



COMMUNITY DEVELOPMENT DEPARTMENT

45175 Ten Mile Road
Novi, MI 48375
(248) 347-0415 Phone
(248) 735-5600 Facsimile
www.cityofnovi.org

ZONING BOARD OF APPEALS STAFF REPORT

FOR: City of Novi Zoning Board of Appeals **MEETINGDATE:** April 14, 2026

REGARDING: **43675 Grand River Avenue #50-22-15-477-011 & 50-22-15-477-012**
(PZ26-0010)

BY: Alan Hall, Deputy Director Community Development

I. GENERAL INFORMATION:

Applicant

City Center Office Plaza

Variance Type

Dimensional Variance

Property Characteristics

Zoning District: this property is zoned Town Center-1 (TC-1)

Location: south of Grand River Avenue, west of Novi Road

Parcel #: 50-22-15-477-011 & 50-22-15-477-012

Request

The applicant is requesting variances from the City of Novi Zoning Ordinance: Section 3.1.25.D to permit a less than 20 ft parking setback on the east, west and south sides of the development (minimum 10 feet proposed); Section 3.27.1.D to allow parking in the exterior side yards on non-residential collector streets; and Section 5.4.2 to allow a reduction in the loading zone size (540 sf proposed, 940 sf required).

II. STAFF COMMENTS:

The applicant, City Center Office Plaza, is seeking (5) dimensional variances:

- 1) To allow a 10' side yard parking setback on the East side of the development.*
- 2) To allow a 10' side yard parking setback on the West side of the development.*
- 3) To allow a 10' exterior side yard parking setback on the South side of the development.*
- 4) To allow parking within an exterior side yard setback.*
- 5) To allow a 400 SF size reduction in the loading zone size (a result of 540 SF total).*

III. RECOMMENDATION:

The Zoning Board of Appeals may take one of the following actions:

1. I move that we **grant** the variance in Case No. **PZ26-0010**, sought by _____, for _____ because Petitioner has shown practical difficulty requiring _____

_____.

(a) Without the variance Petitioner will be unreasonably prevented or limited with respect to use of the property because _____

_____.

(b) The property is unique because _____

_____.

(c) Petitioner did not create the condition because _____

_____.

(d) The relief granted will not unreasonably interfere with adjacent or surrounding properties because _____

_____.

(e) The relief is consistent with the spirit and intent of the ordinance because _____

_____.

(f) The variance granted is subject to:

1. _____.

2. _____.

3. _____.

4. _____.

2. I move that we **deny** the variance in Case No. **PZ26-0010** sought by _____, for _____ because Petitioner has not shown practical difficulty requiring _____.

(a) The circumstances and features of the property including _____ are not unique because they exist generally throughout the City.

(b) The circumstances and features of the property relating to the variance request are self-created because _____.

(c) The failure to grant relief will result in mere inconvenience or inability to attain higher economic or financial return based on Petitioners statements that _____.

(d) The variance would result in interference with the adjacent and surrounding properties by _____.

(e) Granting the variance would be inconsistent with the spirit and intent of the ordinance to _____.

Should you have any further questions with regards to the matter please feel free to contact me at (248) 347-0417.

Alan Hall – Deputy Director Community Development - City of Novi

RECEIVED

FEB 25 2026

CITY OF NOVI
COMMUNITY DEVELOPMENT



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ZONING BOARD OF APPEALS APPLICATION

APPLICATION MUST BE FILLED OUT COMPLETELY

Application Fee: \$330.00
Meeting Date: 4/14/26
ZBA Case #: PZ 26-0010

I. PROPERTY INFORMATION (Address of subject ZBA Case)			
PROJECT NAME / SUBDIVISION City Center Office Plaza			
ADDRESS 43675 Grand River Avenue		LOT/SUITE/SPACE #	
SIDWELL # 50-22-15 -477 -011		May be obtain from Assessing Department (248) 347-0485	
CROSS ROADS OF PROPERTY			
IS THE PROPERTY WITHIN A HOMEOWNER'S ASSOCIATION JURISDICTION? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		REQUEST IS FOR: <input type="checkbox"/> RESIDENTIAL <input checked="" type="checkbox"/> COMMERCIAL <input type="checkbox"/> VACANT PROPERTY <input type="checkbox"/> SIGNAGE	
DOES YOUR APPEAL RESULT FROM A NOTICE OF VIOLATION OR CITATION ISSUED? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
II. APPLICANT INFORMATION			
A. APPLICANT		CELL PHONE NO.	
NAME PATRICIA KEROS		TELEPHONE NO.	
ORGANIZATION/COMPANY CITY CENTER OFFICE PLAZA, LLC		FAX NO.	
ADDRESS 25875 NOVI ROAD, SUITE 180		CITY NOVI	STATE MI
		ZIP CODE 48375	
B. PROPERTY OWNER <input checked="" type="checkbox"/> CHECK HERE IF APPLICANT IS ALSO THE PROPERTY OWNER			
Identify the person or organization that owns the subject property:		EMAIL ADDRESS	
NAME		CELL PHONE NO.	
		TELEPHONE NO.	
ORGANIZATION/COMPANY		FAX NO.	
ADDRESS		CITY	STATE
		ZIP CODE	
III. ZONING INFORMATION			
A. ZONING DISTRICT			
<input type="checkbox"/> R-A <input type="checkbox"/> R-1 <input type="checkbox"/> R-2 <input type="checkbox"/> R-3 <input type="checkbox"/> R-4 <input type="checkbox"/> RM-1 <input type="checkbox"/> RM-2 <input type="checkbox"/> MH <input type="checkbox"/> I-1 <input type="checkbox"/> I-2 <input type="checkbox"/> RC <input type="checkbox"/> TC <input checked="" type="checkbox"/> TC-1 <input type="checkbox"/> OTHER _____			
B. VARIANCE REQUESTED			
INDICATE ORDINANCE SECTION (S) AND VARIANCE REQUESTED:			
1. Section <u>3.1.25.D</u>		Variance requested <u>Less than 20' setback on all 4 sides of the development.</u>	
2. Section <u>3.27.1.D</u>		Variance requested <u>Parking located in front yard and exterior side yard.</u>	
3. Section <u>3.27.1.H / 5.4.2</u>		Variance requested <u>Loading area proposed in side yard.</u>	
4. Section <u>4.19.2.F</u>		Variance requested <u>Dumpster proposed within 10' of building.</u>	
IV. FEES AND DRAWINGS			
A. FEES			
<input type="checkbox"/> Single Family Residential (Existing) \$220 <input type="checkbox"/> (With Violation) \$275 <input type="checkbox"/> Single Family Residential (New) \$275 <input type="checkbox"/> Multiple/Commercial/Industrial \$330 <input type="checkbox"/> (With Violation) \$440 <input type="checkbox"/> Signs \$330 <input type="checkbox"/> (With Violation) \$440 <input type="checkbox"/> House Moves \$330 <input type="checkbox"/> Special Meetings (At discretion of Board) \$660			
B. DRAWINGS 1-COPY & 1 DIGITAL COPY SUBMITTED AS A PDF			
<ul style="list-style-type: none"> Dimensioned Drawings and Plans Site/Plot Plan Existing or proposed buildings or addition on the property Number & location of all on-site parking, if applicable Existing & proposed distance to adjacent property lines Location of existing & proposed signs, if applicable Floor plans & elevations Any other information relevant to the Variance application 			



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ZONING BOARD OF APPEALS APPLICATION

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Meeting Date: _____

ZBA Case #: PZ _____

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SIDWELL # 50-22- 15 - 477 - 011		May be obtain from Assessing Department (248) 347-0485	
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II. APPLICANT INFORMATION			
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NAME PATRICIA KEROS		CELL	
ORGANIZATION/COMPANY CITY CENTER OFFICE PLAZA, LLC		TE	
ADDRESS 25875 NOVI ROAD, SUITE 180		CITY NOVI	ZIP CODE 48375
B. PROPERTY OWNER <input checked="" type="checkbox"/> CHECK HERE IF APPLICANT IS ALSO THE PROPERTY OWNER			
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B. VARIANCE REQUESTED			
INDICATE ORDINANCE SECTION (S) AND VARIANCE REQUESTED:			
1. Section <u>3.27.1</u> Variance requested <u>Lack of proposed sidewalk on west side of Flint Street.</u>			
2. Section _____ Variance requested _____			
3. Section _____ Variance requested _____			
4. Section _____ Variance requested _____			
IV. FEES AND DRAWINGS			
A. FEES			
<input type="checkbox"/> Single Family Residential (Existing) \$220 <input type="checkbox"/> (With Violation) \$275 <input type="checkbox"/> Single Family Residential (New) \$275 <input type="checkbox"/> Multiple/Commercial/Industrial \$330 <input type="checkbox"/> (With Violation) \$440 <input type="checkbox"/> Signs \$330 <input type="checkbox"/> (With Violation) \$440 <input type="checkbox"/> House Moves \$330 <input type="checkbox"/> Special Meetings (At discretion of Board) \$660			
B. DRAWINGS 1-COPY & 1 DIGITAL COPY SUBMITTED AS A PDF			
<ul style="list-style-type: none"> • Dimensioned Drawings and Plans • Site/Plot Plan • Existing or proposed buildings or addition on the property • Number & location of all on-site parking, if applicable • Existing & proposed distance to adjacent property lines • Location of existing & proposed signs, if applicable • Floor plans & elevations • Any other information relevant to the Variance application 			



ZONING BOARD OF APPEALS APPLICATION

V. VARIANCE

A. VARIANCE (S) REQUESTED

DIMENSIONAL USE SIGN

There is a five-(5) hold period before work/action can be taken on variance approvals.

B. SIGN CASES (ONLY)

Your signature on this application indicates that you agree to install a **Mock-Up Sign** ten-(10) days before the schedule ZBA meeting. Failure to install a mock-up sign may result in your case not being heard by the Board, postponed to the next schedule ZBA meeting, or cancelled. A mock-up sign is **NOT** to be actual sign. Upon approval, the mock-up sign must be removed within five-(5) days of the meeting. If the case is denied, the applicant is responsible for all costs involved in the removal of the mock-up or actual sign (if erected under violation) within five-(5) days of the meeting.

C. ORDINANCE

City of Novi Ordinance, Section 3107 – Miscellaneous

No order of the Board permitting the erection of a building shall be valid for a period longer than one-(1) year, unless a building permit for such erection or alteration is obtained within such period and such erection or alteration is started and proceeds to completion in accordance with the terms of such permit.

No order of the Board permitting a use of a building or premises shall be valid for a period longer than one-hundred and eighty-(180) days unless such use is establish within such a period; provided, however, where such use permitted is dependent upon the erection or alteration or a building such order shall continue in force and effect if a building permit for such erection or alteration is obtained within one-(1) year and such erection or alteration is started and proceeds to completion in accordance with the terms of such permit.

D. APPEAL THE DETERMINATION OF THE BUILDING OFFICIAL

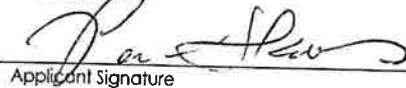
PLEASE TAKE NOTICE:

The undersigned hereby appeals the determination of the Building Official / Inspector or Ordinance made

CONSTRUCT NEW HOME/BUILDING ADDITION TO EXISTING HOME/BUILDING SIGNAGE
 ACCESSORY BUILDING USE OTHER _____

VI. APPLICANT & PROPERTY SIGNATURES

A. APPLICANT


Applicant Signature

2/17/26
Date

B. PROPERTY OWNER

If the applicant is not the owner, the property owner must read and sign below:

The undersigned affirms and acknowledges that he, she or they are the owner(s) of the property described in this application, and is/are aware of the contents of this application and related enclosures.

Property Owner Signature

Date

VII. FOR OFFICIAL USE ONLY

DECISION ON APPEAL:

GRANTED

DENIED

The Building Inspector is hereby directed to issue a permit to the Applicant upon the following and conditions:

Chairperson, Zoning Board of Appeals

Date



Community Development Department
45175 Ten Mile Road
Novi, MI 48375
(248) 347-0415 Phone
(248) 735-5600 Facsimile
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REVIEW STANDARDS DIMENSIONAL VARIANCE

The Zoning Board of Appeals (ZBA) will review the application package and determine if the proposed Dimensional Variance meets the required standards for approval. In the space below, and on additional paper if necessary, explain how the proposed project meets each of the following standards. (Increased costs associated with complying with the Zoning Ordinance will not be considered a basis for granting a Dimensional Variance.)

Standard #1. Circumstances or Physical Conditions.

Explain the circumstances or physical conditions that apply to the property that do not apply generally to other properties in the same zoning district or in the general vicinity. Circumstances or physical conditions may include:

- a. Shape of Lot.** Exceptional narrowness, shallowness or shape of a specific property in existence on the effective date of the Zoning Ordinance or amendment.

Not Applicable Applicable If applicable, describe below:

The agreement with the City of Novi to dedicate the Bond Street right-of-way to the city creates an odd shaped lot with roads on all four sides of the property. A 20' setback is provided along Grand River Avenue. However, providing a 20' setback along Bond Street and Flint Street will not allow adequate room to park the proposed development.

and/or

- b. Environmental Conditions.** Exceptional topographic or environmental conditions or other extraordinary situations on the land, building or structure.

Not Applicable Applicable If applicable, describe below:

and/or

- c. Abutting Property.** The use or development of the property immediately adjacent to the subject property would prohibit the literal enforcement of the requirements of the Zoning Ordinance or would involve significant practical difficulties.

Not Applicable Applicable If applicable, describe below:

Standard #2. Not Self-Created.

Describe the immediate practical difficulty causing the need for the Dimensional Variance, that the need for the requested variance is not the result of actions of the property owner or previous property owners (i.e., is not self-created).

The applicant has met with the City of Novi and came to an agreement to dedicate the Bond Street right-of-way to the city to complete the loop road. This right-of-way dedication created the odd shaped lot.

Standard #3. Strict Compliance.

Explain how the Dimensional Variance in strict compliance with regulations governing area, setback, frontage, height, bulk, density or other dimensional requirements will unreasonably prevent the property owner from using the property for a permitted purpose, or will render conformity with those regulations unnecessarily burdensome.

Strict compliance with the 20' parking setbacks will not allow adequate room to adequately park the site.

Standard #4. Minimum Variance Necessary.

Explain how the Dimensional Variance requested is the minimum variance necessary to do substantial justice to the applicant as well as to other property owners in the district.

The proposed site plan uses the minimum parking lot dimensions for drive aisles and parking spaces. There is not adequate room to the north or to the west of the site to move the parking to allow the 20' setbacks along Bond Street or Flint Street.

Standard #5. Adverse Impact on Surrounding Area.

Explain how the Dimensional Variance will not cause an adverse impact on surrounding property, property values, or the use and enjoyment of property in the neighborhood or zoning district.

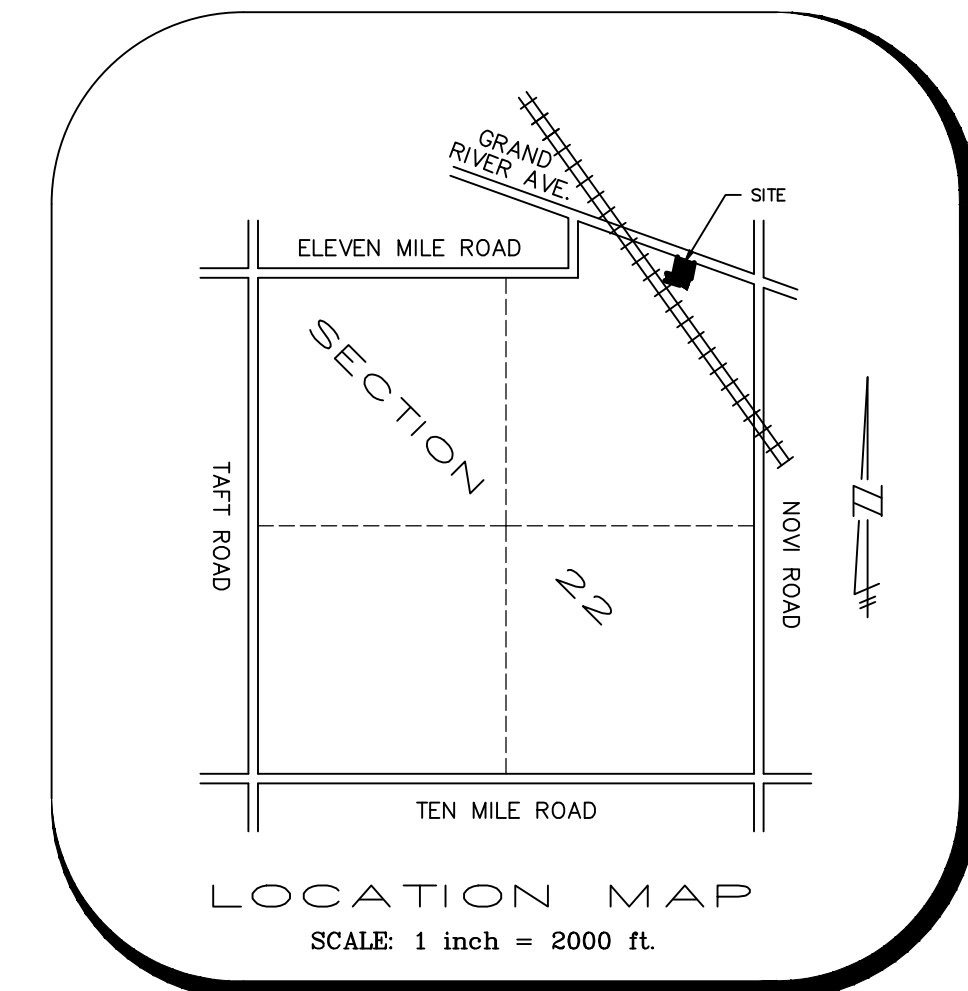
A gas station is located on the east side of Flint Street and the Bond Street intersection with Grand River is located on the west side of the property. Parking spaces are adequately screen from headlights directed toward adjacent properties and Bond Street.

ENGINEERING CONSTRUCTION PLANS FOR:

CITY CENTER OFFICE PLAZA

SECTION 22, TOWN 1 NORTH, RANGE 8 EAST,
CITY OF NOVI, OAKLAND COUNTY, MICHIGAN

OWNER :
CITY CENTER OFFICE PLAZA, LLC
25875 NOVI ROAD, SUITE 180
NOVI, MICHIGAN 48375
PHONE : 248-513-3665
EMAIL : GTMANAGEMENT@GMAIL.COM



LEGAL DESCRIPTION

PART OF LOTS 6 AND 7 AND ALL OF LOT 8 OF "SUPERVISOR'S PLAT NO. 3", LIBER 54A OF PLATS, PAGE 84, AND PART OF LOT 9 OF "RAILROAD SUBDIVISION", LIBER 92 OF PLATS, PAGE 16, SECTION 22, T1N-R8E, CITY OF NOVI, OAKLAND COUNTY, MICHIGAN, MORE FULLY DESCRIBED AS: COMMENCING AT THE NORTHEAST CORNER OF SAID SECTION 22; THENCE S03°09'10"E 138.97 FEET ALONG THE EAST LINE OF SAID SECTION 22; THENCE N73°47'41"W 705.29 FEET ALONG THE SOUTH LINE OF GRAND RIVER AVENUE (100 FEET WIDE) TO THE NORTHEAST CORNER OF LOT 8 OF "SUPERVISOR'S PLAT NO. 3", SAID POINT ALSO BEING THE POINT OF BEGINNING; THENCE S08°47'02"W 168.60 FEET ALONG THE EAST LINE OF SAID LOT 8 AND THE WEST LINE OF FLINT STREET TO THE SOUTHEAST CORNER OF SAID LOT 8; THENCE S14°53'01"W 38.74 FEET ALONG THE EAST LINE OF LOT 9 OF "RAILROAD SUBDIVISION" AND THE WEST LINE OF SAID FLINT STREET; THENCE THE FOLLOWING SEVEN (7) COURSES ALONG THE NORTHERLY RIGHT-OF-WAY LINE OF BOND STREET; 1) N73°47'54"W 11.46 FEET, 2) S16°12'06"W 25.00 FEET, 3) N72°48'37"W 86.73 FEET, 4) 221.29 FEET ALONG A 187.00 FEET RADIUS CURVE TO THE RIGHT, WITH A CHORD BEARING N38°54'34"W 208.60 FEET, 5) 30.73 FEET ALONG A 187.50 FEET RADIUS CURVE TO THE RIGHT, WITH A CHORD BEARING N09°02'33"E 30.70 FEET, 6) 34.38 FEET ALONG A 182.00 FEET RADIUS CURVE TO THE RIGHT, WITH A CHORD BEARING N09°49'13"E 34.33 FEET, AND 7) N15°13'56"E 45.56 FEET TO A POINT ON THE SOUTH LINE OF SAID GRAND RIVER AVENUE; THENCE S73°47'41"E 255.04 FEET ALONG THE SOUTH LINE OF SAID GRAND RIVER AVENUE TO THE POINT OF BEGINNING, CONTAINING 1.252 ACRES OF LAND, MORE OR LESS.

FIRE DEPARTMENT NOTES

- ALL FIRE HYDRANTS AND WATER MAINS SHALL BE INSTALLED AND IN SERVICE PRIOR TO ABOVE FOUNDATION BUILDING CONSTRUCTION AS EACH PHASE IS BUILT.
- ALL ROADS SHALL BE PAVED AND CAPABLE OF SUPPORTING 35 TONS PRIOR TO CONSTRUCTION ABOVE FOUNDATION.
- BUILDING ADDRESSES SHALL BE POSTED FACING THE STREET DURING ALL PHASES OF CONSTRUCTION. ADDRESSES SHALL BE A MINIMUM OF THREE INCHES IN HEIGHT ON A CONTRASTING BACKGROUND.
- FIRE LANES SHALL BE POSTED WITH "FIRE LANE - NO PARKING" SIGNS IN ACCORDANCE WITH ORDINANCE #85.99.02.

WAIVERS AND VARIANCES REQUESTED:

- ZONING ORDINANCE SECTION 3.1.25.D - REQUEST ZBA VARIANCE FOR SIDE YARD SETBACK FROM 20 FT. TO 10 FT.
- ZONING ORDINANCE SECTION 2.27.1.D - REQUEST ZBA VARIANCE FOR FRONT YARD AND SIDE YARD PARKING.
- ZONING ORDINANCE SECTION 3.27.1.I - REQUEST VARIANCE FOR ABSENCE OF SIDEWALK ON FLINT STREET.
- ZONING ORDINANCE SECTION 3.27.1.D - REQUEST ZBA VARIANCE FOR FRONT YARD PARKING ALONG FLINT AND BOND STREETS.
- ZONING ORDINANCE SECTION 5.4.2 - REQUEST ZBA VARIANCE FOR SIZE OF LOADING AREA FROM 940 S.F. TO 494 S.F. AND LOADING ZONE IN SIDE YARD
- ZONING ORDINANCE SECTION 4.19.2.F - REQUEST ZBA VARIANCE FOR DUMPSTER LOCATION LESS THAN 10 FT. FROM BUILDING.
- WAIVER REQUIRED FOR DISTANCE BETWEEN PROPOSED DRIVEWAY TO GRAND RIVER AVE. AND FLINT STREET (112' PROPOSED vs 185' REQUIRED FOR 40 MPH)



Scale: 1 inch = 100 ft.

SHEET INDEX:

- ENGINEERING PLANS:**
- COVER SHEET
 - TOPOGRAPHIC SURVEY
 - SITE PLAN
 - EXISTING CONDITIONS AND DEMOLITION PLAN
 - GRADING, PAVING, AND SESC PLAN
 - UTILITY PLAN
 - STORM WATER MANAGEMENT PLAN
 - PRETREATMENT STRUCTURE DETAILS
 - DETAILED GRADING PLAN
 - FIRE TRUCK ROUTE PLAN
 - TRAFFIC CONTROL PLAN
 - NOTES AND DETAILS
 - NOTES AND DETAILS

CITY OF NOVI STANDARD DETAILS:

- SANITARY SEWER DETAILS (3)
- WATER MAIN DETAILS, DATED 3/2014 (5)
- STORM SEWER DETAILS (2)

OAKLAND COUNTY WATER RESOURCE COMMISSION

- SOIL EROSION AND SEDIMENTATION CONTROL DETAILS

LANDSCAPE PLANS:

- L-1 LANDSCAPE PLAN
- L-2 LANDSCAPE DETAILS

ARCHITECTURAL PLANS:

- P.2.1 FLOORS PLAN
- P.4.1 ELEVATIONS PLAN
- 1-3 PHOTOMETRIC PLAN

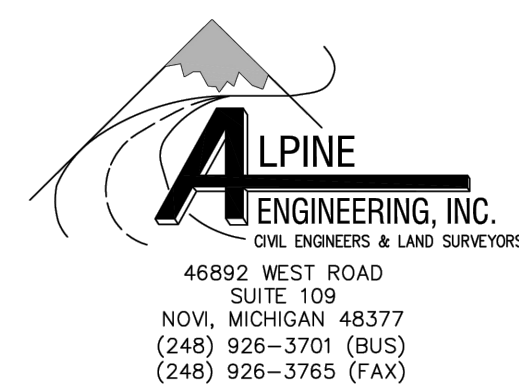
BENCHMARKS:

- BM#1 - PK NAIL AT SOUTH FACE OF POWER POLE AS SHOWN. ELEV.= 908.03 NAVD88
- BM#2 - PK NAIL AT SOUTHEAST FACE OF POWER POLE AS SHOWN. ELEV.= 906.18 NAVD88



ENGINEERING | PLANNING
LAND DEVELOPMENT CONSULTING
39205 COUNTRY CLUB DR. STE C8
FARMINGTON HILLS, MI 48331
248.308.3331

BOUNDARY AND TOPOGRAPHIC
SURVEY PROVIDED BY:



WAH YEE ASSOCIATES
ARCHITECTS & PLANNERS
42400 GRAND RIVER AVENUE, SUITE 200
NOVI, MICHIGAN 48375
PHONE: 248.489.9160
PROJECT NO. 5118

LANDSCAPE PLANS PROVIDED BY:



PROJECT NUMBER:	REV. #	REV. DATE	REVISION INFO.
25-062	-	-	-
PROJECT MANAGER:	-	-	-
R. EMERINE	-	-	-
DRAWN BY:	-	-	-
S. AHMADIAN	-	-	-
CHECKED BY:	-	-	-
R. EMERINE	-	-	-
DATE:	-	-	-
03/04/2025	-	-	-
OFFICE:	-	-	-
FARMINGTON HILLS	-	-	-



LEGEND

- EX. CATCH BASIN
- EX. MANHOLE
- △ EX. END SECTION
- ◇ EX. OVERFLOW STRUCTURE
- EX. DOWNSPOUT/ROOF DRAIN
- ⊙ 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

DESCRIPTION:

PART OF LOTS 6 AND 7 AND ALL OF LOT 8 OF "SUPERVISOR'S PLAT NO. 3", LIBER 54A OF PLATS, PAGE 84, AND PART OF LOT 9 OF "RAILROAD SUBDIVISION", LIBER 92 OF PLATS, PAGE 16, SECTION 22, T1N-R8E, CITY OF NOVI, OAKLAND COUNTY, MICHIGAN, MORE FULLY DESCRIBED AS: COMMENCING AT THE NORTHEAST CORNER OF SAID SECTION 22; THENCE S03°09'10"E 138.97 FEET ALONG THE EAST LINE OF SAID SECTION 22; THENCE N73°47'41"W 705.29 FEET ALONG THE SOUTH LINE OF GRAND RIVER AVENUE (100 FEET WIDE) TO THE NORTHEAST CORNER OF LOT 8 OF "SUPERVISOR'S PLAT NO. 3", SAID POINT ALSO BEING THE POINT OF BEGINNING; THENCE S08°47'02"W 168.60 FEET ALONG THE EAST LINE OF SAID LOT 8 AND THE WEST LINE OF FLINT STREET TO THE SOUTHWEST CORNER OF SAID LOT 8; THENCE S14°53'01"W 38.74 FEET ALONG THE EAST LINE OF LOT 9 OF "RAILROAD SUBDIVISION" AND THE WEST LINE OF SAID FLINT STREET; THENCE THE FOLLOWING SEVEN (7) COURSES ALONG THE NORTHERLY RIGHT-OF-WAY LINE OF BOND STREET; 1) N73°47'54"W 11.46 FEET, 2) S16°12'06"W 25.00 FEET, 3) N72°48'37"W 86.73 FEET, 4) 221.29 FEET ALONG A 187.00 FEET RADIUS CURVE TO THE RIGHT, WITH A CHORD BEARING N38°54'34"W 208.60 FEET, 5) 30.73 FEET ALONG A 187.50 FEET RADIUS CURVE TO THE RIGHT, WITH A CHORD BEARING N09°02'37"E 34.33 FEET, 6) 34.33 FEET ALONG A 182.00 FEET RADIUS CURVE TO THE RIGHT, WITH A CHORD BEARING N09°49'13"E 34.33 FEET, AND 7) N15°13'56"E 45.56 FEET TO A POINT ON THE SOUTH LINE OF SAID GRAND RIVER AVENUE; THENCE S73°47'41"E 255.04 FEET ALONG THE SOUTH LINE OF SAID GRAND RIVER AVENUE TO THE POINT OF BEGINNING, CONTAINING 1.252 ACRES OF LAND, MORE OR LESS.

NOTE:

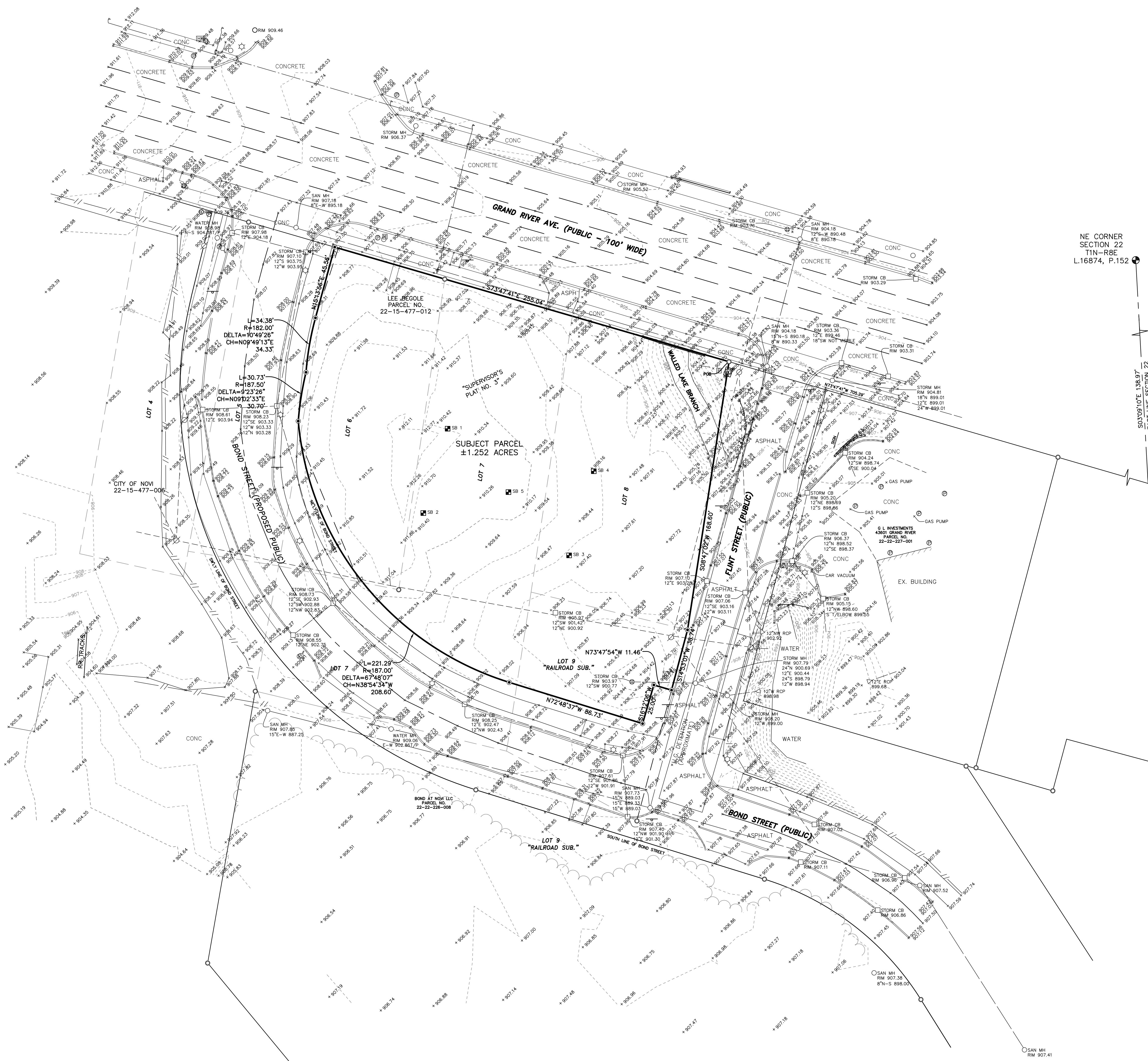
BEARINGS BASED ON MICHIGAN STATE PLANE COORDINATES, NAD83, MICHIGAN SOUTH ZONE

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.



NE CORNER SECTION 22 T1N-R8E L.16874, P.152

S03°09'10"E 138.97' EAST LINE SECTION 22

COMMERCIAL
 SITE PLANNING
 SITE ENGINEERING
 INDUSTRIAL & MULTI-UNIT
 LAND SURVEYING
 CONSTRUCTION LAYOUT

SURVEYING
 ALTA SURVEYS
 BOUNDARY SURVEYS
 TOPOGRAPHIC SURVEYS
 PARCEL SPLITS

RESIDENTIAL
 SUBDIVISIONS
 SITE CONDOMINIUM
 MULTI-FAMILY
 PLOT PLANS
 CONSTRUCTION LAYOUT

ALPINE ENGINEERING, INC.
 CIVIL ENGINEERS & LAND SURVEYORS

46892 WEST ROAD
 SUITE 109
 NOVI, MICHIGAN 48377

(248) 928-3701 (BUS)
 (248) 928-3765 (FAX)
 WWW.ALPINE-INC.NET

811
 Know what's below
 Call before you dig.

CLIENT: G&T MANAGEMENT COMPANY

TOPOGRAPHIC SURVEY

CITY CENTER OFFICE PLAZA
 TOWNSHIP-1N RANGE-8E
 CITY OF NOVI OAKLAND COUNTY MICHIGAN

SECTION: 22

REVISED
 4/11/25: UPDATED TOPO
 12/18/25: UPDATED TOPO

DATE: 9-16-21

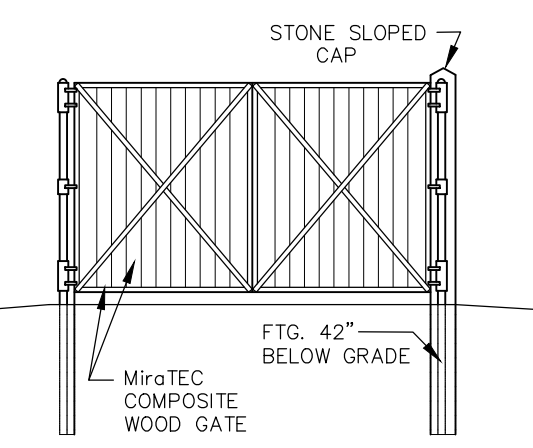
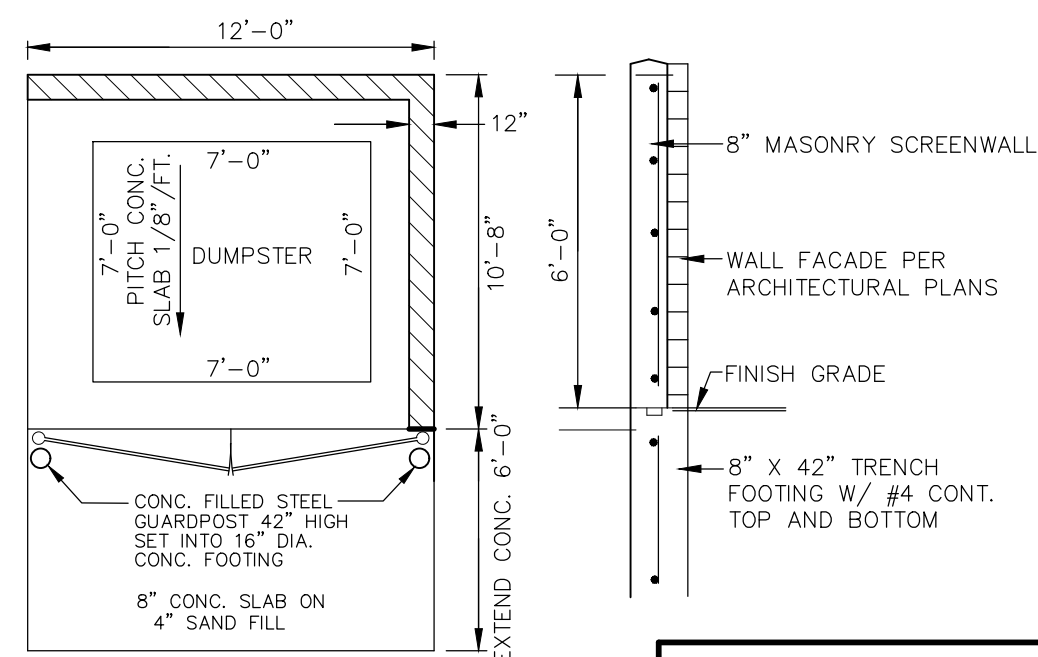
DRAWN BY: JRV

CHECKED BY: JDH/JKH

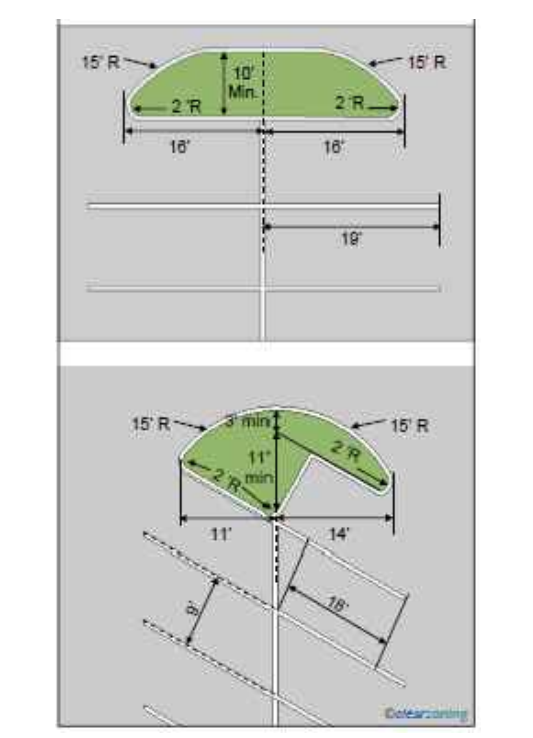
FBK: 1/1

CHP: MJ

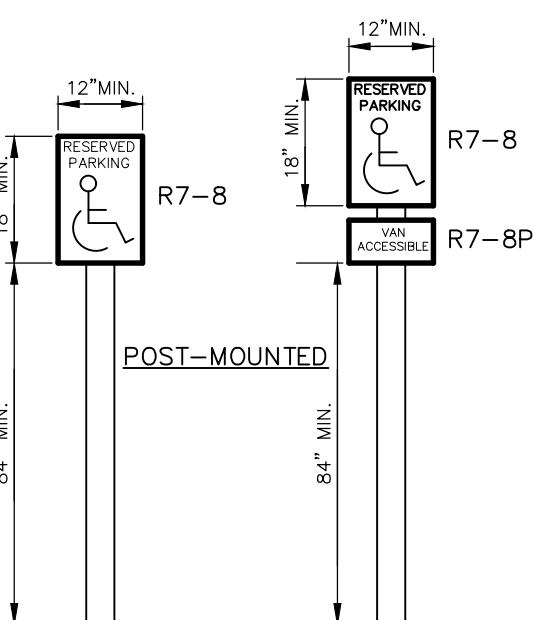
SCALE: HOR 1"=30 FT.
 VER 1"=21-127



DUMPSTER DETAIL (SINGLE UNIT)
(NO SCALE)



END ISLAND DETAILS PER CITY OF NOVI STANDARDS.



BARRIER-FREE RESERVED PARKING SIGNS
NOTE: ACCESSIBLE PARKING SPACE SIGNS SHALL HAVE A MIN. 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.

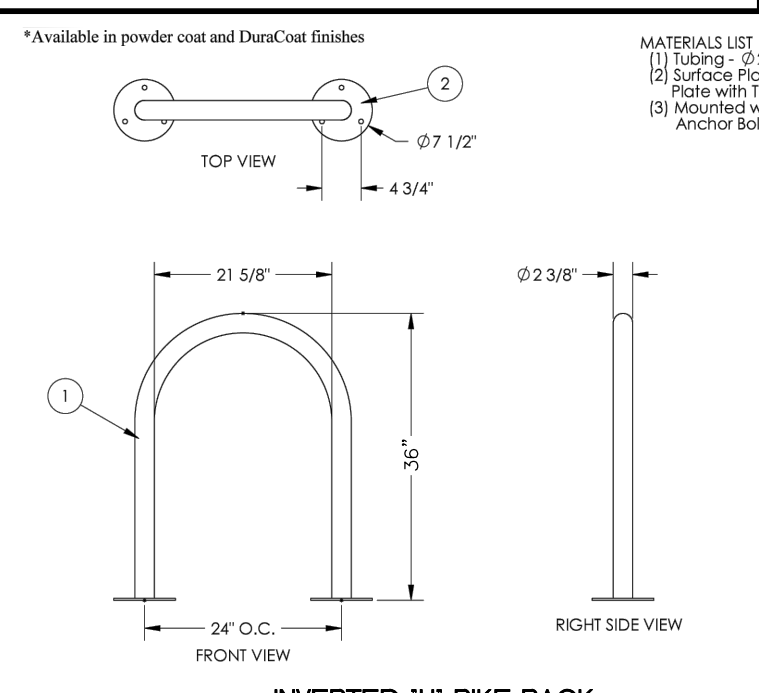
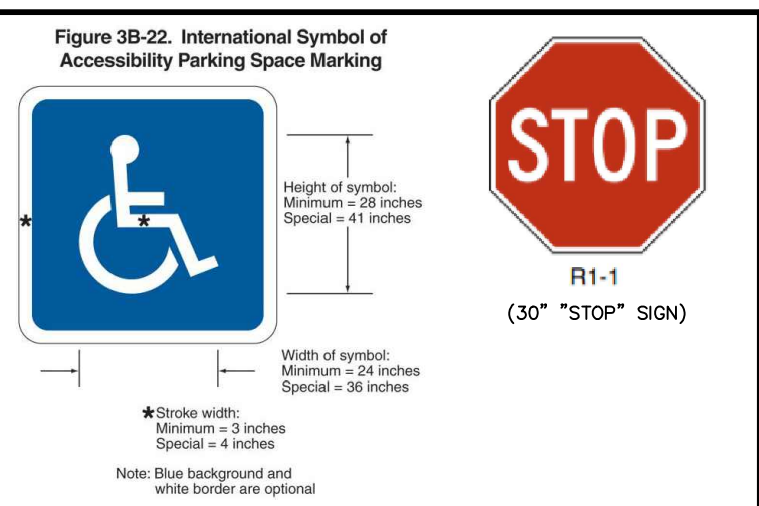
SIGNING NOTES
1. ALL SIGNS SHALL HAVE A MINIMUM BOTTOM MOUNTING HEIGHT OF 7' FROM FINAL GRADE FOR GROUND MOUNTED SIGNS. WALL MOUNTED SIGNS MAY HAVE A BOTTOM MOUNTING HEIGHT OF 5'.
2. ALL ROADSIDE SIGNS SHOULD BE INSTALLED TWO FEET FROM THE FACE OF THE CURB TO THE NEAR EDGE OF THE SIGN.
3. SINGLE SIGNS WITH NOMINAL DIMENSIONS OF 12"x18" OR SMALLER IN SIZE SHALL BE MOUNTED ON A GALVANIZED 2 LB. U-CHANNEL POST. MULTIPLE SIGNS AND/OR SIGNS WITH NOMINAL DIMENSIONS GREATER THAN 12"x18" SHALL BE MOUNTED ON A GALVANIZED 3 LB. OR GREATER U-CHANNEL POST AS DICTATED BY THE WEIGHT OF THE PROPOSED SIGNS.
4. TRAFFIC CONTROL SIGNS SHALL USE THE FHWA STANDARD ALPHABET SERIES.
5. TRAFFIC CONTROL SIGNS SHALL HAVE A HIGH INTENSITY PRISMATIC (HIP) SHEETING TO MEET FHWA RETROREFLECTIVITY REQUIREMENTS.

STRIPING NOTES
1. PARKING LOTS SHALL HAVE PARKING AREAS AND RAMP PAVEMENT MARKINGS MARKED BY PAINTED 4-INCH WIDE LINES ACCURATELY AND NEATLY ARRANGED AS INDICATED ON THE PLAN. LINES SHALL BE PAINTED WITH AN APPROVED WHITE TRAFFIC PAINT COMPATIBLE WITH BITUMINOUS/CONCRETE SURFACES SUCH AS SHERWIN WILLIAMS NO. 82 SW-1; PPG TYPE 11-3 OR 11-4, OR AS APPROVED BY THE OWNER. PROTECT ALL PAINTED AREAS UNTIL PAINT IS COMPLETELY DRY. PARKING AREAS FOR THE PHYSICALLY HANDICAPPED SHALL BE PAINTED WITH BLUE PAINT FOR STRIPING. WHEEL CHAIR SYMBOL SHALL BE PAINTED WHITE. ALL PAINTED MARKINGS AND STRIPING SHALL BE PROVIDED IN TWO COATS.
2. THE INTERNATIONAL SYMBOL FOR ACCESSIBILITY SHALL BE WHITE OR WHITE WITH BLUE BACKGROUND.
3. WHEN A BARRIER FREE PARKING SPACE IS ADJACENT TO A STANDARD PARKING SPACE, BLUE AND WHITE LINES ABUTTING EACH OTHER SHALL BE PROVIDED.

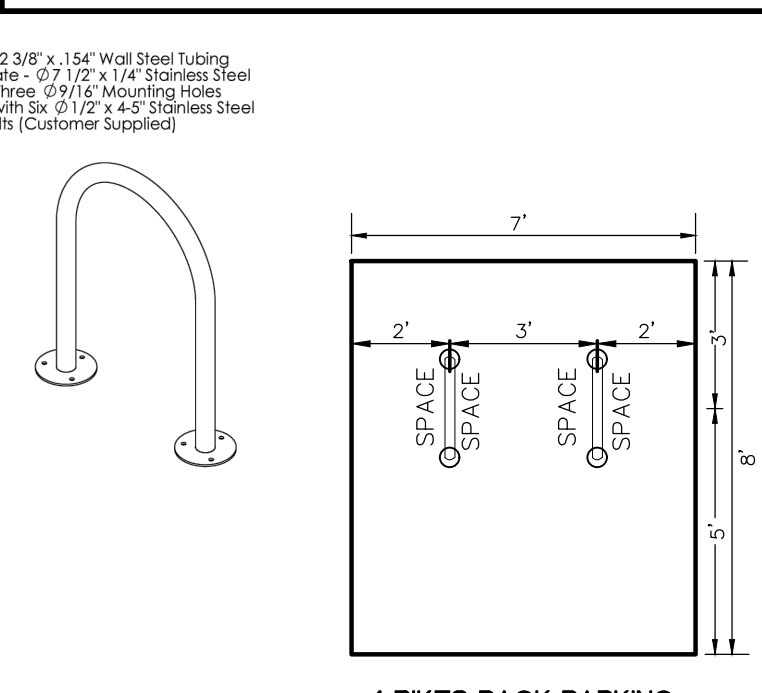
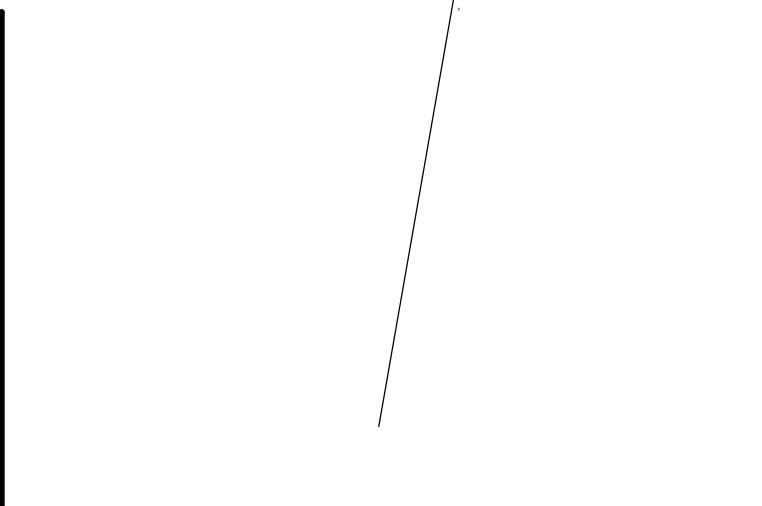
SIGN QUANTITIES

SYMBOL	DESCRIPTION	QUANTITY	PANEL	POST
[Symbol]	R1-1 30" "STOP" SIGN	2	2	2
[Symbol]	V.A. BARRIER FREE SIGN	2	2	2
[Symbol]	BARRIER FREE SIGN	1	1	1

NOTE: ALL TRAFFIC SIGNAGE SHALL COMPLY WITH CURRENT MUTCD STANDARDS.



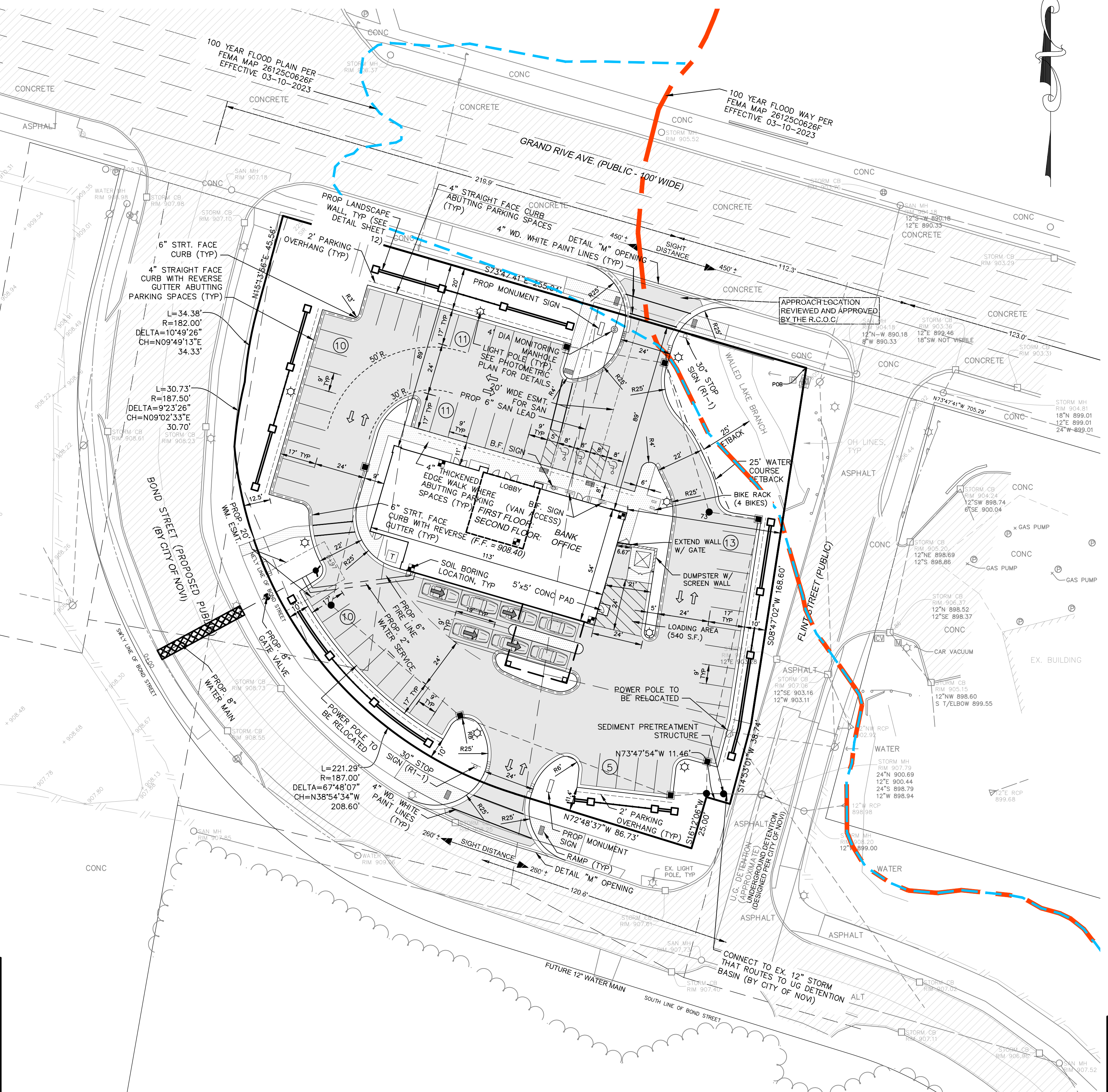
INVERTED 'U' BIKE RACK
NOT TO SCALE



4 BIKES RACK PARKING LAYOUT



SOIL CLASSIFICATIONS
(FROM U.S.C. SOIL SURVEY OF OAKLAND COUNTY, MI 1980)
59 - URBAN LAND
The soils classification determined from the Soils Survey of Oakland County, Michigan 1980, published by the United States Department of Agriculture, Soils Conservation Service is 59-Urban Land, (Entire Parcel). Site Plan is graphical representation.



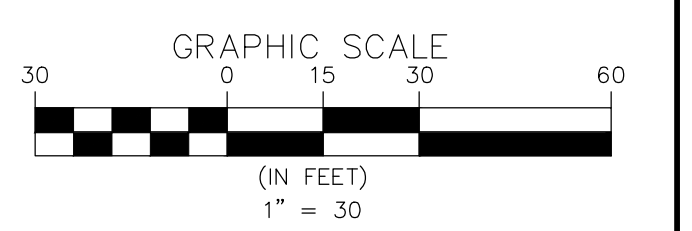
NOTES:
1. SEE SOIL BORINGS REPORT SUBMITTED WITH THE FINAL SITE PLAN.
2. TWO (2) COPIES OF AS-BUILT PLANS SHALL BE SUBMITTED TO THE CITY ENGINEER WITHIN THIRTY (30) DAYS OF COMPLETION OF THE UTILITY INSTALLATION.

PROPOSED IMPROVEMENTS:
1. MUNICIPAL SEWER TO BE PROVIDED BY CONNECTING TO AN EXISTING SANITARY SEWER LOCATED ALONG SOUTH SIDE OF GRAND RIVER AVE.
2. MUNICIPAL WATER TO BE PROVIDED BY CONNECTING TO FUTURE 12" WATER MAIN LOCATED ALONG SOUTH SIDE OF REDESIGNED BOND STREET BY CITY OF NOVI.
3. STORM WATER SHALL BE CONVEYED BY A STORM SEWER SYSTEM TO AN OFF-SITE EXISTING UNDERGROUND DETENTION BASIN DESIGNED BY CITY OF NOVI. STORAGE AND DISCHARGE SHALL CONFORM TO THE OAKLAND COUNTY DRAIN COMMISSIONER'S STANDARDS AND CITY OF NOVI STANDARDS.
4. A CITY OF NOVI RIGHT-OF-WAY PERMIT IS REQUIRED FOR WORK WITHIN ANY PUBLIC ROAD RIGHT-OF-WAY.
5. ALL WORK SHALL CONFORM TO THE CURRENT CITY OF NOVI STANDARDS AND SPECIFICATIONS.
6. COMPACTED SAND BACKFILL SHALL BE PROVIDED FOR ALL UTILITIES WITHIN THE INFLUENCE OF PAVED AREAS.

FLOODPLAIN NOTE:
THE EXISTING FLOODPLAIN AND FLOODWAY DRAWN PER FEMA MAP (FEMA# 26125C0626F, DATED 3/10/2023). THE PROPOSED "CITY CENTER OFFICE PLAZA" BUILDING WILL BE LOCATED OUTSIDE OF THE FLOODPLAIN.

LOADING CALCULATIONS:
LOADING AREA REQUIRED = 94' x 10' = 940 S.F.
LOADING AREA PROVIDED = 540 S.F.

SITE CALCULATIONS
PARCEL AREA : 1.25 AC.
EXISTING ZONING : TC-1
BUILDING HEIGHT : 47'-8"
LOT COVERAGE : 9.37%
FIRST FLOOR :
BANK 3,235 S.F. G.B.A. : 3235/150 = 22 SPACES REQUIRED
RETAIL 1,898 S.F. G.B.A. : 1,898/200 = 10 SPACES
SECOND FLOOR:
OFFICE 5,202 S.F. USABLE AREA : 5,202/222 = 24 SPACES
TOTAL SPACES REQUIRED = 22+10+24 = 56 SPACES
TOTAL SPACES PROVIDED = 60 SPACES
SEE ARCHITECTURAL PLANS



SANITARY SEWER BASIS OF DESIGN

Usage
5884 SF (gross) - FIRST FLOOR
5884 SF (gross) - SECOND FLOOR
11,768 SF (gross) - TOTAL

Equiv. Single Family Units
4.7 Units (0.40 Units / 1,000 SF)
4.7 Total Units (REU)

Population
= 3.2 people/unit x 4.7 units
= 15.1 people

AVERAGE FLOW
= 15.1 people x 100 gal/cap/day
= 1506 gal/day
= 0.0023 cfs

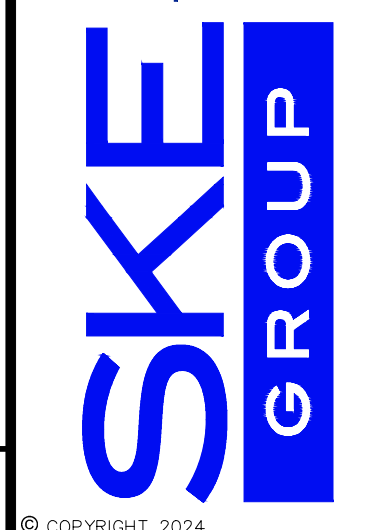
PEAK FACTOR
For service area populations greater than 500 people
P.F. = (18+SQRT(P/1000))/(4+SQRT(P/1000))
= 4.40
For service area populations less than 500 people
P.F. = 4
Governs

PEAK FLOW
= PEAK FACTOR X AVERAGE FLOW
= 0.0093 cfs
(CAPACITY OF A 6" PIPE @ 1.00% IS 0.56 cfs)
THEREFORE 6" LEAD CAPACITY IS SUFFICIENT.

PROPOSED LEGEND

[Symbol]	SANITARY SEWER
[Symbol]	WATER MAIN
[Symbol]	STORM SEWER
[Symbol]	DITCH/SWALE
[Symbol]	SANITARY LEAD
[Symbol]	WATER LEAD
[Symbol]	FENCE
[Symbol]	SILT FENCE
[Symbol]	TREE PROTECTION FENCE
[Symbol]	MELTAND
[Symbol]	FLOODPLAIN
[Symbol]	CONTOUR
[Symbol]	CURB AND GUTTER
[Symbol]	FIRE LINE WITH VALVE BOX
[Symbol]	WATER SERVICE WITH VALVE BOX
[Symbol]	SANITARY MANHOLE
[Symbol]	SANITARY CLEANOUT
[Symbol]	STORM MANHOLE
[Symbol]	CURB INLET WITH SILT SACK
[Symbol]	END SECTION
[Symbol]	FIRE HYDRANT
[Symbol]	VALVE IN WELL
[Symbol]	WATER SHUT OFF
[Symbol]	WELL
[Symbol]	MONITORING WELL
[Symbol]	LIGHT POLE
[Symbol]	UTILITY POLE
[Symbol]	POST / BOLLARD
[Symbol]	SAND BACKFILL
[Symbol]	PAVEMENT (ASPHALT)
[Symbol]	PAVEMENT (CONCRETE)
[Symbol]	PAVEMENT (CONCRETE SIDEWALK)
[Symbol]	H.P.
[Symbol]	L.P.
[Symbol]	LOW POINT
[Symbol]	DIRECTION SURFACE WATER FLOW
[Symbol]	OVERLAP ROUTE
[Symbol]	DRAINWAY LOCATION
[Symbol]	1000.00
[Symbol]	1000.00
[Symbol]	1/2"
[Symbol]	GRADE
[Symbol]	TOP OF CURB

ENGINEERING | PLANNING
LAND DEVELOPMENT CONSULTING
39205 COUNTRY CLUB DR, STE C8
FARMINGTON HILLS, MI 48331
248.308.3331



DATE: 02/19/2026
SUBMITTAL DATE: 02/19/2026
REVISION: [Table with 2 columns: NO., DESCRIPTION]

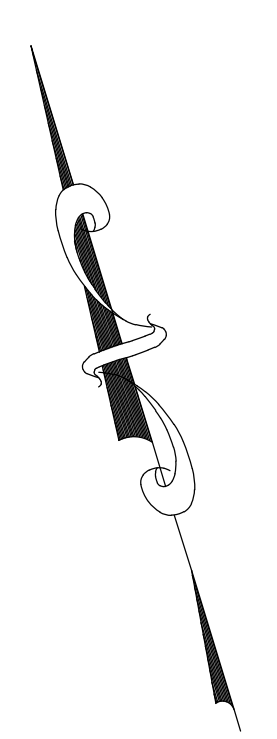
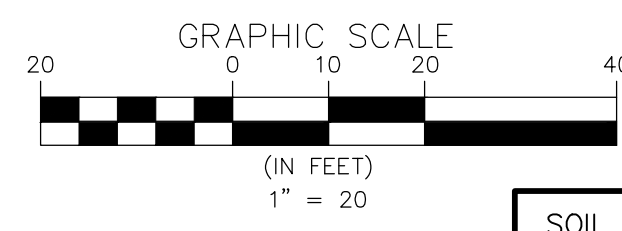
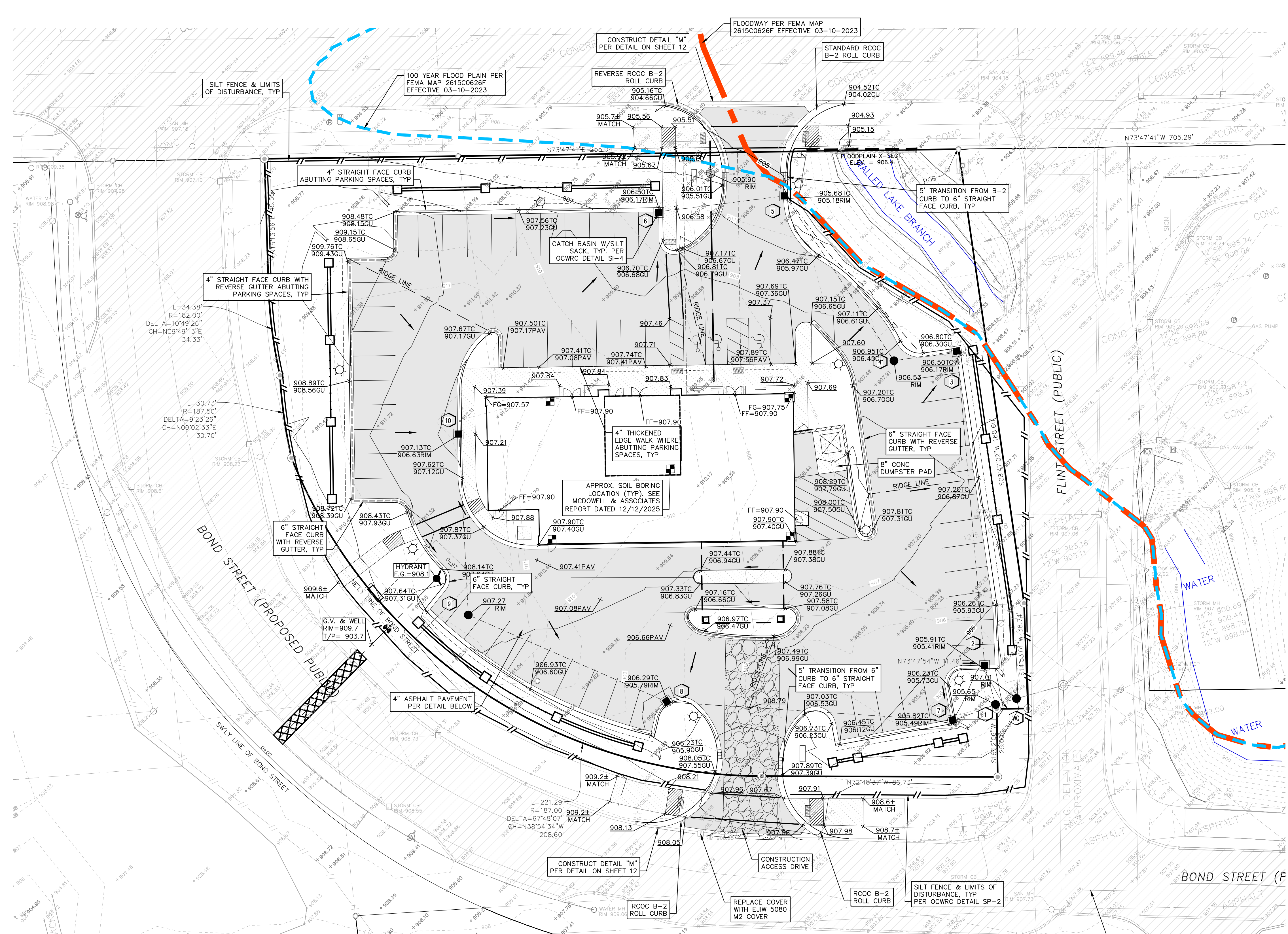


3 WORKING DAYS BEFORE YOU DIG
CALL MISS DIG
1-800-482-7171
TOLL FREE FOR THE LOCATION OF UNDERGROUND FACILITIES

PROJECT NUMBER: 25-062
PROJECT MANAGER: BE
DRAWN BY: SA
CHECKED BY: BR
OFFICE: FARMINGTON HILLS

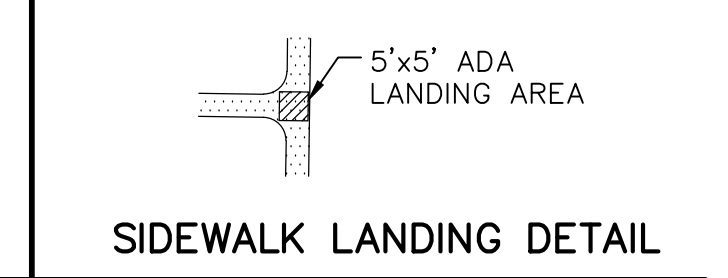
CLIENT INFO:
CITY CENTER OFFICE PLAZA, LLC
PATRICIA KEROS
25875 NOVI ROAD, SUITE 180
NOVI, MI 48375
PHONE: 248.513.3665

PROJECT NAME:
CITY CENTER OFFICE PLAZA
PART OF THE NORTHEAST 1/4 OF SECTION 22,
T1N. 18E., R3E., CITY OF NOVI, OAKLAND COUNTY, MI
SHEET TITLE:
SITE PLAN
PAGE NO.: 3



SOIL BORING INFORMATION PROVIDED BY MCDOWELL & ASSOCIATES REPORT DATED 12/12/2025

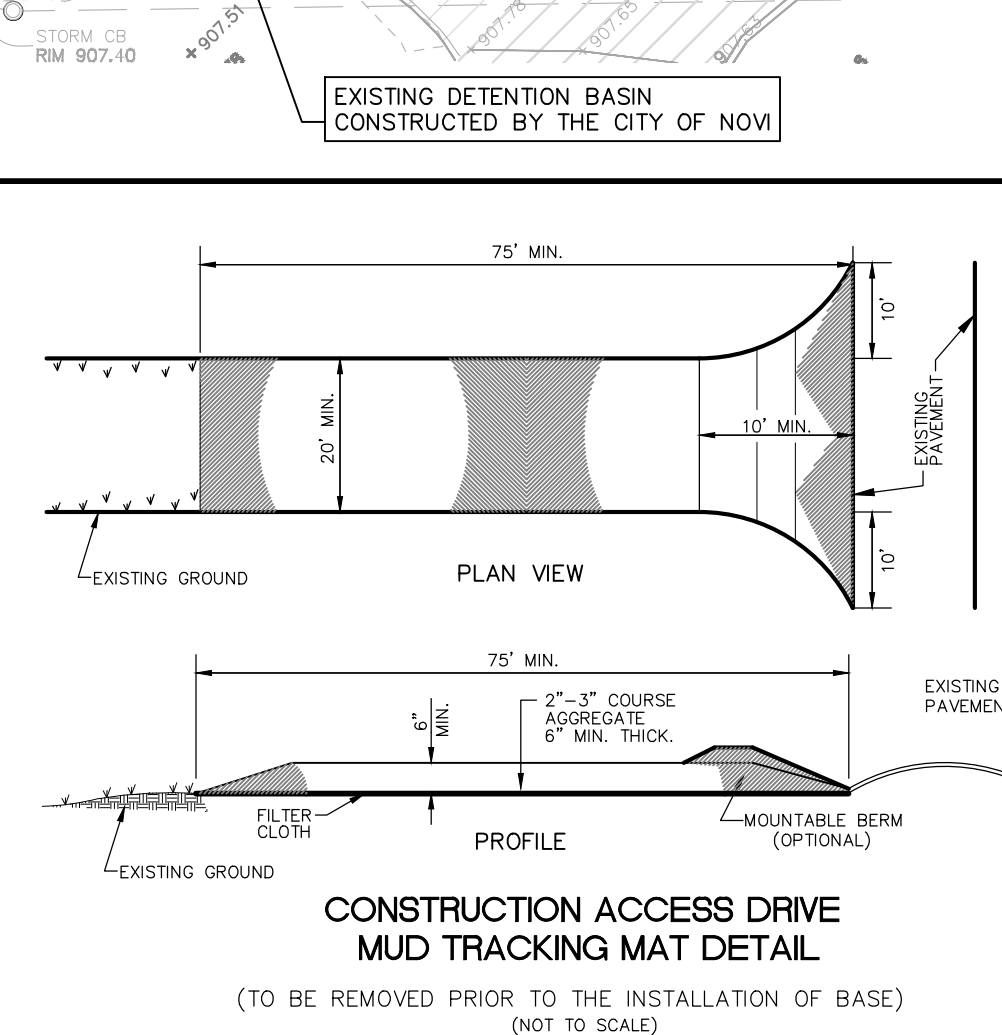
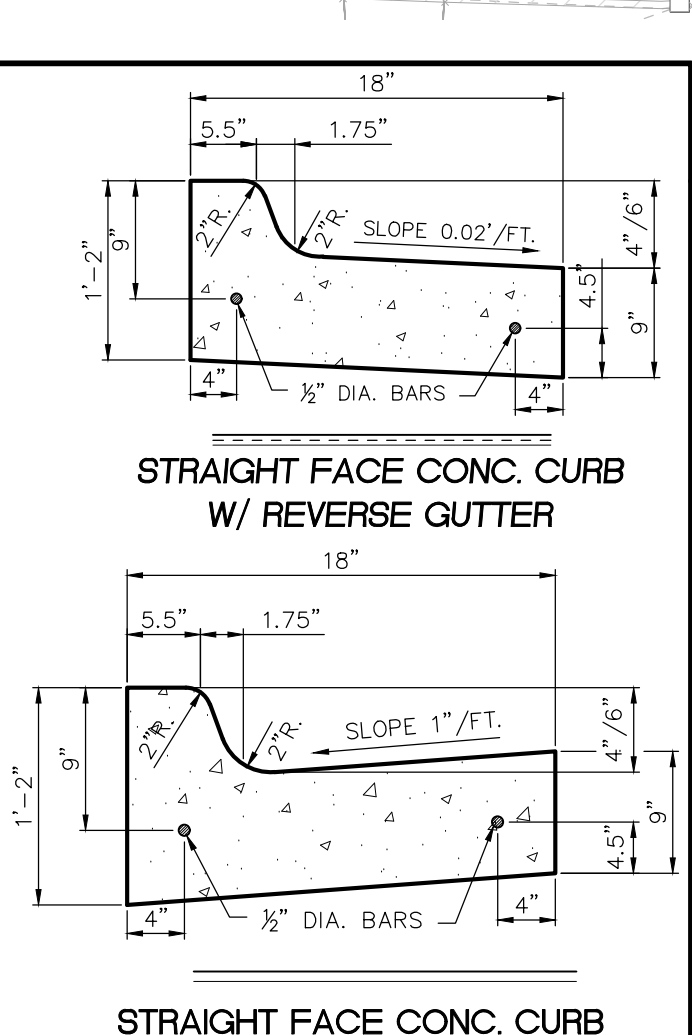
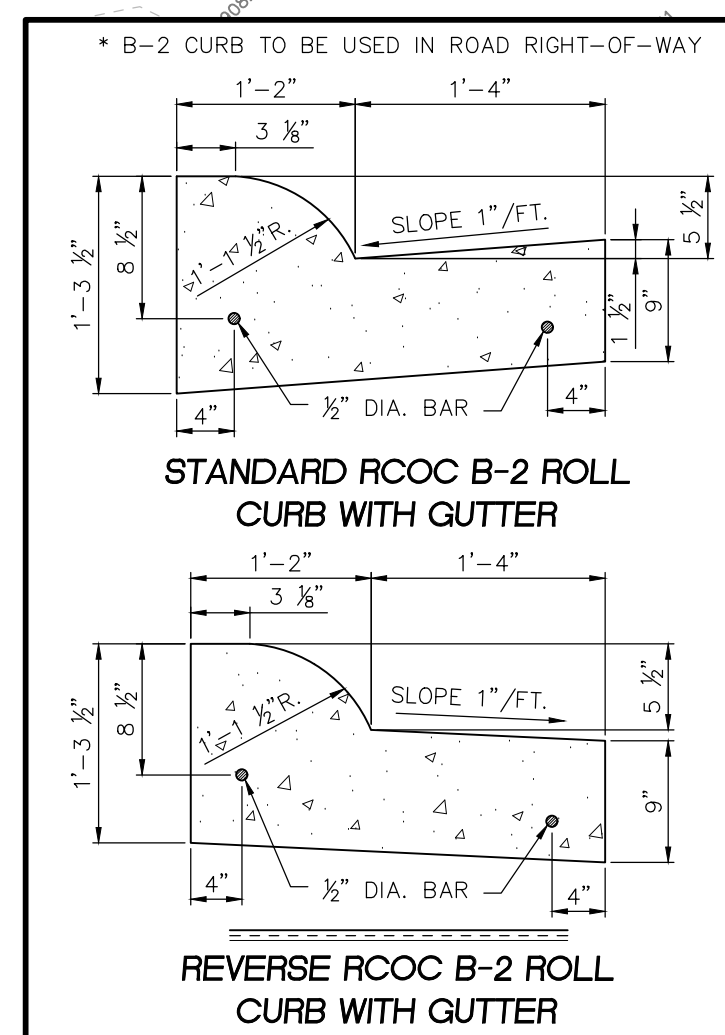
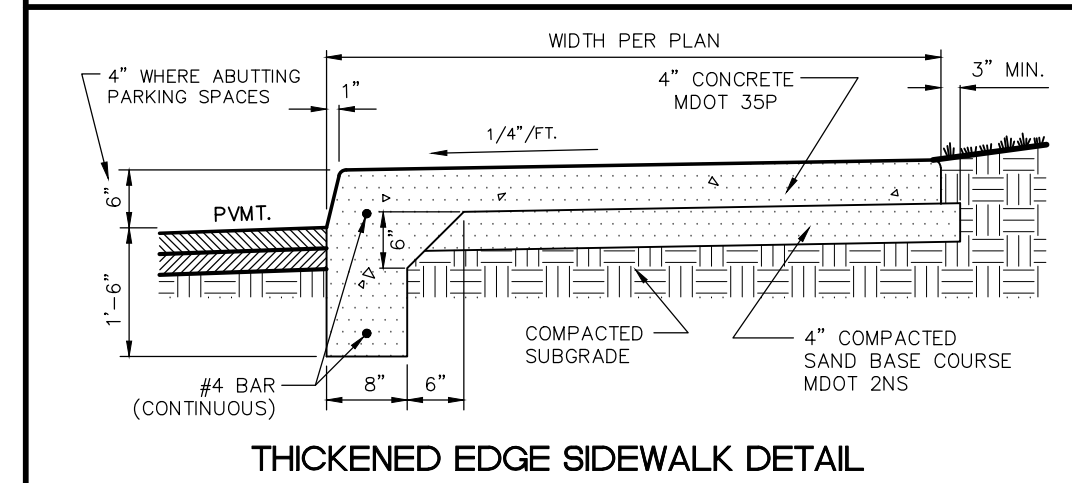
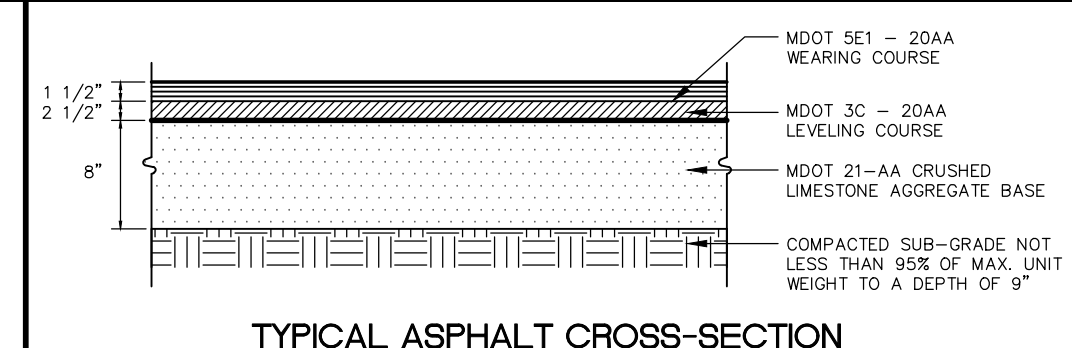
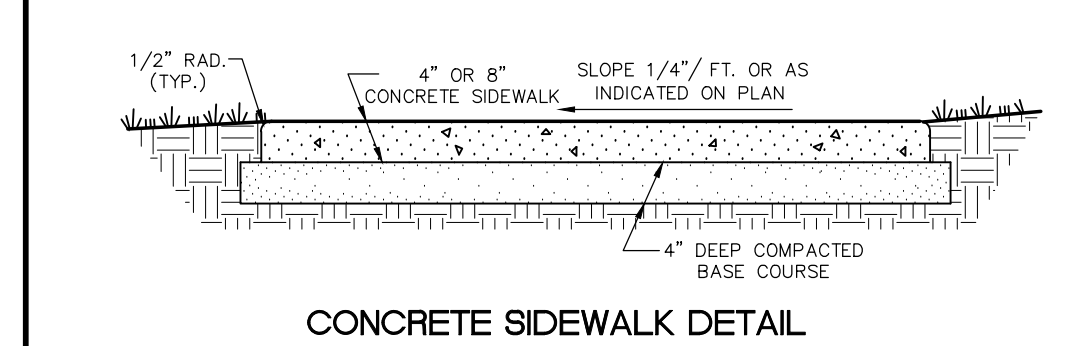
PROPOSED LEGEND	
	SANITARY SEWER
	WATER MAIN
	STORM SEWER
	DITCH/SWALE
	SANITARY LEAD
	WATER LEAD
	FENCE
	TREE PROTECTION FENCE
	FLOODPLAIN
	WETLAND
	CONTOUR
	CURB AND GUTTER
	FIRE LINE WITH VALVE BOX
	WATER SERVICE WITH VALVE BOX
	SANITARY MANHOLE
	SANITARY CLEANOUT
	STORM MANHOLE
	CURB INLET WITH SILT SACK
	END SECTION
	FIRE HYDRANT
	VALVE IN WELL
	WATER SHUT OFF
	WELL
	MONITORING WELL
	LIGHT POLE
	UTILITY POLE
	POST / BOLLARD
	SAND BACKFILL
	PAVEMENT (ASPHALT)
	PAVEMENT (CONCRETE)
	PAVEMENT (CONCRETE SIDEWALK)
	H.P.
	L.P.
	DIRECTION SURFACE WATER FLOW
	OVERFLOW ROUTE
	DRIVEWAY LOCATION
	GRADE
	TOP OF CURB



- 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'X5' ADA LANDING AREAS HAVE A MAXIMUM SLOPE IN ALL DIRECTIONS OF 2%
 4. THE MAXIMUM SLOPE FOR A RAMP IS 8% FOR MAXIMUM 6" RISE

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

- NOTES**
1. THE CONTRACTOR WILL FIELD VERIFY ALL EXISTING UTILITY LOCATIONS, INVERTS AND GRADES PRIOR TO THE START OF ANY WORK.
 2. THE PROPOSED PATHWAY WITHIN THE ROAD RIGHT-OF-WAY SHALL MATCH EXISTING GRADES AT BOTH ENDS.
 3. 21AA CRUSHED LIMESTONE BASE SHALL BE USED FOR ANY PAVEMENT WITHIN 100 FEET OF WATER COURSE.
 4. A CITY OF NOVI RIGHT-OF-WAY PERMIT IS REQUIRED FOR WORK WITHIN THE BOND STREET RIGHT-OF-WAY.
 5. CONTRACTOR TO FIELD VERIFY ALL EXISTING UTILITY LOCATIONS, INVERTS, AND GRADES PRIOR TO THE START OF ANY WORK.



EXISTING DETENTION BASIN CONSTRUCTED BY THE CITY OF NOVI

ENGINEERING | PLANNING
LAND DEVELOPMENT | CONSULTING

SKE GROUP

39205 COUNTRY CLUB DR, STE C8
FARMINGTON HILLS, MI 48331
248.308.3331

PROJECT NUMBER:	25-062
PROJECT MANAGER:	BE
DRAWN BY:	SA
CHECKED BY:	BR
OFFICE:	FARMINGTON HILLS



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

CLIENT INFO:	CITY CENTER OFFICE PLAZA, LLC PATRICIA KEROS 25875 NOVI ROAD, SUITE 180 NOVI, MI 48275 PHONE: 248.513.3665
--------------	--

PROJECT NAME:	CITY CENTER OFFICE PLAZA
PART OF THE NORTHWEST 1/4 OF SECTION 22, T11N. 18E., CITY OF NOVI, OAKLAND COUNTY, MI	
SHEET TITLE:	GRADING, PAVING, AND SESC PLAN

NO.	REVISION	DATE

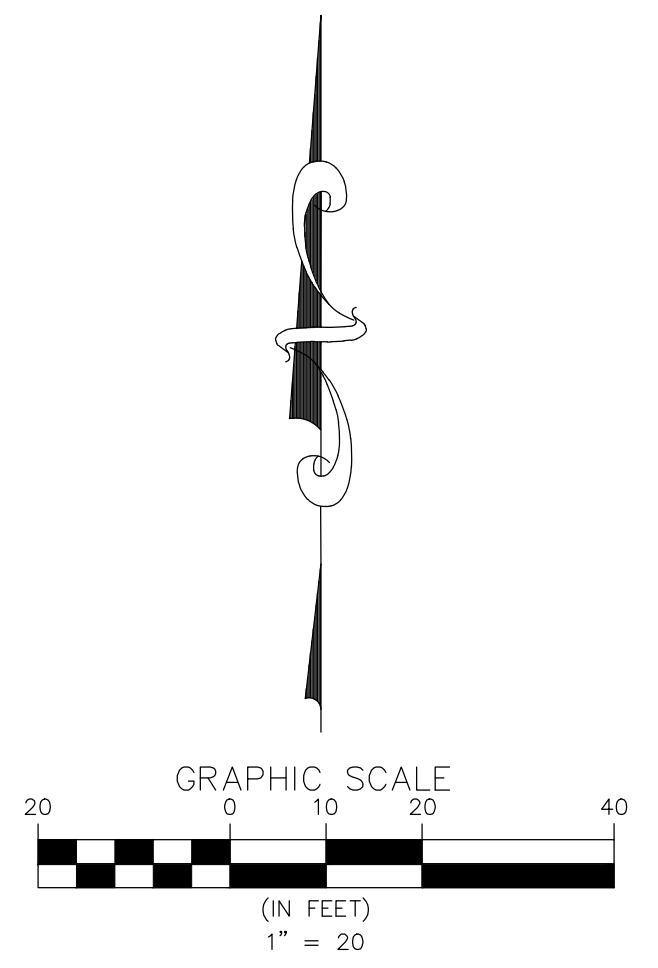


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PROJECT MANAGER:	BE
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OFFICE:	FARMINGTON HILLS

CLIENT INFO:
CITY CENTER OFFICE PLAZA, LLC
PATRICIA KEROS
25875 NOVI ROAD, SUITE 180
NOVI, MI 48375
PHONE: 248-513-3665

PROJECT NAME:
CITY CENTER OFFICE PLAZA
PART OF THE NORTHEAST 1/4 OF SECTION 22,
T1N. 18E., CITY OF NOVI, OAKLAND COUNTY, MI
SHEET TITLE:
UTILITY PLAN

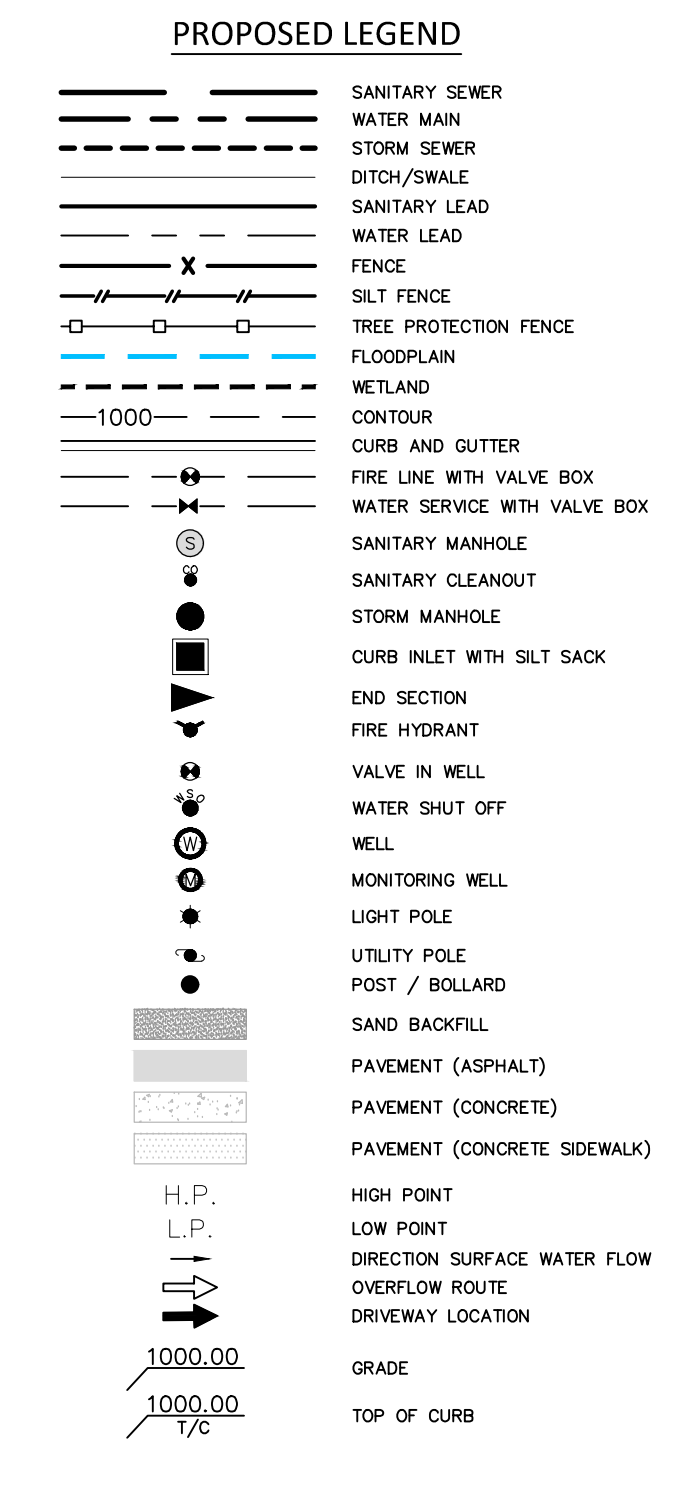


- NOTES:**
- ALL 8" SANITARY SEWER LEADS SHALL BE SDR 26 PIPE OR APPROVED EQUIVALENT.
 - SANITARY LEADS SHALL BE A MINIMUM OF 1% GRADE.
 - ALL WATER MAIN SHALL MAINTAIN A MIN. OF 5.5' OF COVER GENERALLY, AND A MIN. OF 6' OF COVER WHEN UNDER THE INFLUENCE OF PAVEMENT.
 - ALL SANITARY SEWER LEADS SHALL BE BURIED AT LEAST 5' UNDER THE INFLUENCE OF PAVEMENT.
 - IF DEWATERING IS ANTICIPATED OR ENCOUNTERED DURING CONSTRUCTION, A DEWATERING PLAN MUST BE SUBMITTED TO THE ENGINEERING DIVISION FOR REVIEW.
 - ANY LOCATIONS WHERE 18" OF VERTICAL SEPARATION CANNOT BE PROVIDED, ADDITIONAL MEASURED WILL BE REQUIRED - NOTIFY CITY OF NOVI ENGINEER
 - CONTRACTOR TO FIELD VERIFY ALL EXISTING UTILITY LOCATIONS, INVERTS, AND GRADES PRIOR TO THE START OF ANY WORK.
 - TWO (2) COPIES OF AS-BUILT PLANS SHALL BE SUBMITTED TO THE CITY ENGINEER WITHIN THIRTY (30) DAYS OF COMPLETION OF THE UTILITY INSTALLATION.

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.

UTILITY CROSSING NUMBER (SEE CHART THIS SHEET)



Usage

8884 SF (gross) - FIRST FLOOR
8884 SF (gross) - SECOND FLOOR
11,768 SF (gross) - TOTAL

Equiv. Single Family Units

4.7 Units (0.40 Units / 1,000 SF)
4.7 Total Units (REU)

Population

= 3.2 people/unit x 4.7 units
= 15.1 people

AVERAGE FLOW

= 15.1 people x 100 gal/cap/day
= 1506 gal/day
= 0.0023 cfs

PEAK FACTOR

For service area populations greater than 500 people
P.F. = $(18 + \sqrt{RT(P/1000)}) / (4 + \sqrt{RT(P/1000)})$
= 4.40
For service area populations less than 500 people
P.F. = 4 Governs

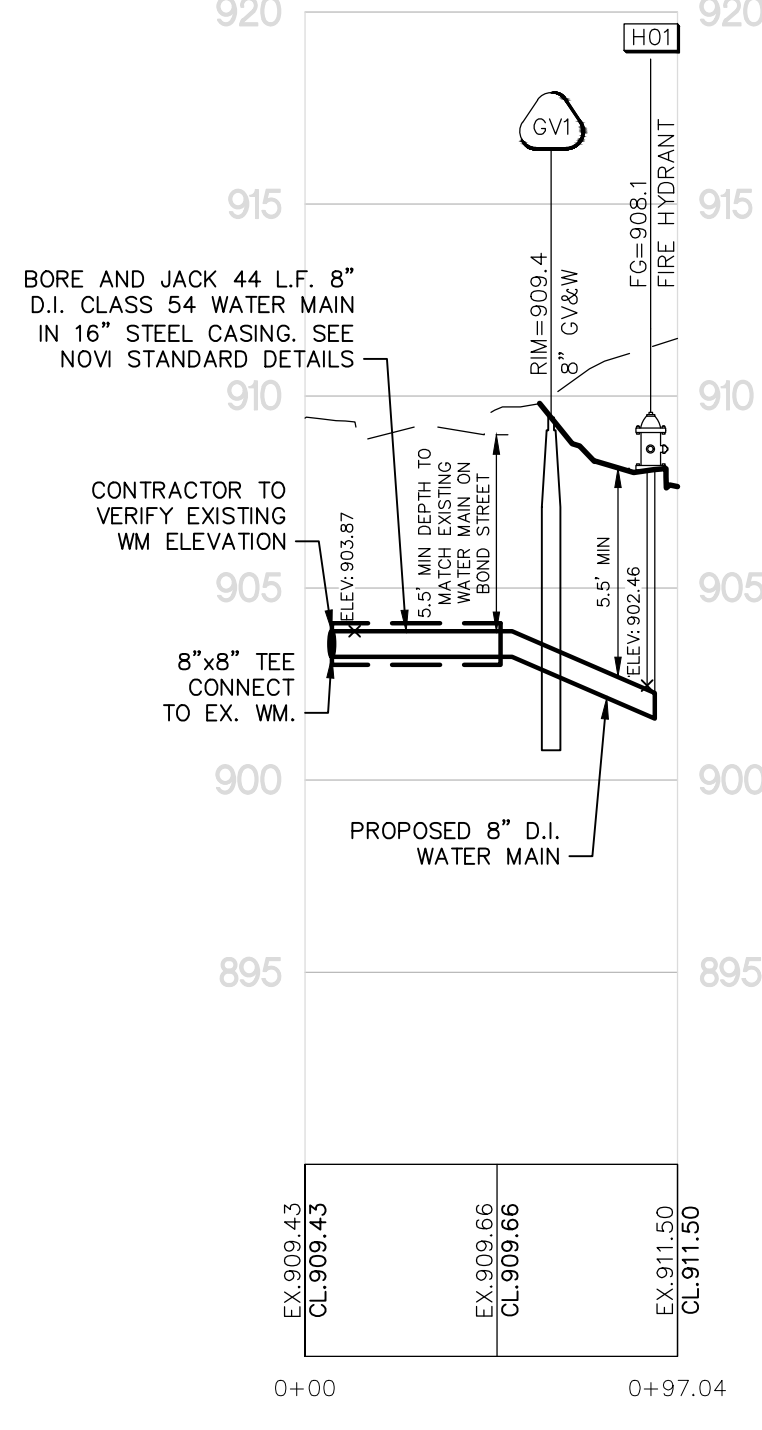
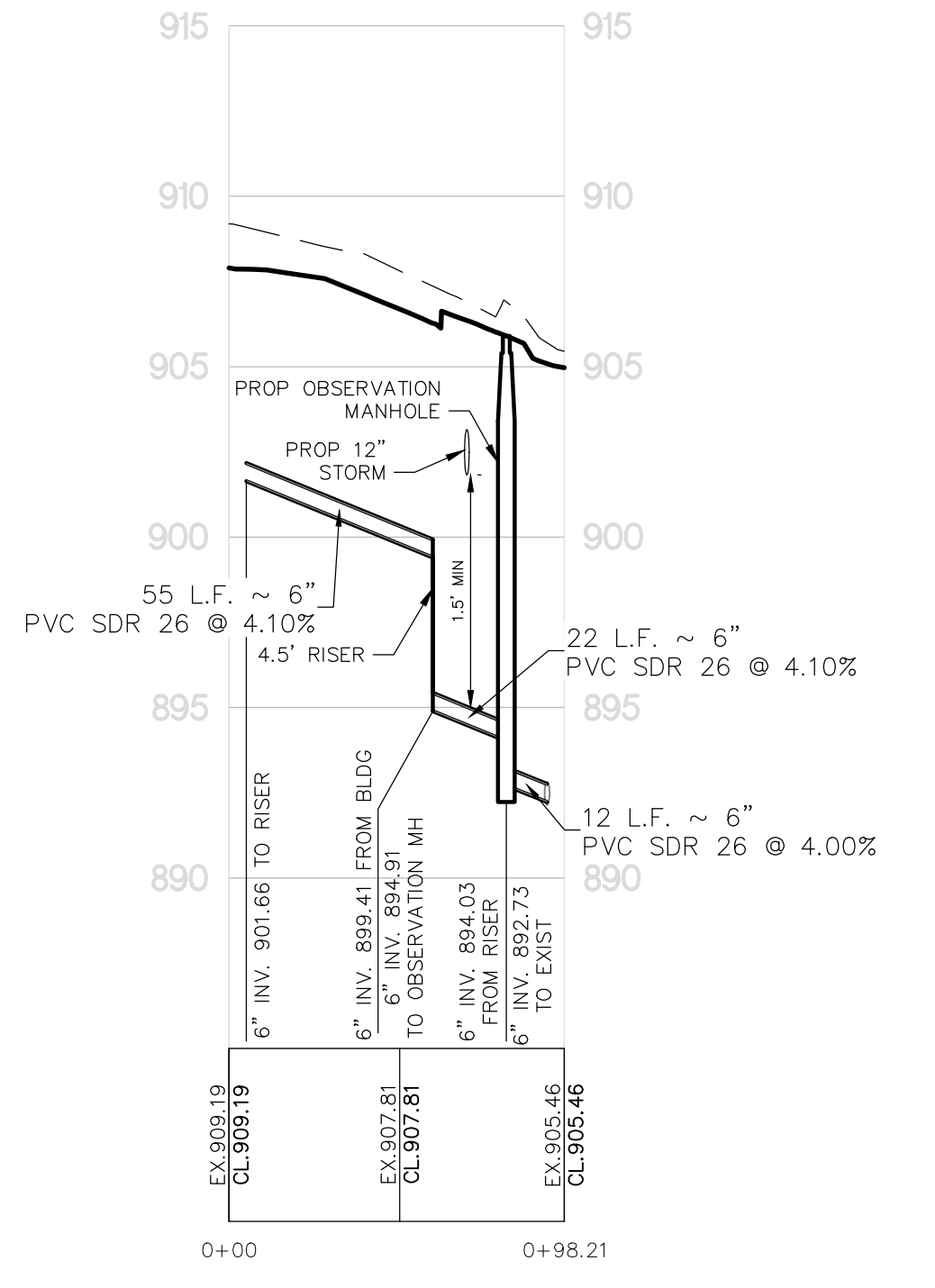
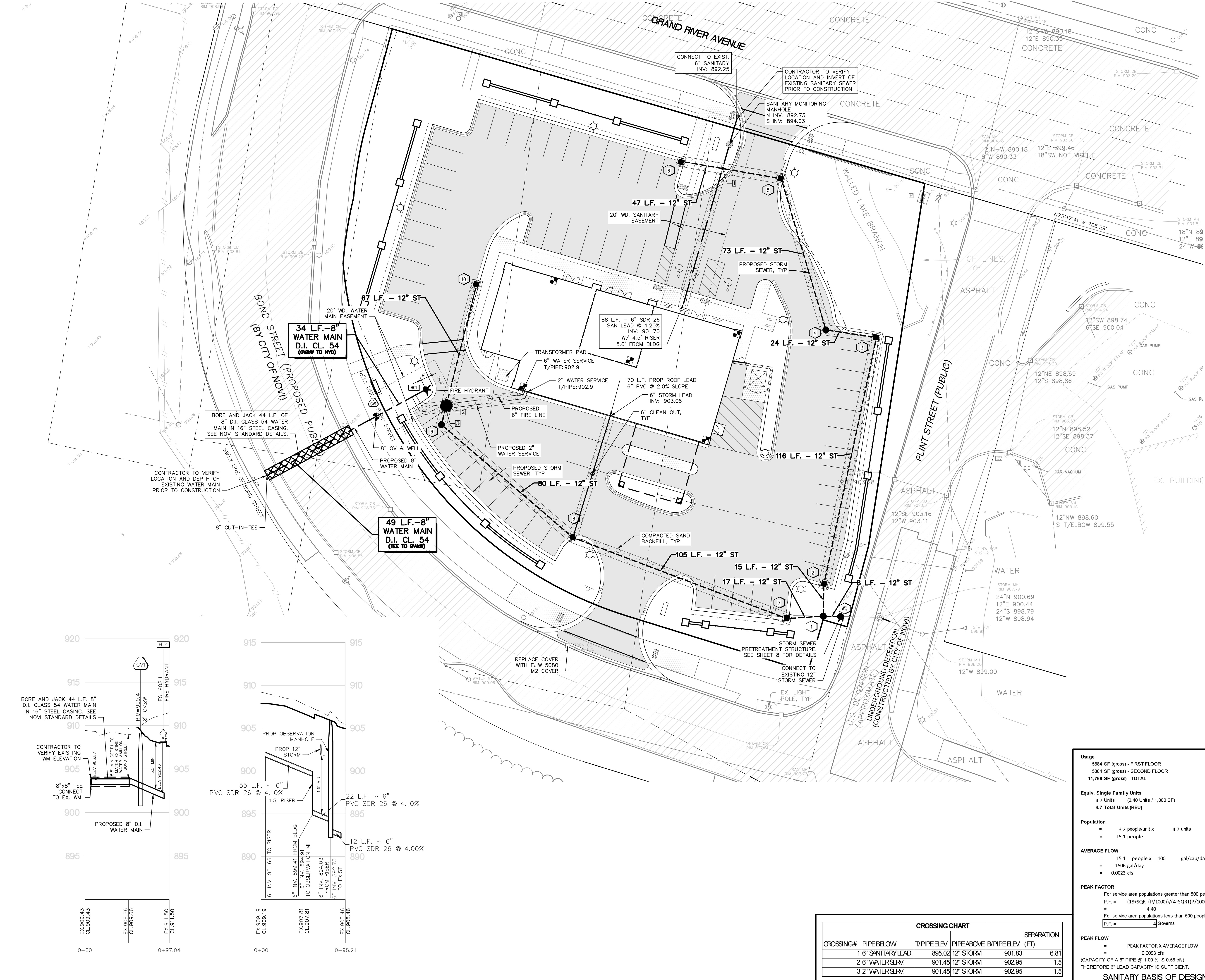
PEAK FLOW

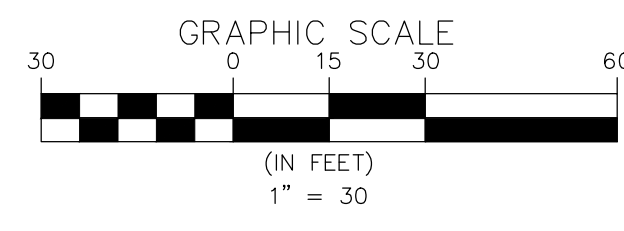
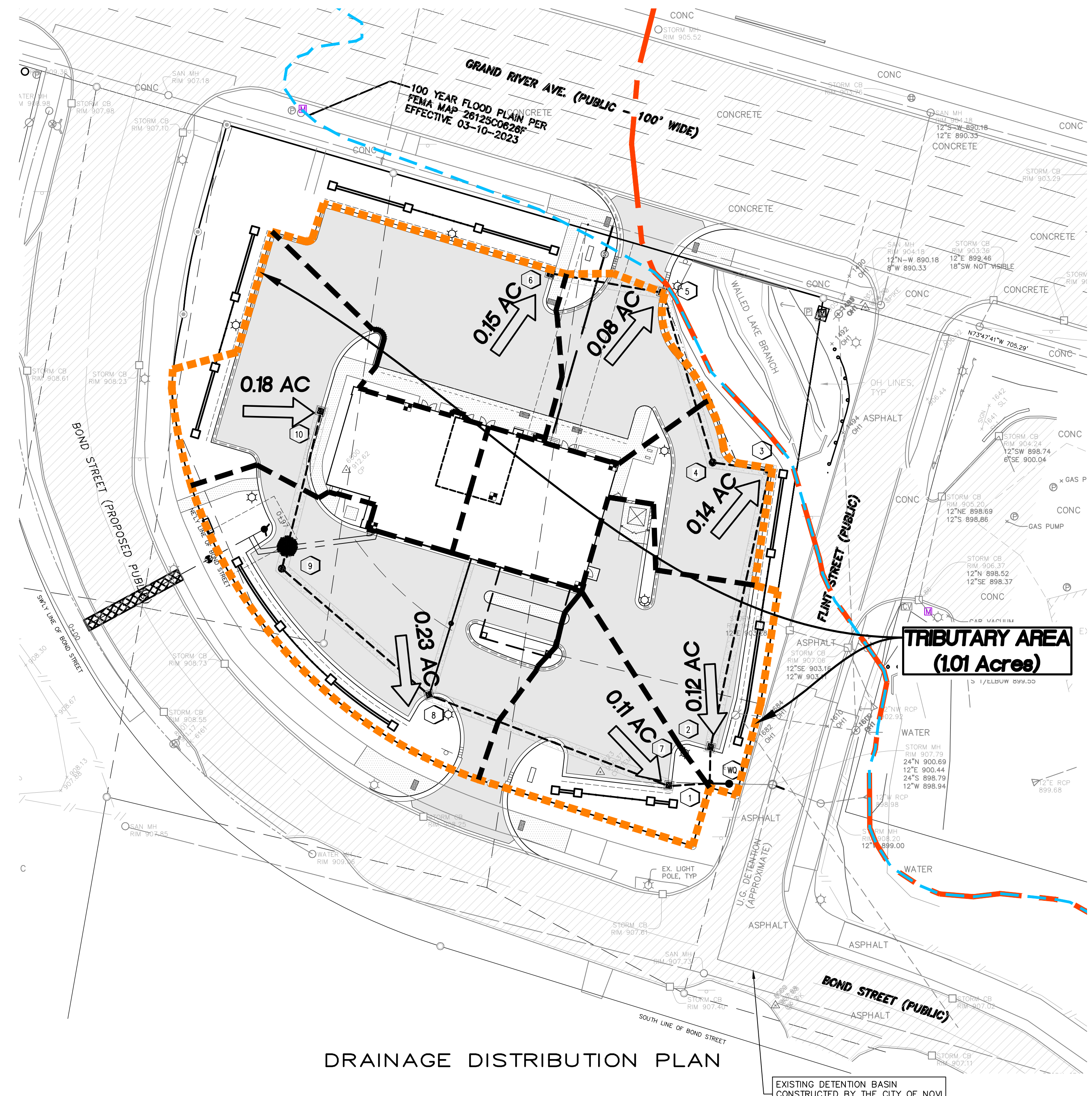
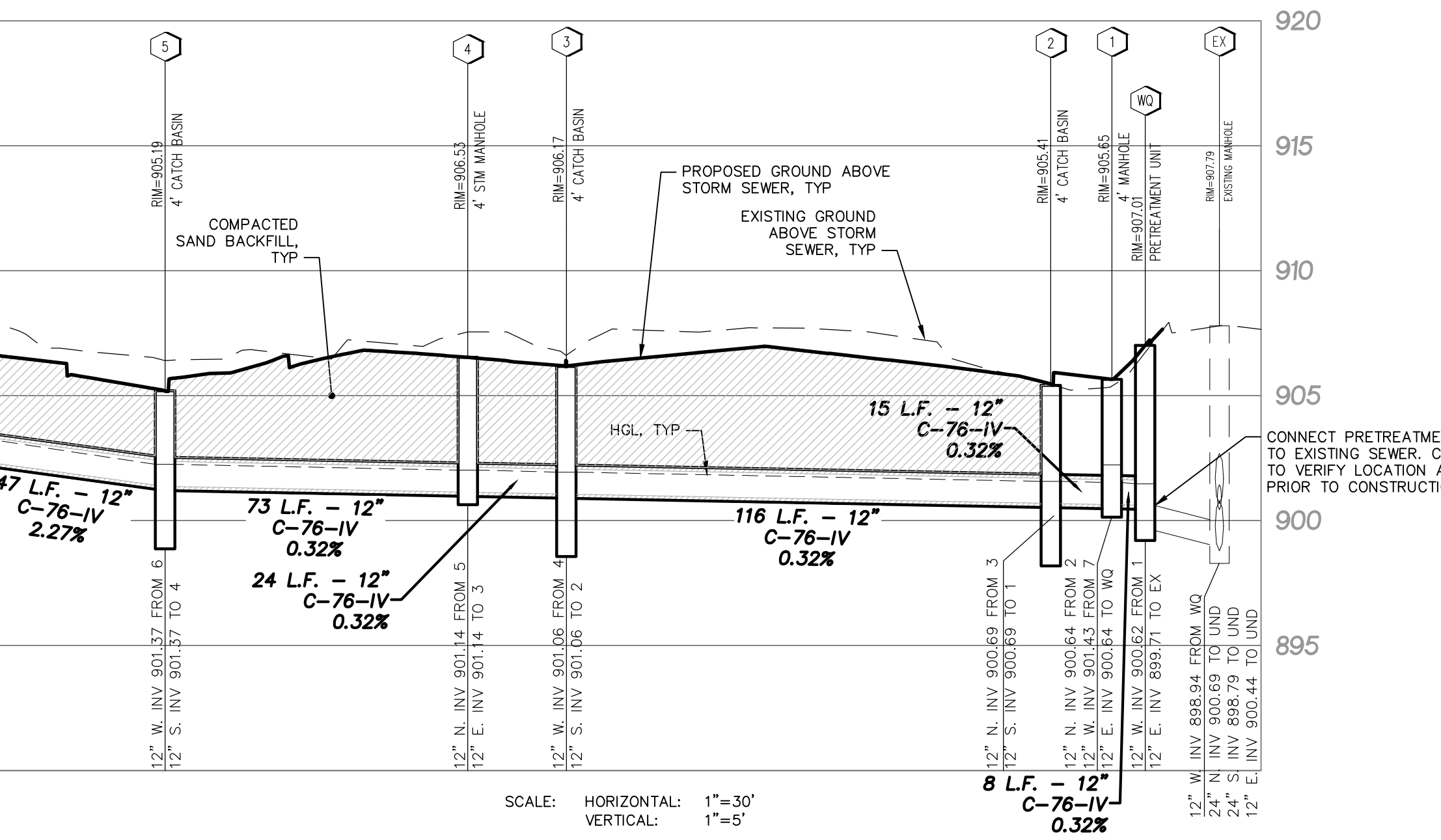
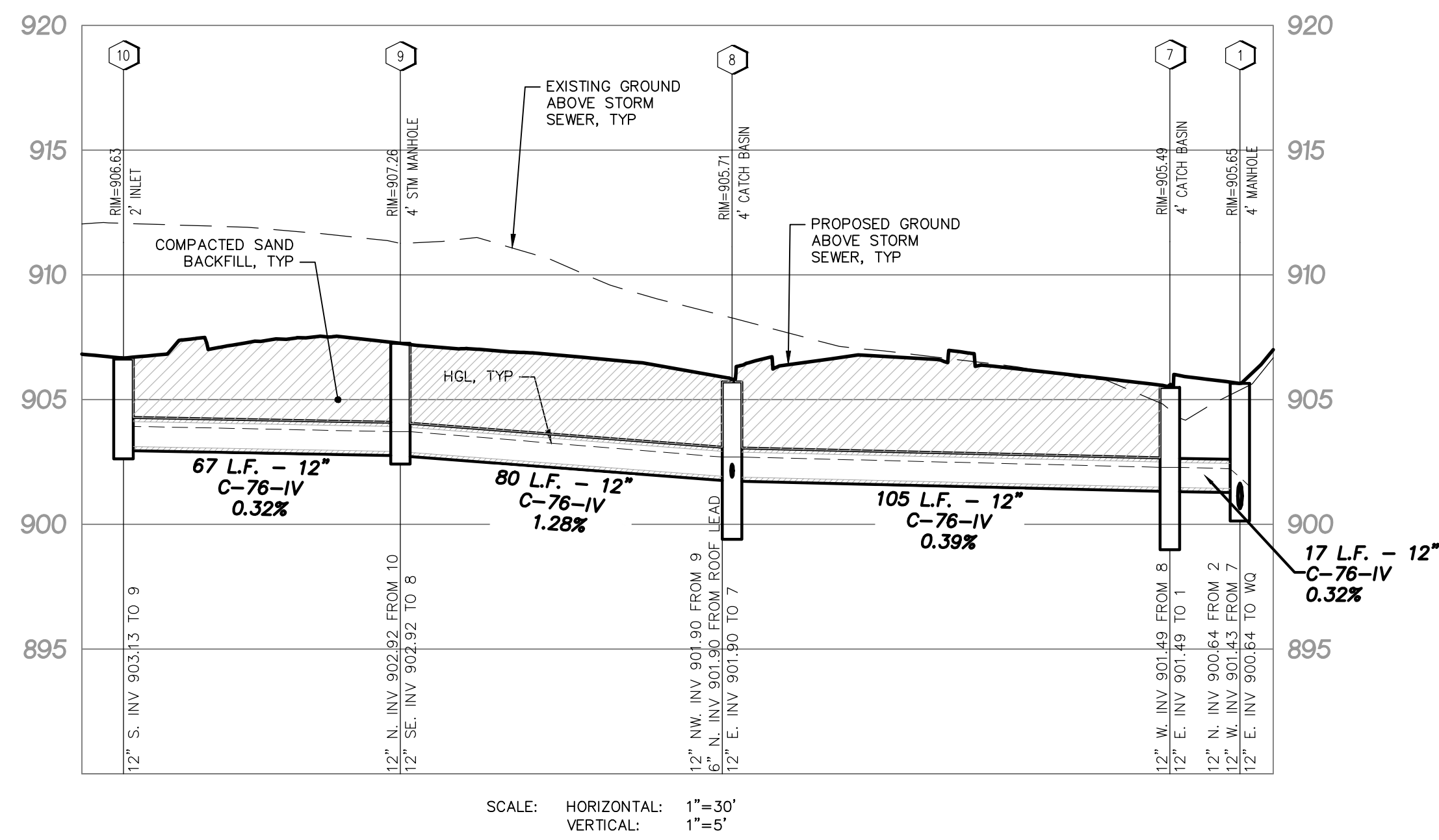
= PEAK FACTOR x AVERAGE FLOW
= 0.0093 cfs
(CAPACITY OF A 6" PIPE @ 1.00 % IS 0.96 cfs)
THEREFORE 6" LEAD CAPACITY IS SUFFICIENT.

SANITARY BASIS OF DESIGN

CROSSING CHART

CROSSING#	PIPE BELOW	T/PIPE/ELEV	PIPE ABOVE	B/PIPE/ELEV	SEPARATION (FT)
1	6" SANITARY LEAD	895.02 12" STORM	901.83	901.83	6.81
2	6" WATER SERV.	901.45 12" STORM	902.95	902.95	1.5
3	3" WATER SERV.	901.45 12" STORM	902.95	902.95	1.5





PROPOSED LEGEND

- SANITARY SEWER
- WATER MAIN
- STORM SEWER
- STORM SWALE
- SANITARY LEAD
- WATER LEAD
- FENCE
- SILT FENCE
- TREE PROTECTION FENCE
- FLOODPLAIN
- WETLAND
- CONTOUR
- CURB AND GUTTER
- FIRE LINE WITH VALVE BOX
- WATER SERVICE WITH VALVE BOX
- SANITARY MANHOLE
- SANITARY CLEANOUT
- STORM MANHOLE
- CURB INLET WITH SILT SACK
- END SECTION
- FIRE HYDRANT
- VALVE IN WELL
- WATER SHUT OFF
- WELL
- MONITORING WELL
- LIGHT POLE
- UTILITY POLE
- POST / BOLLARD
- SAND BACKFILL
- PAVEMENT (ASPHALT)
- PAVEMENT (CONCRETE)
- PAVEMENT (CONCRETE SIDEWALK)
- H.P.
- L.P.
- DIRECTION SURFACE WATER FLOW
- OVERFLOW ROUTE
- DRIVEWAY LOCATION
- GRADE
- TOP OF CURB

CITY CENTER PLAZA 5
 CITY OF NOVI
 (City of Novi Criteria)
 $p = 10$ Year Design
 $I = \frac{175}{(Tc + 25)}$
 $n = 0.013$

MH-MH	A(s) acres	C	A(s)x C unit	A(s)x C cumul.	T min	I in/hr	Design Q cfs	Q Provided cfs	Dia in	Hyd. Gr. %	Vel. ft/sec	Length ft	Tr Time min	Inv. upst.	Inv. dnst.	Grnd. upst.	HGL upst.	Pipe slope-%	RIM -HGL	T/Pipe -HGL	Rim -inv	T/Pipe -RIM	T/Pipe -RIM
10 - 9	0.18	0.85	0.15	0.15	20.00	3.89	0.59	2.01	12	0.32	2.57	67	0.43	903.13	902.92	907.13	903.93	0.32	3.20	0.20	4.00	3.00	3.41
9 - 8	0.00	0.85	0.00	0.15	20.43	3.85	0.58	2.57	12	1.28	5.13	80	0.26	902.92	901.90	907.33	903.72	1.28	3.61	0.20	4.41	3.41	3.00
8 - 7	0.23	0.85	0.20	0.35	20.69	3.83	1.34	3.40	12	0.37	2.76	110	0.67	901.90	901.49	905.90	902.70	0.37	3.20	0.20	4.00	3.00	3.00
7 - 1	0.11	0.85	0.10	0.45	21.36	3.77	1.69	2.01	12	0.32	2.57	17	0.11	901.49	901.43	905.49	902.29	0.32	3.20	0.20	4.00	3.00	3.24
Downstream Data -																							
																	905.67	901.48					
6 - 5	0.15	0.85	0.12	0.12	20.00	3.89	0.48	5.37	12	2.27	6.83	47	0.11	902.43	901.37	906.43	903.27	2.27	3.16	0.16	4.00	3.00	3.00
5 - 4	0.08	0.85	0.07	0.19	20.11	3.88	0.75	2.01	12	0.32	2.57	73	0.47	901.37	901.14	905.37	902.21	0.32	3.16	0.16	4.00	3.00	4.66
4 - 3	0.00	0.85	0.00	0.19	20.59	3.84	0.74	2.01	12	0.32	2.57	24	0.15	901.14	901.06	906.80	901.97	0.32	4.83	0.16	5.66	4.66	4.11
3 - 2	0.14	0.85	0.12	0.31	20.74	3.83	1.18	2.01	12	0.32	2.57	117	0.76	901.06	900.69	906.17	901.90	0.32	4.27	0.16	5.11	4.11	3.80
2 - 1	0.12	0.85	0.10	0.41	21.50	3.76	1.53	2.01	12	0.32	2.57	15	0.10	900.69	900.69	905.49	901.52	0.32	3.97	0.16	4.80	3.80	4.03
1 - WQ	0.00	0.85	0.00	0.41																			
+ Flow from 7			0.45	0.85	21.59	3.76	3.21	2.01	12	0.81	4.09	8	0.03	900.64	900.61	905.67	901.48	0.32	4.19	0.16	5.03	4.03	5.40
WQ - EX	0.00	0.85	0.00	0.85	21.63	3.75	3.21	7.39	12	4.30	9.41	18	0.03	899.71	898.94	907.01	900.51	4.30	6.50	0.20	7.30	6.30	7.89
Downstream Data -																							
																	899.74						

BANK FULL FLOOD VOLUME REQUIRED
 Drainage Area = 1.01 Ac.
 "C" Factor = 0.85
 $V_{bf} = 5160 \times A \times C = 4,430 \text{ C.F.}$

NOTE: THE EXISTING UNDERGROUND DETENTION BASIN WAS PREVIOUSLY DESIGNED AND CONSTRUCTED BY THE CITY OF NOVI. THIS BASIN WAS DESIGNED TO INCLUDE TRIBUTARY AREA FROM THE CITY CENTER OFFICE PLAZA PROJECT.

DETERMINE DETENTION REQUIRED (100-YEAR STORM)
 $Q_{all} = 0.15 \text{ cfs (0.15 cfs/AC)}$
 $AC = 1.01 \text{ (AREA TRIBUTARY TO THE DETENTION BASIN)}$
 $C = 0.85$
 $Q_o = Q_{all} / (AC \times C) = 0.18$
 $T = -25 + \sqrt{RT(10312.5/Q_o)} = 216.74 \text{ min.}$
 $V_s = ((16500 \times T) / (T + 25)) \times (40 \times Q_o \times T) = 13263.69 \text{ C.F./Ac. imp.}$
 $V_t = V_s \times AC \times C = 11386.879 \text{ C.F.}$
TOTAL DETENTION VOLUME REQUIRED = 11,387 C.F.
TOTAL DETENTION VOLUME PROVIDED = 22,524 C.F.

City Center Plaza # 5
 C - Factor Determination
 Tributary Area = 1.01
Impervious Areas
 Sidewalks, Roads and Building 0.84 Ac. at C = 0.95
Pervious Areas
 Lawn Areas = 0.17 Ac. at C = 0.35
C Avg. = 0.85

STORM SEWER STRUCTURE TABLE

CITY CENTER OFFICE PLAZA

Number	Type	Size (Dia)	Sump Depth	Frame & Cover
1	MANHOLE	4	0	EJW 1040 TYPE B COVER
2	CATCH BASIN	4	2	EJW 5105 TYPE M1 COVER
3	CATCH BASIN	4	2	EJW 5105 TYPE M1 COVER
4	MANHOLE	4	0	EJW 1040 TYPE B COVER
5	CATCH BASIN	4	2	EJW 5105 TYPE M1 COVER
6	INLET	2	0	EJW 1040 TYPE B COVER
7	CATCH BASIN	4	2	EJW 5105 TYPE M1 COVER
8	CATCH BASIN	4	2	EJW 5105 TYPE M1 COVER
9	MANHOLE	4	0	EJW 1040 TYPE B COVER
10	INLET	2	0	EJW 5105 TYPE M1 COVER

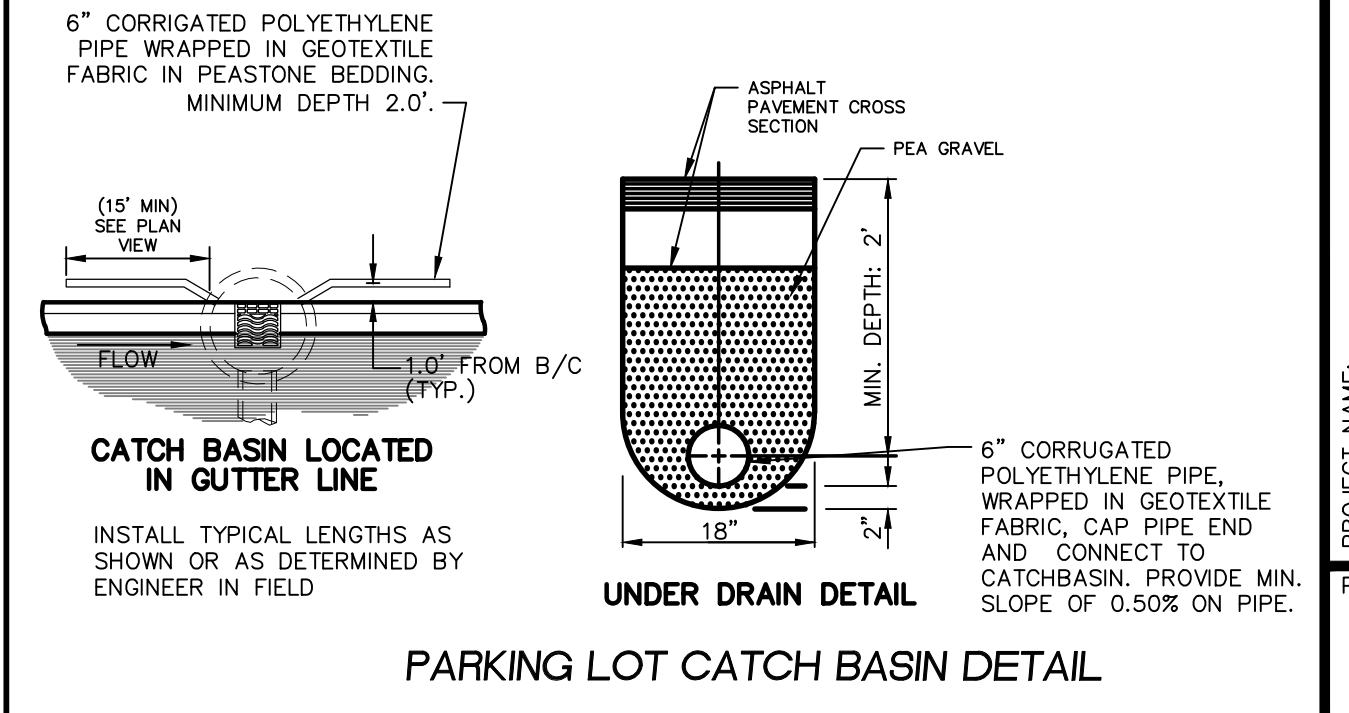
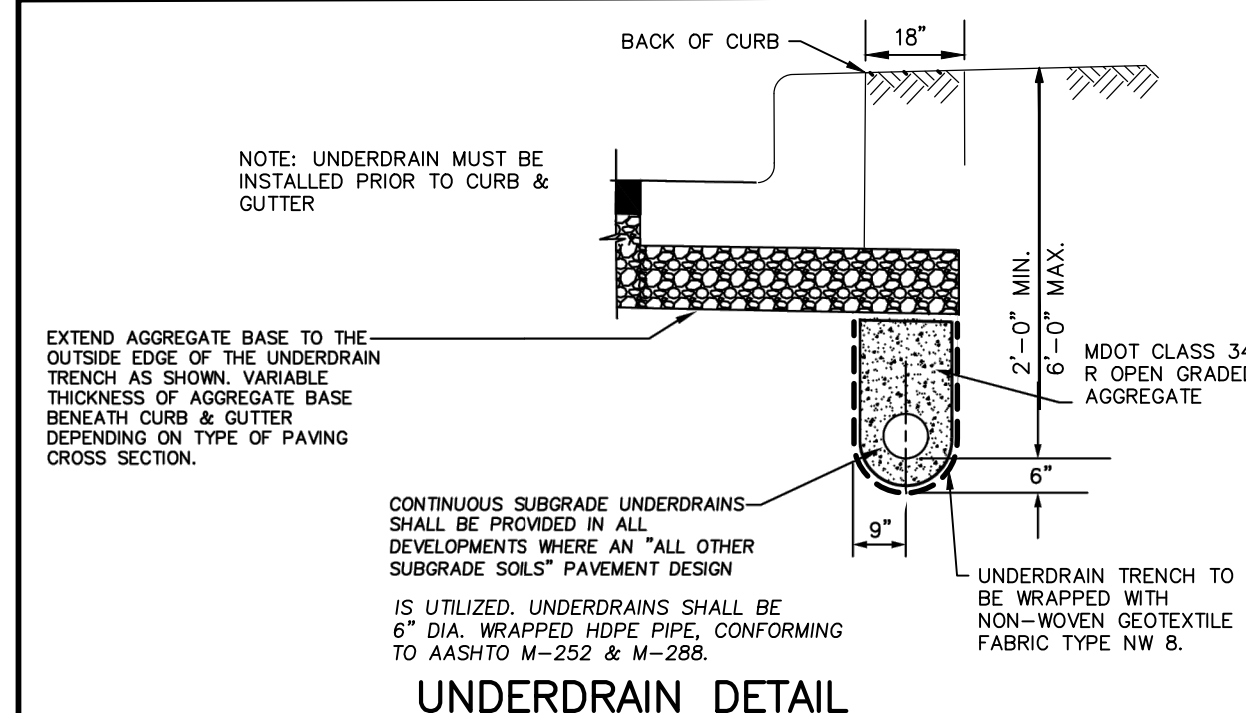
NOTES

- STORM WATER GENERATED ON SITE SHALL BE COLLECTED AND DELIVERED TO EXISTING UNDERGROUND DETENTION BASIN DESIGNED BY CITY OF NOVI AS SHOWN ON THE PLAN.
- PROPOSED CATCH BASINS SHALL HAVE A 2' SUMPS.

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

NOTE: AT ANY LOCATIONS WHERE 18" OF VERTICAL SEPARATION CANNOT BE PROVIDED, ADDITIONAL BEDDING MEASURES WILL BE REQUIRED - NOTIFY CITY OF NOVI ENGINEER.

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



ENGINEERING PLANNING LAND DEVELOPMENT CONSULTING
 39205 COUNTRY CLUB DR. STE C8
 FARMINGTON HILLS, MI 48331
 248.308.3331

SKE GROUP

PROJECT NUMBER: 25-062
 PROJECT MANAGER: BE
 DRAWN BY: SA
 CHECKED BY: BR
 OFFICE: FARMINGTON HILLS

CLIENT INFO:
 CITY CENTER OFFICE PLAZA, LLC
 PATRICIA KEROS
 25875 NOV ROAD, SUITE 180
 NOV, MI 48375
 PHONE: 248.513.5685

PROJECT NAME:
 CITY CENTER OFFICE PLAZA
 PART OF THE NORTHEAST 1/4 OF SECTION 22,
 T1N. 18E., CITY OF NOVI, OAKLAND COUNTY, MI

SHEET TITLE:
 STORM WATER MANAGEMENT PLAN

DATE: 02/19/2026
 SUBMITTAL DATE: 02/19/2026

REVISION

NO.

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 CALL MISS DIG
 1-800-482-7171
 TOLL FREE FOR THE LOCATION OF UNDERGROUND FACILITIES

811

DATE: 02/19/2026

PAGE NO.: 7

ARCADIA AR4PC		W	Q
OK-110 MAX. TREATMENT RATE		2.75 CFS	
24" COVER RAISED RIM ELEVATION ±		907.01'	
DIAMETER	ANGLE	TYPE	INVERT
1	12"	180"	RCP
2			
3			
SUMP ELEVATION		892.95'	
OUTLET		12"	0"
		RCP	899.71'

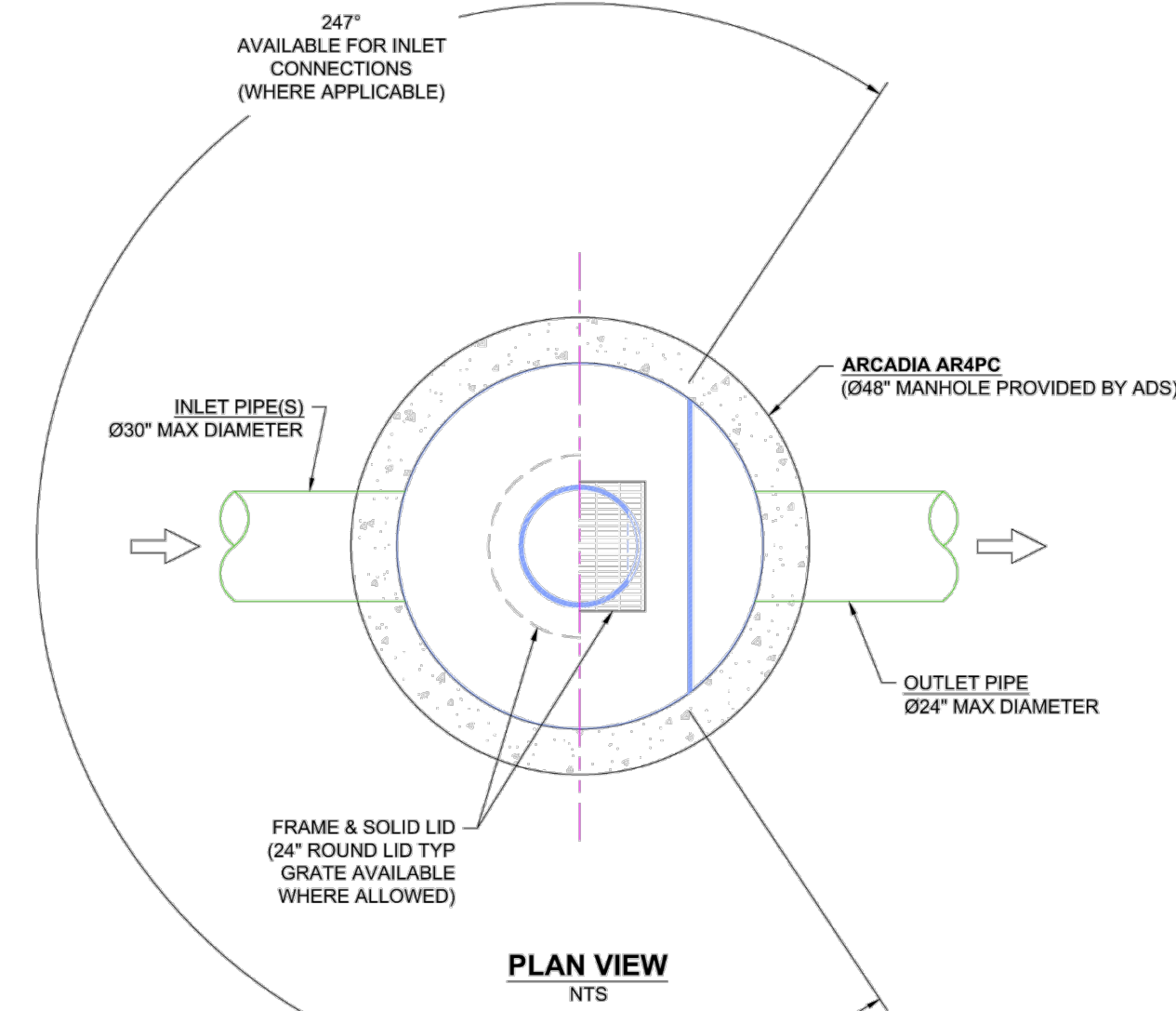
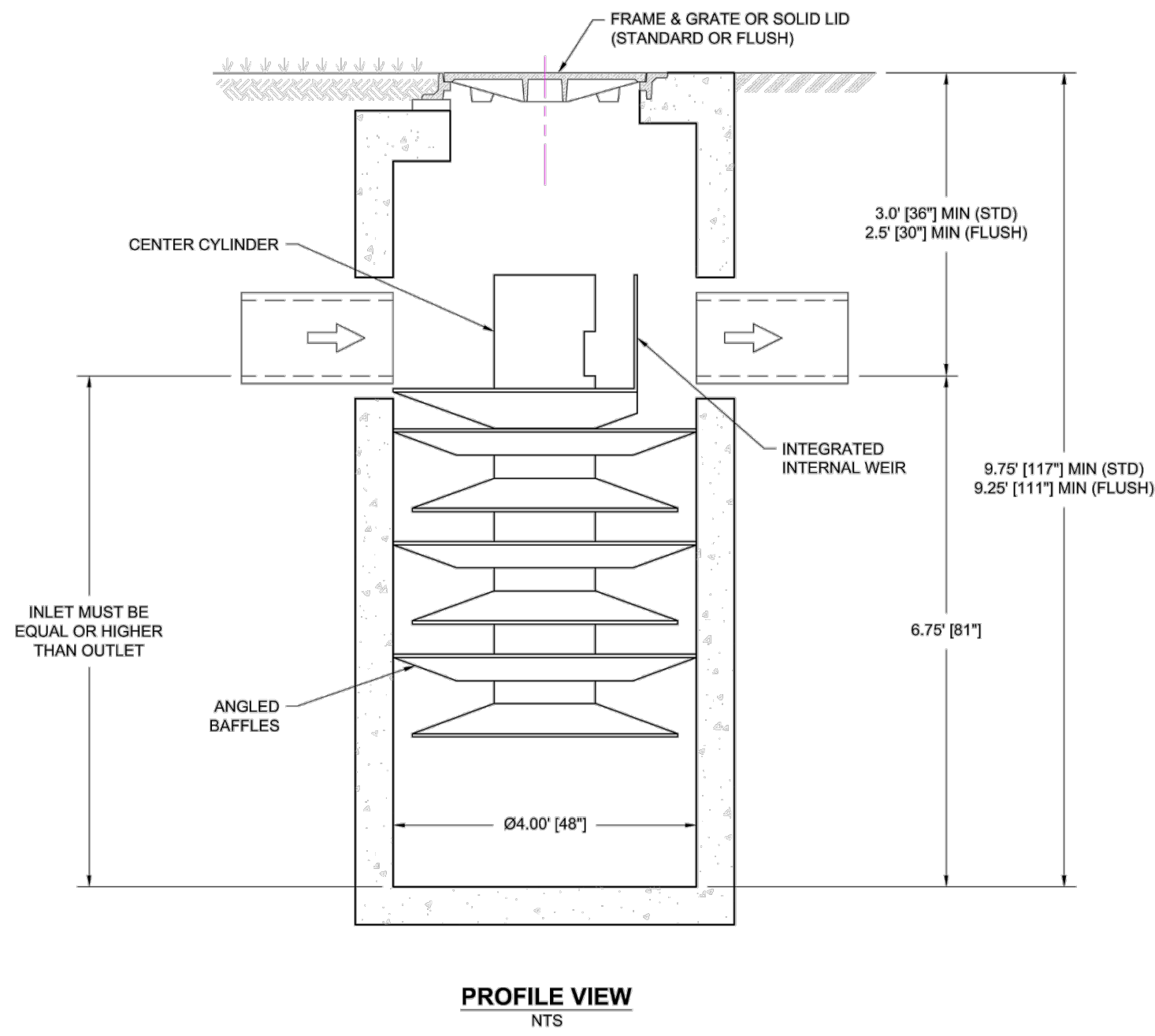
PRODUCT SPECIFICATIONS

• THE STORMWATER TREATMENT UNIT SHALL BE AN INLINE UNIT CAPABLE OF CONVEYING 100% OF THE DESIGN PEAK FLOW. IF PEAK FLOW RATES EXCEED MAXIMUM HYDRAULIC RATE, THE UNIT SHALL BE INSTALLED OFFLINE.

• THE ARCADIA UNIT SHALL BE DESIGNED TO REMOVE AT LEAST 80% OF THE SUSPENDED SOLIDS ON AN ANNUAL AGGREGATE REMOVAL BASIS. SAID REMOVAL SHALL BE BASED ON FULL-SCALE THIRD PARTY VERIFIED TESTING USING OK-110 MEDIA GRADATION OR EQUIVALENT AND 300 MG/L INFLUENT CONCENTRATION. FULL SCALE TESTING SHALL HAVE INCLUDED SEDIMENT CAPTURE BASED ON ACTUAL TOTAL MASS COLLECTED BY THE STORMWATER TREATMENT UNIT.

-OR-

THE ARCADIA UNIT SHALL BE DESIGNED TO REMOVE AT LEAST 50% OF TSS USING A MEDIA MIX WITH D50=75 MICRON AND 200 MG/L INFLUENT CONCENTRATION.



NOTES:

- ENGINEER / CONTRACTOR TO CONFIRM PIPE MATERIALS AND APPLICABLE ADAPTERS
- CONTRACTOR IS RESPONSIBLE FOR MATERIAL AND LABOR TO BRING CASTINGS TO FINISHED GRADE
- CONTRACTOR TO MEASURE HEIGHT OF STRUCTURE TO ENSURE THAT DEPTH OF EXCAVATION IS CORRECT.
- UNIT SHALL CONFORM TO HS20-44 LOAD RATINGS

CITY CENTER PLAZA PHASE 5		DATE	DWN	CHK
4640 TRUJMAN BLVD HILLIARD, OH 43026		DATE	DWN	CHK
ARCADIA Stormwater Separator		DATE	DWN	CHK
1 Sheet OF 1		DATE	DWN	CHK



Project Name: City Center Plaza Phase 5
Location: Novi, MI

Water Quality Volume Calculations:
Urban Hydrology for Small Watersheds (SCS TR-55)

Site Conditions:
Design Treatment Flow Rate = 1.68 cfs
Arcadia Size = AR4
Peak Flow Rate = 2.75 cfs

WATER QUALITY CALCULATION (OCWRC) 1-Year, 24-Hour storm

$$Q = C * A * \frac{30.20}{(Tc + 9.17)^{0.81}}$$

Tc = 20 min
Q = 1.68 cfs



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ENGINEERING | PLANNING
LAND DEVELOPMENT CONSULTING

39205 COUNTRY CLUB DR, STE C8
FARMINGTON HILLS, MI 48331
248.308.3331

SKE GROUP

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NO.	REVISION	DATE

PROJECT NUMBER: 25-062
PROJECT MANAGER: BE
DRAWN BY: SA
CHECKED BY: BR
OFFICE: FARMINGTON HILLS

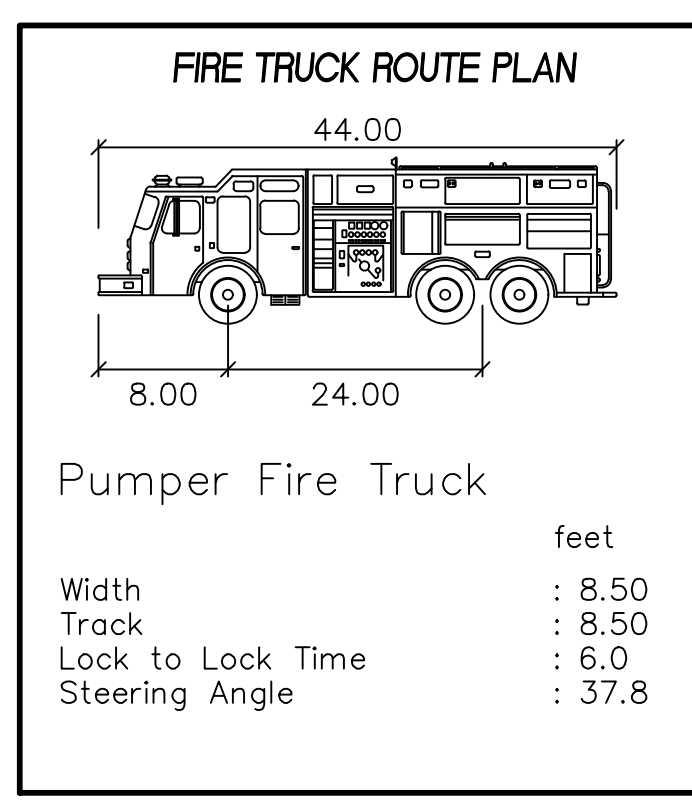
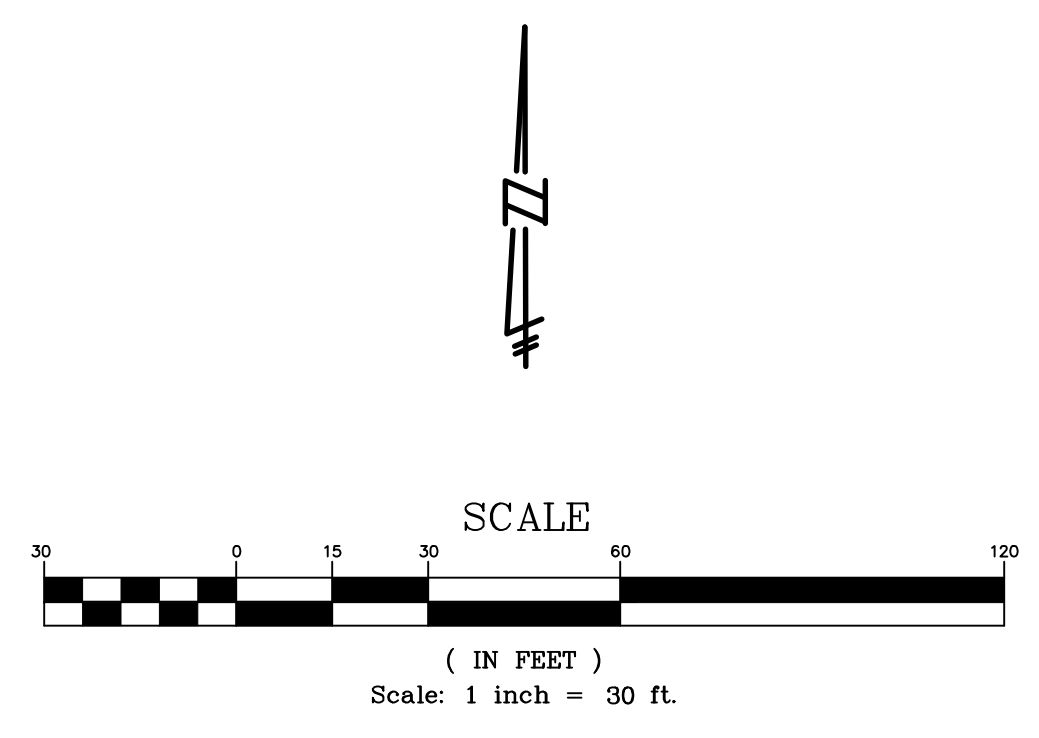
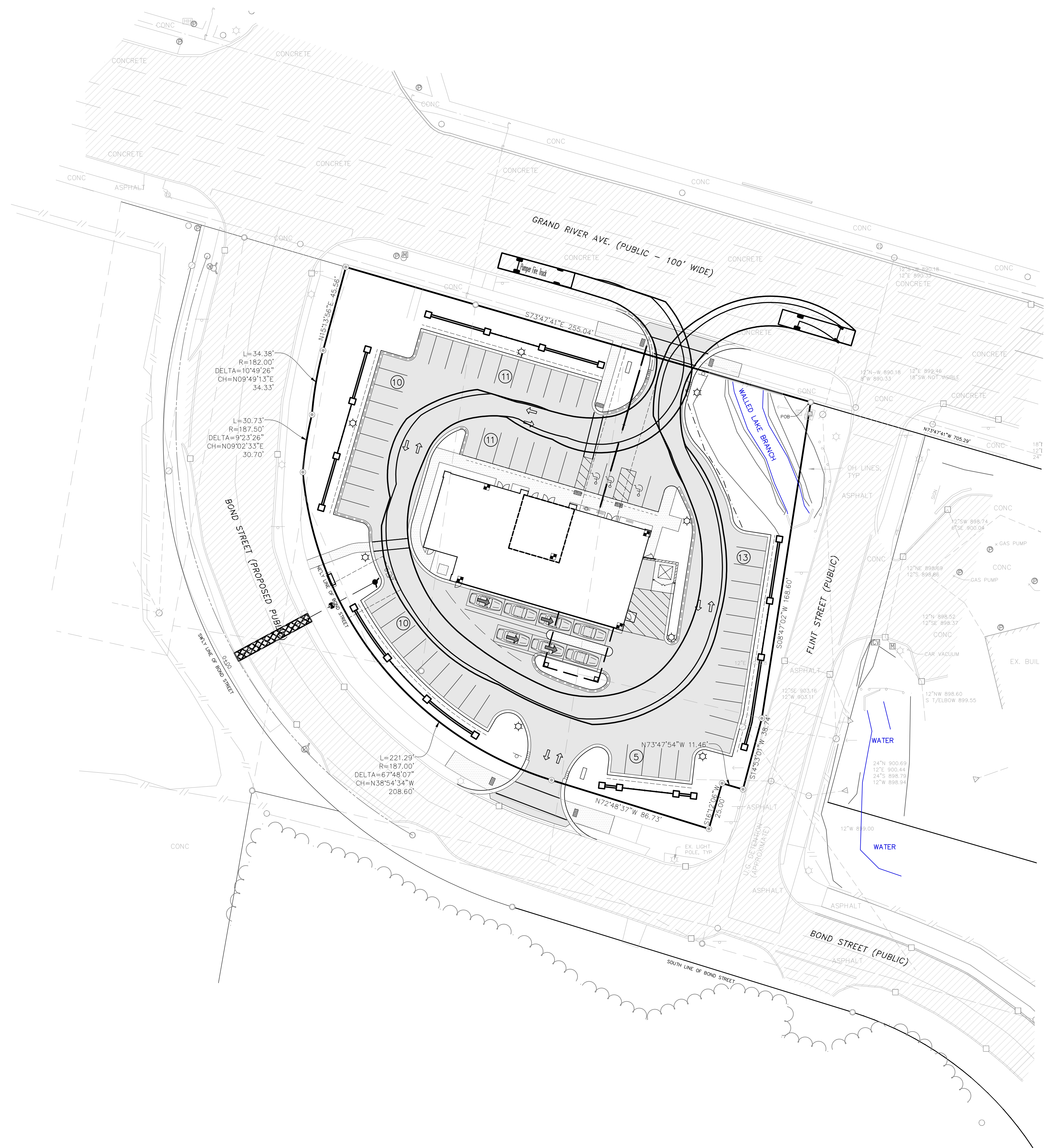
CLIENT INFO:
CITY CENTER OFFICE PLAZA, LLC
PATRICIA KEROS
25875 NOVI ROAD, SUITE 180
NOVI, MI 48375
PHONE: 248.513.3665

PROJECT NAME:
CITY CENTER OFFICE PLAZA
PART OF THE NORTHEAST 1/4 OF SECTION 22,
T1N., R8E., CITY OF NOVI, OAKLAND COUNTY, MI
SHEET TITLE:
PRE-TREATMENT STRUCTURE DETAILS

PAGE No.: **8**

811

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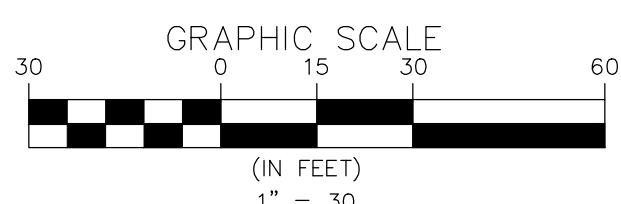
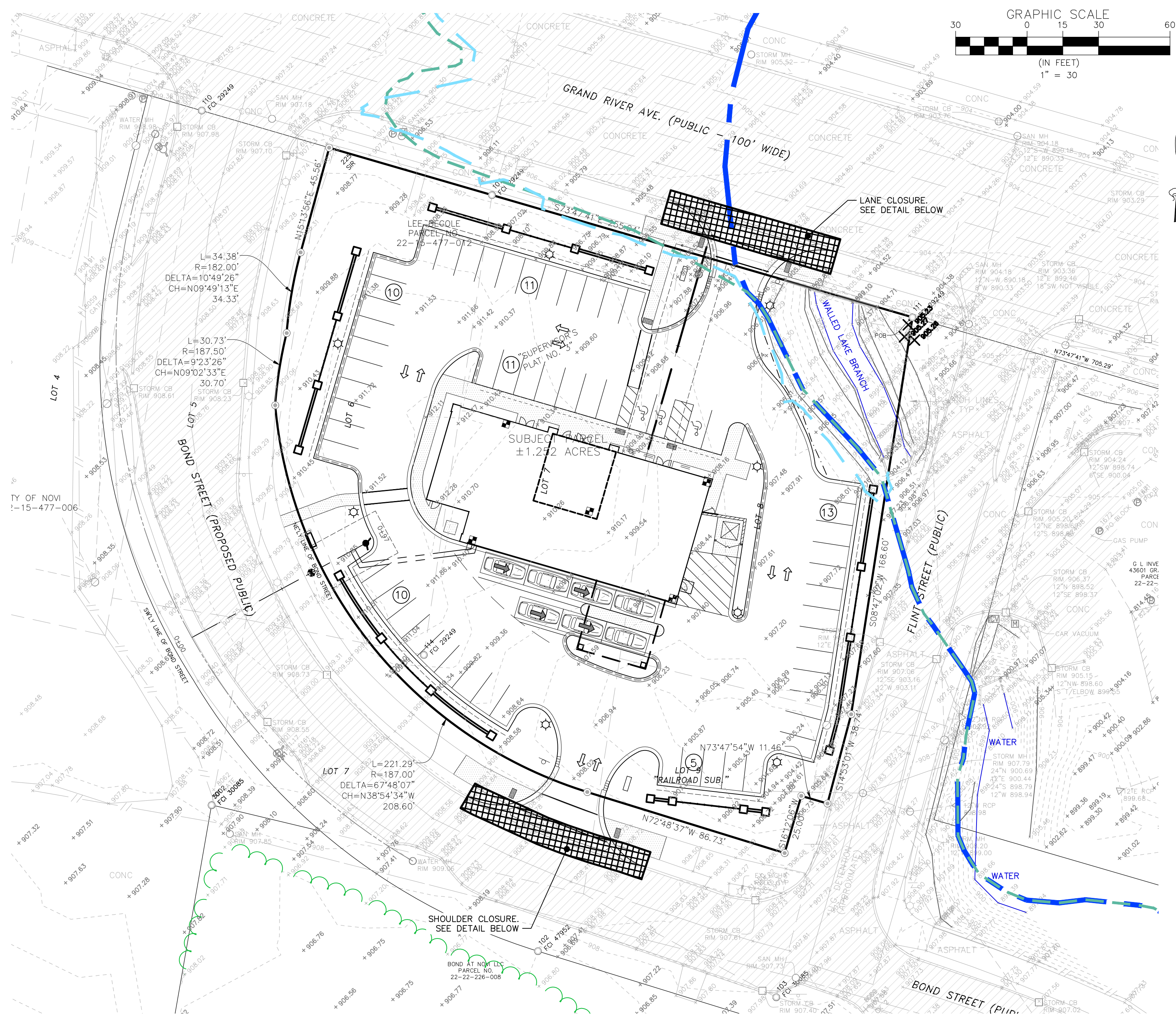
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PATRICIA KEROS
25875 NOMI ROAD, SUITE 180
NOMI, MI 48375
PHONE: 248.513.3665

PROJECT NAME:
CITY CENTER OFFICE PLAZA
 PART OF THE NORTHEAST 1/4 OF SECTION 22,
 T11N., R8E., CITY OF NOMI, GRAND COUNTY, MI
SHEET TITLE:
FIRE TRUCK ROUTE PLAN



SPECIAL PROVISION FOR MAINTAINING TRAFFIC NARRATIVE

A. DESCRIPTION. TRAFFIC SHALL BE MAINTAINED BY THE CONTRACTOR THROUGHOUT THE PROJECT IN ACCORDANCE TO SECTIONS 104.11, AND 812 OF THE MDT 2012 STANDARD SPECIFICATIONS FOR CONSTRUCTION, INCLUDING ANY SUPPLEMENTAL SPECIFICATIONS, AND AS SPECIFIED HERE.

THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND CITY OF NOVI A MINIMUM OF 72 BUSINESS HOURS PRIOR TO THE IMPLEMENTATION OF ANY DETOURS, ROAD CLOSURES, OR LANE CLOSURES OR MAJOR TRAFFIC SHIFTS.

THE CONTRACTOR SHALL COORDINATE HIS OPERATIONS WITH CONTRACTORS PERFORMING WORK ON OTHER PROJECTS WITHIN OR ADJACENT TO THE CONSTRUCTION INFLUENCE AREA (CIA) OR ADJACENT AREAS TO AVOID CONFLICTS IN THE MAINTENANCE OF TRAFFIC, CONSTRUCTION SIGNING, AND TO PROVIDE FOR THE ORDERLY PROGRESS OF CONTRACT WORK.

CITY OF NOVI MAINTENANCE CREWS AND/OR CONTRACT MAINTENANCE AGENCIES MAY PERFORM MAINTENANCE WORK WITHIN OR ADJACENT TO THE CONSTRUCTION INFLUENCE AREA (CIA), THE CITY AND/OR CONTRACT MAINTENANCE AGENCY WILL COORDINATE THEIR OPERATIONS WITH THE OWNER TO MINIMIZE THE INTERFERENCE TO THE CONTRACTOR.

- CONSTRUCTION INFLUENCE AREA (CIA). THE C.I.A. SHALL INCLUDE THE ENTIRE CONSTRUCTION LIMITS AS SHOWN ON THE PLANS WITHIN THE RIGHT-OF-WAY OF THE ABOVE-MENTIONED ROUTES. THE C.I.A. SHALL ALSO INCLUDE THE AREA WITHIN THE RIGHT-OF-WAY OF ALL INTERSECTING STREETS 500 FEET.
- TRAFFIC RESTRICTIONS. DURING THE COURSE OF CONSTRUCTION, THE CONTRACTOR SHALL ACCOMMODATE BOTH LOCAL VEHICULAR AND PEDESTRIAN TRAFFIC ALONG THE ROADS. PROVISIONS SHALL BE MADE TO MAINTAIN ACCESS FOR EMERGENCY VEHICLES, SCHOOLS, BUSES AND WASTE COLLECTION VEHICLES AT ALL TIMES. ALL STREETS MUST BE LEFT OPEN TO TRAFFIC WHEN NOT WORKING ON THE PROJECT (I.E. WEEKENDS, HOLIDAYS, NIGHTS) UNLESS AUTHORIZED BY THE CITY ENGINEER.

BOND STREET SHALL REMAIN OPEN TO TRAFFIC DURING THE CONSTRUCTION PERIOD. TRAFFIC SHALL BE MAINTAINED ON ALL DRIVEWAYS THROUGHOUT THE CONSTRUCTION PERIOD.

TEMPORARY FLAGGING OPERATIONS SHALL BE LIMITED TO A TRAFFIC DELAY OF LESS THAN 10 MINUTES.

THE MINIMUM TRAVELED LANE WIDTH SHALL BE 10 FEET ON ALL PORTIONS OF THE ROADWAY, WHICH ARE OPEN TO TRAFFIC DURING CONSTRUCTION.

ACCESS TO ALL RESIDENCES AND BUSINESSES SHALL BE MAINTAINED EXCEPT AS NOTED ON THE PLANS OR AS DIRECTED BY THE CITY ENGINEER. NO DRIVEWAY ACCESS SHALL BE SUPPLEMENTED WITHOUT PRIOR NOTIFICATION TO THE PROPERTY OWNER.

B. MATERIALS.

- TRAFFIC CONTROL DEVICES. ALL TRAFFIC CONTROL DEVICES AND THEIR USAGE SHALL CONFORM TO THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), 2011 EDITION AS REVISED, AND AS SPECIFIED HEREIN.

THE CONTRACTOR SHALL FURNISH, PLACE, AND MAINTAIN SIGNS, BARRICADES, PLASTIC DRUMS, LIGHTS AND MINOR TRAFFIC CONTROL DEVICES WITHIN THE C.I.A. AND UPON COMPLETION OF THE WORK, REMOVE THESE ITEMS FROM THE PROJECT.

WARNING, REGULATORY AND GUIDE SIGNS NOT REQUIRED FOR A PARTICULAR WORK OPERATION, SHALL BE REMOVED, COMPLETELY COVERED, OR LAID DOWN WITH THE LEAST OFF, AS DIRECTED BY THE CITY ENGINEER.

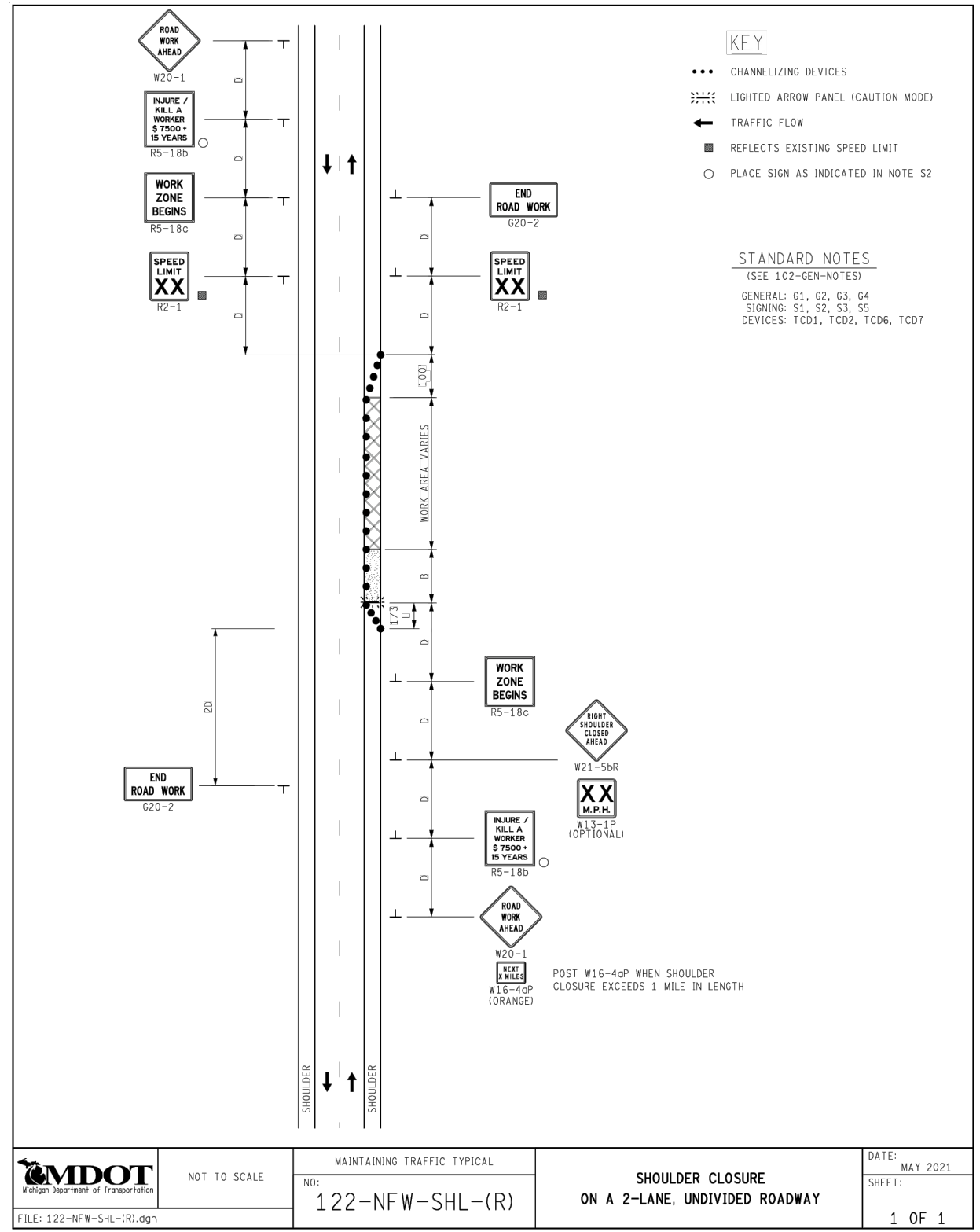
TEMPORARY SIGNS THAT ARE TO REMAIN IN PLACE FOR 30 DAYS OR MORE SHALL BE INSTALLED ON PERMANENT POST MOUNTS PER MUTCD SPECIAL DETAIL W2D-100-A AND AS DIRECTED BY THE CITY. ALL OTHER SIGNS MAY BE INSTALLED ON PORTABLE SUPPORTS.

ALL TRAFFIC CONTROL DEVICES MOVED TO FACILITATE THE CONTRACTORS OPERATION SHALL BE REPLACED AT THE END OF THE WORKDAY. THE CONTRACTOR SHALL MAINTAIN THE TRAFFIC CONTROL DEVICES INCLUDING, BUT NOT LIMITED TO PROPER PLACEMENT, WEIGHT WITH SANDBAGS, REPLACEMENT OF LIGHTS AND REPLACING DAMAGED DEVICES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING THE WORK AREA AND SHALL SUPPLY THE NECESSARY TRAFFIC CONTROL DEVICES APART FROM THOSE CALLED FOR ON THE PLANS TO DELINEATE THE WORK AREA FROM ADJACENT PROPERTY. THE LOCATION FOR STORAGE OF MATERIALS AND EQUIPMENT SHALL BE AS APPROVED BY THE CITY. TRAFFIC CONTROL DEVICES USED TO DELINEATE THE WORK AREA FROM THE TRAVELED WAY MAY BE PLACED ON THE MILED SURFACE TO MAINTAIN 10 FT MINIMUM LANES AS DIRECTED BY THE ENGINEER.

- BARRICADES. BARRICADES AND TRAFFIC CONES NECESSARY FOR TRAFFIC CONTROL AND PUBLIC SAFETY SHALL BE FURNISHED AND ERECTED BY THE CONTRACTOR AS SHOWN ON THE PLANS OR AS DIRECTED BY THE CITY. THE BARRICADES SHALL BE LIGHTED AS SHOWN IN THE MUTCD STANDARD SPECIFICATIONS FOR CONSTRUCTION AND THE MOST UPDATED EDITION OF THE CURRENT MUTCD. TYPE III BARRICADES SHALL BE SUPPLEMENTED WITH TWO (2) TYPE C WARNING LIGHTS. ANY SIGNS REQUIRED AT TYPE III BARRICADE LOCATIONS SHALL BE MOUNTED ABOVE THE BARRICADE ON SEPARATE SIGN SUPPORTS BEHIND THE BARRICADE. ALL BARRICADES SHALL BE CLEANED AND ALL LIGHTS ON BARRICADES SHALL BE CHECKED ON A WEEKLY BASIS.
- TEMPORARY SIGNS. ALL DIAMOND-SHAPED WARNING SIGNS SHALL BE 48 INCH X 48 INCH MOUNTED AT A 7 FOOT MINIMUM BOTTOM HEIGHT UNLESS OTHERWISE SPECIFIED IN THE TYPICALS.
- TRAFFIC CONTROL SHALL BE IN ACCORDANCE WITH THE FOLLOWING MUTCD TYPICALS:
 - TABLES FOR "D", "D", AND "B" VALUES (101-GEN-SPACING-CHARTS) (AS SHOWN ON THIS PLAN)
 - G20 SERIES, INJURE KILL DOUBLE FINES, ADVANCED SIGNING TREATMENTS (MOD40A)
 - TYPICAL TEMPORARY TRAFFIC CONTROL FOR A SHOULDER CLOSURE ON A TWO LANE TWO-WAY ROADWAY, NO SPEED REDUCTION (M0110a) (AS SHOWN ON THIS PLAN)
 - GROUND DRIVEN SIGN SUPPORTS FOR TEMPORARY SIGNS (W2D-100-A)
 - TEMPORARY TRAFFIC CONTROL DEVICES (W2D-125-E)

C. OTHER REQUIREMENTS.

- TRUCK HAUL ROUTES. TRUCK HAUL ROUTES SELECTED BY THE CONTRACTOR MUST BE SUBMITTED TO THE CITY ENGINEER FOR APPROVAL PRIOR TO THE START OF CONSTRUCTION AND ARE SUBJECT TO REGULATIONS OF THE CITY OF NOVI. THE CONTRACTOR SHALL NOT USE THE CITY SIDE STREETS FOR TRANSPORTING OF MATERIALS TO OR FROM THE PROJECT TO AVOID TRAFFIC BACKUPS.
- WORK HOURS. NORMAL WORKING HOURS WITHIN THE CITY OF NOVI ARE 7:00 AM TO 7:00 PM, MONDAY THROUGH SATURDAY. IF THE CONTRACTOR NEEDS TO SCHEDULE ANY WORK BEYOND THESE HOURS, THE CONTRACTOR MUST SUBMIT THIS REQUEST IN WRITING TO THE CITY ENGINEER.
- ADDITIONAL SIGNING. DURING CONSTRUCTION, ADDITIONAL SIGNS MAY BE REQUIRED TO BETTER MANAGE TRAFFIC. THE CONTRACTOR SHALL PROMPTLY BRING OUT THE REQUIRED SIGNS AS NEEDED BY THE ENGINEER AND PER THE MUTCD FUSP 812A, TRAFFIC CONTROL AND COMPLIANCE.
- CLEANING ADJACENT STREET AND SIDEWALKS, DIRT, MUD, CONSTRUCTION MATERIALS, OR OTHER DEBRIS DEPOSITED ON PUBLIC SIDEWALKS OR STREETS AS THE RESULT OF SPILLING, TRACKING ON THE WHEELS OF TRUCKS OR CONSTRUCTION EQUIPMENT, OR BY OTHER ACTIONS OF THE CONTRACTOR, HIS EMPLOYEES, OR HIS SUBCONTRACTORS SHALL IMMEDIATELY BE REMOVED BY THE CONTRACTOR AND SHALL NOT BE PAID FOR SEPARATELY.
- DUST CONTROL. THE CONTRACTOR SHALL APPLY A DUST PALLIATIVE WEEKLY OR AS REQUIRED BY THE CITY ENGINEER TO CONTROL DUST IN THIS AREA.



POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA)	DISTANCES (FEET)														
	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95
25	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950

POSTED SPEED, OFF-PEAK 85TH PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED.	LENGTH (FEET)														
	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
20	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90

POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA)	OFFSET (FEET)														
	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95
25	11	15	21	27	33	40	47	55	63	71	80	89	99	110	121

WORK ZONE SPEED LIMIT	DRUM AND 42" DEVICE SPACING (FT)	NIGHTTIME 42" DEVICE SPACING (FT)	TAPER TANGENT	TAPER TANGENT
< 45 MPH	1 x SPEED LIMIT	2 x SPEED LIMIT	25 FEET	50 FEET
≥ 45 MPH	50 FEET	100 FEET	25 FEET	50 FEET
TAPER TYPE	TAPER LENGTH			
UPSTREAM TAPERS	L - MINIMUM 1/2 L - MINIMUM			
MERGING TAPER	1/2 L - MINIMUM 1/3 L - MINIMUM			
SHOULDER TAPER	2 TO 1 LANE ROAD TAPER			
DOWNSTREAM TAPERS (USE IS RECOMMENDED)	100' (PER LANE)			
DASHED OUTLINES INDICATE A SIGN THAT EXISTS ON SITE, AND NEEDS TO BE COVERED.	SOLID OUTLINES INDICATE A SIGN THAT IS TO BE PLACED ON THE PROJECT.			

WEIGHT OF TMA VEHICLE (TONS)	PREVAILING SPEED (POSTED SPEED PRIOR TO WORK ZONE)	ROLL-AHEAD DISTANCE* (DISTANCE FROM FRONT OF TMA VEHICLE TO WORK AREA)
5.5 TONS (STATIONARY)	40 MPH OR LESS	25 FT

WEIGHT OF TMA VEHICLE (TONS)	PREVAILING SPEED (POSTED SPEED PRIOR TO WORK ZONE)	ROLL-AHEAD DISTANCE* (DISTANCE FROM FRONT OF TMA VEHICLE TO WORK AREA)
5 TONS (MOBILE)	45 MPH	100 FT
	50-55 MPH	150 FT
	60-75 MPH	175 FT
12 TONS (STATIONARY)	45 MPH	25 FT
	50-55 MPH	25 FT
	60-75 MPH	50 FT

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

GENERAL NOTES

- SEE SIGN SPACING CHARTS FOR COMMON VALUES INCLUDING:
 - DISTANCE BETWEEN TRAFFIC CONTROL DEVICES
 - MINIMUM LENGTH OF CHANNELIZING BUFFER
 - MINIMUM LENGTH OF MERGING TAPER
- DISTANCE BETWEEN SIGNS, "D", VALUES FOR WHICH ARE SHOWN IN TYPICAL, SHALL BE APPROVED AND MAINTAINED AS DIRECTED BY THE ENGINEER.
- FOR BARRICADES, TYPE III BARRICADES, THEIR SUPPORT SYSTEMS AND LIGHTING MUST MEET NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM REPORT NO. 350 (SEE LEVEL 3) OR MANUAL FOR SAFETY SIGNING (MUTCD) CHAPTER 6C AS WELL AS THE CURRENT EDITION OF THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) CHAPTER 6C. THE STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE STANDARD PLANS AND APPLICABLE SPECIAL PROVISIONS, ONLY SIGNAGE AND MATERIALS APPROVED BY MUTCD WILL BE ALLOWED.
- DO NOT STORE EQUIPMENT, MATERIALS OR PERFORM WORK IN ESTABLISHED BUFFER AREAS.
- ALL EXISTING PAVEMENT MARKINGS WHICH ARE IN CONFLICT WITH EITHER PROPOSED CHANNELIZING DEVICES OR TRAFFIC CONTROL DEVICES SHALL BE REMOVED AND REPAIRED. ALL EXISTING PAVEMENT MARKINGS WHICH ARE NOT IN CONFLICT WITH EITHER PROPOSED CHANNELIZING DEVICES OR TRAFFIC CONTROL DEVICES SHALL BE MAINTAINED AND REPAIRED AS NECESSARY. ALL EXISTING PAVEMENT MARKINGS WHICH ARE NOT IN CONFLICT WITH EITHER PROPOSED CHANNELIZING DEVICES OR TRAFFIC CONTROL DEVICES SHALL BE MAINTAINED AND REPAIRED AS NECESSARY.

TRAFFIC REGULATOR NOTES

- TRAFFIC REGULATORS MUST FOLLOW ALL THE REQUIREMENTS IN THE STANDARD SPECIFICATIONS, THE STANDARD PLANS AND APPLICABLE SPECIAL PROVISIONS, THE CURRENT EDITION OF THE TRAFFIC REGULATORS INSTRUCTION MANUAL, THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) CHAPTER 6C, AND THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) CHAPTER 6C. THE MAXIMUM DISTANCE BETWEEN THE TRAFFIC REGULATORS IS DETERMINED BY THE ROADWAY ADJ. GEOMETRICS, AND AS DIRECTED BY THE ENGINEER.
- PROVIDE APPROPRIATE BALLAST LIGHTING TO SUFFICIENTLY ILLUMINATE TRAFFIC REGULATORS AND CHANNELIZING DEVICES THROUGHOUT THE CONSTRUCTION PERIOD.
- PROVIDE EITHER A STOP/STOP FLASHER OR A RED/WHITE FLASHING LIGHT MEETING THE REQUIREMENTS OF THE MUTCD.

TEMPORARY TRAFFIC CONTROL DEVICE NOTES

- THE MAXIMUM DISTANCE IN FEET BETWEEN CHANNELIZING DEVICES IN A TAPER SHOULD NOT EXCEED 5.0 TIMES THE WORK ZONE SPEED LIMIT IN MPH FOR ROADWAYS WITH A POSTED WORK ZONE SPEED LIMIT LESS THAN 45 MPH AND SHOULD NOT EXCEED 50 FEET ON ROADWAYS WITH A POSTED WORK ZONE SPEED LIMIT OF 45 MPH OR GREATER. THE SPECIFIC TAPER LENGTHS AND CHANNELIZING DEVICES TAPERS ARE NOT TO EXCEED 25 FEET AT NIGHT.
- THE MAXIMUM DISTANCE IN FEET BETWEEN CHANNELIZING DEVICES IN A TANGENT WITH A POSTED WORK ZONE SPEED LIMIT LESS THAN 45 MPH AND SHOULD NOT EXCEED 50 FEET ON ROADWAYS WITH A POSTED WORK ZONE SPEED LIMIT OF 45 MPH OR GREATER. THE SPECIFIC TAPER LENGTHS AND CHANNELIZING DEVICES TAPERS ARE NOT TO EXCEED 50 FEET AT NIGHT.
- TYPE III BARRICADES MUST BE LIGHTED FOR CHANNELIZING CLOSURES.
- WHEN THE ROAD ROAD IS NOT IN USE, PLACE LIGHTED TYPE III BARRICADES WITH YOUR CLOSEST EXTENSION COMPLETELY ACROSS THE ROAD.
- USE OBJECT MARKER SIGNS IN LEVEL OF THE TYPE B HIGH INTENSITY LIGHT SHOWN IN THE STANDARD PLAN FOR TEMPORARY CONCRETE BARRIERS, SPICES, AND SIGNS WHEN USED WITH A TEMPORARY SIGN SYSTEM. THE OBJECT MARKER SIGNS SHALL BE A MINIMUM OF 12 INCHES IN HEIGHT AND BE PLACED IN THE RIGHT AND LEFT HAND SIDING AREAS AND BE IDENTIFIED WITH THE IDENTIFICATION ON THE WORK AREA. ALL OBJECT MARKER SIGNS SHALL BE IDENTIFIED WITH THE IDENTIFICATION ON THE WORK AREA. ALL OBJECT MARKER SIGNS SHALL BE IDENTIFIED WITH THE IDENTIFICATION ON THE WORK AREA.
- PLACE LIGHTED ARROW PANELS AS CLOSE TO THE BEGINNING OF TAPERS AS PRACTICAL, BUT NOT IN A MANNER THAT WILL OBSCURE OR CONFUSE APPROACHING MOTORISTS. PLACE LIGHTED ARROW PANELS IN THE BEGINNING OF TAPER AS PRACTICAL. IF ARROW BOARD CANNOT BE PLACED BEHIND CURB, PLACE ARROW BOARD IN THE CLOSURE LANE AS CLOSE TO THE BEGINNING OF TAPER AS PRACTICAL.
- ADDITIONAL TYPE III BARRICADES MAY BE REQUIRED TO COMPLETELY CLOSE OFF ROAD FROM EDGE OF PAVEMENT TO EDGE OF PAVEMENT.
- WHEN THE SHOULDER SECTION IS SHORTER THAN 600 FEET, A DOUBLE REVERSE CURVE SIGN (W2D-11) CAN BE USED INSTEAD OF THE FIRST REVERSE CURVE SIGN AND THE SECOND REVERSE CURVE SIGN CAN BE OMITTED.
- TRIPLE STRIPS ARE TO BE PLACED AS SPECIFIED IN THE CONTRACT. IF NOT SPECIFIED IN THE CONTRACT, PLACE TRIPLE STRIPS AS SHOWN AND IN ACCORDANCE WITH THE TRIPLE STRIP MANUFACTURER'S RECOMMENDATIONS. AN ARROW BOARD IS REQUIRED IN THE ARROW BOARD SECTION. PLACE THE TRIPLE STRIPS IN THE ARROW BOARD SECTION AS SHOWN IN THE TYPICAL.
- SEE THE WORK ZONE SAFETY AND MOBILITY MANUAL, PORTABLE CHANNELIZING DEVICES SECTION FOR RECOMMENDATIONS AND CORRECT FORM WEARING, STAGGER FOOT, THAT ARE ON OPPOSITE SIDES OF THE ROAD 500 FEET FROM EACH OTHER.

RAMP NOTES

- WHEN CONSTRUCTION BLOCKS (E-1) SIGNS MUST BE REMOVED OR COVERED AND CHANNELIZING DEVICES MUST BE POSITIONED TO ENABLE RAMP TRAFFIC TO DIVERT TO A FREEWAY.
- WHEN STOP AND YIELD CONDITIONS SHOULD BE AVOIDED WHENEVER PRACTICAL. WHEN CONSTRUCTION BLOCKS (E-1) SIGNS MUST BE USED IN PLACE OF E-1 SIGNS, WHEN E-1 SIGNS ARE USED, E-1 SIGNS MUST BE USED IN PLACE OF E-1 SIGNS. CONSIDERATION SHOULD BE GIVEN TO CLOSING THE RAMP TO COMPLETE WORK TO ALLOW AN ADEQUATE MERGE DISTANCE. WORK SHOULD BE EXPEDITED TO AVOID THE STOP AND YIELD CONDITIONS.

ENGINEERING | PLANNING
LAND DEVELOPMENT CONSULTING
39205 COUNTRY CLUB DR. STE. C8
FARMINGTON HILLS, MI 48331
248.308.3331

SKE GROUP

DATE: 02/19/2026
SUBMITTAL DATE: 02/19/2026
REVISION: NO

PROJECT NUMBER: 25-062
PROJECT MANAGER: BE
DRAWN BY: SA
CHECKED BY: SA
OFFICE: FARMINGTON HILLS

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CITY CENTER OFFICE PLAZA, LLC
PATRICIA KEROS
25875 NOW ROAD, SUITE 180
NOVI, MI 48375
PHONE: 248.513.3665

CITY CENTER OFFICE PLAZA
PART OF THE NORTHEAST 1/4 OF SECTION 22,
SHELDON, TWP., CITY OF NOVI, OAKLAND COUNTY, MI
SHEET TITLE:
TRAFFIC CONTROL PLAN

PROJECT NAME: CITY CENTER OFFICE PLAZA
DATE: MAY 2021
SHEET: 1 OF 3

PROJECT NAME: CITY CENTER OFFICE PLAZA
DATE: MAY 2021
SHEET: 2 OF 3

PROJECT NAME: CITY CENTER OFFICE PLAZA
DATE: MAY 2021
SHEET: 3 OF 3

PROJECT NAME: CITY CENTER OFFICE PLAZA
DATE: MAY 2021
SHEET: 1 OF 2

PAGE NO.: 11

SIDEWALK JOINTS NOTES

1. CONSTRUCT TRANSVERSE AND LONGITUDINAL EXPANSION AND JOINTS AT INTERSECTIONS AND AT ALL BARRIER FREE PARKING AREAS AS INDICATED ON THE PLANS.
2. CONSTRUCT JOINTS WITH FACES PERPENDICULAR TO THE SIDEWALK SURFACE.
3. PLACE CONSTRUCTION JOINTS AT 5' MINIMUM AND 7' MAXIMUM INTERVALS. JOINTS ARE TO BE FULL WIDTH OF THE WALK AND MINIMUM 1/4" SLOPE THICKNESS DEEP AND 1/8" NOT TO 1/4" INCH WIDE. (MATERIAL AS SPECIFIED)
4. PLACE 1/2" FIBER EXPANSION JOINT FILLERS AT MAX. 50' INTERVALS. EXTEND EXPANSION JOINT FILLER THE FULL WIDTH OF THE JOINT WITH THE TOP SLIGHTLY BELOW THE FINISHED SURFACE OF THE SIDEWALK.
5. PLACE 1/2" FIBER EXPANSION JOINT FILLERS AT EACH SIDE OF DRIVE.
6. PROVIDE 1" FIBER EXPANSION JOINT FILLERS AT CURB AND BUILDING OR R.O.W. LINE.

GENERAL NOTES

1. EXISTING TOPSOIL, VEGETATION AND ORGANIC MATERIALS SHALL BE STRIPPED AND REMOVED FROM PROPOSED PAVEMENT AREA PRIOR TO PLACEMENT OF BASE MATERIALS. TREE ROOTS SHALL BE COMPLETELY REMOVED.
2. EXCAVATE TO THE DEPTH OF THE FINAL SUBGRADE ELEVATION TO ALLOW FOR GRADE CHANGES AND THE PLACEMENT OF THE RECOMMENDED PAVEMENT SYSTEM.
3. THE PAVEMENT SUBGRADE SHALL BE COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY (MODIFIED PROCTOR) PRIOR TO PLACEMENT OF PROPOSED PAVEMENT. THE FINAL SUBGRADE SHALL BE THOROUGHLY PROOF-ROLLED IN THE PRESENCE OF A GEOTECHNICAL/PAVEMENT ENGINEER TO DETERMINE STABILITY. LOOSE OR YIELDING AREAS WHICH CANNOT BE MECHANICALLY STABILIZED SHALL BE REMOVED AND REPLACED AS DIRECTED BY THE ENGINEER. ALL FILL MATERIAL AND BASE MATERIAL SHALL BE TESTED AND ITS COMPACTATION AND SUITABILITY FOR ACCEPTANCE OF THE MATERIAL FOR PAVEMENT SHALL BE CERTIFIED BY SAID TESTING FIRM. THE OWNER SHALL SUPPLY THREE COPIES OF GEOTECHNICAL AND TECHNICAL REPORTS TO THE CITY'S CONSULTANT.
4. IF IN THE OPINION OF THE INSPECTOR, FIELD CONDITIONS WARRANT ADDITIONAL TESTING, THE DEVELOPER SHALL ARRANGE FOR AND PAY FOR ALL REQUIRED ADDITIONAL TESTING.
5. 21AA AGGREGATE BASE SHALL BE COMPACTED TO ACHIEVE A 95% COMPACTION LEVEL (MODIFIED PROCTOR - ASTM D 1557-91). THE BASE SHALL EXTEND A MINIMUM OF 2 FEET BEYOND THE BACK OF CURB OR THE PAVED EDGE.
6. CONCRETE PAVEMENT THICKNESS SHALL BE REQUIRED FOR ALL PROJECTS.
7. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT STANDARDS AND SPECIFICATIONS OF THE CITY OF NOVI, ROAD AND MOOT.
8. FOR ANY WORK WITHIN THE PUBLIC RIGHT-OF-WAY, THE CONTRACTOR SHALL SECURE ALL NECESSARY PERMITS AND LICENSES ARRANGE FOR ALL INSPECTION.
9. 10 INCH AND 2.0 INCH EXPANSION JOINTS SHALL BE INSTALLED PER CITY STANDARDS PER THIS SHEET.
10. ALL AREAS SHALL BE MACHINE COMPACTED IN UNIFORM LIFTS TO 95% OF THE MAXIMUM DRY DENSITY (MODIFIED PROCTOR) PRIOR TO PLACEMENT OF PROPOSED PAVEMENT.
11. 6" UNDER DRAIN SHALL BE INSTALLED ON BOTH SIDES OF ALL ROADWAYS IN GEOTEKSTILE WRAPPED TRENCH. ALSO, PLACE UNDER DRAINS AT ALL DRAINAGE STRUCTURES WITHIN PARKING AREAS. (SEE DETAILS 9 AND 8).
12. PRIOR TO BITUMINOUS STREET ACCEPTANCE, THE FULL CROSS SECTION MUST BE INSTALLED PER THE APPROVED PLAN, AND ANY AND ALL REPAIRS TO THE PAVEMENT AND CURB MUST BE COMPLETED AT THE DIRECTION OF THE CITY ENGINEER.
- 12(a). AT THE TIME OF INITIAL ROAD CONSTRUCTION, THE FULL CROSS SECTION MAY BE INSTALLED TO MINIMIZE THE AMOUNT OF PAVEMENT AND CURB REPAIRS. PRIOR TO STREET ACCEPTANCE, THE CITY ENGINEER WILL INSPECT THE PAVEMENT AND CURB, AND WILL IDENTIFY AREAS TO BE REPAIRED PRIOR TO THE INSTALLATION OF THE TOP COURSE.
- 12b. ALTERNATIVELY, THE TOP COURSE MAY BE OMITTED UNTIL THE MAJORITY OF THE CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED. PRIOR TO STREET ACCEPTANCE, THE CITY ENGINEER WILL INSPECT THE BASE PAVEMENT AND CURB, AND WILL IDENTIFY AREAS TO BE REPAIRED PRIOR TO THE INSTALLATION OF THE TOP COURSE.
13. PROVIDE MINIMUM 20' DISTANCE TO TRANSITION FROM DETAIL 3E TO DETAIL 3A

SIDEWALK STANDARD NOTES

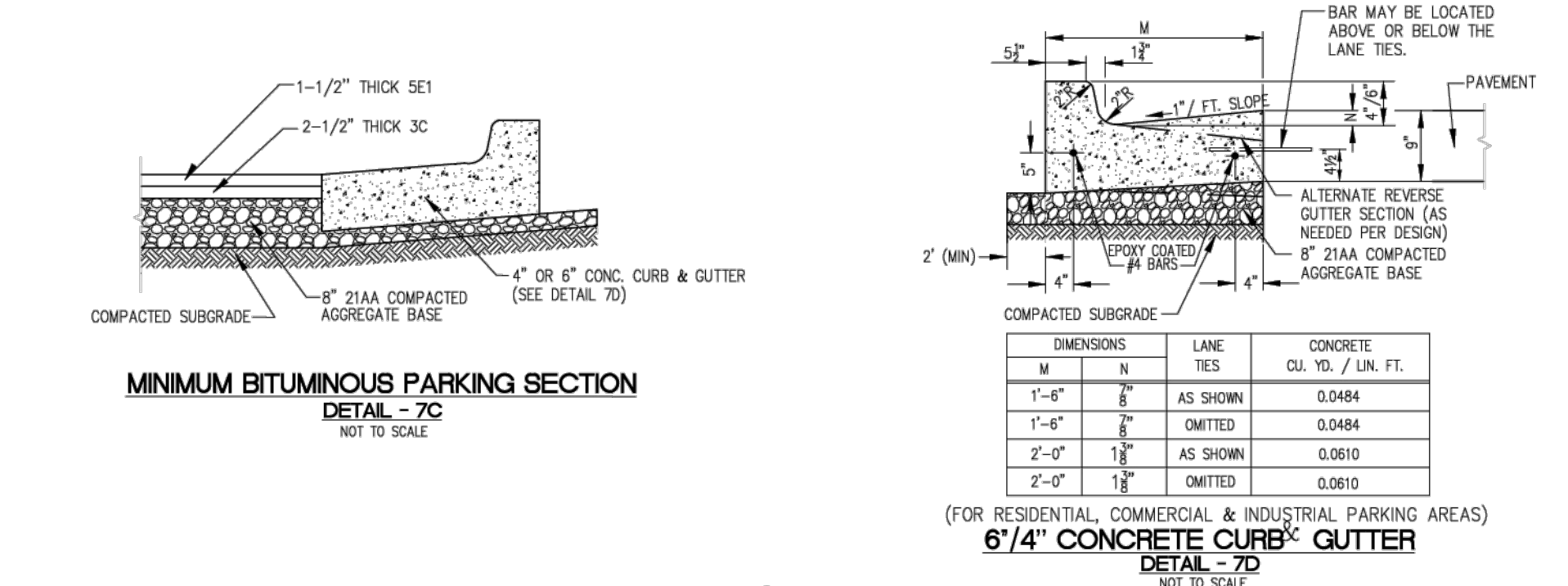
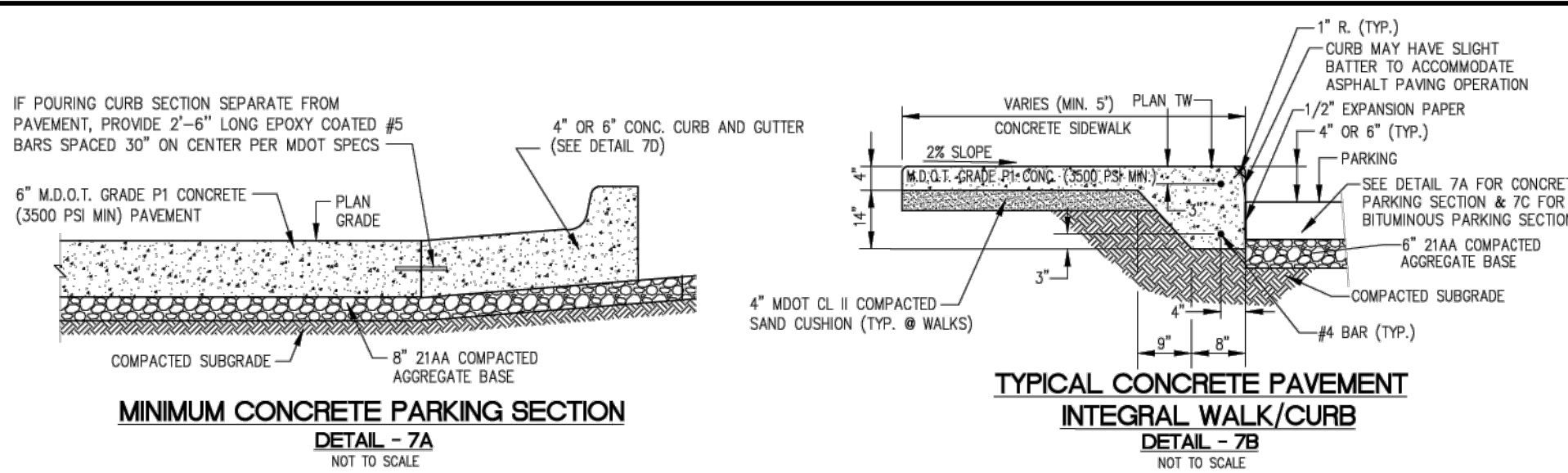
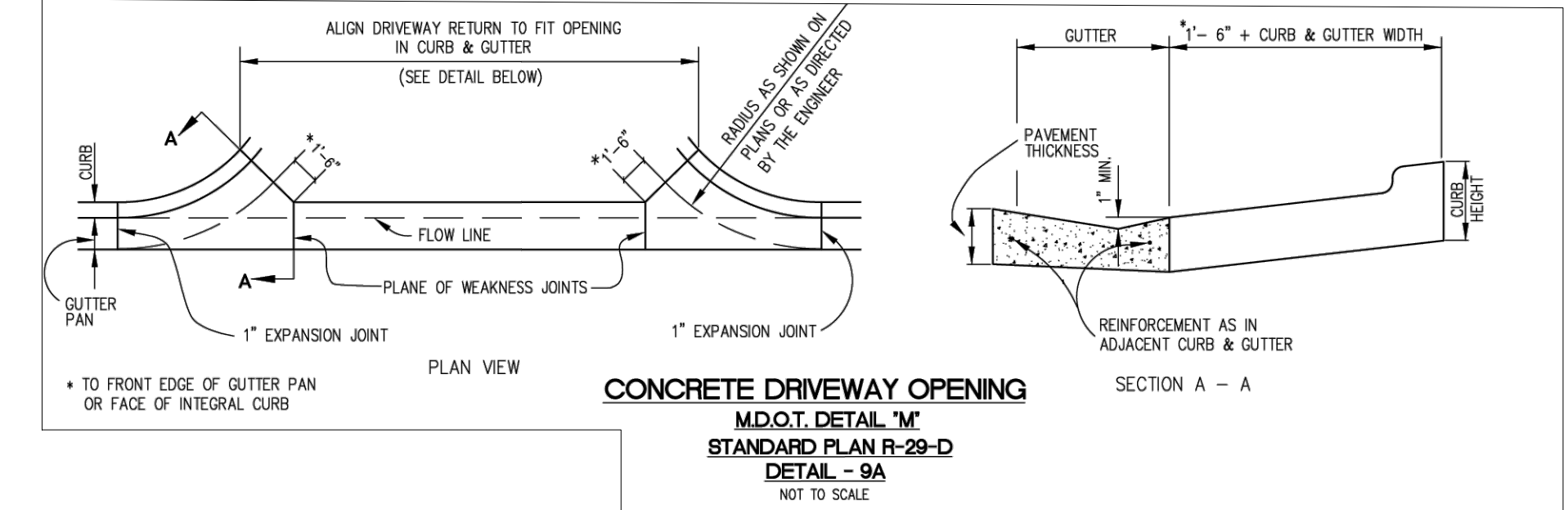
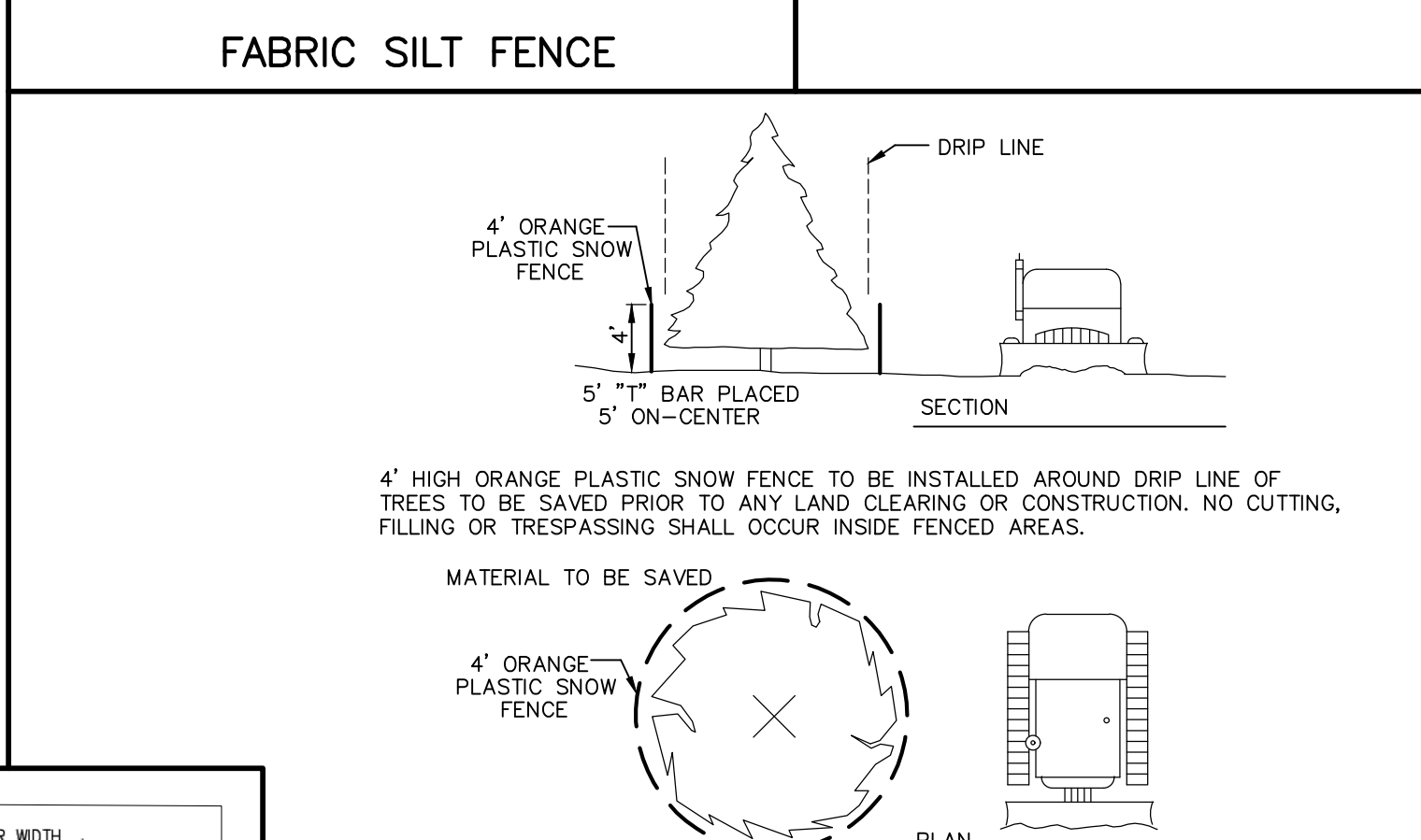
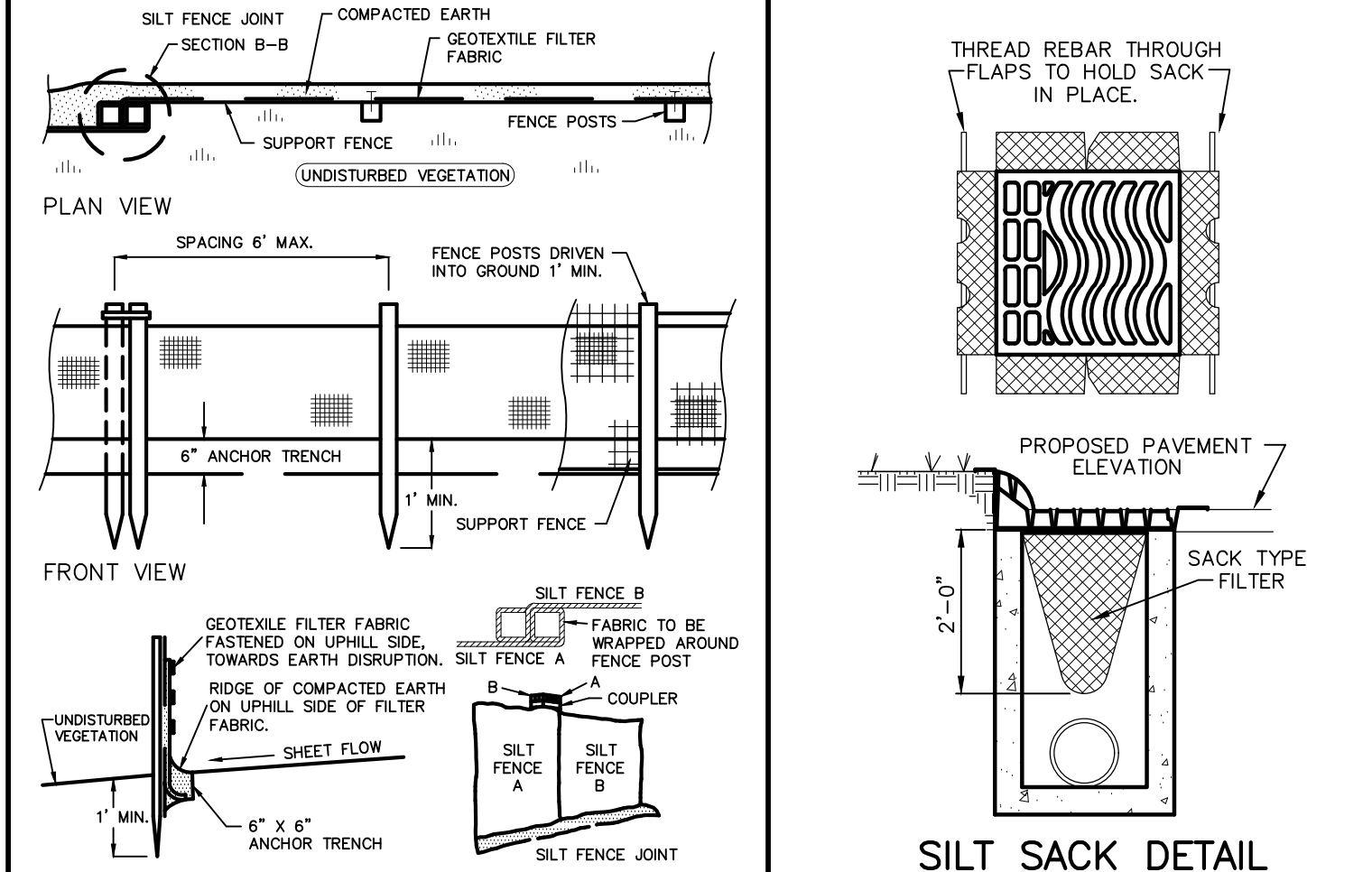
1. SIDEWALK RAMPS, CONFORMING TO PUBLIC ACT NO. 8, 1993, SHALL BE INSTALLED AS SHOWN ON THE PLAN AT ALL STREET INTERSECTIONS AND AT ALL BARRIER FREE PARKING AREAS AS INDICATED ON THE PLANS.
2. SIDEWALK AND PATHWAY RAMPS ARE TO BE LOCATED AS SPECIFIED ON THE PLANS OR AS DIRECTED BY THE ENGINEER. HANDICAP RAMPS SHALL MEET CURRENT MOISTANDARDS AND A.D.A. BARRIER FREE REQUIREMENTS.
3. RAMPS SHALL BE PROVIDED AT CORNERS OF AN INTERSECTION WHERE THERE IS EXISTING OR PROPOSED SIDEWALK AND CURB.
4. SURFACE TEXTURE OF THE RAMP SHALL BE THAT OBTAINED BY A COARSE BROOMING, TRANSVERSE TO THE SLOPE OF RAMP.
5. SIDEWALK SHALL BE RAMPED WHERE THE DRIVEWAY CURB IS EXTENDED ACROSS THE WALK. CARE SHALL BE TAKEN TO ASSURE A UNIFORM GRADE ON THE RAMP, FREE OF SAGS AND SHORT GRADE CHANGES. WHERE CONDITIONS PERMIT, IT IS DESIRABLE THAT THE SLOPE OF THE RAMP BE IN ONLY ONE DIRECTION, PARALLEL TO THE DIRECTION OF TRAVEL.
7. IF POSSIBLE, DRAINAGE STRUCTURES SHOULD NOT BE PLACED IN LINE WITH RAMPS, EXCEPT WHERE EXISTING DRAINAGE STRUCTURES ARE BEING UTILIZED IN THE NEW CONSTRUCTION. LOCATION OF THE RAMP SHOULD TAKE PRECEDENCE OVER LOCATION OF DRAINAGE STRUCTURE.
8. THE NORMAL CUTTER LINE PROFILE SHALL BE MAINTAINED THROUGH THE AREA OF THE RAMP.
9. THE TOP OF THE JOINT FILLER FOR ALL RAMP TYPES SHALL BE FLUSH WITH THE ADJACENT CONCRETE.
10. CROSSWALK AND STOP LINE MARKINGS, IF USED, SHALL BE SO LOCATED AS TO STOP TRAFFIC SHORT OF RAMP CROSSINGS. SPECIFIC DETAILS FOR MARKING APPLICATIONS ARE GIVEN IN THE "MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES".
11. DETECTABLE WARNING SHALL EXTEND THE FULL WIDTH OF THE CURB RAMP.

CONCRETE PAVEMENT

1. CONCRETE SHALL CONSIST OF: PORTLAND CEMENT TYPE IV (AIR-ENTAINED) WITH A MINIMUM CEMENT CONTENT OF 59 SACS PER CUBIC YARD, MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3500 PSI AND A SLUMP OF 1" TO 3 INCHES. PAVEMENT SHALL CONFORM TO M.D.O.T. GRADE P1.
2. ALL CONCRETE PAVEMENT, DRIVEWAYS, CURB & GUTTER, ETC., SHALL BE SPRAY CURED WITH WHITE MEMBRANE CURING COMPOUND IMMEDIATELY FOLLOWING FINISHING OPERATION.
3. THE CONCRETE BATCH PLAN SHALL BE M.D.O.T. CERTIFIED WITH LOCATION APPROVED BY THE CITY.
4. NO CONCRETE PAVING SHALL BE ALLOWED PRIOR TO MAY 1, OR AFTER NOVEMBER 1 (UNLESS APPROVED BY THE CITY).
5. DO NOT PLACE CONCRETE WHEN PRECIPITATION IS IMMINENT OR WHEN MOISTURE ON THE EXISTING SURFACE WILL PREVENT SATISFACTORY CURING. UNLESS OTHERWISE APPROVED BY THE ENGINEER IN WRITING, TEMPERATURE AND SEASONAL REQUIREMENTS FOR PLACING CONCRETE WILL BE ACCORDING TO THE CURRENT MOOT SPECIFICATIONS. PAVING WILL NOT BE ALLOWED BELOW THESE MINIMUM TEMPERATURES, NOR WHEN FROST IS ON OR IN THE GRADE OR ON THE EXISTING SURFACE.

BITUMINOUS PAVEMENT

1. BITUMINOUS MIXTURE SHALL CONSIST OF: LEVELING COURSE - MDOT BITUMINOUS MIXTURE NO. 3C; LEVELING COURSE - MDOT BITUMINOUS MIXTURE NO. 4C; WEARING COURSE MDOT BITUMINOUS MIXTURE NO. 5E. ASPHALT CEMENT PENETRATION GRADE 85-100 (PG 64-22) RECLAIMED ASPHALT PAVEMENT (RAP) SHALL BE REVIEWED FOR APPROVAL BY THE CITY NOV.
2. ALL BITUMINOUS MATERIAL SHALL BE COMPACTED TO A DENSITY OF 92% OF THE FIELD CONTROL DENSITY AS DETERMINED BY THE THEORETICAL MAXIMUM DENSITY.
3. A BOND COAT OF SS-1H EMULSION IS REQUIRED BETWEEN ALL COURSES OF ASPHALT IMMEDIATELY PRIOR TO PLACEMENT OF EACH COURSE OF PAVEMENT. THE BOND COAT SHALL BE APPLIED IN A UNIFORM MANNER OVER THE SURFACE AT A RATE OF 0.10 GALLONS/SY. BETWEEN LEVELING COURSES & 0.05 GALLONS/SY BETWEEN WEARING COURSE AND LEVELING COURSE.
4. DO NOT PLACE HMA OR APPLY BOND COAT WHEN PRECIPITATION IS IMMINENT OR WHEN MOISTURE ON THE EXISTING SURFACE WILL PREVENT SATISFACTORY CURING. UNLESS OTHERWISE APPROVED BY THE ENGINEER IN WRITING, TEMPERATURE AND SEASONAL REQUIREMENTS FOR PLACING HMA WILL BE ACCORDING TO THE CURRENT MOOT SPECIFICATIONS. PAVING WILL NOT BE ALLOWED BELOW THESE MINIMUM TEMPERATURES, NOR WHEN FROST IS ON OR IN THE GRADE OR ON THE EXISTING SURFACE.



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 REQUIRES INSPECTION WEEKLY OR AFTER EACH RAIN EVENT. ALSO, THESE ITEM ARE REUSABLE IF MAINTAINED CORRECTLY. THEY CAN BE REMOVED, EMPLOYED, CLEANED AND REPLACED WITHOUT PURCHASING NEW ONES.

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.

SOIL EROSION CONTROL VIOLATIONS/CITATIONS

1. ROUTINE INSPECTIONS WILL BE PERFORMED BY THE CITY OF NOVI OR ITS AGENT ONCE A WEEK.
2. UPON COMPLETION OF INSPECTION, IF THE SITE IS FOUND NOT TO BE IN COMPLIANCE WITH CITY OF NOVI'S SOIL EROSION AND SEDIMENTATION CONTROL ORDINANCE, THEN THE PERMIT HOLDER/SIGNER WILL BE ISSUED, BY HAND, MAIL OR FAX, 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 CITY OF NOVI FOR ADDITIONAL INSPECTIONS, HEARINGS AND REPORT FOLLOW-UP. 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 THE CITY OF NOVI, FOR FOLLOW-UP INSPECTIONS, MEETINGS AND OTHER EXPENSES INCURRED.

GROUND WATER NOTES

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 CITY OF NOVI WILL REQUIRE A WRITTEN DEWATERING PROCEDURE (AS INDICATED IN CITY OF NOVI ORDINANCE NO. 11-37 (h) (1)) PROVIDED BY THE APPLICANT'S ENGINEER, PRIOR TO COMMENCEMENT OF THE DEWATERING OPERATION.

IF GROUNDWATER IS ENCOUNTERED DURING CONSTRUCTION, THE CONTRACTOR MUST CONTACT NOVI DPS IN WRITING SHOWING NEED TO DEWATER PRIOR TO ANY FURTHER CONSTRUCTION.

IF PROCEDURES ARE NOT SUBMITTED OR, ONCE APPROVED, ARE NOT ADHERED TO, THEN THE CITY OF NOVI MAY TAKE ACTION TO SUSPEND DEWATERING ACTIVITIES AT THE PROJECT TO REQUIRE THE ADHERENCE TO PROCEDURES.

CONSTRUCTION ACCESS 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 BMP, ESPECIALLY THOSE FOR DRAINAGE. ALL SEDIMENT DROPPED OR ERODED ONTO PUBLIC RIGHT-OF-WAY SHOULD BE REMOVED IMMEDIATELY BY SWEEPING.

TRAFFIC NOTES:

1. ALL PAVEMENT SLOPES LOCATED BETWEEN AND INCLUDING THE BARRIER FREE PARKING SPACES AND THE ENTRANCE DOORS MEET ADA REQUIREMENTS AND DO NOT EXCEED MAXIMUM SLOPE RATES.
2. PAVEMENT MARKINGS SHALL BE PROVIDED AS FOLLOWS:
 - a. THE MARKING OF NON-BARRIER-FREE PARKING SPACES (AND ASSOCIATED CROSSHATCHING, SUCH AS THE TRIANGULAR AND TRAPEZOIDAL AREAS ALONG THE WEST PROPERTY LINE) SHALL BE WHITE PAINT.
 - b. THE MARKING OF BARRIER-FREE PARKING SPACES AND ASSOCIATED CROSSHATCHED ACCESS AISLES SHALL BE BLUE PAINT.
 - c. WHERE A BARRIER-FREE SPACE ADJUTS A NON-BARRIER-FREE SPACE, THE TWO SPACES ARE TO BE SEPARATED BY ABUTTING BLUE AND WHITE STRIPES.
 - d. THE INTERNATIONAL SYMBOL OF ACCESSIBILITY (WHEELCHAIR) TO BE PAINTED ON THE PAVEMENT SHALL BE WHITE PAINT PER MUTTOD FIG. 3B-22.
3. ALL SIGNAGE AND PAVEMENT MARKINGS SHALL COMPLY WITH M.M.U.T.C.D. AND THE CITY OF NOVI TRAFFIC CONTROL

ENGINEERING NOTES

1. ALL WORK SHALL CONFORM TO THE CURRENT CITY OF NOVI STANDARDS AND SPECIFICATIONS.
2. IF DEWATERING IS ANTICIPATED OR ENCOUNTERED DURING CONSTRUCTION, A DEWATERING PLAN MUST BE SUBMITTED TO THE CITY OF NOVI ENGINEERING DEPARTMENT FOR REVIEW.
3. THE AREA OF DISTURBANCE IS 6.87 ACRES.
4. DIMENSIONS OF PARKING STALLS ABUTTING A CURB OR SIDEWALK ARE TO THE FACE OF CURB OR WALK. ALL OTHER DIMENSIONS ARE TO THE BACK OF CURB UNLESS OTHERWISE INDICATED.

SOIL EROSION CONTROL NOTES

1. SACK TYPE FILTERS SHALL BE INSTALLED ON ALL ROADWAY CATCH BASINS AND INLETS. INLET FILTERS SHALL BE INSTALLED ON ALL REAR YARD CATCH BASINS.
2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSURE THE PROJECT STREETS AND ADJACENT ROADS ARE CLEAN & SWEEP THROUGHOUT THE ENTIRE CONSTRUCTION PERIOD.
3. IT IS THE DEVELOPER'S RESPONSIBILITY (NOT THE BUILDER'S) TO ACHIEVE STABILIZATION OF ALL DISTURBED AREAS WITHIN 5 WORKING DAYS OF ESTABLISHING THE FINAL GRADE. STABILIZATION SHALL BE EITHER TEMPORARY OR PERMANENT.
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 BOND STREET ROAD RIGHT OF WAY AREA.
7. INSTALLATION OF SILT FENCING OR TREE PROTECTION FENCING SHALL NOT OCCUR PRIOR TO THE INITIAL CITY PRE-CONSTRUCTION MEETING. WHEN NATURAL FEATURES EXIST ON THE SITE, INSPECTION OF STAKING MAY BE REQUIRED PRIOR TO INSTALLATION OF THE FENCING.
8. SLOPES STEEPER THAN 1V:6H (16%) SHALL BE STABILIZED WITH EROSION CONTROL BLANKET.
9. MAINTAIN A TEMPORARY FIVE (5) FOOT GRADING BUFFER FROM PERIMETER SILT FENCE, UNTIL FINE OR FINAL GRADING IS NECESSARY.
10. DEWATERING OF ANY KIND MUST BE FILTERED THROUGH VEGETATION, STONE OR "FILTER BAG".

SEQUENCE OF CONSTRUCTION FOR SOIL EROSION CONTROL

1. ATTEND A FULL SITE PRE-CONSTRUCTION MEETING
2. INSTALL ALL SOIL EROSION AND TREE PROTECTION FENCING AS PER APPROVED PLANS. CLEAR ONLY WHAT IS NECESSARY TO INSTALL FENCING. CONSTRUCT CONSTRUCTION ACCESS AT BOND STREET PER THE APPROVED DETAIL.
3. CONTACT THE CITY OF NOVI OR ITS AGENT TO HAVE THE ITEMS LISTED IN "2" INSPECTED FOR APPROVAL. UPON APPROVAL OF AFOREMENTIONED ITEMS, THE DEVELOPER MUST SCHEDULE A FULL PRE-CONSTRUCTION MEETING WITH THE CITY OF NOVI. CLEARING AND GRUBBING MAY TAKE PLACE AT THIS TIME, BUT NO GRADING/MASS GRADING UNTIL SEPARATE APPROVAL IS GRANTED.
4. 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.
5. INSTALL UTILITIES (WATER MAIN, STORM SEWER, SANITARY SEWER) COMPLETE.
6. INSTALL, AS PER APPROVED PLANS, THE CATCH BASIN INLET FILTERS. INSPECT AND MAINTAIN FILTERS AS DIRECTED TO PREVENT CLOGGING AND UNNECESSARY FLOODING.
7. GRADE PARKING LOT LIMITS AND INSTALL PAVEMENT COMPLETE.
8. INSTALL ALL PUBLIC UTILITIES (GAS, ELECTRIC, TELEPHONE, CABLE) COMPLETE.
9. STABILIZE TEMPORARILY OR PERMANENTLY ALL DISTURBED AREAS WITHIN FIVE (5) DAYS OF FINAL GRADE. USE 3-4" OF TOPSOIL WHERE VEGETATION IS REQUIRED.
10. INSPECT AND MAINTAIN ALL SOIL EROSION AND SEDIMENTATION CONTROL MEASURES THROUGHOUT THE CONSTRUCTION OF THE PROJECT. REMOVAL OF CONTROL MEASURES MAY ONLY TAKE PLACE ONCE THE ENTIRE SITE IS FULLY STABILIZED.

SEEDING, SODDING & MULCHING

SEEDS, 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.

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; TOEWALLS; DROP BOXES; CHUTES 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 DISCHARGE POINT SHOULD BE INVESTIGATED TO ENSURE THAT THE CONCENTRATED FLOWS ARE NOT CAUSING EROSION DOWNSTREAM CHECK THE EMERGENCY BYPASS/ SPILLWAY FOR EROSION. CHECK THE STRUCTURES ITSELF 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. ALL STORM STRUCTURES SHOULD BE INSPECTED WEEKLY.

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.

BUFFER/FILTER STRIPS

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 UP-SLOPE 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 REPLACED, AS NECESSARY, AFTER THE CAUSE OF THE DAMAGE IS ASSESSED AND ANY OTHER BMP'S ARE NEEDED ARE IMPLEMENTED.

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.

ENGINEERING | PLANNING | LAND DEVELOPMENT | CONSULTING

SKKE GROUP

39205 COUNTRY CLUB DR. STE C8
FARMINGTON HILLS, MI 48331
248.308.3331

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PROJECT NUMBER: 25-062
PROJECT MANAGER: BE
DRAWN BY: SA
CHECKED BY: BE
OFFICE: FARMINGTON HILLS

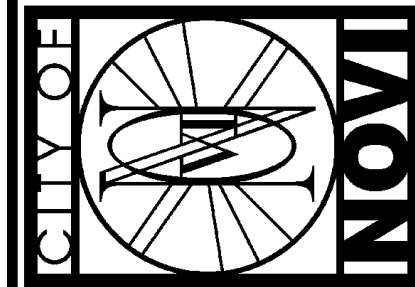
CLIENT INFO:
CITY CENTER OFFICE PLAZA, LLC
PATRICIA KEROS
25675 NOV ROAD, SUITE 180
NOVI, MI 48375
PHONE: 248.513.5665

PROJECT NAME:
CITY CENTER OFFICE PLAZA

PART OF THE NORTHEAST 1/4 OF SECTION 22,
T1N. 18E., R6E., CITY OF NOVI, OAKLAND COUNTY, MI

SHEET TITLE:
NOTES AND DETAILS

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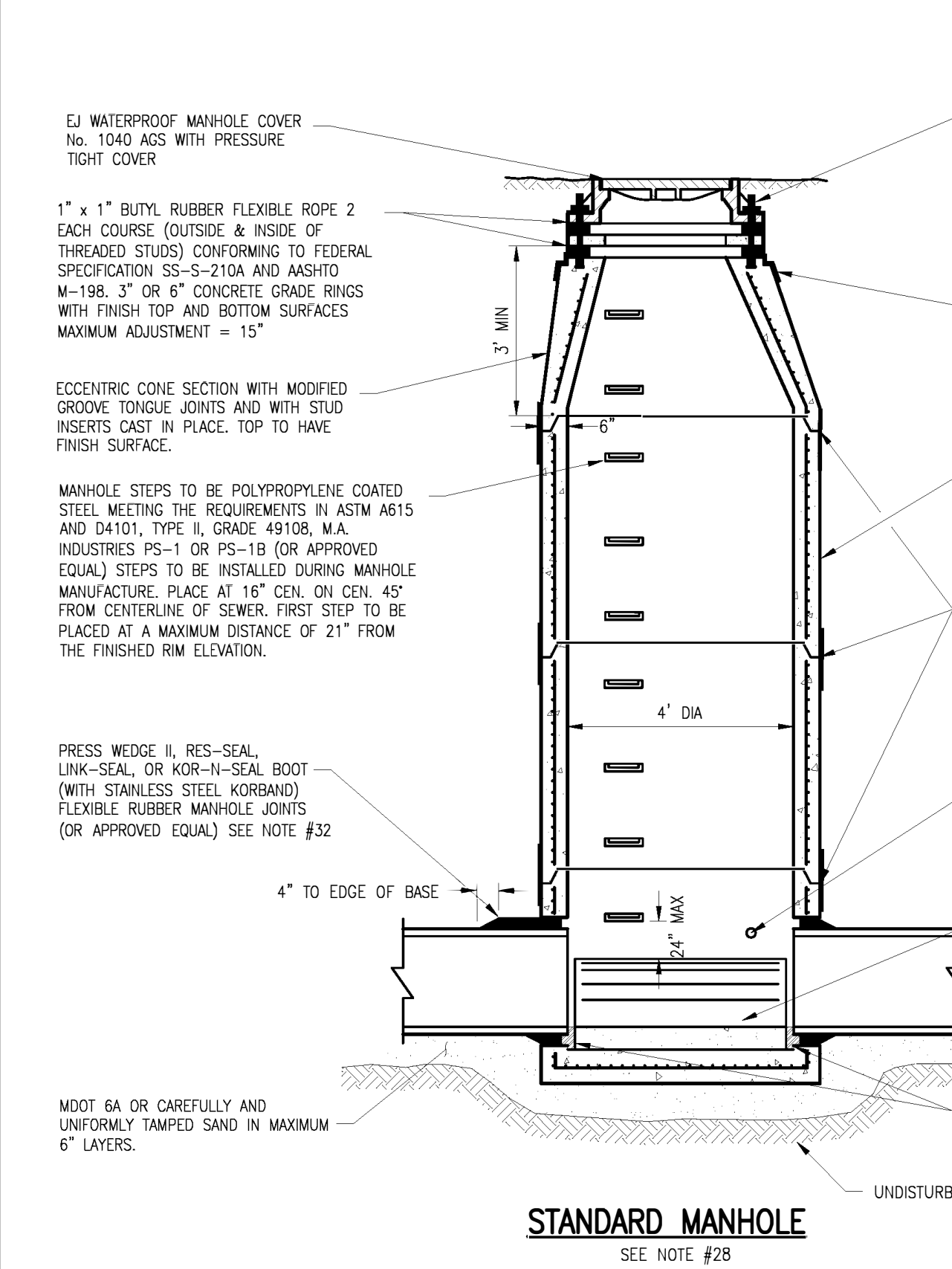
CITY OF NOVI 4575 WEST 10 MILE ROAD | NOVI, MI 48275 | P (248) 347-3456 | WWW.CITYOFNOVI.ORG

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COUNTY: OAKLAND COUNTY

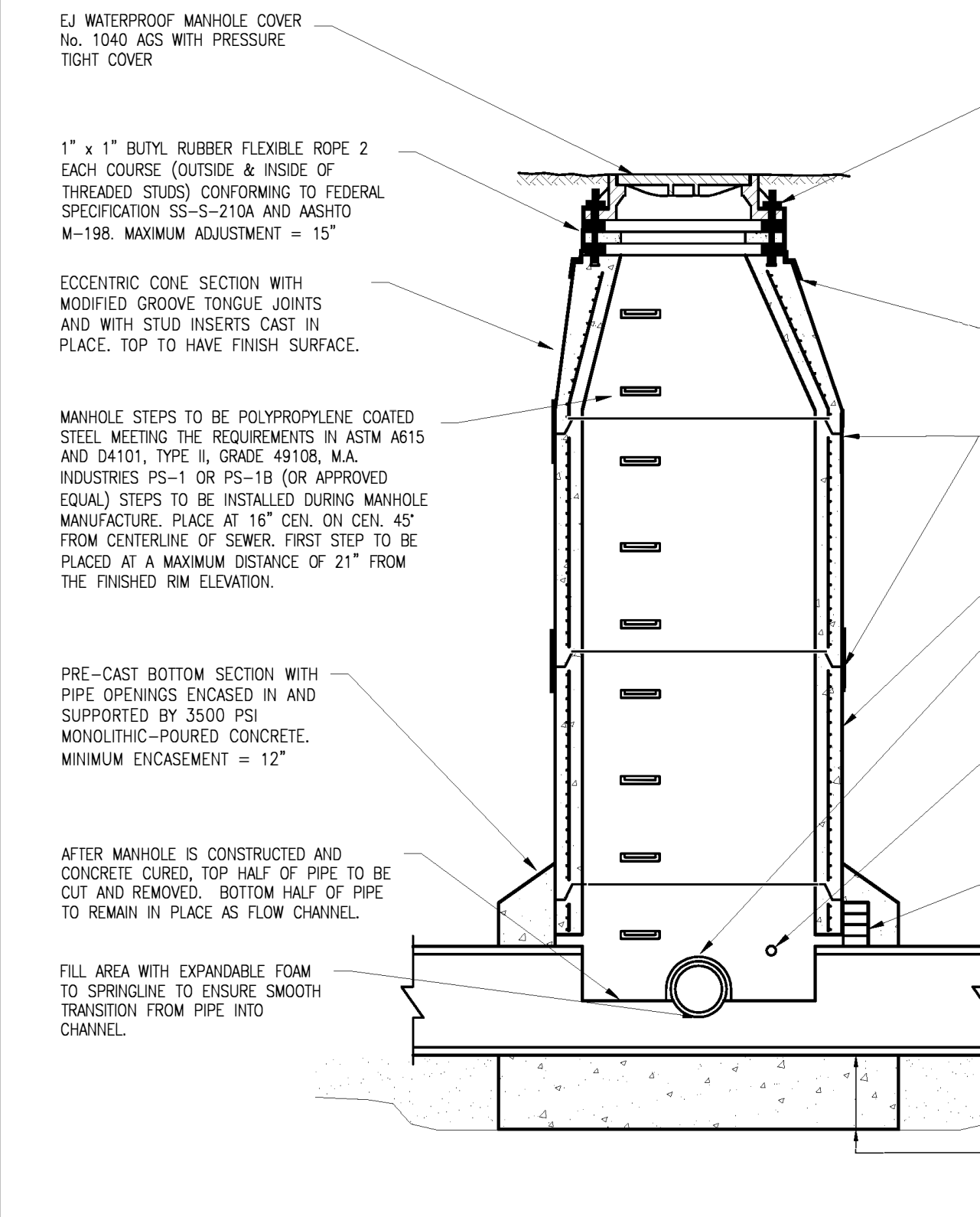
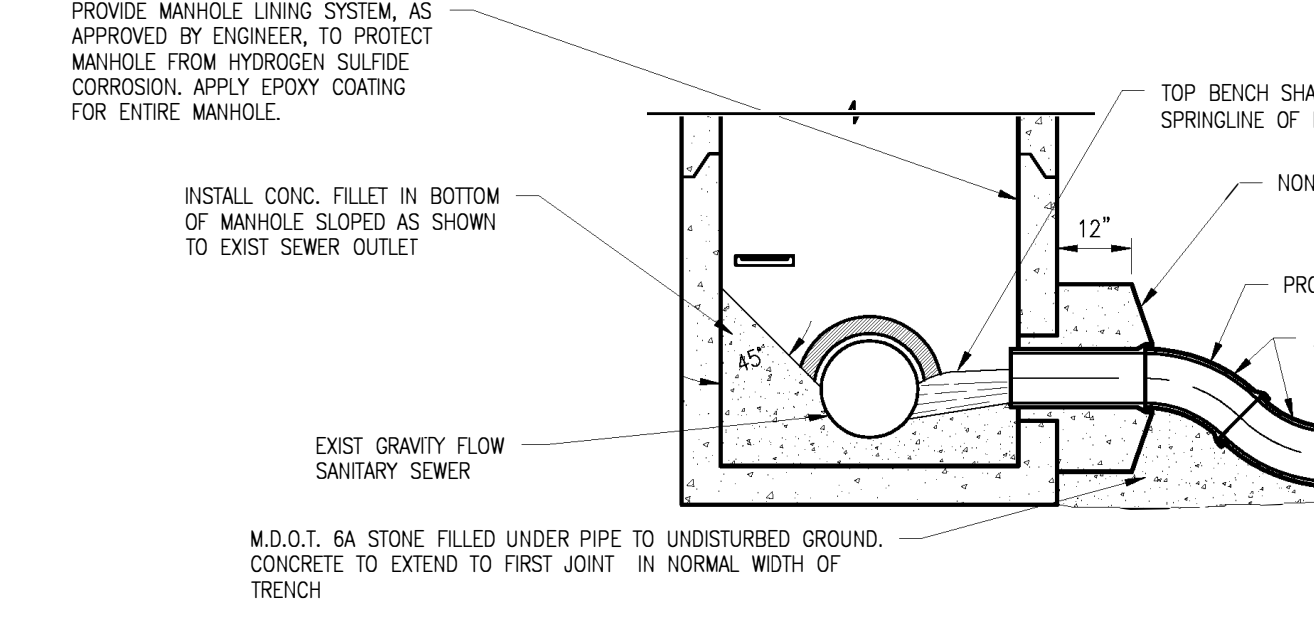
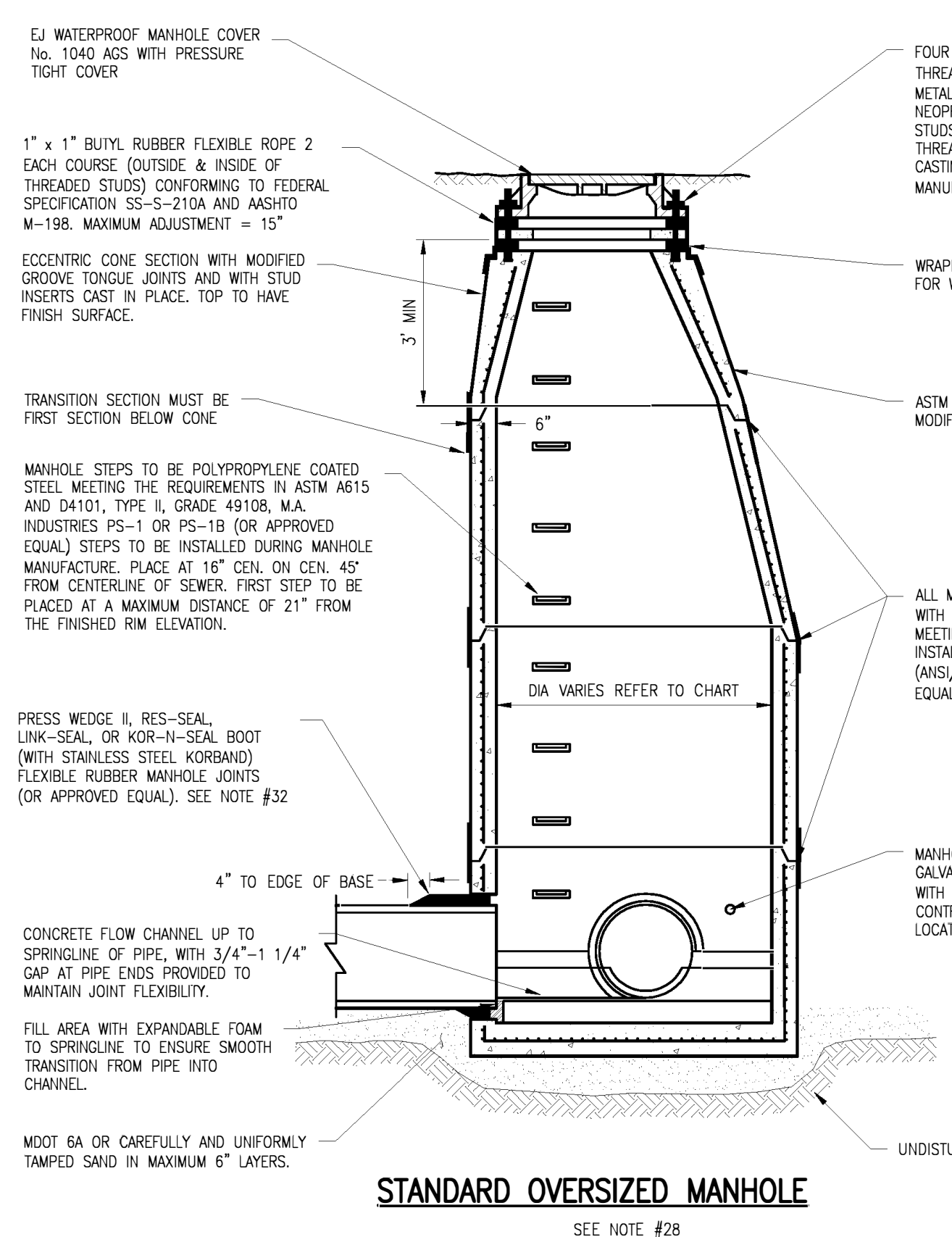
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CITY OF NOVI
SANITARY SEWER
STANDARD DETAILS

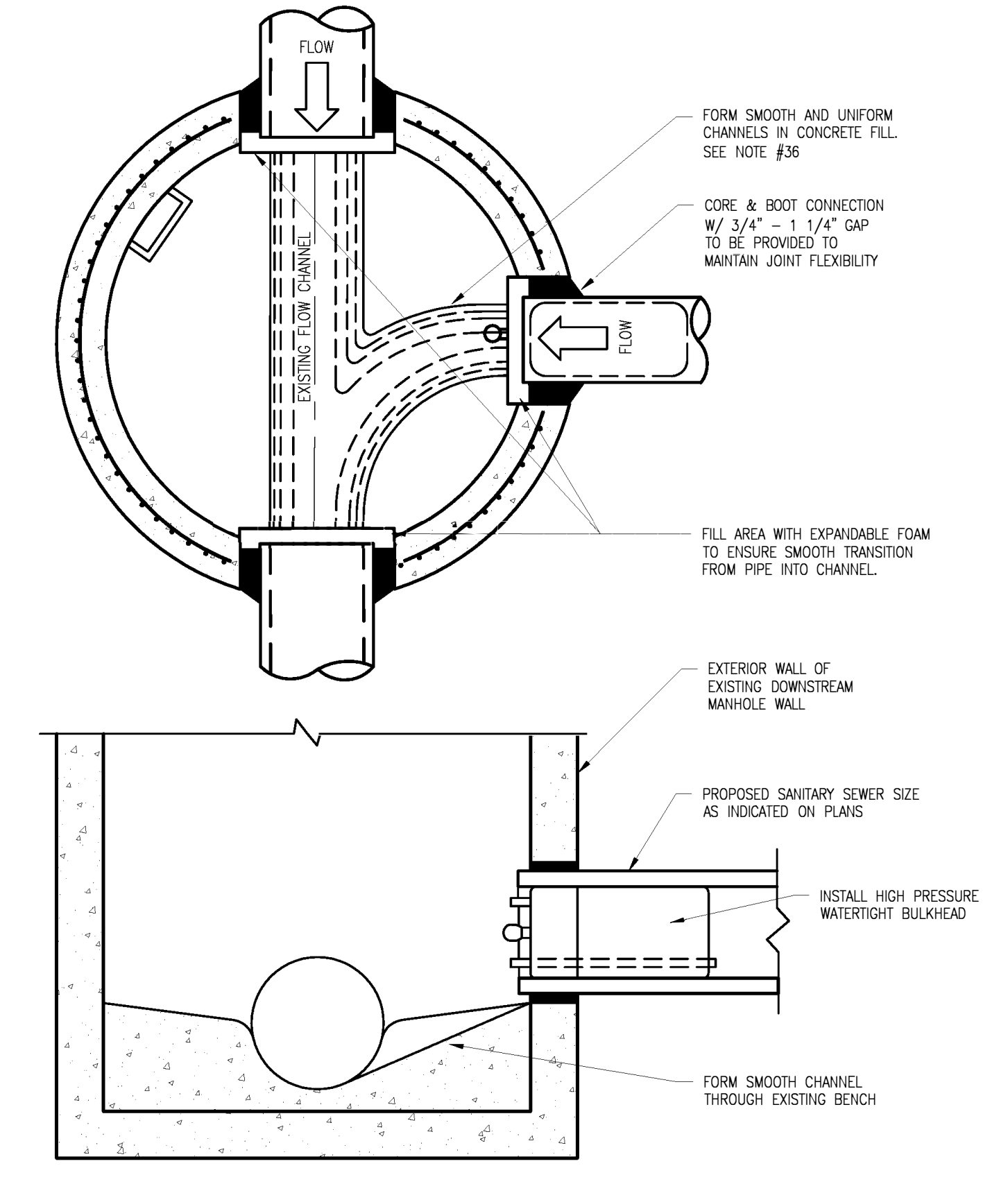
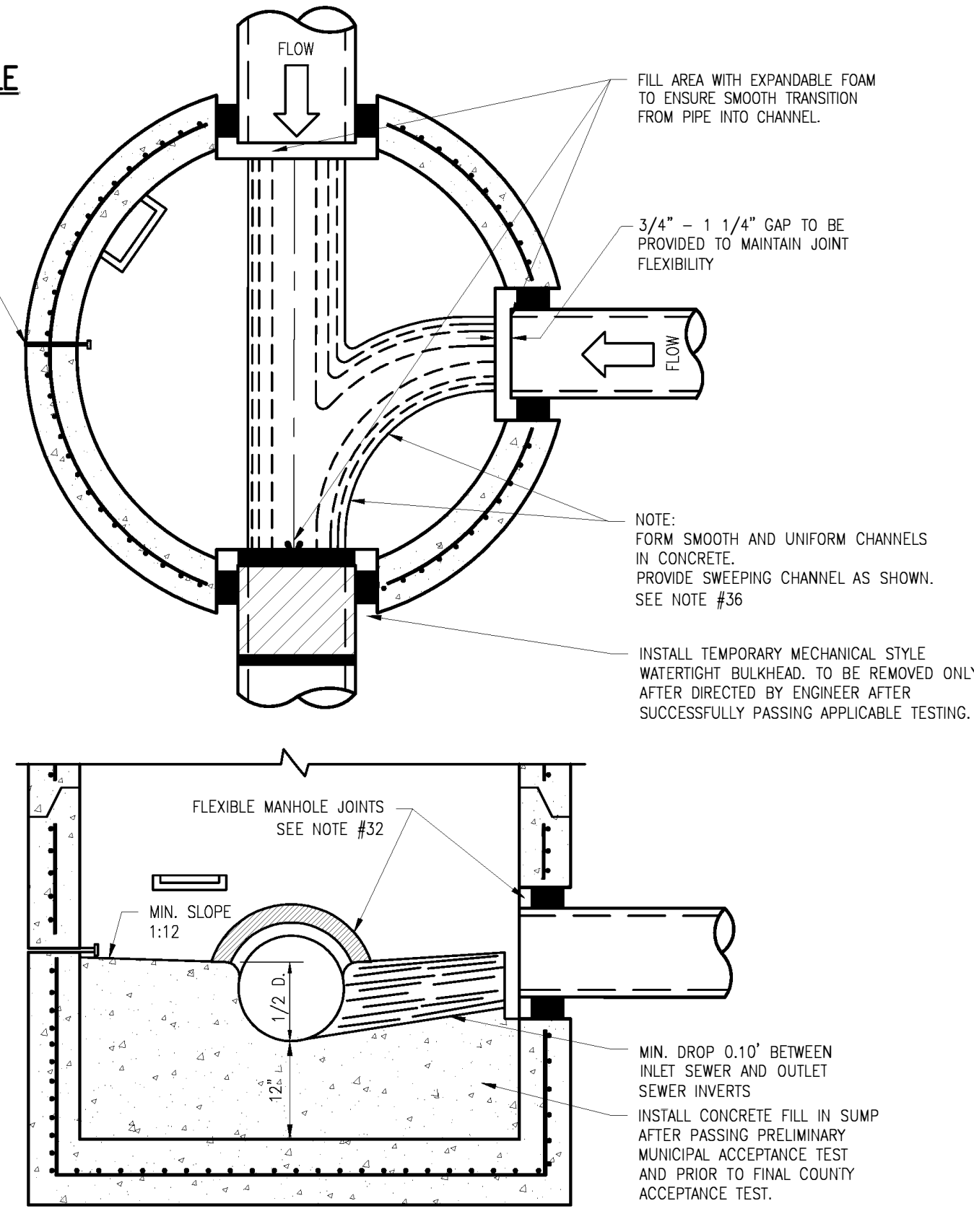
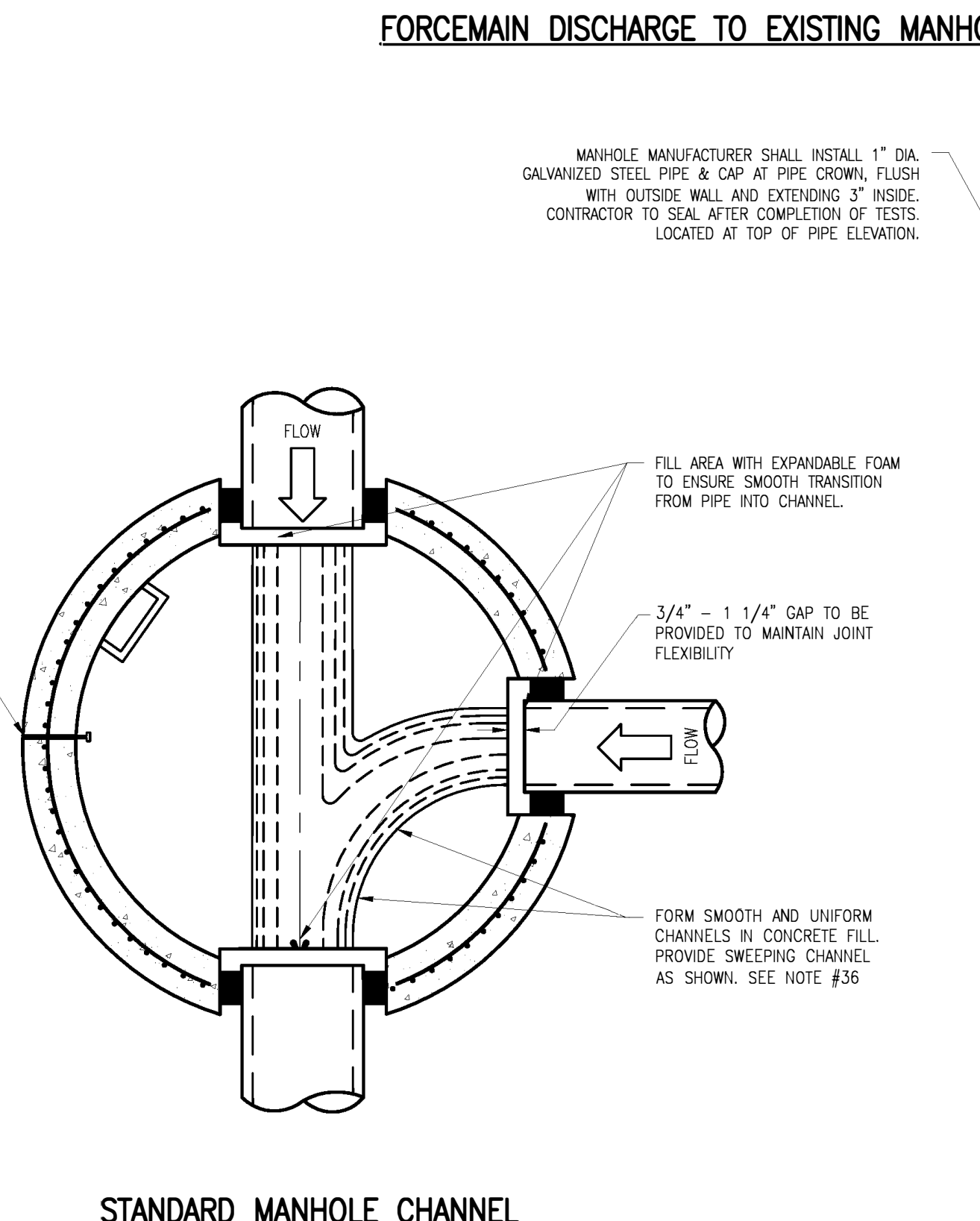


MANHOLE SIZING CHART

MANHOLE DIAMETER	MAX PIPE SIZE FOR STRAIGHT THRU INST.	MAX PIPE SIZE FOR RIGHT ANGLE INST.
4'	24"	18"
5'	36"	24"
6'	42"	36"
7'	60"	42"

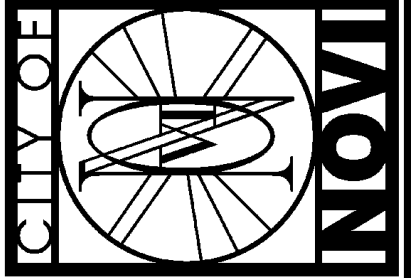


FOR LOCAL SANITARY SEWER EXTENSIONS CONNECTING DIRECTLY OR INDIRECTLY TO OAKLAND COUNTY WRC SEE NOTE #36



NOTE:
REMOVAL AND/OR REPLACEMENT OF ANY INSTALLATION WHICH DOES NOT MEET THE CITY OF NOVI DESIGN MANUAL OR THESE STANDARD DETAILS MAY BE REQUIRED AT THE PROPERTY OWNER'S EXPENSE.

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CITY OF NOVI | 45175 WEST 10 MILE ROAD | NOVI, MI 48275 | P. (248) 347-4468 | WWW.CITYOFNOVI.ORG

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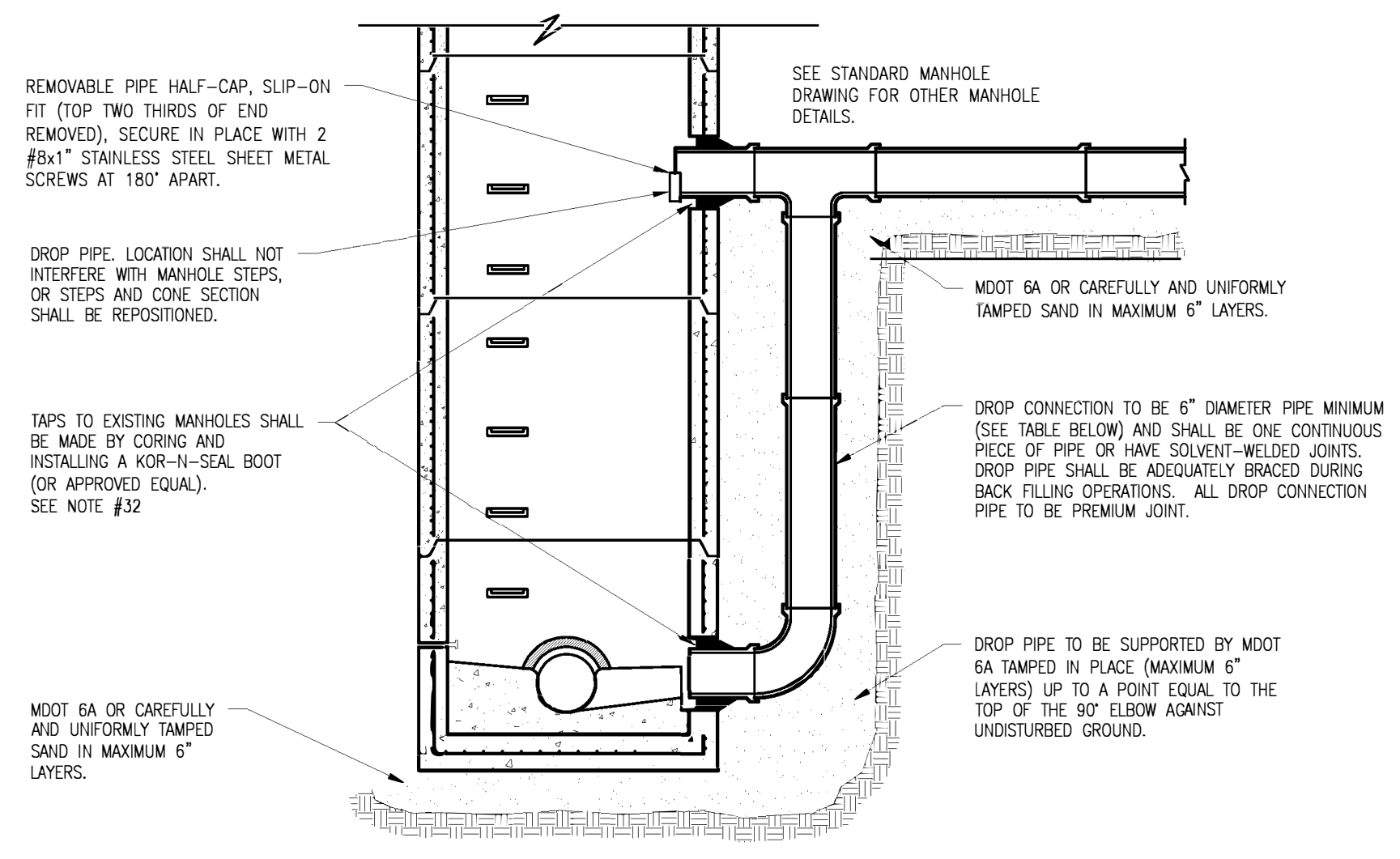
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TOWN: NOVI

DATE: 3/20/14

CITY OF NOVI
SANITARY SEWER
STANDARD DETAILS

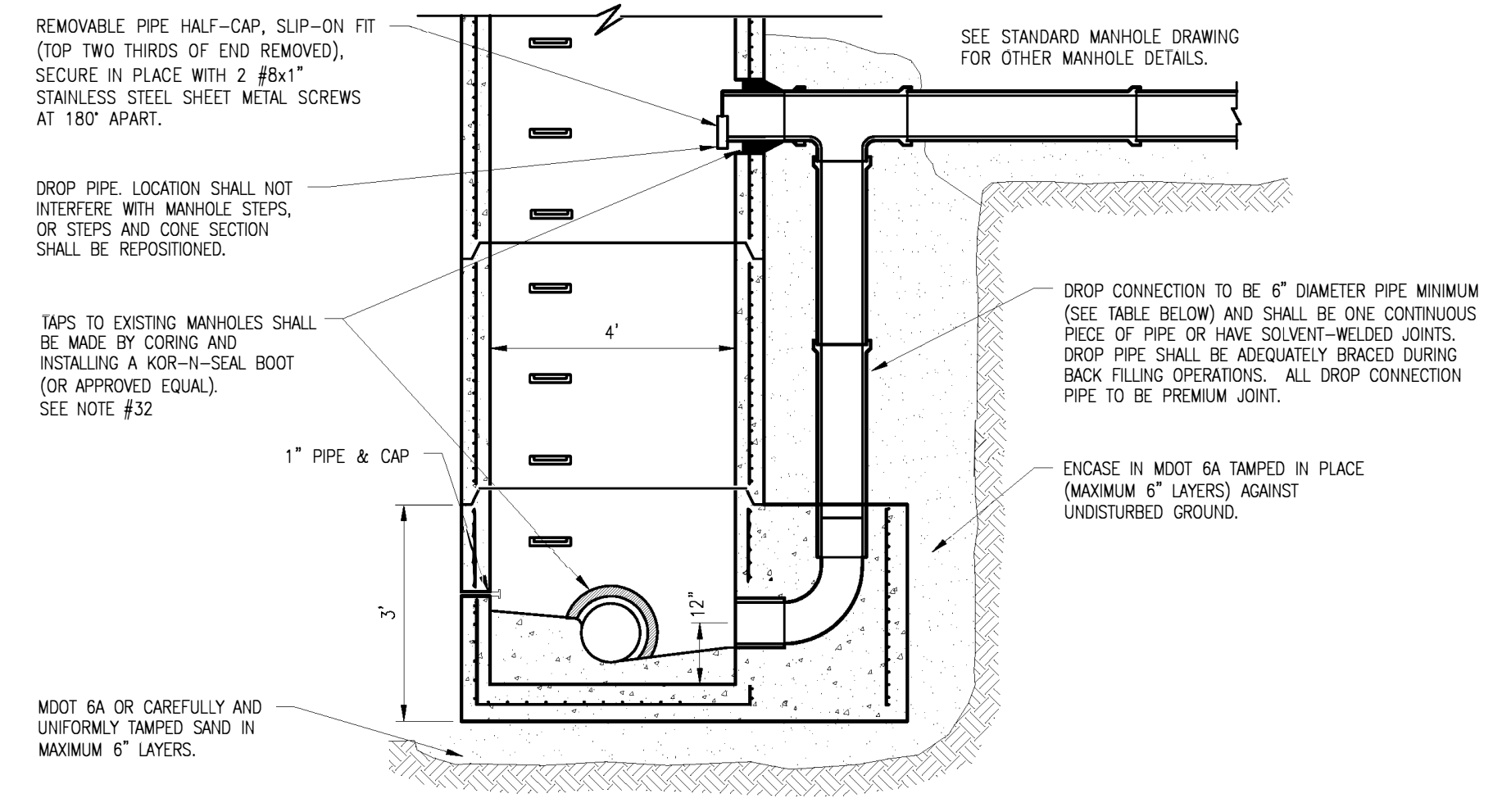
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EXISTING MANHOLE EXTERNAL DROP CONNECTION

SEE NOTES #29, #30 AND #32

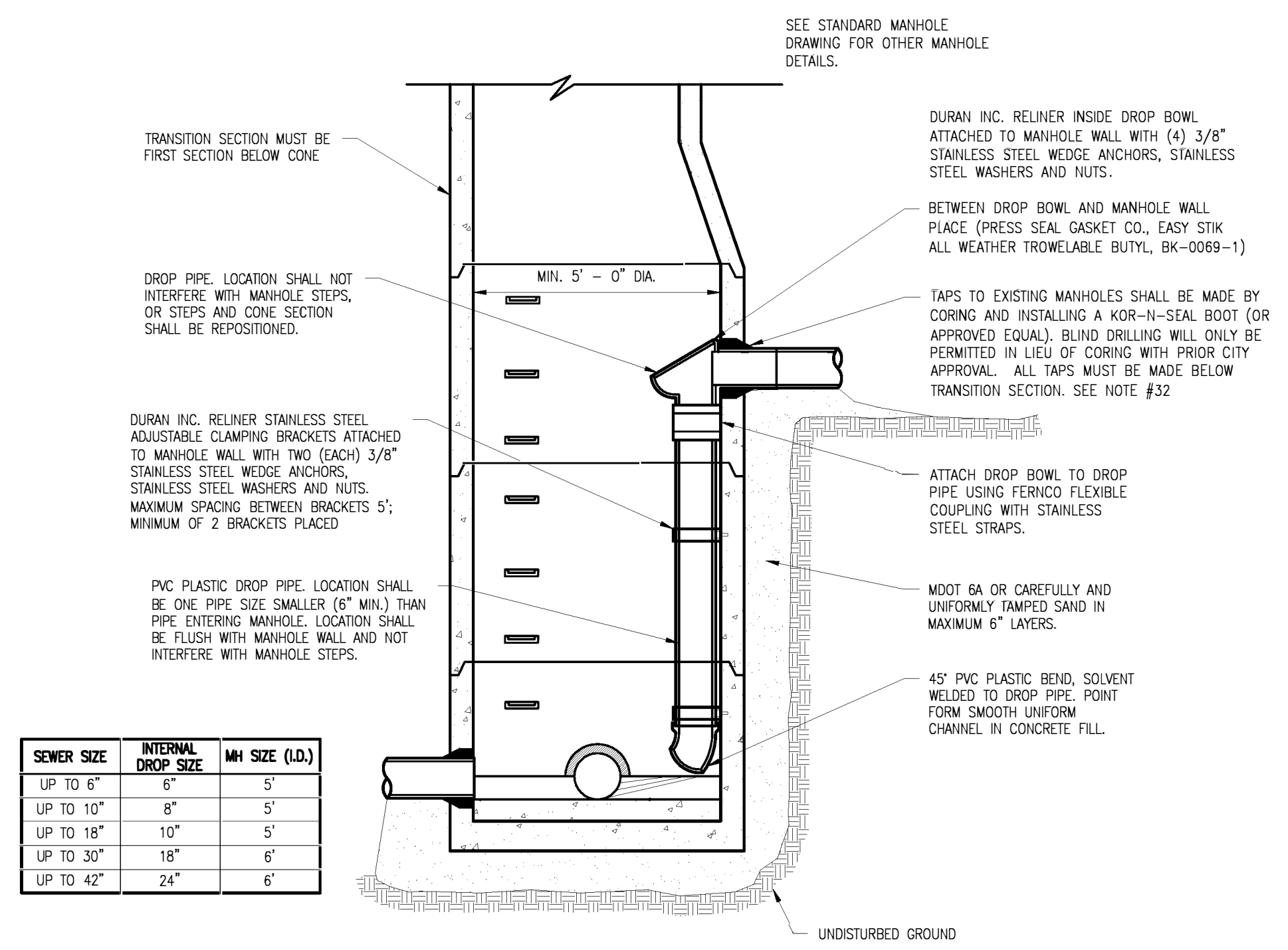
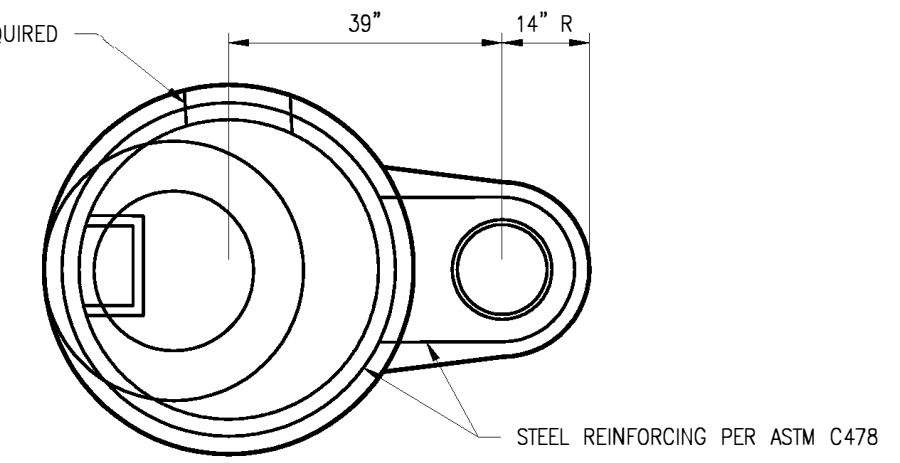
SEWER SIZE	EXTERNAL DROP SIZE	MH SIZE (L.D.)
UP TO 6"	6"	4'
UP TO 10"	8"	4'
UP TO 18"	10"	4'
UP TO 30"	18"	5'



EXTERNAL DROP MANHOLE CONNECTION WITH PRECAST BASE FOR NEW SEWER SYSTEM CONSTRUCTION

SEE NOTES #29, #30 AND #31

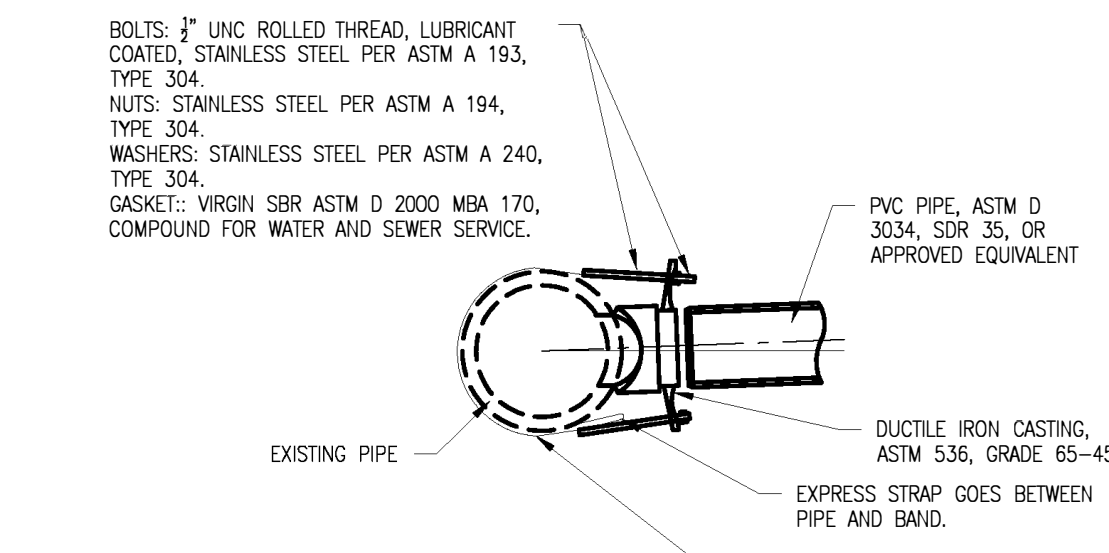
SEWER SIZE	EXTERNAL DROP SIZE	MH SIZE (L.D.)
UP TO 6"	6"	4'
UP TO 10"	8"	4'
UP TO 18"	10"	4'
UP TO 30"	18"	5'



INTERNAL DROP MANHOLE CONNECTION

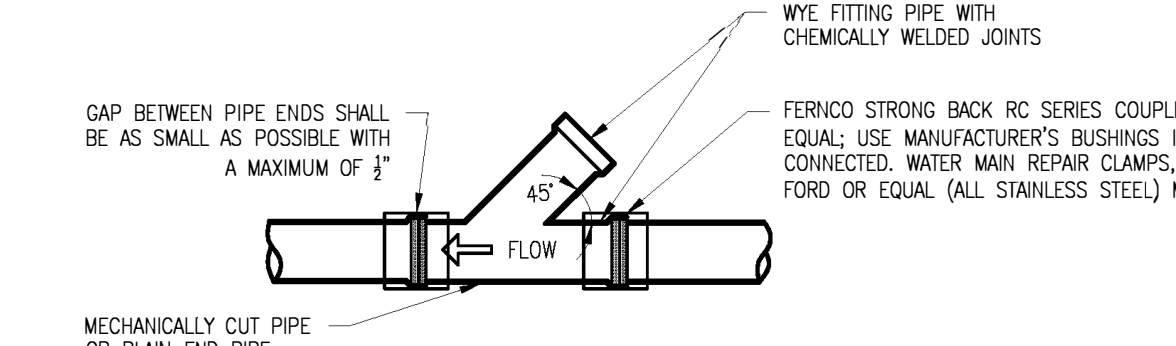
SEE NOTE #29

SEWER SIZE	INTERNAL DROP SIZE	MH SIZE (L.D.)
UP TO 6"	6"	5'
UP TO 10"	8"	5'
UP TO 18"	10"	5'
UP TO 30"	18"	6'
UP TO 42"	24"	6'



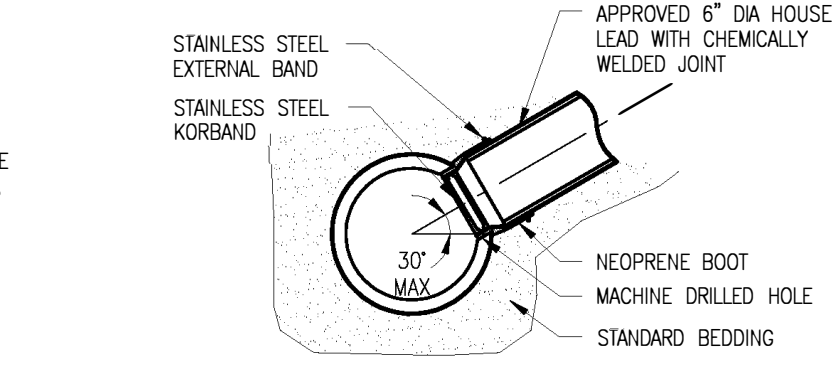
ROMA TAP FOR PVC PIPE

NOTES:
1) USE ROMAC INDUSTRIES, INC. STYLE "CS" SEWER SADDLE, OR APPROVED EQUIVALENT. 2) CORE DRILL AN APPROPRIATELY SIZED HOLE IN EXISTING PIPE TO ACCOMPLISH THE TAP.



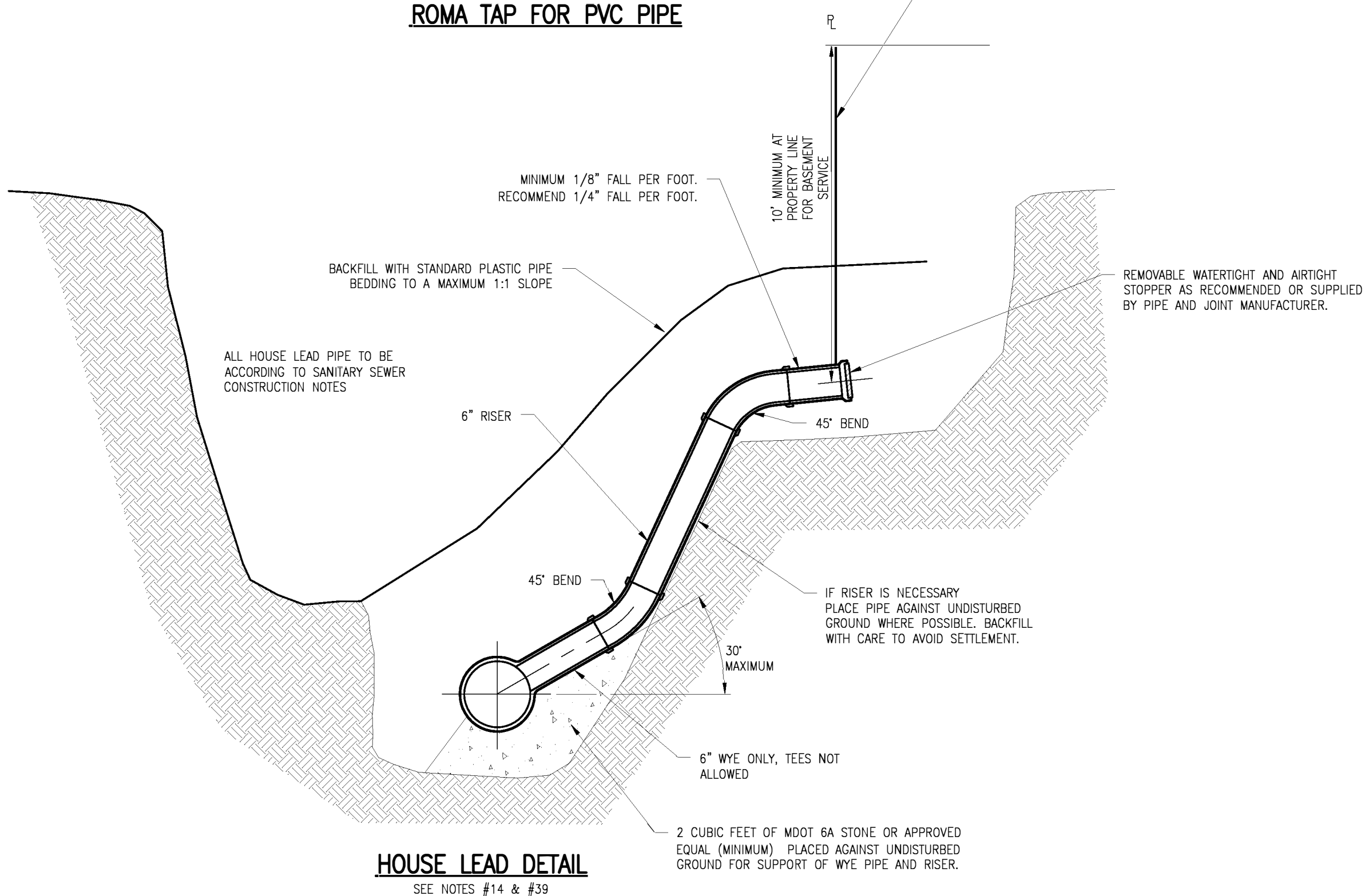
WYE PIPE INSERTION WITH FLEXIBLE COUPLINGS (RIDGID PIPE)

SEE NOTE #41



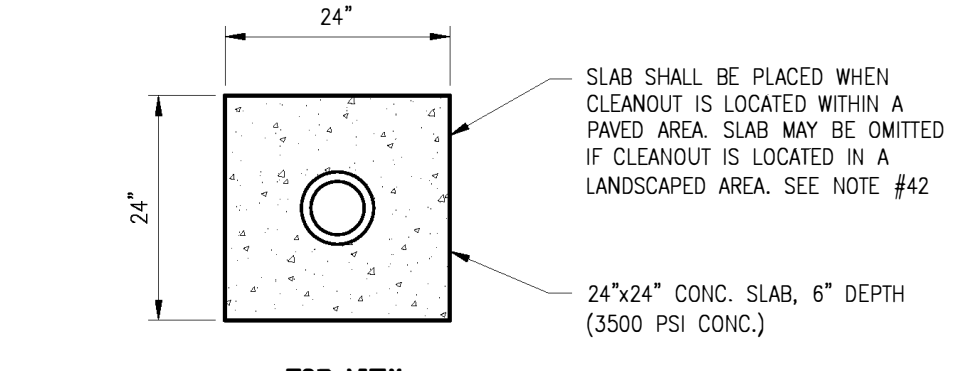
KOR-N-TEE TAP FOR CONCRETE PIPE

SEWER TAP-ALL SIZES OF MAIN SEWER, VITRIFIED CLAY PIPE

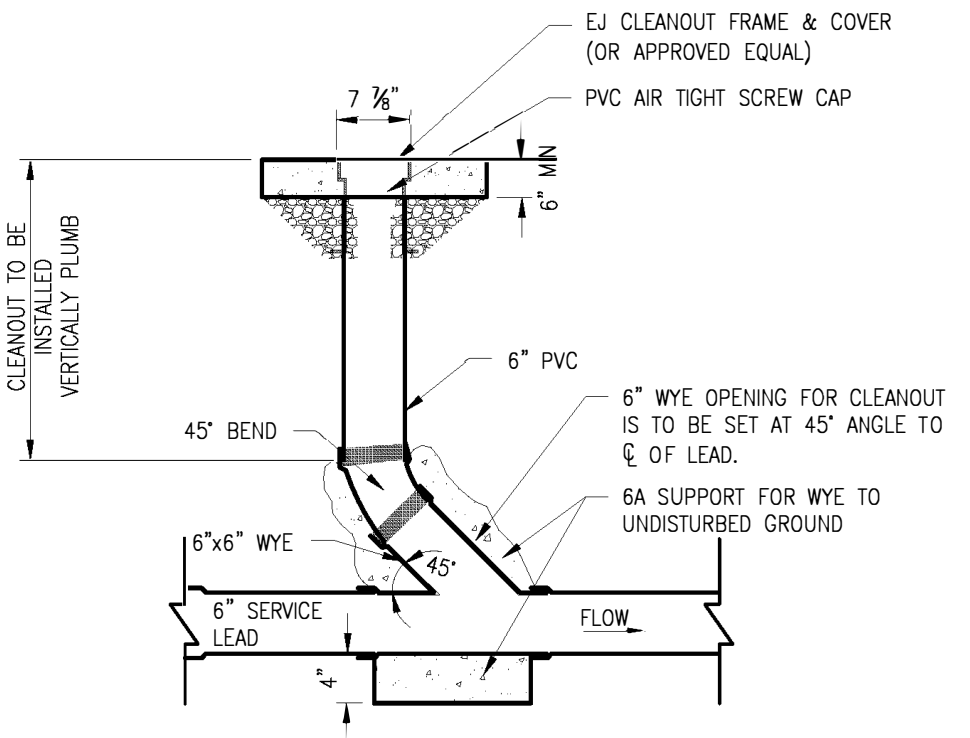


HOUSE LEAD DETAIL

SEE NOTES #14 & #39



TOP VIEW

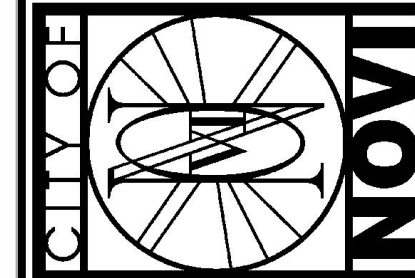


ELEVATION

DETAIL OF SANITARY SEWER CLEANOUT

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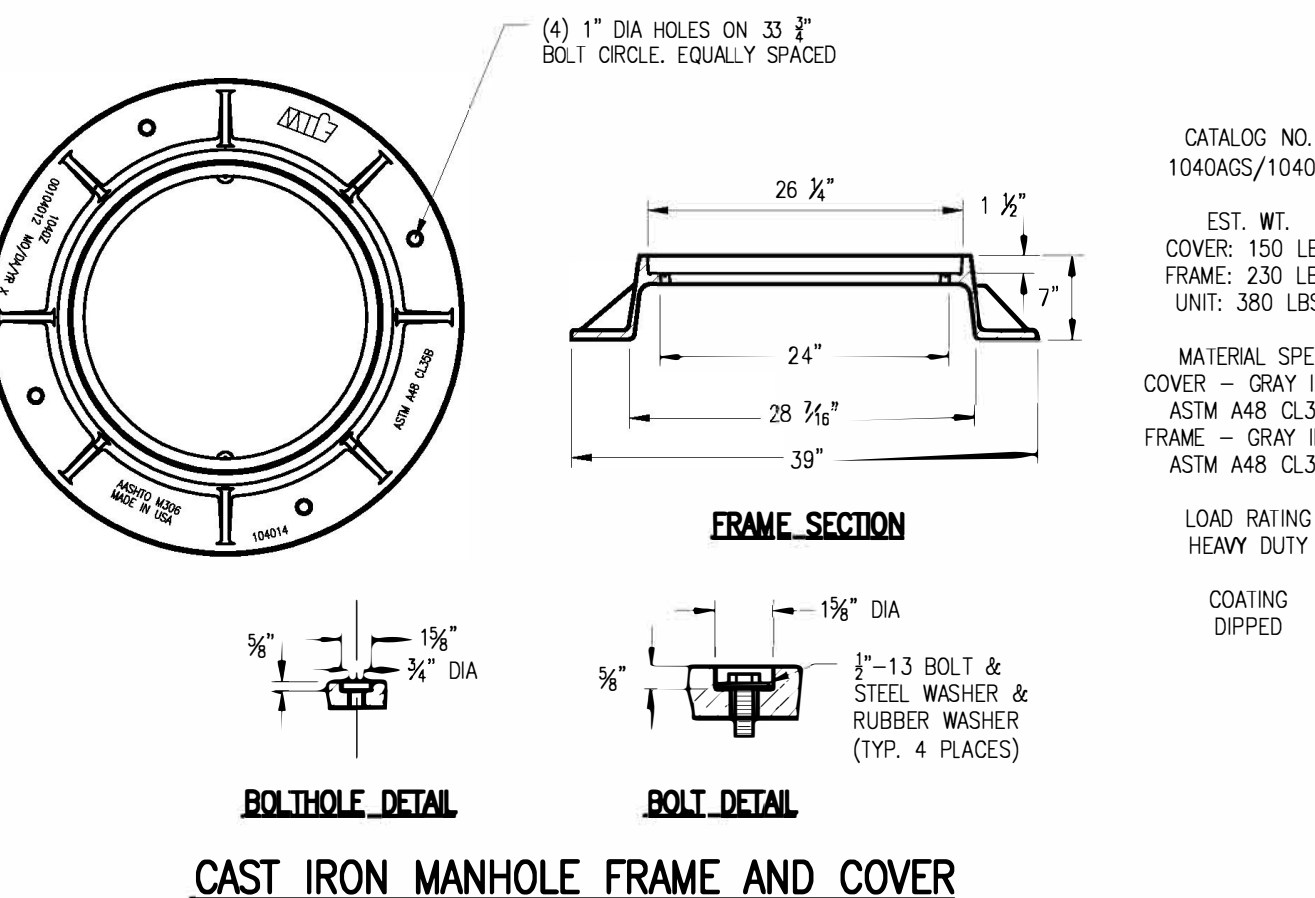
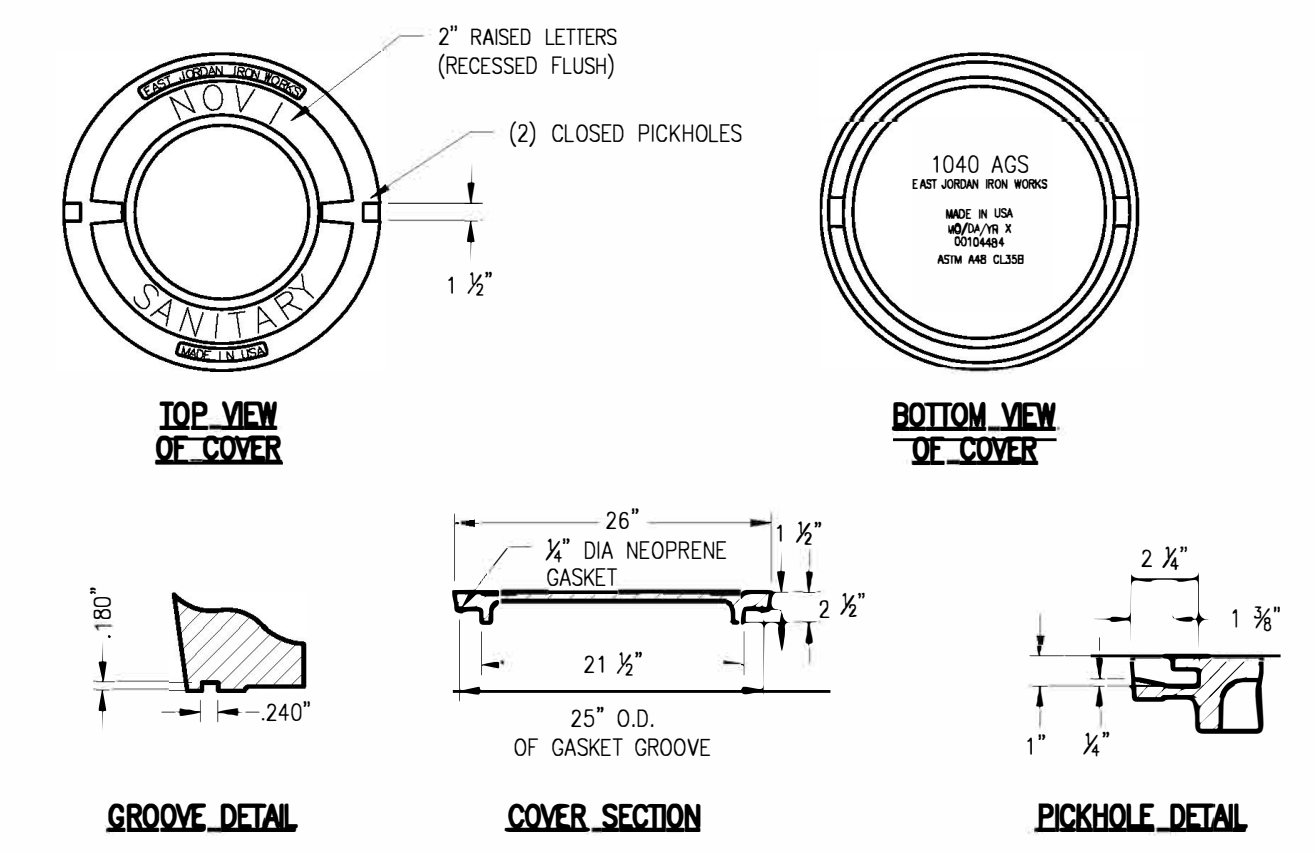
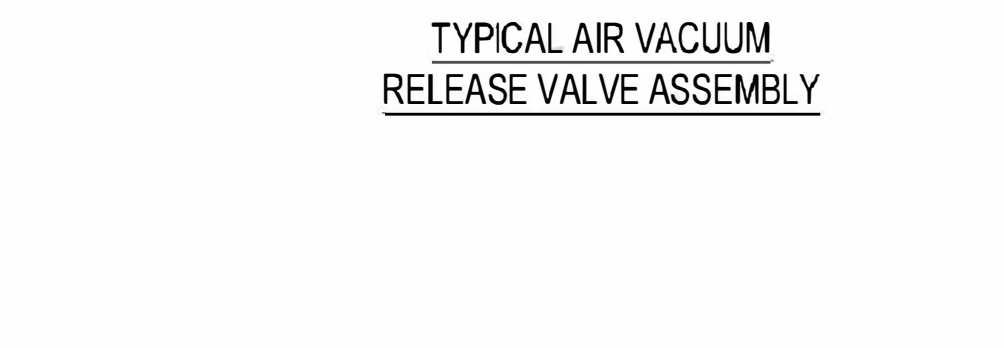
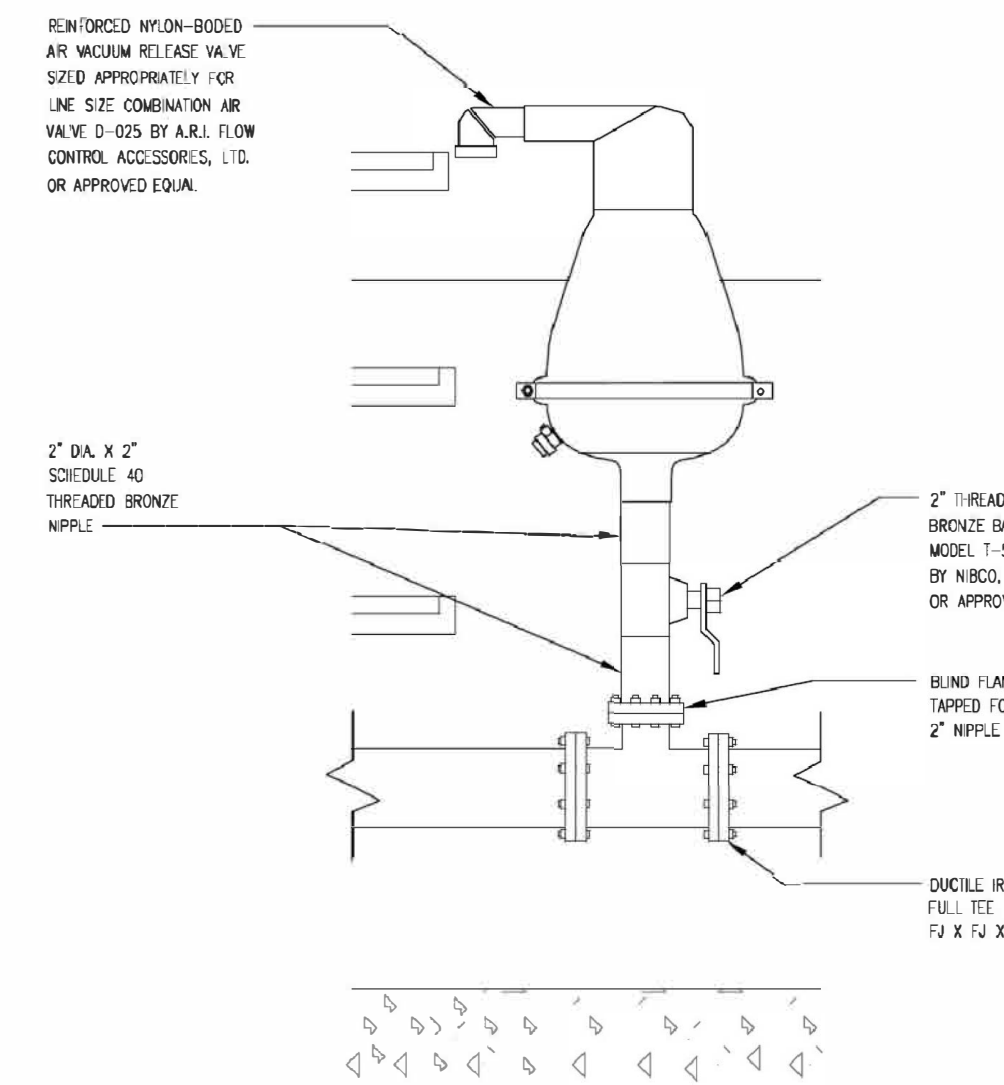
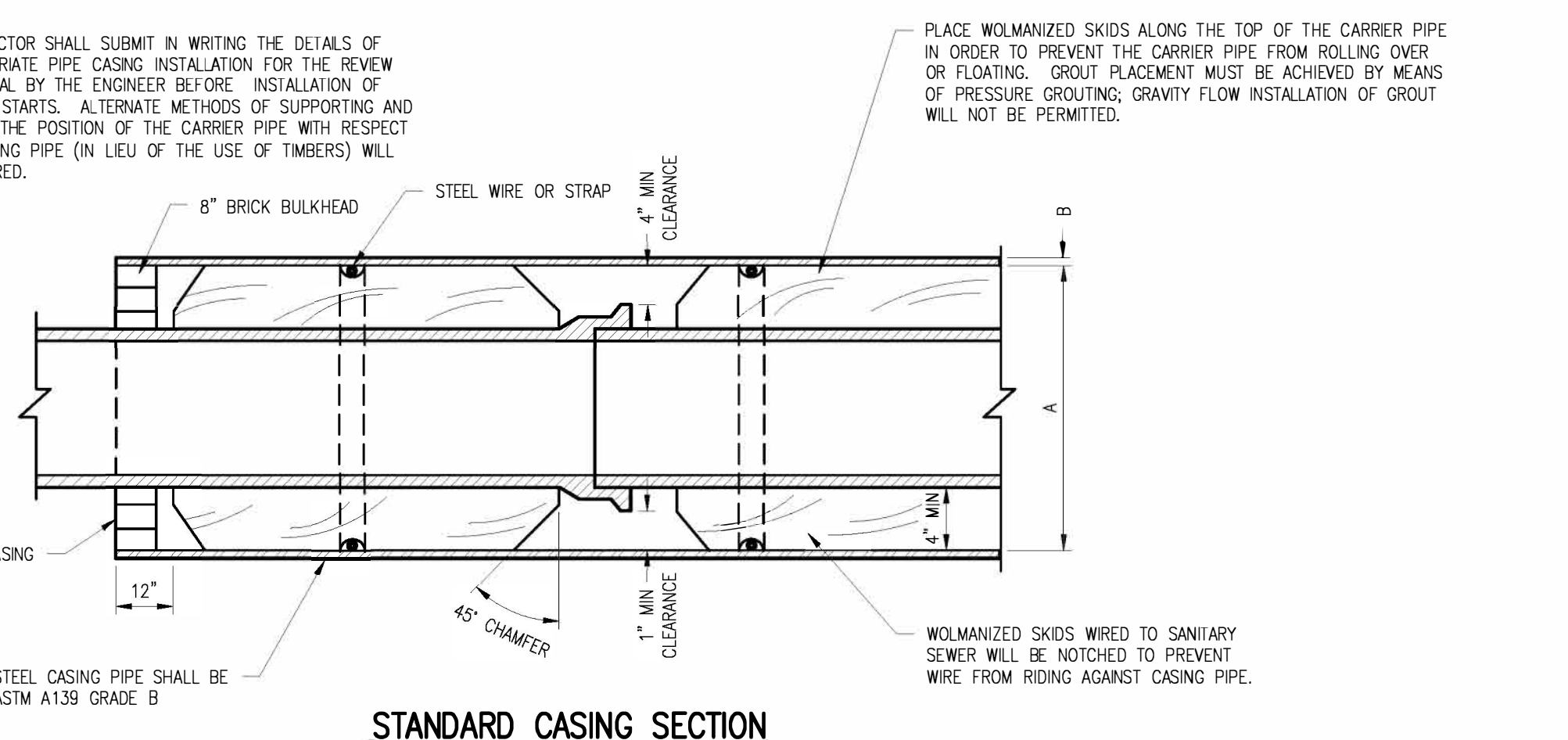
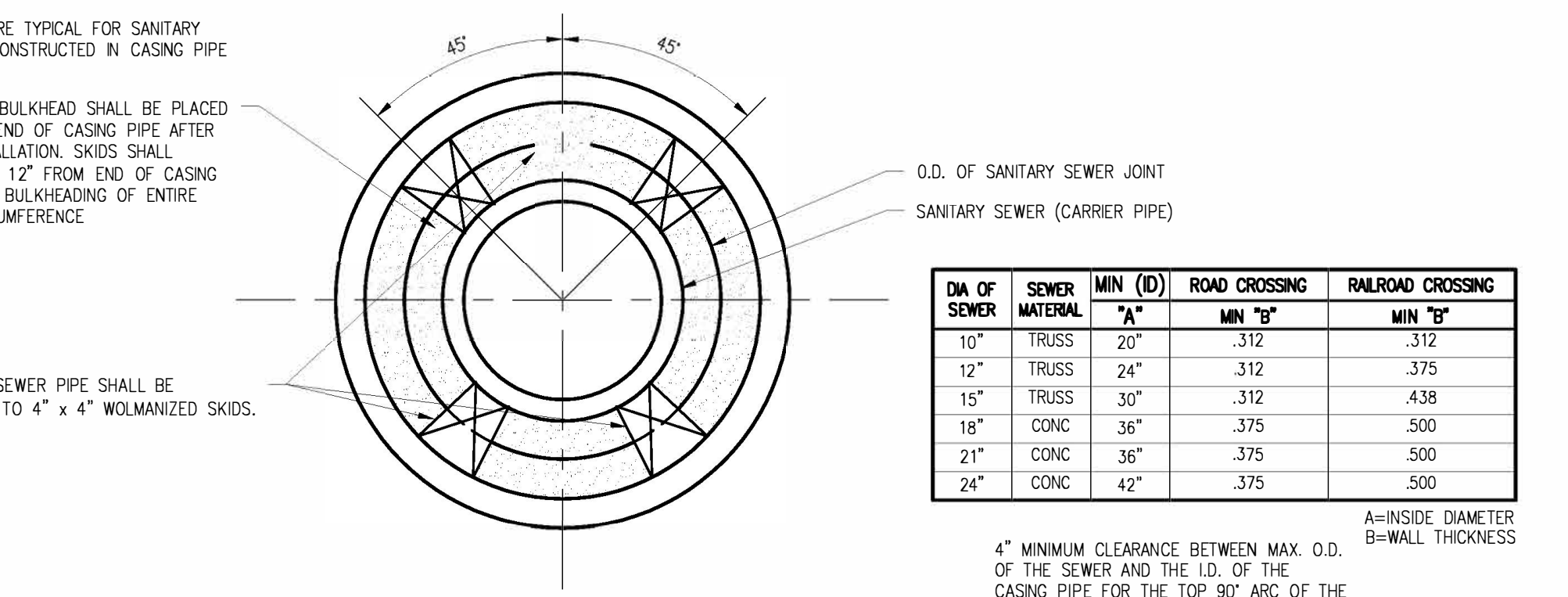
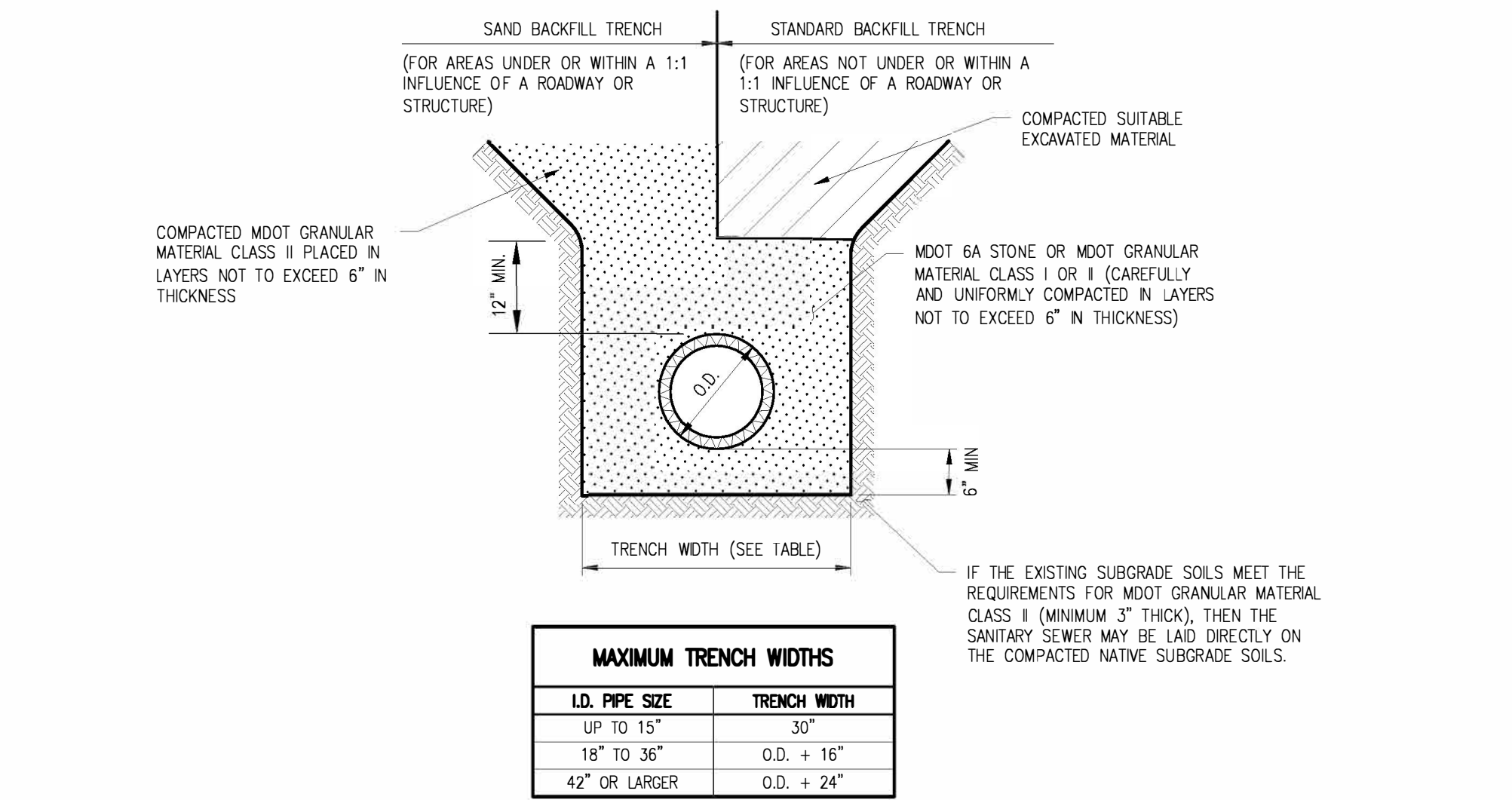
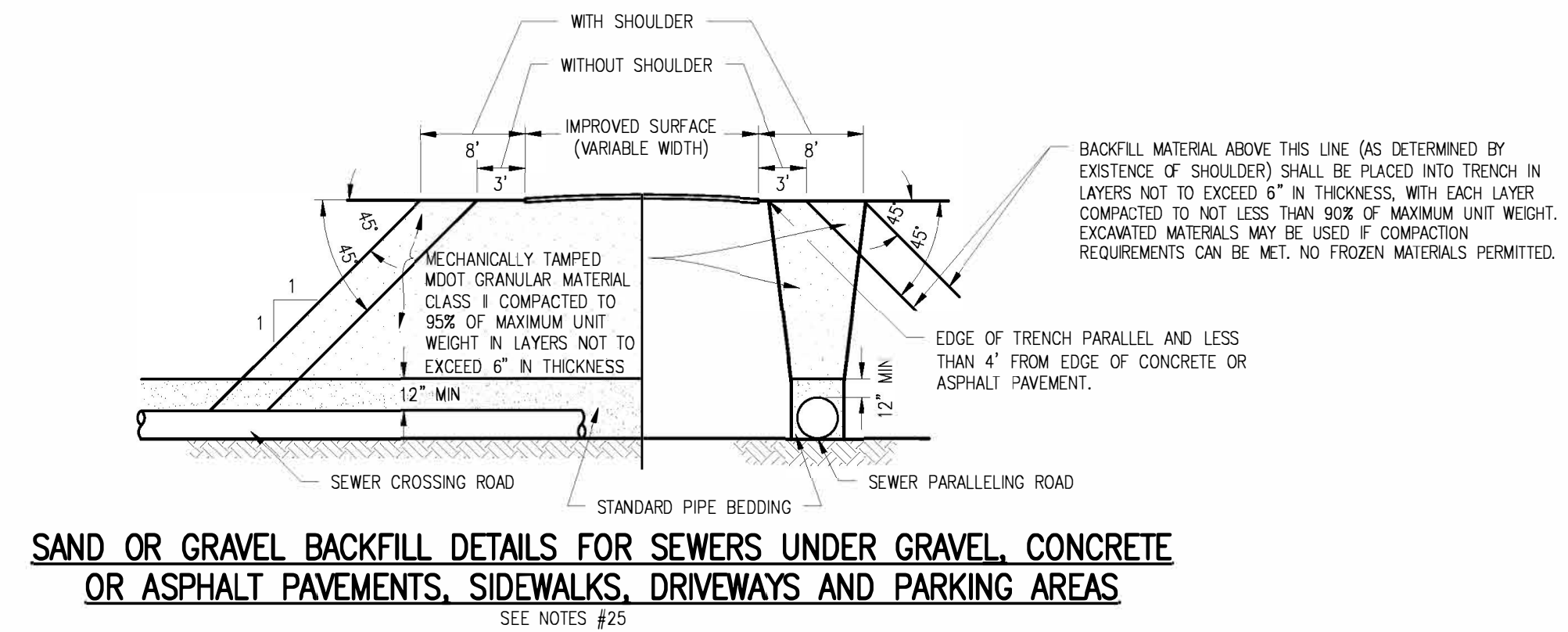
SANITARY SEWER CONSTRUCTION NOTES



CITY OF NOVI
 COUNTY: OAKLAND COUNTY
 TOWN: BEAUMONT
 RANGE: 1N 1E
 DATE: 3/20/14
 REVISIONS: SPALING REVISOR: 2/9/2018

CITY OF NOVI
 SANITARY SEWER
 STANDARD DETAILS

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 OF 3



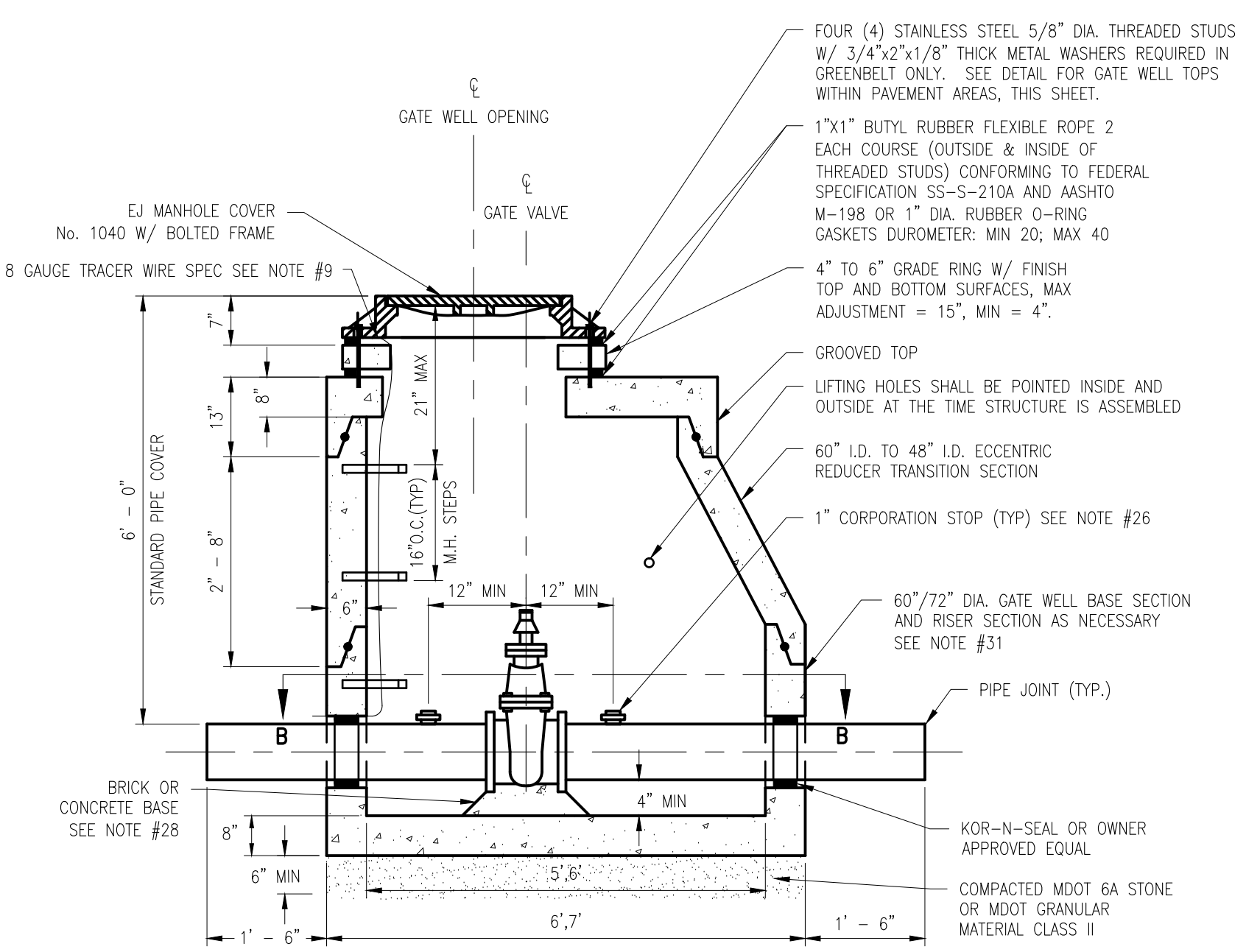
- GENERAL NOTES:**
- All construction shall conform to the current standards and specifications of the City of Novi and the Oakland County Water Resource Commissioner (O.C.W.R.C.). All sanitary sewer construction shall have full-time inspection supervised by a State of Michigan professional engineer provided by, or caused to be provided by, the City of Novi. The Contractor shall contact the City Consultant to schedule inspection two (2) full working days prior to the start of construction.
 - At all connections to O.C.W.R.C. sewers or to extensions thereto, and before the start of construction, the Contractor must request and have in his possession an approved Sewer Inspection Permit issued by the O.C.W.R.C. The Contractor shall be responsible for all O.C.W.R.C. charges and shall contact O.C.W.R.C. for their fees, bonds and deposit requirements. The Contractor shall notify the City's Consultant and the O.C.W.R.C. (248) 858-1110 three (3) full working days prior to the beginning of any construction. Final test must be witnessed by the O.C.W.R.C. personnel and must be scheduled in advance.
 - Three (3) working days prior to construction, the Contractor shall telephone MISS DIG (811 or 1-800-482-7171) for underground facilities locations and shall also notify representatives of other utilities located in the vicinity of the work.
 - No ground water, storm water, construction water, downspout drainage or weep tile drainage shall be allowed to enter any sanitary sewer.
 - 18 inch minimum vertical separation and 10 foot minimum horizontal separation must be maintained between sanitary sewer and water main.
 - No sewer installation shall have an infiltration exceeding 100 gallons per inch diameter per mile per 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 O.C.W.R.C. Standards. All testing gauges shall be calibrated every six (6) months, with the last certification date provided to O.C.W.R.C. prior to testing. Only Qualified Groove Tongue, O-Ring, Uniloc, Arvill, Nobel, Ring-Tite, Fluid-Tite or equal, as approved by O.C.W.R.C./City of Novi may be used for sewer joints. All joints shall meet requirements of ASTM C425 or C443.
 - At all connections to an existing sewer or to extensions thereto, a temporary watertight bulkhead with a threaded, capped or valved 1 inch diameter pipe to permit measuring infiltration shall be provided to be removed only after directed by the engineer. A 12 inch temporary sump and a watertight mechanical bulkhead shall be installed on the first manhole upstream of the proposed connection. The temporary sump shall be filled in after successful completion of any infiltration test up to the standard fill provided for the flow channel, and the bulkhead shall be removed after directed by engineer. Infiltration testing is required for all sewers twenty-four (24) inch diameter and greater, or for all sewer pipe diameters where the ground water level is seven (7) feet above the top of the sewer pipe.
 - When connections are made to sewers carrying fluids, special care must be taken that no part of the work is built under water. A flame or dam must be installed and pumping maintained, if necessary, and the new work kept dry until completed and any concrete or mortar has set up.
 - A NASSCO PACP formatted video of the interior of sanitary sewer 8" or greater in diameter (with top and lead location) shall be submitted to and approved by the City's Consultant prior to final acceptance. Said video shall be obtained a minimum of 30 days after construction is completed and by a NASSCO PACP Certified CCTV Contractor. Typical items to be reviewed on the videotape will include pipe deflections, pipe settlements, lead connections, joints and pipe cleanliness. If the video review reveals unsatisfactory conditions, the Contractor shall correct the condition at his own cost and shall then re-video the affected pipe for review by the City's Consultant.
 - The completed installation shall at no point have out-of-round pipe deflections greater than 5%. Deflectometer or go/no-go gauging tests will be required prior to sewer acceptance.
 - The materials specified below may be substituted with an approved equal as determined by the City. It is at the sole discretion of the City to determine if a material is acceptable and can be utilized. Written authorization must be obtained prior to ordering or installing the approved equal.

- SANITARY SEWER NOTES:**
- MATERIALS AND CERTIFICATIONS**
- Truss Pipe and Fittings shall be as described under the current ASTM D2680. Appendix XI of said specification shall be as modified by the bedding requirements outlined below.
 - Solid wall pipe for 6" house connection sewers shall be PVC SDR 23.5 conforming to ASTM D3034 or ASTM D2665. Solid wall pipe shall be installed in accordance with bedding requirements outlined below.
 - Pipe material utilized for force main shall be submitted to and approved by the City prior to installation.
 - All pipe shall be certified by the manufacturer to meet the applicable ASTM specification requirements. Certification forms, together with a report of the test results, shall be provided to the inspector with pipe deliveries and copies shall be forwarded to the Engineer or the Owner. Certification forms shall include project name, location, Contractor, and test lot number. Lot sizes shall be acceptable to the Engineer.
 - All pipe and fittings shall be suitably marked to provide manufacturer's name, extrusion code (including date and location of manufacture), ASTM designation, type of plastic, nominal diameter, and SDR number, where applicable. Fittings however, need not contain the extrusion code. Pipe shall have a "home" mark. Truss Pipe with an absence of filler material at the ends greater than 1/4" deep shall be subject to rejection or acceptable repair.
 - O.C.W.R.C./City of Novi approved flexible manhole joints shall be used. Where adapters to other materials are required, only approved adapters and joints may be used. Where the connections are made to existing manholes, a rubber waterstop shall be used around the pipe.
 - No day pipe will be allowed for main line sanitary sewer or for sanitary sewer leads.

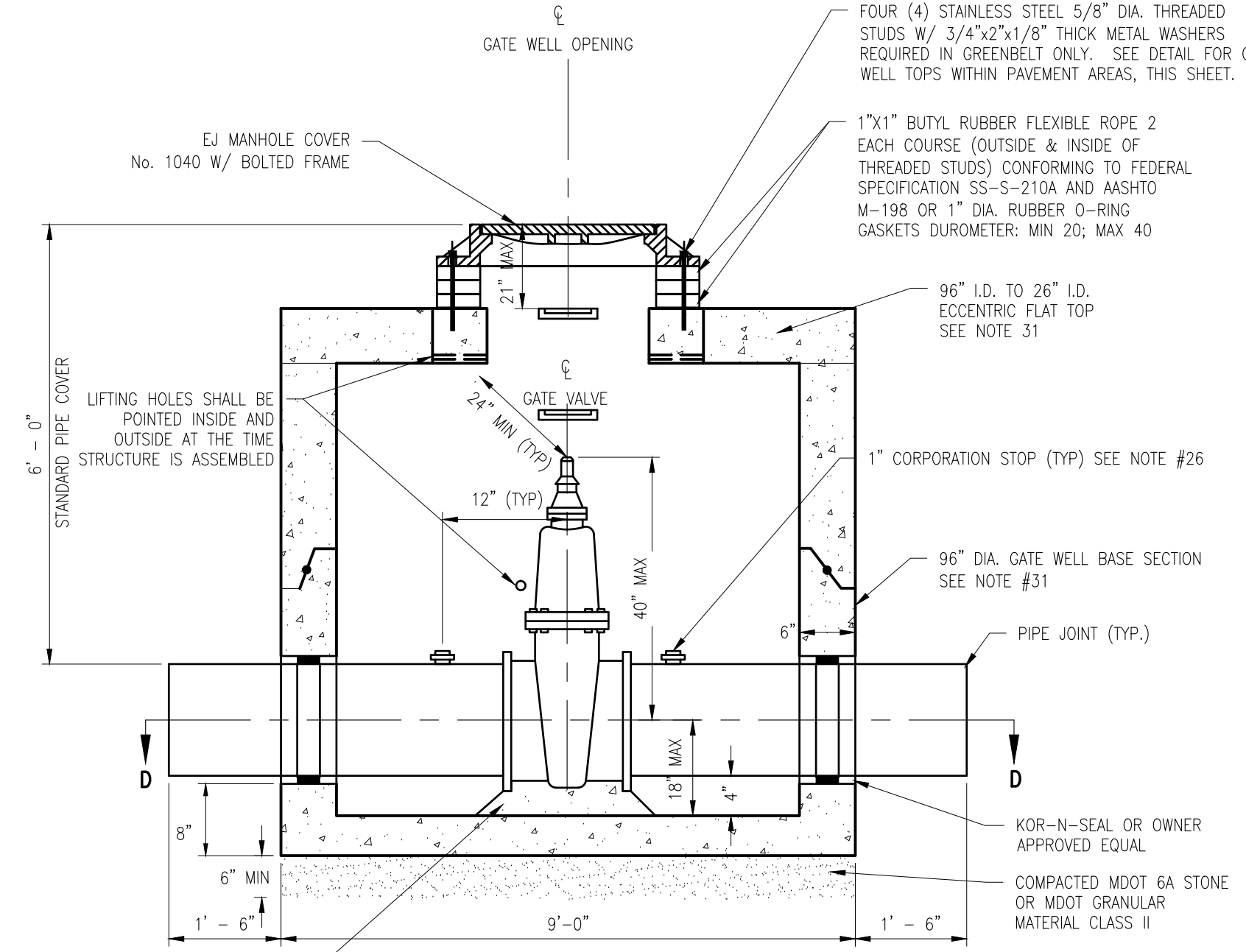
- BEDDING**
- Bedding for Truss Pipe and solid wall pipe shall be in accordance with the current ASTM D2321, except, (1) only MDOT Class I and Class II granular materials or MDOT 6A stone may be used, (2) embedment shall extend to minimum 12" above top of pipe, and (3) flooding or puddling shall not be used. The use of flexible and semi-flexible pipe requires that the bedding provide unyielding side support and complete bedding contact under pipe haunches. Bedding material must be properly placed and compacted to provide lateral restraint against deflection in the pipe diameter. Pipe must be bedded to the true line and grade throughout its length. Bell holes shall be provided where required.
- Where unstable bottoms are encountered, the Contractor shall undercut to stable ground and construct a foundation consisting of MDOT 6A stone to act as an impervious mat to prevent migration or vertical movement of unstable soils or bedding materials. Where trench shoring, plates, or a trench box are used due to severe ground conditions, all voids to the side and below the top of the pipe caused by the shoring, plates, or box withdrawal shall be completely filled or the supports left in place below the top of the pipe.
 - Due to potential damage to exterior walls of Truss Pipe or solid wall pipe, particularly under cold weather conditions, if rocks, frozen material, or large objects strike the pipe, the Contractor shall carefully avoid dumping any materials other than approved bedding sand or stone on the pipe until 12" cover is placed on it, particularly under cold weather conditions. Pipe walls and ends shall also be protected from abrasion and damage during handling, and shall be fully inspected just prior to placing in the trench.

- Care shall be taken during bedding compaction to avoid distorting the shape of the pipe or damaging its exterior wall. Mobile equipment shall not be used over the pipe trench until 48" of cover has been placed.
- BACKFILL**
- Backfill shall be compacted above pipe or as indicated on construction drawings. Trench backfill shall be a suitable material and shall be free of any organic materials and rocks larger than 3" in size. Under road surfaces, pavement, sidewalks, curbs, driveways and areas where trench is within a 1:1 influence of the pavement, sand backfill shall be used which shall consist of MDOT granular material Class II compacted in layers not to exceed 6" in thickness to a density of 95% as determined by MSHTD 1799. All backfill placed within a 1:1 influence of structures shall be approved sand, placed in 6" layers and compacted. Trenches which are to be left open overnight shall be enclosed with suitable fencing and lighted barricades, unless otherwise approved by the city.
- JOINTS**
- Joints for PVC Truss Pipe, PVC solid wall pipe and fittings shall be of the elastomeric gasket push-on type. Such joints shall conform to the current ASTM D3212 and the pipe manufacturer shall file with the O.C.W.R.C. a copy of certified test results of its jointing system prior to use. Gasket joints shall be installed in accordance with procedures specified by the pipe manufacturer, such that the gasket will be compressed (not displaced) in the joint to form a positive seal. Care shall be taken to insure all joints be pushed to the full "home" position and held together in the "home" position during any grade or line adjustments.
- CUTTING AND HANDLING**
- Cutting of pipe lengths, where required, shall be performed with tools or equipment that will provide a neat, perpendicular cut without damage to the plastic or the filler material. All burrs shall be removed by the use of a file, knife, or abrasive paper. Spigot ends on cut pipe shall be beveled similar to factory beveling to prevent gasket damage.
 - Bowing or warping of Truss Pipe or solid wall pipe can occur with temperature fluctuations. The Contractor shall store and protect the pipe to minimize bowing. Nominal 1/2" or longer pipe lengths having deviations from straight greater than 1", as measured along a straight line, shall not be used.
- STRUCTURE NOTES:**
- All new manholes shall have O.C.W.R.C./City of Novi approved flexible, watertight seals where pipes pass through walls. Manholes shall be precast sections with modified tongue and groove joints with rubber gaskets and shall conform to ASTM C478. Precast manhole sections shall be O.C.W.R.C./City of Novi approved modified eccentric cone type. All manholes shall be provided with watertight covers.
 - At all connections to manholes on O.C.W.R.C. sewers or extensions thereto, interior drop connections will be required when there is a difference in invert elevations.
 - The difference in the invert elevations at a drop connection must be a minimum of 18". If an 18" minimum cannot be obtained, the sewer must be made steeper in order to achieve matching invert elevations for all incoming and outgoing sewers.
 - All new manholes requiring an exterior drop connection shall be constructed using a manhole base with a precast drop as shown on sheet 2 of these details.
 - Wherever existing manholes are to be topped, the top shall be made by coring. The contractor shall place a NOR-SEAL boot (or approved equal) after coring is completed. Blind drilling will only be permitted in lieu of coring with prior approval from both O.C.W.R.C. and City of Novi.
 - All manholes constructed or adjusted as part of the system maintained by the City of Novi shall be provided with watertight covers as depicted on this detail sheet.
 - New manholes constructed directly on O.C.W.R.C. sewers shall be provided with covers reading "Oakland County Water Resources Commissioner - Sanitary" in raised letters per detail in the O.C.W.R.C. specifications.
 - New manholes built over any existing sanitary sewers shall have monolithic poured bottoms.
 - A proper channel shall be constructed within the existing structure at the connection point to the existing system. Channel shall be constructed to create the least amount of turbulence. Any portion of the existing structure which would interfere with such construction shall be removed. When forming a concrete channel in a precast structure that utilizes a flexible joint pipe connector, the channel shall be placed so as not to interfere in any way with the flexibility of the joint. The channel shall be constructed the same size as the inside diameter of the existing pipe.
- SANITARY SEWER LEAD NOTES:**
- All building lead work must be performed under City of Novi inspection. The Department of Public Service conducts inspection of lead from ROW line to building connection.
 - No sanitary sewer may be used as a dewatering outlet.
 - All building leads and risers shall be 6" SDR 23.5 PVC with rubber gasket joint (ASTM D2665), or a City of Novi approved equal pipe and joint. Sewer pipe openings shall contain factory installed premium joint material of the type identical to that of the building lead pipe used. Building leads to be furnished with removable airtight and watertight stoppers. Taps to existing PVC or Truss Pipe shall be made with wye saddle taps.
 - Where an existing building lead is being extended, dissimilar types and sizes of pipe shall be joined using an O.C.W.R.C./City of Novi approved adapter. Allowable types of sewer pipe adapters are the Femco Adapter or the Femco Flexible Coupling.
 - Field taps of existing sanitary sewers shall be made by installing a wye fitting for house connections. Femco fittings with stainless steel bands shall be used to secure the wye fitting to the sanitary sewer pipe. Bedding for house connection sewers shall be equal to that of the main sewer bedding. Risers in deep and unstable trenches should be bedded in MDOT 6A stone, or an approved equal, to avoid settlement. Concrete shall not be used for bedding. End caps or plugs shall be braced or anchored to withstand air test pressures. Caps or plugs shall not be chemically welded in place.
 - Where sanitary sewer cleanouts fall within a paved area (parking lot, service drive area, etc.), the cleanout shall have a cast iron cover that is centered in a 2'x2' (min.) concrete slab having a compressive strength of 3000 psi at 28-day cure time.

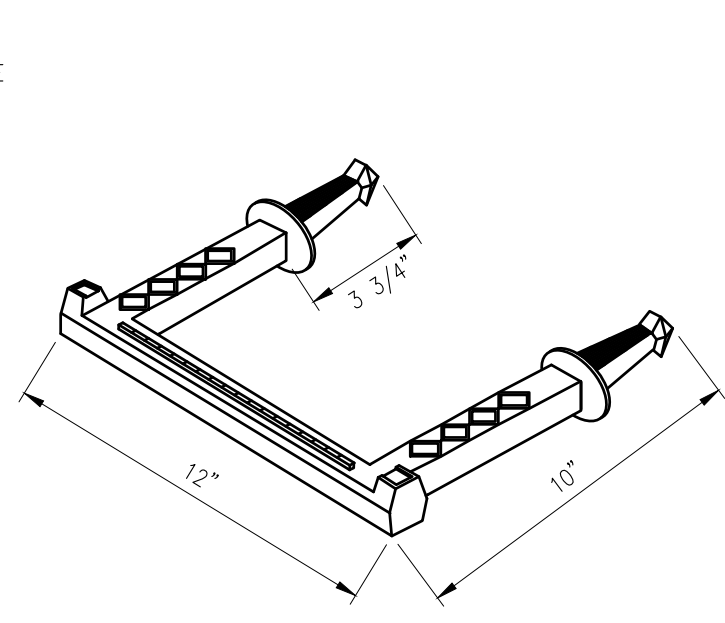
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5' AND 6' GATE WELLS
 (A-A)
 (SEE NOTE #29)

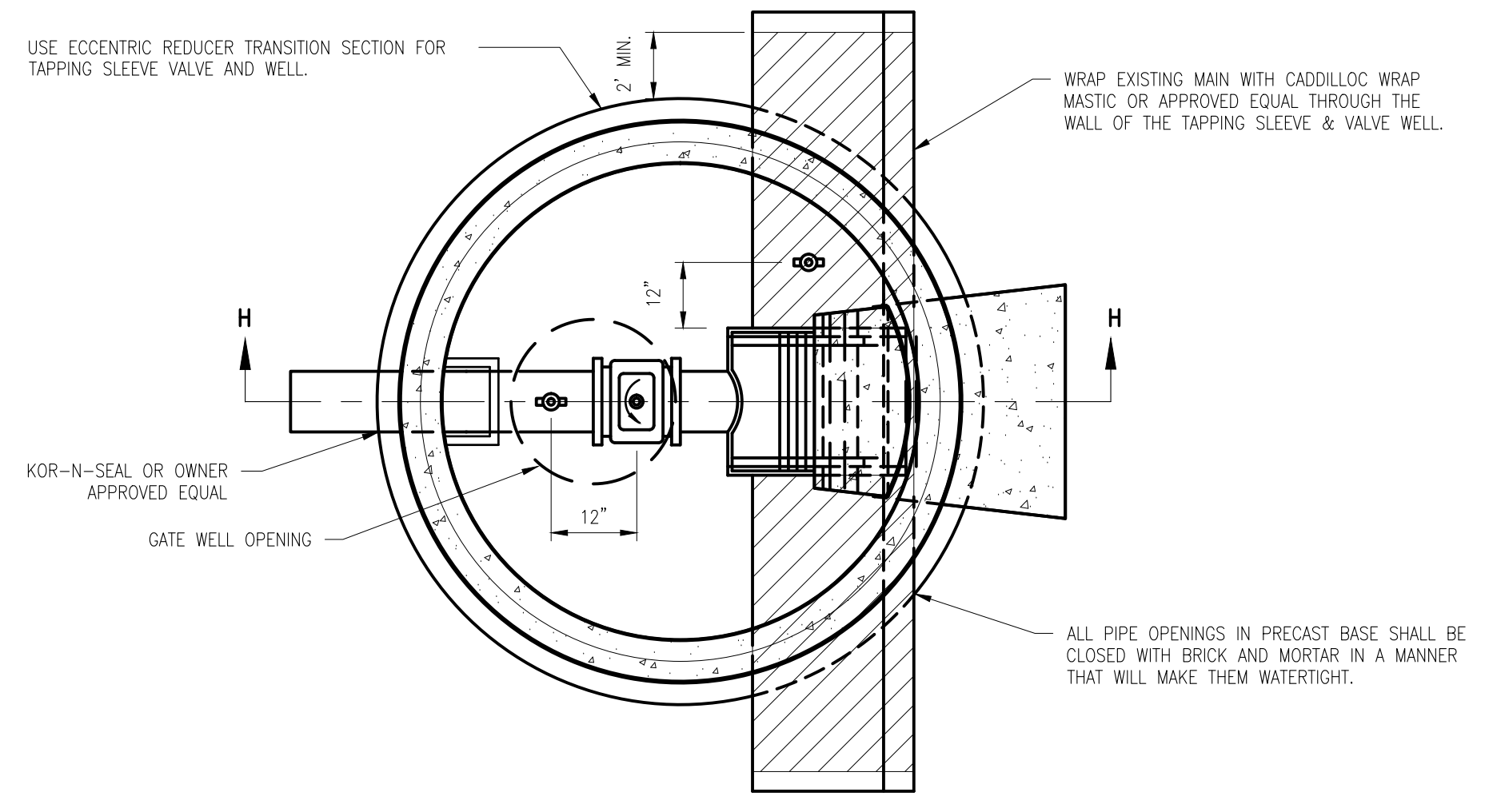


8' TYPICAL GATE WELL
 (C-C)

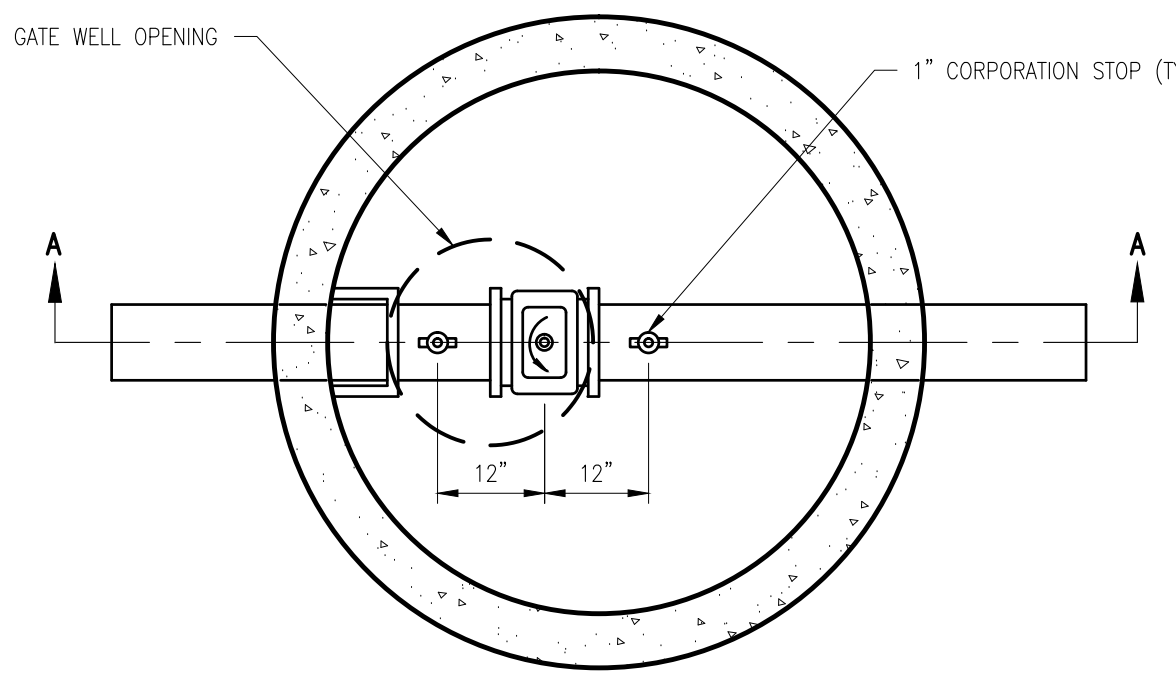


MANHOLE STEP

NOTE:
 MANHOLE STEPS TO BE POLYPROPYLENE COATED STEEL MEETING THE REQUIREMENTS IN ASTM A615 AND D4101, TYPE II, GRADE 48108, M.A. INDUSTRIES PS-1 OR PS-1B (OR APPROVED EQUAL) STEPS TO BE INSTALLED DURING MANHOLE MANUFACTURE. PLACE AT 16" CEN. ON CEN. 45° FROM CENTERLINE OF WATER MAIN. FIRST STEP TO BE PLACED AT A MAXIMUM DISTANCE OF 21" FROM THE FINISHED RIM ELEVATION.

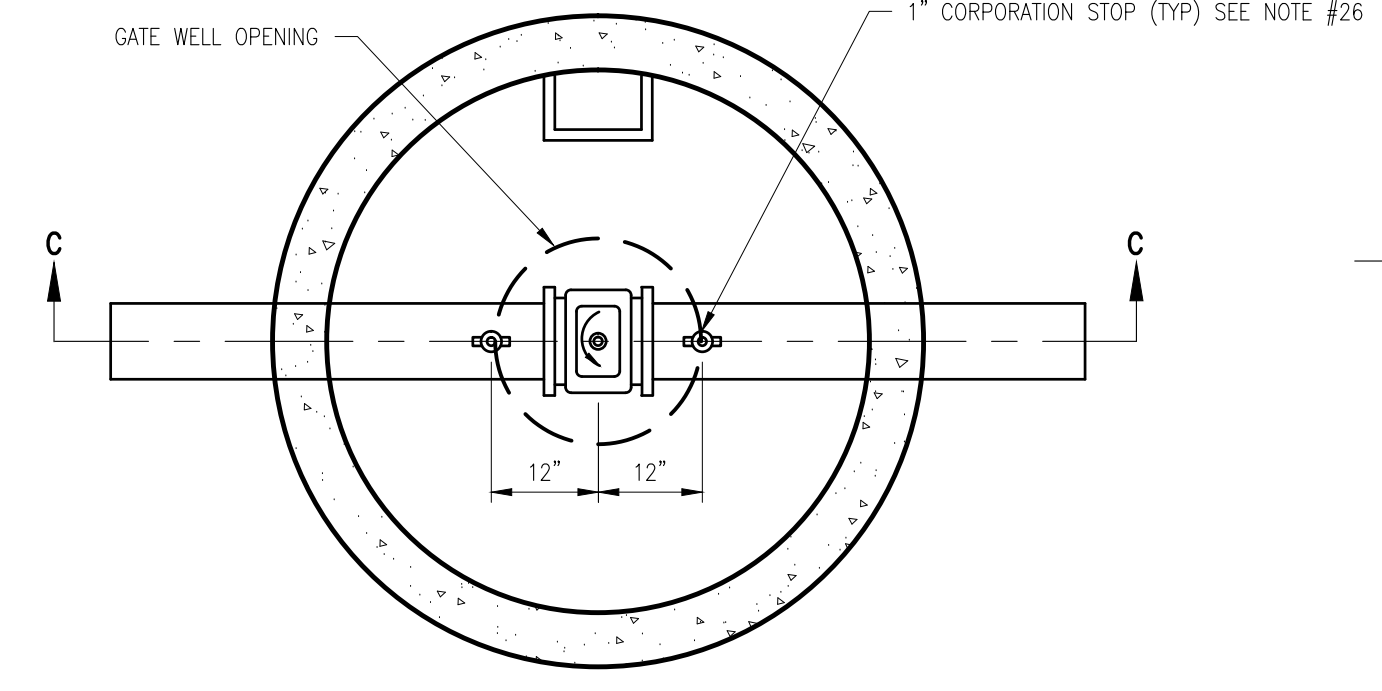


TAPPING SLEEVE VALVE & WELL TYPICAL
 (PLAN VIEW, I-I)
 (SEE NOTE #33)

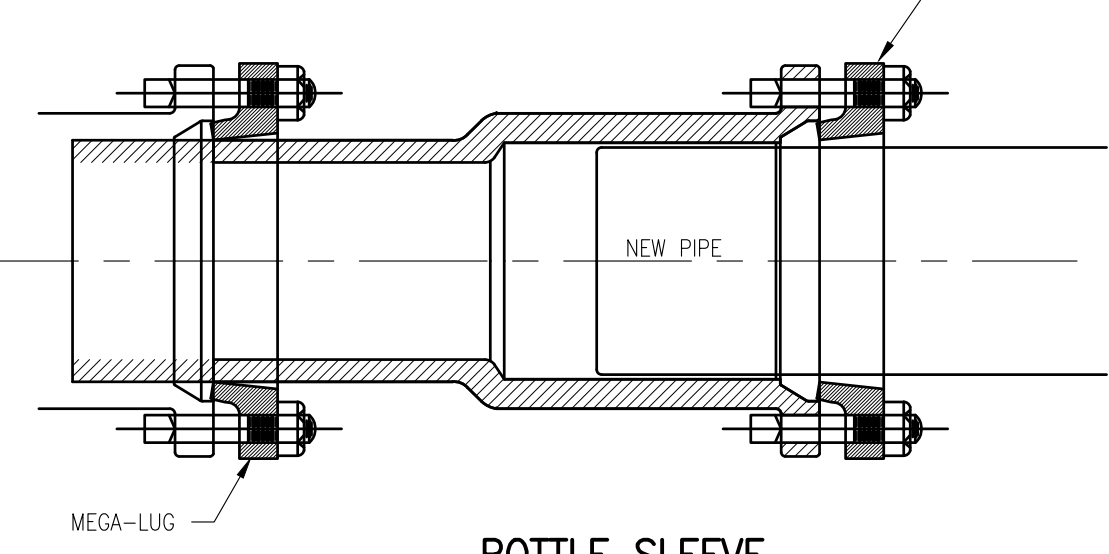


5' AND 6' GATE WELL TYPICAL
 (PLAN VIEW, B-B)

GATE WELL SIZING CHART	
MINIMUM GATE WELL INSIDE DIAMETER	WATER MAIN DIAMETER
5'	6" - 8"
6'	12" - 16"
8'	> 16"

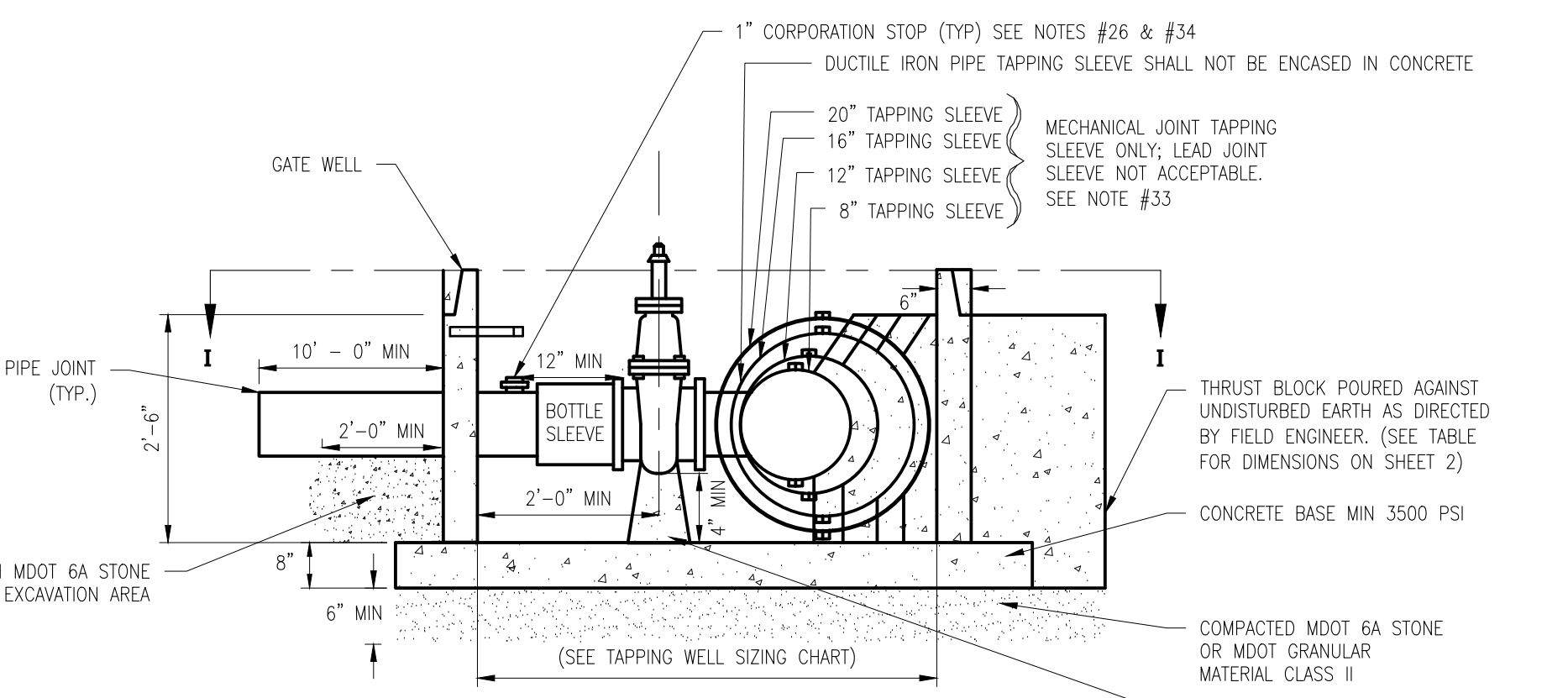


8' GATE WELL TYPICAL
 (PLAN VIEW, D-D)

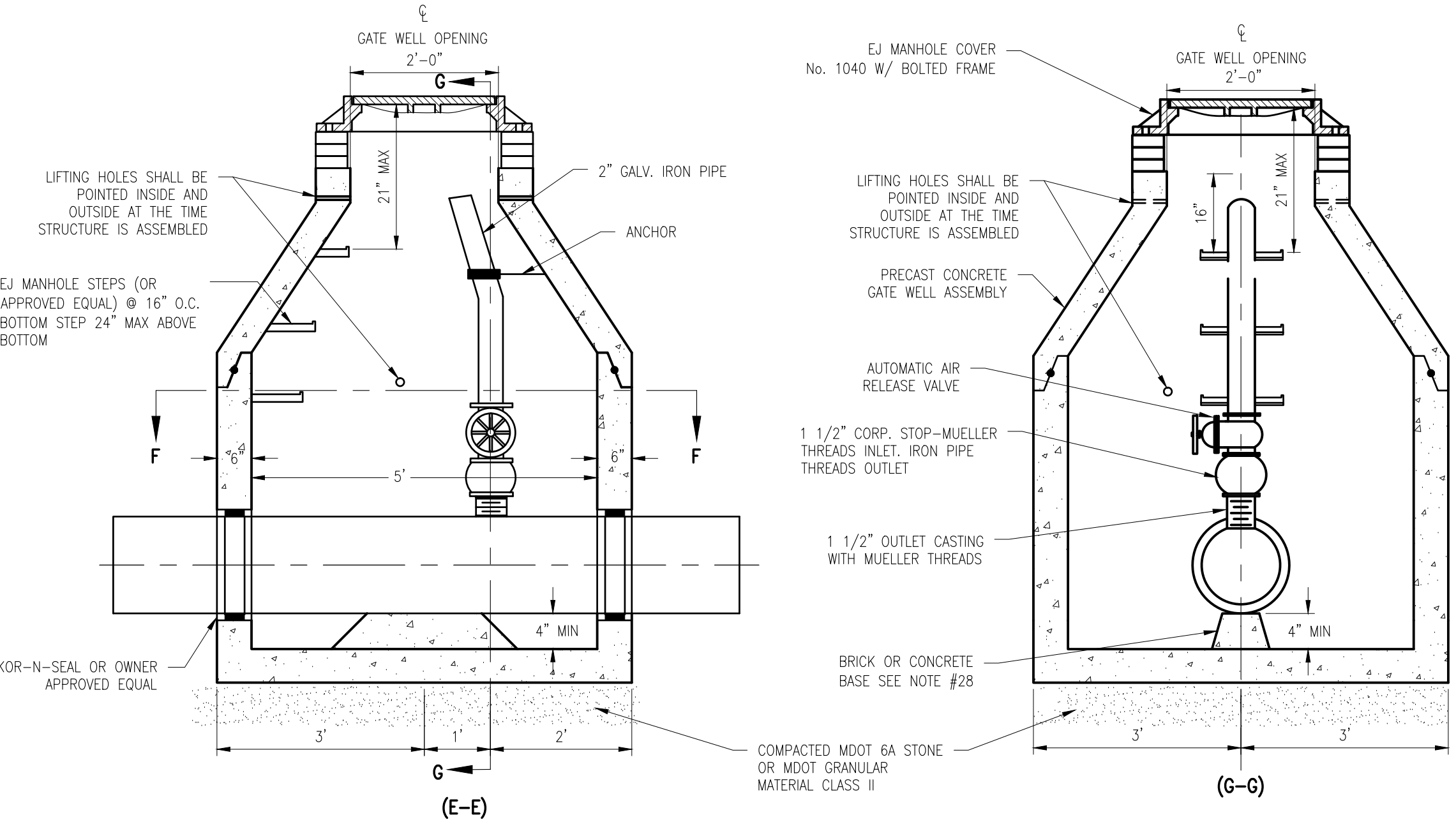


BOTTLE SLEEVE

NOTE:
 TYLER UNION MJ x PE DUAL-PURPOSE CUTTING-IN SLEEVE OR APPROVED EQUAL

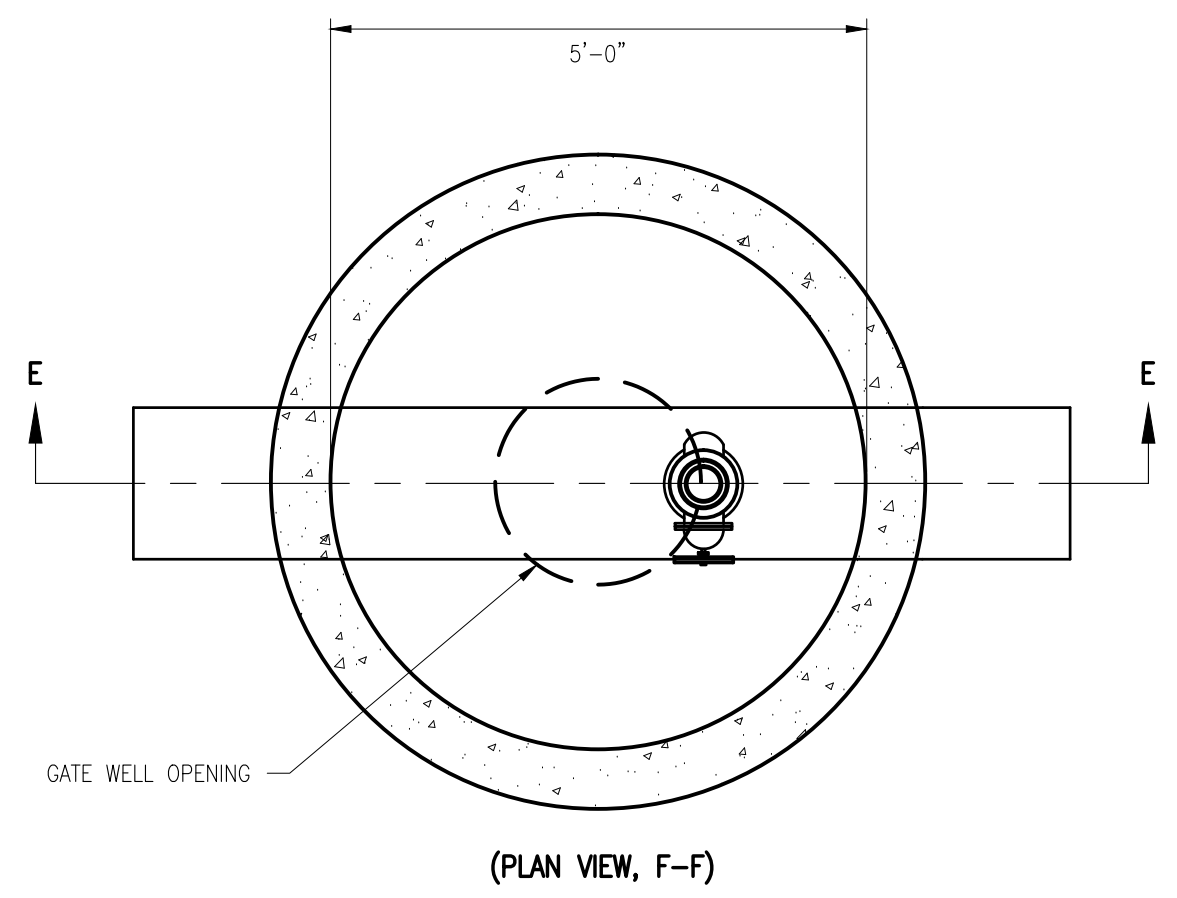


DUCTILE IRON PIPE TAPPING SLEEVE, VALVE & WELL
 (H-H)



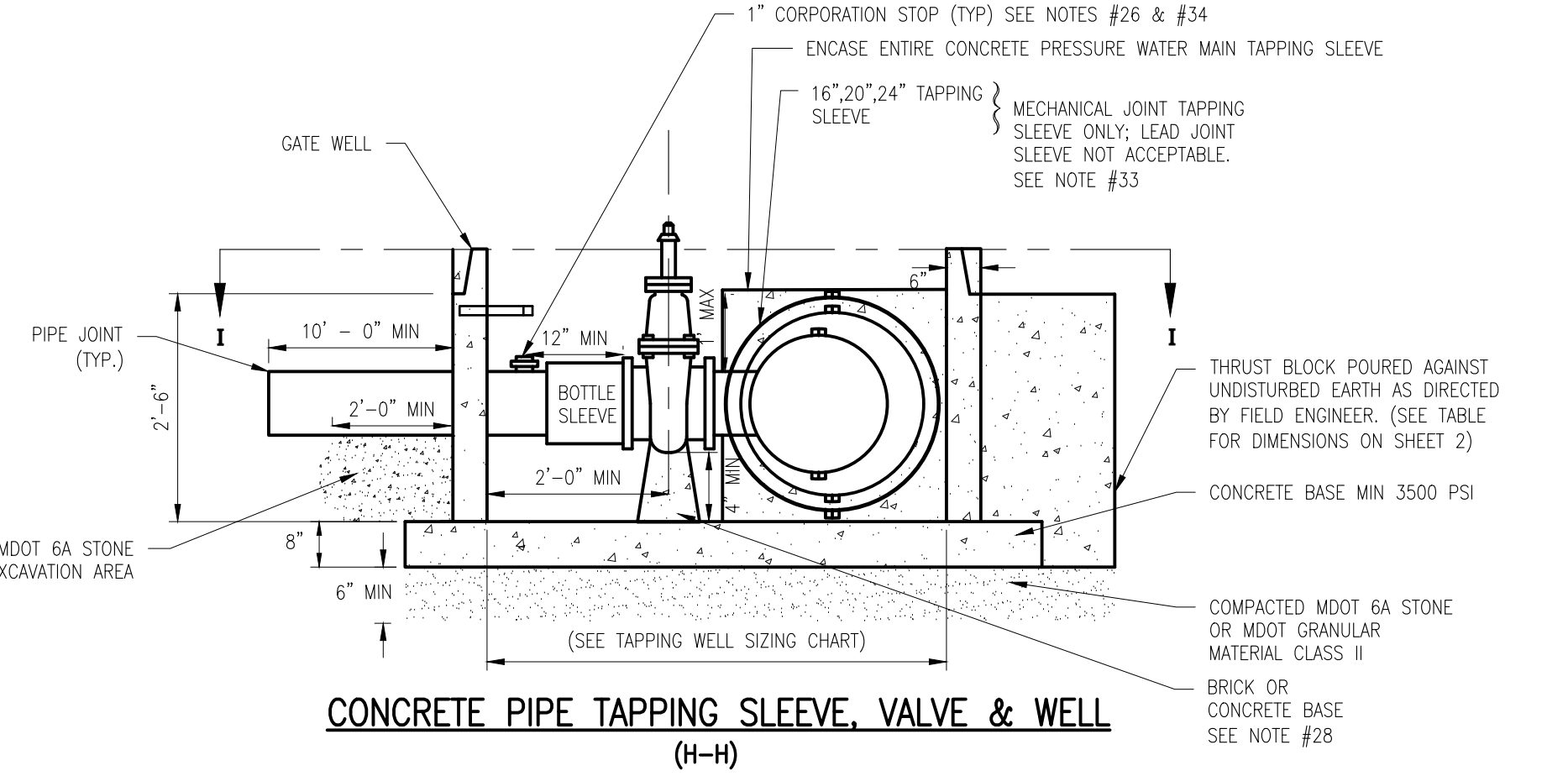
STANDARD AIR RELEASE VALVE & WELL

NOTE:
 ALL AIR RELEASE VALVES SHALL BE AUTOMATIC PER CITY OF NOVI DPS REQUIREMENTS.



GATE WELL TOPS WITHIN PAVEMENT AREAS

NOTE:
 RUBBER O-RINGS SHALL NOT BE USED IN PAVEMENT.



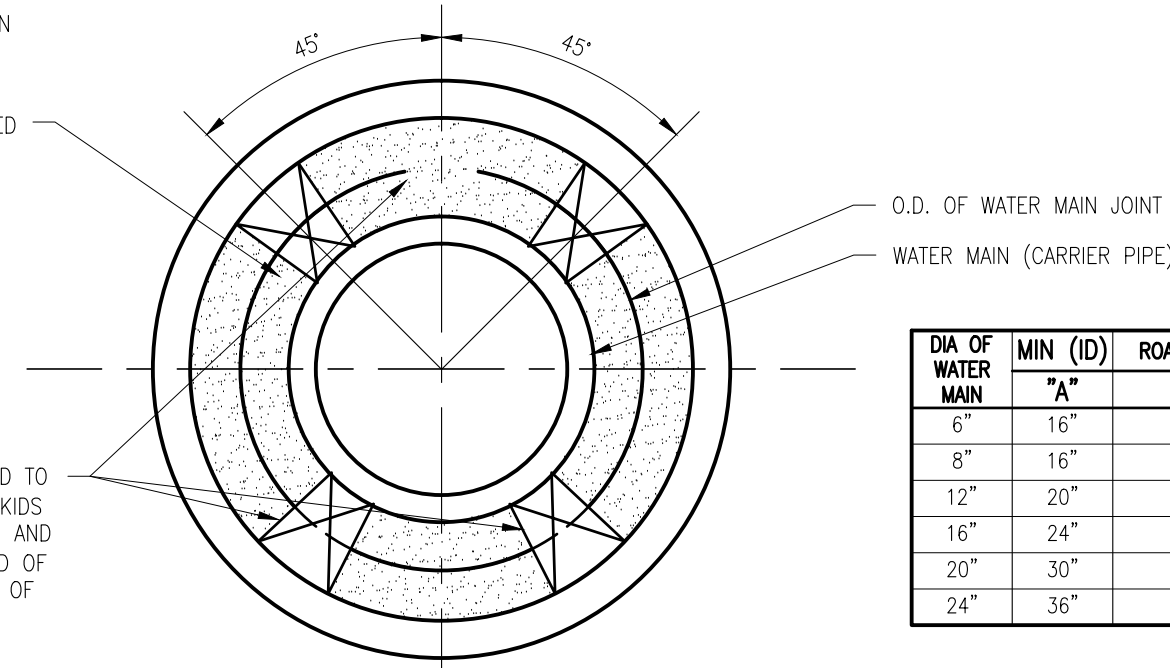
CONCRETE PIPE TAPPING SLEEVE, VALVE & WELL
 (H-H)

TAPPING WELL SIZING CHART	
MINIMUM GATE WELL INSIDE DIAMETER	WATER MAIN DIAMETER
5'	8"
6'	12"
8'	16" and >

DETAILS ARE TYPICAL FOR WATER MAIN CONSTRUCTED IN CASING PIPE

8" BRICK BULKHEAD SHALL BE PLACED AT EACH END OF CASING PIPE AFTER PIPE INSTALLATION.

WATER MAIN SHALL BE STRAPPED TO 4" x 4" WOLMANIZED SKIDS. SKIDS SHALL BE 85% OF PIPE LENGTH AND SHALL TERMINATE 12" FROM END OF CASING TO ALLOW BULKHEADING OF ENTIRE PIPE CIRCUMFERENCE.

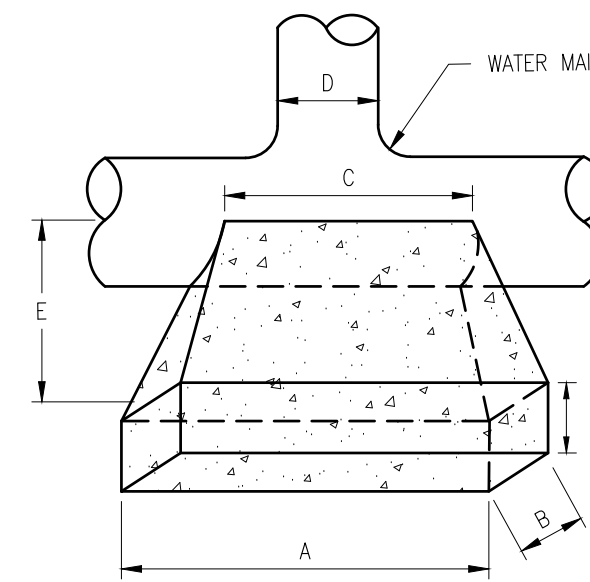


PIPE BARREL SUPPORT FOR WATER MAIN CONSTRUCTED IN CASING PIPE

DI. OF WATER MAIN	MIN "A"	ROAD CROSSING MIN "B"	RAILROAD CROSSING MIN "B"
6"	16"	.375	.375
8"	16"	.375	.375
12"	20"	.375	.500
16"	24"	.375	.500
20"	30"	.375	.500
24"	36"	.375	.500

A=INSIDE DIAMETER
B=WALL THICKNESS

4" MINIMUM CLEARANCE BETWEEN MAX. O.D. OF THE WATER MAIN AND THE I.D. OF THE CASING PIPE FOR THE TOP 90° ARC OF THE CASING. (SEE DETAIL)

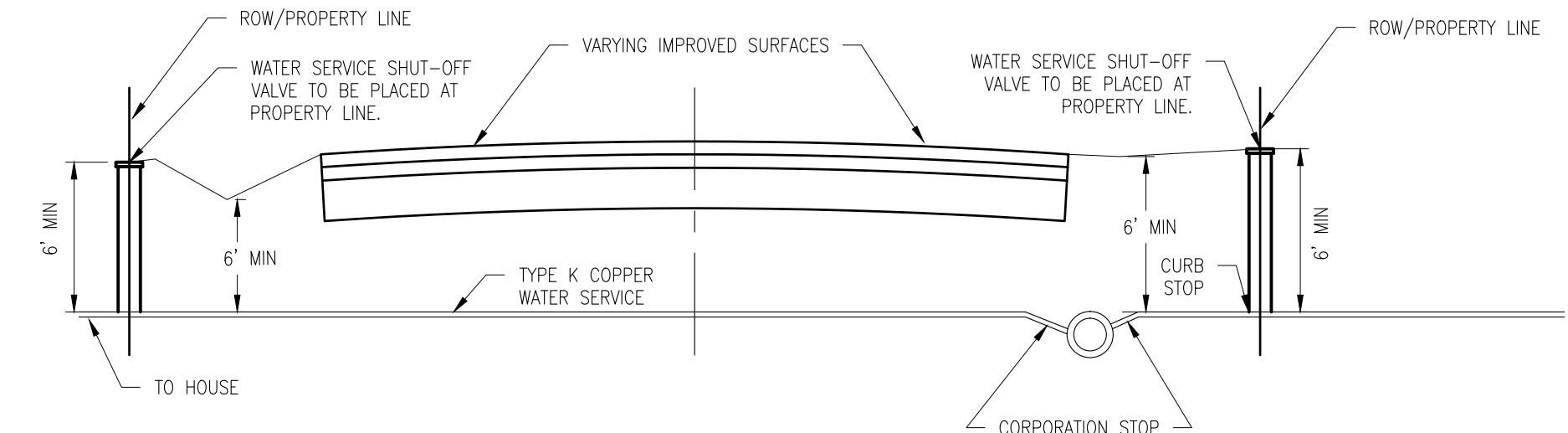


THRUST BLOCK DETAILS

NOTE:
A. 3000 PSI CONCRETE TO BE USED. THRUST BLOCK TO ABUT & REST AGAINST UNDISTURBED SOIL OR EARTH COMPACTED TO 95% MODIFIED PROCTOR.
B. THRUST BLOCKS NOT PERMITTED ON THEIR OWN, MUST BE USED IN COMBINATION WITH MEGALUG RESTRAINTS. SEE NOTE #19.
C. TO BE USED AT THE DISCRETION OF THE CITY'S CONSULTANT.

FOR TEES AND TAPPING SLEEVES

D	A	B	C	E MIN
20"	6.5'	4.5'	3.5'	3'
16"	4'-8"	4'-8"	2.5'	2.75'
12"	4'	3'	2.5'	2.5'
10"	3'	2'	2'	2.25'
8"	2'-6"	2'	2'	2.25'
6"	2'	2'	2'	2.25'

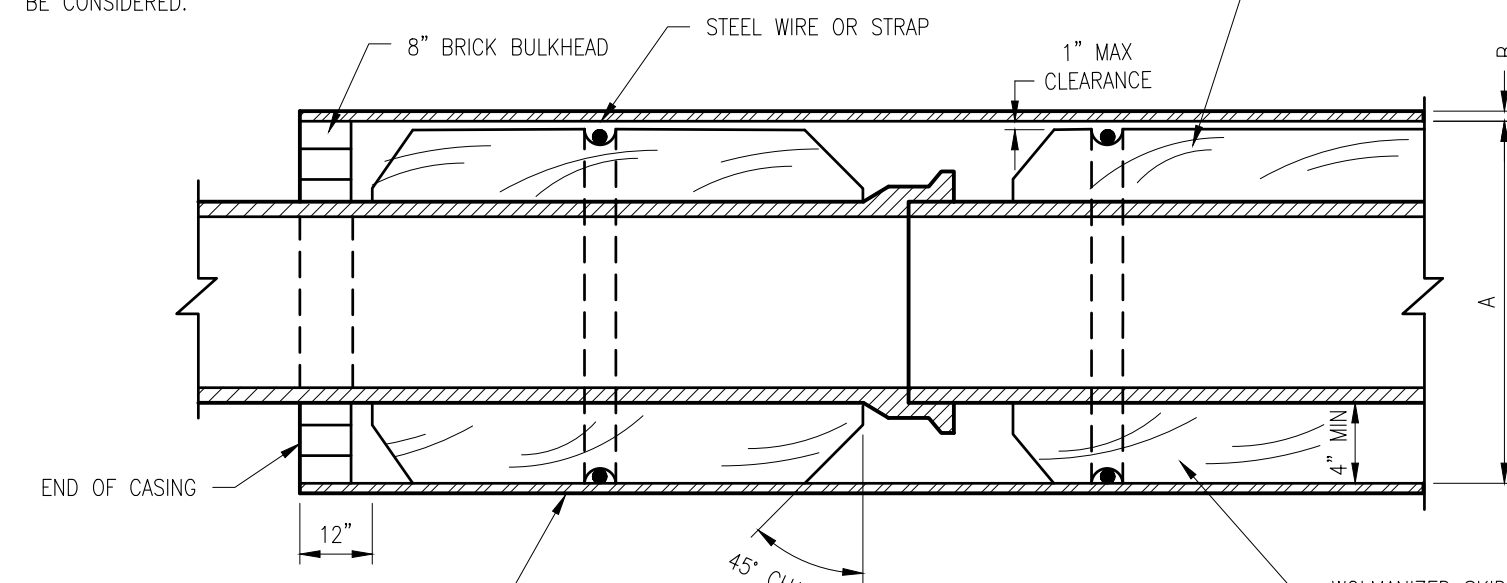


TYPICAL PUBLIC ROAD WATER SERVICE CONNECTION (SEE NOTES #27, #29)

NOTE: LATERAL LOCATION SHALL BE AS REQUESTED BY THE ABUTTING PROPERTY OWNER.

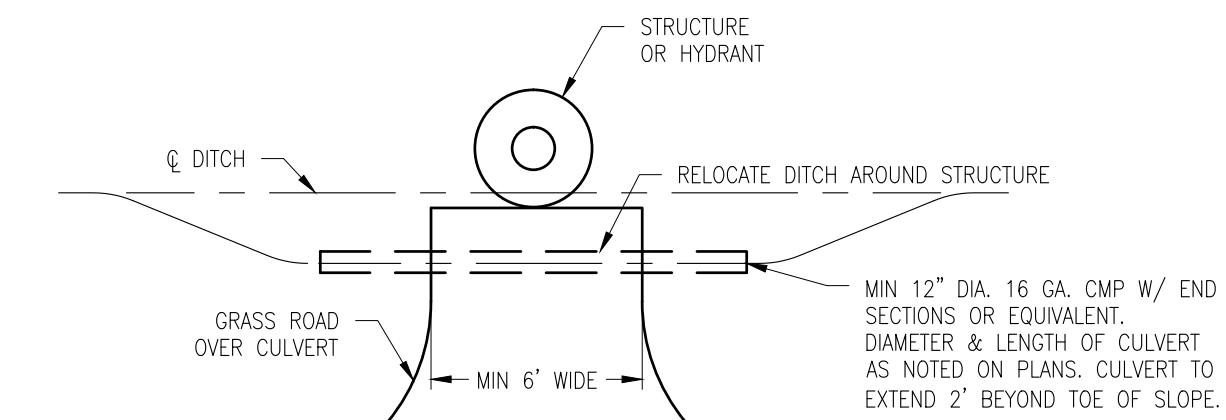
THE CONTRACTOR SHALL SUBMIT IN WRITING THE DETAILS OF THE APPROPRIATE PIPE CASING INSTALLATION FOR THE REVIEW AND APPROVAL BY THE ENGINEER BEFORE INSTALLATION OF ANY CASING STARTS. ALTERNATE METHODS OF SUPPORTING AND MAINTAINING THE POSITION OF THE CARRIER PIPE WITH RESPECT TO THE CASING PIPE (IN LIEU OF THE USE OF TIMBERS) WILL BE CONSIDERED.

PLACE WOLMANIZED SKIDS ALONG THE TOP OF THE CARRIER PIPE IN ORDER TO PREVENT THE CARRIER PIPE FROM ROLLING OVER OR FLOATING. GROUT PLACEMENT MUST BE ACHIEVED BY MEANS OF PRESSURE GROUTING. GRAVITY FLOW INSTALLATION OF GROUT WILL NOT BE PERMITTED.

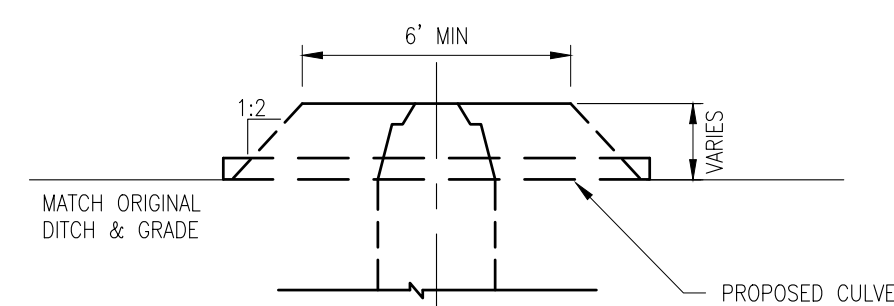


STANDARD CASING SECTION

WOLMANIZED SKIDS WIRED TO WATER MAIN WILL BE NOTCHED TO PREVENT WIRE FROM RIDING AGAINST CASING PIPE.

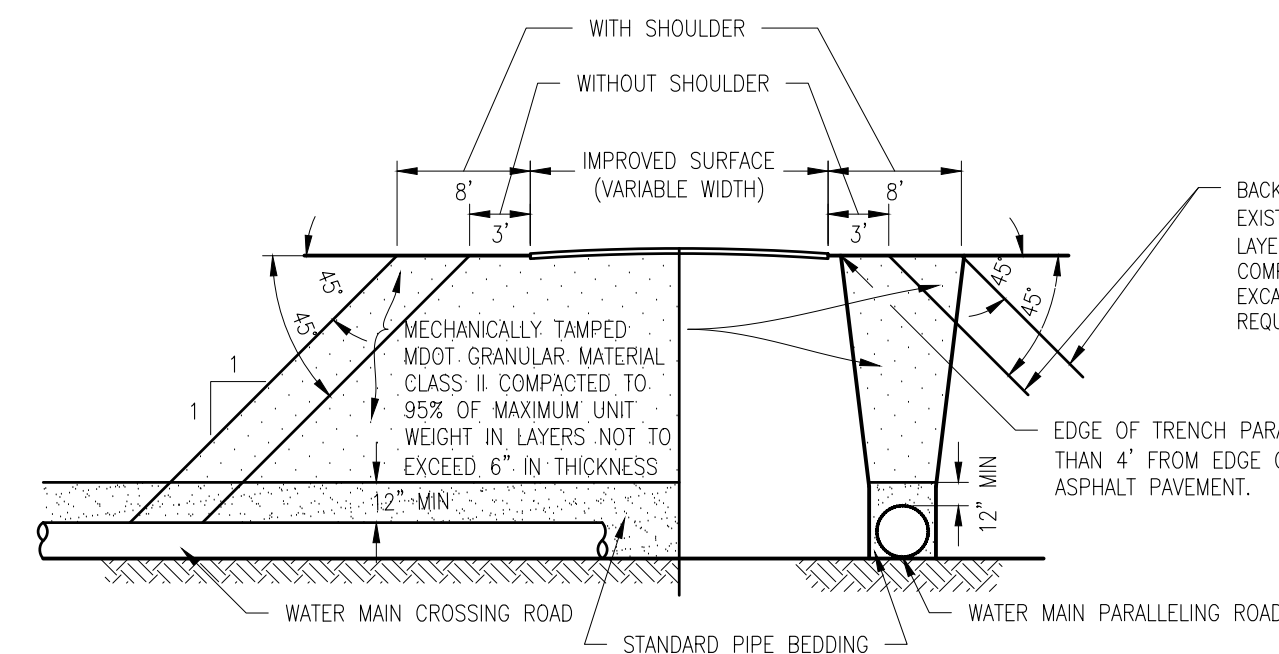


PLAN



PROFILE

DITCH ENCLOSURE AT GATE WELL OR HYDRANT

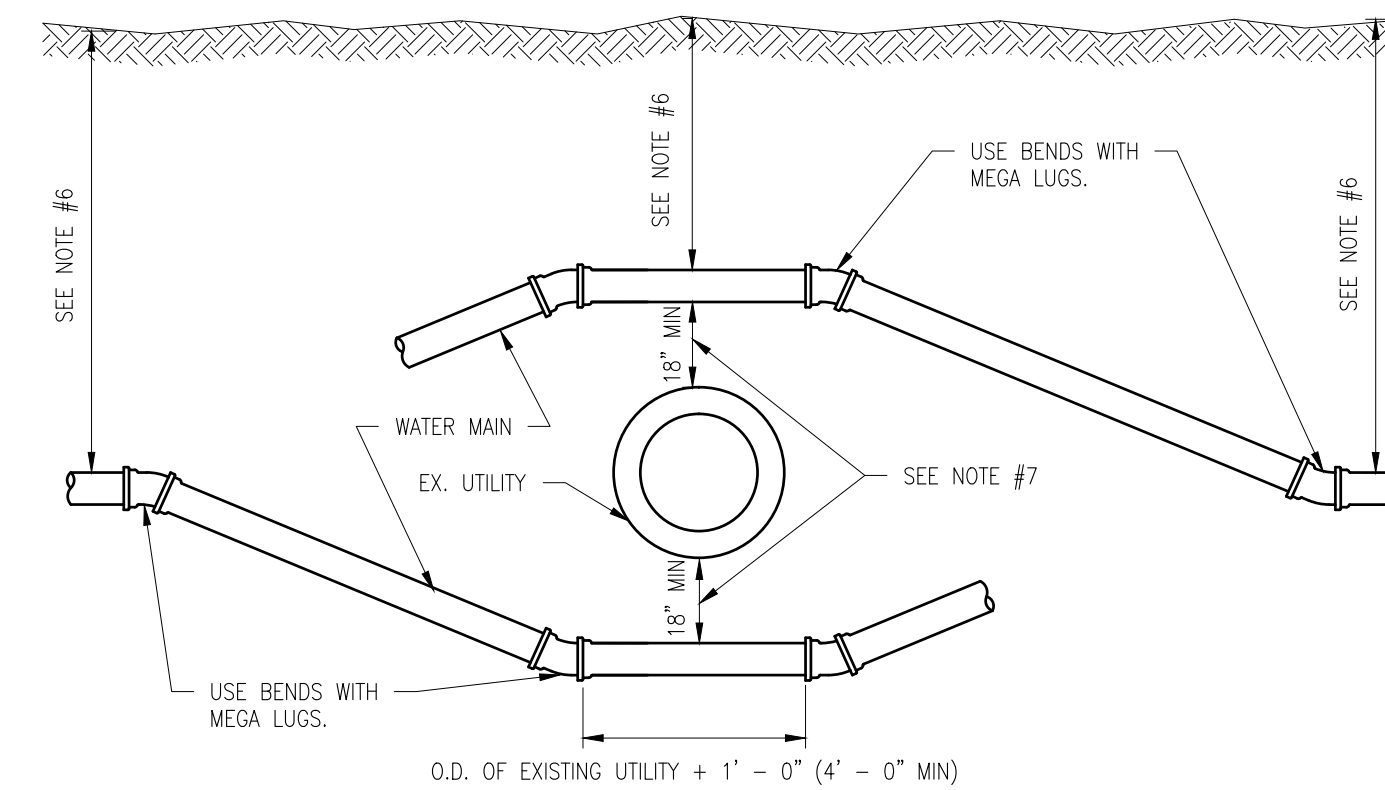


SAND OR GRAVEL BACKFILL DETAILS FOR WATER MAINS UNDER GRAVEL, CONCRETE OR ASPHALT PAVEMENTS, SIDEWALKS, DRIVEWAYS AND PARKING AREAS

(SEE NOTE #24)

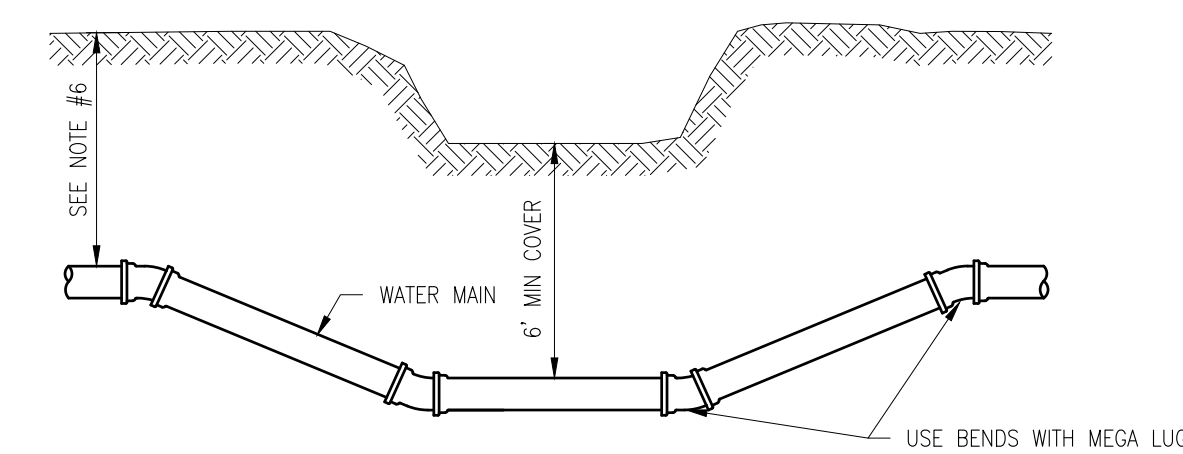
BACKFILL MATERIAL ABOVE THIS LINE (AS DETERMINED BY EXISTENCE OF SHOULDER) SHALL BE PLACED INTO TRENCH IN LAYERS NOT TO EXCEED 6" IN THICKNESS, WITH EACH LAYER COMPACTED TO NOT LESS THAN 90% OF MAXIMUM UNIT WEIGHT. EXCAVATED MATERIALS MAY BE USED IF COMPACTION REQUIREMENTS CAN BE MET. NO FROZEN MATERIALS PERMITTED.

EDGE OF TRENCH PARALLEL AND LESS THAN 4" FROM EDGE OF CONCRETE OR ASPHALT PAVEMENT.

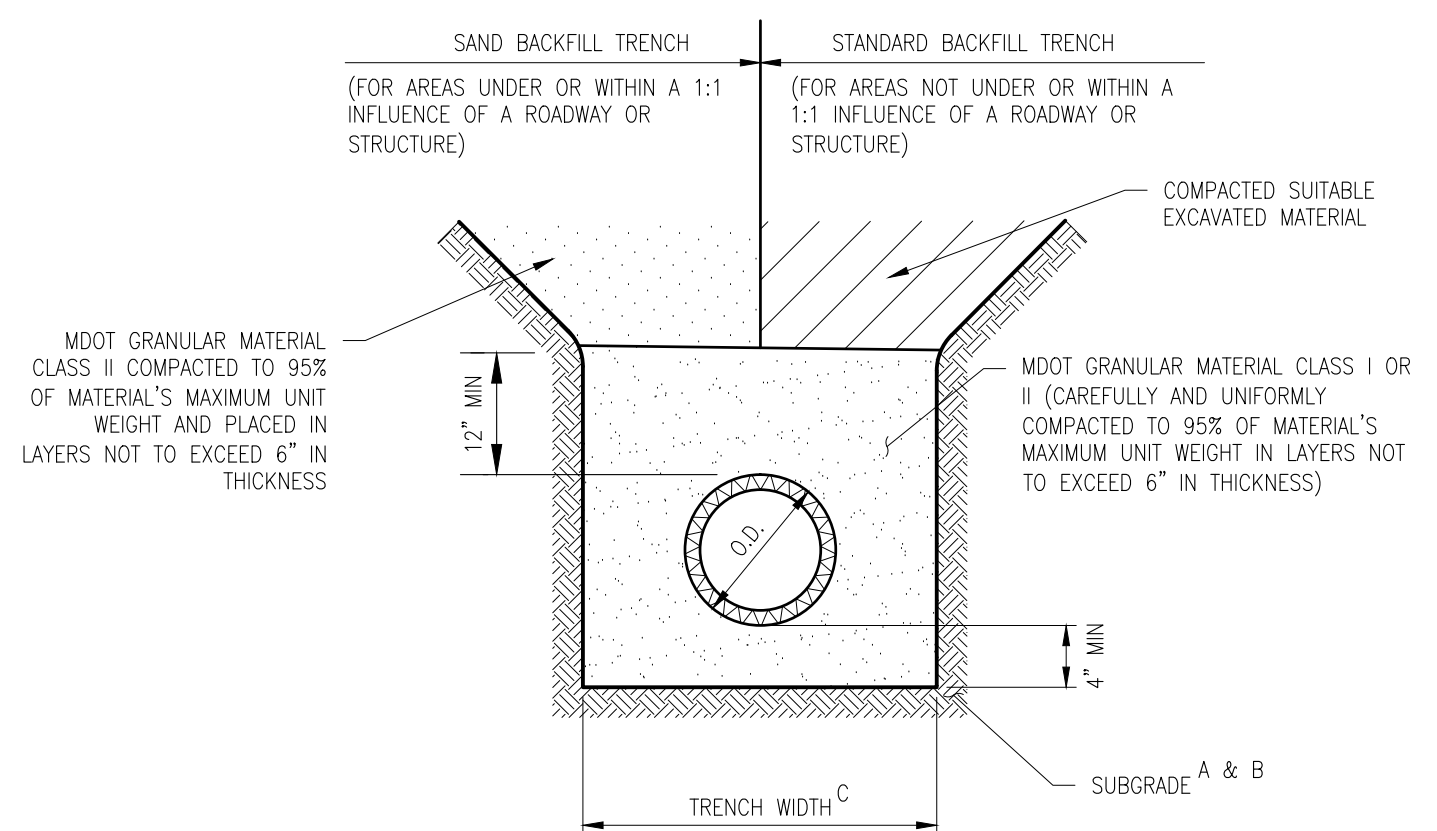


TYPICAL WATER MAIN UTILITY CROSSING (SEE NOTE #17)

NOTE:
6A STONE BACKFILL SHALL EXTEND 9" EACH SIDE OF EXISTING PIPE, 12" ABOVE EXISTING PIPE AND SHALL BE AT A ONE ON ONE SLOPE TO THE BOTTOM OF THE TRENCH.



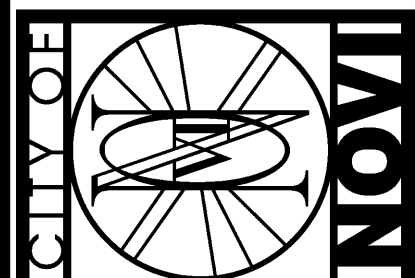
DITCH, STREAM OR WETLAND CROSSING



BEDDING AND TRENCH BACKFILL DETAIL (SEE NOTE #24)

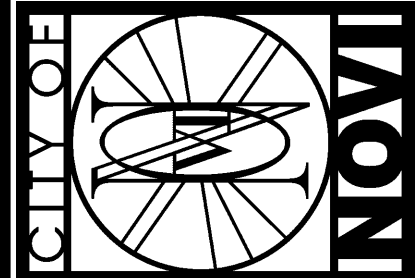
NOTES:
A. IF THE EXISTING SUBGRADE SOILS MEET THE REQUIREMENTS FOR MOTT GRANULAR MATERIAL CLASS II (MINIMUM 4" THICK), THEN THE WATER MAIN MAY BE LAID DIRECTLY ON THE COMPACTED NATIVE SUBGRADE SOILS.
B. FIELD CONDITIONS MAY REQUIRE UP TO 18" OF MOTT 6A STONE IN ORDER TO SECURE A FIRM TRENCH BOTTOM. ADDITIONAL DEPTH OF TRENCH UNDERCUT SHALL BE DIRECTED BY A GEOTECHNICAL ENGINEER AND SHALL BE REFILLED WITH 1" x 3" STONE.
C.

MAXIMUM TRENCH WIDTHS	
I.D. PIPE SIZE	TRENCH WIDTH
UP TO 12"	30"
15" TO 36"	O.D. + 12"
42" OR LARGER	O.D. + 24"



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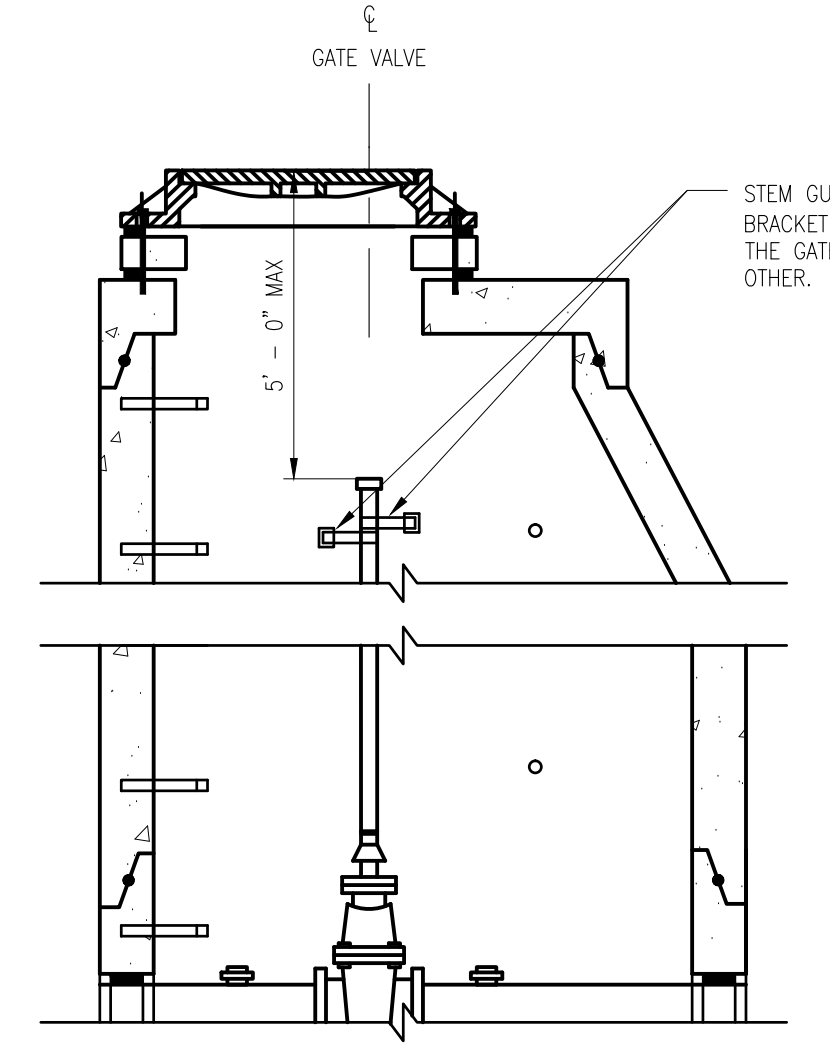
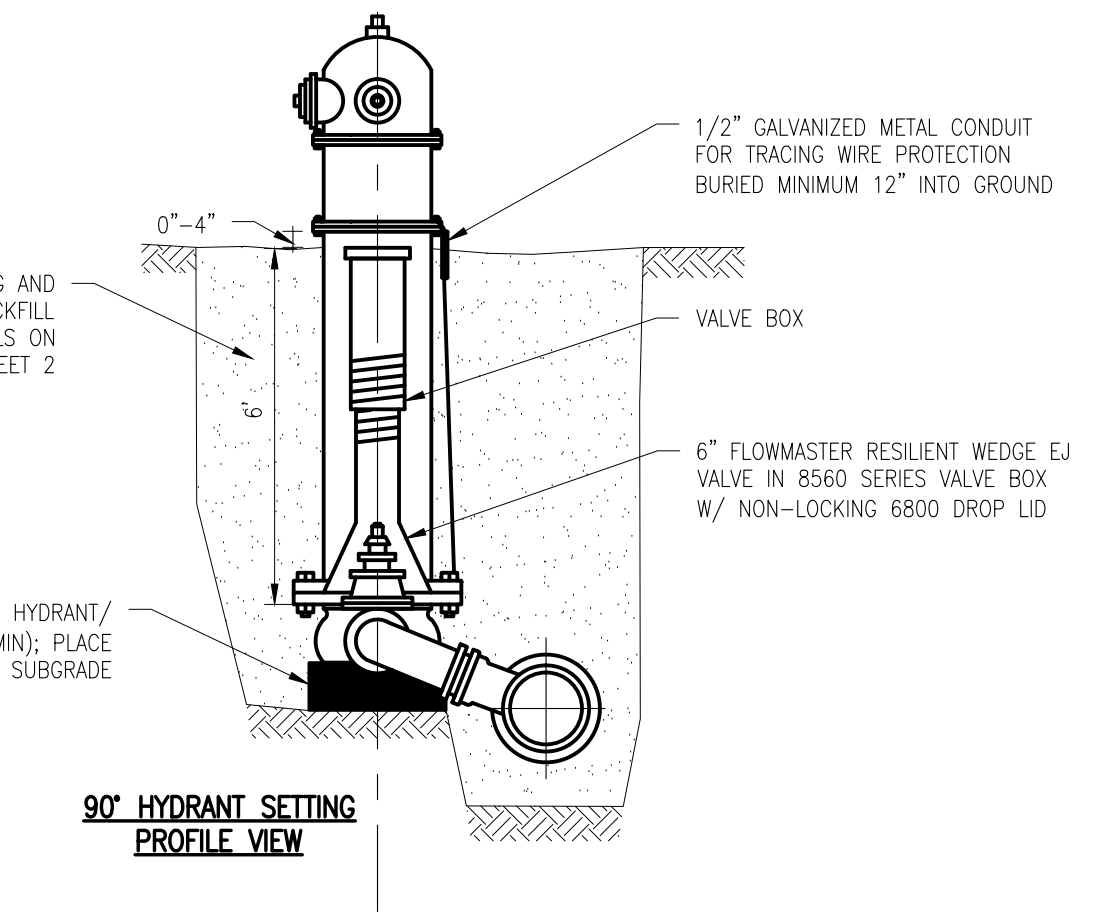
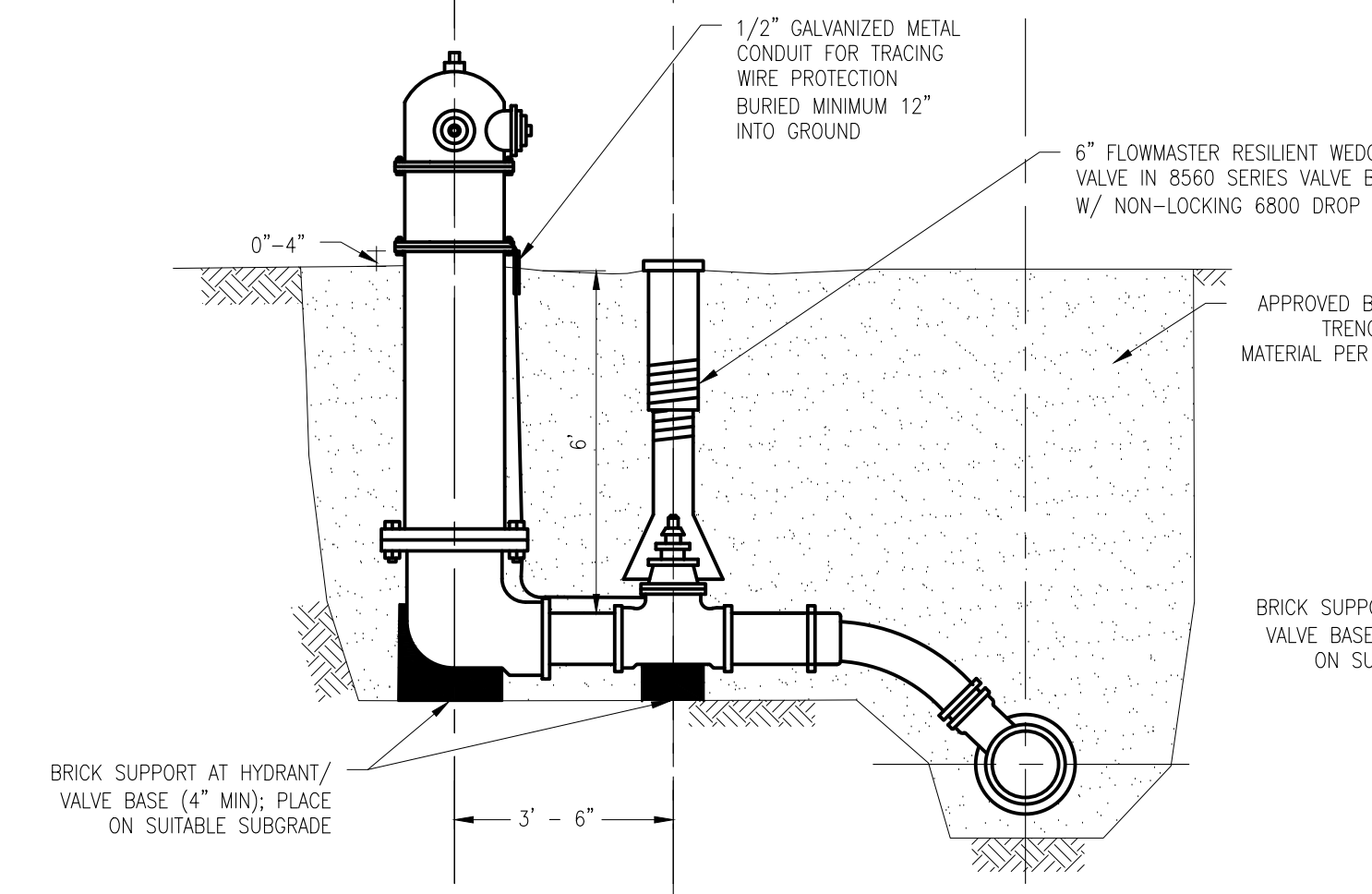
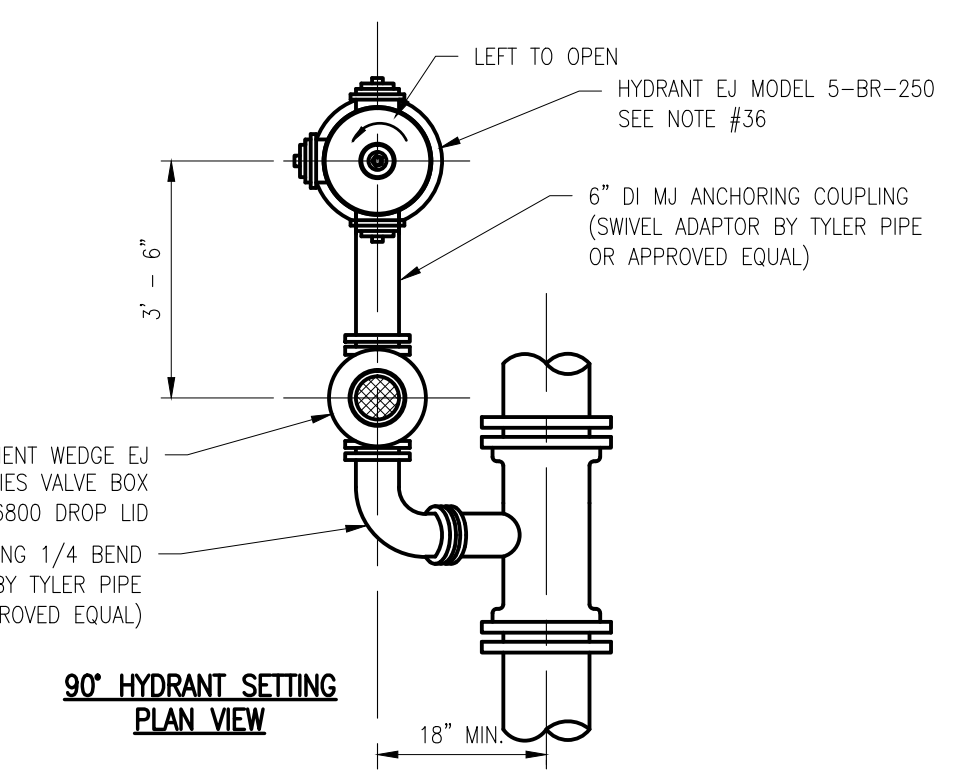
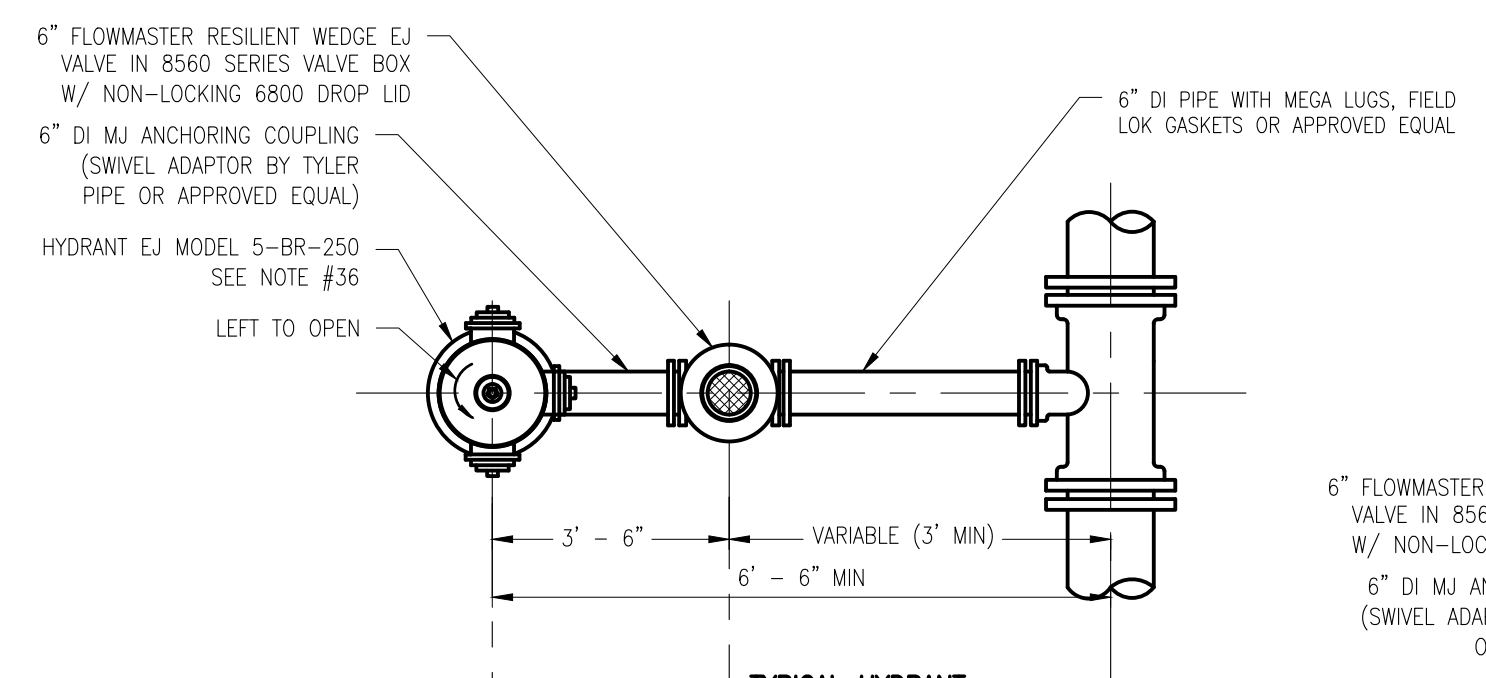
CITY OF NOVI
WATER MAIN
STANDARD DETAILS



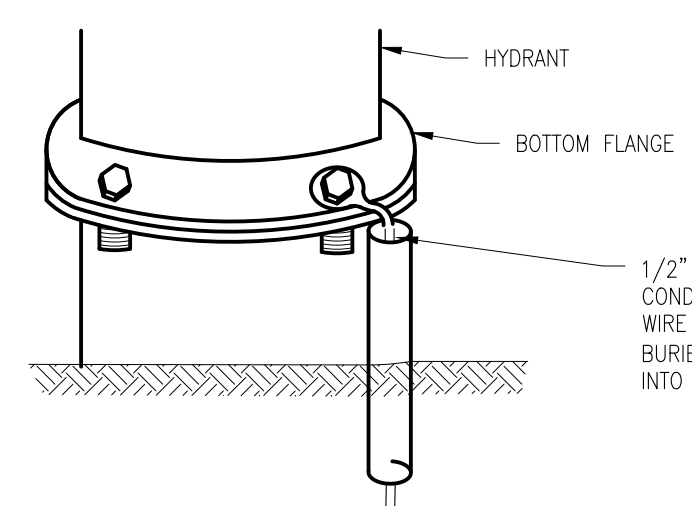
WATER MAIN CONSTRUCTION NOTES

- GENERAL NOTES:**
- All construction procedures and materials used on all water main projects shall conform to AWWA and the City of Novi current Standards and Specifications.
 - No water main is to be installed without City inspection.
 - Three (3) working days prior to construction, the Contractor shall telephone MISS DIG (811 or 1-800-482-7171) for underground facilities locations and shall also notify representatives of other utilities located in the vicinity of the work.
 - Where work is to be performed in the vicinity of a City of Detroit water main, contractor shall notify the GLWA three (3) working days prior to start of construction and request an inspection of the job.
 - All pipe and all pipe fittings shall be made in the U.S.A.
 - Unless otherwise specified on plans, top of all water mains shall be six (6) feet below existing or proposed gravel, concrete or asphalt pavements, sidewalks, driveways and parking areas. A minimum cover of six (6) feet shall be maintained when crossing a ditch; water mains shall have a minimum of 5.5 feet of cover when in greenbelt.
 - Whenever a water main is installed under existing utility line, 6A stone shall be used to properly support or distribute any concentrated loads to avoid any settlement and all possible failure of the lower main. A vertical separation of at least 18 inches between the utility and the water main shall be provided (measured barrel to barrel).
 - All required cross connection devices shall be installed as required by the local plumbing code and in accordance with the standards of the Michigan Department of Environmental Quality Water Resources Division and the Michigan Department of Public Health.
 - Tracing wire shall be provided for all water main, regardless of pipe material. Brass wedges are not permitted. Wire shall be copper, 8-gauge stranded, blue insulated per City requirements, or Copperhead Industries #9 AWG Blue Coated solid shot extra strength tracer wire. Connection is required at all service leads, hydrants, and gate wells. Wire shall be brought through each gate well and connected to the top step. All wire exposed above ground surface shall be encased in 1/2" metal conduit. The conduit should extend 12" below the ground surface. Conductivity shall be tested by the contractor prior to acceptance of the main. All splices shall be made using a gel-cap product which provides a water proof seal, such as 3M's Direct Bury Splice Kit or approved equal.
 - Connection to an existing water main shall be made only after pressure and bacteriological tests have been successfully completed. The city consultant must be present for the tests and review the results. Testing and disinfection procedures shall meet the requirements of ANSI/AWWA-C600/C651. The water main shall pass a test of 150 psi for a two (2) hour period. Water loss shall not exceed a rate of 11.65 U.S. gallons per inch diameter per mile of water main in twenty-four (24) hours.
 - All watermain 8" or larger shall be cleaned with a poly pig.
 - The city consultant must witness the connection of the water main to the existing water main. After the city consultants' approval letter has been issued, residential and commercial taps will be allowed. All water service connections two (2) inches and smaller shall be made by the City of Novi DPS.
 - Contractor supplied gauges are required for testing. The minimum size shall be 3/4" diameter graduated in one (1) or two (2) pound increments from 1 to 160 psi (minimum range).
 - When temporary water main jumpers are used during water main construction, a testable RPZ backflow preventer with current test report shall be placed on the jumper hose that is connected to the new water main.
 - The materials specified below may be substituted with an approved equal as determined by the City. It is at the sole discretion of the City to determine if a material is acceptable and can be utilized. Written authorization must be obtained prior to ordering or installing the approved equal.
- WATER MAIN NOTES:**
- All water main shall be ductile iron or concrete. HDPE water main may be permitted upon city approval. Water main shall be per the following specifications:
 - Ductile iron pipe shall be ANSI/AWWA C151/A21.51 cement lined with bituminous seal coat Class 54 for sizes 3" through 16" and Class 55 for 20" through 24" pipe. Ductile iron pipe shall be designed for a minimum working pressure of 150 psi.
 - Pre-stressed Concrete Cylinder pipe (P.C.C.P.) shall be AWWA C-301 specification for sizes larger than 24".
 - High Density Polyethylene (HDPE) SDR 9 or 11 pipe shall meet the requirements of AWWA C906 (SDR 11) with blue shell or blue stripes.
 - Water services up to 2" shall be either Type K soft copper or HDPE DR9 with tracing wire meeting the requirements of ANSI/AWWA C909 for a pressure class of 200 psi. If HDPE is used, a tracing wire shall be run from the meter setup to the curb box (See Item #9 for tracing wire requirements). All water services greater than 2" shall follow the standards listed in Item #15.
 - The maximum allowable deflection at joints for ductile iron water main shall be per manufacturers standards (i.e. 4" - 36" water main - 5" per 20').
 - Poly-wrap may be required by the city and shall be placed around the water main per manufacturers specifications.
 - MEGALUG shall be placed at all valves, bands, tees, plugs, hydrants and mechanical fittings. Surrounding joints shall be restrained using U.S. Pipe Field Lok gaskets or approved equal and shall be per the manufacturer's joint restraining schedule and the latest edition of DIPRA's Thrust Restraint Design for Ductile Iron Pipe.
 - Water main joints shall be Tyton, Fastite, Mechanical, or approved equal in accordance with ANSI/AWWA C111/A21.11.
 - Restrained joints are required in lieu of thrust blocks. Restrained joints for pipe sizes up to 16" shall be Fast Grip Gaskets, Mega Lug or approved equal.

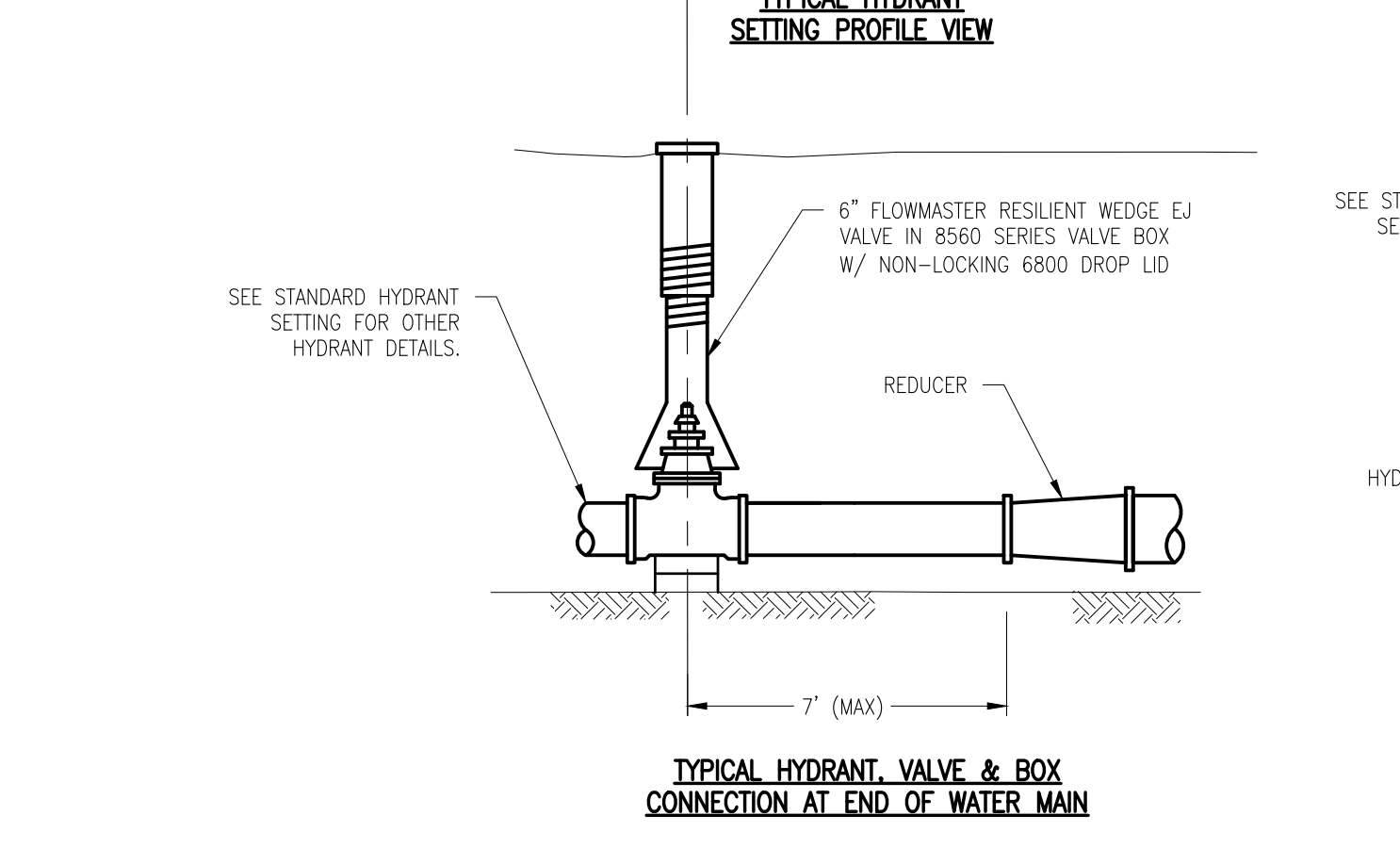
- Restrained joints for pipe sizes over 16" shall be American Ductile Iron Flex-Ring Joint Pipe or approved equal boltless system.
- Thrust restraint design shall be per the Ductile Iron Pipe Research Association's Manual of Thrust Restraint Design for Ductile Iron Pipe, current edition.
 - All bolts on all flanged and mechanical joint fittings shall be domestic origin high strength, low alloy COR-BLUE steel bolts or approved equal. These bolts shall meet the current provisions of American National Standard ANSI/AWWA C111/A21.11 for rubber gasket joints for ductile iron pressure pipes and fittings. Bolt manufacturer's certificate of compliance must accompany each shipment.
 - Backfill shall be compacted above pipe as indicated on construction drawings. Trench backfill shall be a suitable material and shall be free of any organic materials and rocks larger than 3" in size. Under road surfaces, pavement, sidewalks, curbs, driveways and areas where trench is within a 1:1 influence of the pavement, sand backfill shall be used which shall consist of MDOT granular material Class II and shall be compacted in layers not to exceed six (6) inches in thickness to a density of 95% as determined by AASHTO T99. Where water main is to be placed on fill material, all fill material below the pipe must also be compacted to 95% maximum unit density. All backfill placed within a 1:1 influence of structures shall be approved sand, placed in six (6) inch layers and compacted. Trenches that are to be left open overnight shall be enclosed with suitable fencing and lighted barricades.
- VALVE & SLEEVE NOTES:**
- All Gate Valves less than 16" shall be EJ ductile iron body, fully bronze-mounted, resilient-wedge, non-rising stem (ANSI/AWWA C509), opening counterclockwise.
 - Corporation Stops shall be 1-inch Mueller #H-15000, or approved equal. Corporation stops shall be securely capped after testing. Must use free caps.
 - All service lead corporation stops installed outside of gate wells 1" or less may be direct tapped to main. For corporation stops larger than 1" use bronze double strap tapping saddle.
 - Gate valves and fittings shall be supported by formed concrete or mortared brick bearing on the floor (minimum four (4) inches of clearance between floor and bottom of gate valve).
 - All gate valves 6" or larger shall be placed in a well with the exception of a hydrant shut off valve. A valve shall be placed in a box for water main smaller than 6". A stop box and rod is required for services up to 2" and a hydrant valve box is required for services less than 6". If the box falls within a paved area, a hydrant valve box is required for all service sizes.
 - Butterfly valves shall be used for valves 16" and larger in diameter and shall be Dezurik AWWA style, or approved equal, manufactured in accordance with ANSI/AWWA C504 and conforming to NSF Standard 61.
 - All precast concrete gate well sections shall be manufactured to conform with ASTM C478, except wall thickness shall be as shown on these details. Precast concrete gate well sections shall be modified tongue and groove with premium rubber gasket-type joints manufactured to conform with ASTM C443.
 - All gate well covers shall be EJ #1040A with bolted frame and with lettering per detail on this sheet. All cover bolts shall be stainless steel.
 - Tapping sleeves shall be manufactured by JCM Industries, Romac Industries, Mueller, EJ, Smith-Blair or approved equal and shall be mechanical joint with DWS Mechanical Joint Tapping Gate Valve. Lead joint sleeves shall not be used. Like size tapping sleeves can only be used when the existing main is ductile iron and equal to/less than 12-inch in diameter. For like size connections greater than 12-inch, a cut-in-tee is required. All tapping sleeves must be mechanical tapping sleeves.
 - No tapping of any water main fitting will be permitted.
 - No water main fittings or water service fittings shall contain lead.
- HYDRANT NOTES:**
- All hydrants shall be 6" bury EJ #5BR-250-Traffic Model and shall conform to ANSI/AWWA C502, and shall have a minimum 5 1/4" valve opening that closes with the water pressure. Hydrants shall be traffic style with breakable flange and coupling.
 - Hydrants shall have a swivel flange to allow bonnet to be turned 360 degrees without removing the bonnet, and barrel flanges shall be integrally cast with the barrel. Inlet shoe shall have a bronze valve seat, which can be removed without digging.
 - Inlet connection shall be 6" mechanical joint, conforming to AWWA C111 and ASA-A21.11. Stem threads shall be sealed with double "O" rings and shall be permanently lubricated with all weather grease.
 - Hose connections: One (1) 4 1/2" pumper nozzle and two (2) 2 1/2" hose nozzles, with National Standard Thread (NST) threads. Final orientation of the hydrant steamer connection to be determined by City consultant or Fire Department.
 - Operating Nut: (1) 1 1/2" P-F pentagon, open left.
 - Hydrants shall be factory painted by spray application red above the ground and black below, with a finish coat of Glomortex 501 enamel, color 314 Vermillion, or approved equal.
 - Prior to acceptance, hydrants shall be charged, tested and any leaks are to be repaired. Hydrants and valve boxes shall be plumbed and set to finished grade. Valve boxes shall be in line with the valve.



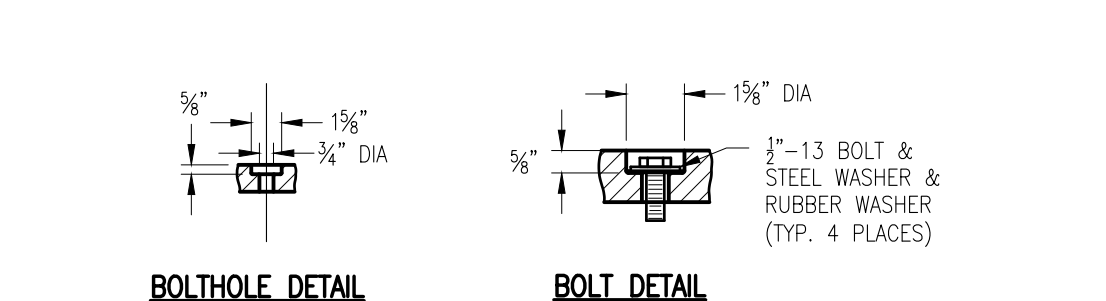
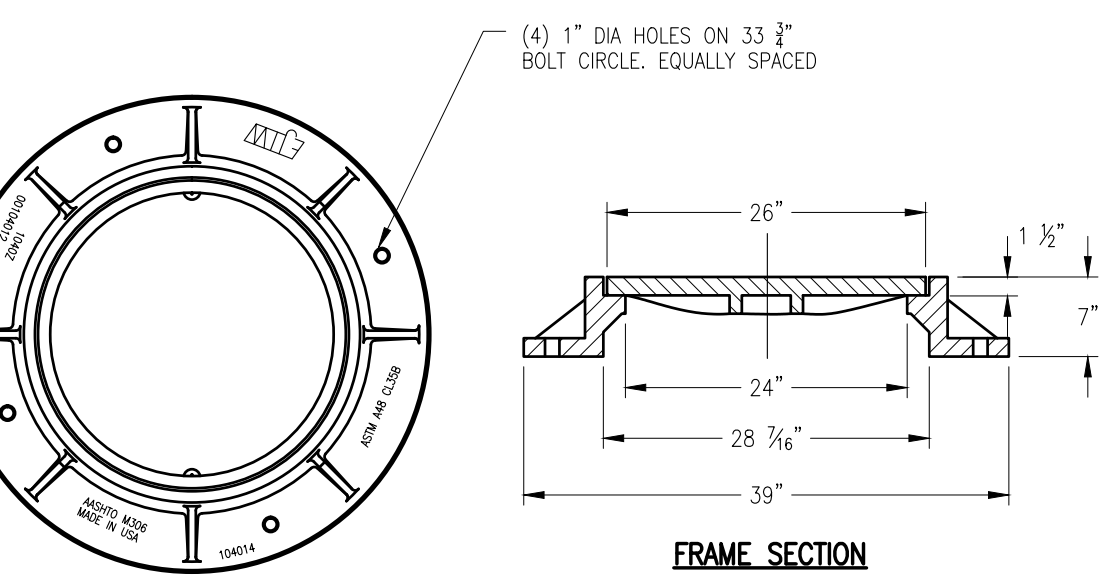
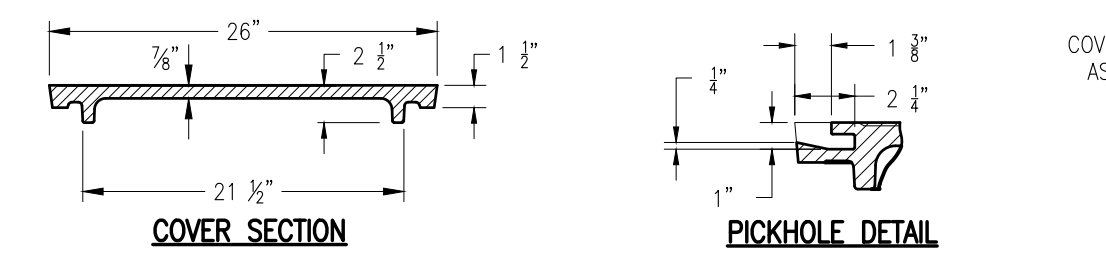
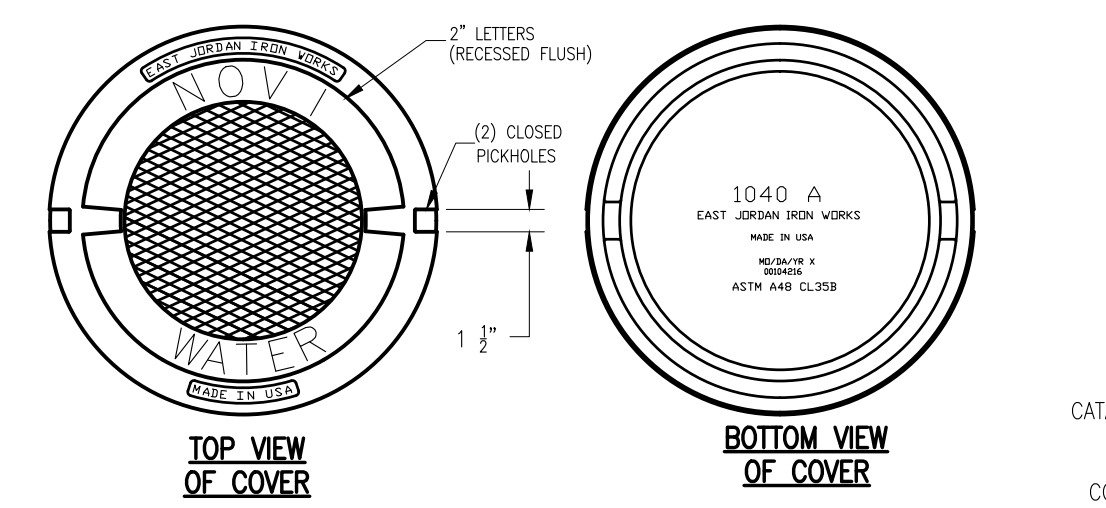
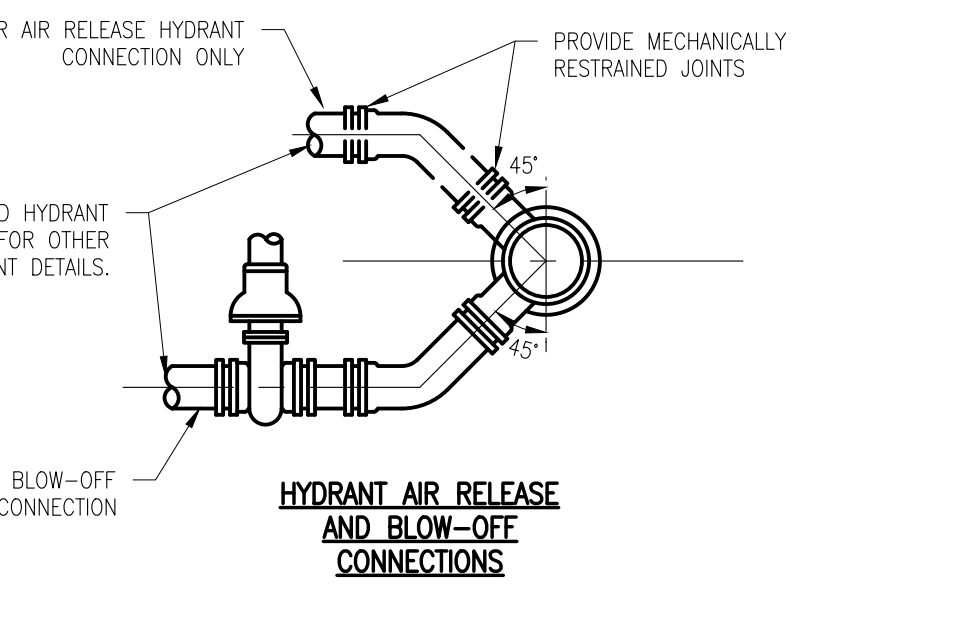
NOTE:
STEM EXTENSIONS SHALL BE PROVIDED AT ALL GATE VALVES WITH OPERATING NUTS AT A DISTANCE GREATER THAN 5' BELOW THE GROUND SURFACE.



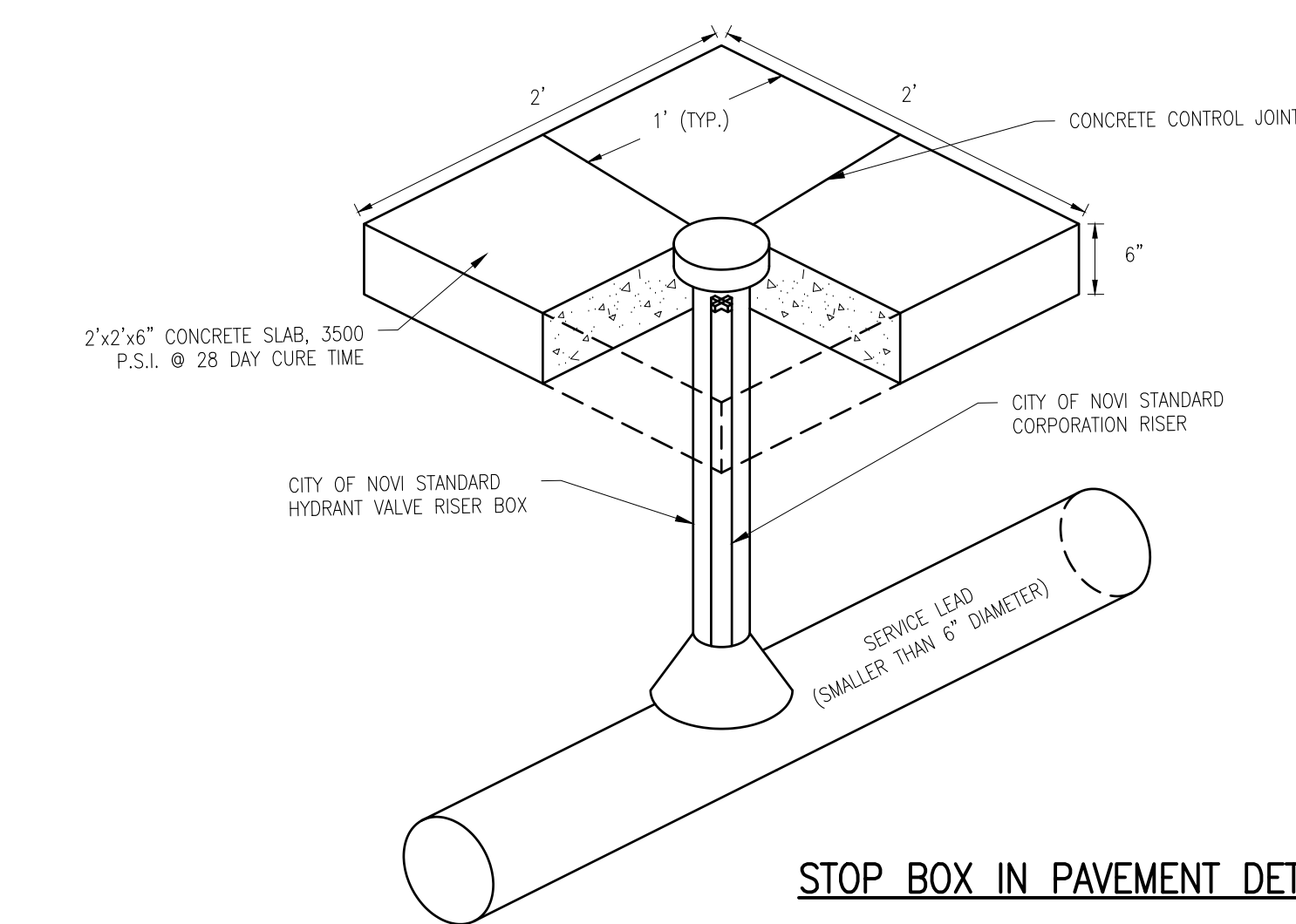
BLUE TRACER WIRE ATTACHED TO HYDRANT (SEE NOTE #9)



DETAIL OF HYDRANT SETTINGS



CAST IRON GATE WELL FRAME AND COVER (SEE NOTE #32)



NOTE:
WHERE WATER SERVICE CORPORATION BOX FALLS WITHIN A PAVED AREA (PARKING LOT, SERVICE DRIVE AREA, ETC.) THE STOP BOX SHALL BE PLACED IN A STANDARD HYDRANT VALVE BOX. THE VALVE BOX SHALL BE CENTERED IN A 2'x2'x6" CONCRETE SLAB. CONCRETE CONTROL JOINTS SHALL BE PLACED IN SLAB AT 1' INTERVALS.

DATE	3/2/14	TOWN	1N	RANGE	1E	COUNTY	OAKLAND	SCALE	N.T.S.	REVISIONS	
DATE	7/7/2017	TOWN	1N	RANGE	1E	COUNTY	OAKLAND	SCALE	N.T.S.	REVISIONS	
DATE	2/16/2018	TOWN	1N	RANGE	1E	COUNTY	OAKLAND	SCALE	N.T.S.	REVISIONS	

DRAWING PATH: J:\NW\Design\NW17003-Nov17 Standards and Details\DWG\Water.dwg Feb 16, 2018 - 9:08am

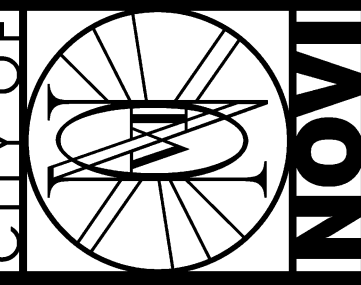


TABLE 23.6.5.A
DUCTILE IRON WATER MAIN PIPE
THRUST RESTRAINT LENGTH FOR HORIZONTAL BENDS

BEND ANGLES (degrees)	PIPE DIAMETER (inches)													
	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	30"	36"	42"
11.25°	1	2	2	3	4	4	5	6	7	7	9	11	13	15
22.5°	3	3	5	6	8	9	10	12	13	15	17	21	25	29
30°	4	4	6	8	10	12	14	16	18	20	23	29	34	40
45°	6	7	10	13	16	19	22	25	28	31	36	45	53	61
60°	8	10	14	18	22	26	30	34	39	43	51	62	74	85
90°	14	17	24	31	38	46	53	60	67	74	88	108	128	148
Unit Frictional Force (ft/lbs)	124	151	217	284	349	415	481	547	613	679	811	1,005	1,203	1,398
Unit Bearing Resistance (ft/lbs)	152	185	268	354	437	523	611	699	789	879	1,064	1,344	1,639	1,939

Assumptions: Cover = 6.0 feet
 Design Pressure = 150 psi
 Safety Factor = 1.5
 Laying Condition = Type 3
 Soil Designation = Clay 1
 Non-Polywrapped Pipe

☐ = Not Permitted (for 60°, use two 30° bends; for 90°, use two 45° bends)

* Data Table acquired from the Ductile Iron Pipe Research Association (DIPRA)

TABLE 23.6.5.D
DUCTILE IRON WATER MAIN PIPE
THRUST RESTRAINT LENGTH FOR TEES

PIPE DIAMETER OF BRANCH RUN (inches)	PIPE DIAMETER OF MAIN PIPE RUN (inches)													
	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	30"	36"	42"
3"	8	7	6	4	2	1	0	0	0	0	0	0	0	0
4"		10	9	8	6	5	3	2	0	0	0	0	0	0
6"			16	15	14	13	12	11	10	9	7	4	1	0
8"				22	22	21	20	19	19	18	16	14	11	8
10"					28	27	27	26	26	25	24	22	19	17
12"						34	33	32	32	31	29	27	25	25
14"							40	39	39	38	37	36	35	33
16"								46	45	45	44	43	41	40
18"									52	51	51	49	48	47
20"										58	57	56	55	54
24"											69	68	68	67
30"												87	86	85
36"													104	104
42"														122
Unit Frictional Force (ft/lbs)	249	302	434	569	697	829	961	1,093	1,225	1,357	1,621	2,011	2,406	2,796
Unit Bearing Resistance (ft/lbs)	152	185	268	354	437	523	611	699	789	879	1,064	1,344	1,639	1,939

Assumptions: Cover = 6.0 feet
 Design Pressure = 150 psi
 Safety Factor = 1.5
 Laying Condition = Type 3
 Soil Designation = Clay 1
 Non-Polywrapped Pipe

☐ = Not Applicable

* Data Table acquired from the Ductile Iron Pipe Research Association (DIPRA)

TABLE 23.6.5.B
DUCTILE IRON WATER MAIN PIPE
THRUST RESTRAINT LENGTH FOR VERTICAL UP BENDS

BEND ANGLES (degrees)	PIPE DIAMETER (inches)													
	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	30"	36"	42"
11.25°	1	2	2	3	4	4	5	6	7	7	9	11	13	15
22.5°	3	3	5	6	8	9	10	12	13	15	17	21	25	29
30°	4	4	6	8	10	12	14	16	18	20	23	29	34	40
45°	6	7	10	13	16	19	22	25	28	31	36	45	53	61
60°	8	10	14	18	22	26	30	34	39	43	51	62	74	85
90°	14	17	24	31	38	46	53	60	67	74	88	108	128	148
Unit Frictional Force (ft/lbs)	124	151	217	284	349	415	481	547	613	679	811	1,005	1,203	1,398
Unit Bearing Resistance (ft/lbs)	152	185	268	354	437	523	611	699	789	879	1,064	1,344	1,639	1,939

Assumptions: Cover = 6.0 feet
 Design Pressure = 150 psi
 Safety Factor = 1.5
 Laying Condition = Type 3
 Soil Designation = Clay 1
 Non-Polywrapped Pipe

☐ = Not Permitted (for 60°, use two 30° bends; for 90°, use two 45° bends)

* Data Table acquired from the Ductile Iron Pipe Research Association (DIPRA)

TABLE 23.6.5.E
DUCTILE IRON WATER MAIN PIPE
THRUST RESTRAINT LENGTH FOR REDUCERS

DIAMETER OF SMALLER PIPE (inches)	DIAMETER OF LARGER PIPE (inches)													
	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	30"	36"	42"
3"														
4"		4												
6"			13											
8"				10										
10"					11									
12"						11								
14"							11							
16"								11						
18"									11					
20"										11				
24"											22			
30"												31		
36"													33	
42"														32
Unit Frictional Force (ft/lbs)		302	434	569	697	829	961	1,093	1,225	1,357	1,621	2,011	2,406	2,796

Assumptions: Cover = 6.0 feet
 Design Pressure = 150 psi
 Safety Factor = 1.5
 Laying Condition = Type 3
 Soil Designation = Clay 1
 Non-Polywrapped Pipe

☐ = Not Applicable
 ☐ = Not Probable

* Data Table acquired from the Ductile Iron Pipe Research Association (DIPRA)

TABLE 23.6.5.C
DUCTILE IRON WATER MAIN PIPE
THRUST RESTRAINT LENGTH FOR VERTICAL DOWN BENDS

BEND ANGLES (degrees)	PIPE DIAMETER (inches)													
	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	30"	36"	42"
11.25°	2	3	4	5	6	7	8	10	11	12	14	18	21	25
22.5°	4	5	8	10	12	15	17	19	22	24	29	36	43	50
30°	6	7	10	14	17	20	23	26	29	33	39	48	58	67
45°	9	11	16	21	26	31	36	41	45	50	60	75	89	104
60°	13	16	22	29	36	43	50	57	63	70	84	104	124	145
90°	22	27	39	51	62	74	86	98	110	122	145	180	215	250
Unit Frictional Force (ft/lbs)	124	151	217	284	349	415	481	547	613	679	811	1,005	1,203	1,398
Unit Bearing Resistance (ft/lbs)	152	185	268	354	437	523	611	699	789	879	1,064	1,344	1,639	1,939

Assumptions: Cover = 6.0 feet
 Design Pressure = 150 psi
 Safety Factor = 1.5
 Laying Condition = Type 3
 Soil Designation = Clay 1
 Non-Polywrapped Pipe

☐ = Not Permitted (for 60°, use two 30° bends; for 90°, use two 45° bends)

* Data Table acquired from the Ductile Iron Pipe Research Association (DIPRA)

TABLE 23.6.5.F
DUCTILE IRON WATER MAIN PIPE
THRUST RESTRAINT LENGTH FOR DEAD ENDS

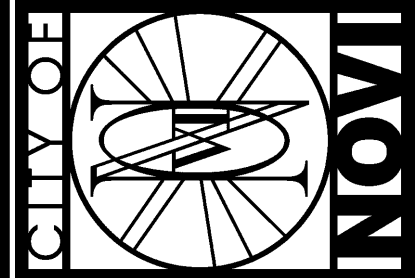
Pipe Diameter (inches)	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	30"	36"	42"
Restraint Length (feet)	11	14	19	25	31	37	43	49	55	61	73	90	108	125
Unit Frictional Force (ft/lbs)	249	302	434	569	697	829	961	1,093	1,225	1,357	1,621	2,011	2,406	2,796

Assumptions: Cover = 6.0 feet
 Design Pressure = 150 psi
 Safety Factor = 1.5
 Laying Condition = Type 3
 Soil Designation = Clay 1
 Non-Polywrapped Pipe

* Data Table acquired from the Ductile Iron Pipe Research Association (DIPRA)

CITY OF NOVI
 COUNTY: OAKLAND COUNTY
 TOWN: BE
 RANGE: IN
 DATE: 3/2014
 REVISIONS: SPALING DECKER
 SPALING DECKER
 DATE: 5/17/2017
 DATE: 7/26/2018
 H: N.T.S.
 V: N.T.S.
 SCALE: V: N.T.S.
 CITY OF NOVI 145175 WEST 10 MILE ROAD | NOVI, MI 48375 | P: (248) 347-0456 | WWW.CITYOFNOVI.ORG

CITY OF NOVI
 WATER MAIN
 STANDARD DETAILS



CITY OF NOVI 145175 WEST 10 MILE ROAD | NOVI, MI 48375 | P (248) 347-0466 | WWW.CITYOFNOVI.ORG
 COUNTY: OAKLAND COUNTY
 TOWN: RANGE 8E
 DATE: 3/20/14
 REVISIONS: SPALING, BEECHER
 DATE: 2/12/2018
 H. N.T.S. V. N.T.S.
 SCALE: N.T.S.
 REVISIONS:

CITY OF NOVI
 WATER MAIN
 STANDARD DETAILS

SHEET
 5
 OF 5

HIGH-DENSITY POLYETHYLENE (HDPE) WATER MAIN NOTES

In addition to the water main notes listed on sheet 3 of the standard details, the following notes will apply to construction projects using HDPE water main:

MATERIALS
 1. HDPE pipe, appurtenances, and installation methods shall conform to the most current edition of AWWA standard C906.

2. HDPE pipe shall be manufactured out of virgin material as defined in ASTM D3350. The pipe shall be made from high density PE 3408 polyethylene resin and the materials used must be listed and approved for use under NSF/ANSI Standard 14 and 61. HDPE pipe shall have a standard dimension ratio (SDR) of 11 or less, a hydrostatic design basis (HDB) of 1600 psi for water at 73.4°F and a minimum working pressure rating of 160 psi. No rework except that obtained from the manufacturer's own production of the same formulation shall be used. The pipe shall be homogeneous throughout and shall be free of visible cracks, holes, foreign materials, blisters, or other deleterious faults. A "Certificate of Compliance" shall be furnished for all materials supplied.

3. The physical appearance of the pipe having deformities such as concentrated ridges, discoloration, excessive spot roughness, pitting, varying wall thickness, etc., shall constitute sufficient basis for rejection. Pipe with gashes, nicks, abrasions or any physical damage that occurred during storage and/or handling which are wider or deeper than 10% of the wall thickness shall not be used and must be removed from the construction site. Any pipe that has been damaged or does not meet the City's approval shall be replaced at the Contractor's expense.

4. Mechanical fittings used with HDPE pipe shall be specifically designed for or tested and found to be acceptable for use with HDPE by the fitting manufacturer. Mechanical fittings designed for other materials shall not be used.

5. Water service saddles on HDPE water main shall be "VA" Electrofusion Service Saddles by Fritec, Inc. or approved equal.

6. The mechanical joint fittings must conform to outside diameter requirements of ANSI/AWWA C111/A21 or ANSI/AWWA C153/A21.53 depending size. Butt fusion fittings shall meet AWWA C906 dimensional requirements.

7. Bolts, nuts, gaskets, and glands meeting ANSI/AWWA C111/A21.11 and ANSI/AWWA C153/A21.53 are required. Mechanical joint components shall be installed in accordance with manufacturer's recommendations.

8. Pipe and fittings must be marked as prescribed by AWWA C906 and NSF. Pipe markings shall include nominal size, OD base, dimension ratio, pressure class, working pressure rating, AWWA C906 material code designation PE 3408, manufacturer's name, manufacturer's production code including day, month, year extruded, and manufacturer's plant and extrusion line and NSF logo. Permanent identification of piping shall be provided by co-extruding longitudinal blue stripes into the outside surface of the pipe (stripes printed or painted shall not be acceptable) or the pipe material shall be black with a blue shell.

INSTALLATION
 9. Tracing wire shall be provided for all water main, regardless of pipe material. Brass wedges are not permitted. Wire shall be copper, 8-gauge stranded, blue insulated per City requirements, or Copperhead Industries #8 ABC Blue Coated solid shot extra strength tracer wire. Connection is required at all service leads, hydrants, and gate wells. Wire shall be brought through each gate well and connected to the top step. All wire exposed above ground surface shall be encased in 1/2" metal conduit. The conduit should extend 12" below the ground surface. Conductivity shall be tested by the contractor prior to acceptance of the main. All splices shall be made using a gel-coat product which provides a water proof seal, such as 3M's Direct Bury Splice Kit or approved equal. Sanitary Sewer Force Main, Directional Drilled Water Main and Bore & Jack Water Main must be provided with two tracer wires per above specifications. For sanitary sewer force main applications the tracer wire must be installed on the side of the sanitary structure, to inside the structure by placing the tracer wire between the casting and adjustment.

10. Personnel trained in the use of butt-fusion equipment shall perform the joining of polyethylene pipe by methods recommended for new pipe connections. Personnel directly involved with installing the new pipe shall have received training in the proper methods for handling and installing the HDPE pipe by a qualified representative and certification of this training shall be provided to the City.

11. Connections to HDPE pipe shall not be made immediately after the pipe has been installed. The fused pipe should be laid in the trench and be allowed to reach an equilibrium temperature overnight (24-hour period) in its surrounding environment.

12. The HDPE pipe must be properly aligned at all transitions to conventional or HDPE water main and appurtenances.

TESTING
 13. The polyethylene pipe shall be pressure tested after the line and all fittings and valves have been installed. Connections may be left exposed for visual leak inspection. Under no circumstances shall HDPE pipe be pressure tested when the temperature of the pipe is above 80°F.

14. Connection to an existing water main shall be made only after pressure and bacteriological test have been successfully completed. The city consultant must be present for the test and review the results. Testing and disinfection procedures shall meet the requirements of ANSI/AWWA-C600/C651. The water main shall pass a test of 150 psi for a two (2) hour period. Water loss shall not exceed a rate of 11.65 U.S. gallons per inch diameter per mile of water main in twenty-four (24) hours. Bacteria sample (24) hours back to back.

PIPE BURSTING PROJECTS
 11. The method approved for rehabilitation of existing water mains by pipe bursting and installation of new HDPE pipe is T.I. Technologies GRUNDORACK SYSTEMS, 8(00-533-2078) or approved equal. All contractors must be licensed to use the particular technology proposed for this work.

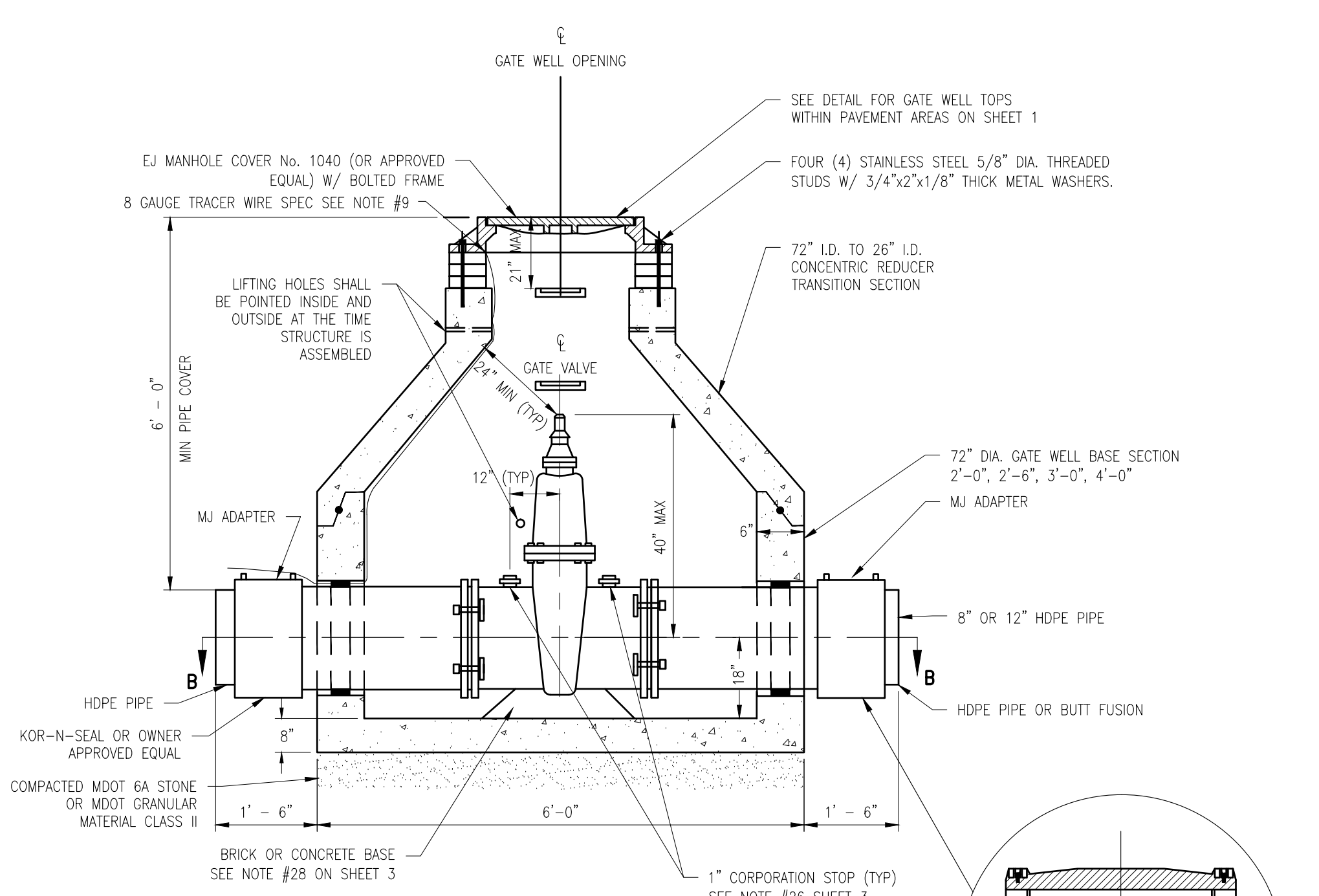
12. The pipe-bursting tool shall be designed and manufactured to force its way through existing pipe materials by fragmenting the pipe and compressing the old pipe sections into the surrounding soil as it progresses. The bursting unit shall be pneumatic and shall generate enough force to burst and compact the existing pipeline.

13. The Manufacturer's specifications shall dictate what size tool should be used in what diameter pipe, as well as parameters of what size tool for percentage of upside allowed.

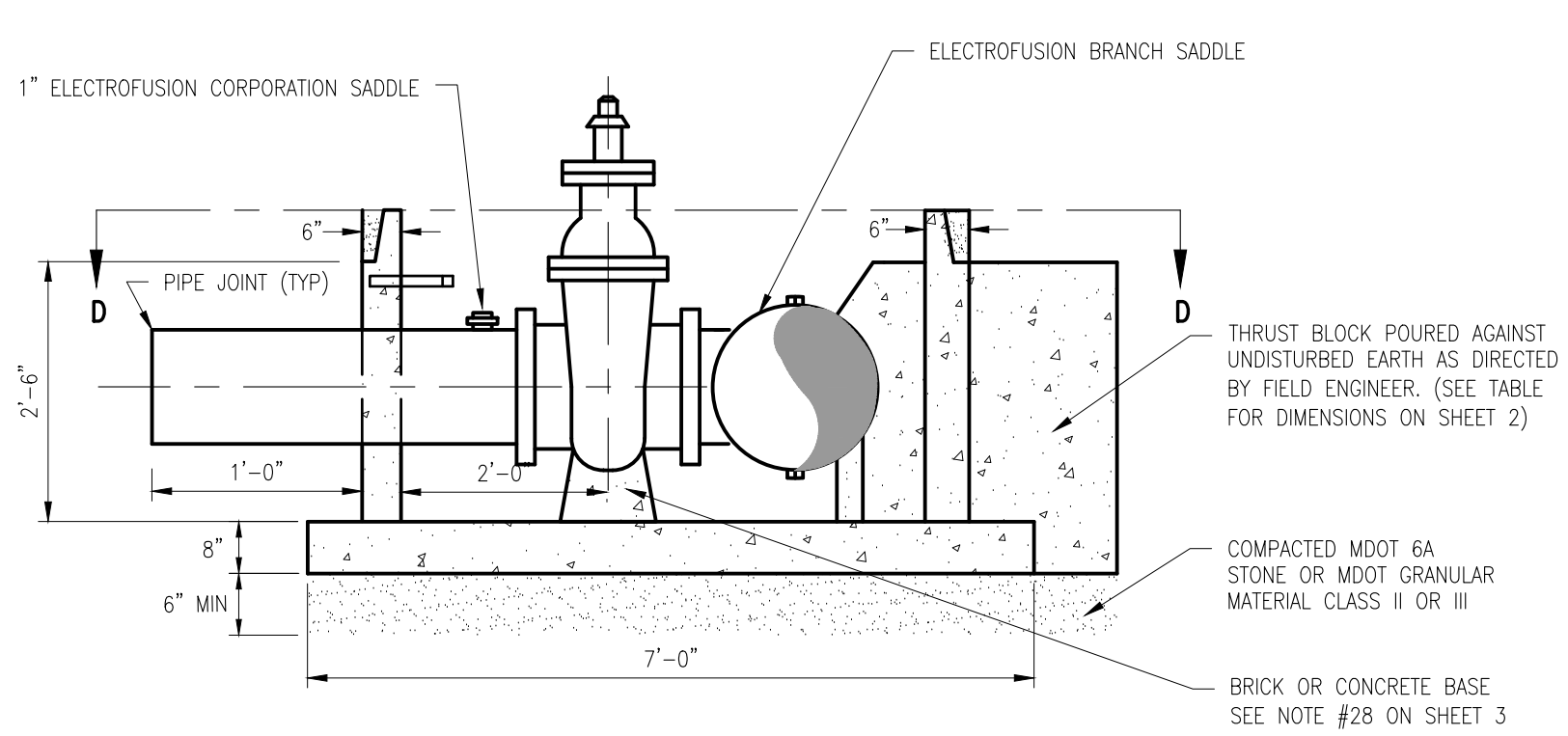
14. Prior to construction, the Contractor shall develop and provide to the City of Novi for review and approval a temporary water system plan to supply water services to area residents and businesses during pipe bursting operations. It is anticipated that the temporary system will be fed from existing fire hydrants. The temporary system and hydrants shall have passed bacteriological testing prior to use.

15. All service connections on the existing water main that is to be burst, or will be taken out of service, shall be connected to the temporary water system prior to mainline bursting, disinfection, testing and service reconnection operations. Temporary service connections shall be made at the water service stop box by disconnecting the existing water service and connecting the temporary water line to the stop box.

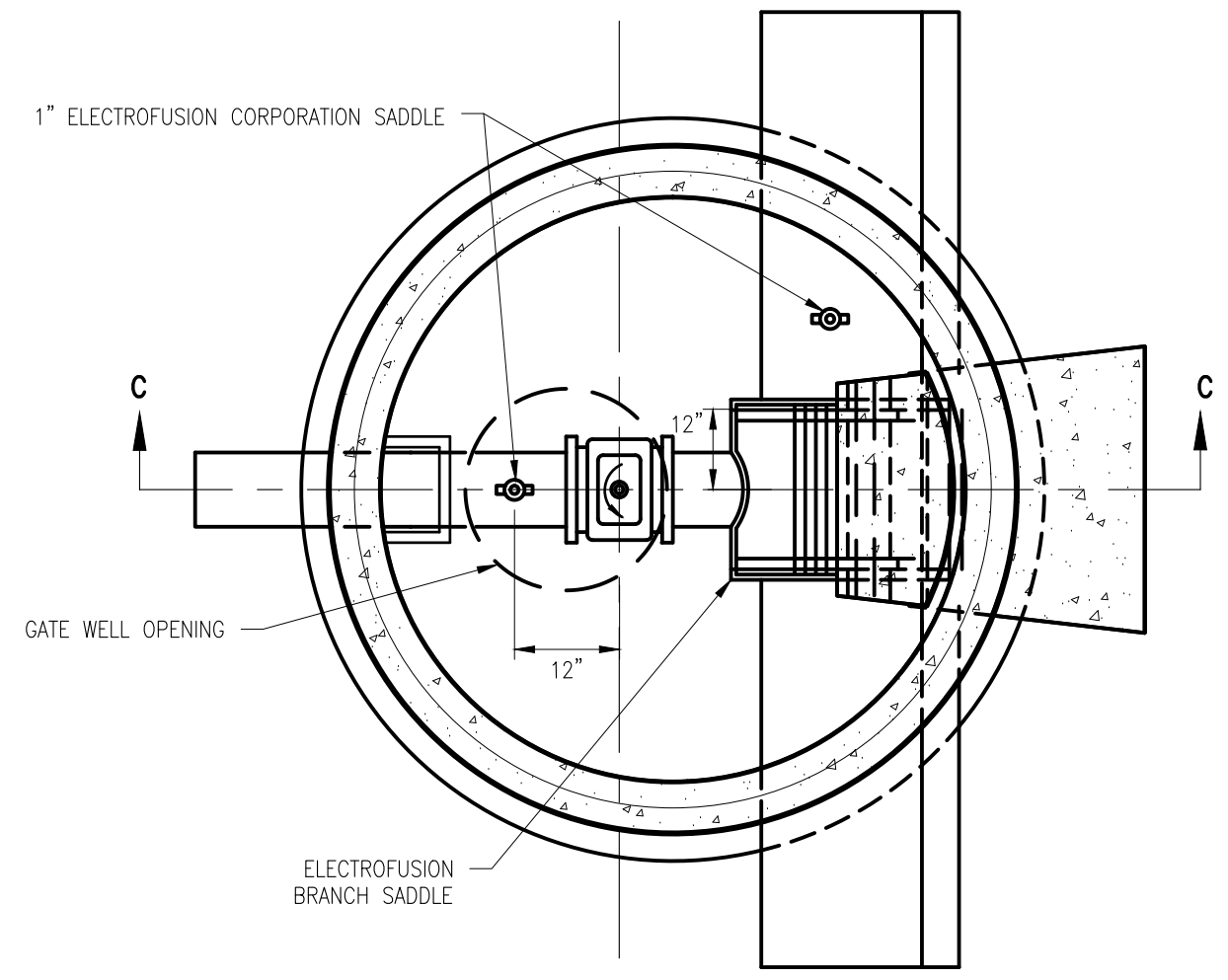
EQUIVALENT DUCTILE IRON PIPE SIZES (DIPS)			
NOMINAL PIPE SIZE (DIPS)	O.D. SIZE (INCHES)	MIN WALL THICKNESS (DIPS)	MIN WALL THICKNESS (INCHES)
6"	6.90	0.627	11 (160 PSI)
8"	9.05	0.823	
12"	13.20	1.200	
16"	17.40	1.582	
20"	21.60	1.964	
24"	25.60	2.345	



8" AND 12" GATE WELL FOR HDPE WATER MAIN
(PROFILE VIEW, A-A)

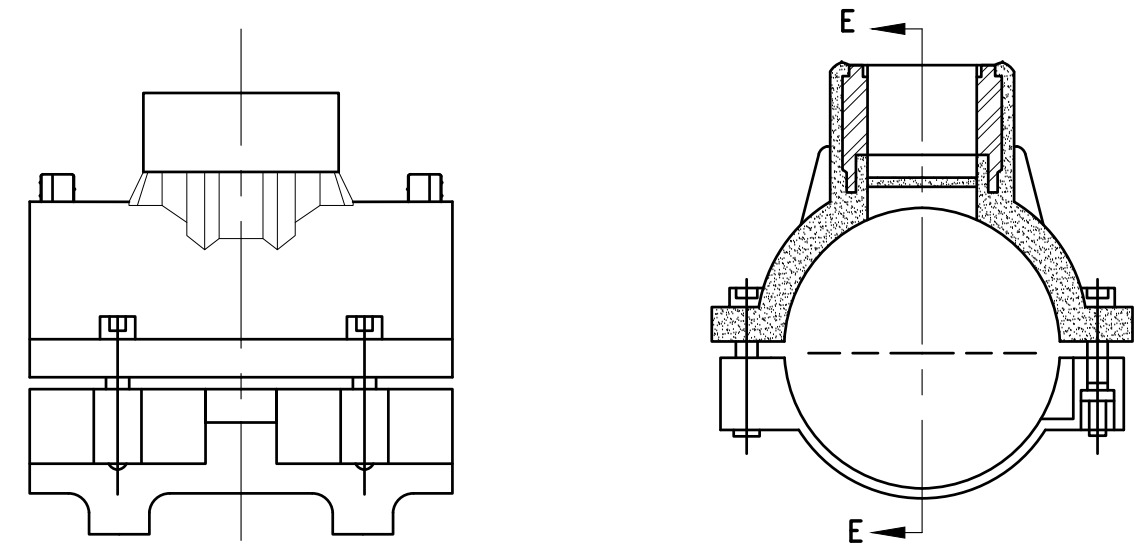


(PROFILE VIEW, C-C)



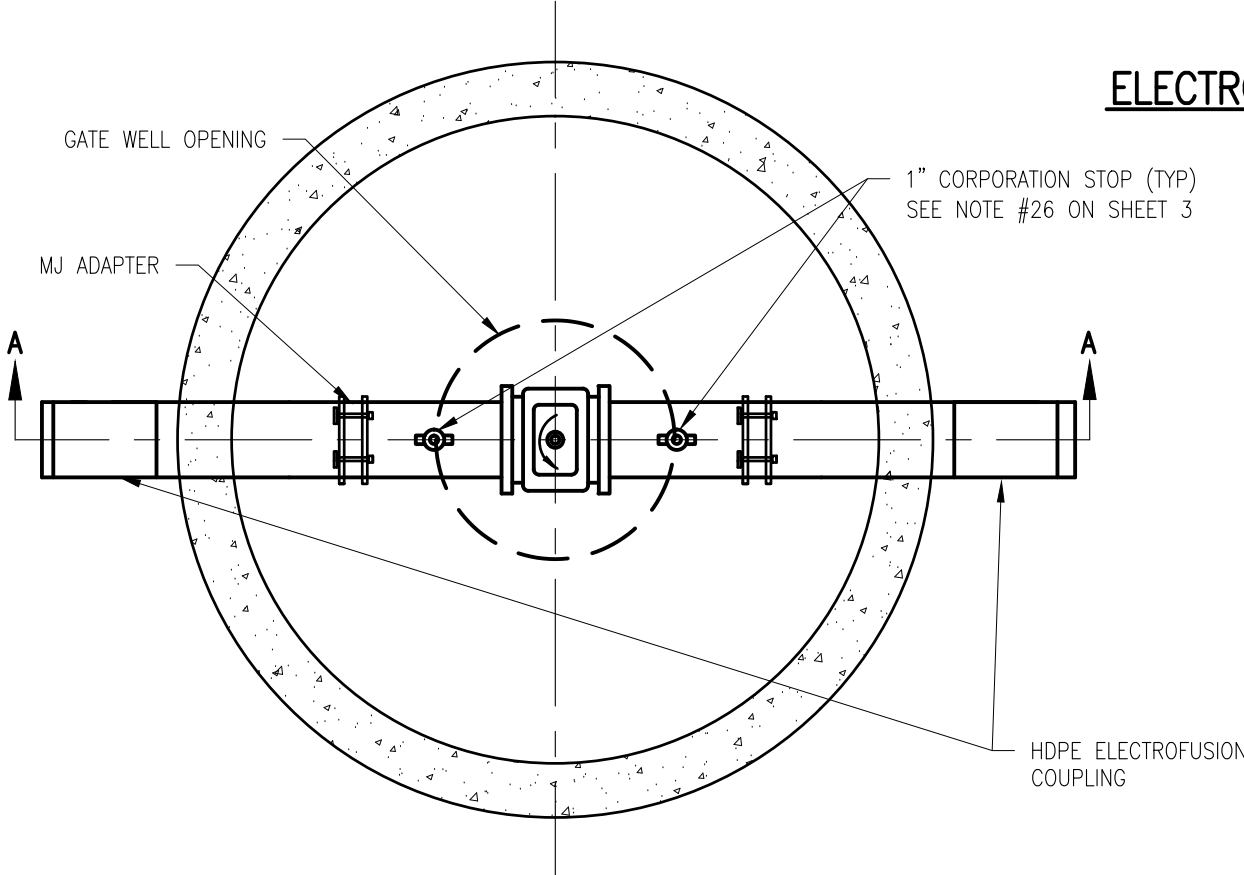
(PLAN VIEW, D-D)

HDPE BRANCH SADDLE VALVE & WELL TYPICAL

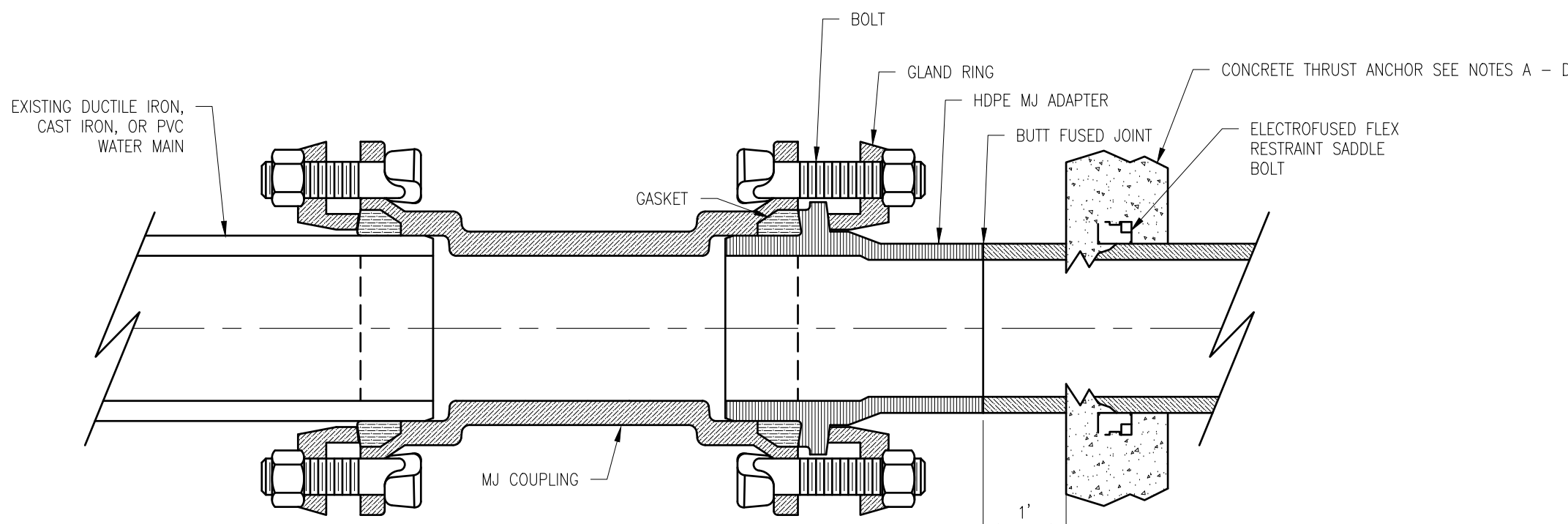


ELECTROFUSION BRANCH SADDLE DETAIL

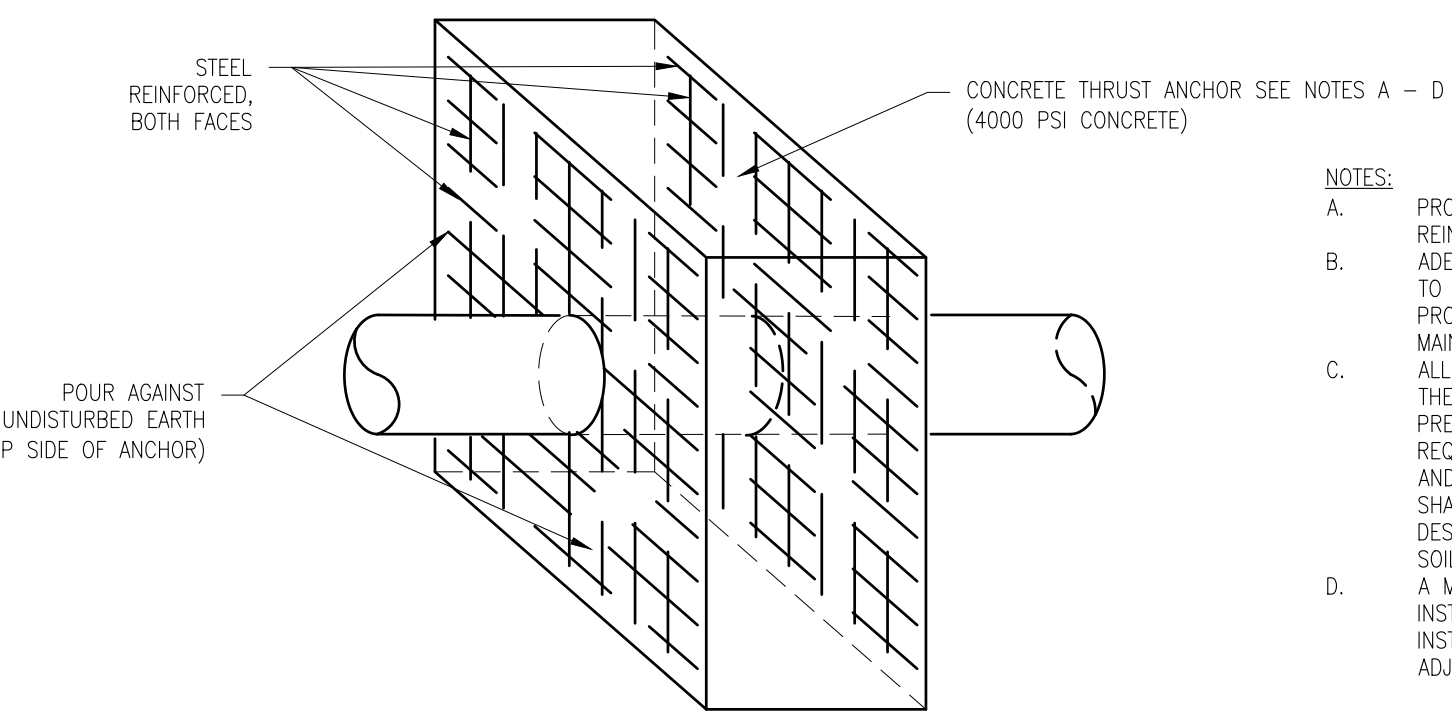
ELECTROFUSION DIPS COUPLINGS



8" AND 12" GATE WELL TYPICAL FOR HDPE WATER MAIN
(PLAN VIEW, B-B)



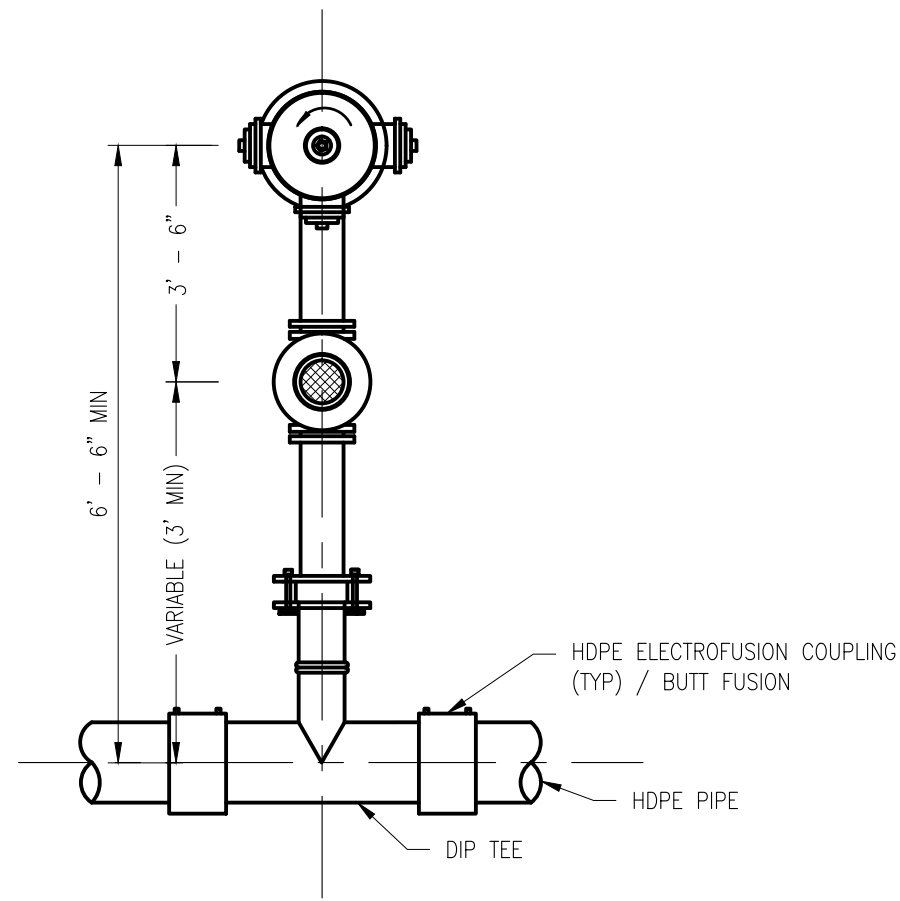
MJ ADAPTER FOR HDPE PIPE



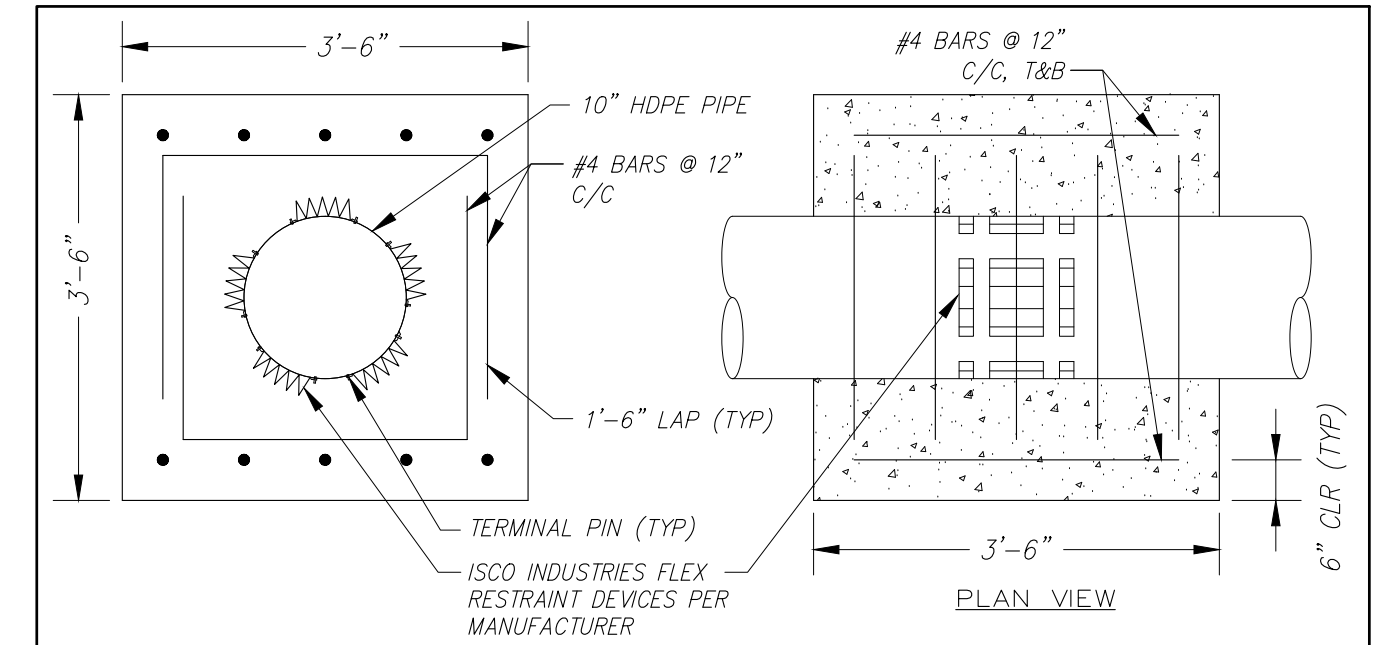
CONCRETE THRUST ANCHOR FOR HDPE PIPE

- NOTES:**
- PROVIDE 2" MINIMUM CONCRETE COVER OVER ALL REINFORCING STEEL.
 - ADEQUATE CURING TIME OR USE OF HIGH EARLY CONCRETE TO ACHIEVE THE REQUIRED 4,000 PSI STRENGTH SHALL BE PROVIDED FOR ALL THRUST ANCHORS PRIOR TO TESTING MAIN.
 - ALL CONCRETE THRUST ANCHORS MUST BE DESIGNED FOR THE SITE SPECIFIC SOIL, GROUNDWATER AND SYSTEM PRESSURE CONDITIONS. THE DESIGN ENGINEER WILL BE REQUIRED TO SUBMIT CALCULATIONS SUPPORTING THE SIZE AND REINFORCEMENT. DIMENSIONS OF THE THRUST ANCHOR SHALL BE SPECIFIED BY THE DESIGN ENGINEER AND DESIGNED BASED ON WATER MAIN PRESSURE AND SIZE AND SOIL CONDITIONS.
 - A MINIMUM OF 48 HOURS TIME SHALL BE PROVIDED AFTER INSTALLATION IS COMPLETE PRIOR TO CONSTRUCTING AND INSTALLING THE THRUST ANCHORS TO ALLOW HDPE PIPE TO ADJUST TO GROUND TEMPERATURE.

HDPE WATER MAIN JOINT RESTRAINT
(FOR CONNECTING HDPE PIPE TO DUCTILE IRON PIPE)



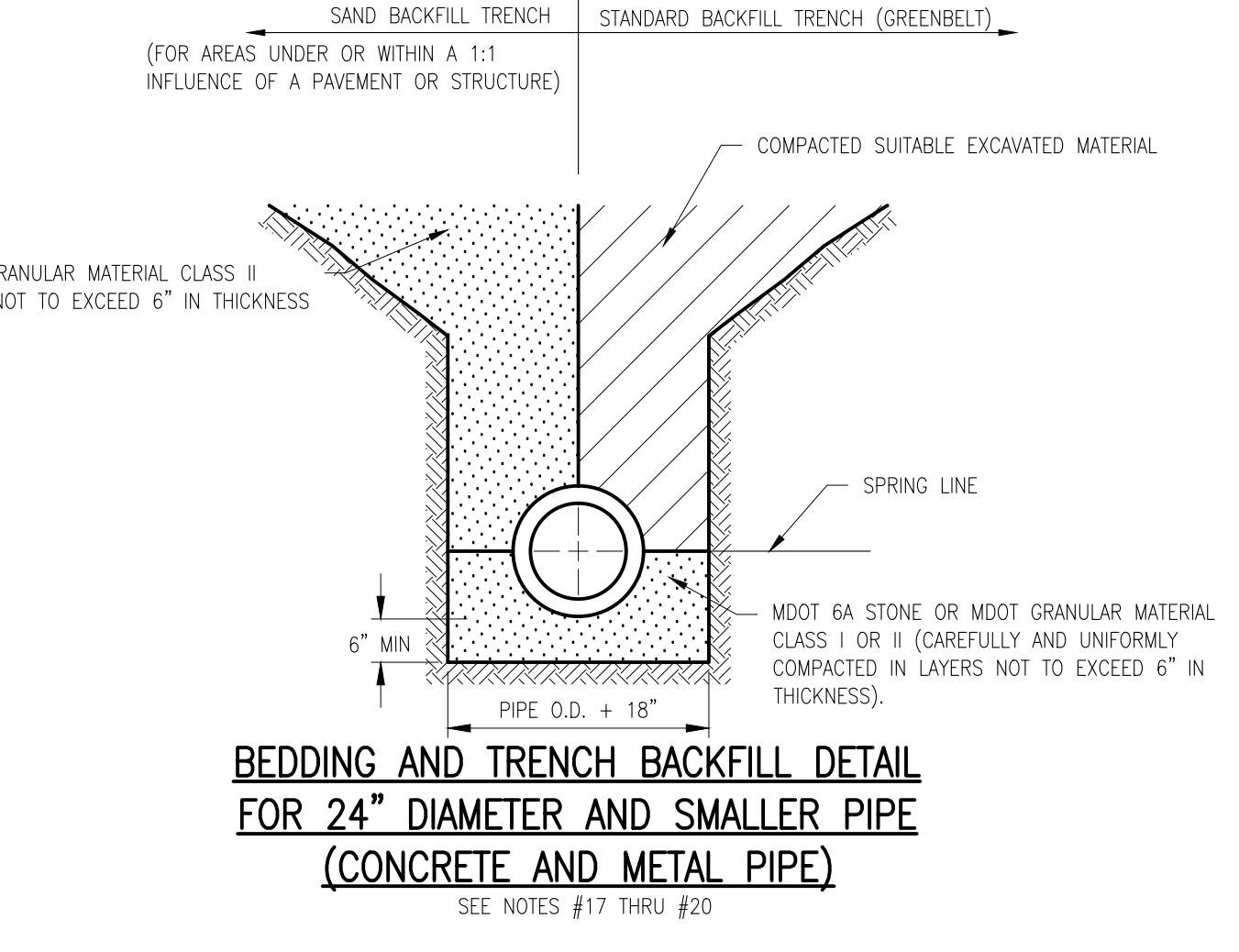
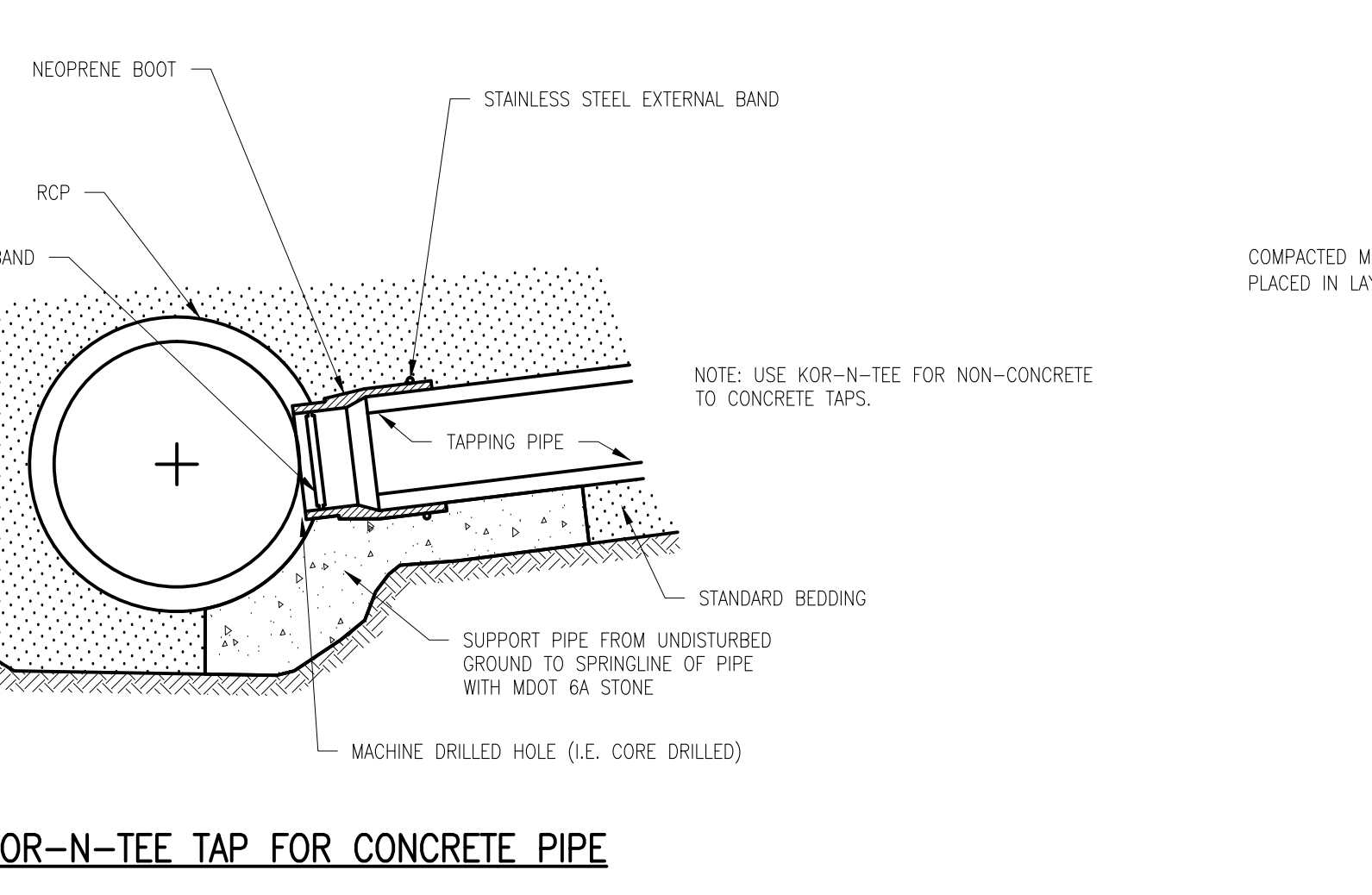
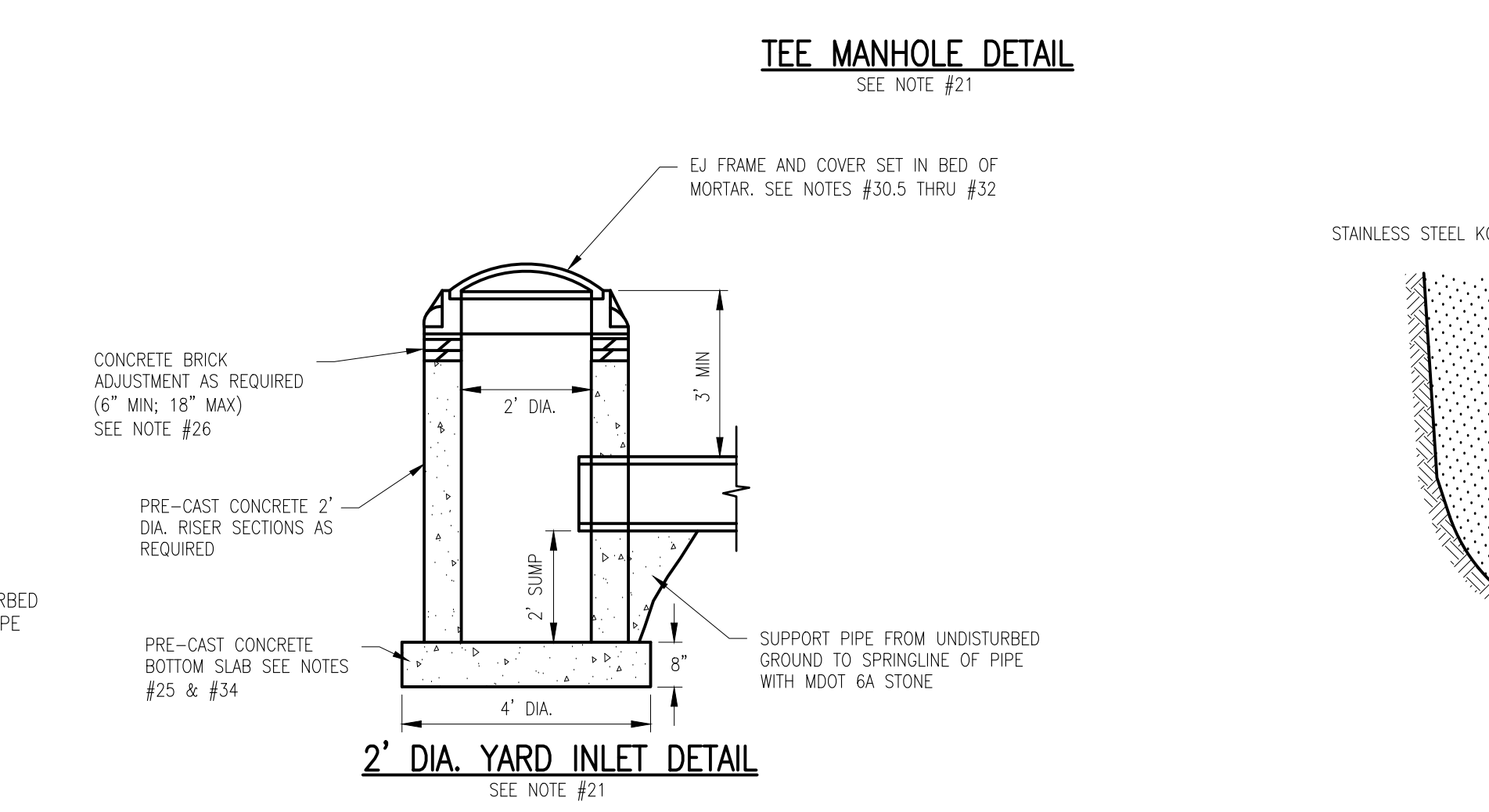
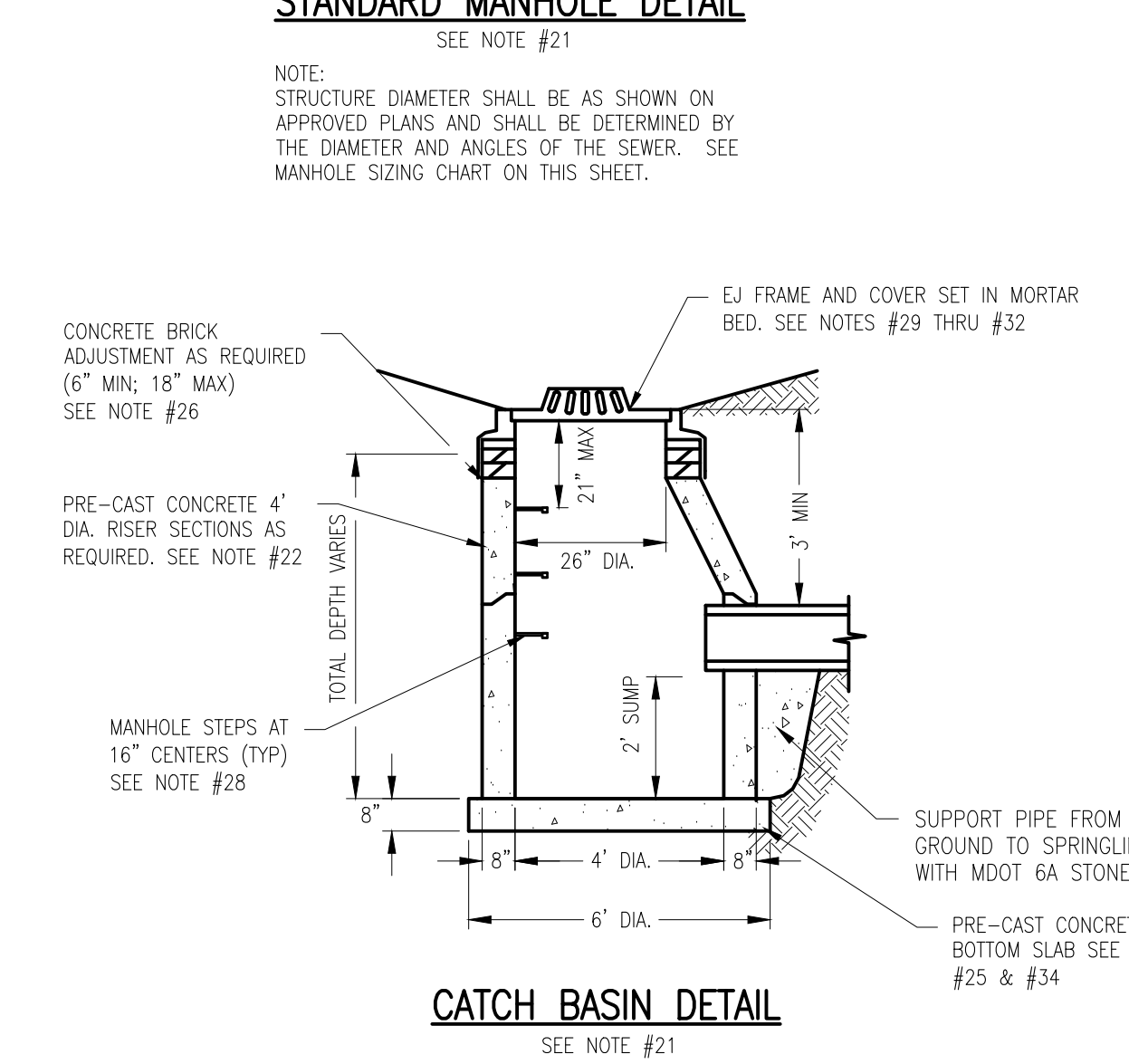
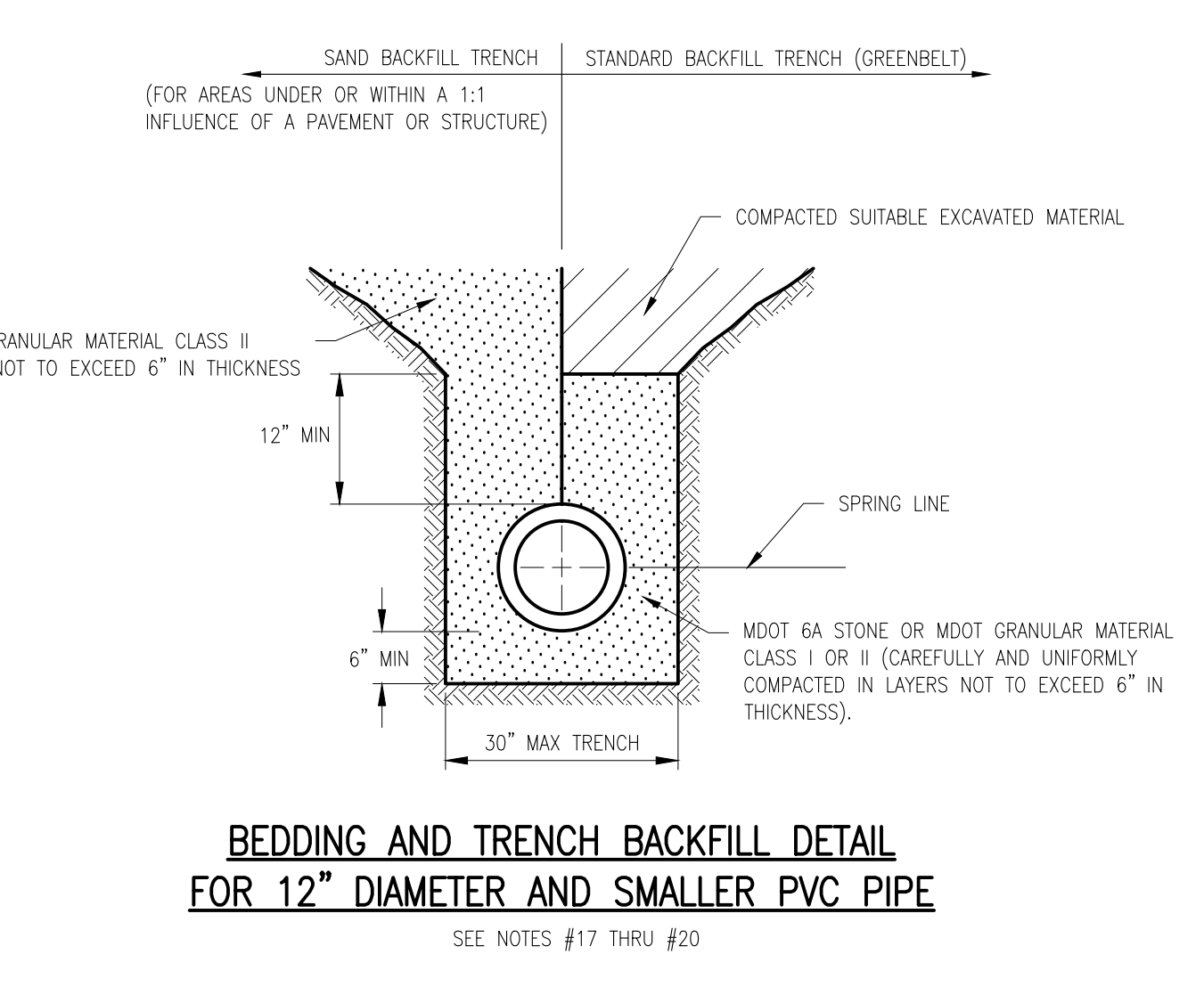
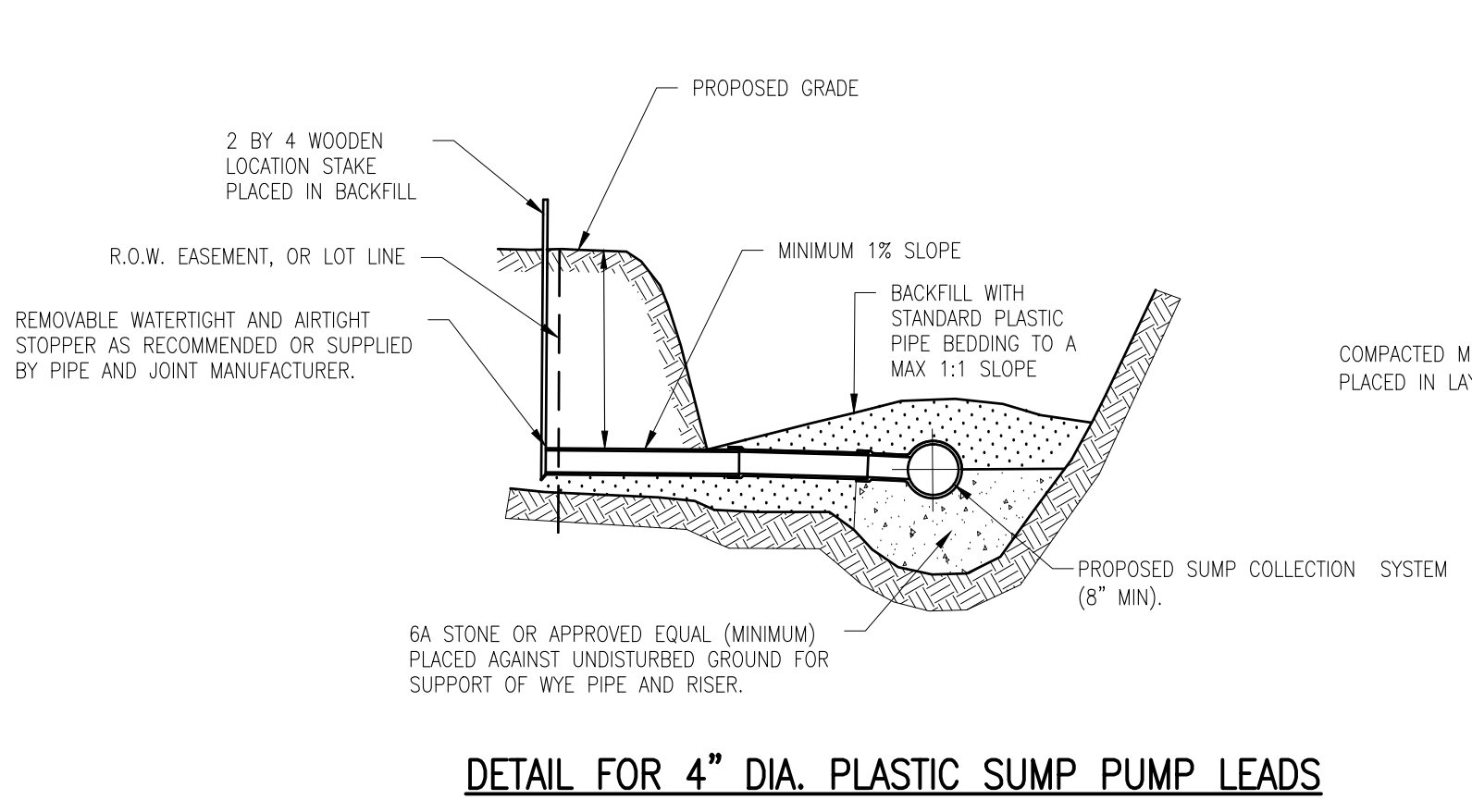
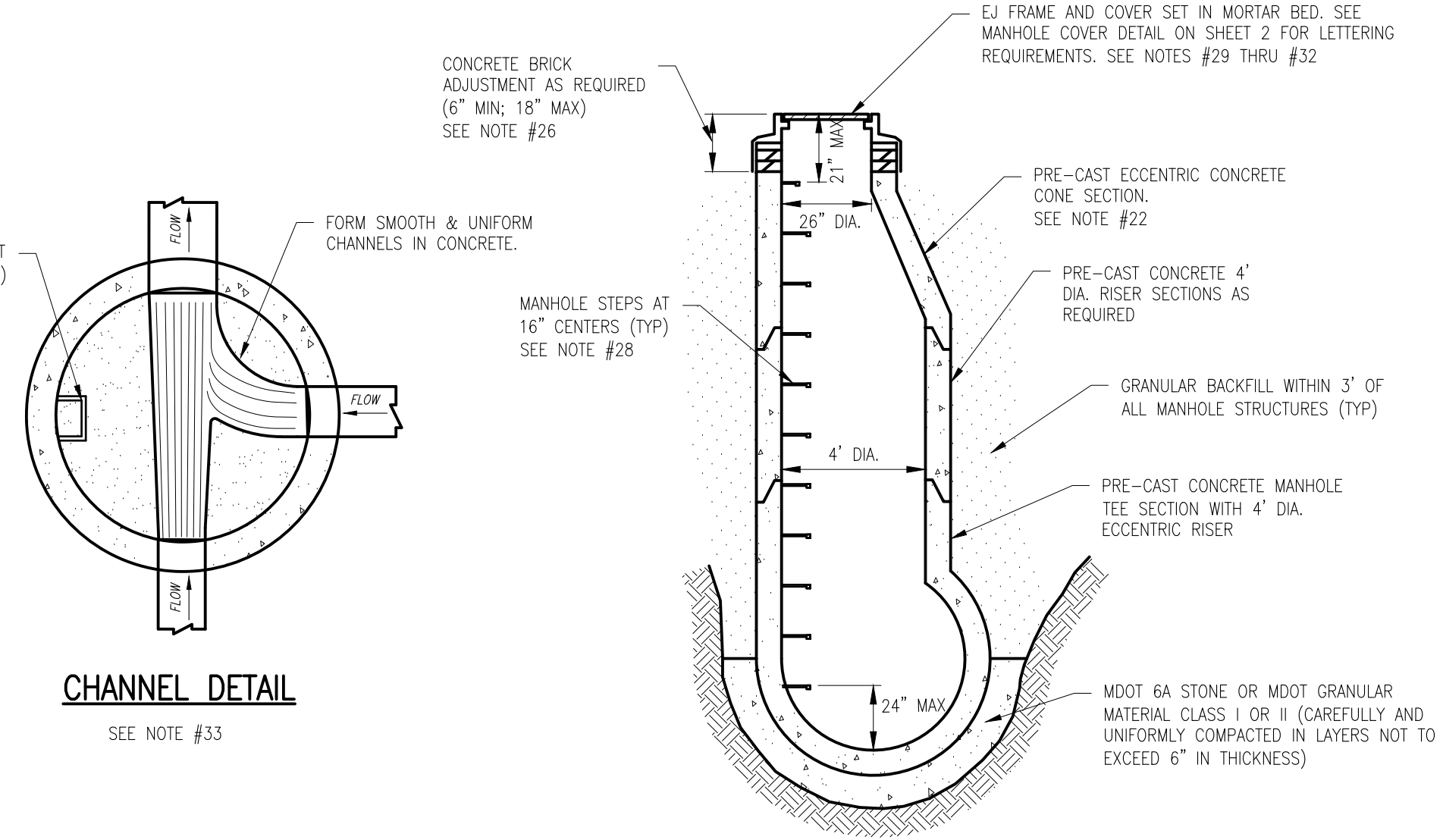
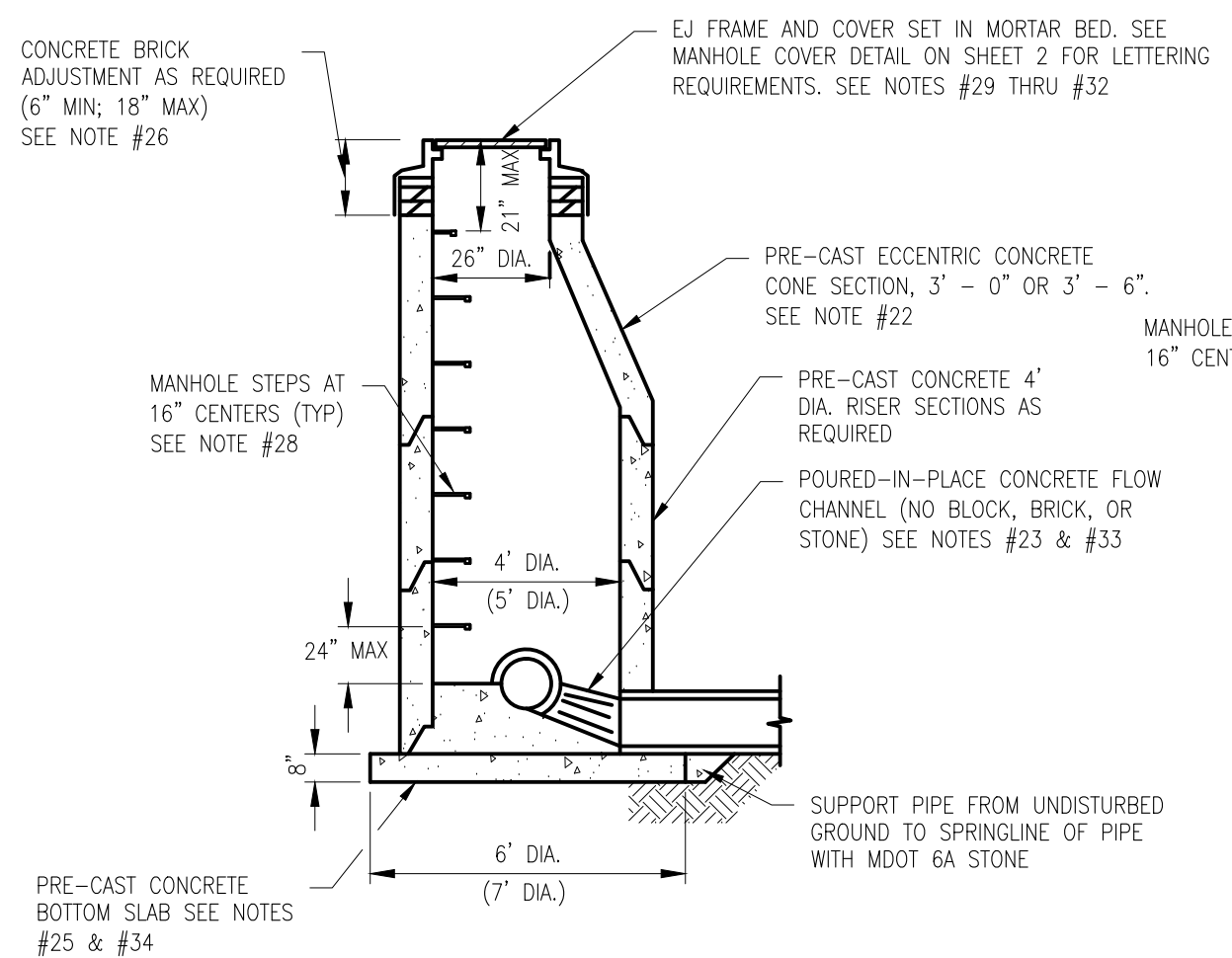
FIRE HYDRANT ASSEMBLY WITH HDPE PRE-MANUFACTURED TEE



- NOTES:**
- BEARING AREA SHALL BE AGAINST UNDISTURBED SOIL.
 - CONCRETE SHALL HAVE A MIN. 28 DAY COMP. STRENGTH OF 3,500 PSI.
 - ALL BARS SHALL BE EPOXY COATED.

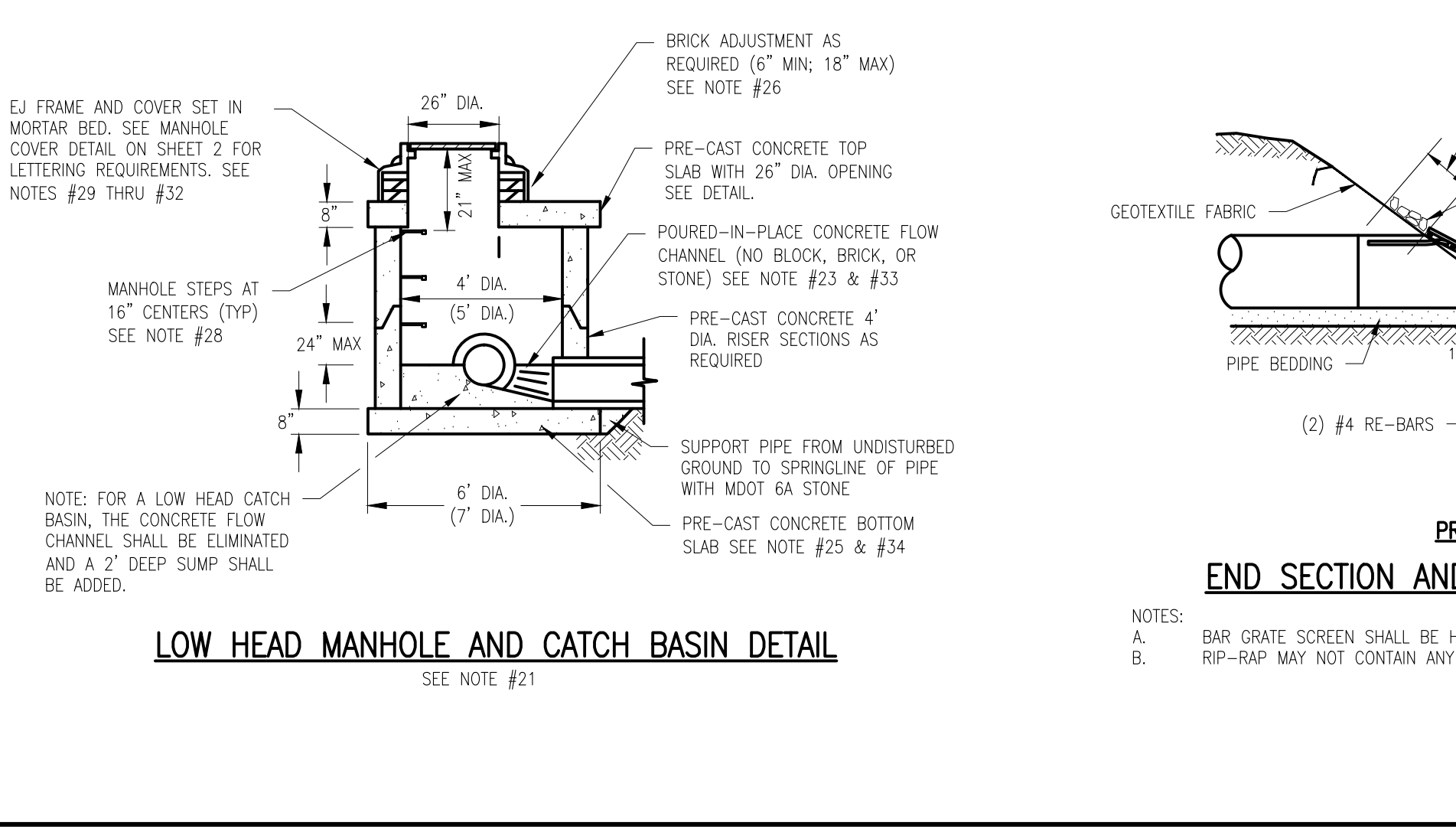
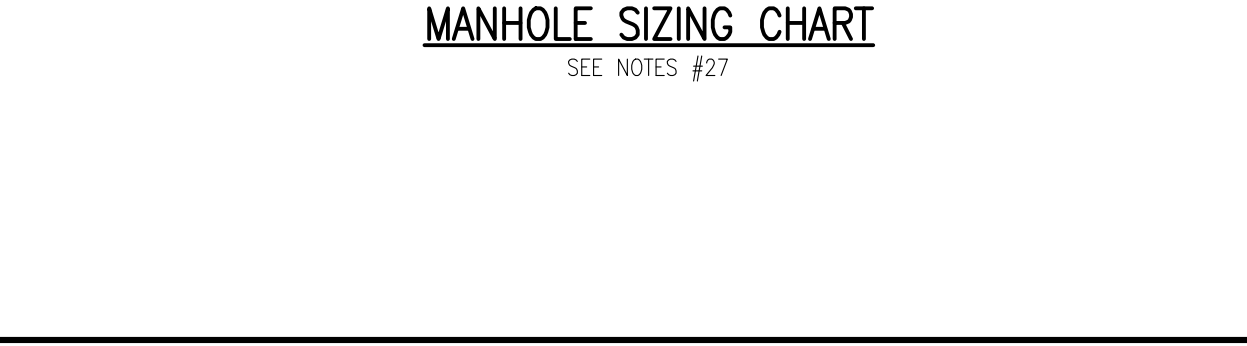
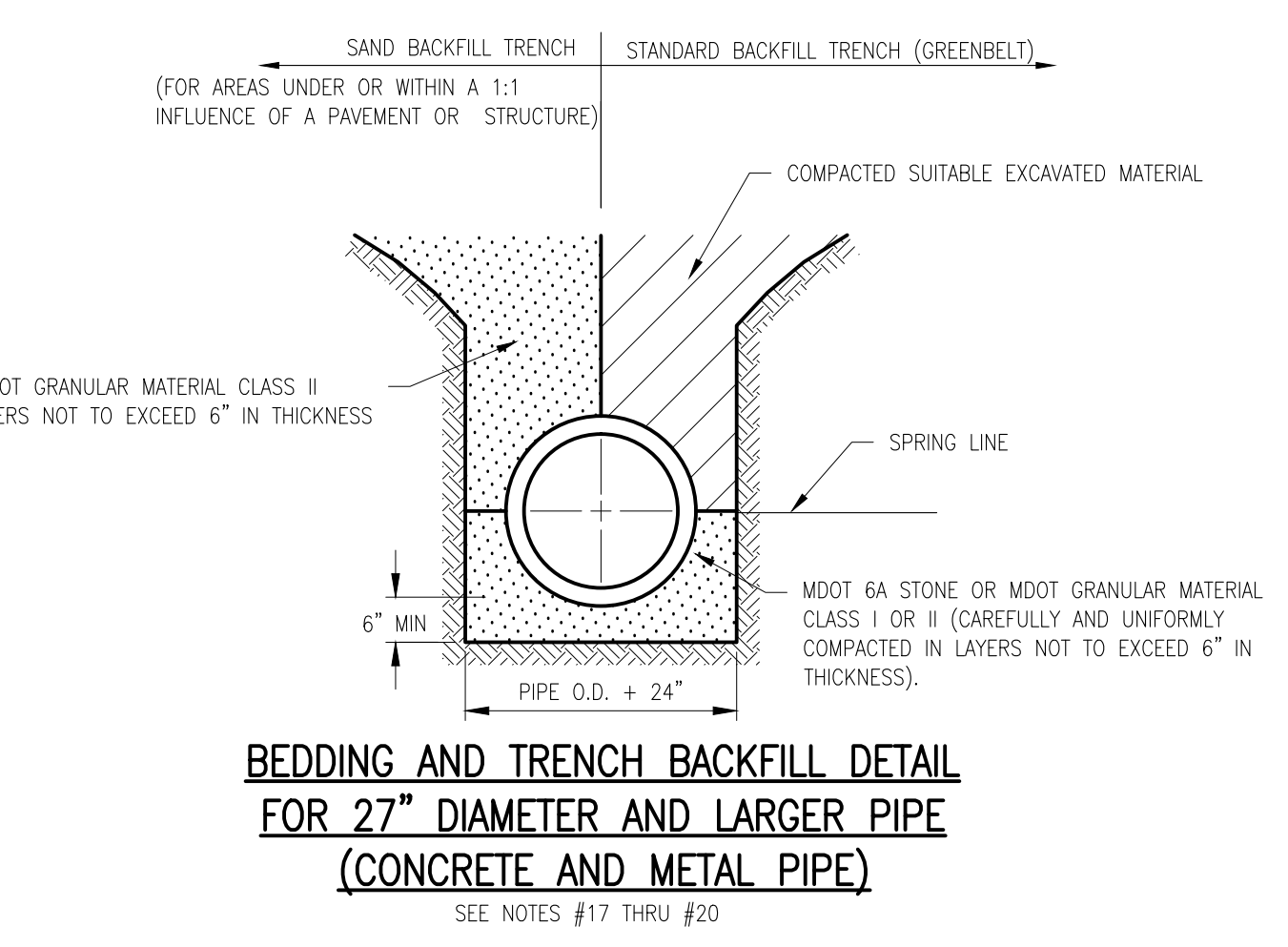
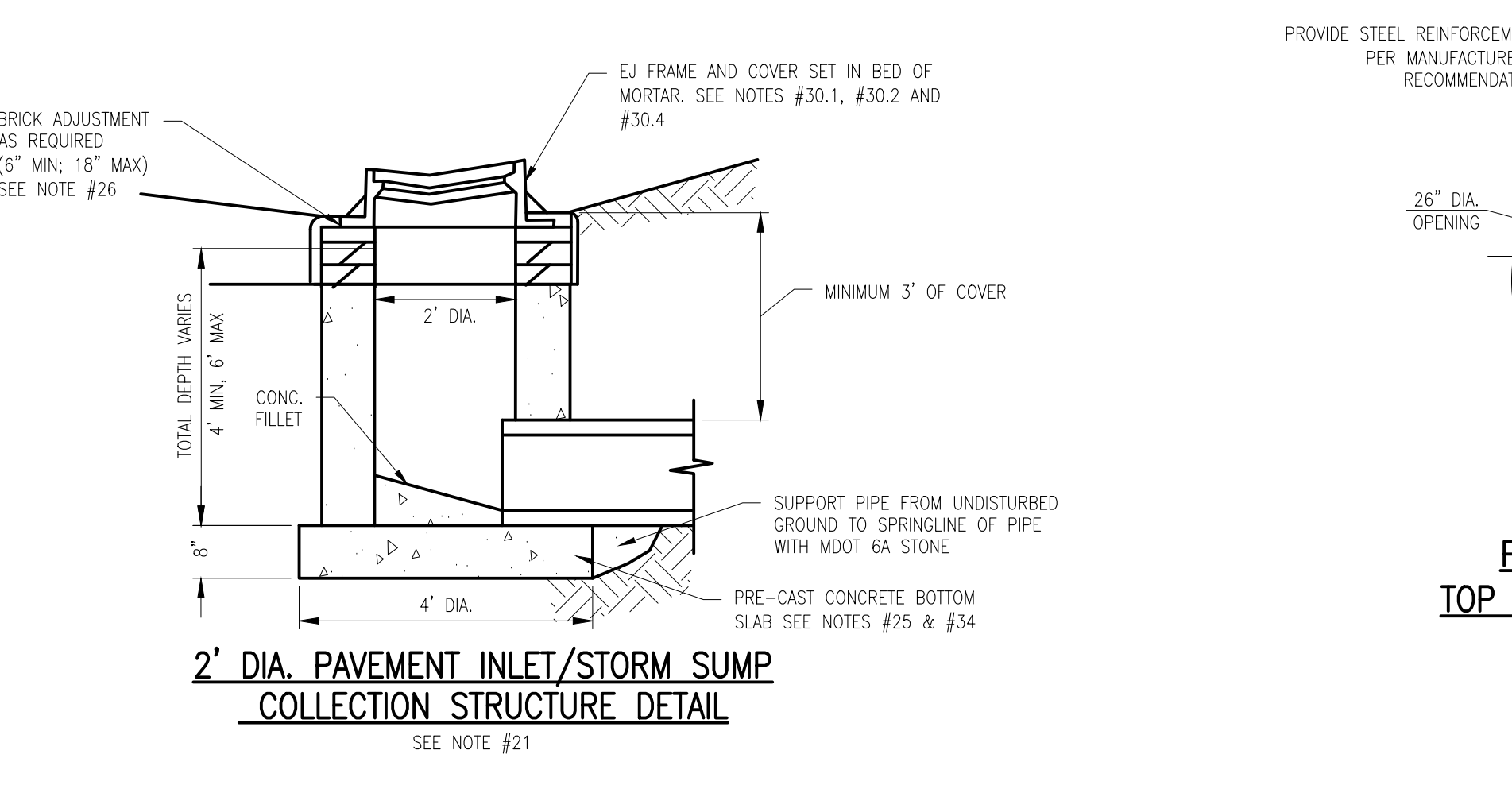
HDPE FORCE MAIN / WATER MAIN PIPE RESTRAINT
SCALE: NONE

DRAWING PATH: J:\M\Design\N\7003-Nov 2017 Standards and Details\DWG\Water.dwg Feb 16, 2018 - 9:08am



MANHOLE SIZING CHART
SEE NOTES #27

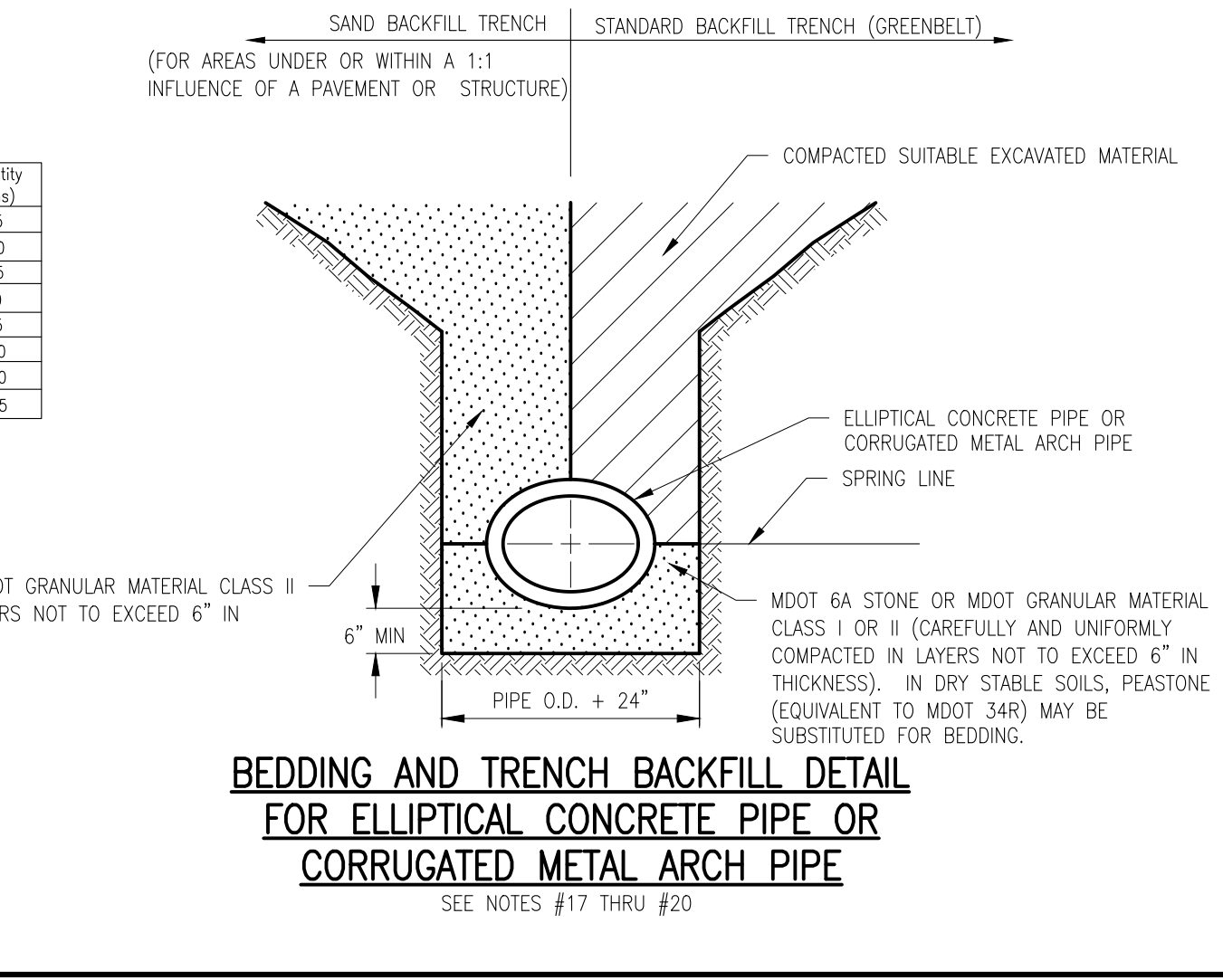
INSIDE DIAMETER	MAXIMUM PIPE SIZE FOR STRAIGHT THRU INSTALLATION	MAXIMUM PIPE SIZE FOR RIGHT ANGLE INSTALLATION
4' - 0"	24"	18"
5' - 0"	36"	24"
6' - 0"	42"	36"
8' - 0"	60"	42"

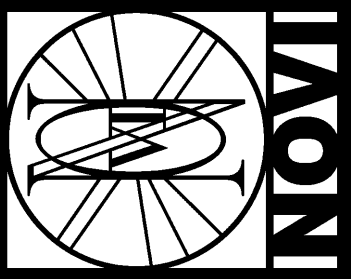


TYPICAL DETAIL FOR ROCK OUTLET PROTECTION BELOW A CULVERT

RIP RAP ROCK FRAGMENT SIZE CHART

Culvert Size D _c (inches)	Rock Size d _r (inches)	Apron Length L _a (feet)	Upstream Width W _u (feet)	Downstream Width W _d (feet)	Thickness T (inches)	Quantity (tons)
12	6	12	3	13	18	15
18	9	16	4.5	18	24	20
24	12	20	6	22	30	25
30	15	24	7.5	24	36	30
36	18	28	9	27	42	35
42	21	32	10.5	30	48	40
48	24	36	12	32	54	45



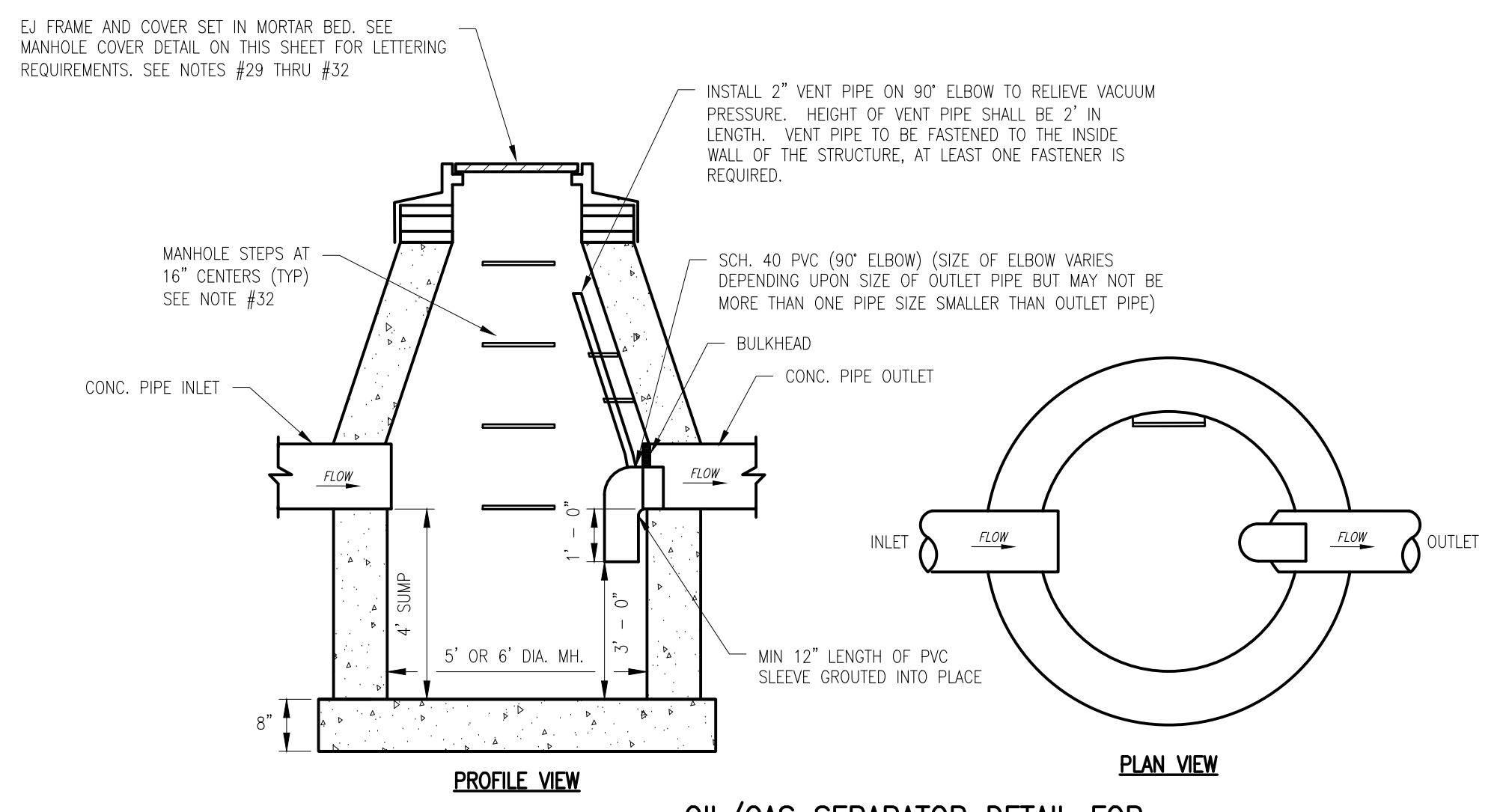
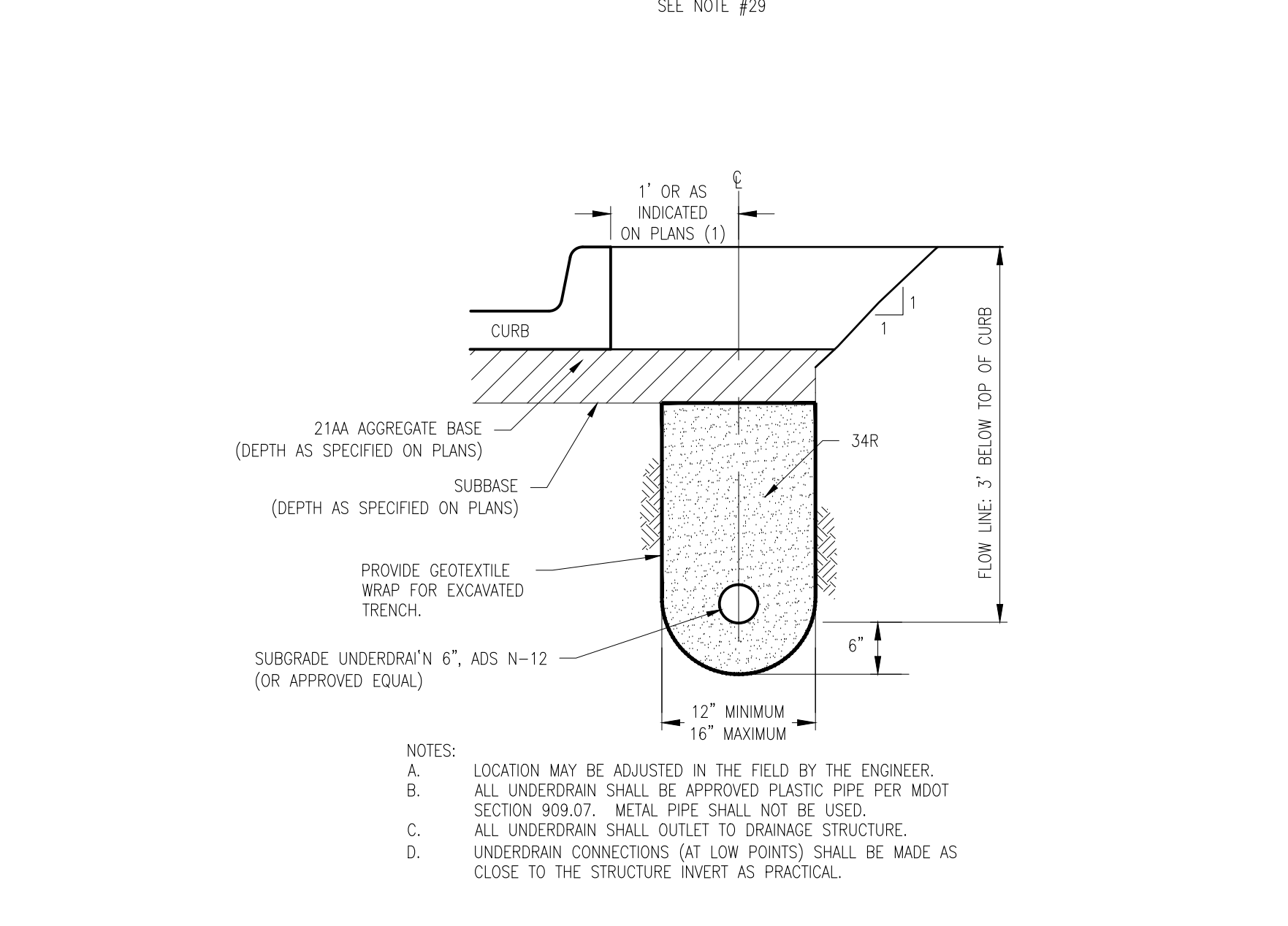
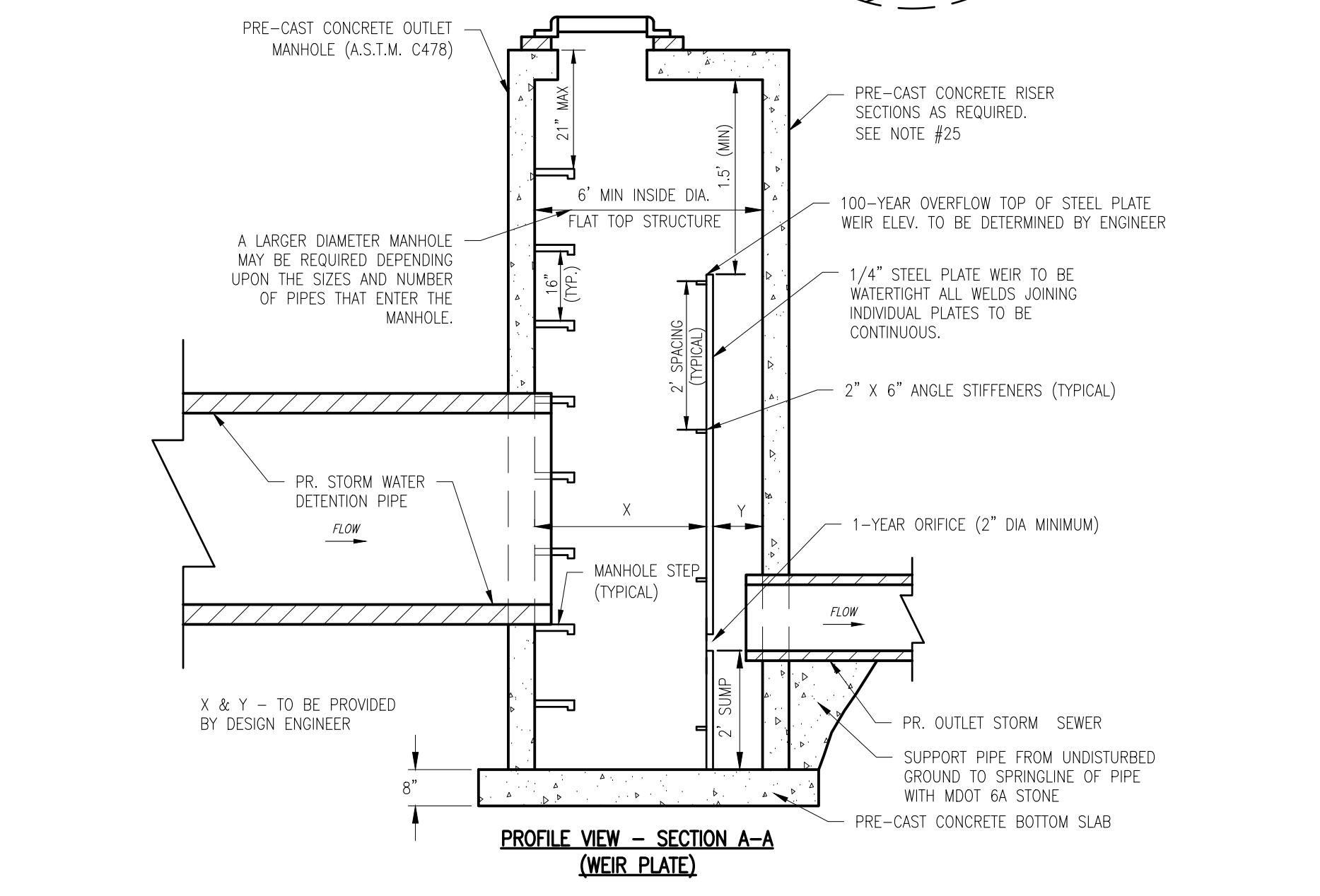
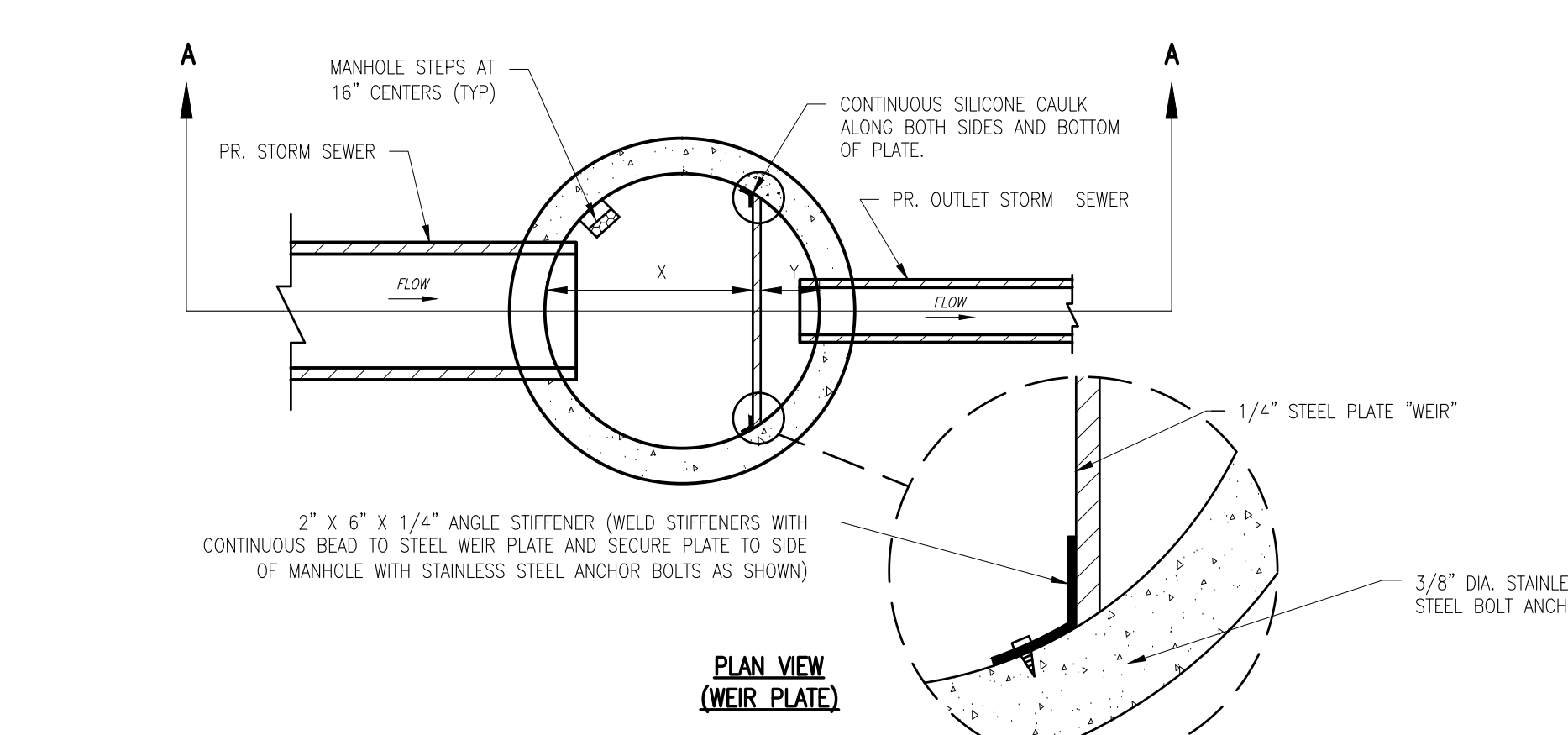
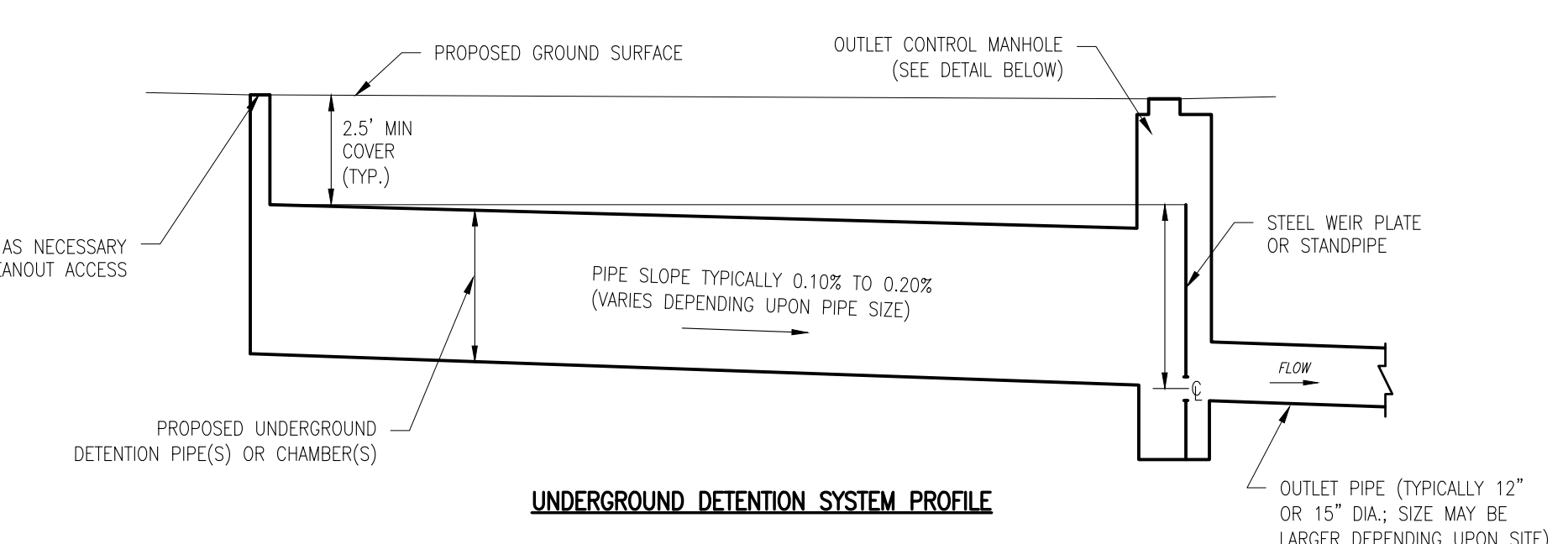
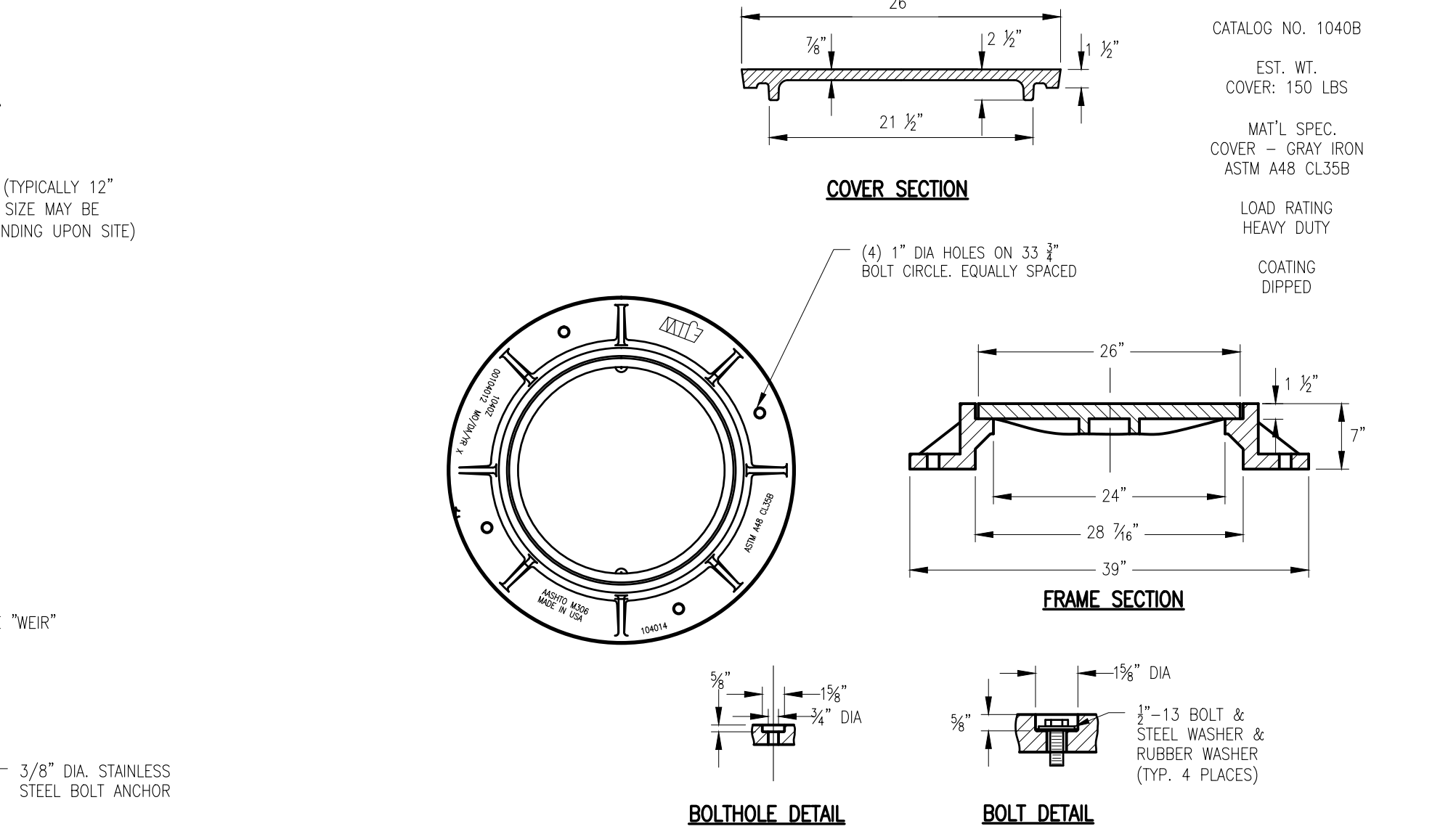
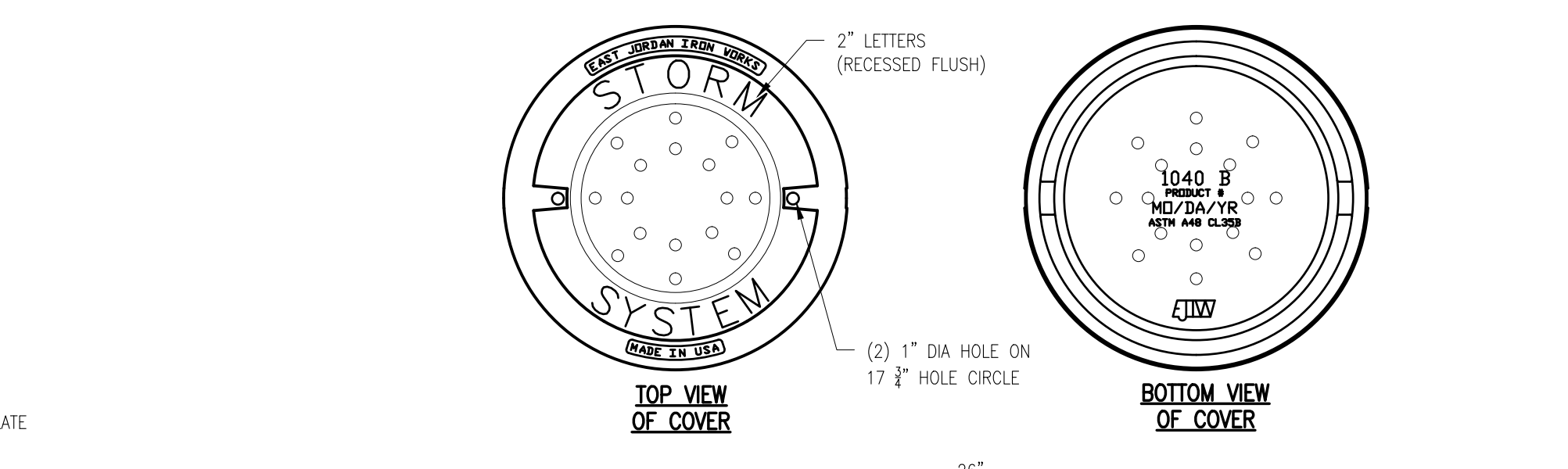
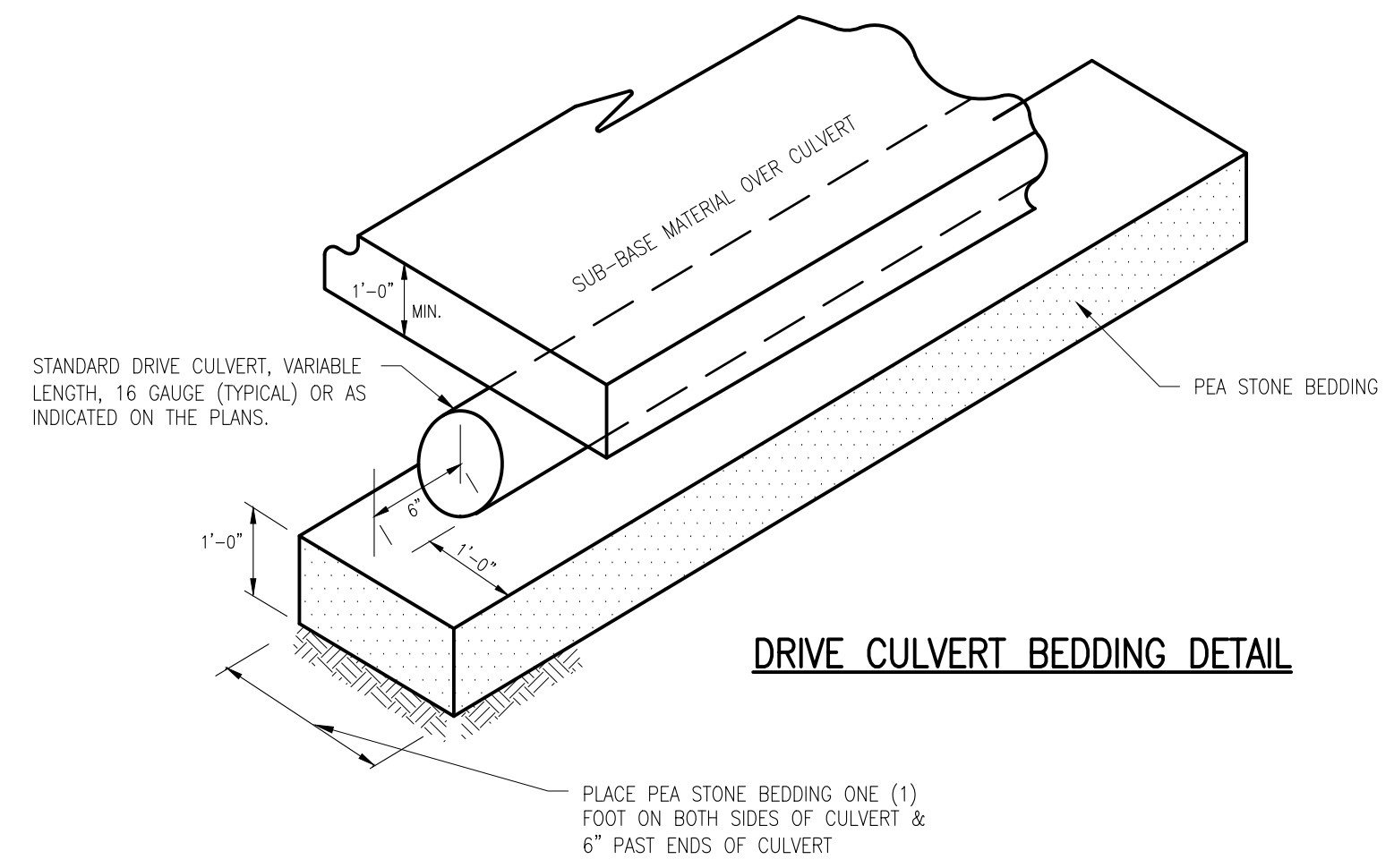
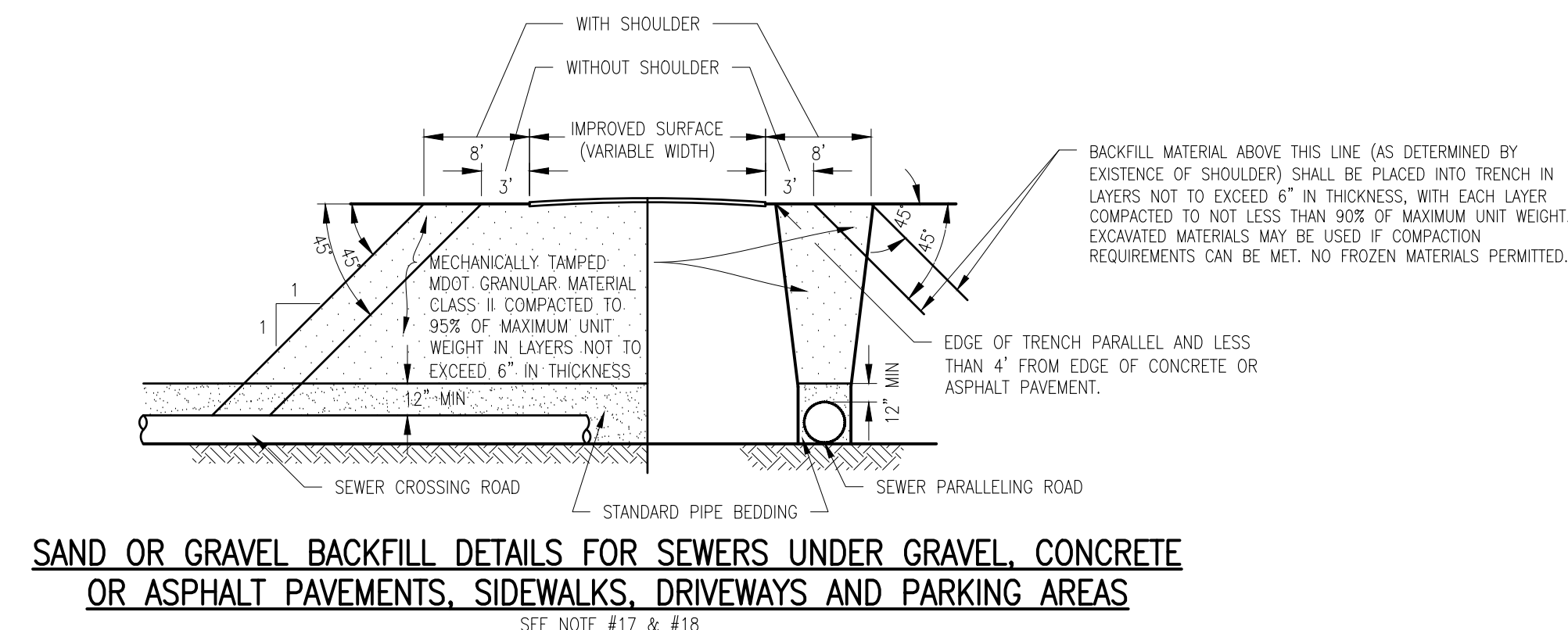


STORM SEWER CONSTRUCTION NOTES

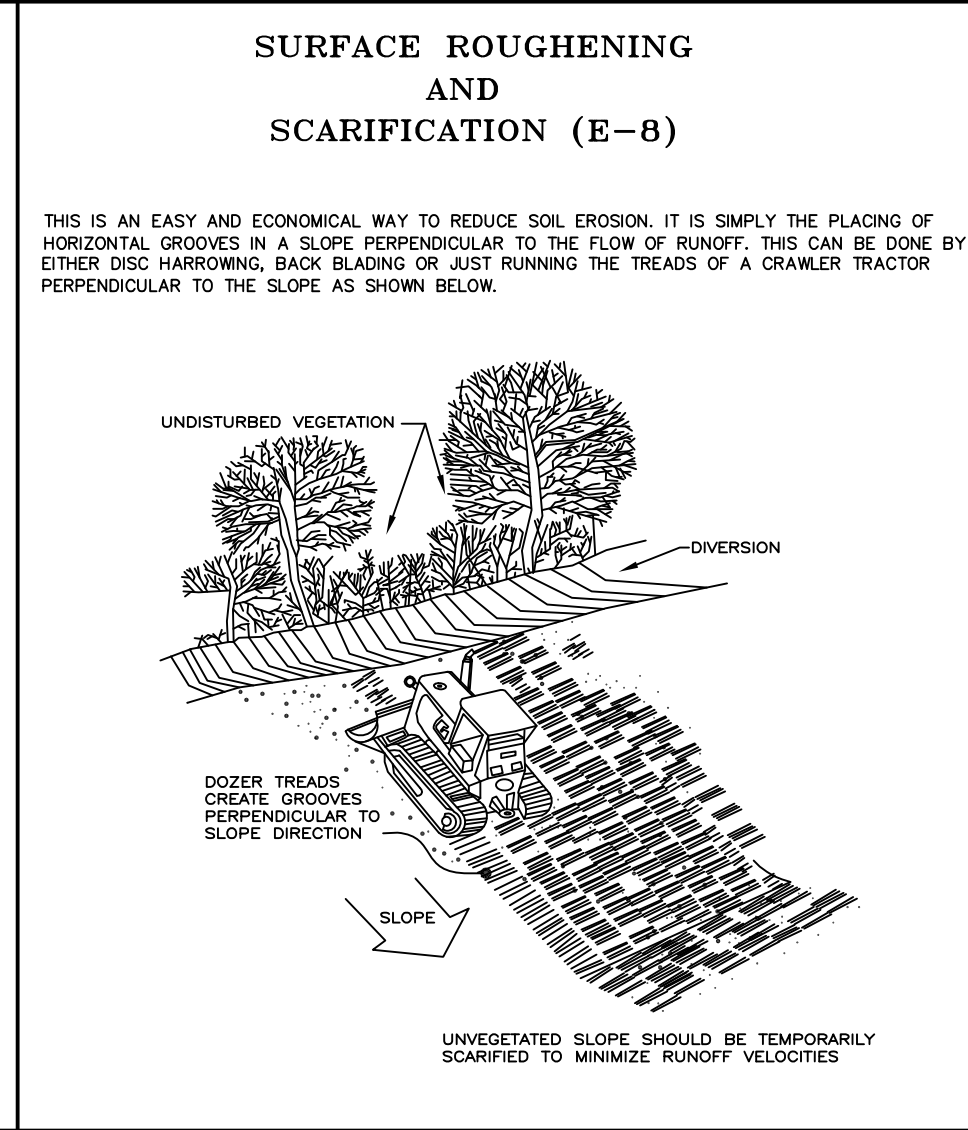
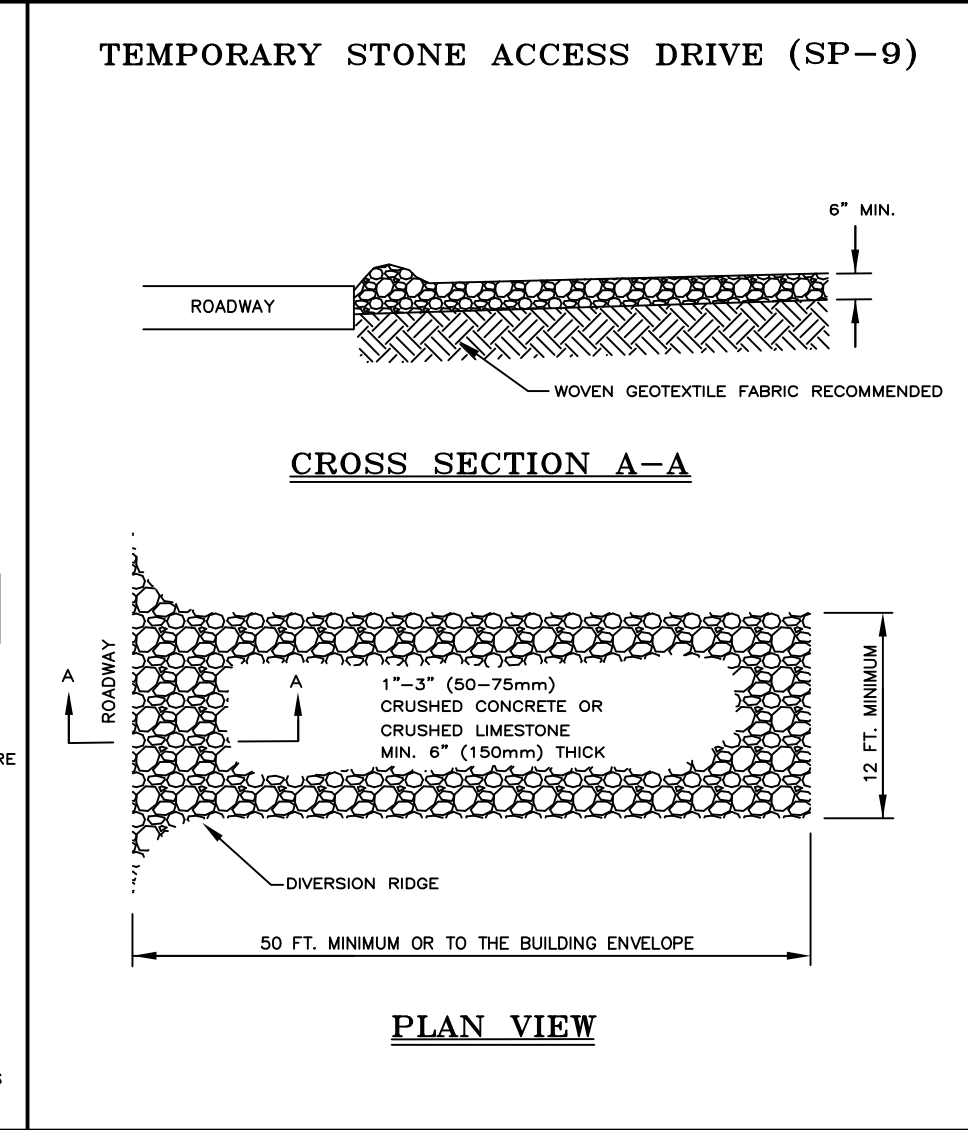
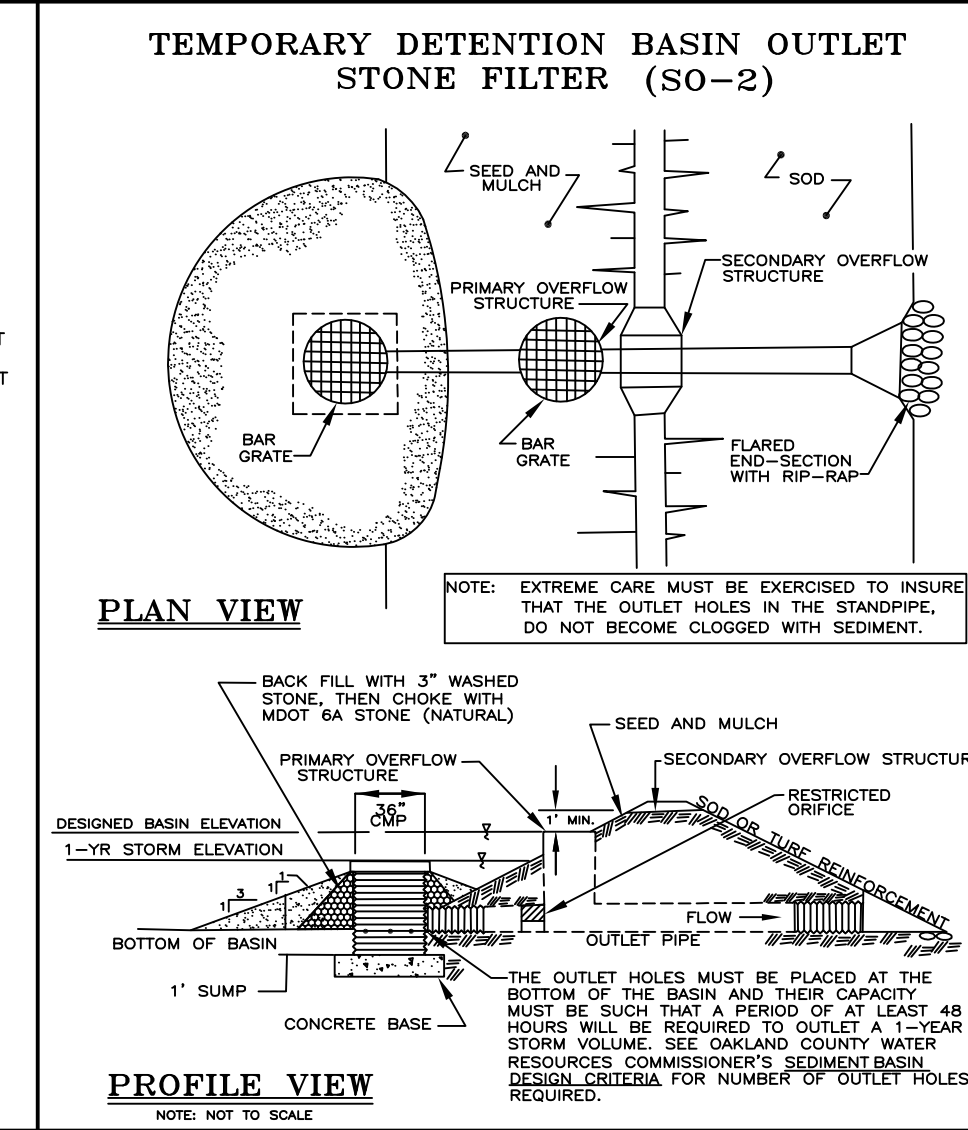
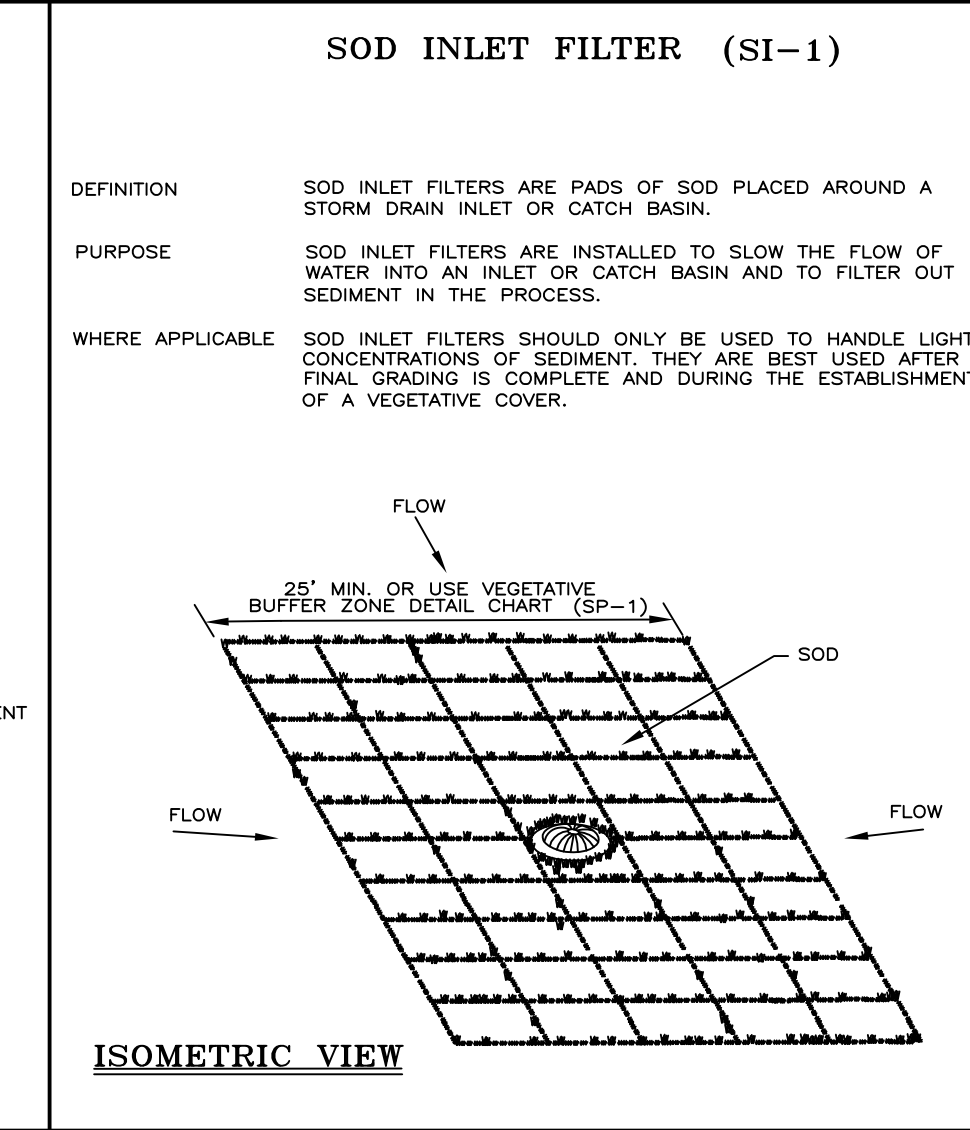
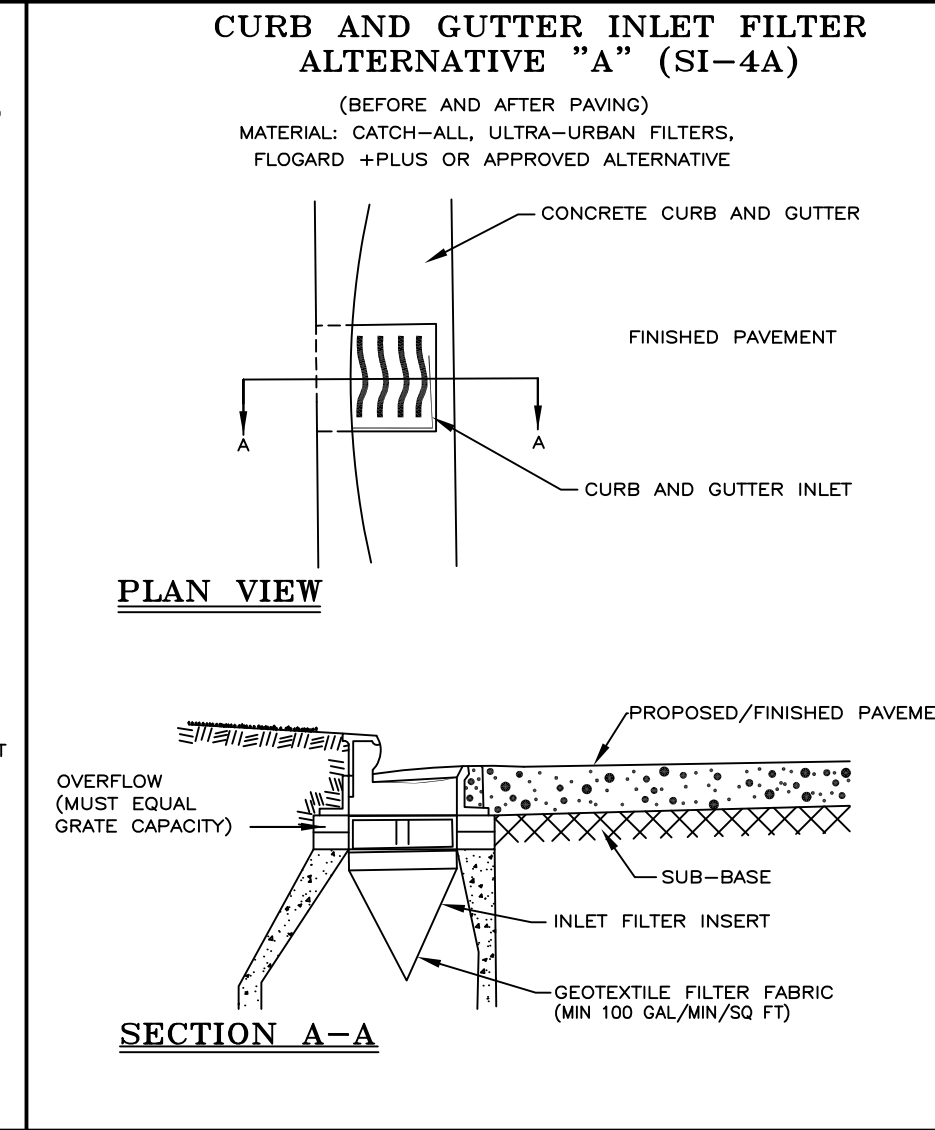
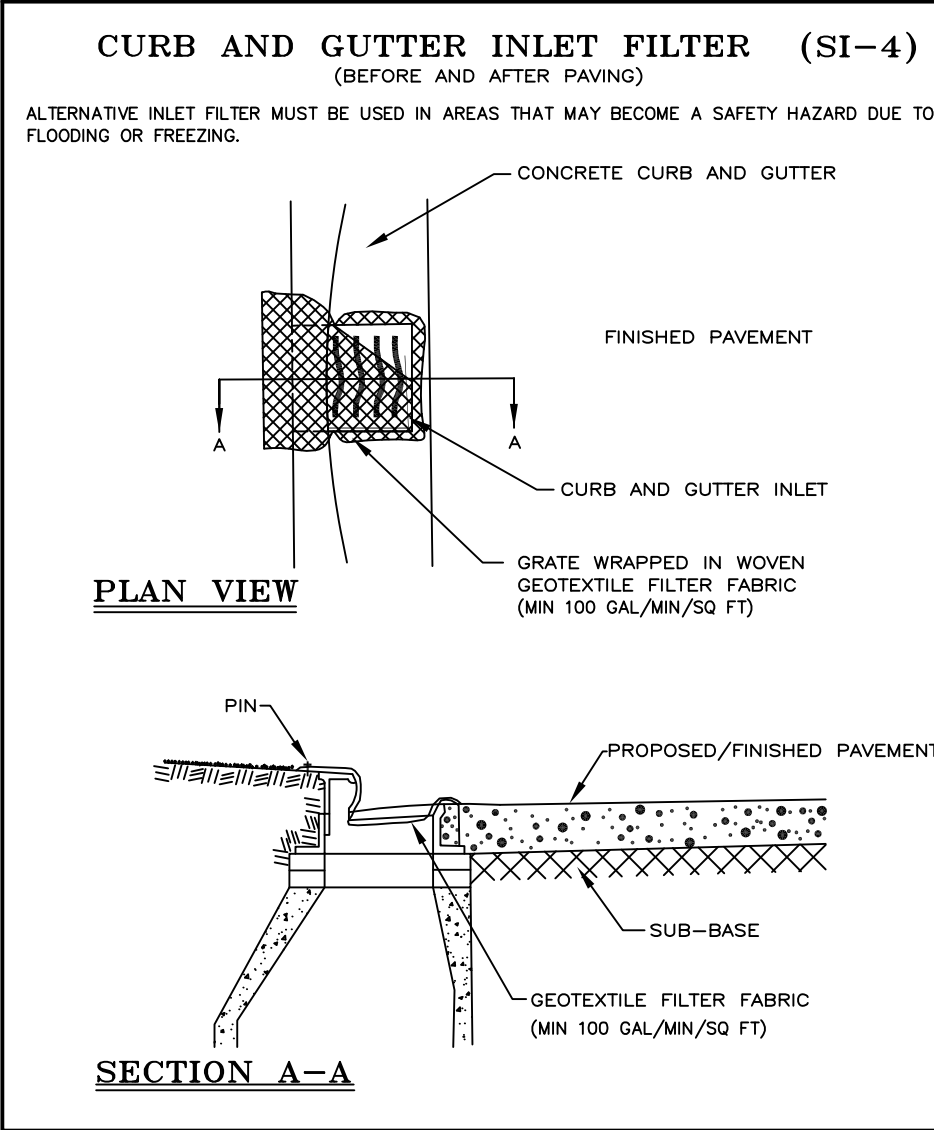
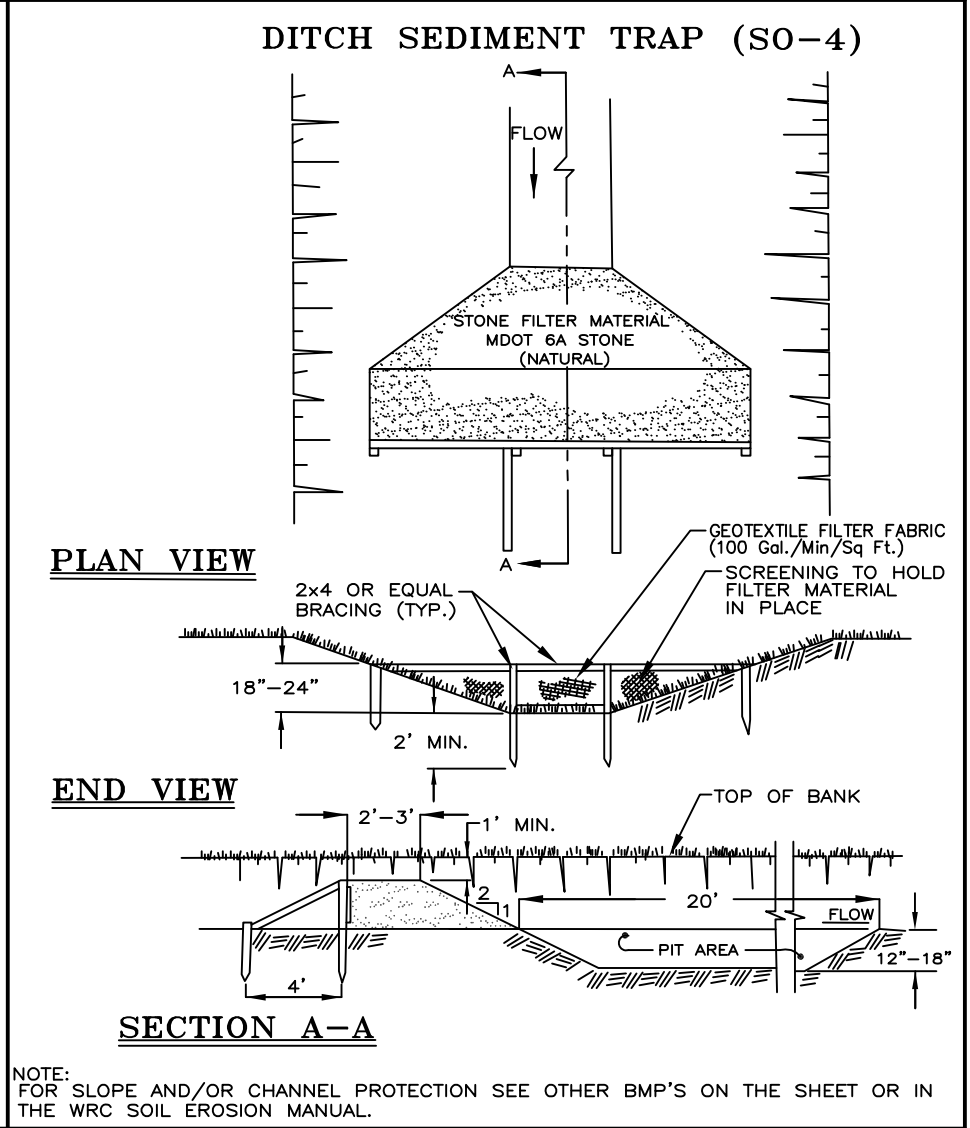
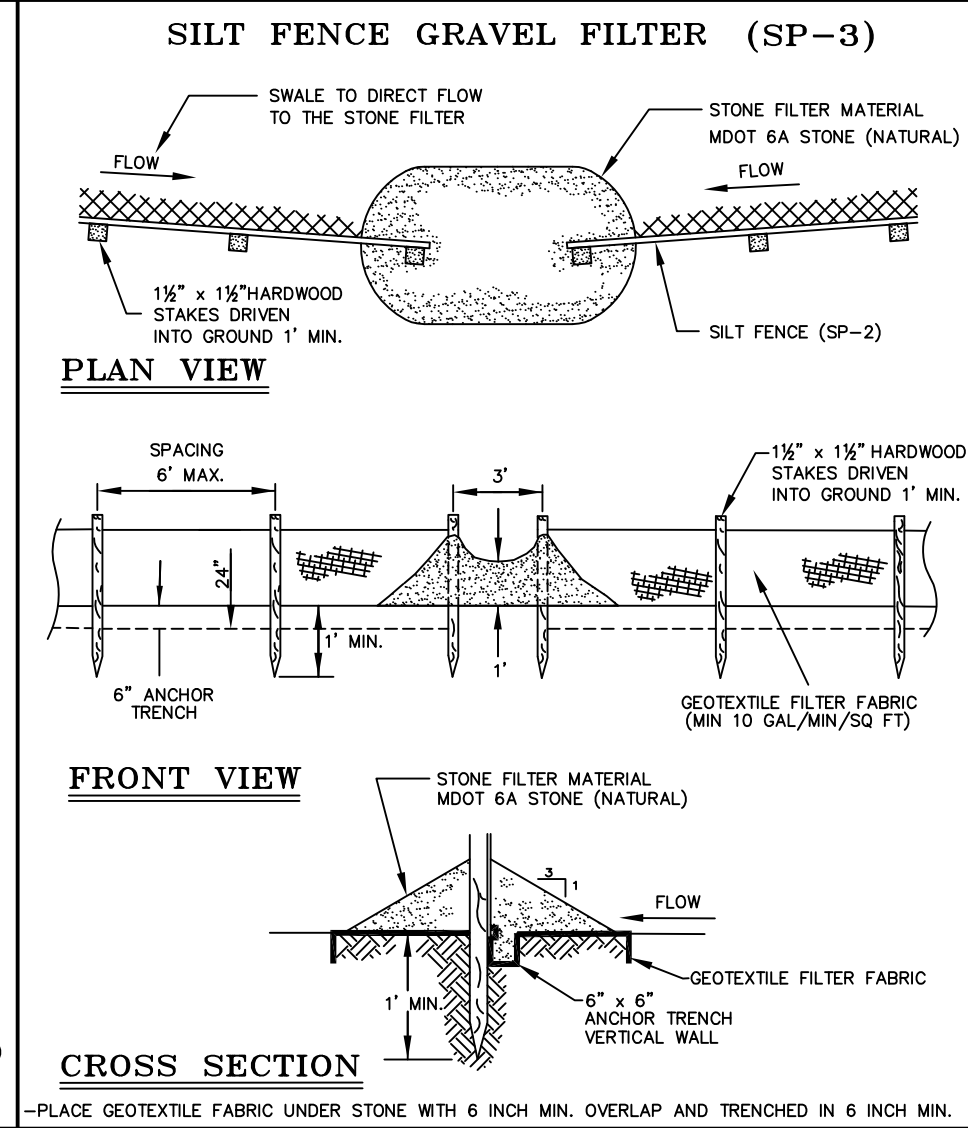
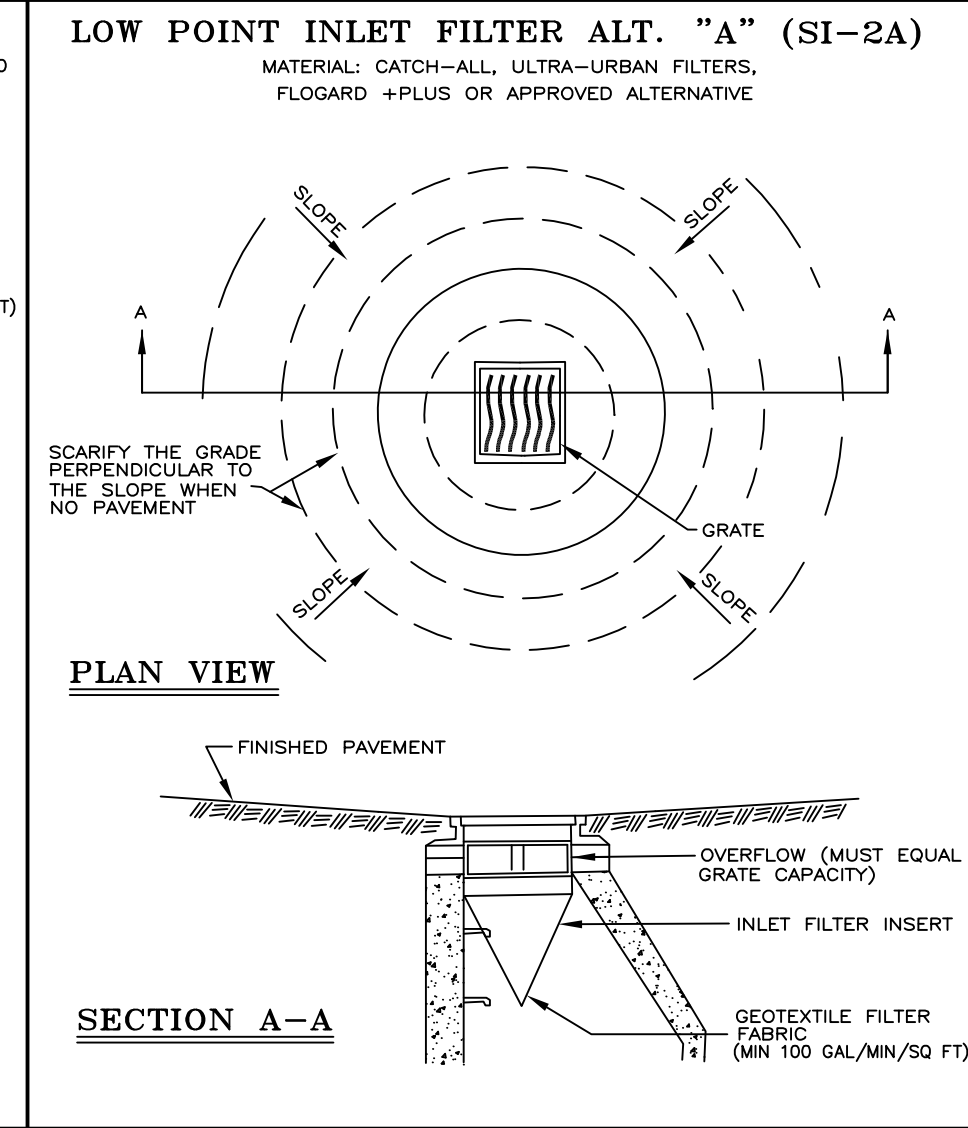
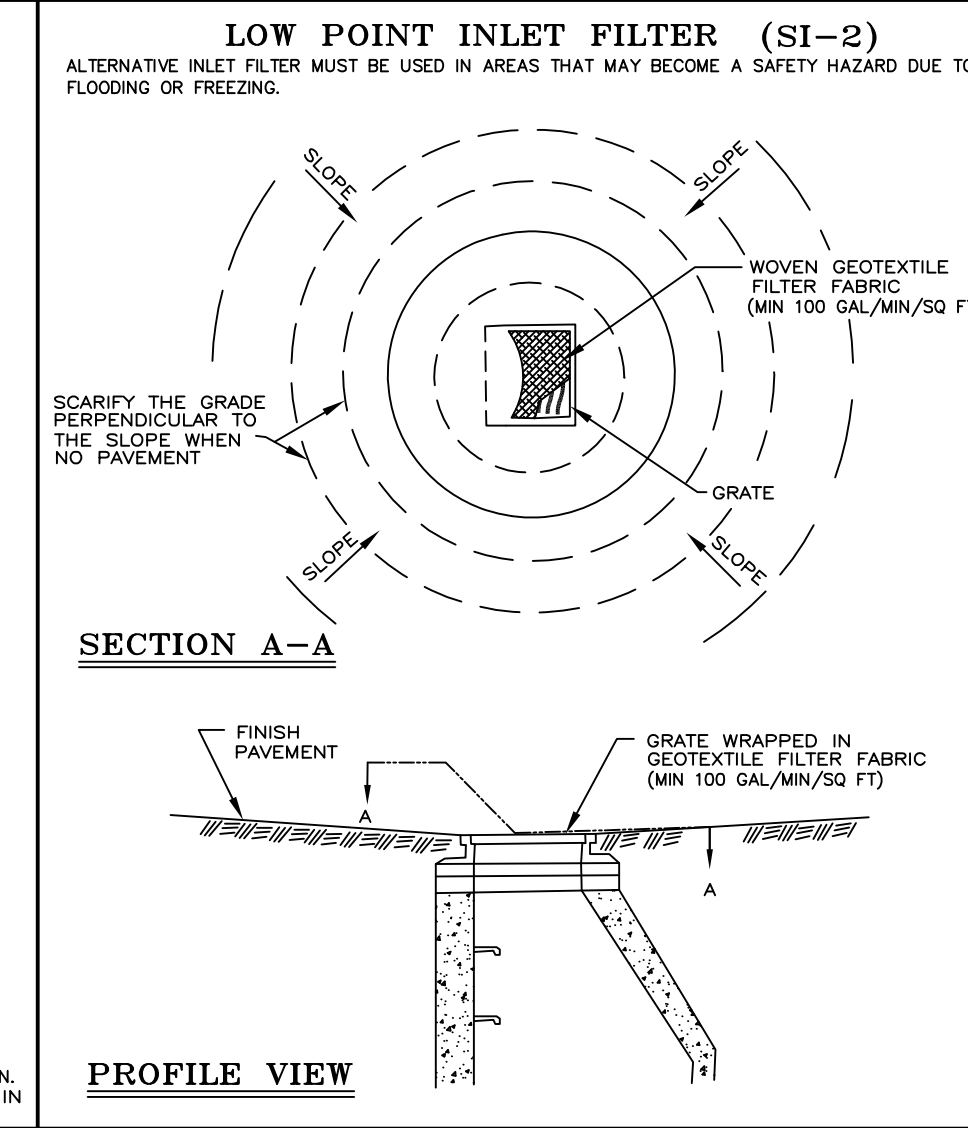
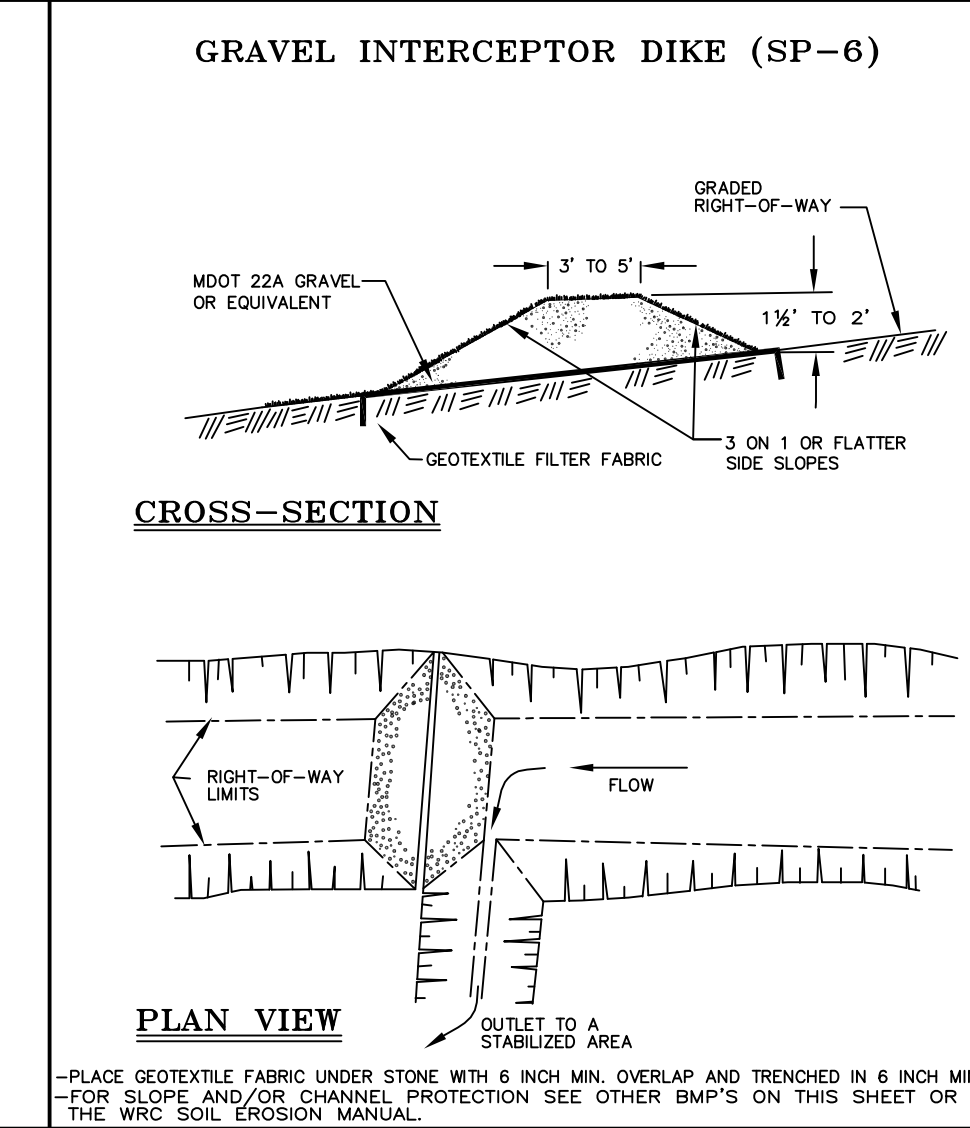
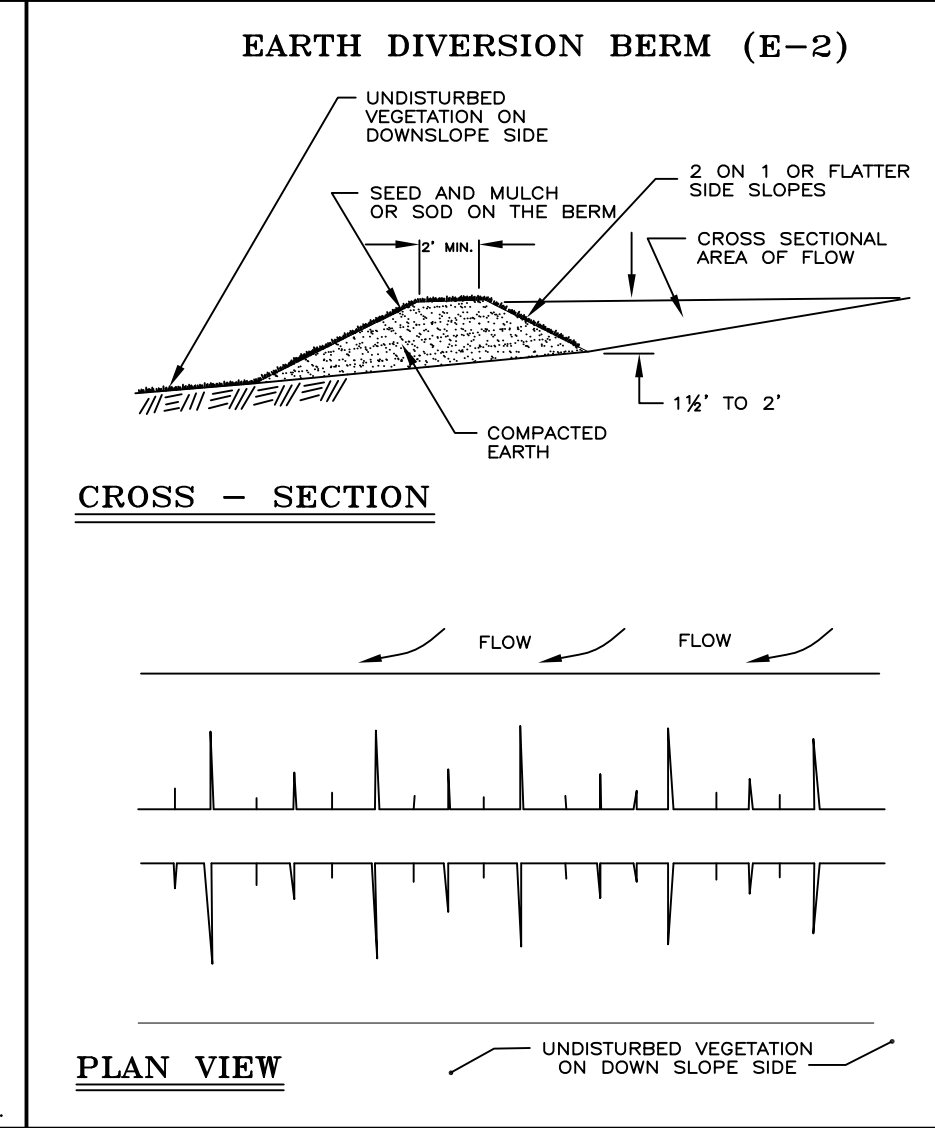
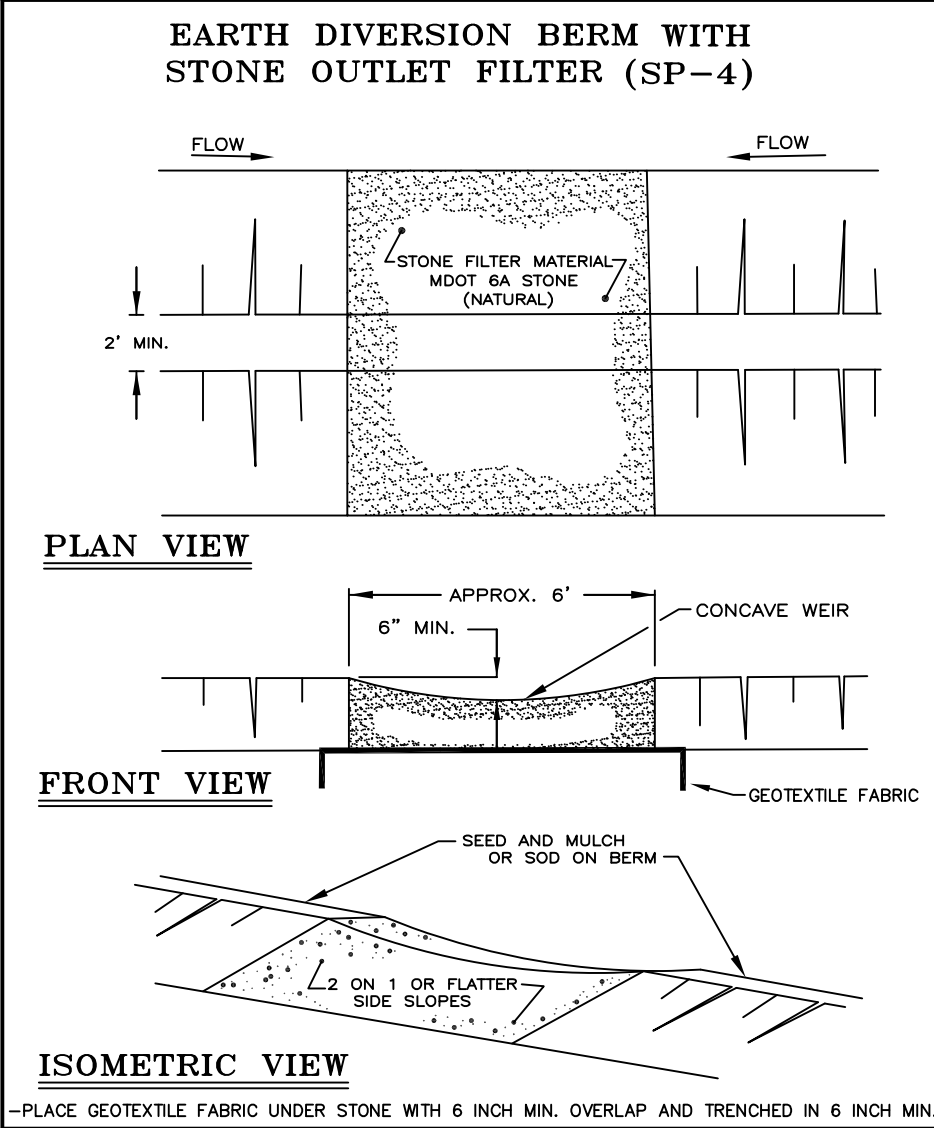
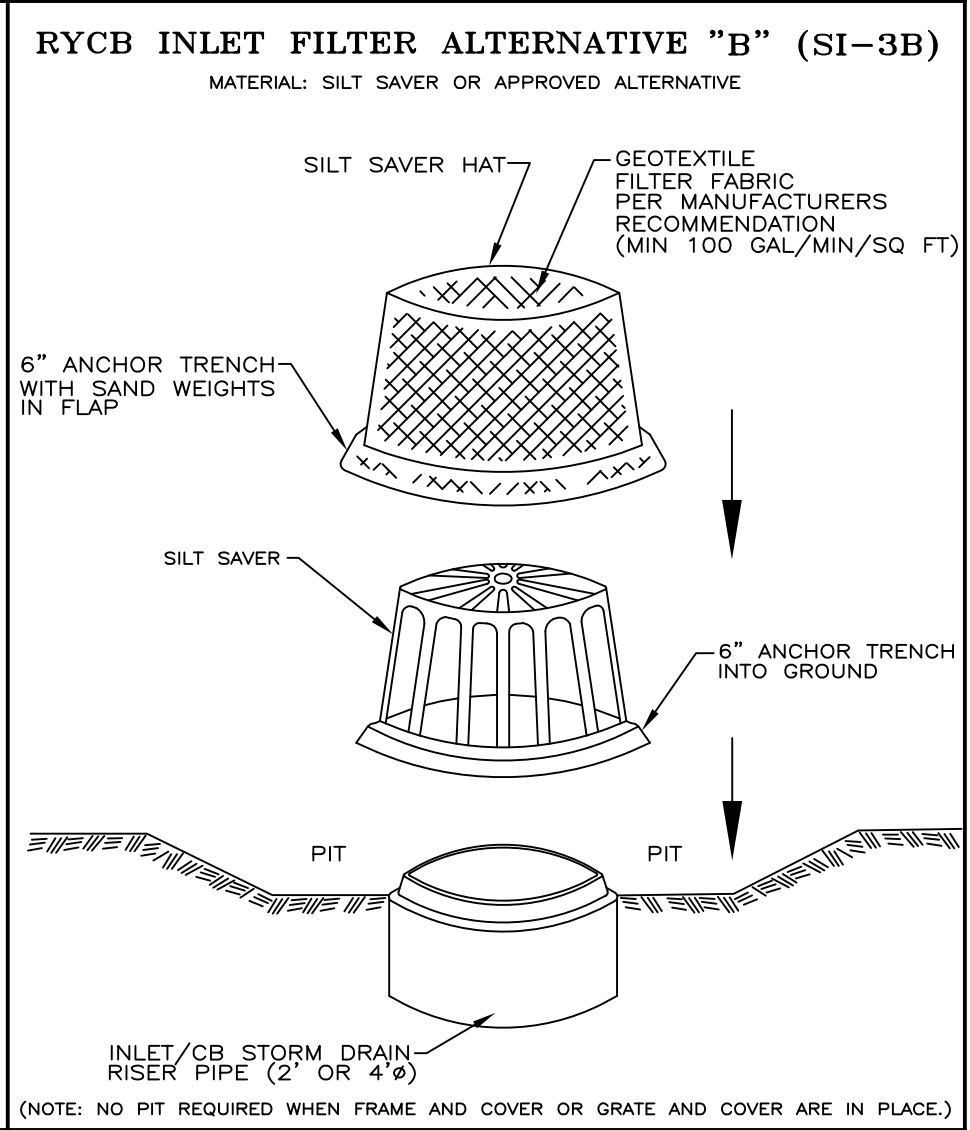
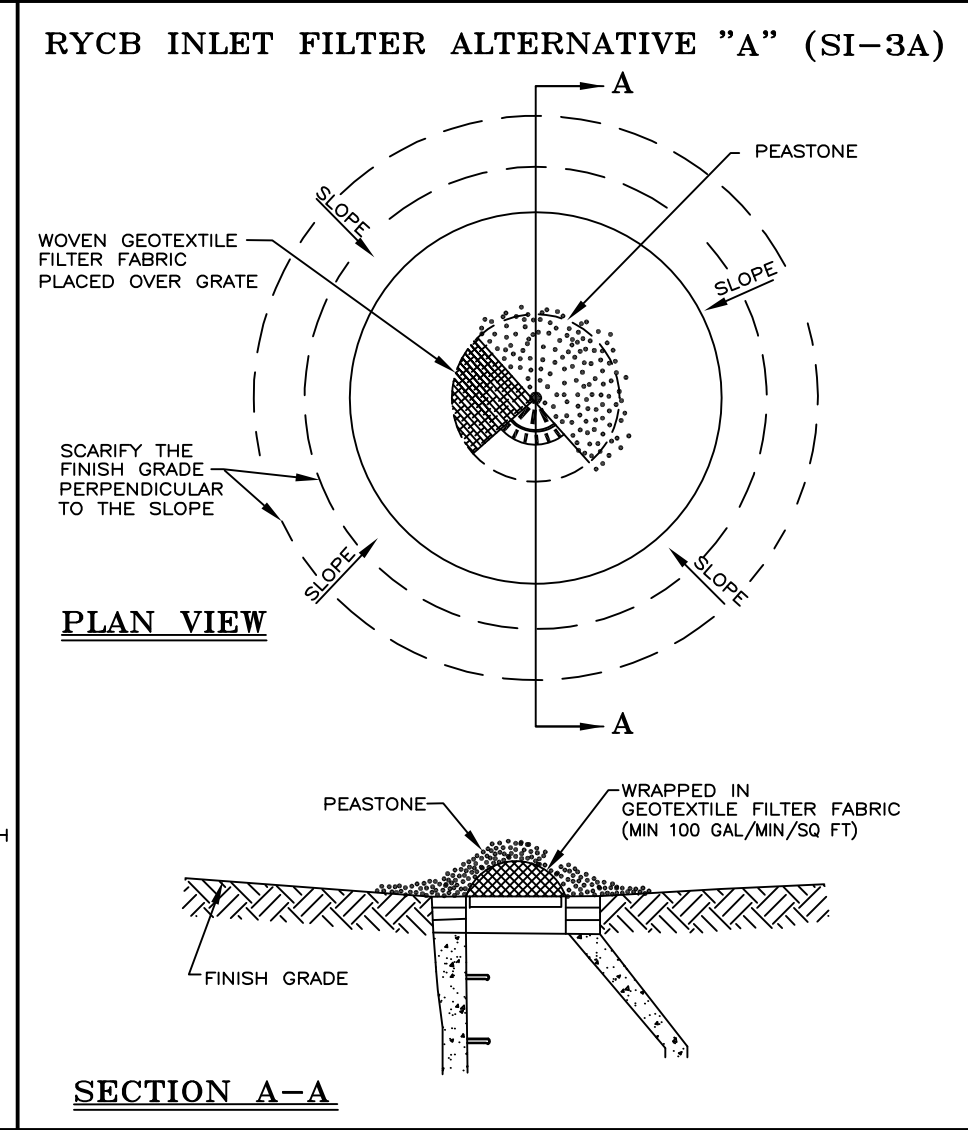
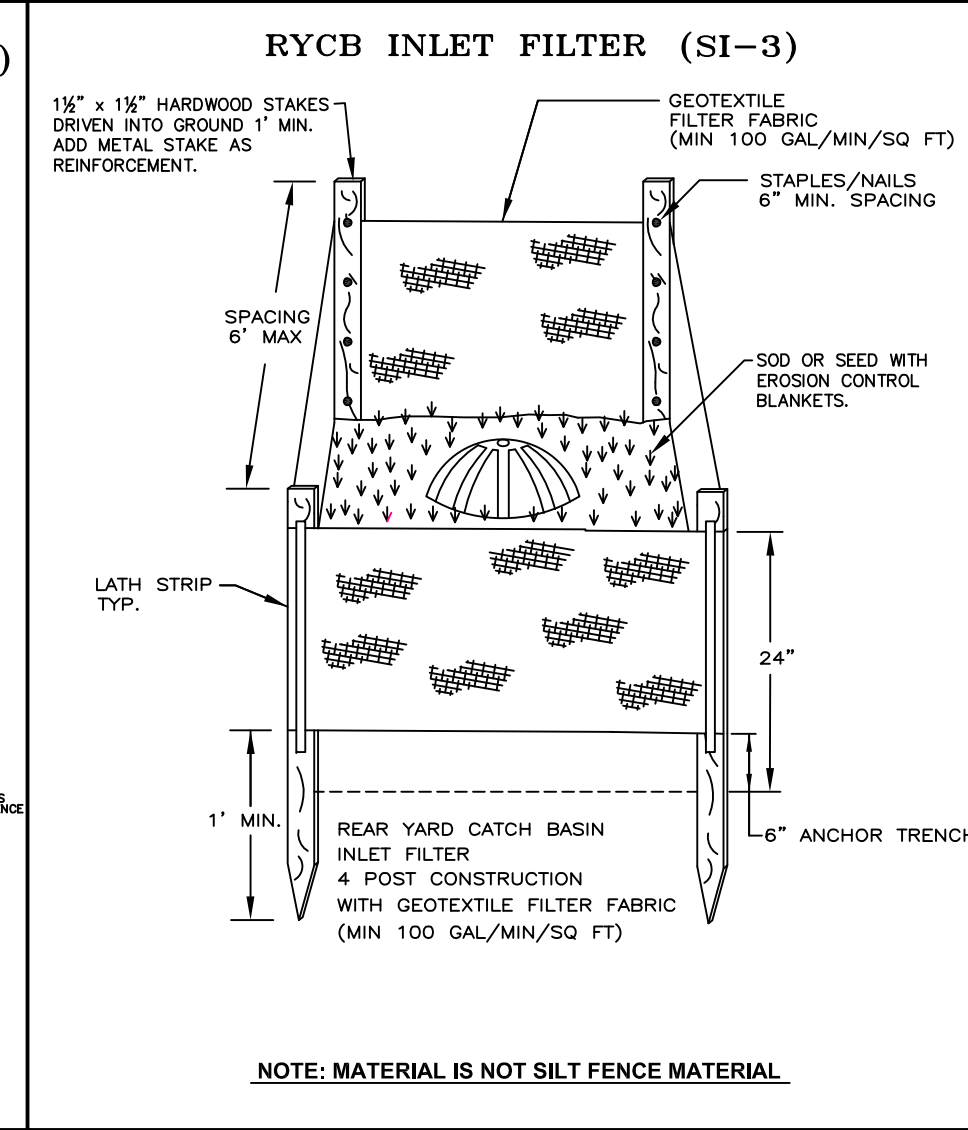
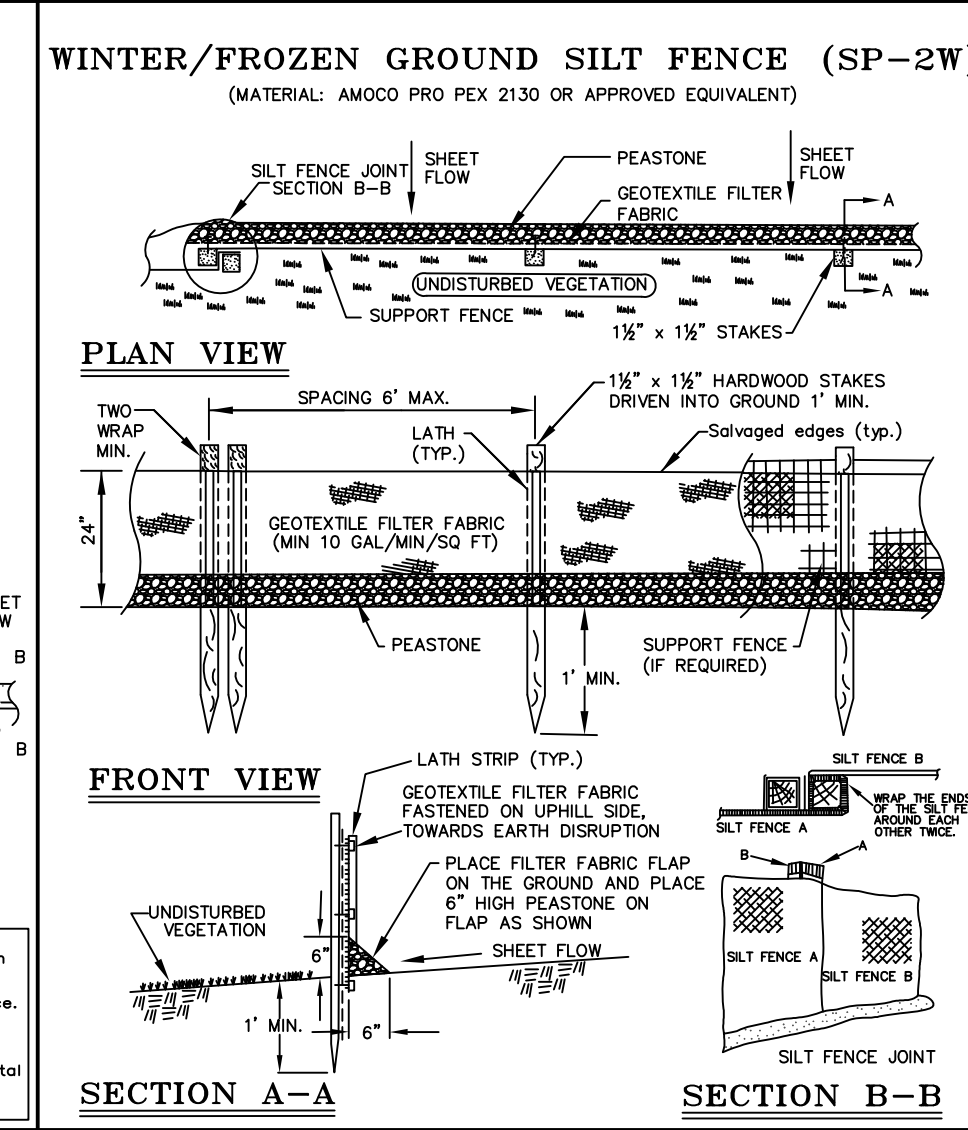
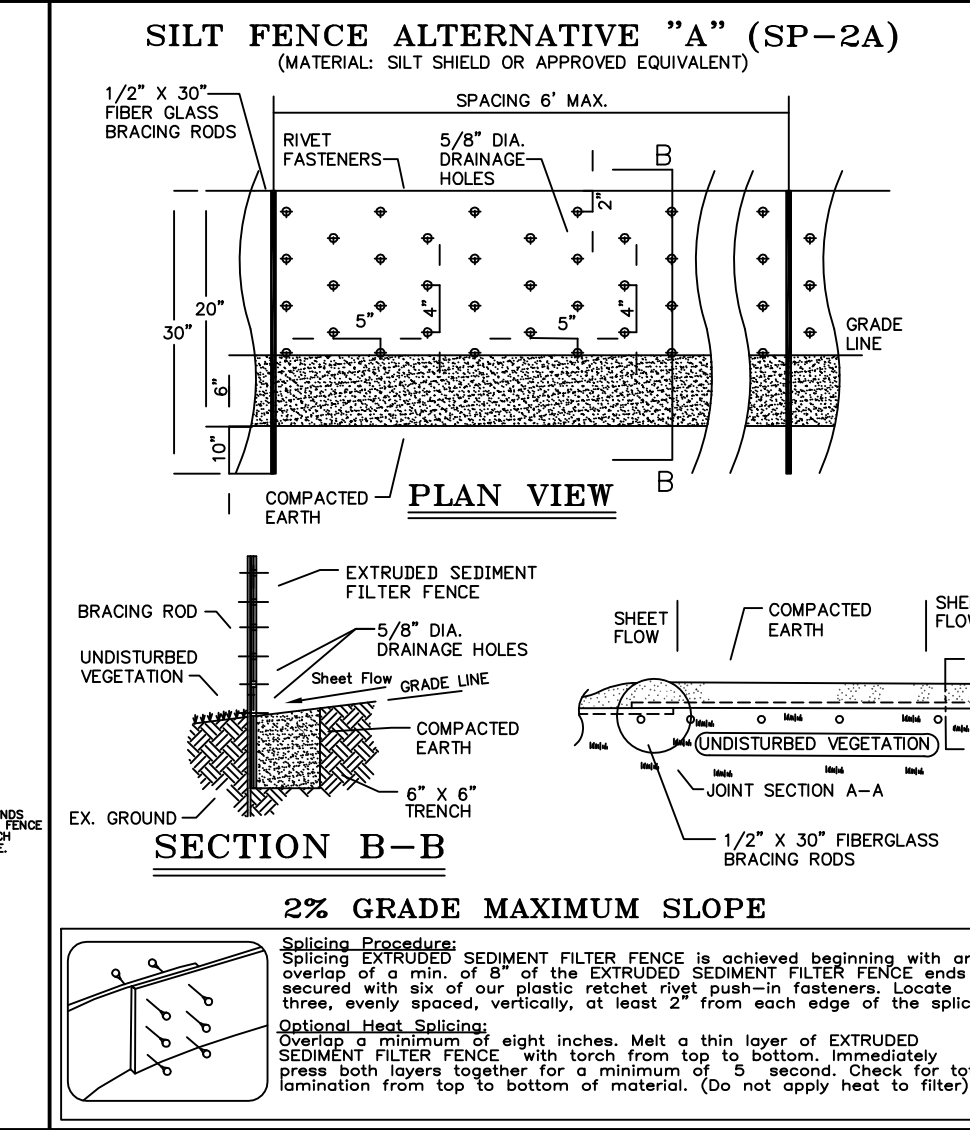
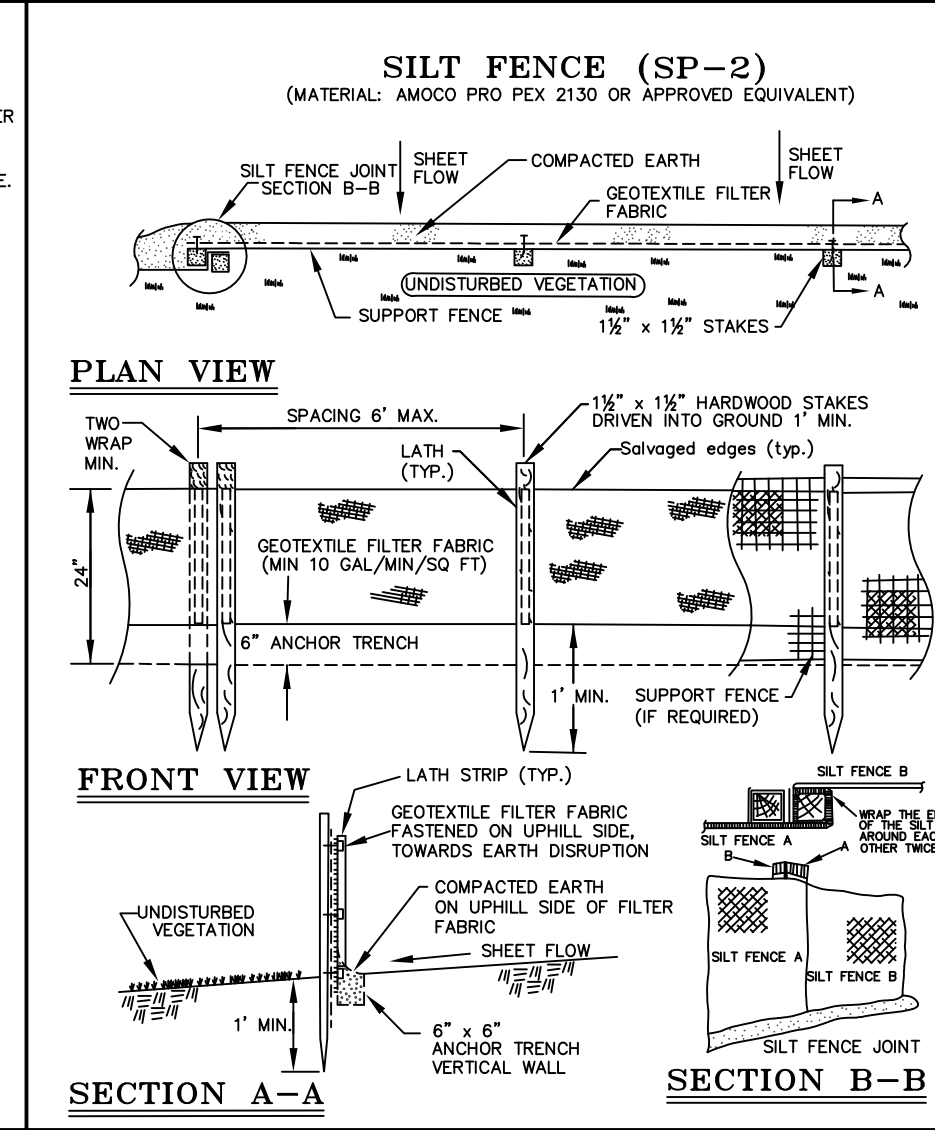
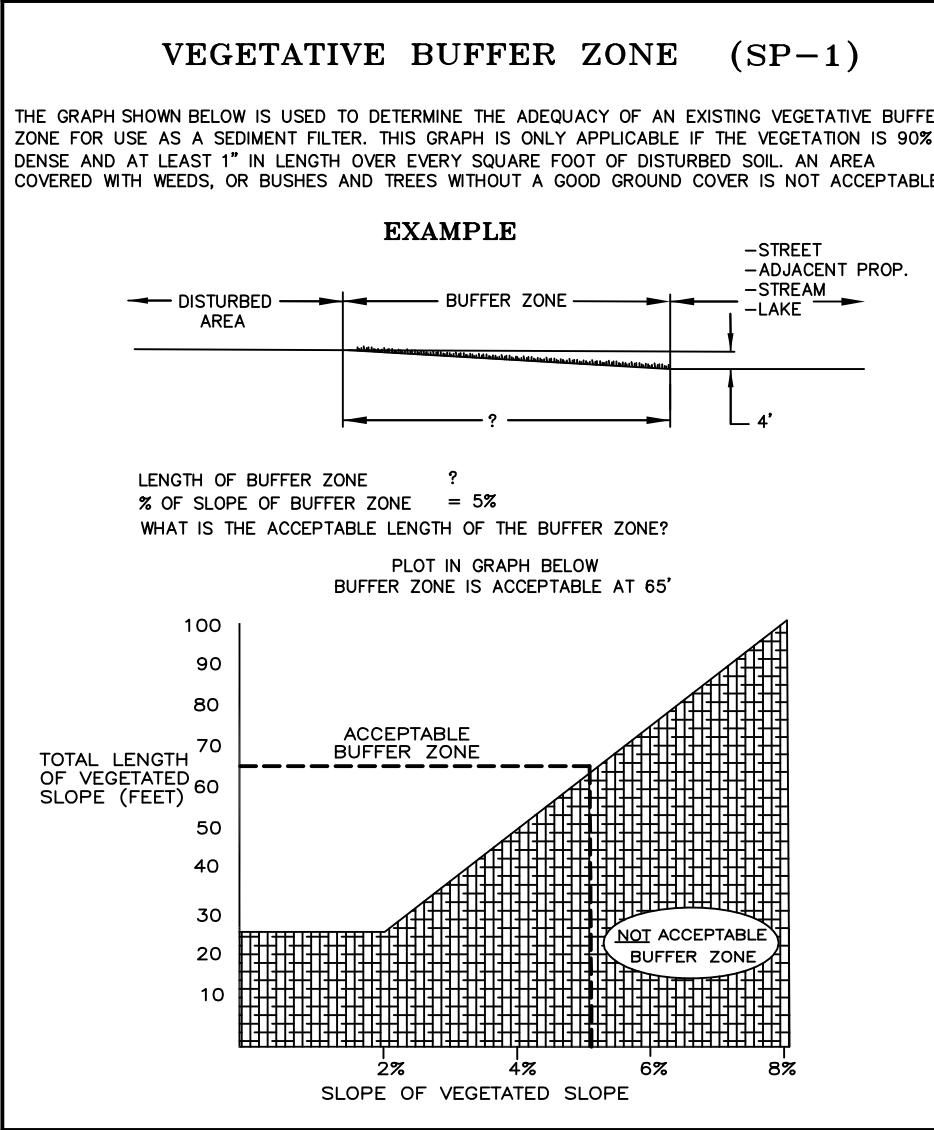
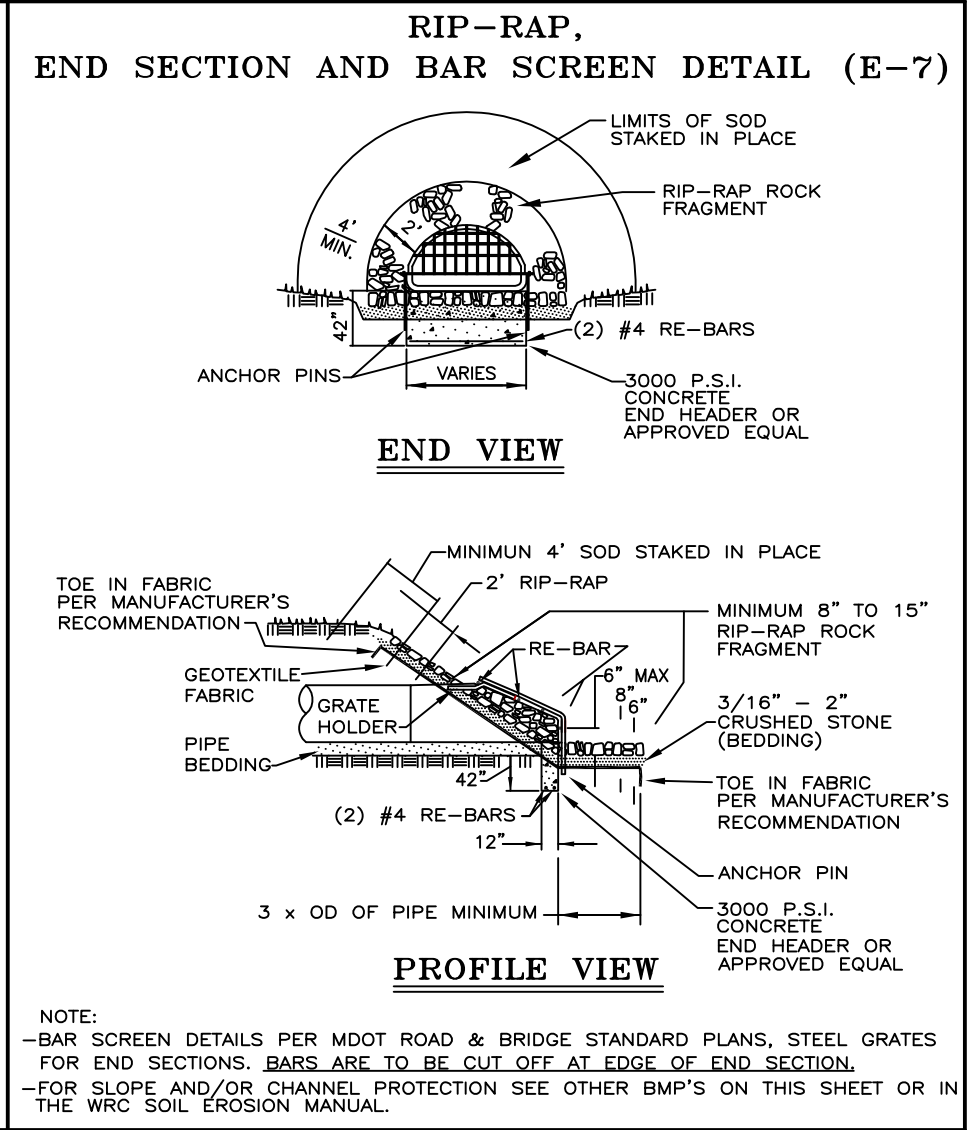
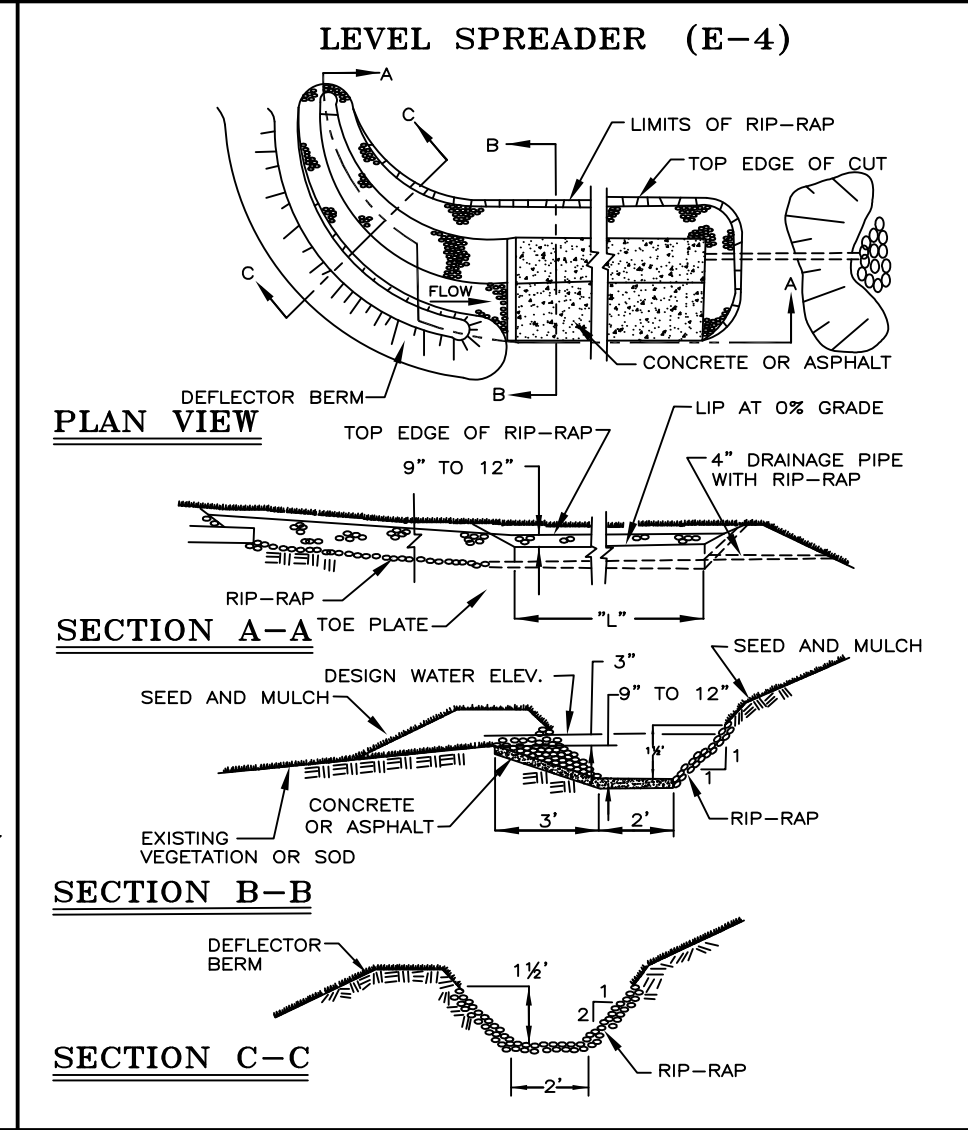
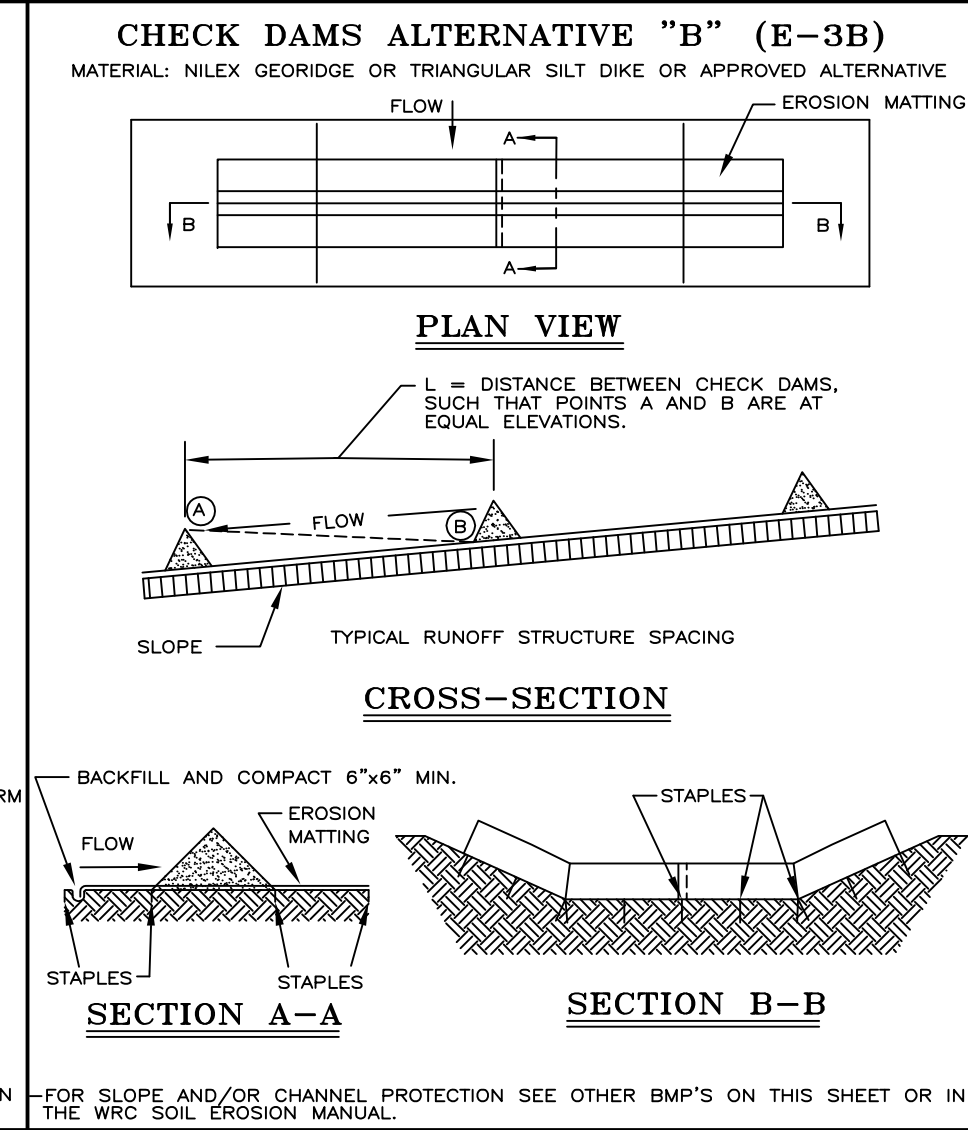
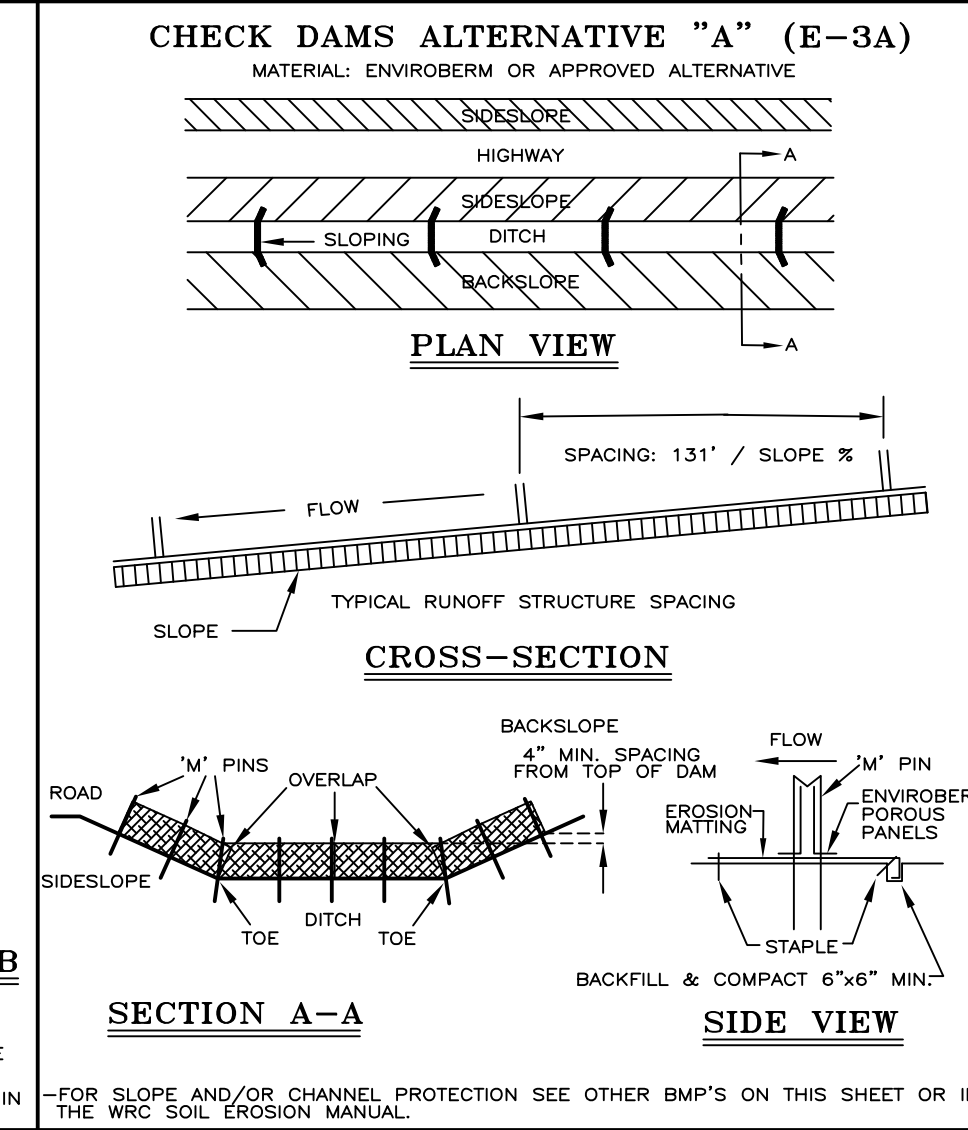
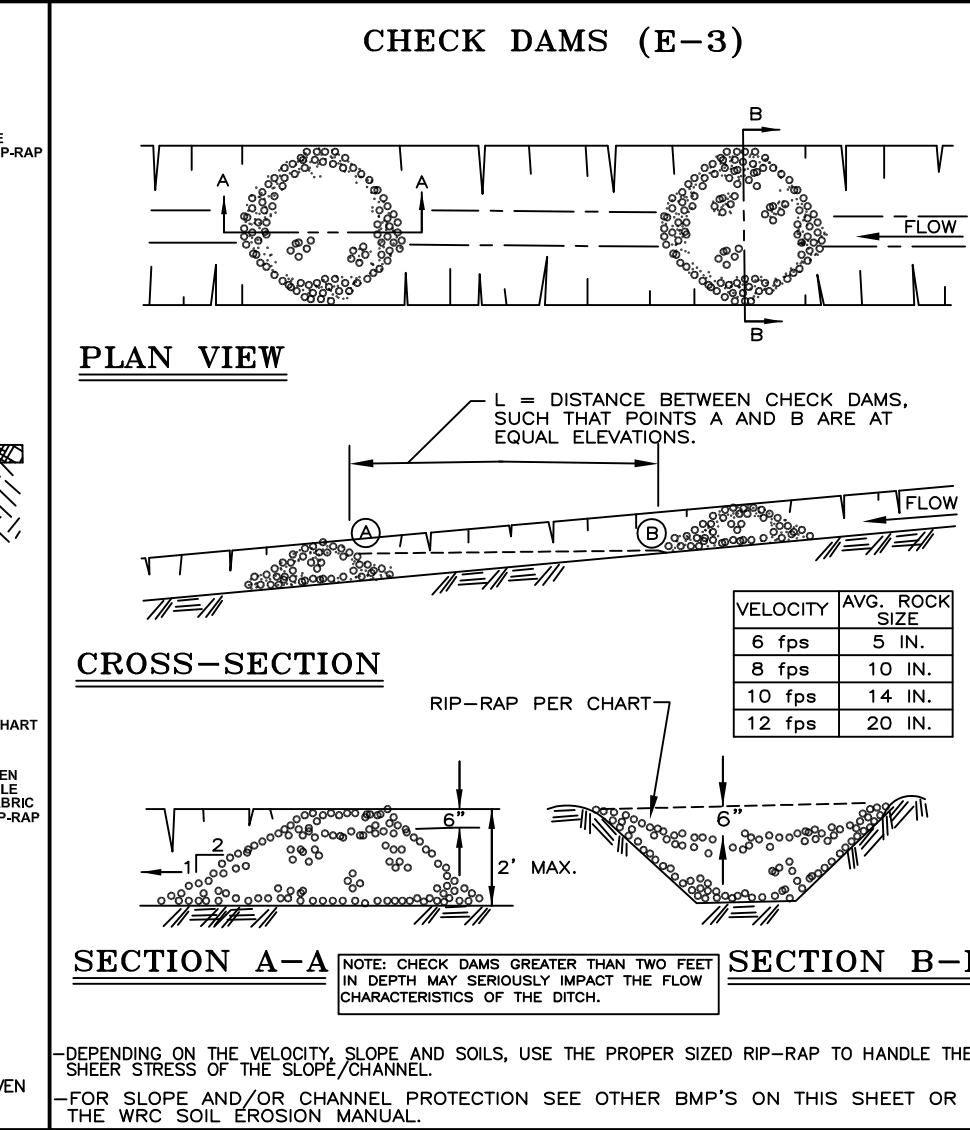
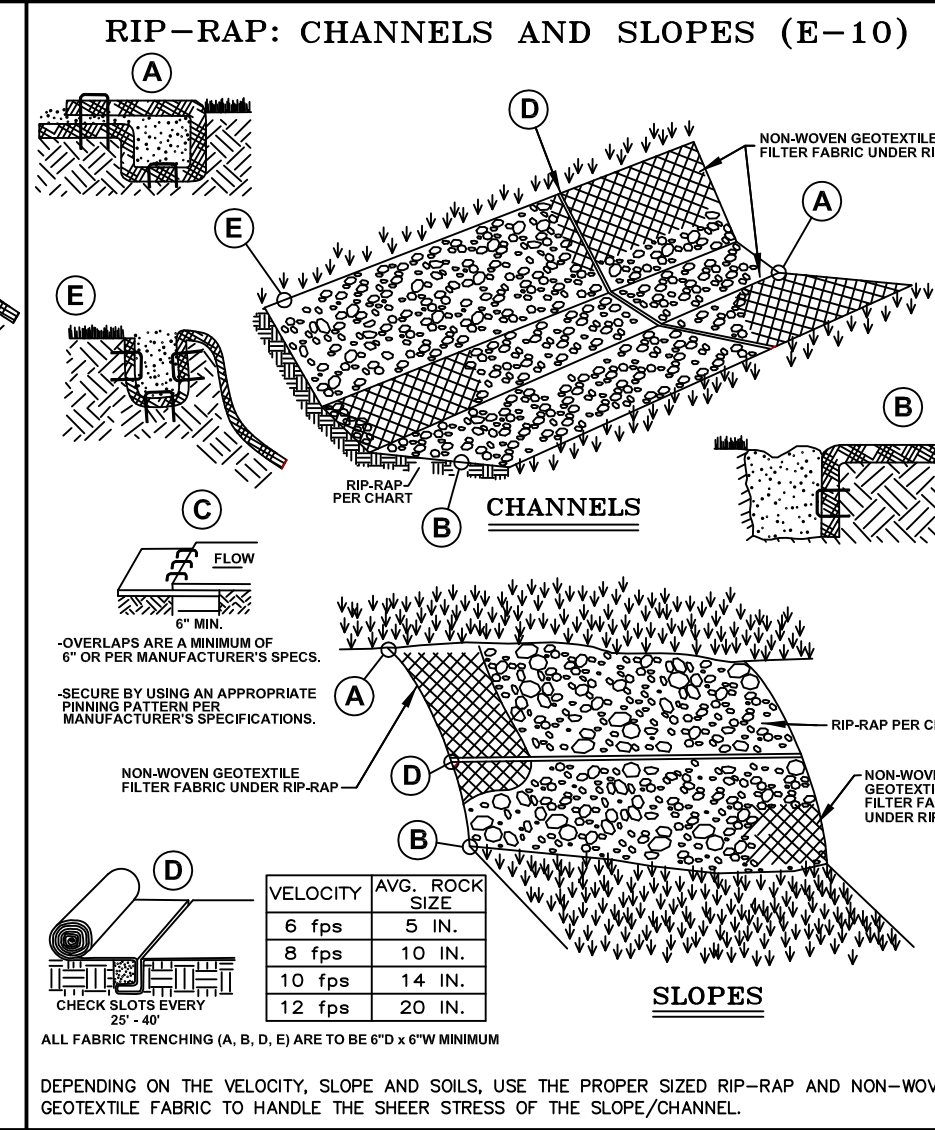
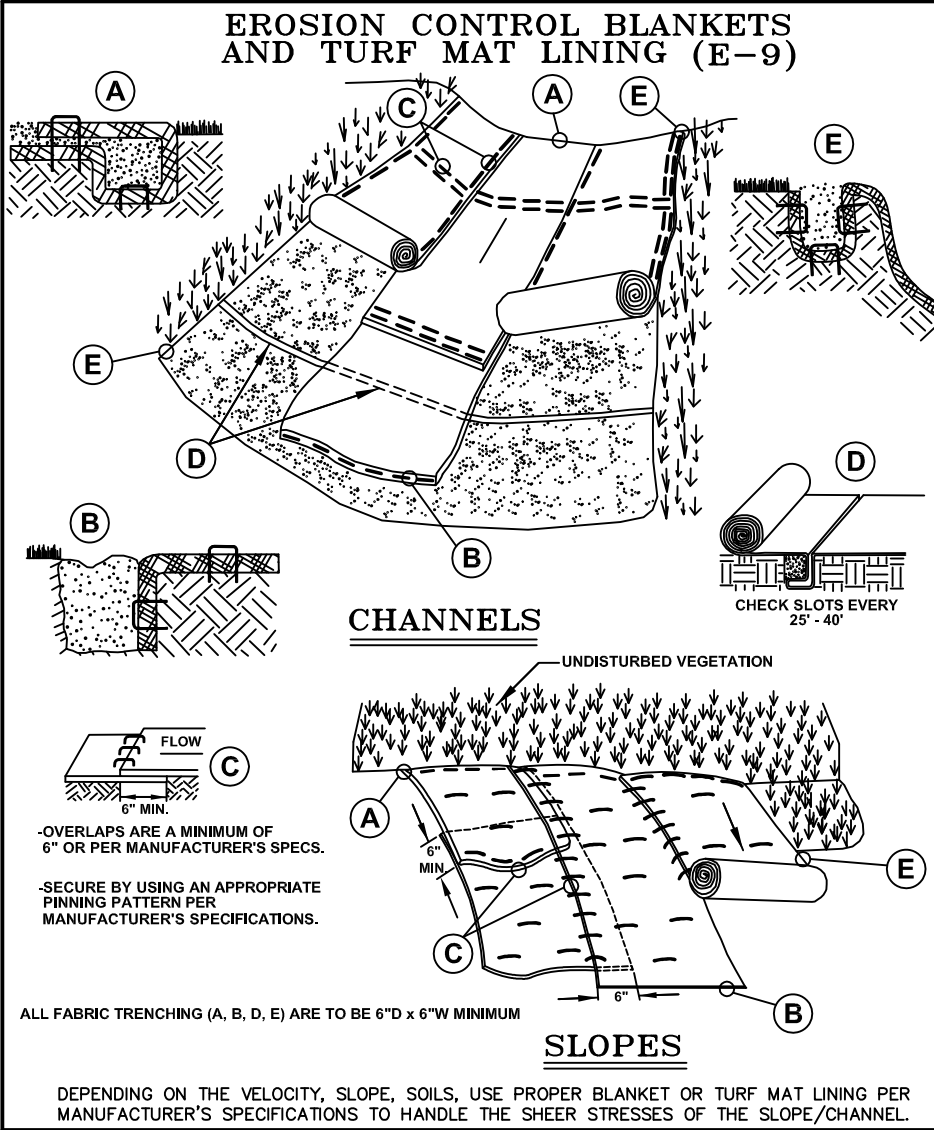
- GENERAL NOTES:**
- All materials and workmanship shall be in accordance with the standards and specifications of the City of Novi.
 - No storm sewer is to be installed without the City's inspector present.
 - Three (3) working days prior to construction, the Contractor shall telephone MISS DIG (811 or 1-800-482-7171) for underground facilities locations and shall also notify representative of other utilities located in the vicinity of the work.
 - Trenches that are to be left open overnight shall be enclosed with suitable fencing and lighted barricades.
 - The materials specified below may be substituted with an approved equal as determined by the City. It is at the sole discretion of the City to determine if a material is acceptable and can be utilized. Written authorization must be obtained prior to ordering or installing the approved equal.
- STORM SEWER NOTES:**
- Type and class of pipe shall be as specified on plans.
 - Concrete Pipe Requirements**
 - All round reinforced concrete pipe (RCP) shall meet the requirements of ASTM C76 with modified tongue and groove joints with rubber gaskets manufactured to meet the requirements of ASTM C443. Catch basin sewers shall be Class IV RCP.
 - The inside joint of pipe over 36" diameter shall be pointed with mortar upon completion of backfilling operations.
 - All elliptical reinforced concrete pipe shall meet the requirements of ASTM C507 with tongue and groove joints with bituminous (DeWitt #10) joint material meeting the requirements of C443. Elliptical concrete pipe joints shall also be wrapped per ASTM C877. In addition, elliptical concrete pipe of 42" equivalent size and larger shall require inside concrete pointing.
 - Plastic Pipe Requirements**
 - Per City standards, the maximum allowable pipe size for plastic storm sewer is 12" diameter. Larger diameter plastic storm sewer may be approved by the City, depending on site conditions.
 - HDPE pipe shall meet the requirements of AASHTO M294 and ASTM D3350 with push-on type joints meeting the requirements of ASTM D3212 and F477.
 - ADP pipe shall meet the requirements of AASHTO M294 and ASTM F2306 with joints meeting the requirements of AASHTO M252, M294, or F2306.
 - Plastic pipe will not be permitted in the right-of-way.
- Bedding Requirements**
- Bedding shall be used as called for on the details.
 - Where unstable ground conditions are encountered, stone bedding shall be used as directed by the Engineer in order to provide a stable foundation for pipe and manholes.
- Backfill Requirements**
- Backfill shall be compacted above pipe or as indicated on construction drawings. Trench backfill shall be of a suitable material and shall be free of any organic materials and rocks larger than 3" in size. Backfill shall be ramped into trench and compacted with a small dozer or other approved method.
 - Where trench is within a 1:1 influence of streets, alleys, sidewalks, driveways, parking areas and structures, sand backfill shall be used which shall consist of MDOT granular material Class II compacted in layers not to exceed 6" in thickness to a density of 95% as determined by AASHTO 199.
- DRAINAGE STRUCTURE REQUIREMENTS:**
- Shop drawings shall be submitted to and approved by the City's Consultant for each proposed structure prior to installation.
 - Pre-cast reinforced concrete sections with modified tongue and groove joint and rubber gaskets shall conform to ASTM C-478. Cone section shall be eccentric and have stud inserts cast in place with a flush top surface.
 - Pipe shall be flush with the inside wall of structure and shall not protrude more than 4" into the structure. Pipe shall be pointed up inside and outside with a smooth finish at its intersection with the structure wall.
 - No openings shall be made in precast units which would leave less than 6" of undisturbed precast structure wall between pipes (as measured between outside pipe walls) or would remove more than 40% of the circumference along any horizontal plane.
- Other Notes:**
26. Precast riser placed on the concrete base shall be set in a full bed of mortar. All joints & liftholes shall be pointed up with mortar on the outside and inside.
 27. All manholes and catch basins shall be 4' or 5' in diameter unless otherwise indicated on construction drawings. Larger diameter drainage structures (6", 7", 8", 10", and 12" diameter) may be needed for large storm sewer pipe or for situations where the angles between entering pipes require a larger diameter structure in order to maintain at least 6" of structure wall between the pipes. 2' diameter catch basins and inlets may be used where approved by the City Engineer.
 28. Structure steps are to be installed at the plant by the manufacturer of the structure. The steps are to be 16 inches on center located 90° from the centerline of the main sewer line. The steps shall be made of No. 4 deformed steel rod encased with copolymer polypropylene plastic and meet the requirements of ASTM D4101, Type II, Grade 49108 or approved equal.
 29. Manhole frame and cover shall be EJ 1040, type "B" 16 Hole Cover or as per construction drawings. Lettering shall be per detail this sheet.
 30. Catch Basin and Inlet frame and cover shall be:
 - EJ 7045, type "M1" cover and type "T1" back set (with "Dump No Waste" logo) with straight face curb and gutter.
 - EJ 7065, type "M1" cover and 7060 "T1" back set (with "Dump No Waste" logo) with mountable curb and gutter and integral curb and gutter.
 - EJ 1040, type "O2" cover (beehive grate) to be used on structures located in ditches, swales and rear yard catch basins. If within 8' of road, type "N" cover (oval grate) shall be used. If 1040 casting is used in pavement, Type M1 grate must be provided.
 - EJ 1030, type "A" solid cover to be used on all 2' cleanouts and structures not located at storm water collection points. EJ 1060, type "A" solid cover may also be used on sump pump cleanout structures.
 - EJ 1030, type "O1" cover (beehive grate) to be used on all 2' structures located in ditches, swales and rear yard catch basins.
 31. The City reserves the right to require a change in structure covers upon final grade and walk-through inspection if deemed necessary due to site conditions.
 32. Frames shall be set in full bed of mortar and the side shall be overlapped to prevent leakage.
 33. A proper channel shall be constructed within the existing manhole or other structure at which the connection is to be made to direct the flow to the existing outlet in a manner that will tend to create the least amount of turbulence. The channel shall be constructed to the same size as the inside diameter of the existing pipes, and shall be built to height of 1/3 the existing pipe diameter with a minimum of 2% slope on the benches.
 34. Concrete base for manhole, catch basin, and inlet shall be MDOT grade 30P, 8" thick, 3000 psi.
 35. When tapping into an existing structure a brick collar shall be placed 12" thick around the pipe and extended 12" beyond the opening. If pre-cast section is tapped, bend mesh and use as reinforcement with brick collar. Taps through structure joints or cone sections are prohibited unless approved by the City.
 36. The final accessible structure prior to discharge into a forebay or detention basin shall contain a permanent 4' deep sump.
 37. A 4' diameter Oil/Gas Separator Structure shall be installed prior to discharge into a forebay, detention basin or open drainage course as directed by the City.
- SUMP PUMP LEAD REQUIREMENTS:**
- All sump pump leads connected to a drain shall be pre-manufactured.
 - Sump pump leads shall be (1) PVC Sch. 40 (2) PVC Truss Pipe, or (3) approved equal, with premium joints.
 - Sump collection system pipes shall be connected at drainage structures and shall be cored or precast. Taps to 12" storm sewer may be made with a Romac saddle, KOR-N-TEE lateral connector for concrete pipe, or approved equal.
 - Ends of all 4" sump pump leads shall be temporarily capped and their location staked, witnessed and recorded.
 - All sump pump leads are to be taken to the property line, easement line or as indicated on the plan.
 - Sump pump cleanouts shall be a minimum inside diameter of 2' and be constructed at changes of alignment ends of sump pump mains or as indicated on approved plans.

CITY OF NOVI	SCALE	TOWN	RANGE	DATE
NOVI	V. N.T.S.	NOVI	BE	JUNE 2012
		COUNTY	REVISIONS	
		OAKLAND COUNTY	DATE: 5/17/2011	
			2/10/2018	

CITY OF NOVI STORM SEWER STANDARD DETAILS



DRAWING PATH: J:\NV\Design\NV17003-Nov12017 Standards and Details\DWG\Storm.dwg Feb 16, 2018 - 8:23am



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: _____

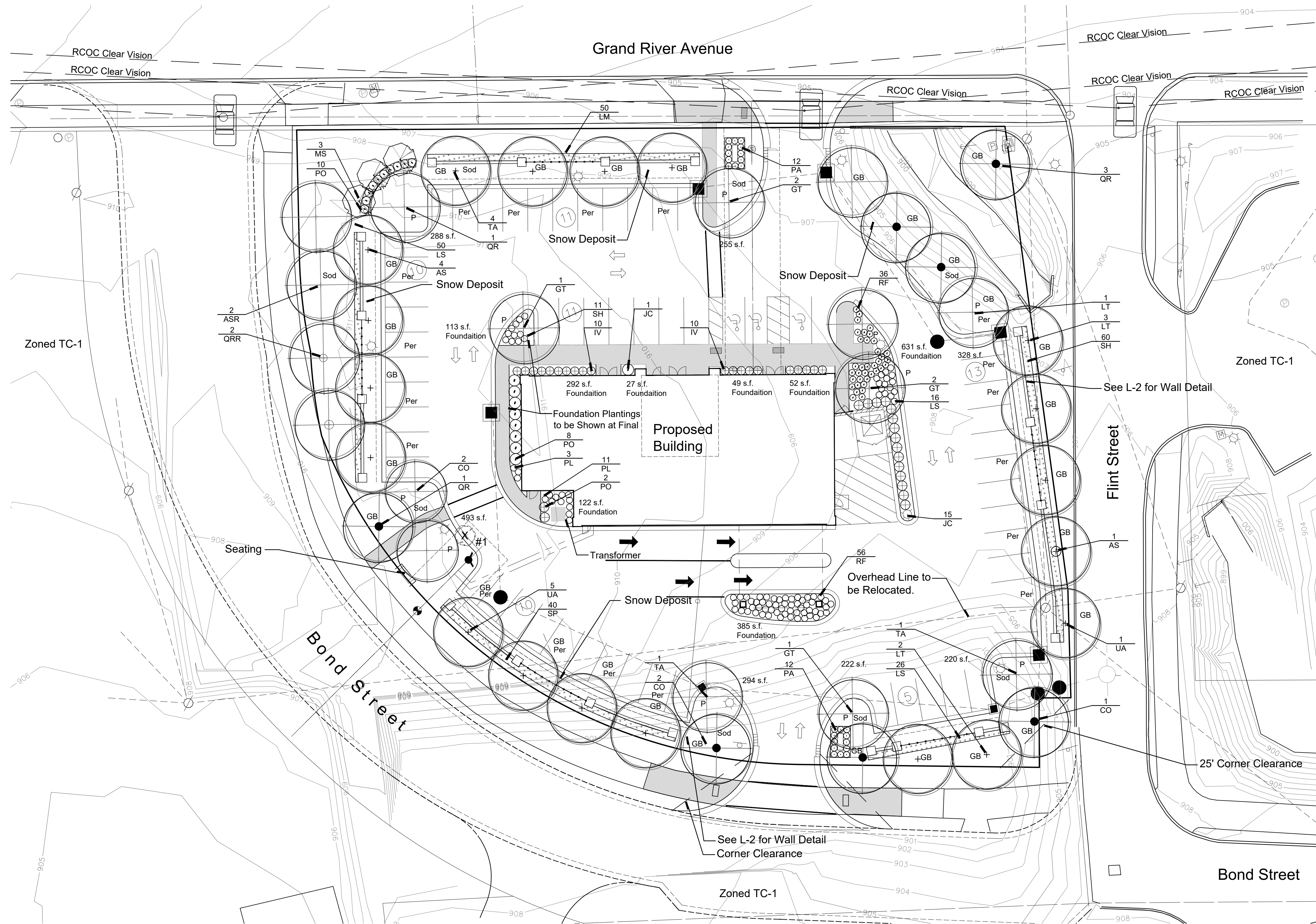
DESIGNED BY: WRC

DRAWN BY: Mapping

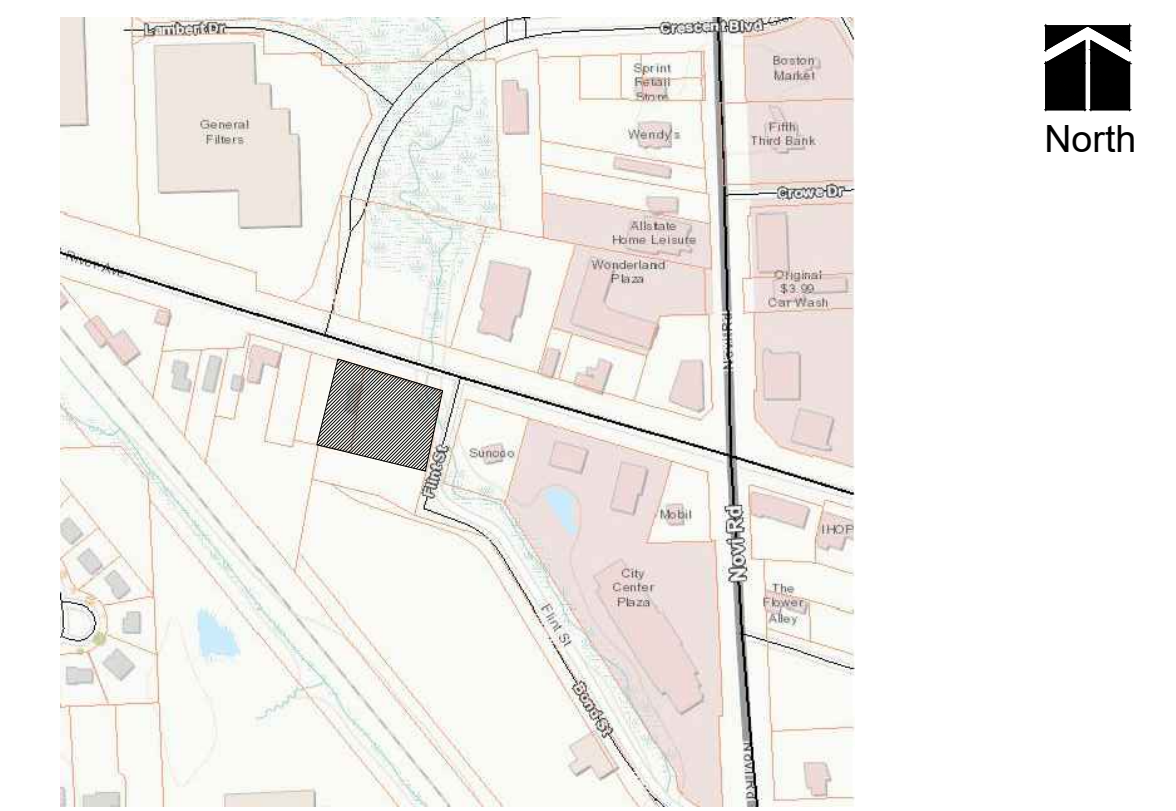
WRC WATER RESOURCES COMMISSIONER

ONE PUBLIC WORKS DRIVE, BLDG 905 WEST WATERFORD MICHIGAN 48320-1907

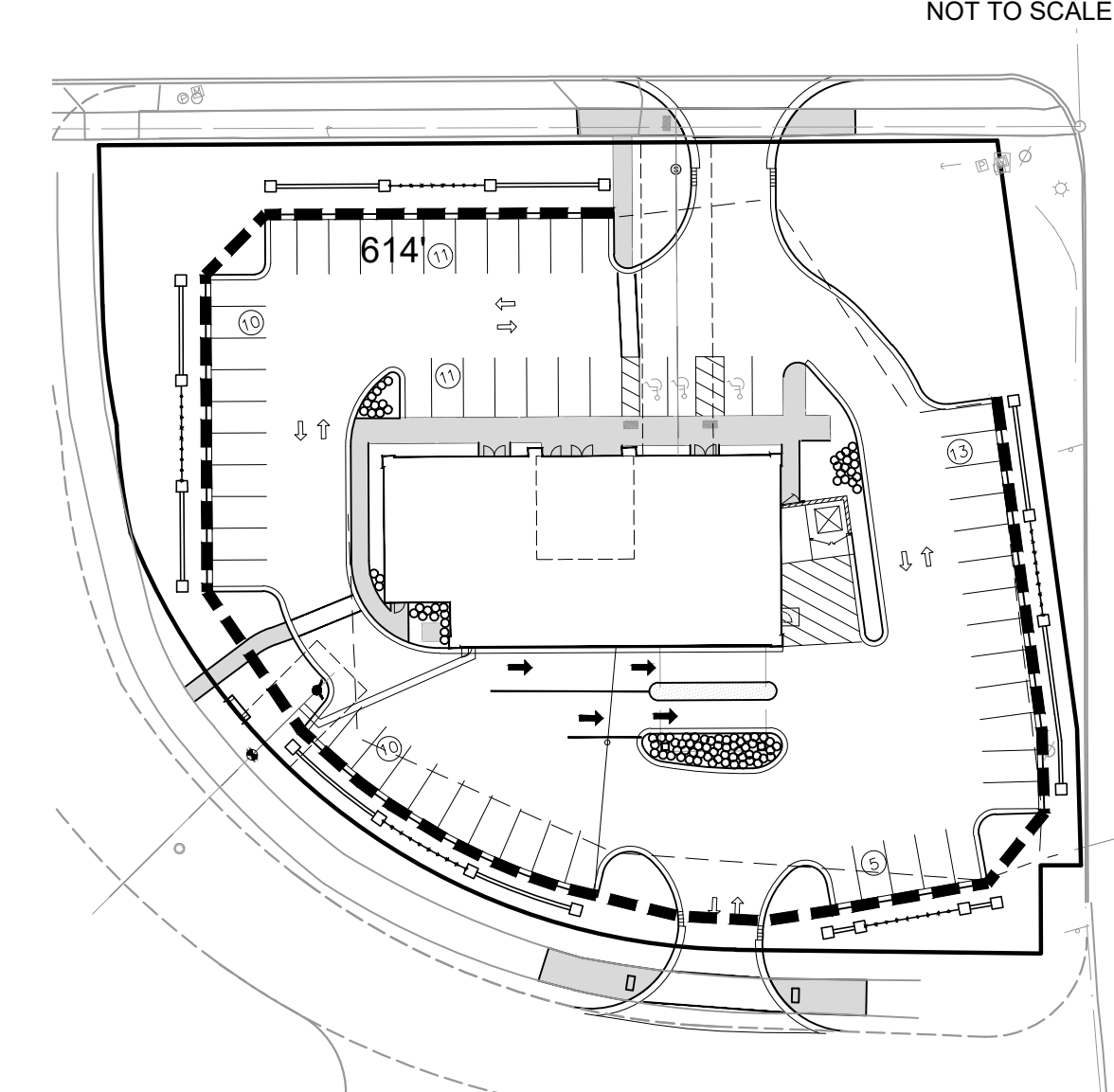
SHEET NO.: 1 of 1



Location Map



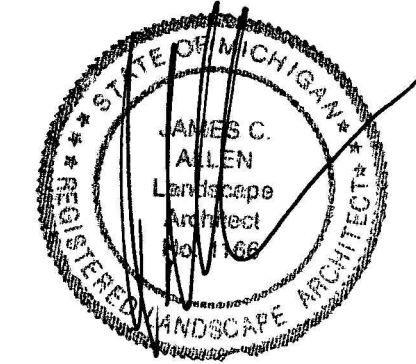
Perimeter Parking Measurement



Seating Detail



Seal:



Title:
Landscape Plan

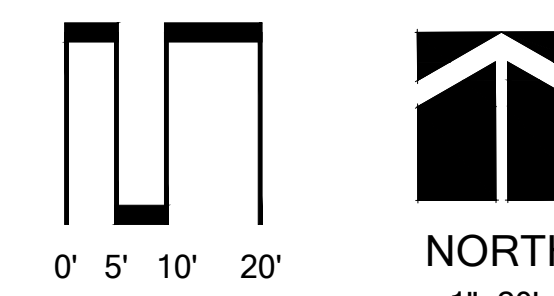
Project:
**City Center
Novi, Michigan**

Prepared for:
City Center Office Plaza, LLC
25875 Novi Road, Suite 180
Novi, MI 48375
248-513-3665

Revision: Issued:
 Submission October 18, 2021
 February 18, 2022
 Revised February 20, 2026

Job Number:
21-070

Drawn By: Checked By:
jca jca



Sheet No.

Landscape Requirements

Existing Zoning	TC-1
Greenbelt	
Street Frontage Adjacent to Pkg. Trees Required	453'
"GB" Trees Provided	18 Trees (453' / 25')
Ornamental Trees Required	30 Trees (453' / 15')
Ornamental Trees Provided	0 Trees
Street Frontage not Adjacent to Pkg. Less Drive Openings	293' / 50'
"GB" Trees Provided	8 Trees (243' / 30')
Ornamental Trees Required	12 Trees (243' / 20')
Ornamental Trees Provided	0 Trees
Parking Lot Landscaping	
Vehicular Use Area	27,962 s.f.
VUA up to 50,000 s.f.	2,097 s.f. (27,962 s.f. x 7.5%)
"P" Landscape Area Required	2,097 s.f.
Landscape Island Provided	2,100 s.f.
Trees Required	10.5 Trees (2,097 s.f. / 200)
Trees Provided	11 Trees
Parking Lot Perimeter Length	614 l.f.
"Per" Trees Required	17.5 Trees (614' / 35')
Trees Provided	18 Trees

Foundation Landscaping	Building Perimeter	335 l.f.
Landscape Required	2,680 s.f. (335' x 8')	
Landscape Provided	1,671 s.f.	
Woodland Replacement		
Trees Required	4 Trees	
Trees Provided	4 Trees	
Requested Waivers:		
1. Sec 5.5.3.B.ii Greenbelt Width		
2. Sec 5.5.3.D Requiring 2,680 s.f. of Foundation Landscaping.		
3. LDM 1.e from 1 through 5. Transformer /Utility Box Screening		
Notes:		
1. No Phragmites or Japanese Knotweed Exist On-Site.		
2. Trees Shall be Planted no Closer than 10' Utility Structure Including Hydrants.		
3. Trees Shall not be Planted within 4' of Property Lines.		

Tree List

Tag	Size	Common Name	Botanical Name	Status
1	36"	Black Walnut	Juglans nigra	Remove
Total Trees 1 Tree				
Regulated Trees Removed 1 Tree				
Replacement Required				
Trees 8" - 11" 0 trees x 1= 0 Trees				
Trees 11" - 20" 0 trees x 2= 0 Trees				
Trees 20" - 30" 0 trees x 3= 0 Trees				
Trees 30"+ 1 trees x 4= 4 Trees				
Multi-Stemmed Trees (1 Tree) 0 Trees				
Replacement Required 4 Trees				

Plant List

sym	qty	botanical name	common name	caliper	spacing	root	height	price	total	Species	Genus	Native	Total
Parking Lot and Perimeter Trees													
AS	5	Acer saccharum 'Green Mountain'	Sugar Maple	3.0"	as shown	B&B		\$ 400.00	\$ 2,000.00	12%	12%	1	1
CO	5	Celtis occidentalis	Northern Hackberry	3.0"	as shown	B&B		\$ 400.00	\$ 2,000.00	12%	12%	1	1
GT	6	Gleditsia triacanthos var. inermis	Thornless Honeylocust	3.0"	as shown	B&B		\$ 400.00	\$ 2,400.00	14%	14%	1	1
LT	6	Liriodendron tulipifera	Tulip Tree	3.0"	as shown	B&B		\$ 400.00	\$ 2,400.00	14%	14%	1	1
MS	3	Malus 'Spring Snow'	Spring Snow Crab	2.5"	as shown	B&B		\$ 400.00	\$ 1,200.00	7%	7%	1	1
QR	5	Quercus rubra	Red Oak	3.0"	as shown	B&B		\$ 400.00	\$ 2,000.00	12%	12%	1	1
TA	6	Tilia americana 'Redmond'	Redmond Linden	3.0"	as shown	B&B		\$ 400.00	\$ 2,400.00	14%	14%	1	1
UA	6	Ulmus 'Pioneer'	Pioneer Elm	3.0"	as shown	B&B		\$ 400.00	\$ 2,400.00	14%	14%	1	1
42		Total Parking Lot, Perimeter Trees											
Woodland Replacement													
ASR	2	Acer saccharum 'Green Mountain'	Sugar Maple	2.5"	as shown	B&B		\$ 400.00	\$ 800.00				
QRR	2	Quercus rubra	Red Oak	2.5"	as shown	B&B		\$ 400.00	\$ 800.00				
General Plantings													
IV	20	Ilex verticillata 'Red Sprite'	Red Sprite Dwarf Inkberry		as shown	cont.	36"	\$ 50.00	\$ 1,000.00			1	1
JC	16	Juniperus ch. 'Keteleer'	Keteleer Juniper - trim to hedge		as shown	B&B	5'	\$ 70.00	\$ 1,120.00				1
LM	50	Liriope muscari 'Big Blue'	Big Blue Liriope		as shown	cont.	#2	\$ 15.00	\$ 750.00				1
LS	92	Leucanthemum x superbum	Shasta Daisy		as shown	cont.	#2	\$ 15.00	\$ 1,380.00				1
PA	24	Pennisetum a. 'Hameln'	Dwarf Fountain Grass		as shown	cont.	#2	\$ 15.00	\$ 360.00				1
PL	14	Pennisetum a. 'Little Bunnies'	Little Bunnies Fountain Grass		as shown	cont.	#2	\$ 15.00	\$ 210.00				1
PO	20	Physocarpus opulifolius 'Coppertina'	Coppertina Ninebark		as shown	cont.	36"	\$ 50.00	\$ 1,000.00			1	1
RF	62	Rubricola fulgida speciosa 'Goldsturm'	Black Eyed Susan		as shown	cont.	#2	\$ 15.00	\$ 1,380.00			1	1
SH	71	Sporobolus heterolepis	Prairie Dropseed		as shown	cont.	#2	\$ 15.00	\$ 1,065.00			1	1
SP	40	Spiraea x. bumalda 'Magic Carpet'	Magic Carpet Spiraea		as shown	cont.	24"	\$ 50.00	\$ 2,000.00			1	1
Irrigation													
		35 4" Deep Shredded Hardwood Bark Mulch/ s.y.						\$ 35	\$ 1,225.00				
		985 Sod / s.y.						\$ 60.00	\$ 5,910.00				
Total									\$ 53,800.00			10	18
												% Native	56%

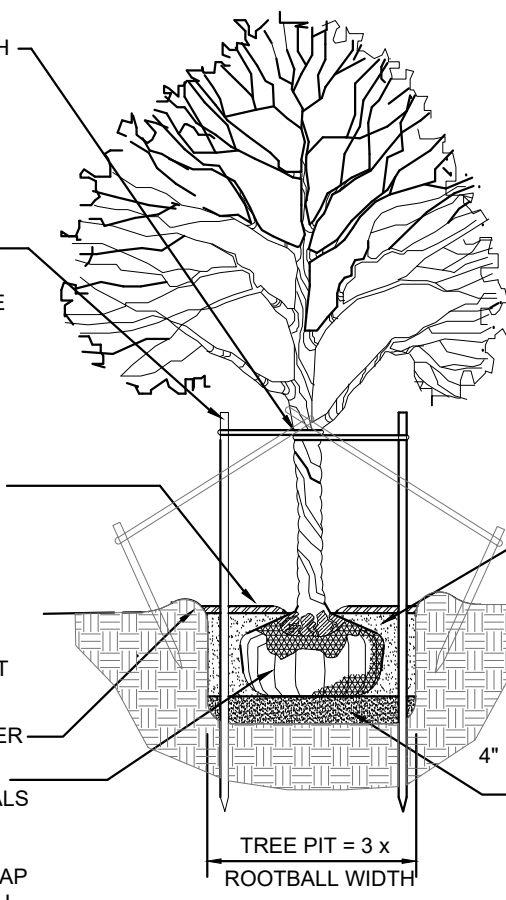


NOTE:
GUY DECIDUOUS TREES ABOVE
3" CAL. STAKE DECIDUOUS
TREES BELOW 3" CAL.

STAKE TREES AT FIRST BRANCH
USING 2"-3" WIDE BELT-LIKE
NYLON OR PLASTIC STRAPS.
ALLOW FOR SOME MINIMAL
FLEXING OF THE TREE.
REMOVE AFTER ONE YEAR.

2" X 2" HARDWOOD STAKES,
MIN. 36" ABOVE GROUND FOR
UPRIGHT, 18" IF ANGLED. DRIVE
STAKES A MIN. 18" INTO
UNDISTURBED GROUND
OUTSIDE ROOTBALL. REMOVE
AFTER ONE YEAR.

MULCH 4" DEPTH WITH
SHREDDED HARDWOOD BARK,
NATURAL IN COLOR. LEAVE 3"
CIRCLE OF BARE SOIL AT BASE
OF TREE TRUNK. PULL ANY
ROOT BALL DIRT EXTENDING
ABOVE THE ROOT FLARE AWAY
FROM THE TRUNK SO THE ROOT
FLARE IS EXPOSED TO AIR.
MOUND EARTH TO FORM SAUCER.
REMOVE ALL
NON-BIODEGRADABLE MATERIALS
COMPLETELY FROM THE
ROOTBALL. CUT DOWN WIRE
BASKET AND FOLD DOWN BURLAP
FROM TOP 1/2 OF THE ROOTBALL.



NOTE:
TREE SHALL BEAR SAME
RELATION TO FINISH GRADE AS
IT BORE ORIGINALLY OR
SLIGHTLY HIGHER THAN FINISH
GRADE UP TO 6" ABOVE GRADE.
IF DIRECTED BY LANDSCAPE
ARCHITECT FOR HEAVY CLAY
SOIL AREAS.

DO NOT PRUNE TERMINAL
LEADER. PRUNE ONLY DEAD OR
BROKEN BRANCHES.

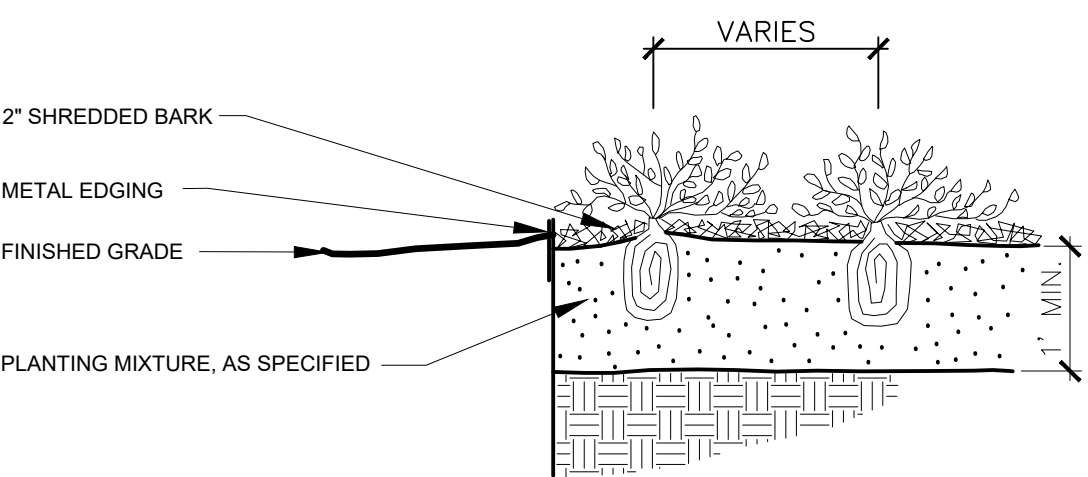
REMOVE ALL TAGS, STRING,
PLASTICS AND OTHER
MATERIALS THAT ARE
UNUSUALLY OR COULD CAUSE
GIRDLING.

PLANTING MIXTURE:
AMEND SOILS PER
SITE CONDITIONS
AND REQUIREMENTS
OF THE PLANT
MATERIAL.

SCARIFY SUBGRADE
AND PLANTING PIT
SIDES. RECOMPACT
BASE OF TO 4"
DEPTH.

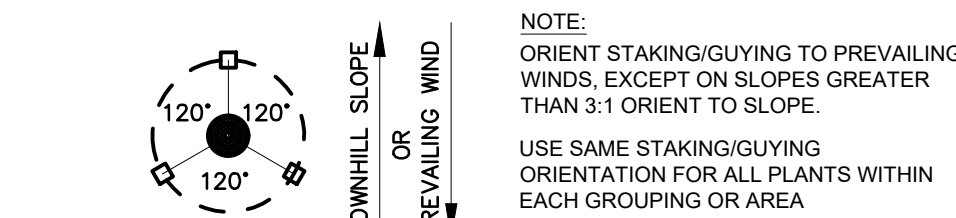
DECIDUOUS TREE PLANTING DETAIL

Not to scale

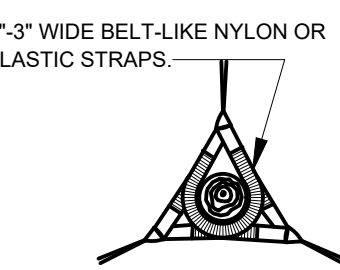


PERENNIAL PLANTING DETAIL

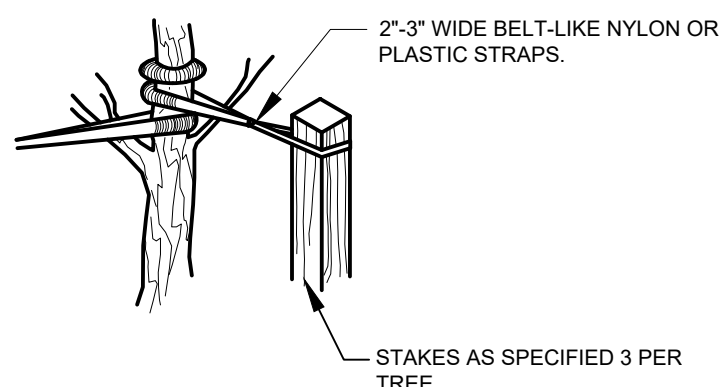
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STAKING/GUYING LOCATION

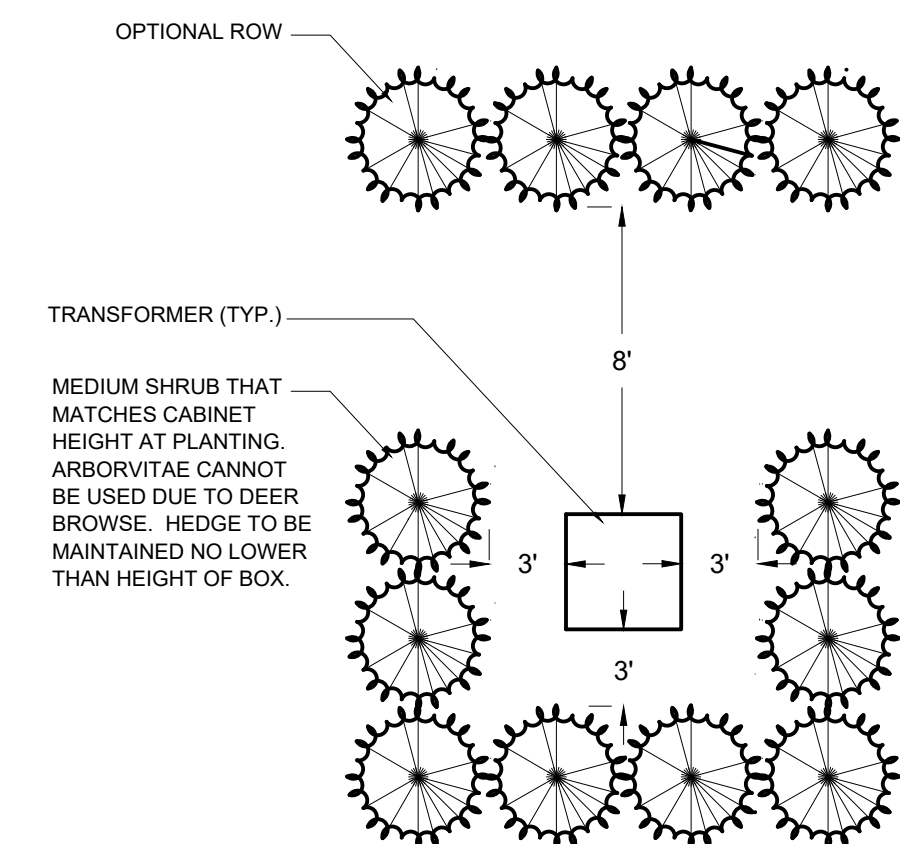


GUYING DETAIL



STAKING DETAIL

TREE STAKING DETAIL



TRANSFORMER SCREENING DETAIL

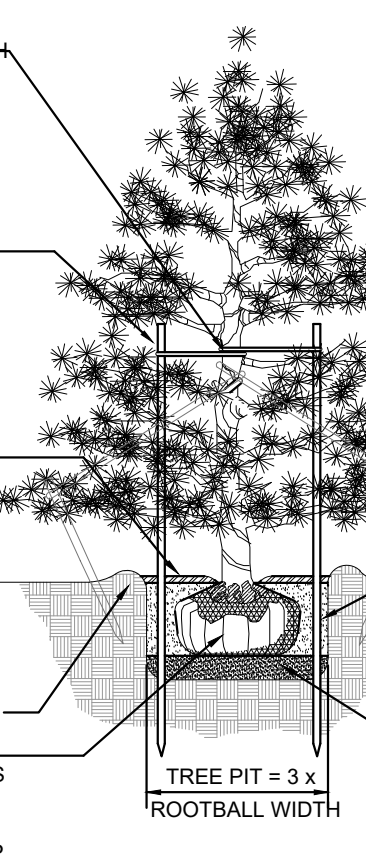
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NOTE:
GUY EVERGREEN TREES ABOVE
12' HEIGHT. STAKE EVERGREEN
TREE BELOW 12' HEIGHT.

STAKE TREES AT FIRST BRANCH
USING 2"-3" WIDE BELT-LIKE
NYLON OR PLASTIC STRAPS.
ALLOW FOR SOME MINIMAL
FLEXING OF THE TREE.
REMOVE AFTER ONE YEAR.

2" X 2" HARDWOOD STAKES,
MIN. 36" ABOVE GROUND FOR
UPRIGHT, 18" IF ANGLED. DRIVE
STAKES A MIN. 18" INTO
UNDISTURBED GROUND
OUTSIDE ROOTBALL. REMOVE
AFTER ONE YEAR.

MULCH 4" DEPTH WITH
SHREDDED HARDWOOD BARK,
NATURAL IN COLOR. LEAVE 3"
CIRCLE OF BARE SOIL AT BASE
OF TREE TRUNK. PULL ANY
ROOT BALL DIRT EXTENDING
ABOVE THE ROOT FLARE AWAY
FROM THE TRUNK SO THE ROOT
FLARE IS EXPOSED TO AIR.
MOUND EARTH TO FORM SAUCER.
REMOVE ALL
NON-BIODEGRADABLE MATERIALS
COMPLETELY FROM THE
ROOTBALL. CUT DOWN WIRE
BASKET AND FOLD DOWN BURLAP
FROM TOP 1/2 OF THE ROOTBALL.



NOTE:
TREE SHALL BEAR SAME
RELATION TO FINISH GRADE AS
IT BORE ORIGINALLY OR
SLIGHTLY HIGHER THAN FINISH
GRADE UP TO 6" ABOVE GRADE.
IF DIRECTED BY LANDSCAPE
ARCHITECT FOR HEAVY CLAY
SOIL AREAS.

DO NOT PRUNE TERMINAL
LEADER. PRUNE ONLY DEAD OR
BROKEN BRANCHES.

REMOVE ALL TAGS, STRING,
PLASTICS AND OTHER
MATERIALS THAT ARE
UNUSUALLY OR COULD CAUSE
GIRDLING.

PLANTING MIXTURE:
AMEND SOILS PER
SITE CONDITIONS
AND REQUIREMENTS
OF THE PLANT
MATERIAL.

SCARIFY SUBGRADE
AND PLANTING PIT
SIDES. RECOMPACT
BASE OF TO 4"
DEPTH.

EVERGREEN TREE PLANTING DETAIL

Not to scale

CITY OF NOVI NOTES

- All landscape islands shall be backfilled with a sand mixture to facilitate drainage.
- All proposed landscape islands shall be curbed.
- All landscape areas shall be irrigated.
- Overhead utility lines and poles to be relocated as directed by utility company of record.
- Evergreen and canopy trees shall be planted a minimum of 10' from a fire hydrant, and manhole, 15' from overhead wires.
- All plant material shall be guaranteed for two (2) years after City Approval and shall be installed and maintained according to City of Novi standards. Replace Falling Material Within Three Months or Next Growing Period, Whichever is Sooner!
- All proposed street trees shall be planted a minimum of 4' from both the back of curb and proposed walks.
- All tree and shrub planting beds shall be mulched with shredded hardwood bark, spread to minimum depth of 4". All lawn area trees shall have a 4' diameter circle of shredded hardwood mulch 3" away from trunk. All perennial, annual and ground cover beds shall receive 2" of dark colored bark mulch as indicated on the plant list. Mulch is to be free from debris and foreign material, and shall contain no pieces of inconsistent size.
- All Substitutions or Deviations from the Landscape Plan Must be Approved in Writing by the City of Novi Prior to their Installation.

NOTES:
THE APPROXIMATE DATE OF INSTALLATION FOR THE PROPOSED LANDSCAPE WILL BE MARCH 15 - NOVEMBER 15 OF 2022 or 2023.

THE SITE WILL BE MAINTAINED BY THE DEVELOPER IN ACCORDANCE WITH THE STANDARDS SET FORTH IN THE CITY OF NOVI ZONING ORDINANCE. THIS INCLUDES WEEDING AND WATERING AS REQUIRED BY NORMAL MAINTENANCE PRACTICES. THIS INCLUDES ONE CULTIVATION BETWEEN JUNE-AUGUST.

DEVELOPER SHALL BE RESPONSIBLE FOR REPLACING ANY TREES WITHIN UTILITY EASEMENTS THAT ARE DAMAGED THROUGH NORMAL MAINTENANCE OR REPAIRS.

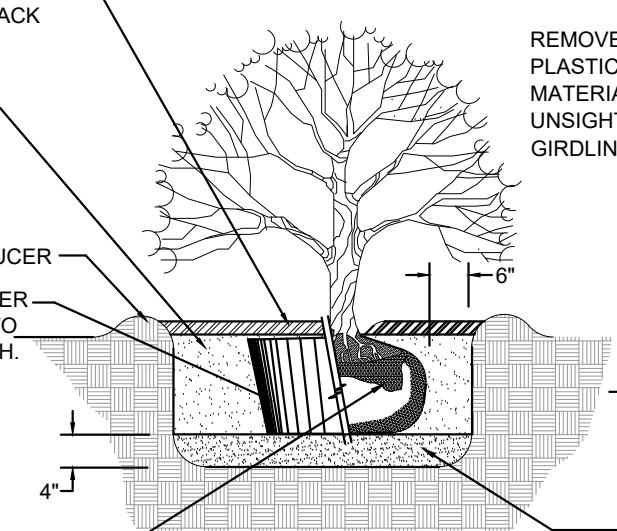
PLANT MATERIALS SHALL BE GUARANTEED FOR 2 YEARS AND SHALL BE MAINTAINED IN ACCORDANCE WITH CITY ORDINANCES. WARRANTY PERIOD BEGINS AT THE TIME OF CITY APPROVAL. WATERING AS NECESSARY SHALL OCCUR DURING THIS WARRANTY PERIOD.

NOTE:
TREE SHALL BEAR SAME
RELATION TO FINISH GRADE AS
IT BORE ORIGINALLY OR
SLIGHTLY HIGHER THAN FINISH
GRADE UP TO 4" ABOVE GRADE.
IF DIRECTED BY LANDSCAPE
ARCHITECT FOR HEAVY CLAY
SOIL AREAS.

MULCH 3" DEPTH WITH
SHREDDED HARDWOOD BARK,
NATURAL IN COLOR. FULL BACK
3" FROM TRUNK.

PLANTING MIXTURE:
AMEND SOILS PER
SITE CONDITIONS
AND REQUIREMENTS
OF THE PLANT
MATERIAL.
MOUND EARTH TO FORM SAUCER.
REMOVE COLLAR OF ALL FIBER
POTS. POTS SHALL BE CUT TO
PROVIDE FOR ROOT GROWTH.
REMOVE ALL NONORGANIC
CONTAINERS COMPLETELY.

REMOVE ALL
NON-BIODEGRADABLE MATERIALS
COMPLETELY FROM THE
ROOTBALL. FOLD DOWN BURLAP
FROM TOP 1/2 OF THE ROOTBALL.



PRUNE ONLY DEAD OR BROKEN
BRANCHES.

REMOVE ALL TAGS, STRING,
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MATERIALS THAT ARE
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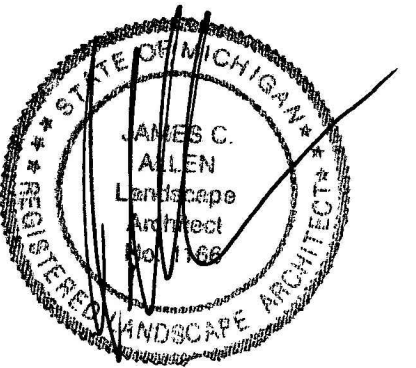
SCARIFY SUBGRADE
AND PLANTING PIT
SIDES. RECOMPACT
BASE OF TO 4"
DEPTH.

SHRUB PLANTING DETAIL

NOT TO SCALE

LANDSCAPE NOTES

- All plants shall be north Midwest American region grown, No. 1 grade plant materials, and shall be true to name, free from physical damage and wind burn.
- Plants shall be full, well-branched, and in healthy vigorous growing condition.
- Plants shall be watered before and after planting is complete.
- All trees must be staked, fertilized and mulched and shall be guaranteed to exhibit a normal growth cycle for at least two (2) full years following City approval.
- All material shall conform to the guidelines established in the most recent edition of the American Standard for Nursery Stock.
- Provide clean backfill soil, using material stockpiled on site. Soil shall be screened and free of any debris, foreign material, and stone.
- "Agriform" tabs or similar slow-release fertilizer shall be added to the planting pits before being backfilled.
- Amended planting mix shall consist of 1/3 screened topsoil, 1/3 sand and 1/3 compost, mixed well and spread to the depth as indicated in planting details.
- All plantings shall be mulched per planting details located on this sheet.
- The Landscape Contractor shall be responsible for all work shown on the landscape drawings and specifications.
- No substitutions or changes of location, or plant types shall be made without the approval of the Landscape Architect.
- The City of Novi's Landscape Architect shall be notified of any discrepancies between the plans and field conditions prior to installation.
- The Landscape Contractor shall be responsible for maintaining all plant material in a vertical condition throughout the guaranteed period.
- The Landscape Architect shall have the right, at any stage of the installation, to reject any work or material that does not meet the requirements of the plans and specifications, if requested by owner.
- Contractor shall be responsible for checking plant quantities to ensure quantities on drawings and plant list are the same. In the event of a discrepancy, the quantities on the plans shall prevail.
- The Landscape Contractor shall seed and mulch or sod (as indicated on plans) all areas disturbed during construction, throughout the contract limits.
- A pre-emergent weed control agent, "Preen" or equal, shall be applied uniformly on top of all mulching in all planting beds.
- All landscape areas shall be provided with an underground automatic sprinkler system.
- Sod shall be two year old "Baron/Cheriadelphi" Kentucky Blue Grass grown in a sod nursery on loam soil.



Seal:

Title:
Landscape Details

Project:
**City Center
Novi, Michigan**

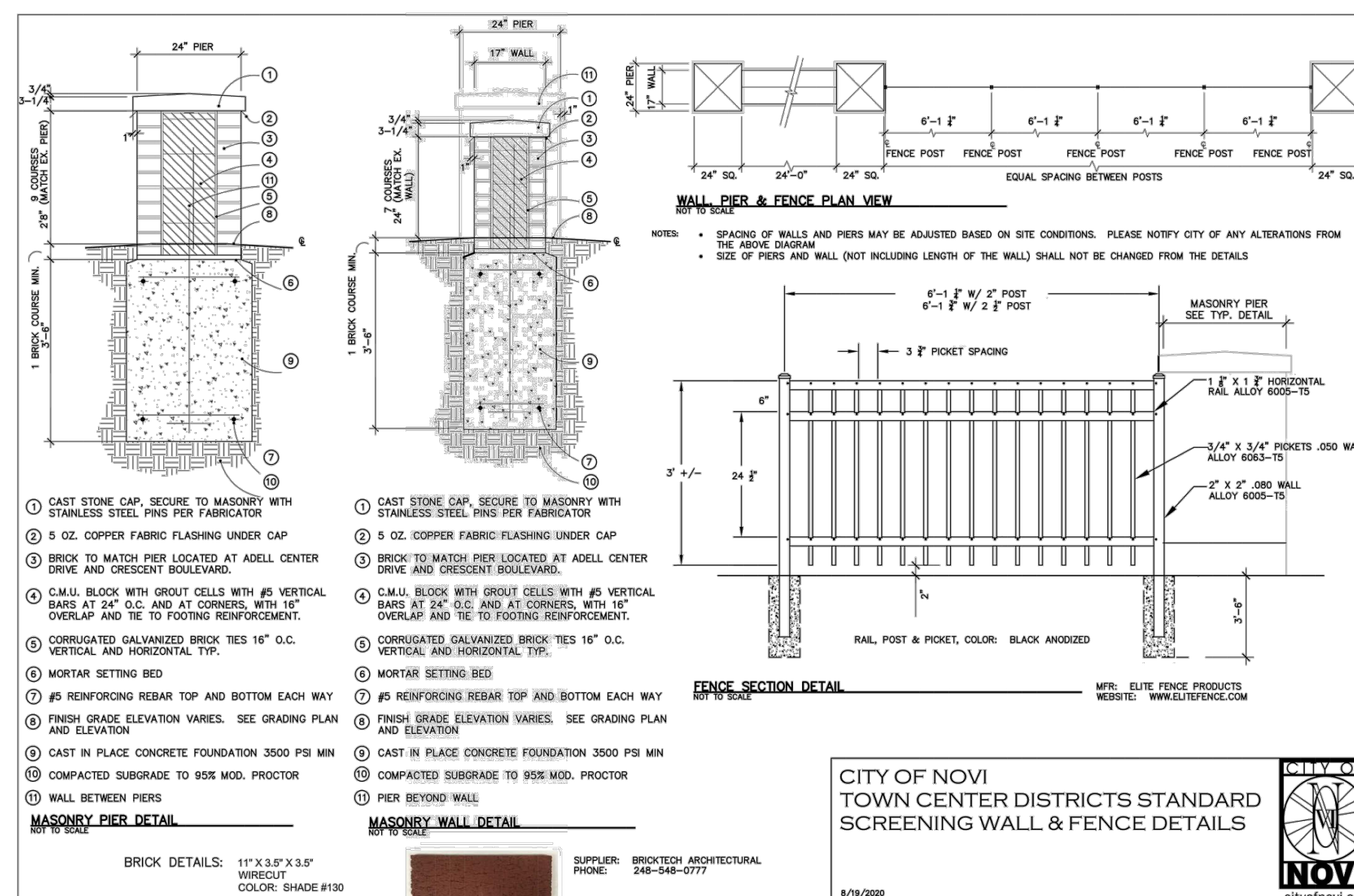
Prepared for:
**City Center Office Plaza, LLC
25875 Novi Road, Suite 180
Novi, MI 48375
248-513-3665**

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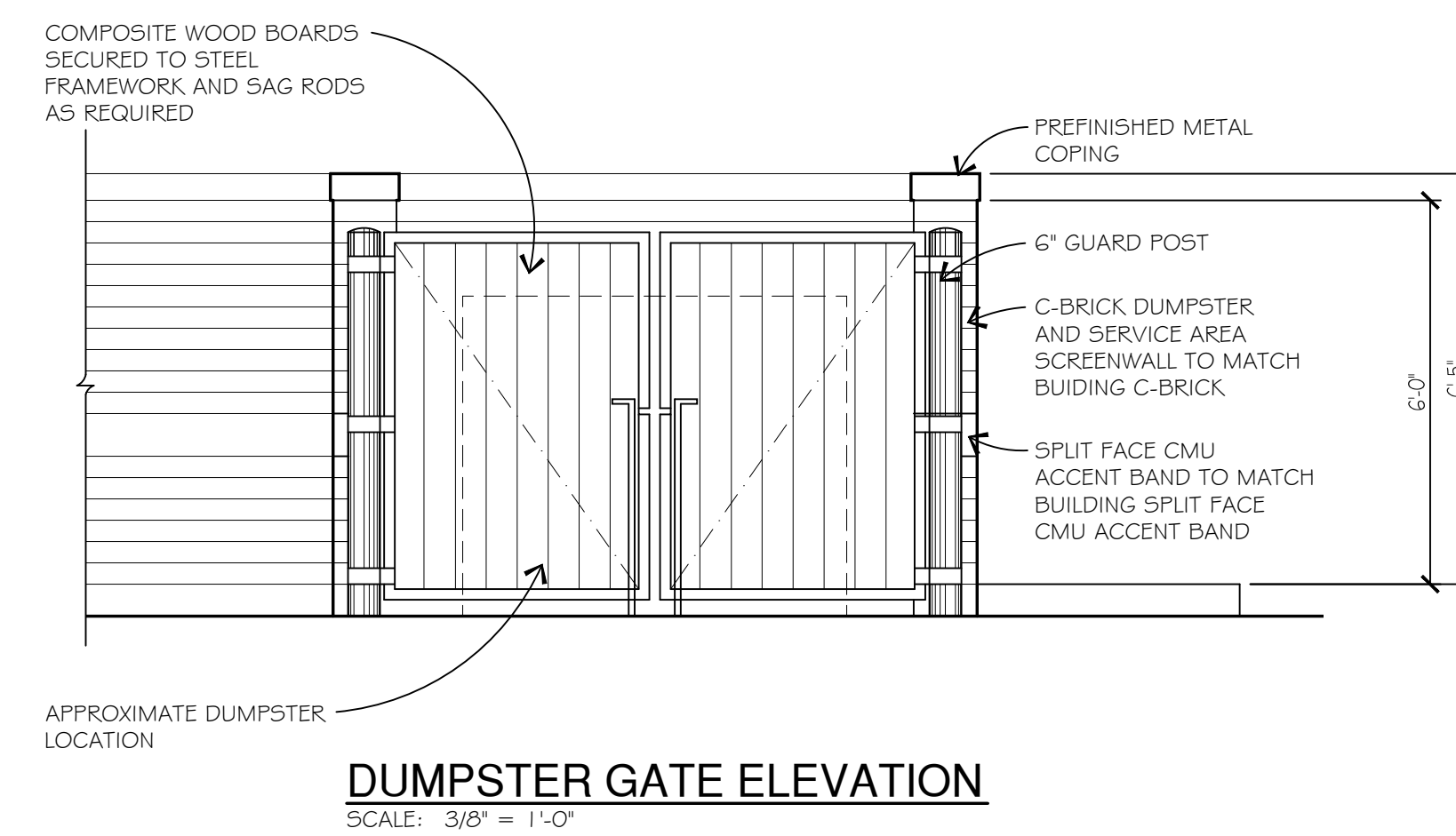
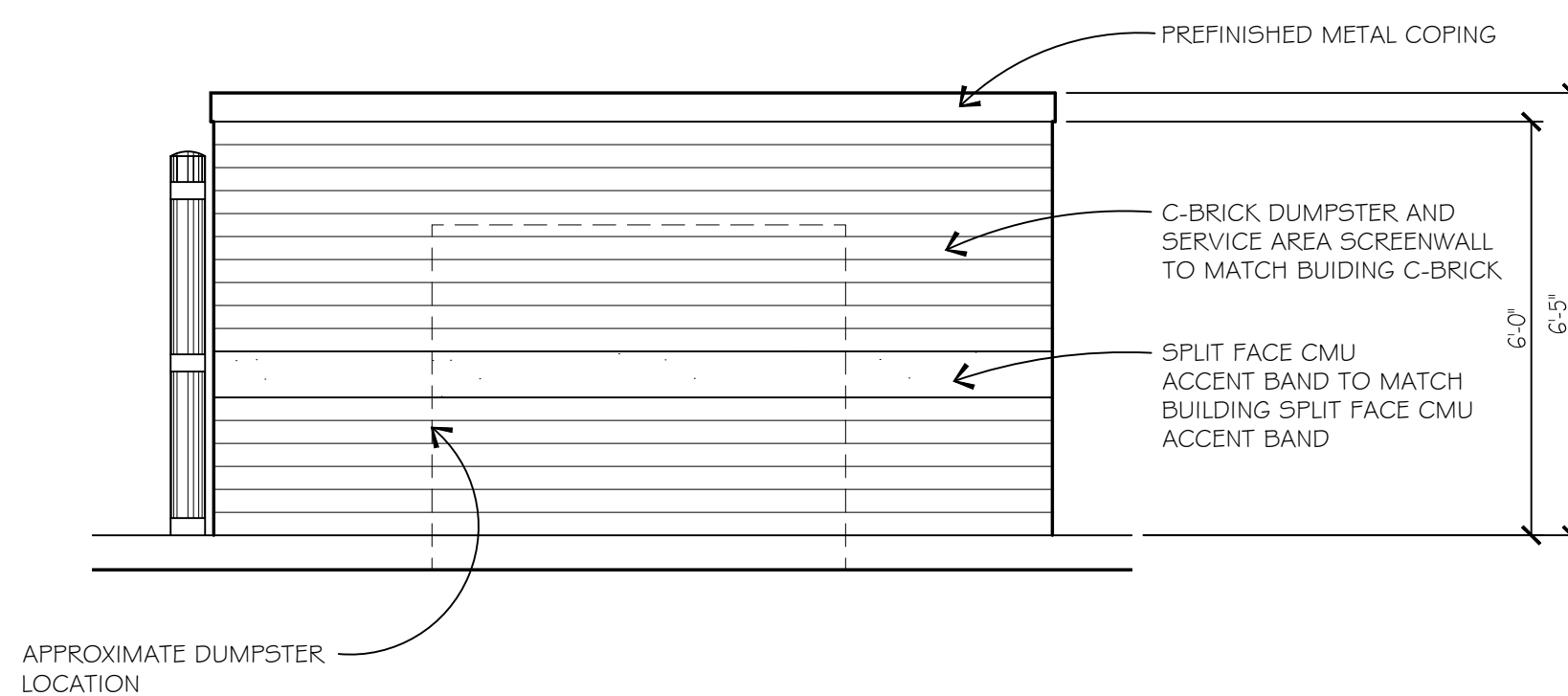
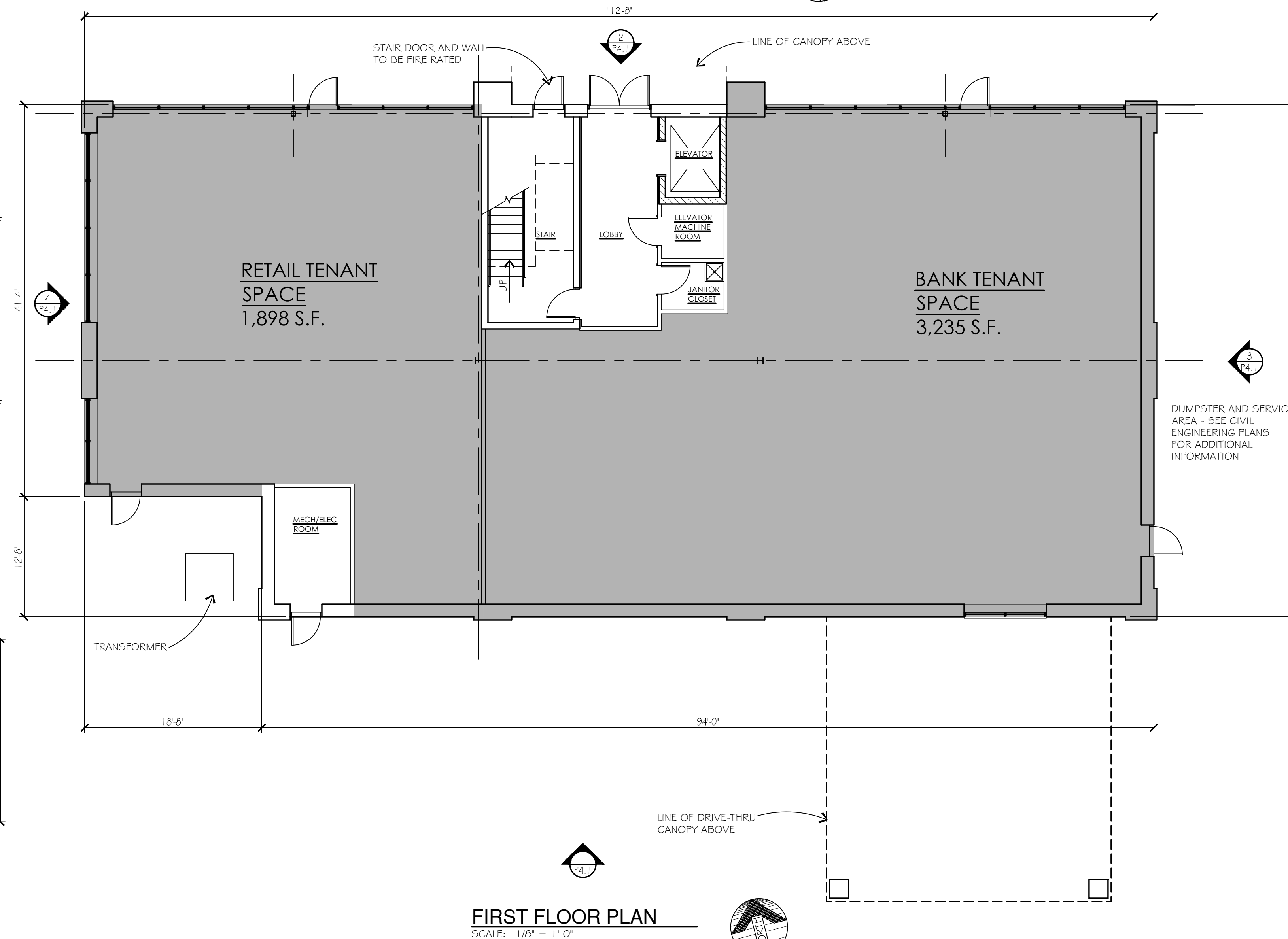
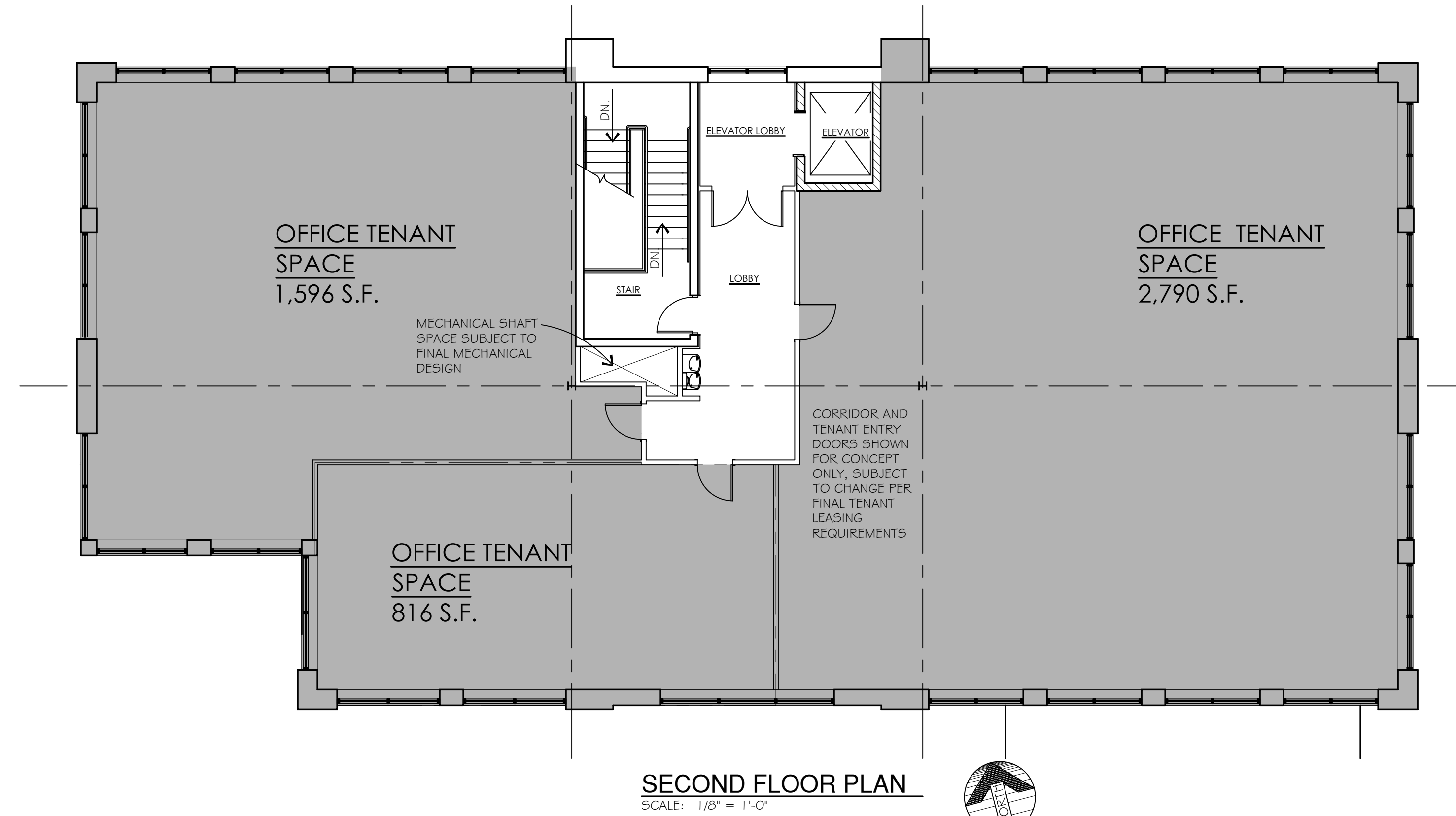
Job Number:
21-070

Drawn By: Checked By:
jca jca

Sheet No.



Know what's below.
Call before you dig.



NOTE: SCREENWALL AND GATE DETAILS ARE SHOWN FOR CONCEPT ONLY, SUBJECT FINAL DESIGN AND ENGINEERING.

BUILDING AREA:

FIRST FLOOR:	
BANK	3,235 S.F.
RETAIL	1,898 S.F.
LOBBY, STAIR, ELEVATOR	751 S.F.
MECH/ELEC	751 S.F.
FIRST FLOOR TOTAL	5,884 S.F.
SECOND FLOOR:	
OFFICE	5,202 S.F.
LOBBY, STAIR, ELEVATOR	682 S.F.
SECOND FLOOR TOTAL	5,884 S.F.
TOTAL BUILDING AREA	11,768 S.F.

PARKING CALCULATIONS:

FIRST FLOOR:	
BANK	3,235 S.F. G.B.A. = 3,235 / 150 = 22 SPACES REQUIRED
RETAIL	1,898 S.F. G.L.A. 1,898 / 200 = 10 SPACES REQUIRED
SECOND FLOOR:	
OFFICE	5,202 S.F. G.L.A. 5,202 / 222 = 24 SPACES

TOTAL PARKING SPACES REQUIRED = 56 SPACES
TOTAL PARKING SPACES PROVIDED = 60 SPACES

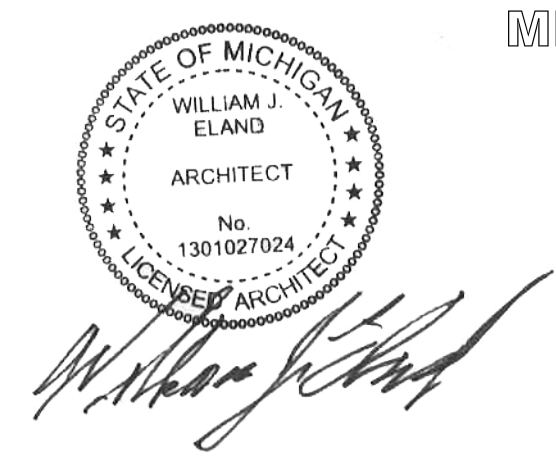
NOTE: SHADED AREA INDICATES AREA REQUIRING PARKING

- GENERAL NOTES:**
- ROOF TOP MECHANICAL EQUIPMENT WILL BE SCREENED BY BUILDING PARAPETS.
 - BUILDING TO BE FULLY SPRINKLED.
 - SITE SIGNS SHOWN FOR CONCEPT ONLY, TO BE SUBMITTED SEPARATELY AT A LATER DATE FROM SITE PLAN SUBMITTAL.
 - BUILDING SIGNAGE WILL BE SUBMITTED SEPARATELY AT A LATER DATE FROM SITE PLAN SUBMITTAL.
 - TRANSFORMER PROVIDED BY UTILITY COMPANY BASED ON BUILDING ENGINEERING REQUIREMENTS, HEIGHT OF TRANSFORMER MAY BE UNDER 4', BUT CAN NOT BE DETERMINED EXACTLY AT THIS PRELIMINARY STAGE.
 - SEE CIVIL ENGINEERING PLANS PREPARED BY SEIBER, KEAST ENGINEERING, L.L.C. FOR ADDITIONAL INFORMATION.
 - TOILET ROOMS WILL BE PROVIDED IN EACH INDIVIDUAL TENANT SPACE.

CITY CENTER OFFICE PLAZA

NOVI, MICHIGAN

OWNER/DEVELOPER:
G & T MANAGEMENT
200 RENAISSANCE CENTER, SUITE 3145
DETROIT, MICHIGAN 48243
PHONE: 313-259-6720
EMAIL: GTMANAGEMENT@GMAIL.COM

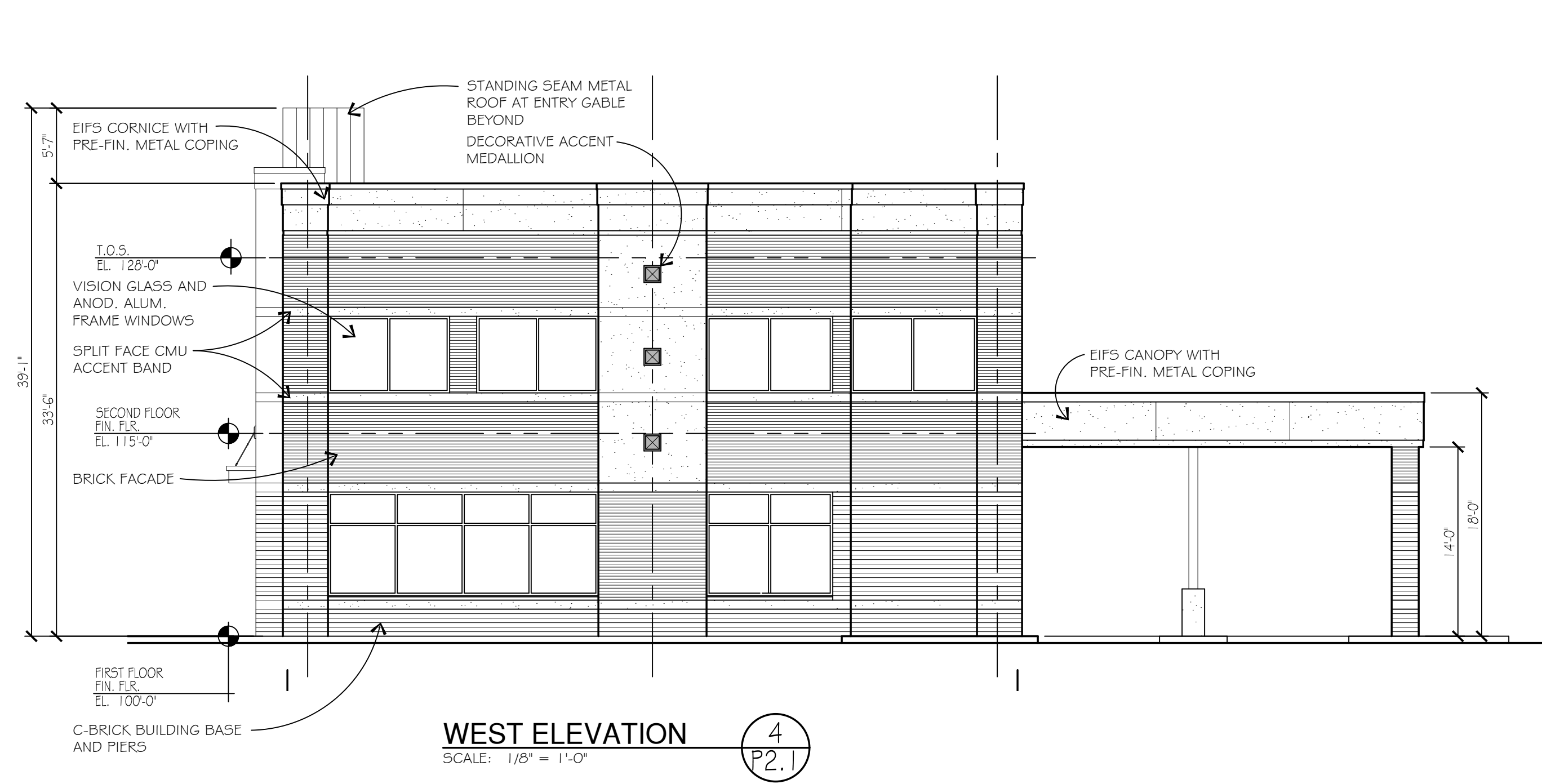


WAH YEE ASSOCIATES
ARCHITECTS & PLANNERS
42400 GRAND RIVER AVENUE, SUITE 200
NOVI, MICHIGAN 48375
PHONE 248.489.9160
PROJECT NO. 5118

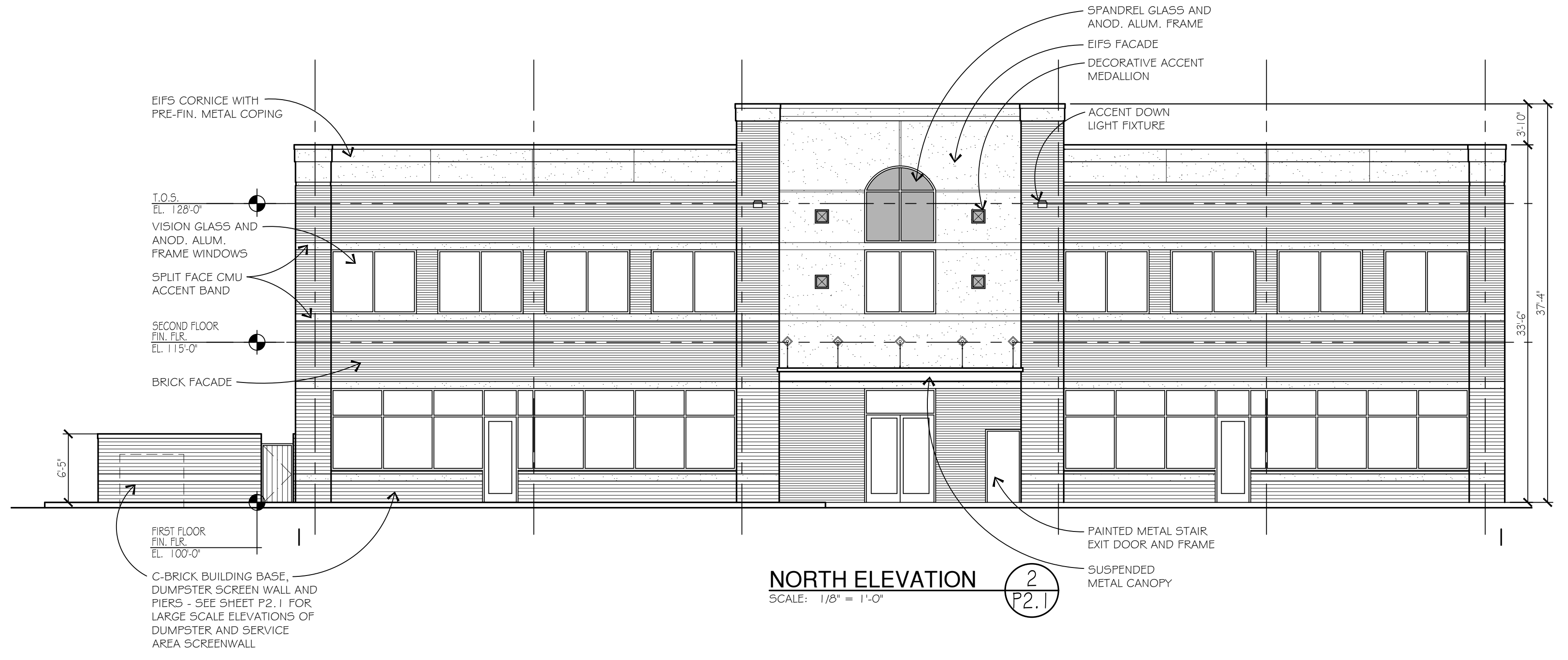
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PRELIMINARY
NOT FOR CONSTRUCTION

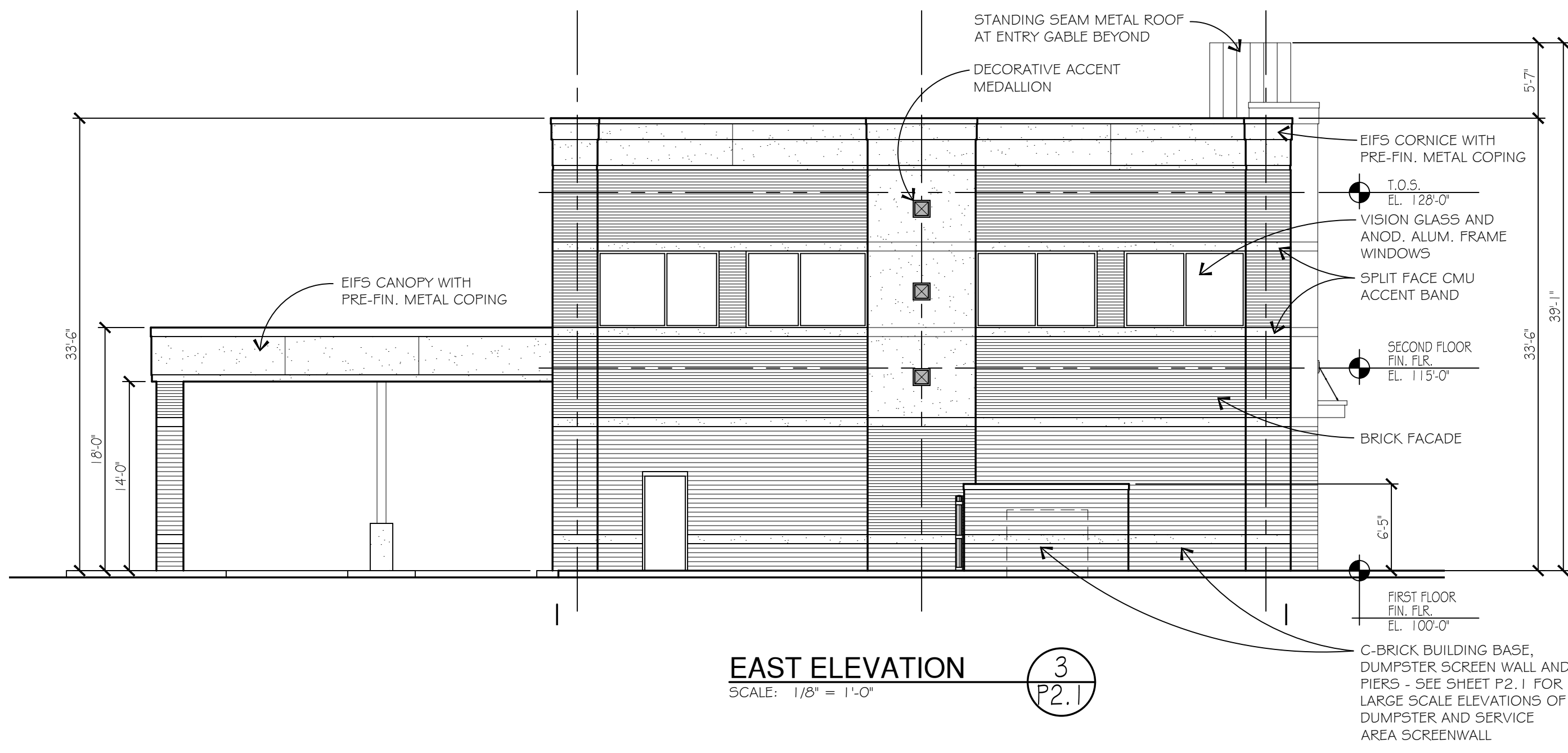
ISSUED:
PRE-APPLICATION SUBMITTAL 2-9-21
PRELIM. S.P.S. 10-13-21
REVISED PRELIM. S.P.S. 2-18-22
REVISED PRELIM. S.P.S. 2-5-24
REVISED PRELIM. 12-16-25
REVISED PRELIM. 2-16-26



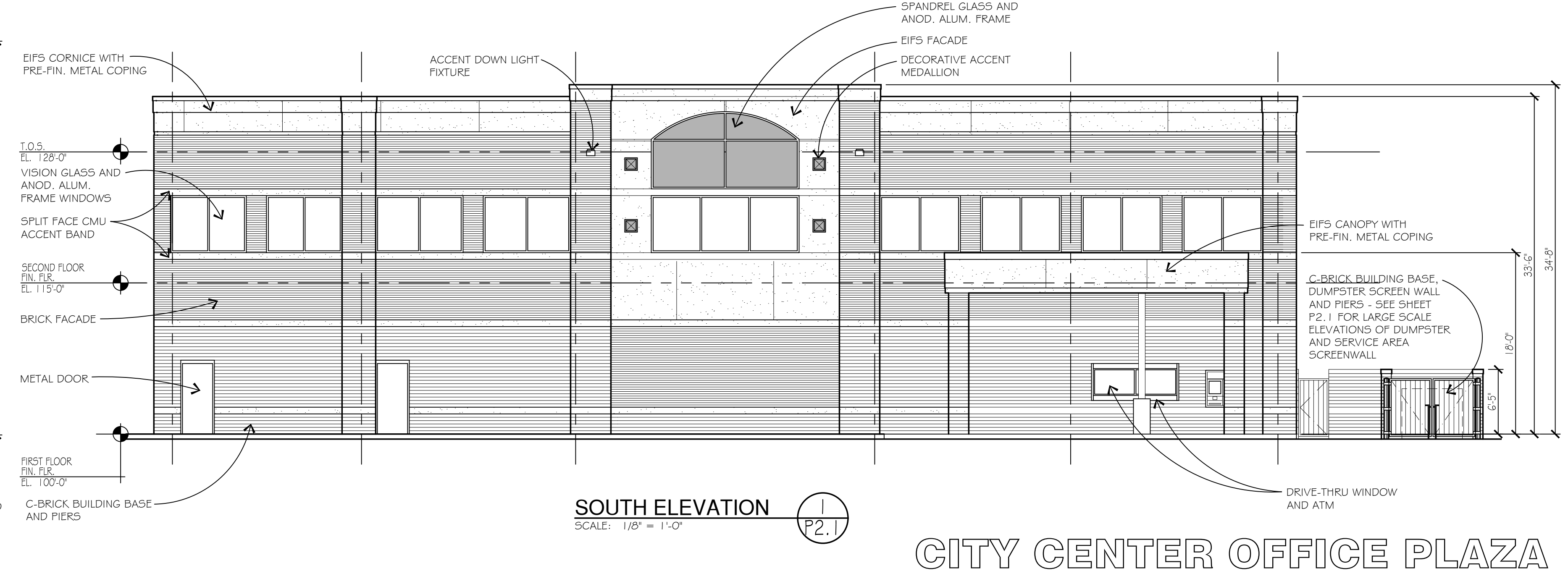
WEST ELEVATION
SCALE: 1/8" = 1'-0"
4
P2.1



NORTH ELEVATION
SCALE: 1/8" = 1'-0"
2
P2.1



EAST ELEVATION
SCALE: 1/8" = 1'-0"
3
P2.1



SOUTH ELEVATION
SCALE: 1/8" = 1'-0"
1
P2.1

WEST ELEVATION MATERIALS

MATERIAL	ALLOWABLE	PROPOSED	PERCENTAGE
BRICK	30% MIN.	744 S.F.	44.8%
C-BRICK	25%	287 S.F.	17.3%
EIFS FACADE	25%	438 S.F.	26.3%
METAL TRIM AND CANOPY	15%	48 S.F.	2.9%
SPANDREL GLASS	50%	0 S.F.	0.0%
SPLIT FACE CMU	10.0%	144 S.F.	8.7%
TOTAL		1,661 S.F.	100.0%

NOTE : TOTAL FACADE = 2,075 S.F. - VISION GLASS AREA OF 414 S.F. = 1,661 S.F.

EAST ELEVATION MATERIALS

MATERIAL	ALLOWABLE	PROPOSED	PERCENTAGE
BRICK	30% MIN.	693 S.F.	37.5%
C-BRICK	25%	523 S.F.	28.3%
EIFS FACADE	25%	438 S.F.	23.7%
METAL TRIM AND CANOPY	15%	48 S.F.	2.6%
SPANDREL GLASS	50%	0 S.F.	0.0%
SPLIT FACE CMU	10.0%	144 S.F.	7.9%
TOTAL		1,846 S.F.	100.0%

NOTE : TOTAL FACADE = 2,049 S.F. - VISION GLASS AREA OF 203 S.F. = 1,846 S.F.

SOUTH ELEVATION MATERIALS

MATERIAL	ALLOWABLE	PROPOSED	PERCENTAGE
BRICK	30% MIN.	1,285 S.F.	38.7%
C-BRICK	25%	950 S.F.	28.6%
EIFS FACADE	25%	706 S.F.	21.3%
METAL TRIM AND CANOPY	15%	71 S.F.	2.1%
SPANDREL GLASS	50%	97 S.F.	2.9%
SPLIT FACE CMU	10.0%	214 S.F.	6.4%
TOTAL		3,323 S.F.	100.0%

NOTE : TOTAL FACADE = 3,827 S.F. - VISION GLASS AREA OF 504 S.F. = 3,323 S.F.

NORTH ELEVATION MATERIALS

MATERIAL	ALLOWABLE	PROPOSED	PERCENTAGE
BRICK	30% MIN.	1,348 S.F.	47.4%
C-BRICK	25%	370 S.F.	13.0%
EIFS FACADE	25%	754 S.F.	26.5%
METAL TRIM AND CANOPY	15%	83 S.F.	2.9%
SPANDREL GLASS	50%	44 S.F.	1.6%
SPLIT FACE CMU	10.0%	244 S.F.	8.6%
TOTAL		2,843 S.F.	100.0%

NOTE : TOTAL FACADE = 4,019 S.F. - VISION GLASS AND DOOR AREA OF 1,176 S.F. = 2,843 S.F.

- GENERAL NOTES :**
- ROOF TOP MECHANICAL EQUIPMENT WILL BE SCREENED BY BUILDING PARAPETS.
 - BUILDING TO BE FULLY SPRINKLED.
 - SITE SIGNS SHOWN FOR CONCEPT ONLY, TO BE SUBMITTED SEPARATELY AT A LATER DATE FROM SITE PLAN SUBMITTAL.
 - BUILDING SIGNAGE WILL BE SUBMITTED SEPARATELY AT A LATER DATE FROM SITE PLAN SUBMITTAL.
 - TRANSFORMER PROVIDED BY UTILITY COMPANY BASED ON BUILDING ENGINEERING REQUIREMENTS, HEIGHT OF TRANSFORMER MAY BE UNDER 4', BUT CAN NOT BE DETERMINED EXACTLY AT THIS PRELIMINARY STAGE.
 - SEE CIVIL ENGINEERING PLANS PREPARED BY SEIBER, KEAST ENGINEERING, L.L.C. FOR ADDITIONAL INFORMATION.

CITY CENTER OFFICE PLAZA

NOVI, MICHIGAN

OWNER/DEVELOPER:
G & T MANAGEMENT
200 RENAISSANCE CENTER, SUITE 3145
DETROIT, MICHIGAN 48243
PHONE : 313-259-6720
EMAIL : GTMANAGEMENT@GMAIL.COM



WAH YEE ASSOCIATES
ARCHITECTS & PLANNERS
42400 GRAND RIVER AVENUE, SUITE 200
NOVI, MICHIGAN 48375
PHONE 248.489.9160
PROJECT NO. 5118

ISSUED :
PRE-APPLICATION SUBMITTAL 2-9-21
PRELIM. S.P.S. 10-13-21
REVISED PRELIM. S.P.S. 2-18-22
REVISED PRELIM. 12-16-25
REVISED PRELIM. 2-16-26

PRELIMINARY
NOT FOR CONSTRUCTION
P4.1



ZONING BOARD OF APPEALS AGENDA

CITY OF NOVI

Regular Meeting

Tuesday April 14, 2026 7:00 PM

Council Chambers | Novi Civic Center | 45175 Ten Mile

CALL TO ORDER

PLEDGE OF ALLEGIANCE

ROLL CALL

PUBLIC HEARING FORMAT AND RULES OF CONDUCT

APPROVAL OF MINUTES – MARCH 2026

APPROVAL OF AGENDA

PUBLIC REMARKS

PUBLIC HEARINGS

PZ26-0007 (Kirk Rasch) 40705 Village Wood Road, west of Haggerty Road, south of Ten Mile Road, Parcel 50-22-30-476-004 The applicant is requesting a variance from the City of Novi Zoning Ordinance Section 3.1.5 for a rear yard setback of 28 ft. 75 in. (35 ft. required, variance of 6 ft. 25 in.). This property is zoned One Family Residential (R-4).

PZ26-0008 (Innovative Research) 46460 Peary Court, east of Hudson Drive, north of West Road, Parcel 50-22-04-378-018 The applicant is requesting a variance from the City of Novi Zoning Ordinance Section 3.6.2.E to allow off-street parking within the front yard setback, whereas parking is permitted in the rear or side yard only (required 40 ft. setback, variance of 5.46 ft) The property is zoned Light Industrial (I-1).

PZ26-0009 (Jacy Headley) 44150 Stassen Ave, south of Eleven Mile Road, east of Clark Street, Parcel 50-22-22-202-009 The applicant is requesting variances from the City of Novi Zoning Ordinance, Section 4.19(E)(i), to allow the construction of a 900 sq. ft. detached garage resulting in a total of 1,380 sq. ft. of accessory structures on the property (maximum of 850 sq. ft. allowed, variance of 530 sq. ft.); and a building height of 15 ft. (required max height 14 ft., variance of 1 ft.). This property is zoned One-Family Residential (R-4).

PZ26-0010 (City Center Office Plaza) 43675 Grand River Avenue, south of Grand River Avenue, west of Novi Road, Parcels 50-22-15-477-011 and 50-22-15-477-012. The applicant is requesting variances from the City of Novi Zoning Ordinance: Section 3.1.25.D to permit a less than 20 ft parking setback on the east, west and south sides of the development (minimum 10 feet proposed); Section 3.27.1.D to allow parking in the exterior side yards on non-residential collector streets; and Section 5.4.2 to allow a reduction in the loading zone size (540 sf proposed, 940 sf required). This property is zoned Town Center-1 (TC-1).

PZ26-0012 (Raising Cane's) 26245 Novi Road, on Novi Road, south of Crescent Boulevard, Parcel 50-22-15-476-049. The applicant is requesting variances from the City of Novi Sign Ordinance Section 28-5(d) to allow for 4 additional wall signs and 1 additional ground sign (3 signs allowed, variance of 5 additional signs); and Section 28-5(a) chart to allow a 7 ft in height ground sign (6 ft maximum, variance of 1 ft). This property is zoned Town Center (TC).

PZ26-0013 (Linda Laplatt) 1701 East Lake Drive, north of Thirteen Mile Road, west of Novi Road, Parcel 50-22-02-357-017. The applicant is requesting variances from the City of Novi Zoning Ordinance Section 3.1.5 to allow a third story addition (2.5 stories permitted, .5 story variance). This property is zoned One Family Residential (R-4).

PZ26-0014 (Adrian Harestiuc) 24235 Glenda Avenue, north of Ten Mile Road, east of Taff Road, Parcel 50-22-22-301-063. The applicant is requesting a variance from the City of Novi Zoning Ordinance Section 3.1.5 of a rear yard setback of 9ft. 3 in. (35 ft. required, variance of 25 ft. 5 in.). This property is zoned One Family Residential (R-4).

OTHER MATTERS

ADJOURNMENT