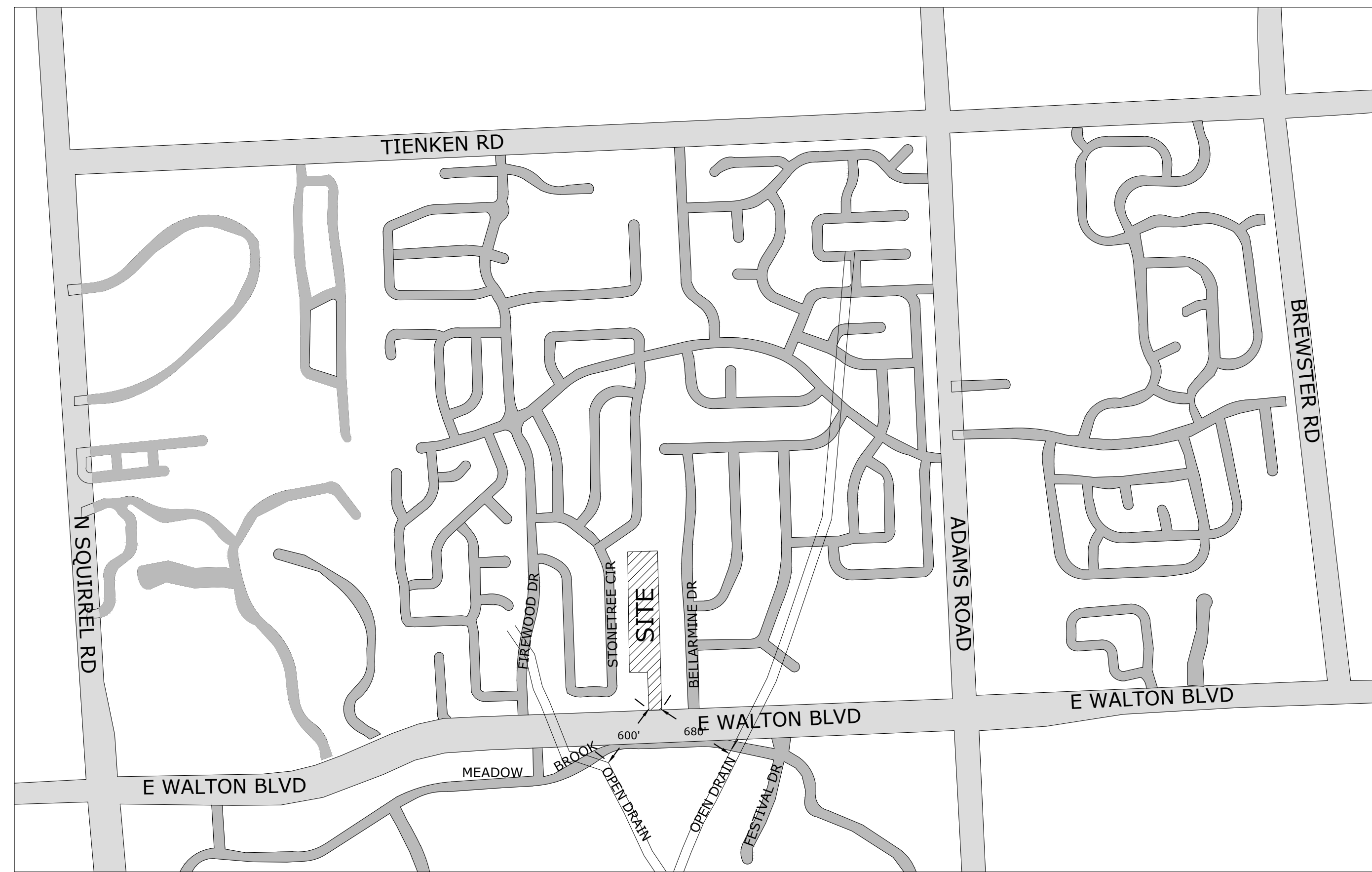


CONSTRUCTION PLANS FOR WALTON OAKS

CITY OF ROCHESTER HILLS, OAKLAND COUNTY, MICHIGAN

SHEET INDEX

ORDER	SHEET#	SHEET NAME
1	COV	COVER SHEET
2	SP	SITE PLAN
3	GR1	PEREGRINE ST GRADING PLAN & PROFILE
4	GR2	PEREGRINE LN GRADING PLAN & PROFILE AND WALTON BLVD ROAD R.O.W. PLAN
5	GR3	MDOT PATHWAY DETAILS
6	ST1	STORM AREA 1 PLAN
7	ST2	STORM AREA 2 PLAN
8	ST3	STORM CALCULATION PLAN
9	WAT1	WATER MAIN PLAN (SOUTH)
10	WAT2	WATER MAIN PLAN (NORTH)
11	SAN 1	SANITARY PLAN - PEREGRINE ST SANITARY
12	SAN 2	SANITARY PLAN - PEREGRINE LN SANITARY AND TIE INTO EXISTING OFFSITE SANITARY
13	ERO	SOIL EROSION CONTROL PLAN
1		TOPOGRAPHIC SURVEY (BY OTHERS)
L-1		TREE REMOVAL & PRESERVATION - SOUTH
L-2		TREE REMOVAL & PRESERVATION - NORTH
L-3		LANDSCAPE TREE LIST
L-4		LANDSCAPE PLAN - SOUTH
L-5		LANDSCAPE PLAN - CENTRAL
L-6		LANDSCAPE PLAN - NORTH
1 OF 1		CITY OF ROCHESTER HILLS STORM STANDARD DETAILS
1 OF 1		CITY OF ROCHESTER HILLS WATERMAIN STANDARD DETAILS
2 OF 2		CITY OF ROCHESTER HILLS WATERMAIN STANDARD DETAILS
1 OF 1		CITY OF ROCHESTER HILLS WATERMAIN SPECIAL DETAILS
1 OF 2		CITY OF ROCHESTER HILLS SANITARY SEWER STANDARD DETAILS
2 OF 2		CITY OF ROCHESTER HILLS SANITARY SEWER STANDARD DETAILS
1 OF 1		WRC SOIL EROSION AND SEDIMENTATION CONTROL DETAILS
1 OF 1		RETAINING WALL CALCULATION AND DETAILS



LOCATION MAP
SCALE 1"=800'

LEGAL DESCRIPTION AS SURVEYED (TAX ID #15-07-376-038):

A PART OF THE SOUTHWEST 1/4 OF SECTION 7, T.3N., R.11E., CITY OF ROCHESTER HILLS, OAKLAND COUNTY, MICHIGAN, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS: COMMENCING AT THE SOUTH 1/4 CORNER OF SAID SECTION 7; THENCE S88°36'01"W, 66.01 FT. ALONG THE SOUTH LINE OF SAID SECTION 7 AND THE CENTERLINE OF WALTON BOULEVARD TO THE POINT OF BEGINNING; THENCE CONTINUING S88°36'01"W 100.16 FT; THENCE N00°25'40"W, 428.00 FT; THENCE S88°36'01"W, 150.00 FT TO A POINT ON THE EASTERLY LINE OF "BROOKDALE WEST" AS RECORDED IN L.164 OF PLATS, PAGES 30-32, OAKLAND COUNTY RECORDS; THENCE N00°26'34"W 1023.60 FT (PREVIOUSLY RECORDED AS N00°26'58"W, 1023.53 FT) ALONG SAID LINE; THENCE N88°36'25"E, 250.02 FT. (PREVIOUSLY RECORDED AS N88°36'01"E, 250.00 FT) ALONG A SOUTHERLY PORTION OF SAID "BROOKDALE WEST"; THENCE S00°26'37"E, 1451.57 FT (PREVIOUSLY RECORDED AS S00°26'58"E, 1451.53 FT) TO THE POINT OF BEGINNING. CONTAINING 6.857 ACRES.

STORM SEWER TOTAL QUANTITY LIST

DESCRIPTION	QUANTITY	CASTING & NOTES
12" C76 CL4 PIPE	1787 LF	2 - 12" OUTLET PIPES HAVE RESTRICTIONS
15" C76 CL4 PIPE	279 LF	
18" C76 CL4 PIPE	337 LF	
2' INLET	8 EA	EJIW 7065 TYPE "M1" w/ 7060 "T1" BACK SET
4' CATCH BASIN	9 EA	EJIW 7065 TYPE "M1" w/ 7060 "T1" BACK SET
4' MANHOLE	7 EA	EJIW 1040 TYPE "A"
5' MANHOLE	1 EA	EJIW 1040 TYPE "A"
2' YARD BASIN	2 EA	EJIW 1040 TYPE "02"
4' YARD BASIN	4 EA	EJIW 1040 TYPE "02"
5' YARD BASIN	1 EA	EJIW 1040 TYPE "02"
12" END SECTION	2 EA	WITH FOUNDATION AND RIP RAP
18" END SECTION	2 EA	W/FOUNDATION, RIP RAP AND BAR SCREEN
48" CMP STANDPIPE	2 EA	BAR SCREEN
48" CMP OVERFLOW	2 EA	BAR SCREEN
CONTECH SCICLONEX 8	1 EA	SEE DETAIL AND CALCULATIONS STM 3

PAVING QUANTITY LIST

DESCRIPTION	QUANTITY	AS-BUILT
3500 PSI CONCRETE	848 CU.YDS.	
4" MOUNTABLE CONCRETE CURB & GUTTER	2865 L.F.	
MDOT CURB	80 L.F.	
21AA CRUSHED LIMESTONE BASE	424 CU.YDS.	
8" CONCRETE WALK ALONG WALTON (LF)	155 L.F.	
5" CONCRETE WALK IN SITE CONDO	1585 L.F.	

TOTAL WATERMAIN QUANTITY LIST

DESCRIPTION	QUANTITY	AS-BUILT
6" CL54 DUCTILE IRON PIPE	11 LF	
8" CL54 DUCTILE IRON PIPE	1588 LF	
8" GATE VALVE & WELL	2 EA	
8" TAPPING SLEEVE VALVE & WELL TIE INTO EXISTING 30" WATERMAIN	1 EA	
HYDRANT	5 EA	
8" 12.25" BEND	1 EA	
8" 22.5" BEND	3 EA	
8" 45" BEND	13 EA	
8" x 8" x 6" TEE	5 EA	

TOTAL SANITARY SEWER QUANTITY LIST

DESCRIPTION (PUBLIC)	QUANTITY	AS-BUILT
8" PVC TRUSS PIPE	1096 LF	
4" SANITARY MANHOLE	6 EA	
DESCRIPTION (PRIVATE)	QUANTITY	AS-BUILT
6" 23.5 PVC (SANITARY LEADS)	432 LF	

Just a note that the proposed retaining walls will need to be approved prior to overall construction plan approval. Submit the revised retaining wall plans once the revisions have been made.

TOPOGRAPHY INFO:

ALL TOPOGRAPHIC SURVEY IS SHOWN PER REICHERT SURVEYING JOB #21-001 DATED 2-17-2021

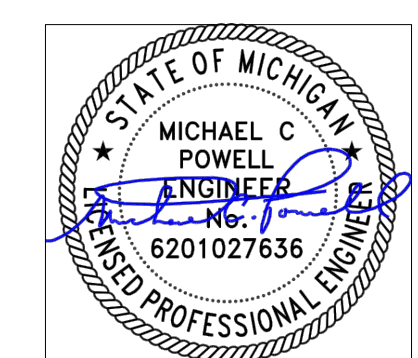
PROPRIETOR/DEVELOPER:

THREE OAKS COMMUNITIES, LLC
CONTACT: MR. BRUCE MICHAEL
P.O. BOX 8307
ANN ARBOR, MI 48107-8307
PHONE: (248)703-4653

BENCHMARKS

- ARROW ON HYDRANT ELEV. 952.45 (NAVD88) AT SE CORNER OF BELLARMINE DR AND DONEGAL DR.
- S RIM CATCH BASIN ELEV. 962.49 (NAVD88) NEAR NE SIDE OF SUBJECT PROPERTY IN LOT 39 OF BROOKDALE WEST
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ENGINEER SEAL



CITY FILE #22-009 SECTION #7

Consulting Civil Engineers
"Engineering A Better Michigan"
Powell Engineering & Associates, LLC
4700 Cornerstone Drive, White Lake, Michigan 48383
P: 248-714-9895 info@powellengineeringllc.com

NOTE: AS AN AID TO THE CONTRACTOR VARIOUS UTILITIES AND UNDERGROUND STRUCTURES ARE SHOWN ON THESE PLANS AND PROFILES. ALL INFORMATION CONCERNING ALL UTILITIES SHOWN ON THE PLANS AND PROFILES IS TAKEN FROM FIELD SURVEY AND RECORDS. THE CONTRACTOR SHALL VERIFY THE LOCATION, DEPTH AND CHARACTER OF ALL UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGE TO EXISTING UTILITIES. WORK SHALL BE STOPPED IMMEDIATELY UPON DISCOVERY OF ANY UTILITIES NOT SHOWN ON THESE PLANS AND PROFILES. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE CITY OF ROCHESTER HILLS ENGINEERING DEPARTMENT UPON DISCOVERY OF ANY UTILITIES NOT SHOWN ON THESE PLANS AND PROFILES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGE TO EXISTING UTILITIES. WORK SHALL BE STOPPED IMMEDIATELY UPON DISCOVERY OF ANY UTILITIES NOT SHOWN ON THESE PLANS AND PROFILES.



WALTON OAKS COVER SHEET
WALTON BOULEVARD, CITY OF ROCHESTER HILLS
THREE GENERATIONS ROCHESTER HILLS SITE PLANS

ISSUE DATES
CONSTRUCTION 8/24/2023
CONSTRUCTION 9/22/2023
CONSTRUCTION 12/22/2023
EGLE WATER 1/16/2024
CONSTRUCTION 3/1/2024

DRAWN MCS
DESIGNED MCS
APPROVED MCP
P.E. JOB No. 21-419
SCALE 1"=50'
COV CONSTRUCTION

JSC2022-0002
PFSC2024-0001
Revision #1
Received 3/5/24

City of Rochester Hills Planning & Economic Development

Site Plan Review
Reviewed for compliance with City Ordinance, Building and Fire Codes
Conditions and mark-ups noted throughout plan set must be addressed prior to final approval

Department	Reviewer	Approved
Assessing	Assessing	Yes
Building	Mark Artinian 248-841-2446 ArtinianM@RochesterHills.org	Yes
Engineering - Utilities	Jason Boughton 248-841-2490 BoughtonJ@RochesterHills.org	Yes
Engineering Legal	Jenny McGuckin 248-841-2494 mcguckinj@rochesterhills.org	YES Date: 03/15/2024
Fire	Lt. Walter Murphy 248-841-2712 MurphyW@RochesterHills.org	Yes
Natural Resources	Matt Einheuser 248-841-2551 EinheuserM@RochesterHills.org	Yes
Planning	Chris McLeod 248-841-2572 mcleodc@RochesterHills.org	Yes
Traffic	Keith Depp 248-841-2503 DeppK@RochesterHills.org	Yes

Final acceptance by City Attorney of Master Deed and addressing remaining site plan comments

GENERAL NOTES:

1. ALL CONSTRUCTION TO CONFORM AND COMPLY TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE CITY OF ROCHESTER HILLS AND OTHER GOVERNMENT AGENCIES.
2. NO LOADING/UNLOADING REQUIRED FOR THIS TYPE OF DEVELOPMENT.
3. WASTE WATER DISPOSAL TO BE EXTENDED TO THE SITE AND DISCHARGED TO THE CITY ROCHESTER HILLS WASTEWATER WHICH MUST GET CITY OF ROCHESTER HILLS, OAKLAND COUNTY WATER RESOURCE COMMISSION, GREAT LAKES WATER AUTHORITY AND MICHIGAN EGLE APPROVAL.
4. WATER SUPPLY TO BE CONNECTED TO THE CITY OF ROCHESTER PUBLIC WATER SUPPLY.
5. TRASH DISPOSAL TO BE RESIDENTIAL COLLECTION.
6. A SOIL EROSION AND SEDIMENTATION PERMIT FROM OAKLAND COUNTY DRAIN COMMISSION TO BE REQUIRED.
7. NO STREET LIGHTING PROPOSED. CARRIAGE LIGHTING ON EACH BUILDING ONLY.
8. SIGN DETAILS ARE TO BE PROVIDED TO THE CITY AND APPROVAL GRANTED PRIOR TO THE PLACEMENT OF ANY SIGNS. SEE LANDSCAPE PLANS FOR SIGN DETAILS.
9. CLEAN STONE ENTRANCE DRIVES TO BE CONSTRUCTED AS FIRST PART OF CONSTRUCTION PROVIDE ACCESS FOR FIRE DEPARTMENT AND CONSTRUCTION TRAFFIC DURING CONSTRUCTION.
10. ALL SANITARY AND WATERMAIN WILL BE DEDICATED TO THE CITY OF ROCHESTER HILLS WITHIN A 20' EASEMENT.
11. STORM SEWER DETENTION TO BE PROVIDED ON SITE WITH DETENTION PONDS DISCHARGING TO THE WALTON ROAD DITCHLINE REQUIRING A STORM WATER DISCHARGE PERMIT GRANTED BY OAKLAND COUNTY ROAD COMMISSION.
12. ALL REQUIREMENTS BY THE FIRE DEPARTMENT PER THE INTERNATIONAL FIRE CODE WILL BE MET.
13. BUILDINGS ARE NOT TO EXCEED 35' IN HEIGHT AND/OR 2 1/2 STORIES.
14. ALL PROPOSED ROADS ARE TO BE PRIVATE, OWNED AND MAINTAINED BY THE CONDO ASSOCIATION. MASTER DEED MUST PROVIDE MAINTENANCE RESPONSIBILITIES AND A ROAD MAINTENANCE MUST BE PROVIDED AND EXCEPTED BY CITY OF ROCHESTER HILLS ENGINEERING DEPARTMENT.
14. PLOT PLANS WILL BE REQUIRED FOR EACH LOT AND MUST MEET THE 2015 MRC.

SITE INFORMATION:

EXISTING PROPERTY ZONING: R-2
 PROPOSED PROPERTY USE: R-2 SINGLE FAMILY
 PROPERTY TAX I.D.: #15-07-376-038
 SITE AREA DATA:
 GROSS SITE AREA = 6.857 ACRES

BENCHMARKS

1. ARROW ON HYDRANT ELEV. 952.45 (NAVD88) AT SE CORNER OF BELLARMI DR AND DONEGAL DR.
2. S RIM CATCH BASIN ELEV. 962.49 (NAVD88) NEAR NE SIDE OF SUBJECT PROPERTY IN LOT 39 OF BROOKDALE WEST
3. E ST CB RIM ELEV. 939.86 (NAVD88) ALONG WEST PROPERTY LINE OF SUBJECT PROPERTY @ SE CORNER LOT 29 OF BROOKDALE WEST

LOT TABLE:

ACCORDING TO LOT SIZE VARIATION SECTION 138-5.200

LOT #	AREA	FRONT SETBACK	SIDE SETBACK	BACK SETBACK	FRONTAGE
1	13,515 SF	40'	15'	35'	126.32'
2	13,512 SF	40'	15'	35'	123.70'
3	13,948 SF	40'	15'	35'	93.00'
4	13,948 SF	40'	15'	35'	93.00'
5	13,948 SF	40'	15'	35'	93.00'
6	13,948 SF	40'	15'	35'	93.00'
7	13,948 SF	40'	15'	35'	93.00'
8	13,948 SF	40'	15'	35'	93.00'
9-12	17,670 SF	40'	15'	66'	93.00'
13-16	17,670 SF	40'	15'	40'	93.00'
17-20	20,270 SF	40'	15'	40'	111.00'
TOTAL	166,325 SF				1105.02'
AVERAGE	15,120 SF	40'	15'	35'	100.45'

R-2 SETBACKS:

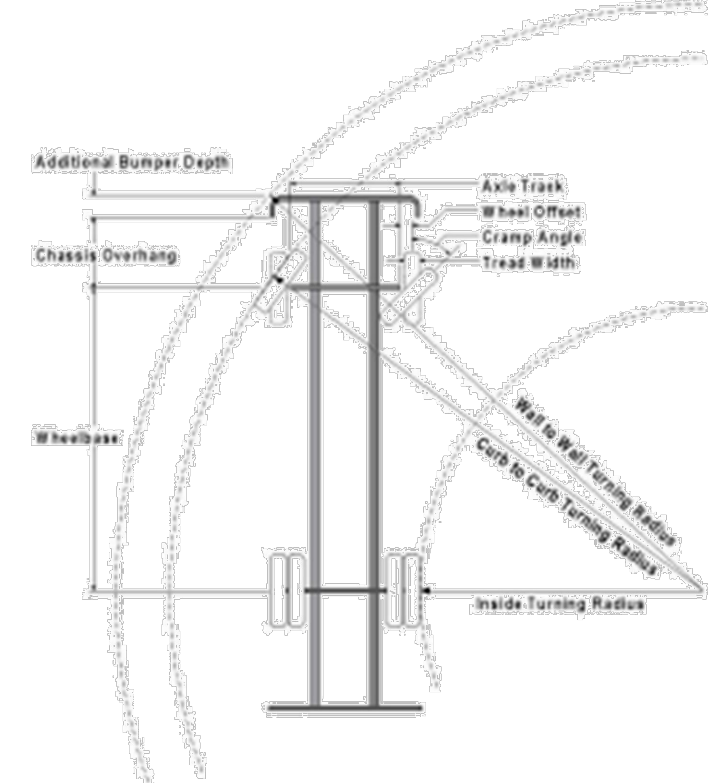
	REQUIRED	AVERAGE PROVIDED
FRONT	40'	40'
SIDE	15'/15'	15'/15'
BACK	35'	35'
LOT WIDTH	100'	100.45'
LOT SIZE	15,000 SF	15,120 SF



Performance Analysis

02/28/2018

Bid Number: 1102 Chassis: Arrow XT Chassis, Aerials/Tankers, Tandem Axle Department: City of Rochester Hills Body: Aerial, HD Ladder 105', Alum Body



Parameters:

Inside Cramp Angle: 45°
 Axle Track: 82.92 in.
 Wheel Offset: 4.88 in.
 Tread Width: 16.3 in.
 Chassis Overhang: 68.99 in.
 Additional Bumper Depth: 16 in.
 Front Overhang: 84.99 in.
 Wheelbase: 245.5 in.

Calculated Turning Radii:

Inside Turn: 19 ft. 5 in.
 Curb to curb: 35 ft. 3 in.
 Wall to wall: 39 ft. 7 in.

Comments:

RHFD 105' turn radius

Category Option Description

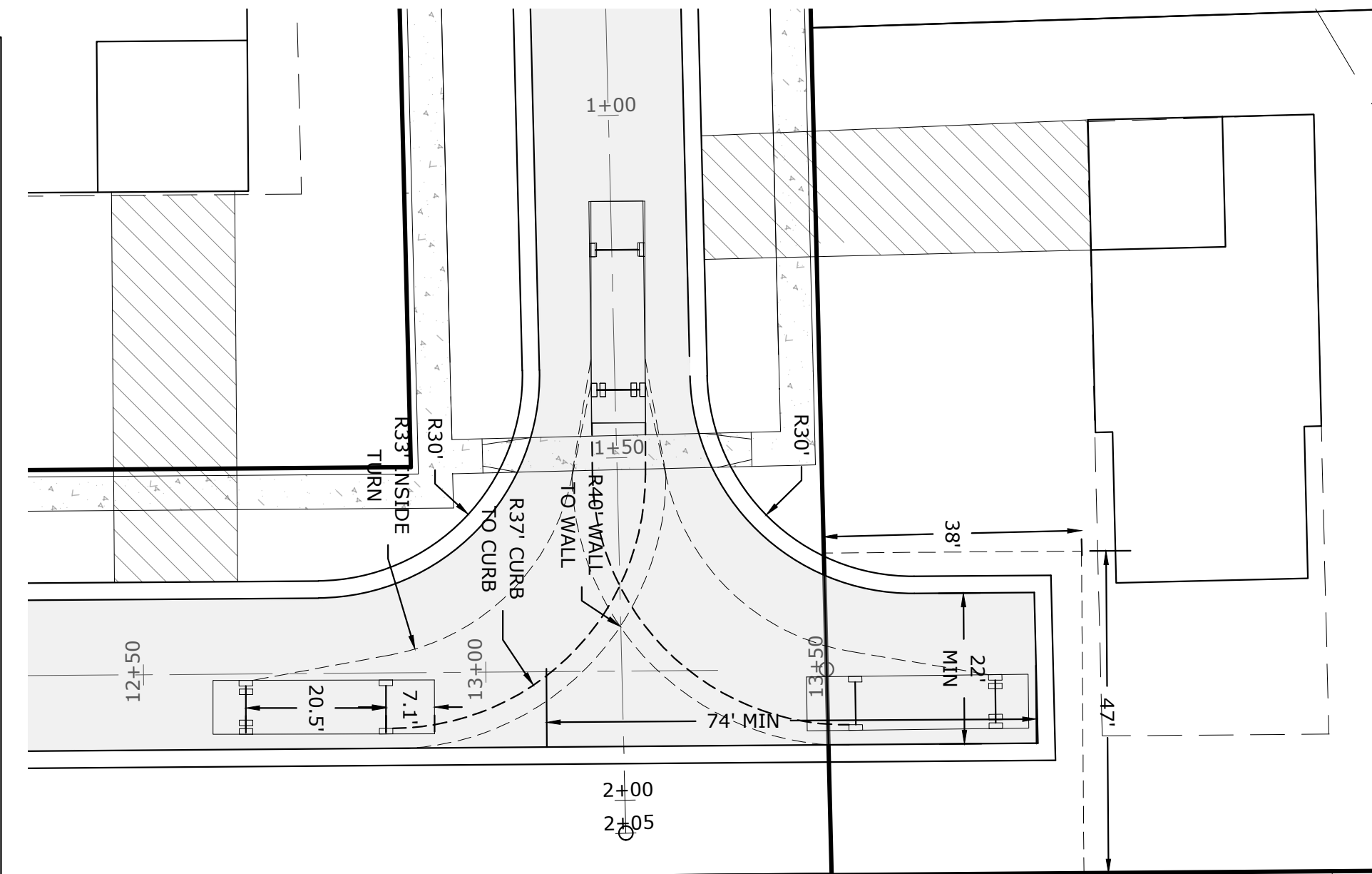
Axle, Front, Custom 0018453 Axle, Front, Oakshok TAK-4, Non Drive, 22,800 lb, Qtm/AXT/DCF Wheels, Front 0019611 Wheels, Front, Alcoa, 22.50" x 12.25", Aluminum, Hub Pilot Tires, Front, Goodyear, G296 MSA, 425/65R22.50, 20 ply Bumpers 0606536 Bumper, 16" Extended, Steel Painted, Arrow XT Aerial Devices 0673137 Aerial, 105' Heavy Duty Ladder (500 dry/500 water)

Notes:

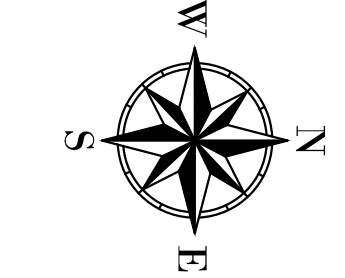
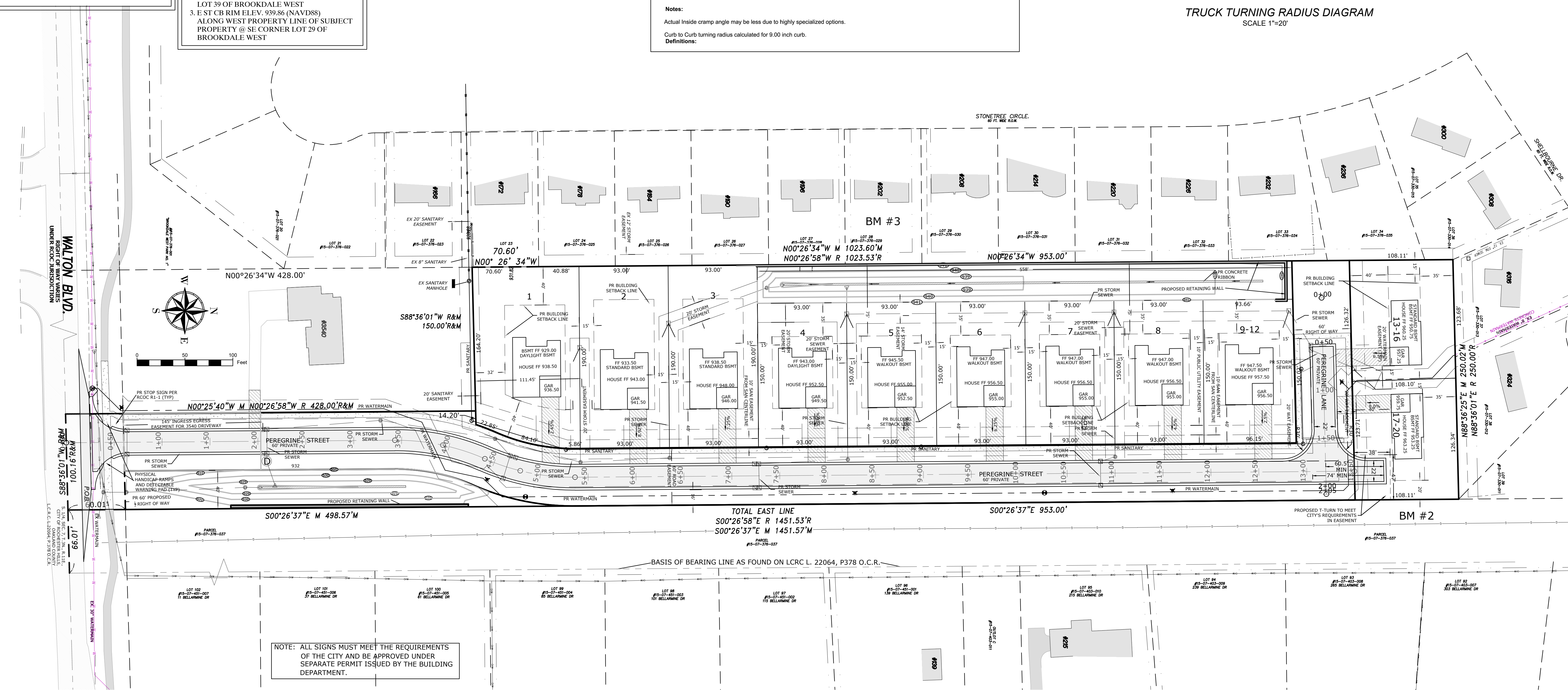
Actual inside cramp angle may be less due to highly specialized options.

Curb to Curb turning radius calculated for 9.00 inch curb.

Definitions:



TRUCK TURNING RADIUS DIAGRAM
 SCALE 1"=20'



NOTE: ALL SIGNS MUST MEET THE REQUIREMENTS OF THE CITY AND BE APPROVED UNDER SEPARATE PERMIT ISSUED BY THE BUILDING DEPARTMENT.

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BEFORE YOU DIG CALL MISS DIG
 1-800-482-7171

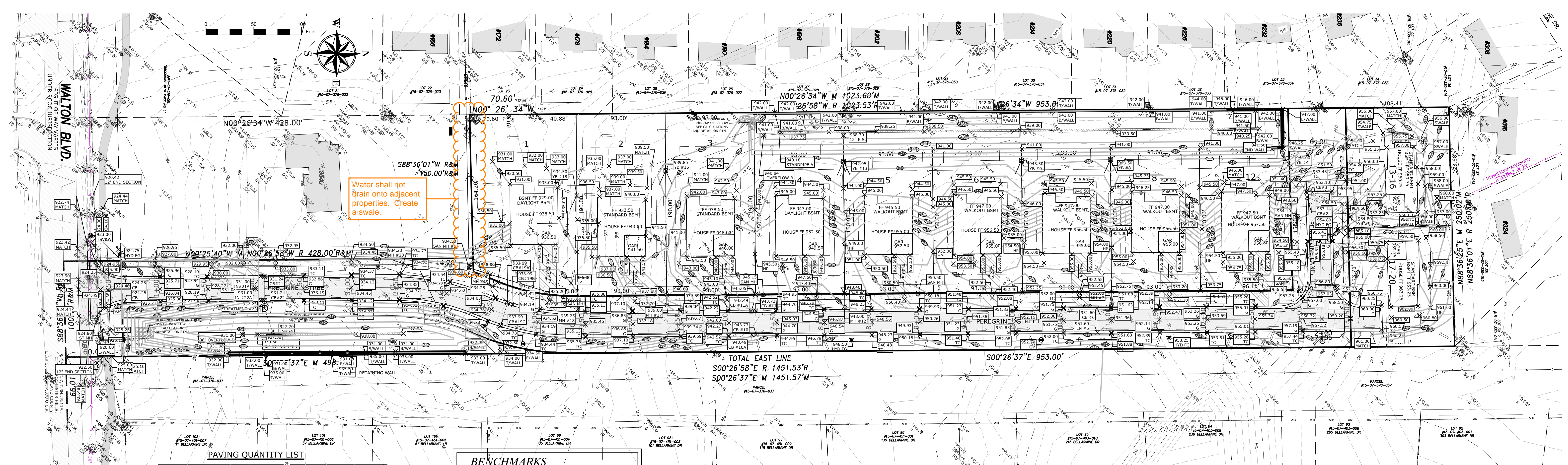
WALTON OAKS SITE PLAN
 WALTON BOULEVARD, CITY OF ROCHESTER HILLS
 THREE GENERATIONS ROCHESTER HILLS SITE PLANS

ISSUE DATES

CONSTRUCTION	5/24/2023
CONSTRUCTION	9/22/2023
CONSTRUCTION	1/16/2024
CONSTRUCTION	3/1/2024

DRAWN MCS
DESIGNED MCS
APPROVED MCP
 P.E. JOB NO. 21-419
 SCALE 1"=50'
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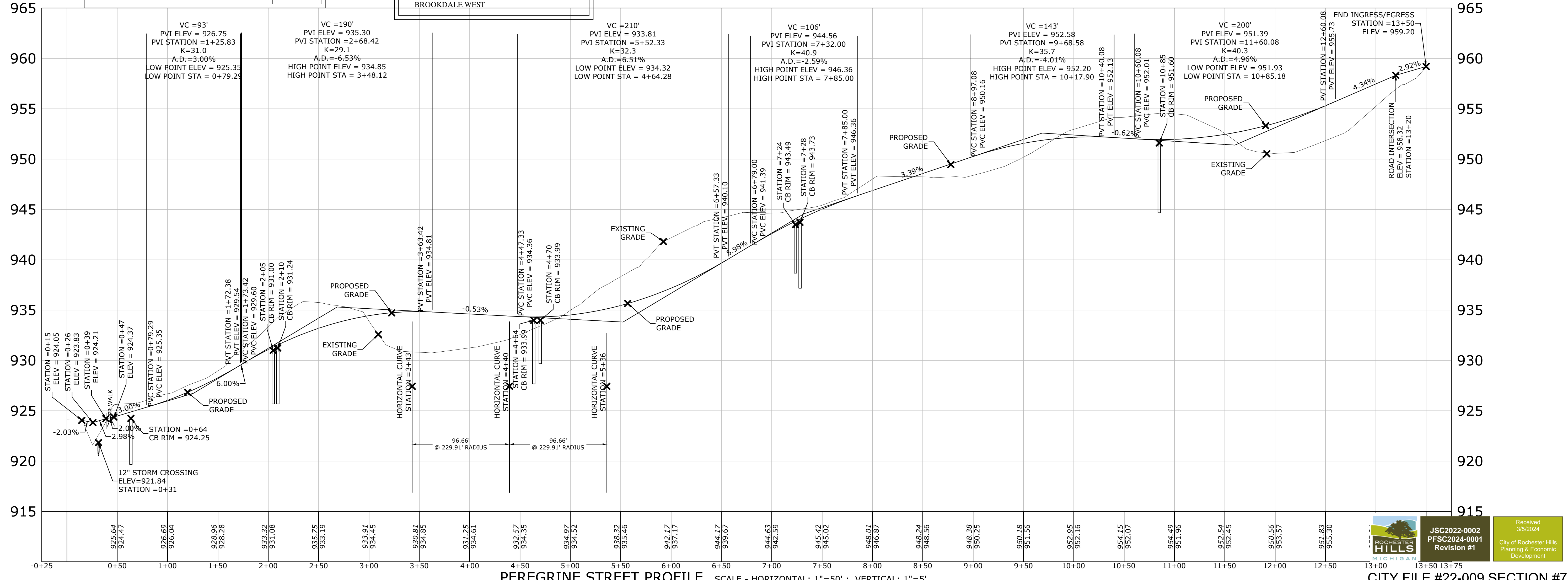
ROCHESTER HILLS MICHIGAN
 JSC2022-0002
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 Revision #1
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PAVING QUANTITY LIST

DESCRIPTION	QUANTITY	AS-BUILT
3500 PSI CONCRETE	848 CU.YDS.	
4" MOUNTABLE CONCRETE CURB & GUTTER	2865 L.F.	
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WALTON OAKS
PEREGRINE STREET

WALTON BOULEVARD, CITY OF ROCHESTER HILLS
THREE GENERATIONS ROCHESTER HILLS SITE PLANS

ISSUE DATES

CONSTRUCTION	5/24/2023
CONSTRUCTION	9/22/2023
CONSTRUCTION	12/22/2023
WRC	1/7/2024
CONSTRUCTION	3/1/2024

City of Rochester Hills
Planning & Economic Development

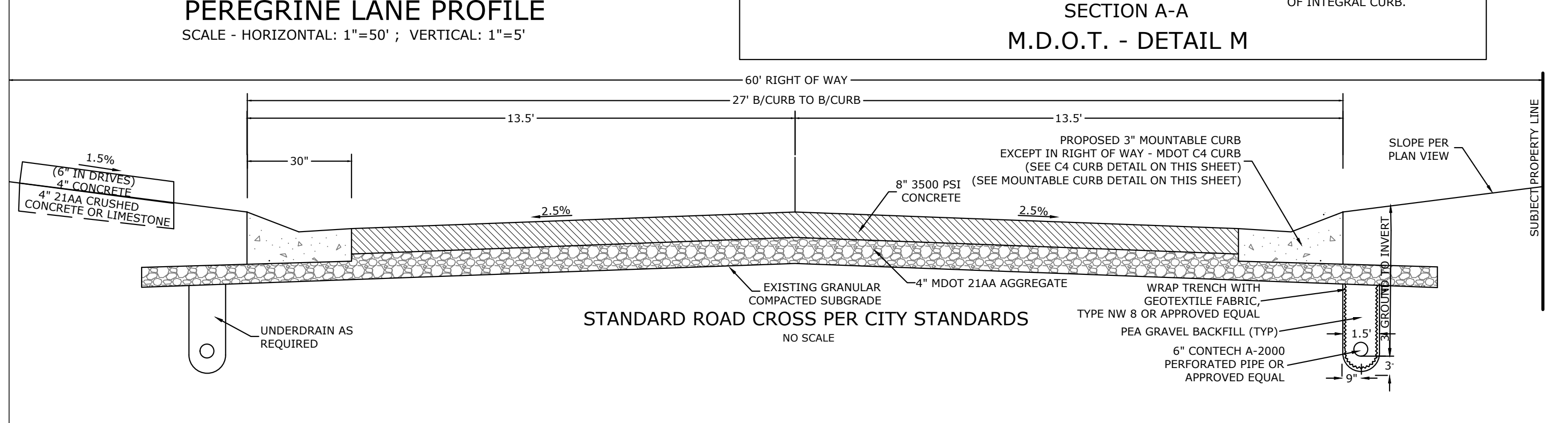
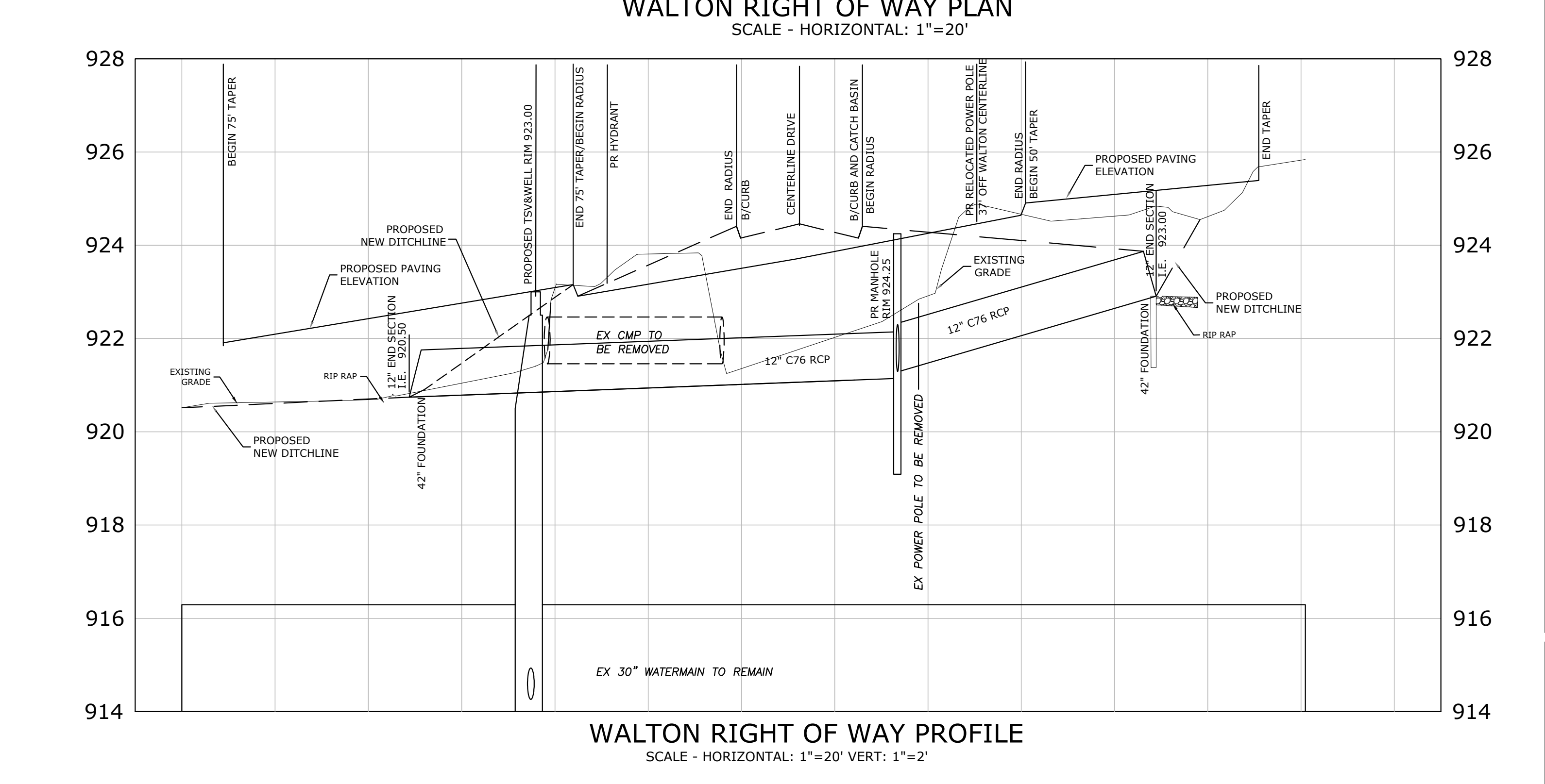
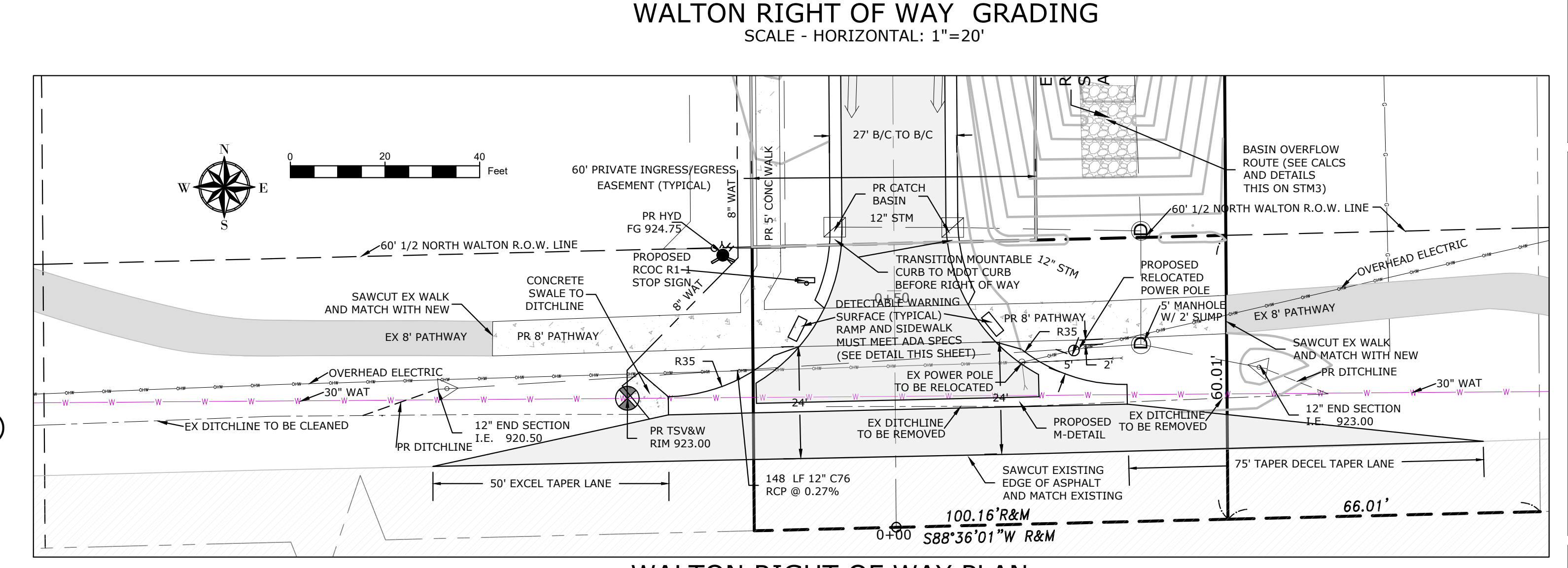
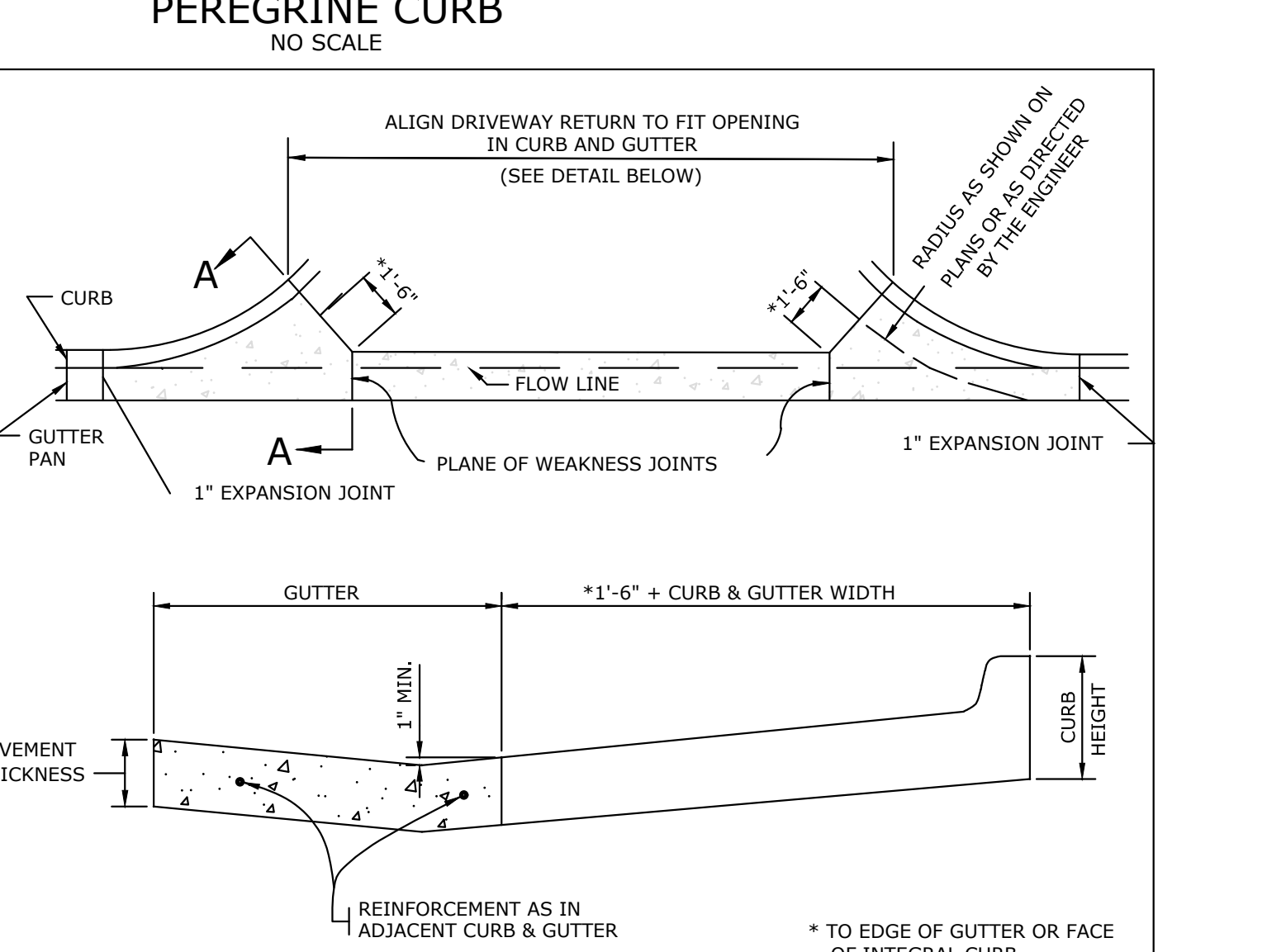
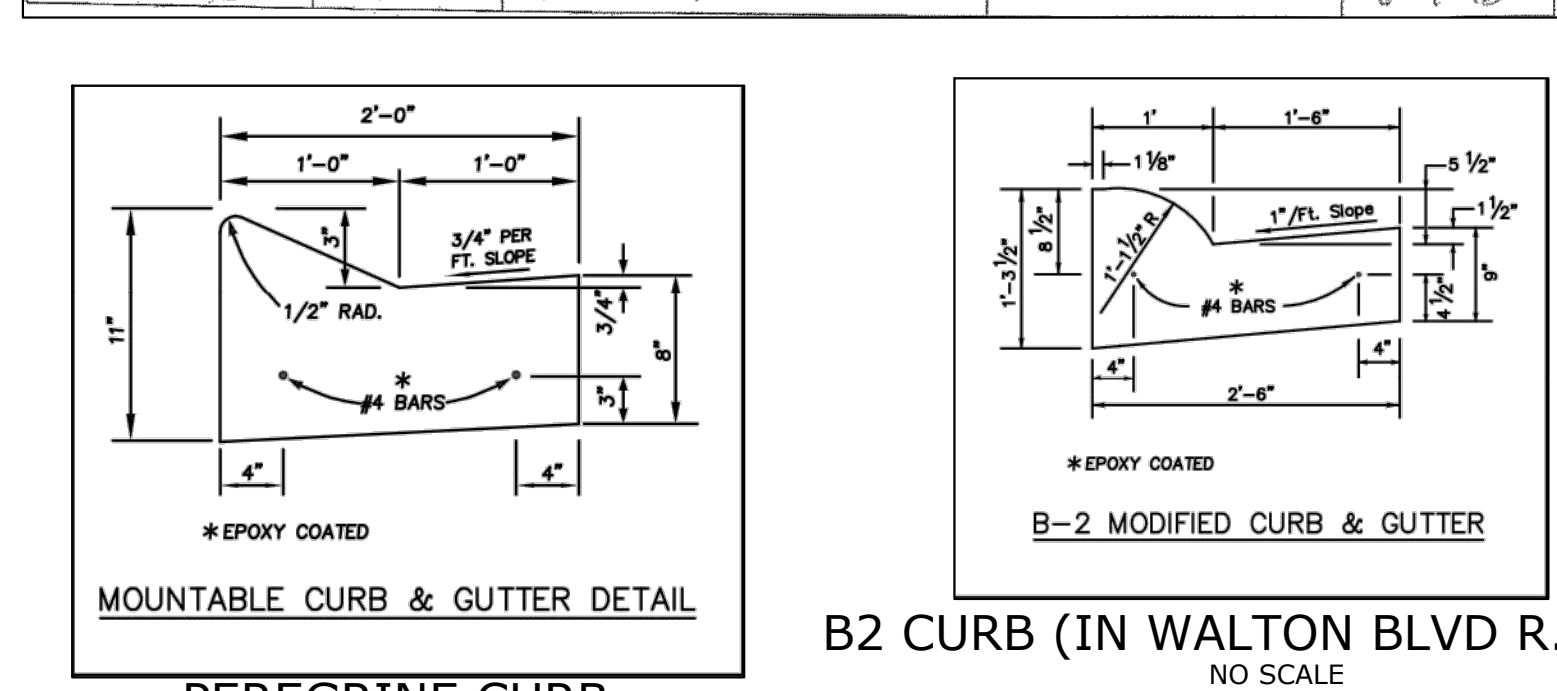
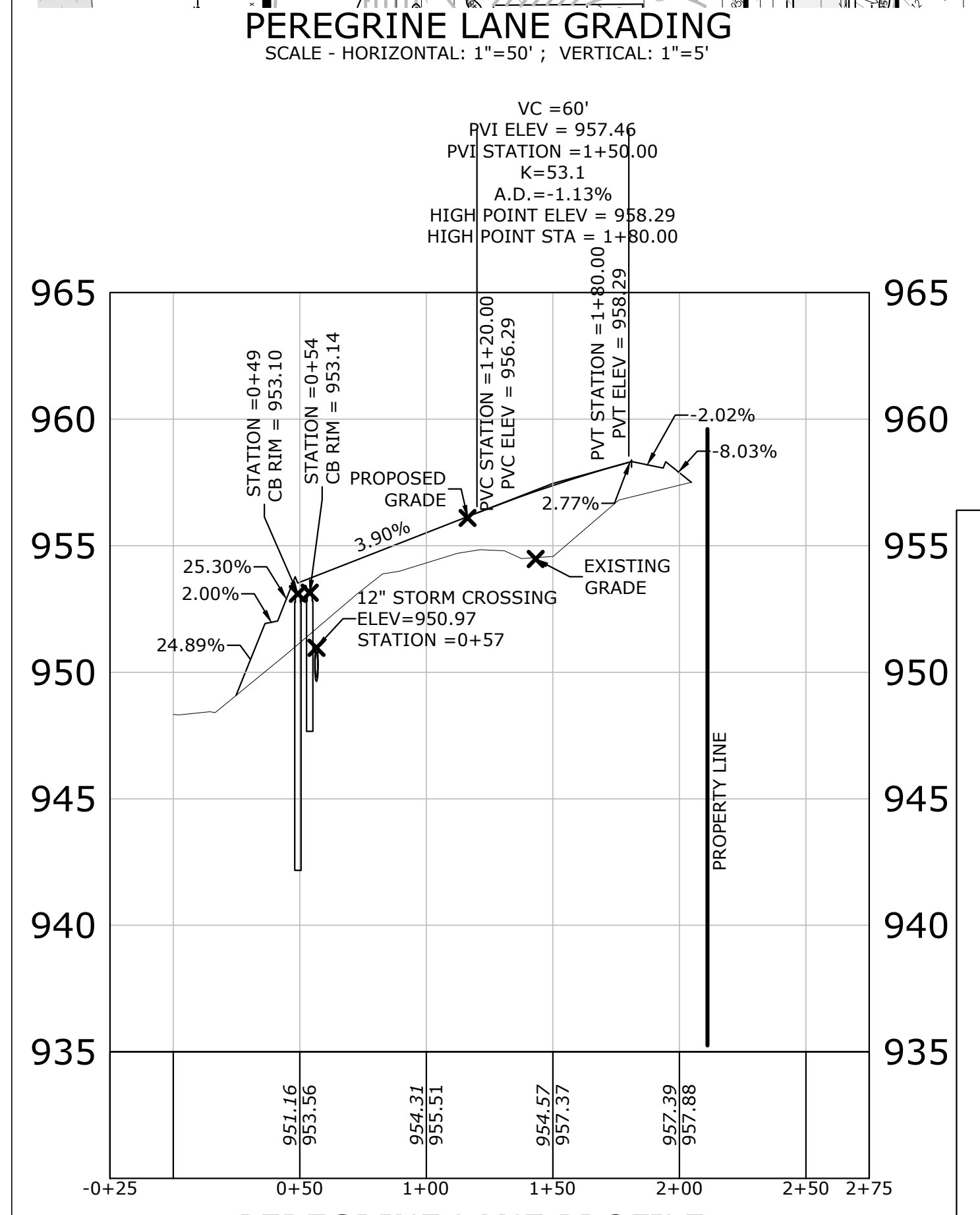
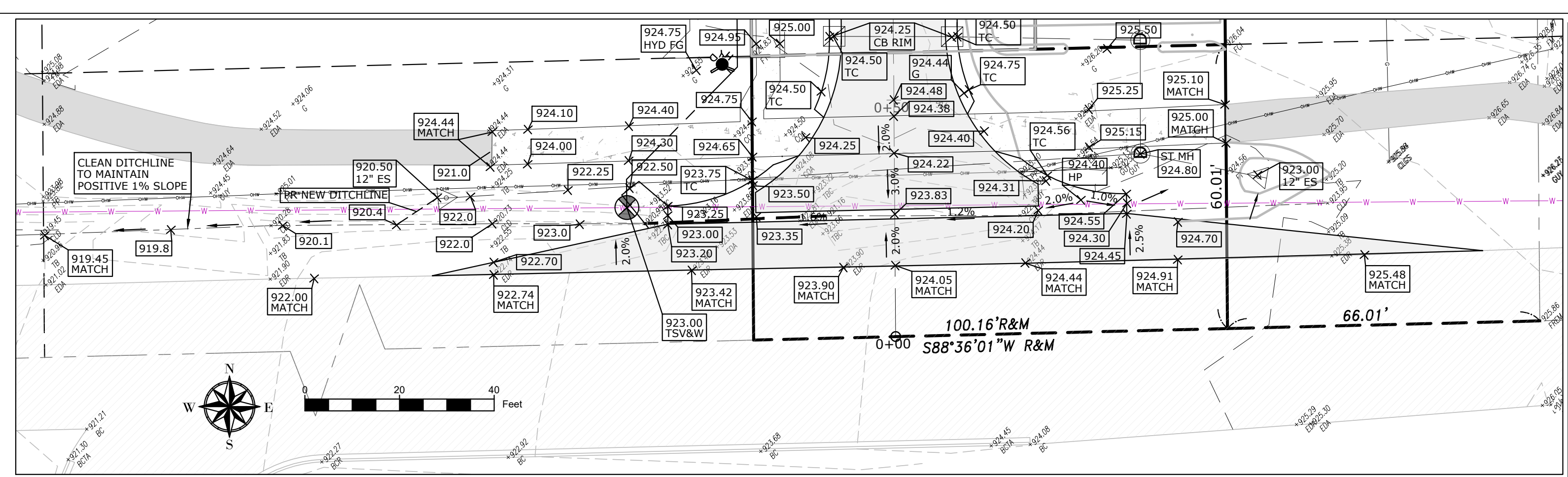
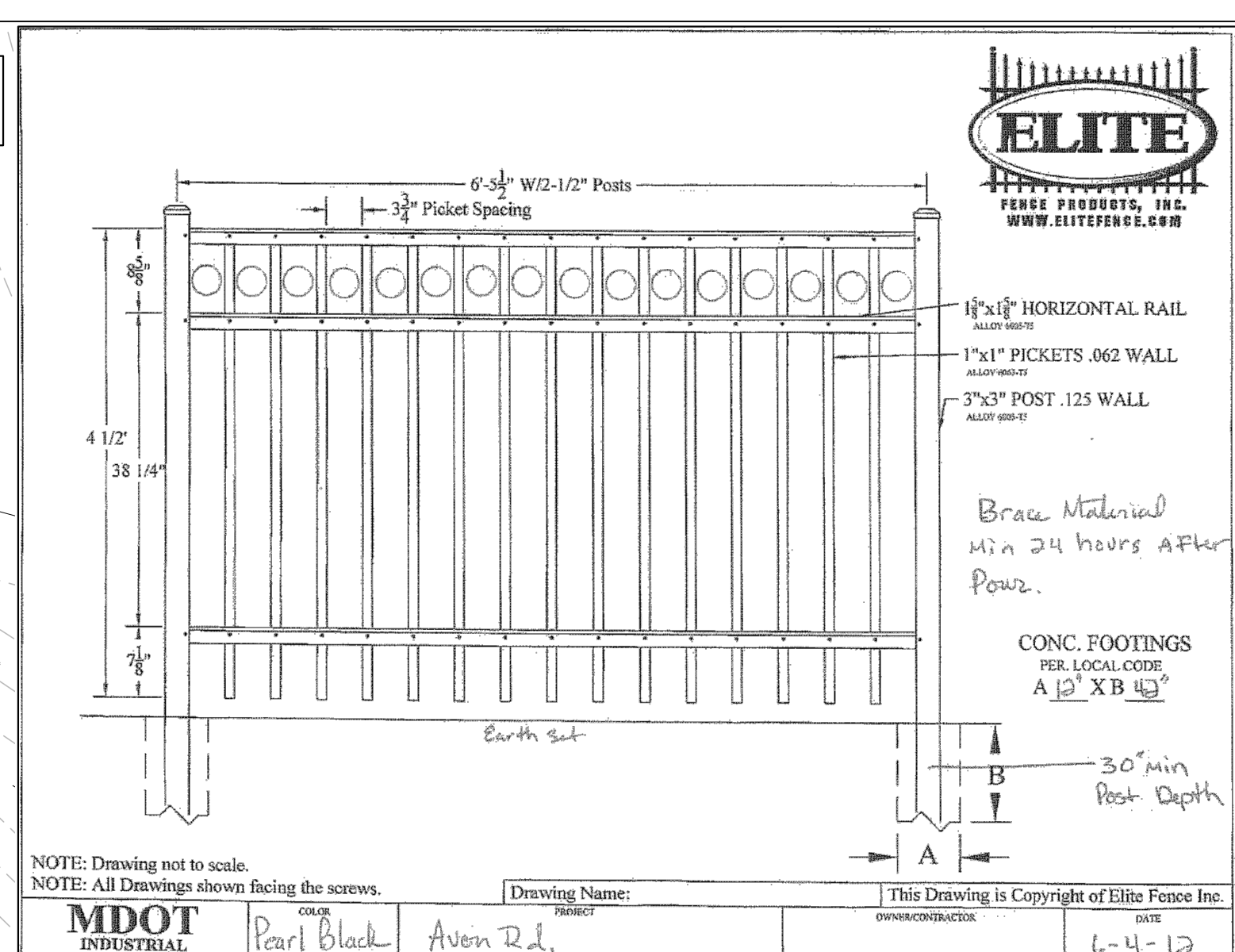
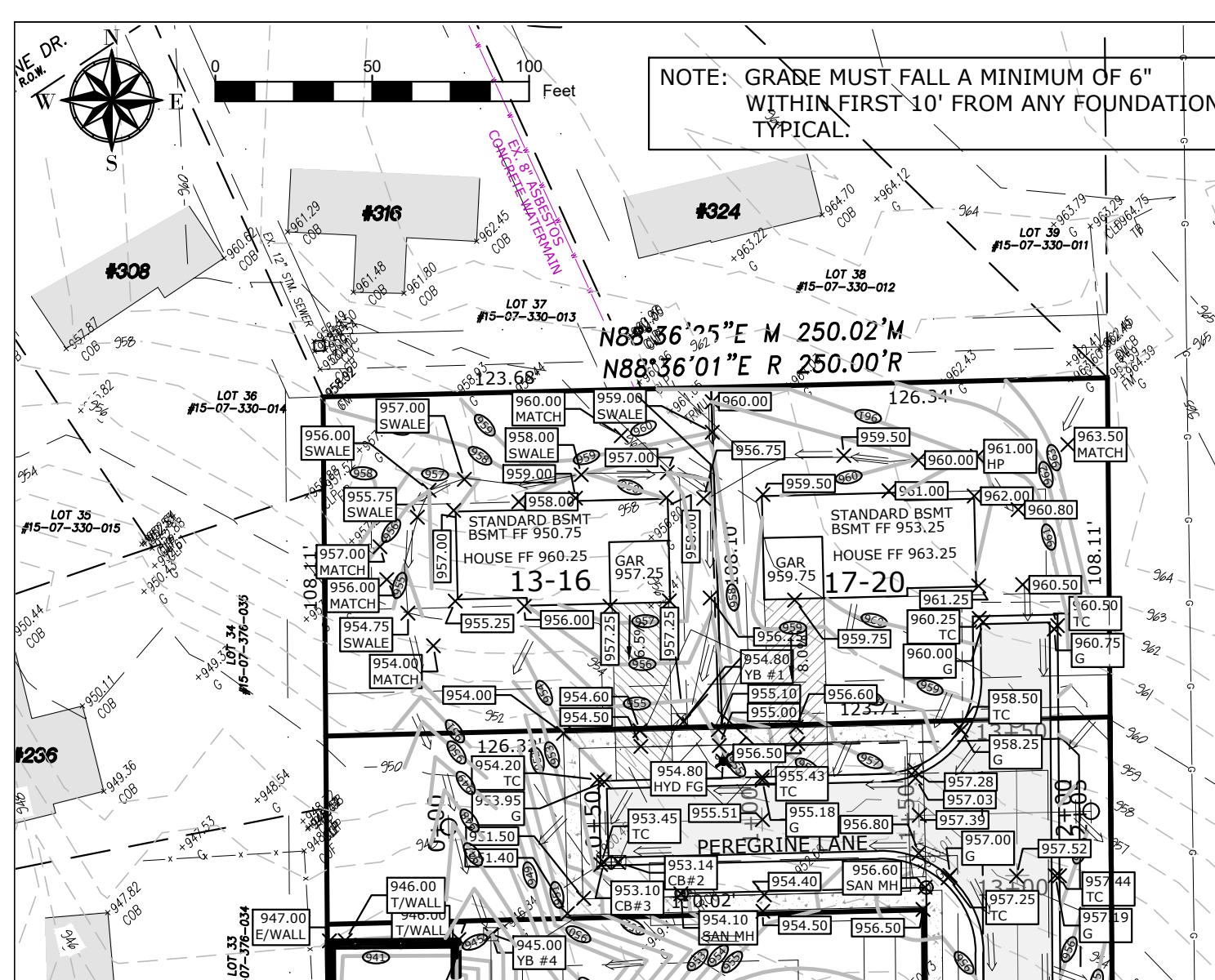
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SCALE 1"=50'

GR1
CONSTRUCTION

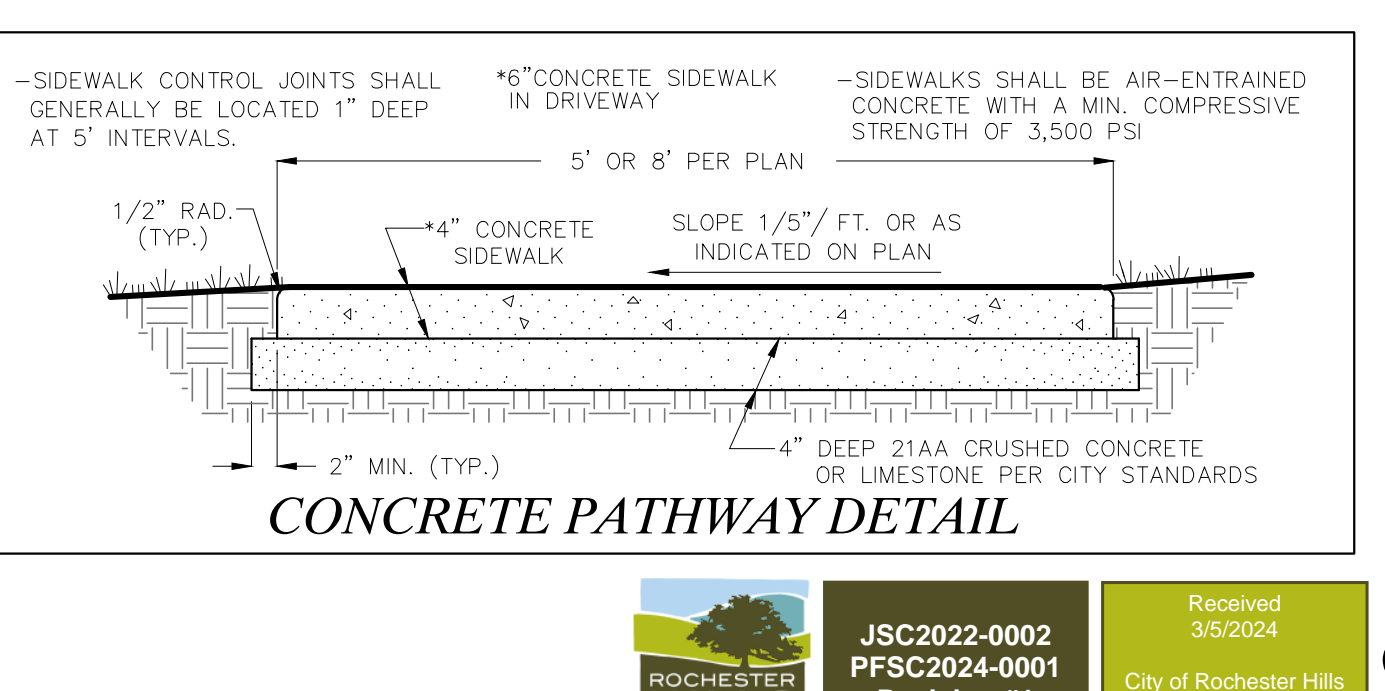
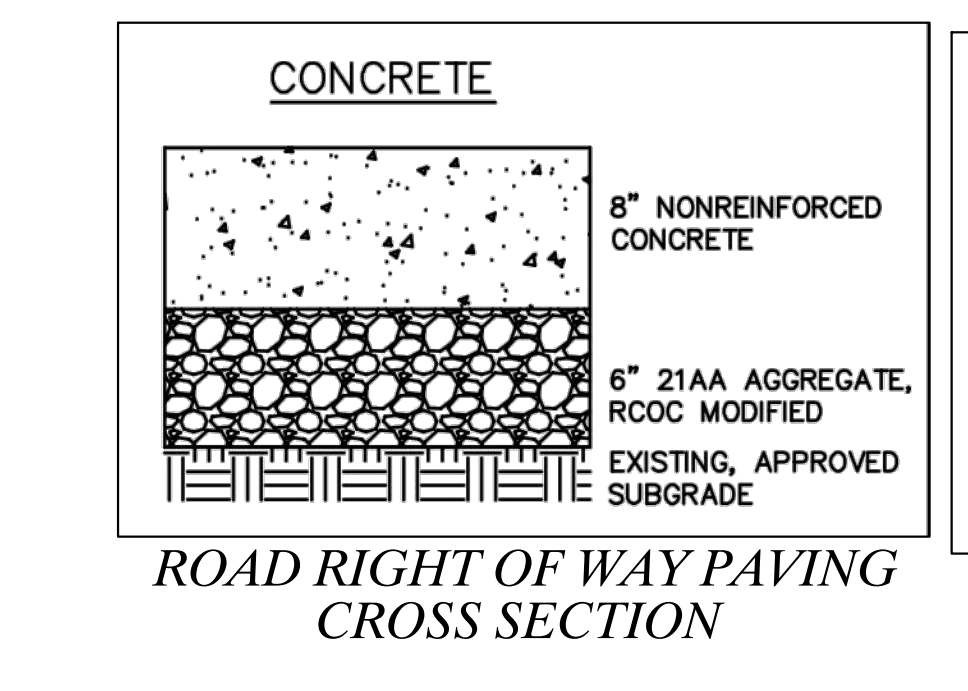
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- BUILDING DEPARTMENT GENERAL NOTES:**
- ALL CONSTRUCTION TO CONFORM AND COMPLY WITH THE STANDARDS OF THE 2015 MICHIGAN BUILDING CODE, MICHIGAN UNIFORM ENERGY CODE 2009, MICHIGAN MECHANICAL CODE 2015, MICHIGAN ELECTRICAL CODE 2014 AND MICHIGAN PLUMBING CODE 2015.
 - ALL GRADES MUST FALL A MINIMUM OF 6" AT 10' FROM THE PROPOSED BUILDING FOUNDATION.
 - ALL DRIVEWAYS MUST BE BETWEEN 2% AND 10% MAXIMUM SLOPE WITH A SLOPE OF 1% - 2% CROSS SLOPE ACROSS SIDEWALKS.
 - ANY BUILDING OVER 200 SQUARE FEET PROPOSED TO BE DEMOLISHED MUST HAVE PERMIT FOR DEMOLITION.
 - THE FOLLOWING DESCRIPTIONS FOR GRADES APPLY:
 - TC = TOP OF CURB GRADE
 - G = GUTTER GRADE
 - ST MH = STORM RIM GRADE
 - CB = STORM CATCH BASIN RIM GRADE
 - YB = STORM YARD BASIN RIM GRADE
 - SAN MH = SANITARY RIM GRADE
 - NO DESCRIPTION = FINISH GRADE AT LOCATION
 - STANDPIPE = BAR SCREEN ELEVATION
 - OVERFLOW = BAR SCREEN ELEVATION
 - T/WALL = TOP RETAINING WALL
 - B/WALL = BOTTOM RETAINING WALL
 - MATCH = MATCH EXISTING GRADE
 - HYD FG = HYDRANT FINISH GRADE
 - GV = WATERMAIN GATE VALVE RIM

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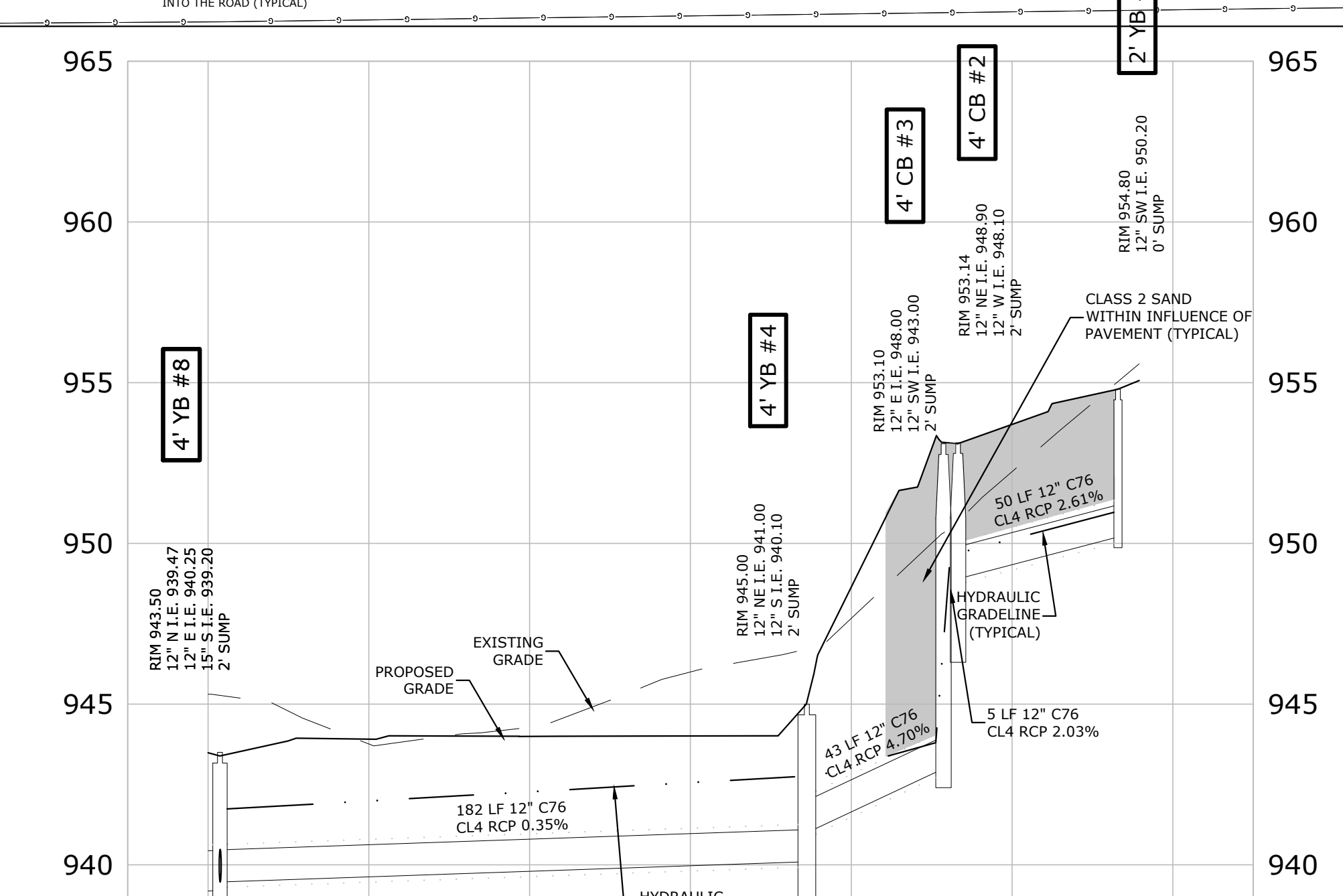
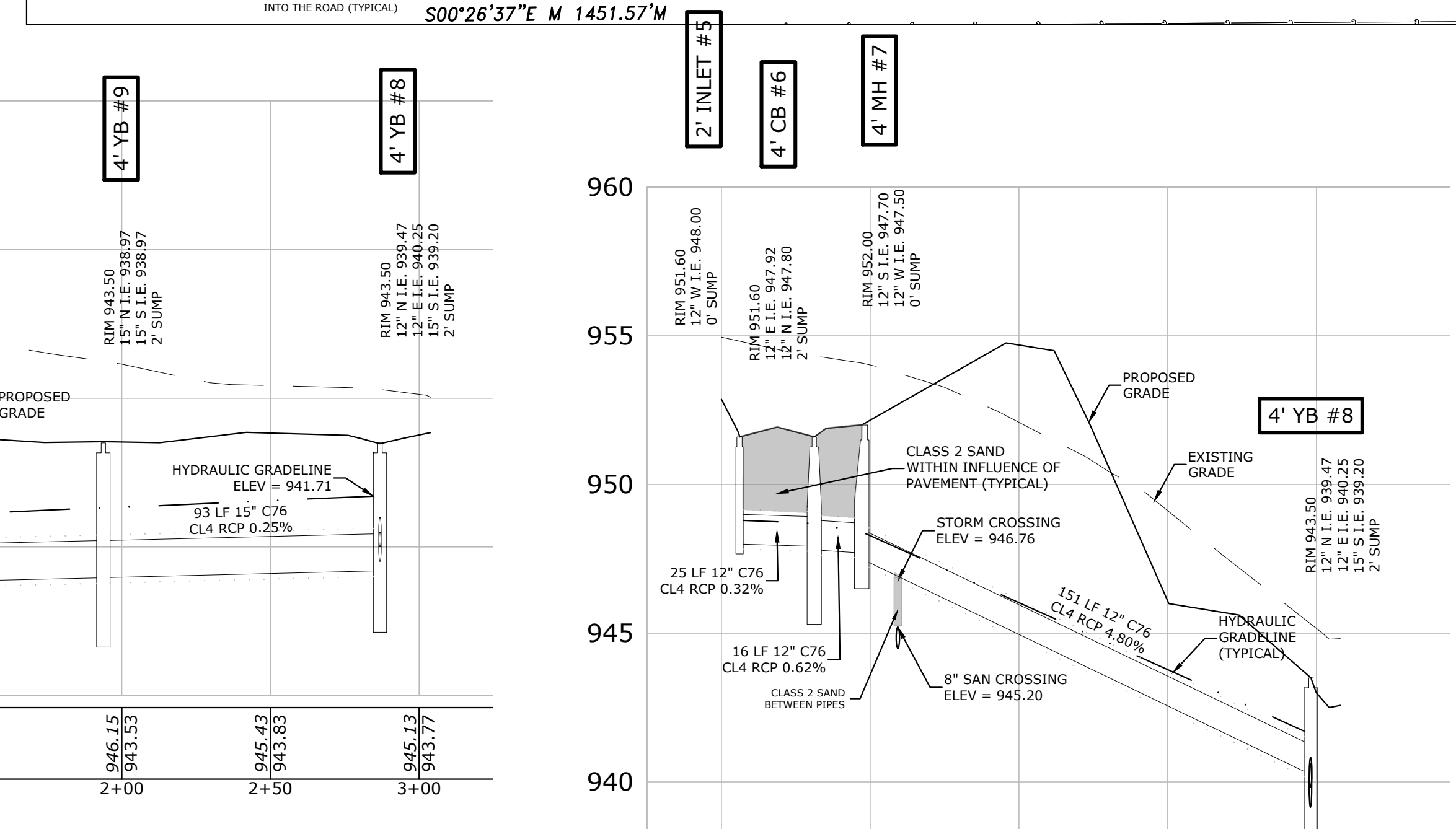
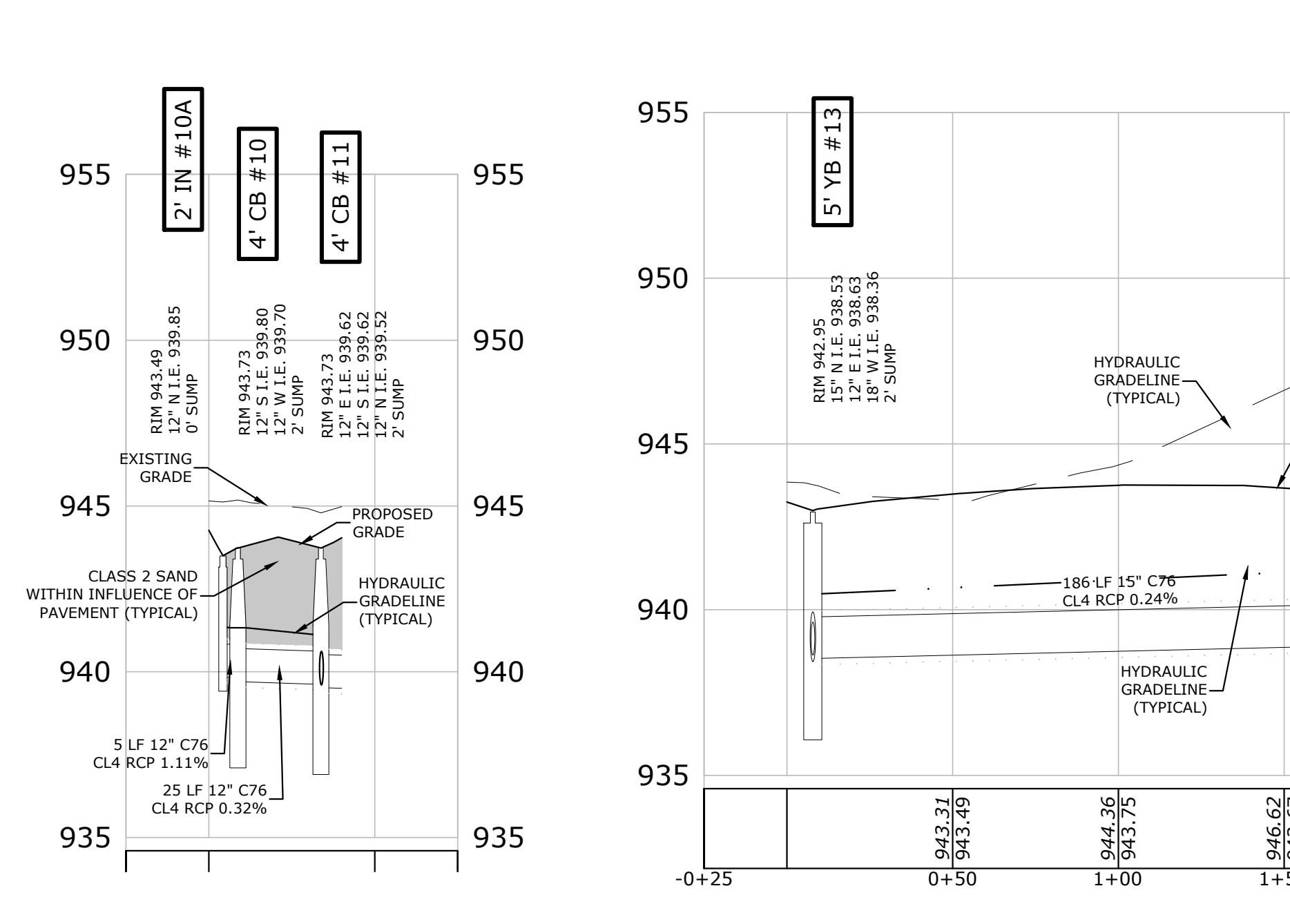
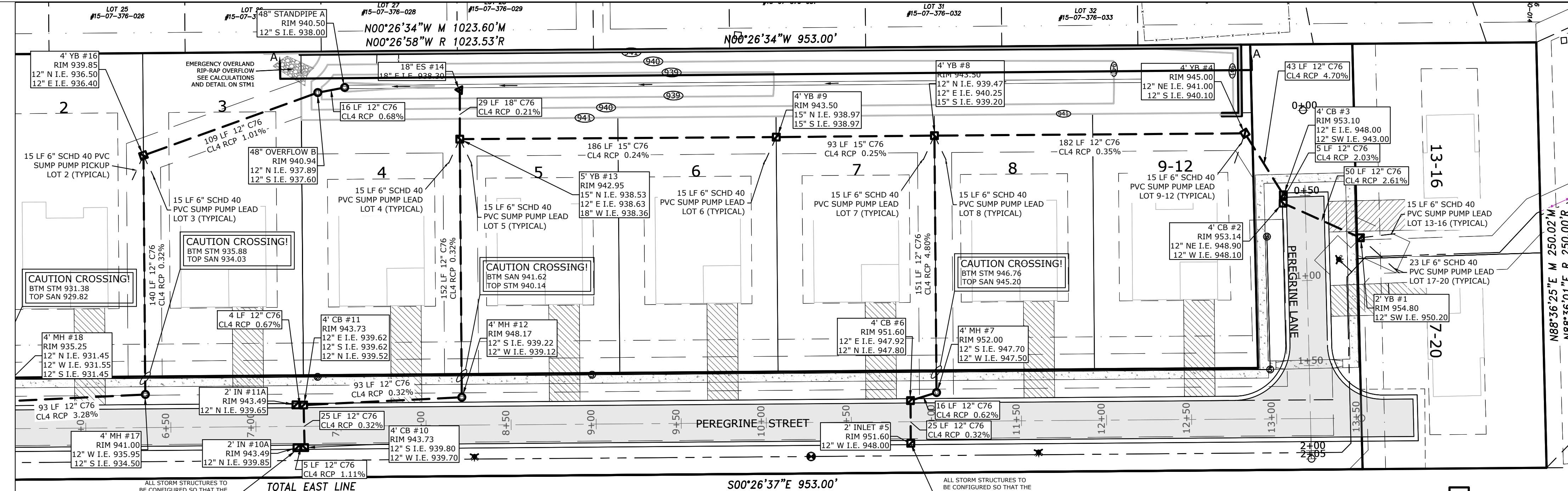
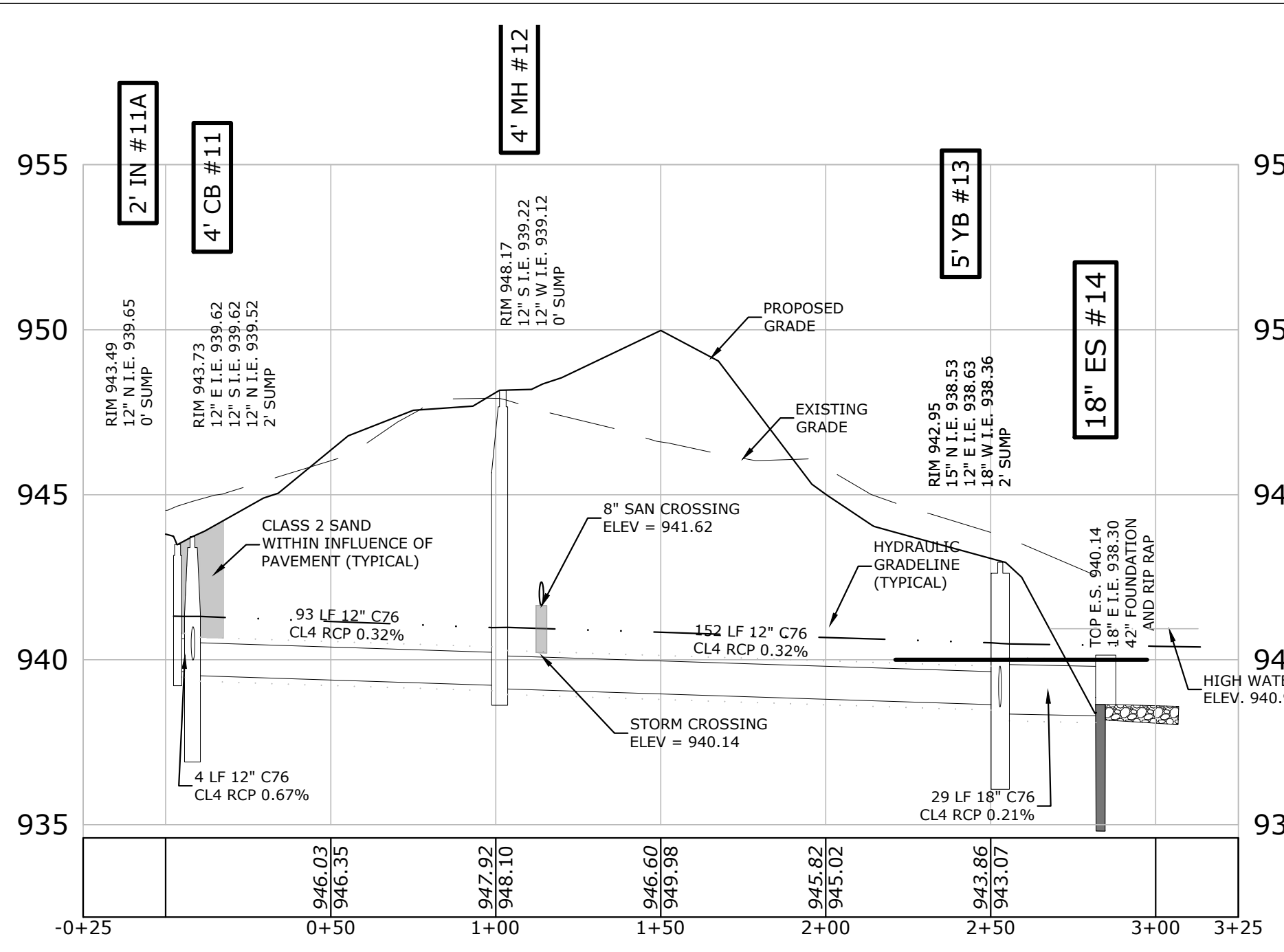
BEFORE YOU DIG
CALL MISS DIG
1-800-482-7171

**WALTON OAKS
LANE & WALTON R.O.W.**
WALTON BOULEVARD, CITY OF ROCHESTER HILLS
THREE GENERATIONS ROCHESTER HILLS SITE PLANS

ISSUE DATES

CONSTRUCTION 5/24/2023
CONSTRUCTION 8/21/2023
CONSTRUCTION 12/22/2023
CONSTRUCTION 1/16/2024
CONSTRUCTION 3/1/2024

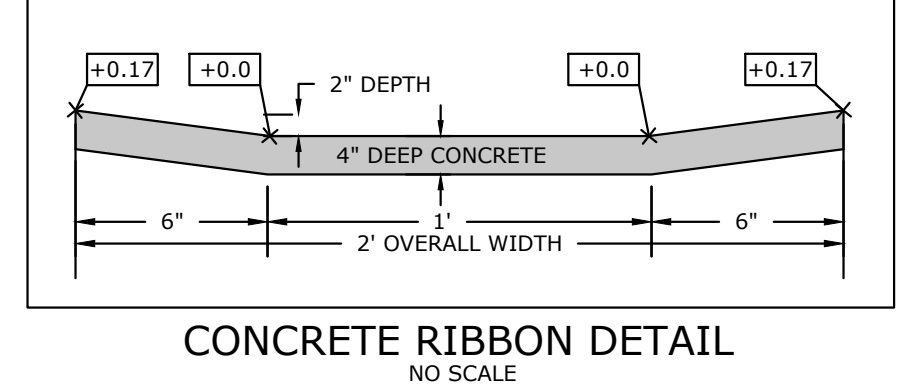
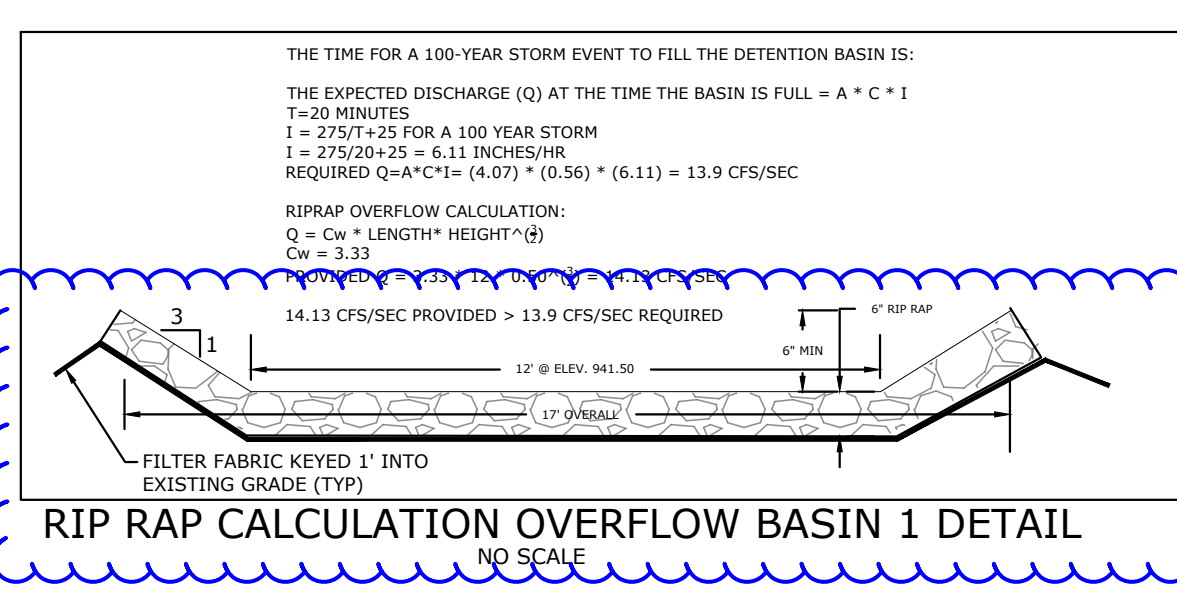
DESIGNED MCS
APPROVED MCP
P.E. JOB NO. 21-419
SCALE 1"=50'
GR2
CONSTRUCTION



STORM SEWER AREA 1 QUANTITY LIST

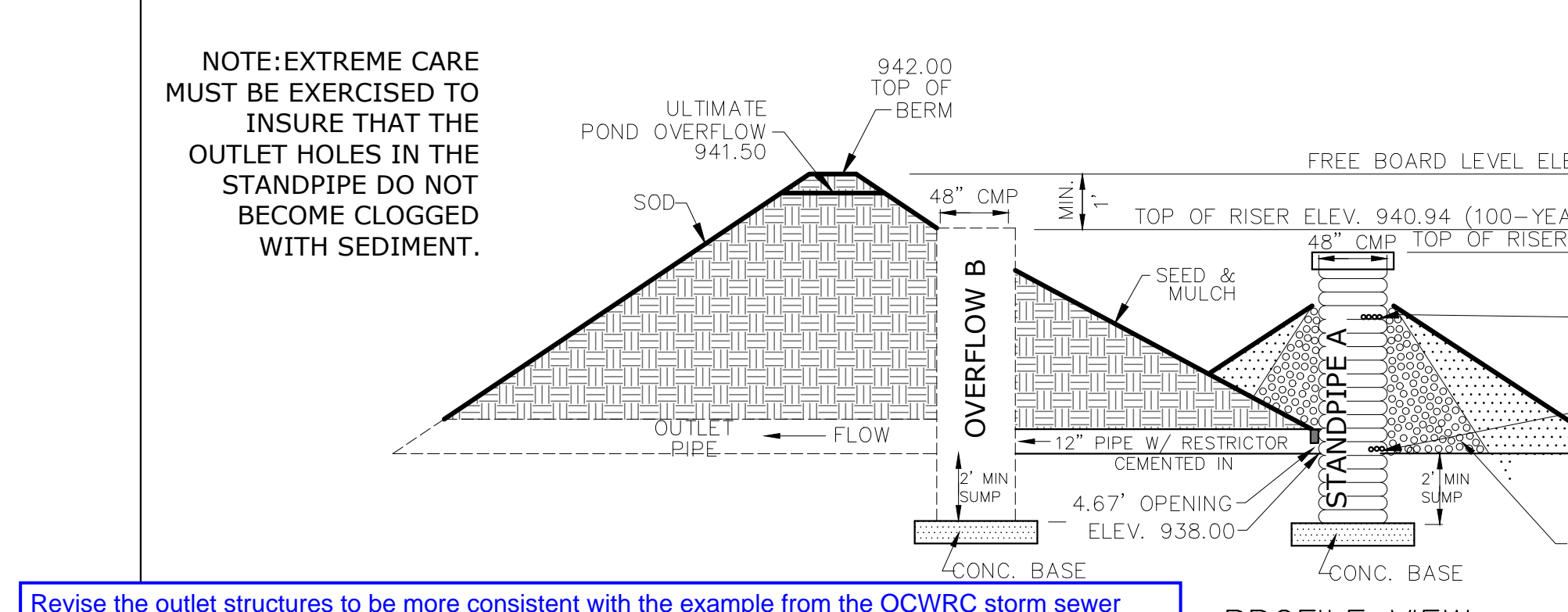
DESCRIPTION	QUANTITY	CASTING & NOTES
12" C76 CL4 PIPE	751 LF	
15" C76 CL4 PIPE	279 LF	
18" C76 CL4 PIPE	29 LF	
2" INLET	3 EA	EJW 7065 TYPE "M1" w/ 7060 "T1" BACK SET
4" CATCH BASIN	5 EA	EJW 7065 TYPE "M1" w/ 7060 "T1" BACK SET
4" MANHOLE	2 EA	EJW 1040 TYPE "A"
2" YARD BASIN	1 EA	EJW 1040 TYPE "02"
4" YARD BASIN	3 EA	EJW 1040 TYPE "02"
5" YARD BASIN	1 EA	EJW 1040 TYPE "02"
18" END SECTION	1 EA	WITH FOUNDATION AND BAR SCREEN

Revise elevations. The proposed elevation is lower than the overflow rim elevation.

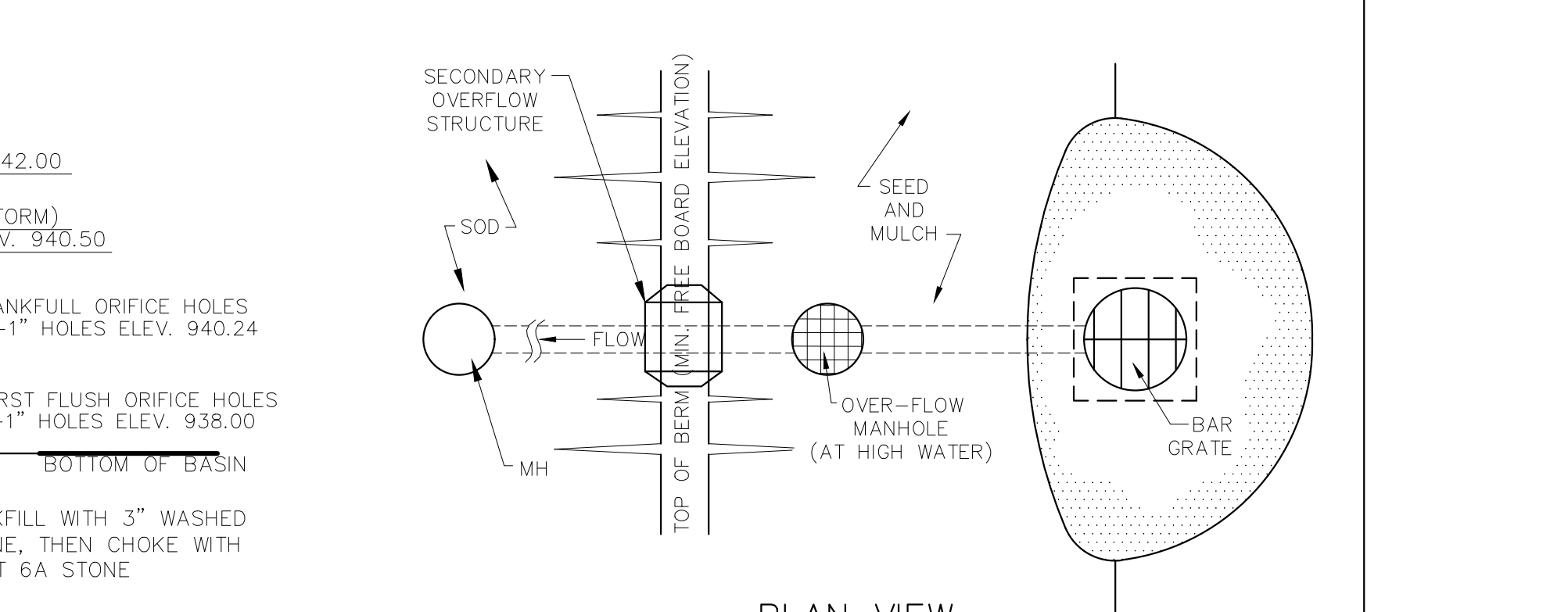


STRUCTURE NORTHING & EASTING CHART

STRUCTURE NUMBER	NORTHING	EASTING
YB #1	433687.7054	13435940.8148
CB #2	433642.3131	13435920.4818
CB #3	433642.4174	13435915.5543
YB #4	433619.8403	13435879.4542
INLET #5	433423.4577	13436061.5410
CB #6	433423.2636	13436036.4647
MH #7	433438.5580	13436031.7273
YB #8	433437.3508	13435880.7910
YB #9	433344.3889	13435881.6689
INLET #10A	433062.0762	13436038.9771
CB #11	433067.1671	13436064.0864
INLET #11A	433062.0762	13436038.9771
CB #11	433066.5651	13436039.0903
MH #12	433159.5381	13436034.5381
YB #13	433158.3582	13435882.8348
ES #14	433158.3645	13435853.9609
A	433090.6673	13435852.5339
B	433074.8578	13435855.5354



Revise the outlet structures to be more consistent with the example from the OCWR storm sewer standards on page 111. The two standpipes are encouraged, but the restrictors locations and the amount of them does not follow the example attached. Why the additional 4.67" cemented restrictor?



STANDPIPE & RESTRICTED OUTLET DETAIL FOR STORM AREA 1 DETENTION POND

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4700 Conover Drive, White Lake, Michigan 48393
P: 248-717-9895 info@powellengineeringllc.com

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WALTON OAKS STORM AREA 1
WALTON BOULEVARD, CITY OF ROCHESTER HILLS
THREE GENERATIONS ROCHESTER HILLS SITE PLANS

ISSUE DATES

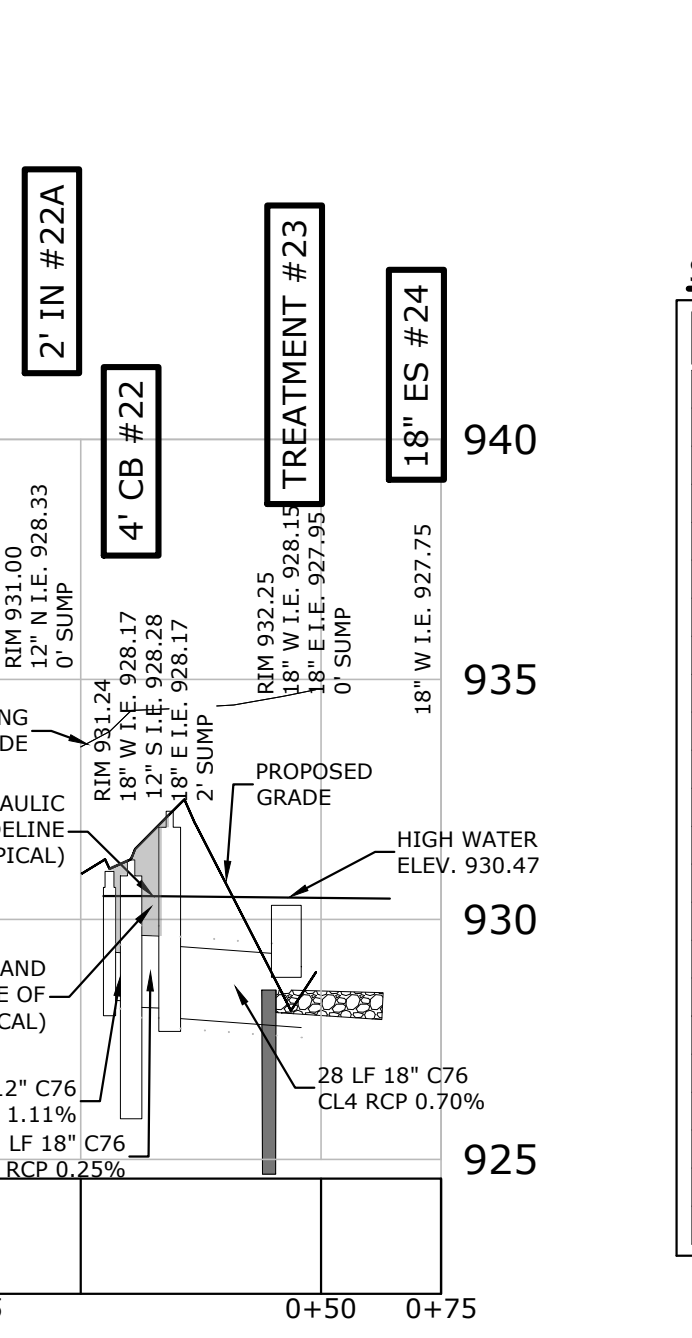
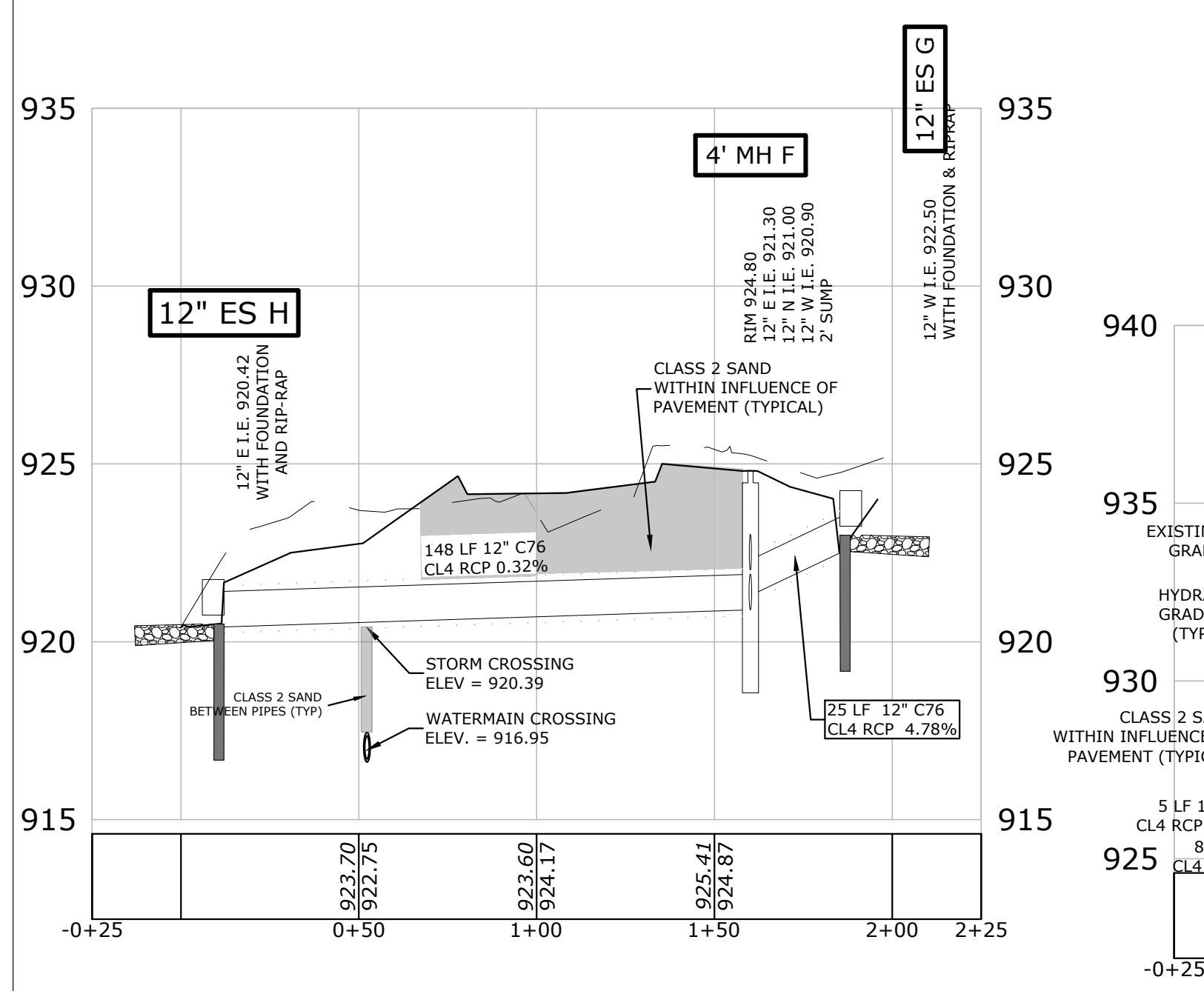
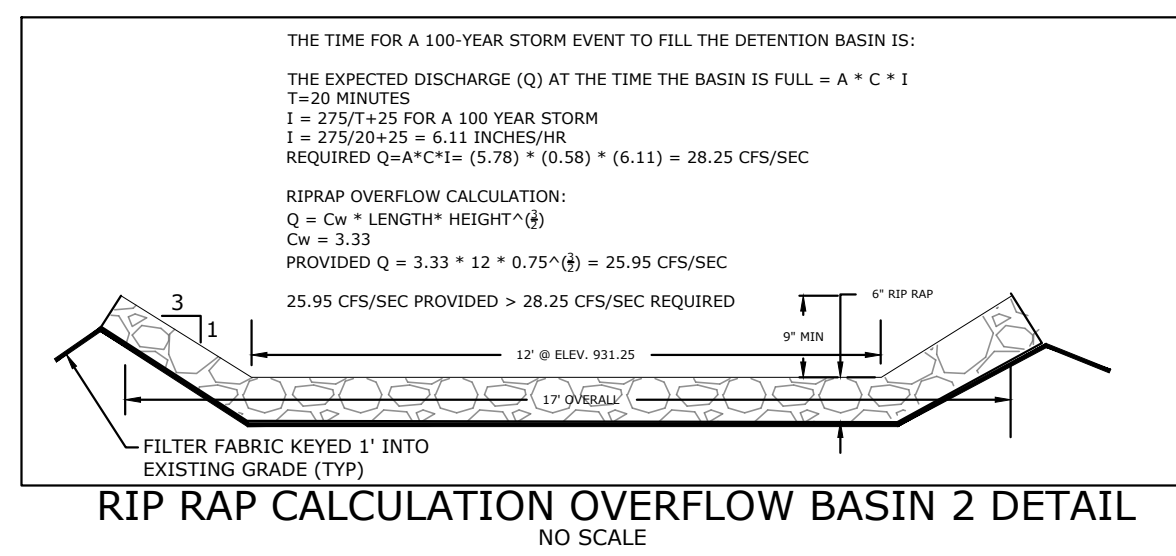
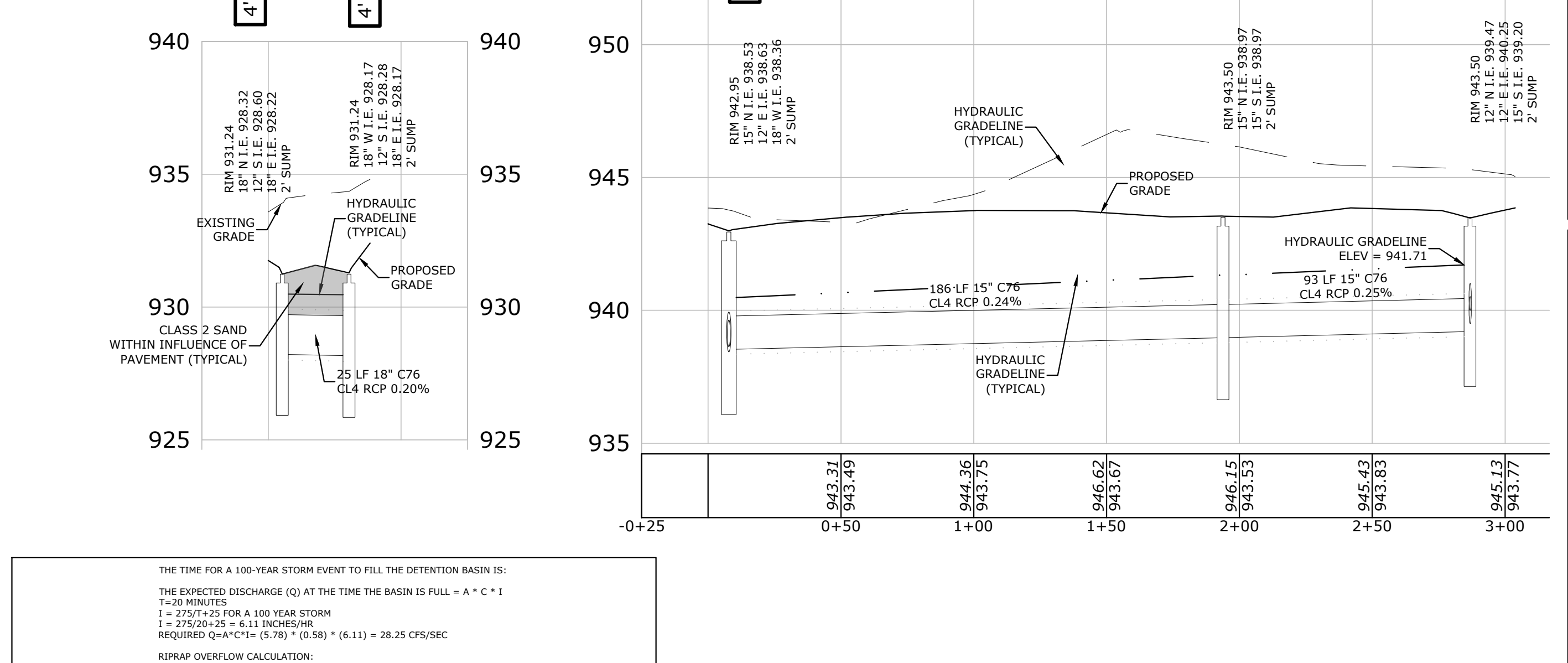
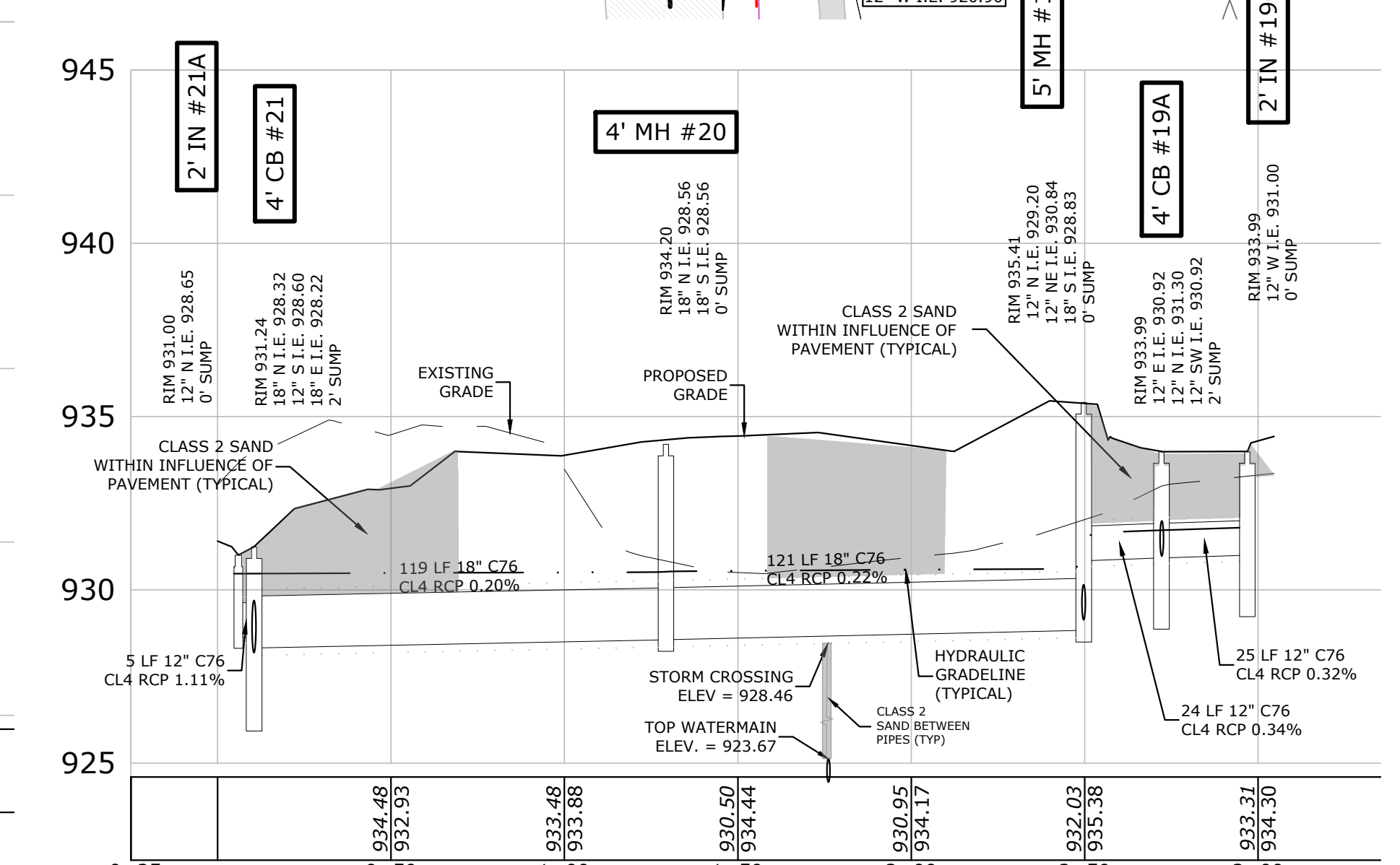
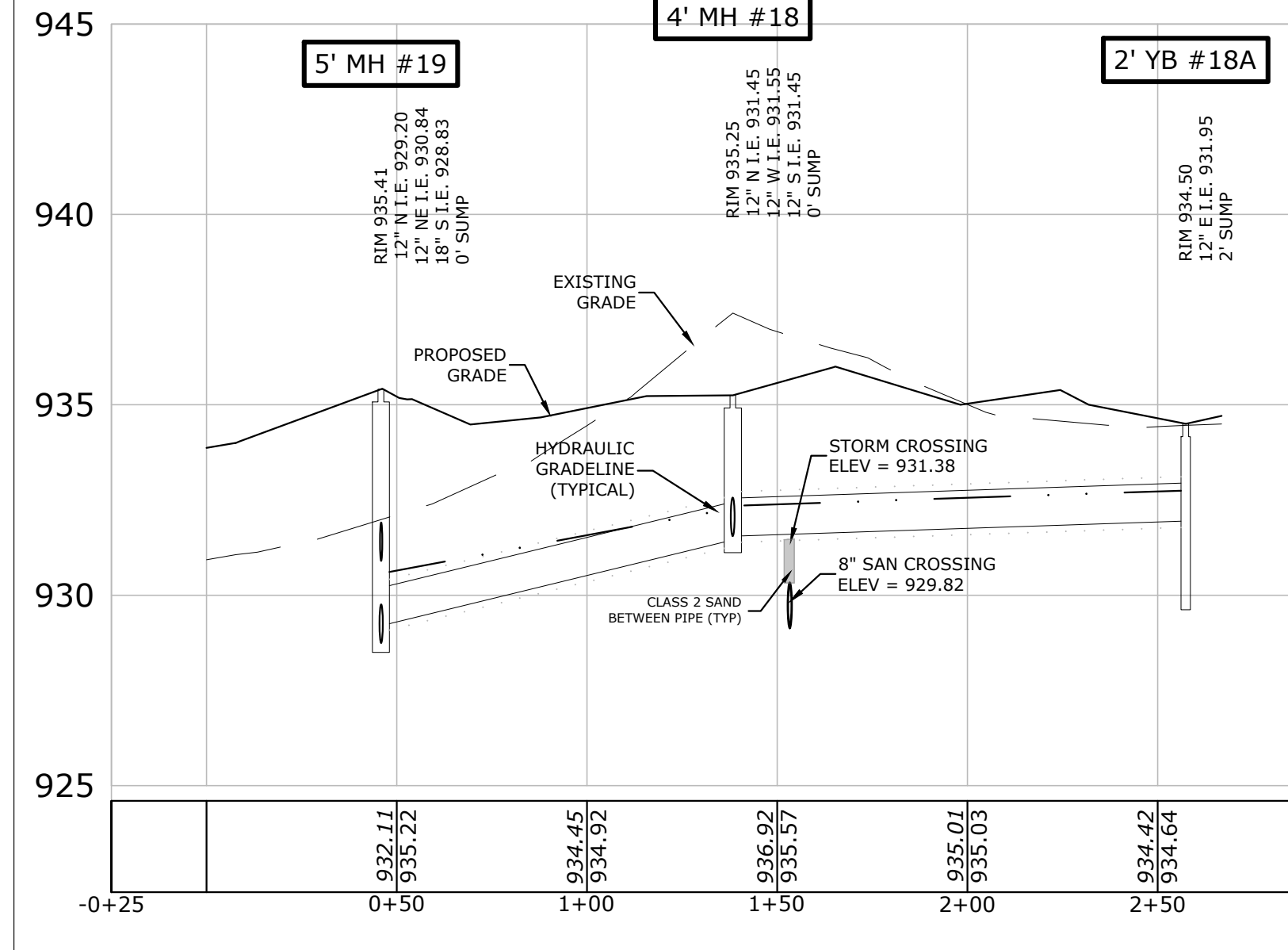
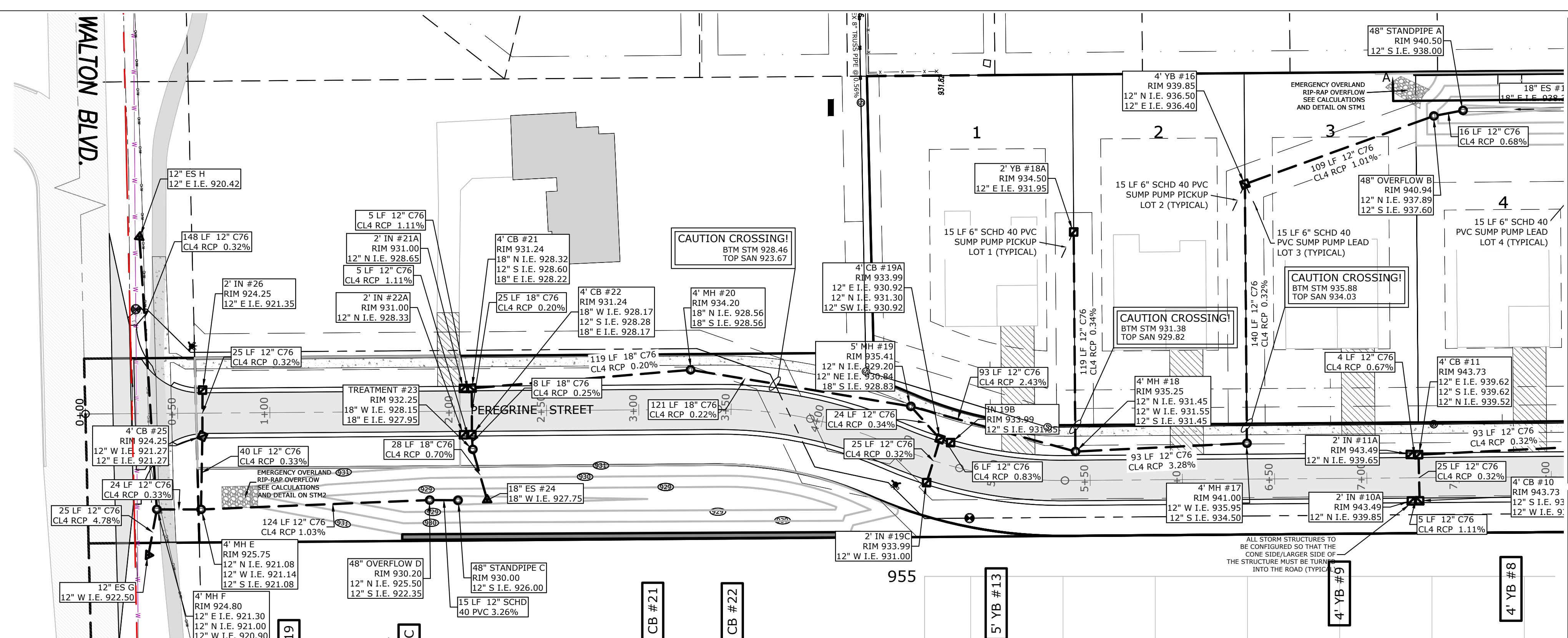
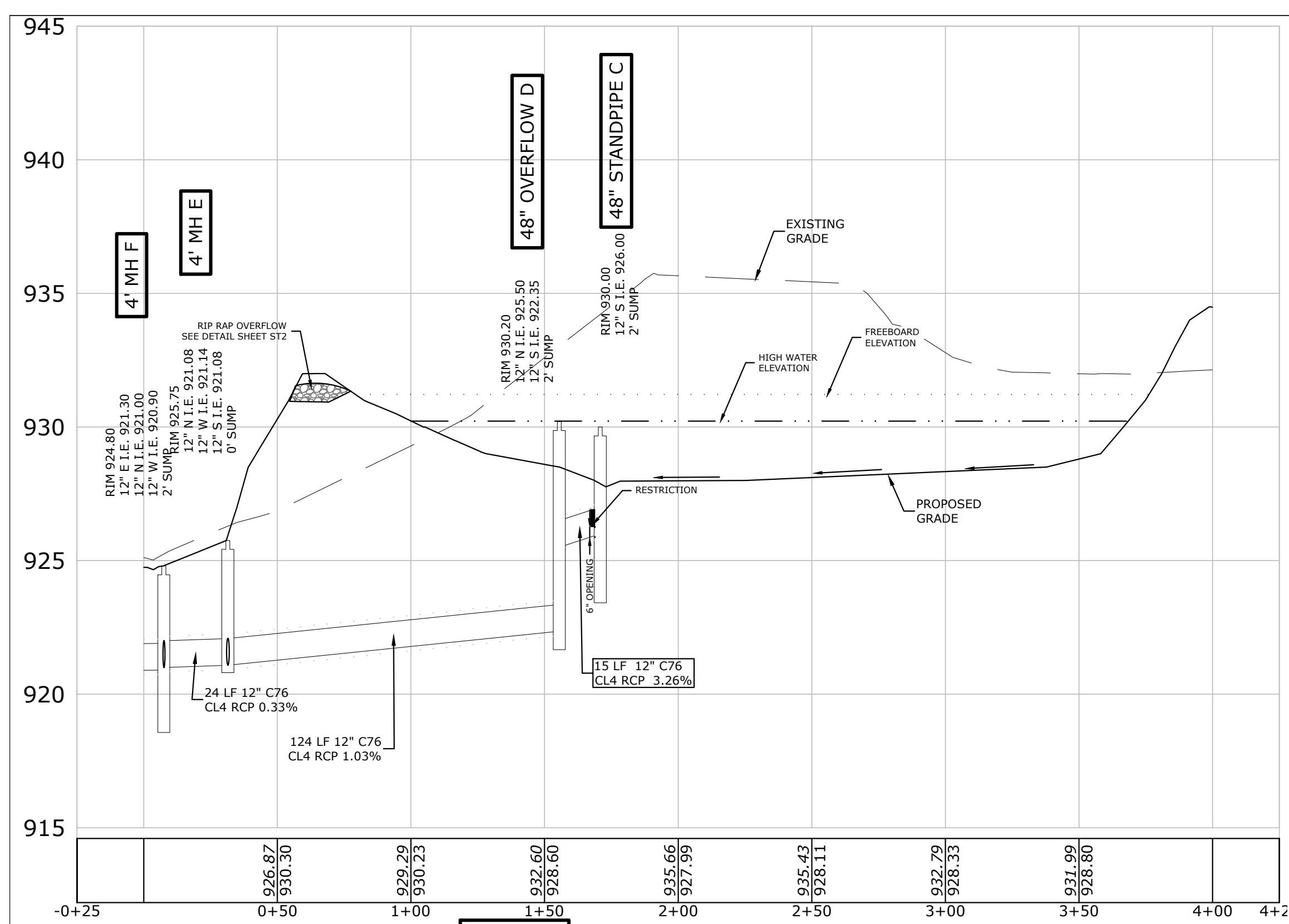
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- CONSTRUCTION 3/1/2024

DRAWN MCS
DESIGNED MCS
APPROVED MCP
P.E. JOB NO. 21-419
SCALE 1"=50'

ST1
CONSTRUCTION

Received 3/5/2024
City of Rochester Hills Planning & Economic Development

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STRUCTURE NORTHING & EASTING CHART

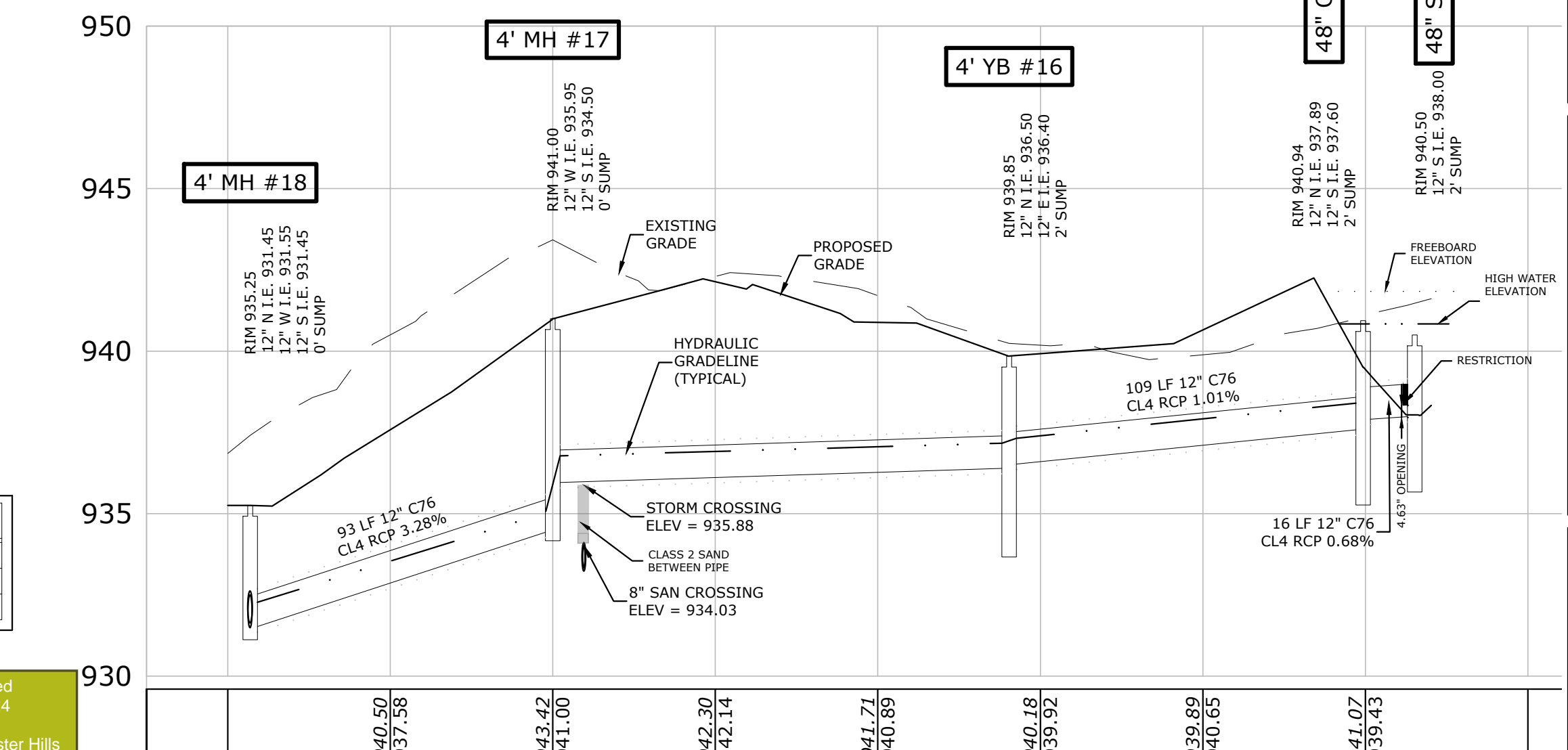
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YB #16	432972.4272	13435892.4610
MH #17	432973.5143	13436032.8896
MH #18	432880.5476	13436037.3860
INLET #19C	432799.8890	13436054.2315
INLET #19B	432812.8972	13436032.5060
CB #19A	432807.1790	13436030.5665
MH #19	432791.3336	13436012.8963
MH #20	432671.9210	13435993.1245
CB #21	432553.3181	13436003.1123
INLET #21A	432548.8019	13436003.1742
CB #22	432553.3833	13436028.2245
INLET #22A	432548.8672	13436028.2863
TREATMENT #23	432553.8328	13436036.2713
ES #24	432552.7217	13436061.5899
C	432545.8576	13436063.8184
D	432530.5304	13436063.6819
MH E	432406.5450	13436068.7700
CB #26	432407.3496	13436004.0824
CB #25	432407.2808	13436029.0168
MH F	432382.5664	13436068.7811
ES G	432378.0781	13436093.4770
ES H	432373.1830	13435921.1300

STORM SEWER AREA 2 QUANTITY LIST

DESCRIPTION	QUANTITY	CASTING & NOTES
12" C76 CL4 PIPE	839 LF	2 - 12" OUTLET PIPES HAVE RESTRICTIONS
18" C76 CL4 PIPE	308 EA	
48" CMP STANDPIPE	2 EA	BAR SCREEN
48" CMP OVERFLOW	2 EA	BAR SCREEN
4' YARD BASIN	1 EA	EJIW 1040 TYPE "02"
4' MANHOLE	4 EA	EJIW 1040 TYPE "A"
5' MANHOLE	1 EA	EJIW 1040 TYPE "A"
2' YARD BASIN	1 EA	EJIW 1040 TYPE "02"
2' INLET	5 EA	EJIW 7065 TYPE "M1" w/ 7060 "T1" BACK SET
4' CATCH BASIN	4 EA	EJIW 7065 TYPE "M1" w/ 7060 "T1" BACK SET
18" END SECTION	1 EA	W/FOUNDATION, RIP RAP AND BAR SCREEN
CONTECH SCICLONEX 8	1 EA	SEE DETAIL AND CALCULATIONS STM 3

STORM SEWER AREA ROAD RIGHT OF WAY

DESCRIPTION	QUANTITY	CASTING & NOTES
12" C76 CL4 RCP	197 LF	
12" CONCRETE END SECTION	2 EA	W/FOUNDATION & RIP RAP
4' MANHOLE	1 EA	EJIW 1040 TYPE "A"



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 "Engineering A Better Michigan"
 4700 Conover Drive, White Lake, Michigan 48383
 P: 248-717-6995 info@powellengineeringllc.com

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WALTON OAKS STORM AREA 2
 WALTON BOULEVARD, CITY OF ROCHESTER HILLS
 THREE GENERATIONS ROCHESTER HILLS SITE PLANS

ISSUE DATES
 CONSTRUCTION 8/24/2023
 CONSTRUCTION 8/21/2023
 CONSTRUCTION 12/22/2023
 CONSTRUCTION 11/6/2024
 CONSTRUCTION 3/1/2024

ST2 CONSTRUCTION
 DRAWN MCS
 DESIGNED MCS
 APPROVED MCP
 P.E. JOB NO. 21-419
 SCALE 1"=50'

ROCHESTER HILLS
 JSC2022-0002
 PFSC2024-0001
 Revision #1
 Received 3/5/2024
 City of Rochester Hills
 Planning & Economic
 Development

WATERMAIN BASIS OF DESIGN

INITIAL & ULTIMATE DESIGN

ESTIMATED INITIAL AND ULTIMATE LOAD = 12 RESIDENTIAL UNITS
 P=POPULATION = 2.44 PEOPLE/REU x 12 REU = 29 PP

INITIAL AVERAGE FLOW = 29 PP x 100 GPDC = 0.0029 MGD = 0.0054 CFS

PEAKING FACTOR = 2.5

INITIAL & ULTIMATE PEAK DESIGN FLOW = 2.5 x 0.0029 MGD = 0.00725 MGD = 0.0134 CFS

NOTE:

PER THE TEN STATES STANDARDS ARTICLE 8.8.3, ONE FULL 20' PIPE LENGTH OF WATERMAIN SHALL BE USED WHENEVER STORM SEWER OR SANITARY SEWER IS CROSSED, AND THE PIPE SHOULD BE CENTERED ON THE CROSSING, IN ORDER TO ENSURE 10-FOOT SEPARATION BETWEEN WATERMAIN AND SEWERS.

BENCHMARKS

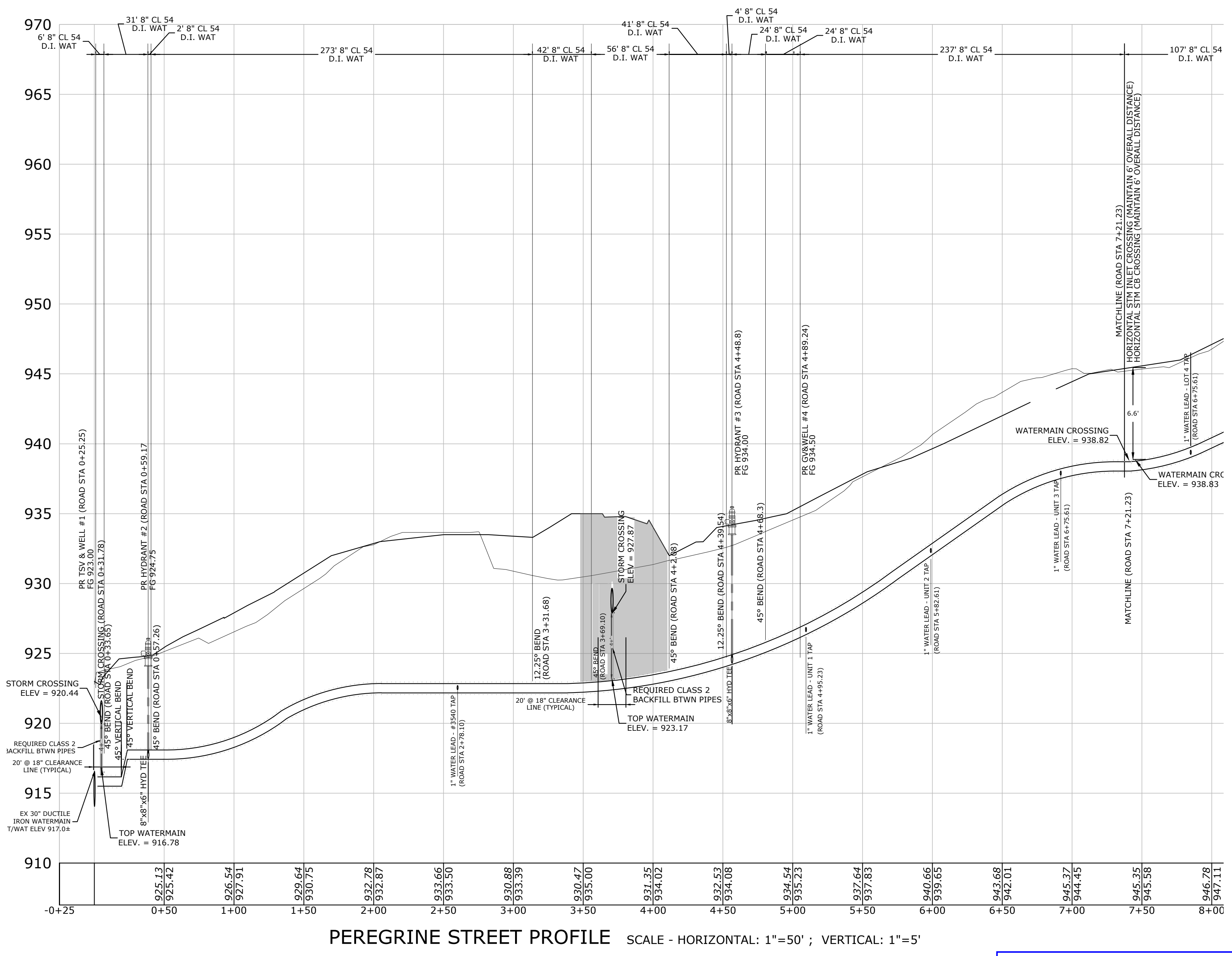
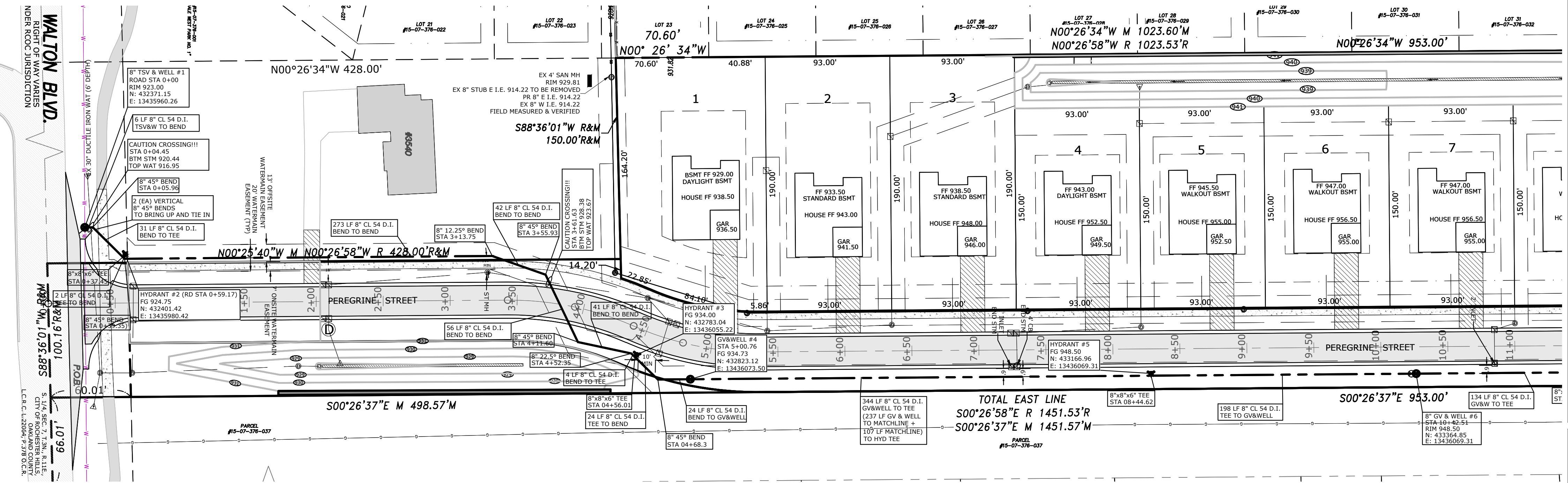
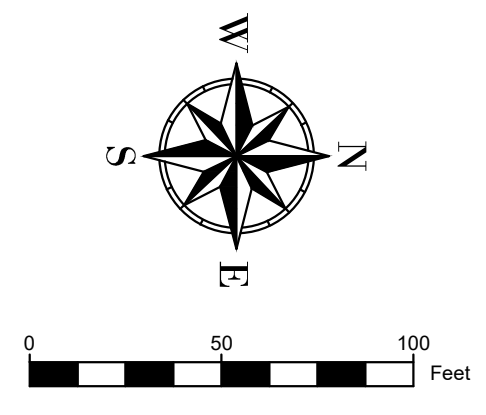
- ARROW ON HYDRANT ELEV. 952.45 (NAVD88) AT SE CORNER OF BELLARMINI DR AND DONEGAL DR.
- S RIM CATCH BASIN ELEV. 962.49 (NAVD88) NEAR NE SIDE OF SUBJECT PROPERTY IN LOT 39 OF BROOKDALE WEST
- E ST CB RIM ELEV. 939.86 (NAVD88) ALONG WEST PROPERTY LINE OF SUBJECT PROPERTY @ SE CORNER LOT 29 OF BROOKDALE WEST

TOTAL WATERMAIN QUANTITY LIST

DESCRIPTION	QUANTITY	AS-BUILT
6" CL54 DUCTILE IRON PIPE	11 LF	
8" CL54 DUCTILE IRON PIPE	1588 LF	
8" GATE VALVE & WELL	2 EA	
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HYDRANT	5 EA	
8" 12.25" BEND	1 EA	
8" 22.5" BEND	3 EA	
8" 45" BEND	13 EA	
8" x 8" x 6" TEE	5 EA	

ASBESTOS CEMENT WATER MAIN REMOVAL AND HANDLING NOTES:

- ENGINEERING CONTROLS AND WORK PRACTICES IN COMPLIANCE WITH MICHIGAN OCCUPATIONAL HEALTH STANDARDS PART 602 SHALL BE FOLLOWED WHEN WORKING IN THE PRESENCE OF ASBESTOS CONTAINING MATERIAL (ACM) OR PRESUMED ASBESTOS CONTAINING MATERIAL (PACM).
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 - SHOULD THE MATERIAL BE IN POOR CONDITION OR BECOME FRIABLE DURING REMOVAL OPERATIONS NESHAP NOTIFICATION REQUIREMENTS ARE REQUIRED TO BE MET WITHIN 24 HOURS.
 - REFER TO ASBESTOS NESHAP EMERGENCY RENOVATION OPERATION NOTIFICATION REQUIREMENTS.
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 - LABEL THE CONTAINERS OR WRAPPED MATERIAL USING WARNING LABELS SPECIFIED BY MIOSHA AND USDOT AND INCLUDE THE NAME OF THE WASTE GENERATOR AND LOCATION AT WHICH THE WASTE WAS GENERATED.
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Show the proposed water leads for all units throughout the development 5 feet off the proposed sanitary sewer leads. Adjust the water main quantities to show the 1" service lines (copper or plastic) and the stop boxes to be installed as part of the initial project. Adjusted water/sewer fees will be determined after the preconstruction meeting. Provide a note on both water main sheets stating as such. This request is per the water and sewer foreman for the City of Rochester Hills.

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WALTON OAKS WATERMAIN
 WALTON BOULEVARD, CITY OF ROCHESTER HILLS
 THREE GENERATIONS ROCHESTER HILLS SITE PLANS

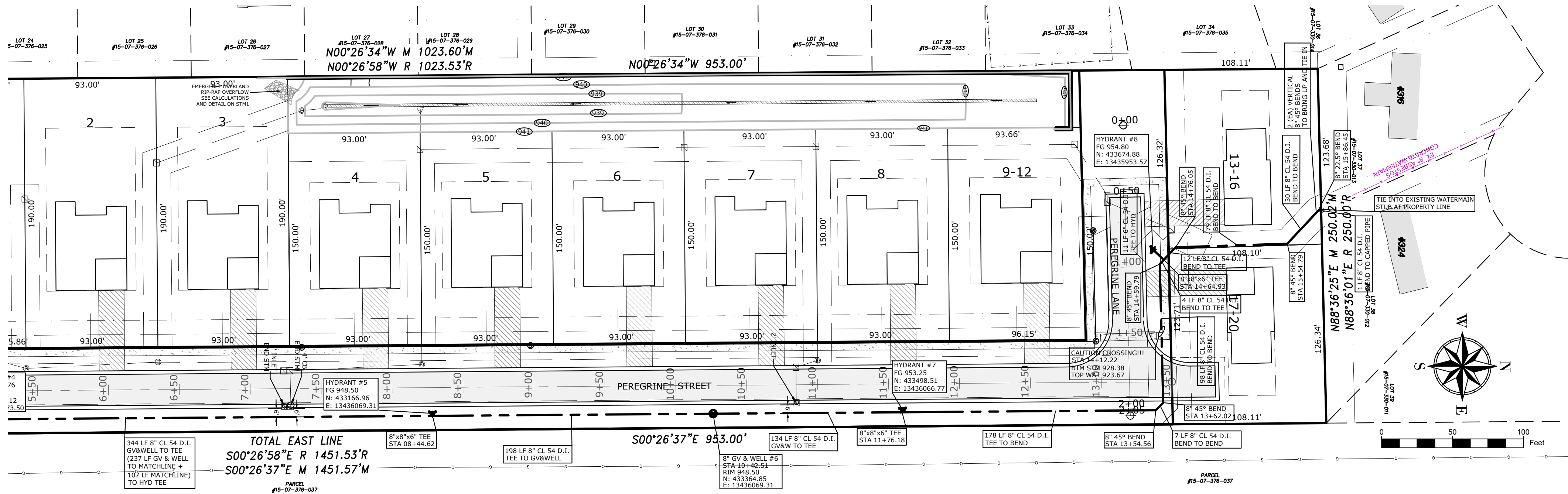
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CONSTRUCTION	1/16/2024
CONSTRUCTION	3/1/2024

ROCHESTER HILLS MICHIGAN
 JSC2022-0002
 PFSC2024-0001
 Revision #1
 Received 3/5/2024
 City of Rochester Hills
 Planning & Economic Development

CITY FILE #22-009 SECTION #7

WAT1 CONSTRUCTION
 DRAWN MCS
 DESIGNED MCS
 APPROVED MCP
 P.E. JOB NO. 21-419
 SCALE 1"=50'



WATERMAIN BASIS OF DESIGN

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ESTIMATED INITIAL AND ULTIMATE LOAD = 12 RESIDENTIAL UNITS
 P=POPULATION = 2.44 PEOPLE/REU x 12 REU = 29 PP

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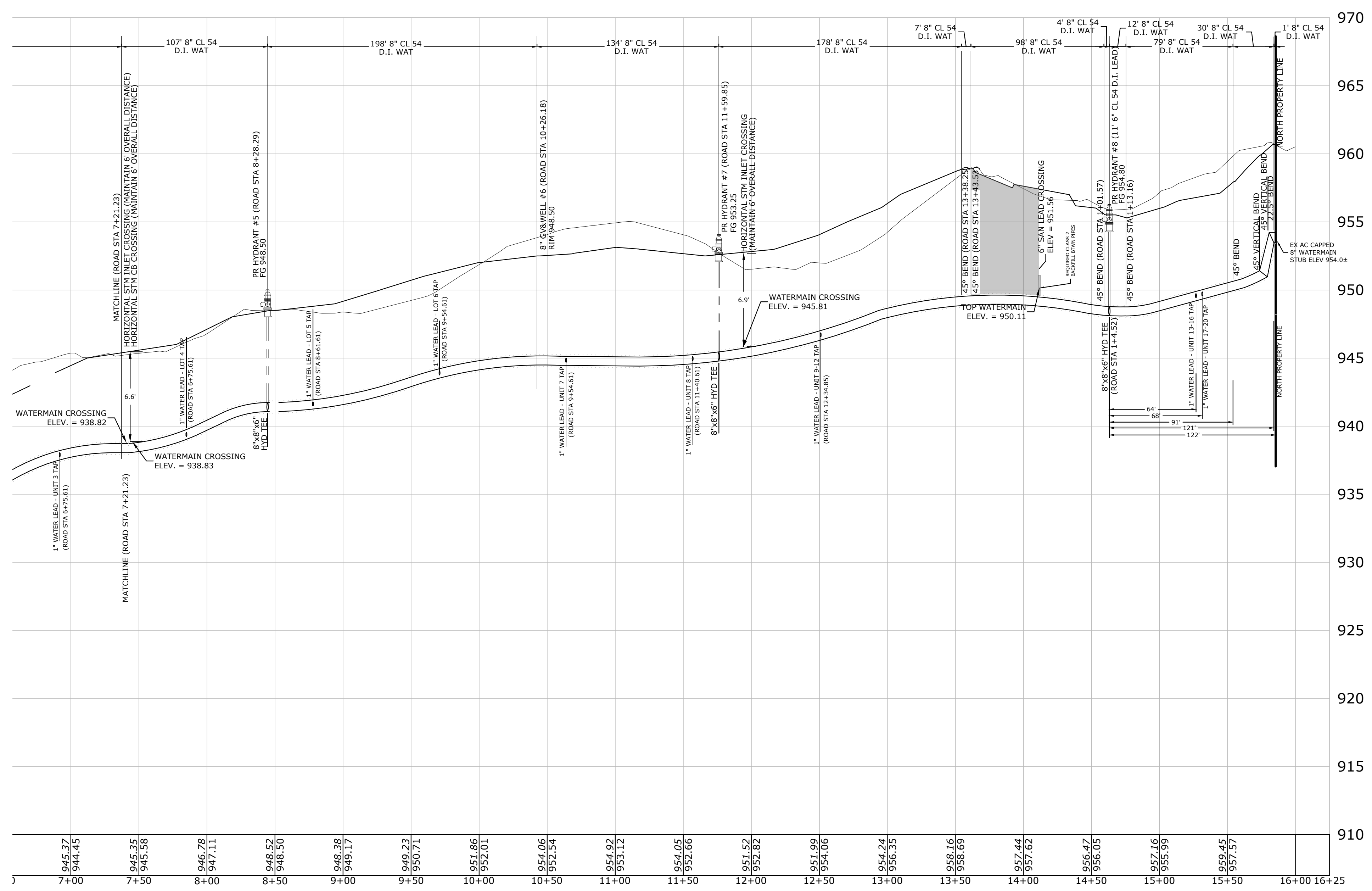
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PEREGRINE STREET PROFILE SCALE - HORIZONTAL: 1"=50' ; VERTICAL: 1"=5'

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 "Engineering A Better Michigan"

Powell Engineering & Associates, LLC

4700 Cornerstone Drive, White Lake, Michigan 48383
 P: 248.714.9895 info@powellengineeringllc.com

NOTE: AS AN AID TO THE CONTRACTOR FROM THE CITY OF ROCHESTER HILLS AND THE ENGINEER, THE PLANS AND PROFILES ARE SHOWN ON THESE SHEETS AND PROFILES. ALL INFORMATION CONCERNING THE LOCATION, DEPTH, AND CHARACTER OF UTILITIES SHOWN ON THESE PLANS AND PROFILES IS TAKEN FROM FIELD SURVEY AND/OR AVAILABLE RECORDS. THE ENGINEER AND CONTRACTOR SHALL VERIFY THE LOCATION, DEPTH, AND CHARACTER OF UTILITIES SHOWN ON THESE PLANS AND PROFILES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES SHOWN ON THESE PLANS AND PROFILES. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY DAMAGE TO UTILITIES SHOWN ON THESE PLANS AND PROFILES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES SHOWN ON THESE PLANS AND PROFILES. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY DAMAGE TO UTILITIES SHOWN ON THESE PLANS AND PROFILES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES SHOWN ON THESE PLANS AND PROFILES.

BEFORE YOU DIG CALL MISS DIG 1-800-482-7171

WALTON OAKS WATERMAIN PLAN

WALTON BOULEVARD, CITY OF ROCHESTER HILLS
 THREE GENERATIONS ROCHESTER HILLS SITE PLANS

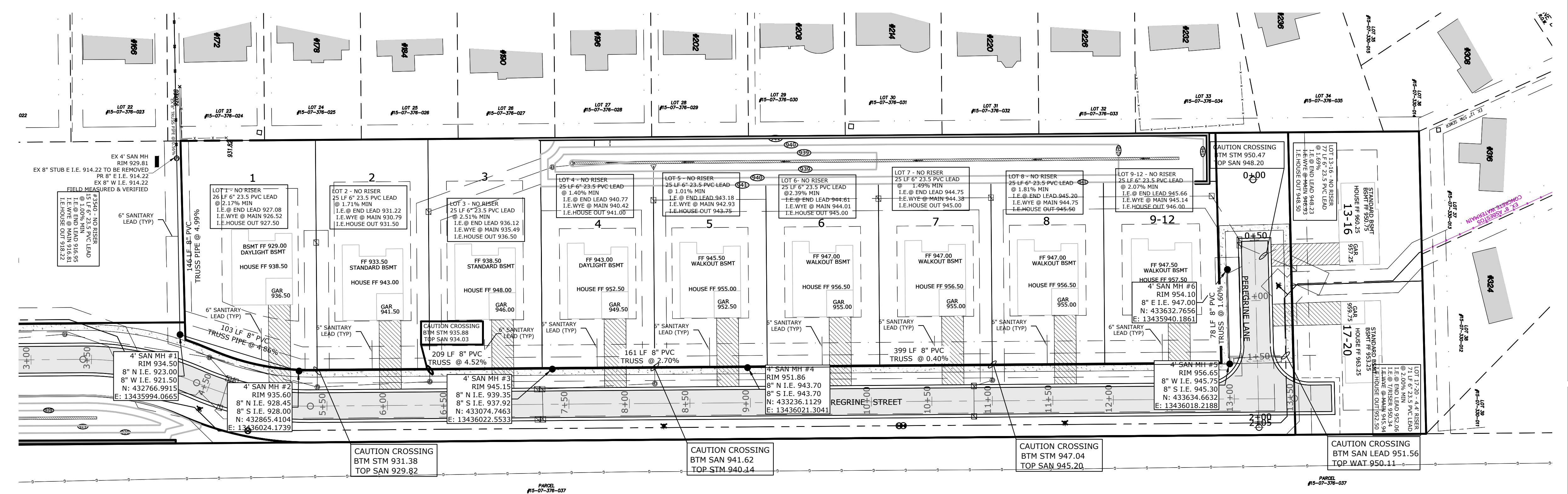
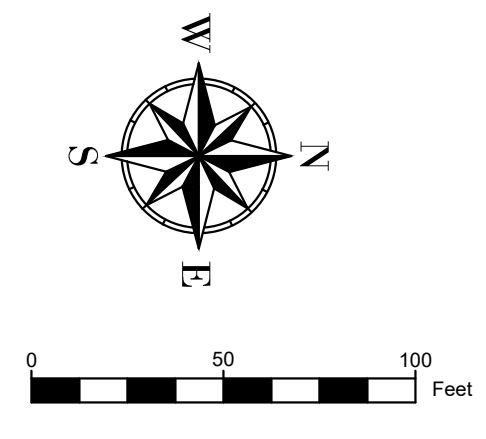
ISSUE DATES

CONSTRUCTION	5/24/2023
CONSTRUCTION	8/21/2023
CONSTRUCTION	1/16/2024
EGL	1/16/2024
CONSTRUCTION	1/16/2024
CONSTRUCTION	3/1/2024

DRAWN MCS
 DESIGNED MCS
 APPROVED MCP
 P.E. JOB No. 21-419
 SCALE 1"=50'
WAT2
 CONSTRUCTION

ROCHESTER HILLS
 JSC2022-0002
 PFSC2024-0001
 Revision #1

Received 3/5/2024
 City of Rochester Hills
 Planning & Economic Development

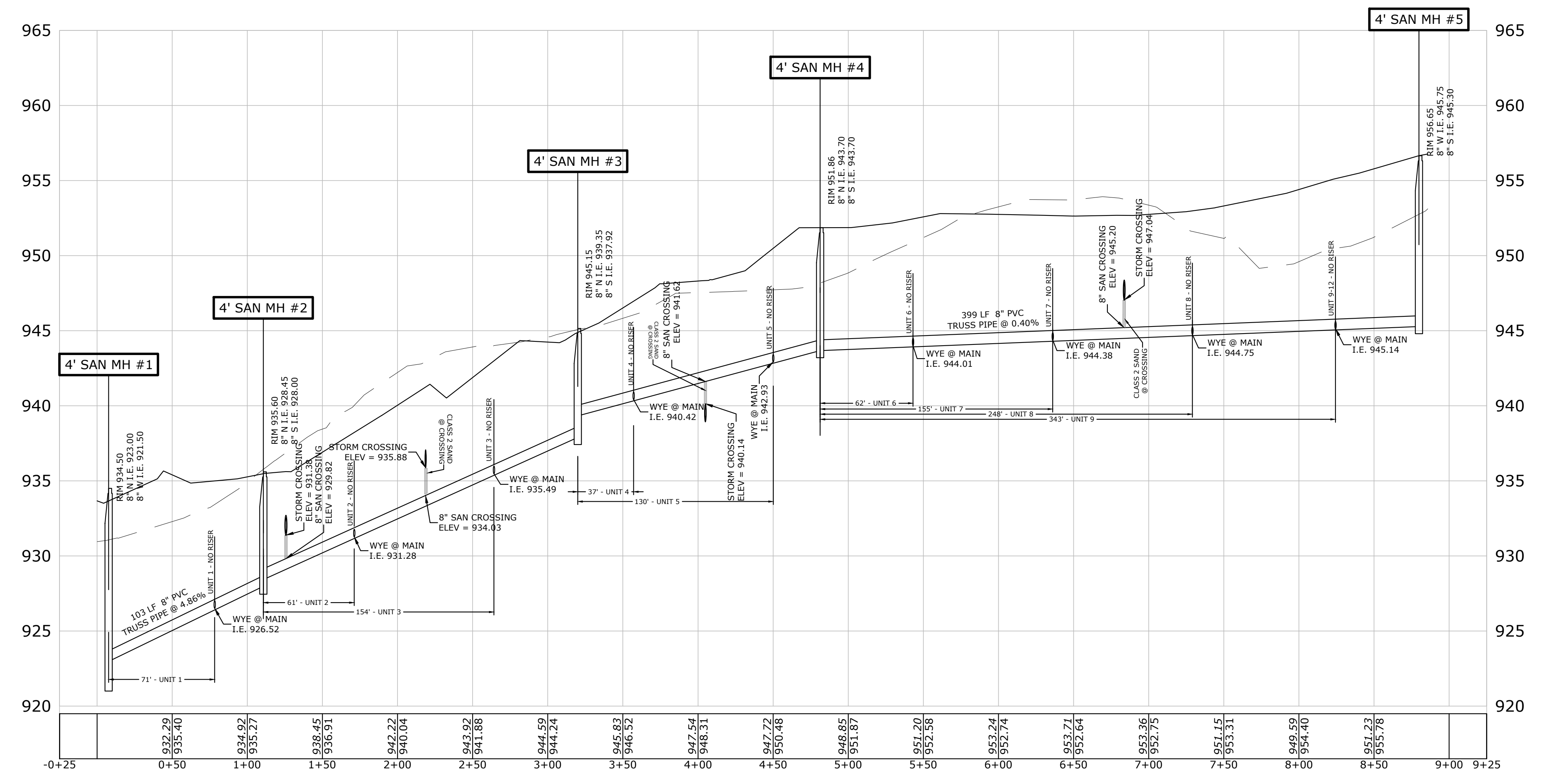


SANITARY BASIS OF DESIGN
 INITIAL & ULTIMATE DESIGN
 ESTIMATED INITIAL AND ULTIMATE LOAD = 12 RESIDENTIAL UNITS
 P = POPULATION = 2.44 PEOPLE/REU x 12 REU = 30 PP
 INITIAL AVERAGE FLOW = 30 PP x 100 GPDCP = 0.0030 MGD = 0.00464 CFS
 PEAKING FACTOR 4.0
 INITIAL AND ULTIMATE PEAK DESIGN FLOW = 4.0 x 0.00464 = 0.0186 CFS
 CAPACITY OF 8" SANITARY SEWER @ 0.40% = 0.75 CFS
 SEWER CAPACITY = 0.75 CFS > 0.0186 CFS DESIGN FLOW

- BENCHMARKS**
- ARROW ON HYDRANT ELEV. 952.45 (NAVD88) AT SE CORNER OF BELLARMINA DR AND DONEGAL DR.
 - S RIM CATCH BASIN ELEV. 962.49 (NAVD88) NEAR NE SIDE OF SUBJECT PROPERTY IN LOT 39 OF BROOKDALE WEST
 - E ST CB RIM ELEV. 939.86 (NAVD88) ALONG WEST PROPERTY LINE OF SUBJECT PROPERTY @ SE CORNER LOT 29 OF BROOKDALE WEST

TOTAL SANITARY SEWER QUANTITY LIST

DESCRIPTION (PUBLIC)	QUANTITY	AS-BUILT
8" PVC TRUSS PIPE	1096 LF	
4" SANITARY MANHOLE	6 EA	
DESCRIPTION (PRIVATE)	QUANTITY	AS-BUILT
6" 23.5 PVC (SANITARY LEADS)	432 LF	



PEREGRINE STREET SANITARY PROFILE
 SCALE - HORIZONTAL: 1"=50'; VERTICAL: 1"=5'

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 WALTON BOULEVARD, CITY OF ROCHESTER HILLS
 THREE GENERATIONS ROCHESTER HILLS SITE PLANS

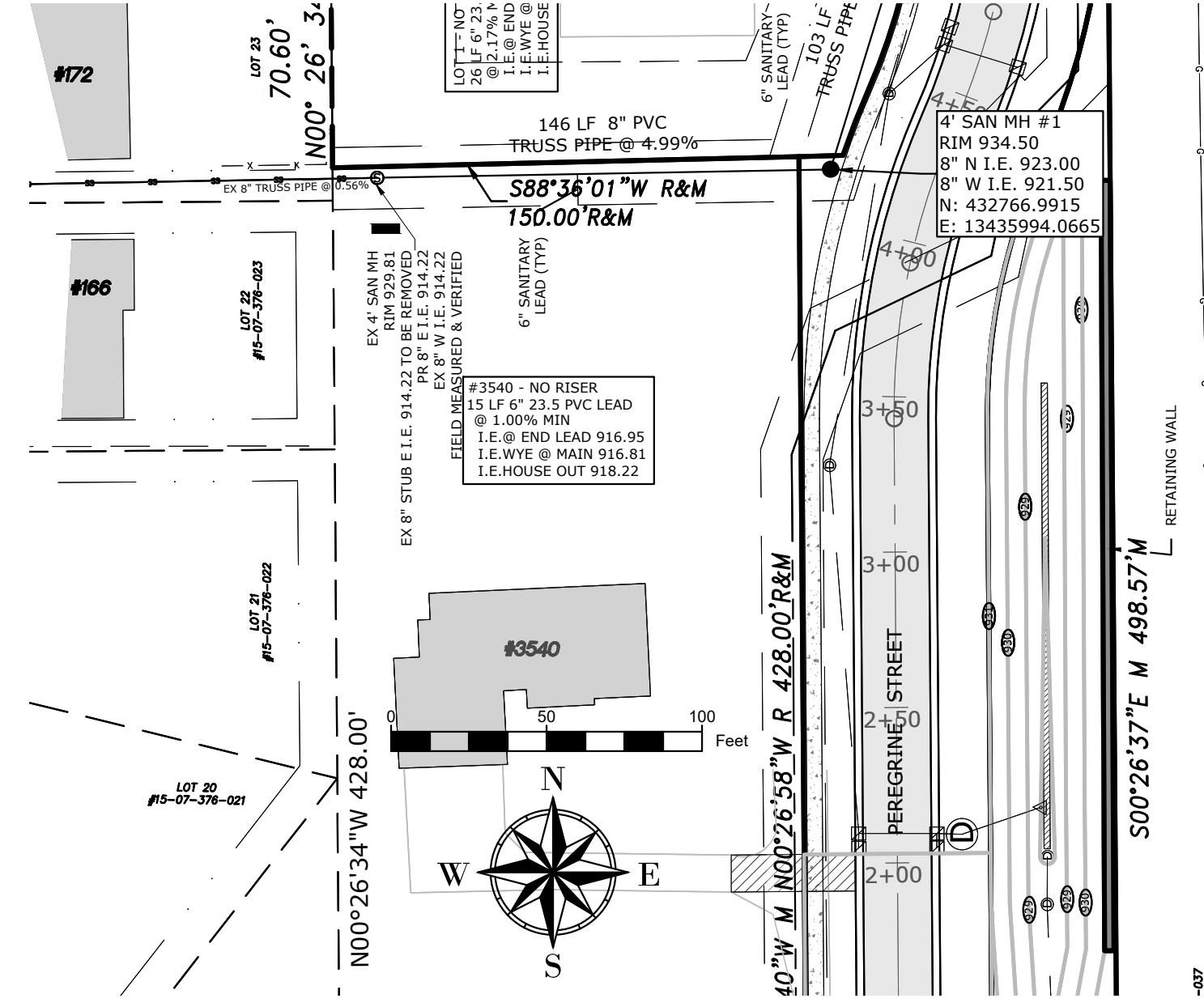
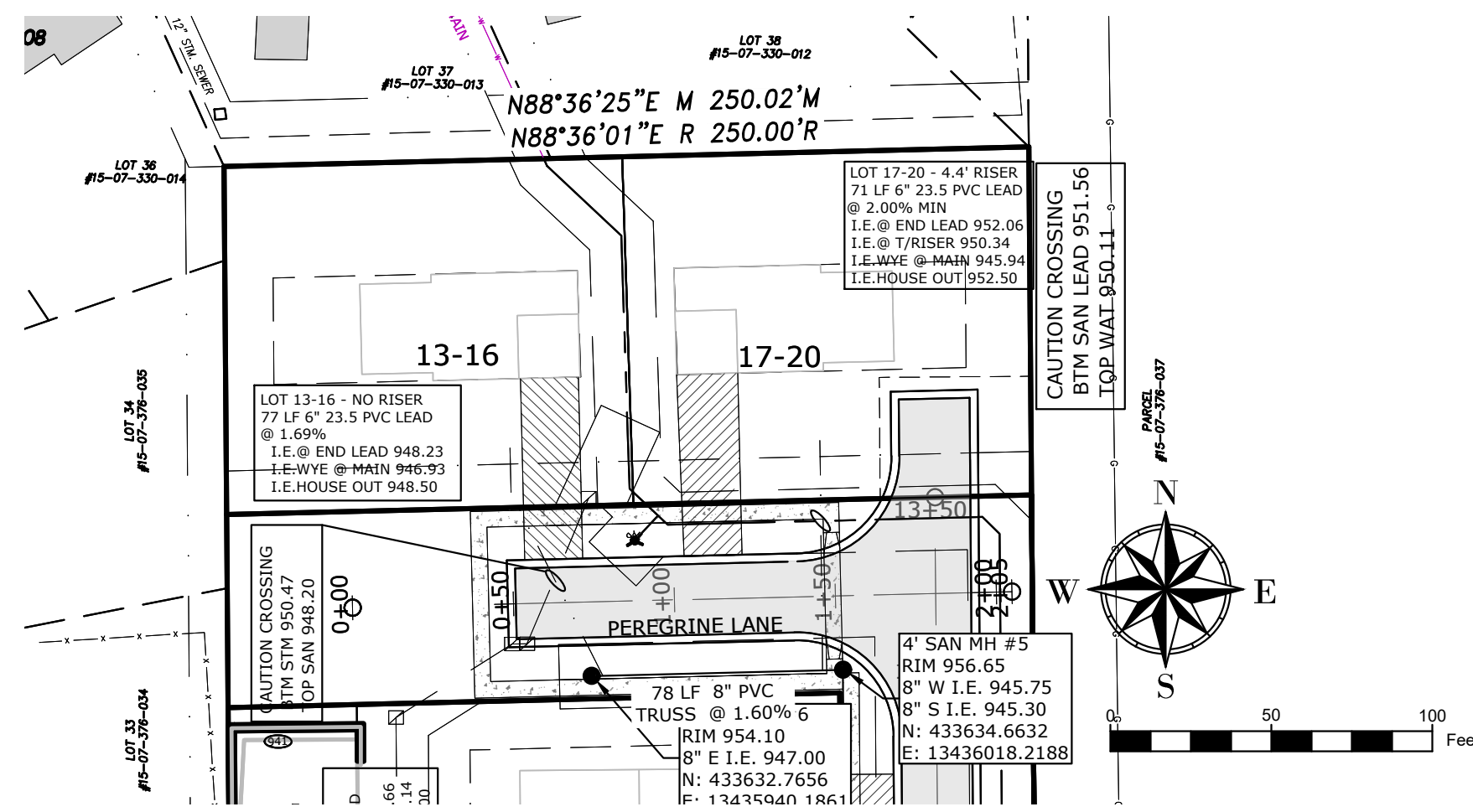
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ROCHESTER HILLS MICHIGAN
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 Planning & Economic Development

CITY FILE #22-009 SECTION #7

DRAWN MCS
 DESIGNED MCS
 APPROVED MCP
 P.E. JOB NO. 21-419
 SCALE 1"=50'
SAN1
 CONSTRUCTION



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PEAKING FACTOR 4.0

INITIAL AND ULTIMATE PEAK DESIGN FLOW = 4.0 x 0.00464 = 0.0186 CFS

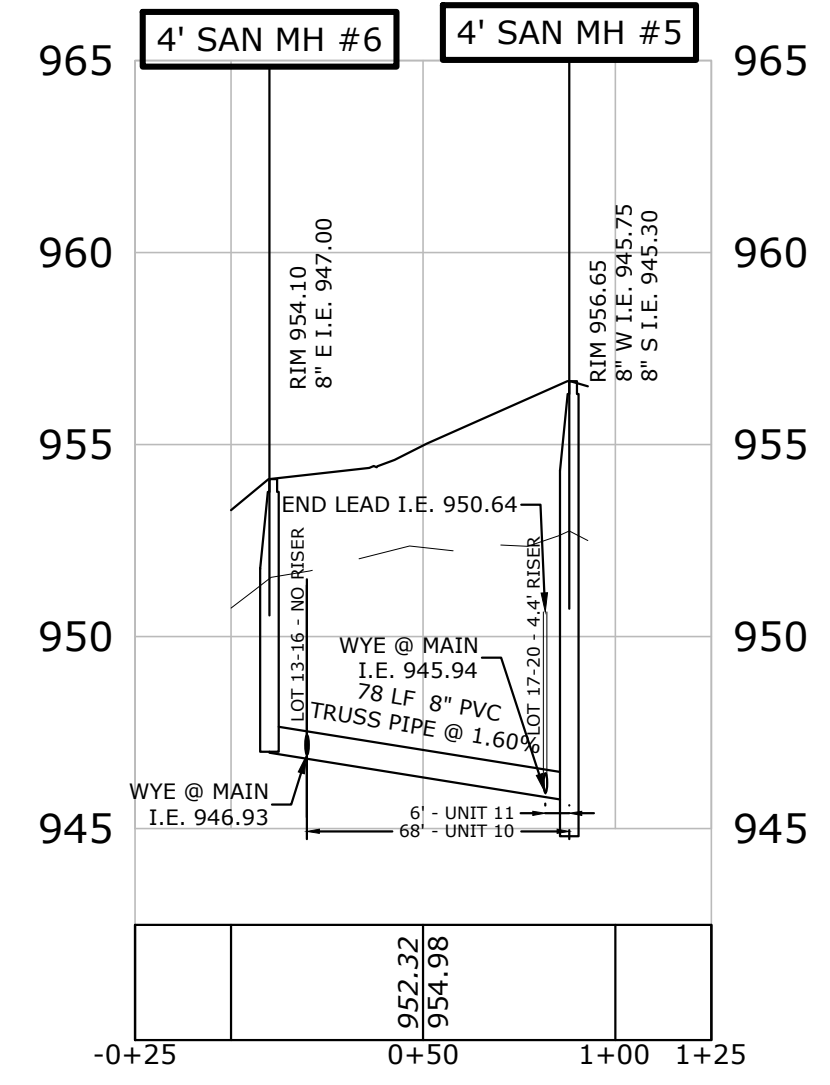
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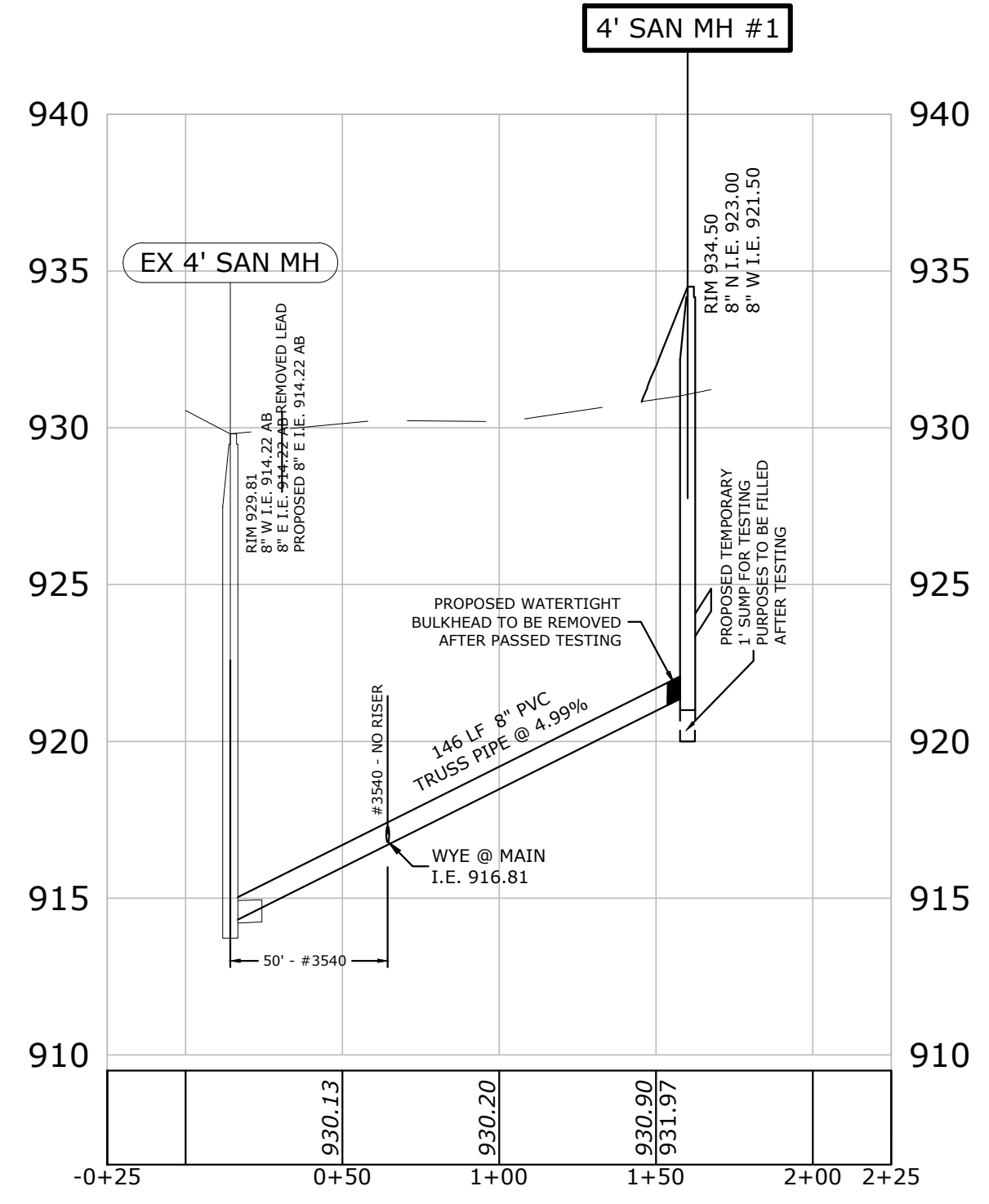
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PEREGRINE LANE SANITARY PROFILE
 SCALE - HORIZONTAL: 1"=50'; VERTICAL: 1"=5'



TIE IN EXISTING SANITARY PROFILE
 SCALE - HORIZONTAL: 1"=50'; VERTICAL: 1"=5'

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 SANITARY PLAN**

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 THREE GENERATIONS ROCHESTER HILLS SITE PLANS

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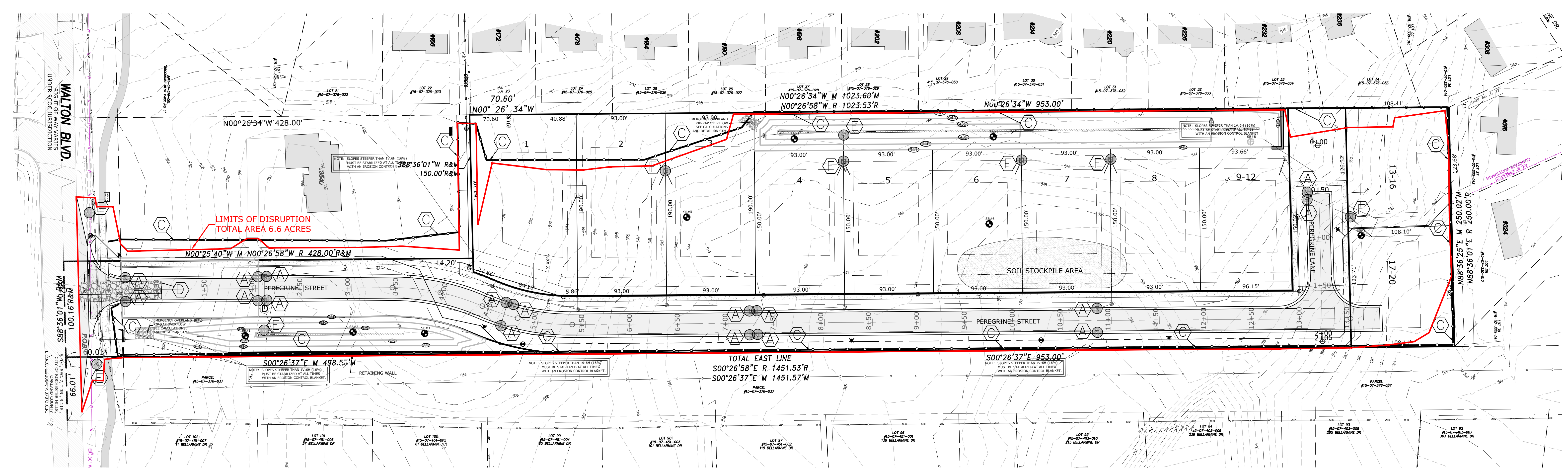
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CITY FILE #22-009 SECTION #7



SOIL EROSION CONTROL STANDARD NOTES

- ALL EROSION AND SEDIMENTATION CONTROL WORK SHALL CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE OAKLAND COUNTY WATER RESOURCE COMMISSIONER. DAILY INSPECTIONS SHALL BE MADE BY THE CONTRACTOR FOR EFFECTIVENESS OF EROSION AND SEDIMENTATION CONTROL MEASURES. ANY NECESSARY REPAIRS SHALL BE PERFORMED WITHOUT DELAY.
- EROSION AND ANY SEDIMENTATION FROM WORK ON THIS SITE SHALL BE CONTAINED WITHIN THE WORK AREA AND NOT ALLOWED TO COLLECT ON ANY OFF-SITE AREAS OR IN WATERWAYS. WATERWAYS INCLUDE BOTH NATURAL AND MAN-MADE OPEN DITCHES, STREAMS, STORM DRAINS, LAKES, PONDS AND WETLANDS.
- THE CONTRACTOR SHALL APPLY TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES AS DIRECTED ON THESE PLANS AND WHERE OTHERWISE REQUIRED BY THE WORK. THE CONTRACTOR SHALL REMOVE TEMPORARY MEASURES AS SOON AS PERMANENT STABILIZATION OF SLOPES, DITCHES, AND OTHER CHANGES HAVE BEEN ACCOMPLISHED.
- SOIL EROSION CONTROL PRACTICES WILL BE ESTABLISHED IN EARLY STAGES OF CONSTRUCTION BY THE CONTRACTOR. SEDIMENT CONTROL PRACTICES WILL BE APPLIED AS A PERIMETER DEFENSE AGAINST ANY TRANSPORTING OF DIRT OFF THE WORK AREA.
- THE CONTRACTOR SHALL PRESERVE OFF-SITE NATURAL VEGETATION AS MUCH AS POSSIBLE.
- PROTECT ALL EXISTING TREES, INCLUDING THEIR BRANCHES AND ROOTS, FROM DAMAGE DUE TO THIS WORK UNLESS SPECIFICALLY IDENTIFIED FOR REMOVAL.
- STABILIZATION OF ALL DISTURBED AREAS SHALL BE ESTABLISHED USING THE APPROPRIATE VEGETATION WITHIN 5 DAYS OF COMPLETION OF FINAL GRADING.
 - AREAS WITH SLOPES OF 1V:6H OR GREATER MUST HAVE EROSION CONTROL BLANKETS WITH SEED AND MULCH STAKED IN PLACE UNTIL VEGETATION IS ESTABLISHED.
 - AREAS WITH SLOPES OF LESS THAN 1V:6H MUST BE SEEDED AND MULCHED.
- THE CONTRACTOR SHALL SWEEP THE EXISTING STREETS SURROUNDING THE PROJECT SITE AS NEEDED.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR DUST CONTROL AND SHALL PROVIDE ALL EQUIPMENT AND MATERIAL TO KEEP DUST IN CHECK AT ALL TIMES. THE CONTRACTOR SHALL RESPOND IMMEDIATELY TO ANY AND ALL COMPLAINTS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE NPDES PERMIT AND ENSURING COMPLIANCE WITH ALL APPLICABLE PERMIT REGULATIONS, INCLUDING BUT NOT LIMITED TO, INSPECTION, RESTORATION AND RECORD KEEPING REQUIREMENTS. REPORTS FROM THE CERTIFIED STORM WATER OPERATOR SHALL BE MADE AVAILABLE TO THE CITY.

SEQUENCE OF CONSTRUCTION FOR SOIL EROSION CONTROL

- OBTAIN SOIL EROSION PERMIT FROM OAKLAND COUNTY WATER RESOURCE COMMISSION.
- INSTALL SILTATION FENCE AND STONE OUTLET FILTERS AS SHOWN ON THE SOIL EROSION CONTROL PLAN. (TEMPORARY)
- STRIP VEGETATION AND STOCKPILE INDEPENDENTLY FROM EXISTING TOPSOIL STOCK PILES. CONSTRUCT DETENTION BASINS AND FOREBAYS. INSTALL STORM SEWER PIPE, STRUCTURES AND SOIL STABILIZATION WITHIN DETENTION BASINS. (PERMANENT)
- MASS GRADE AS REQUIRED.
- ALL STORM WATER TRENCHES MUST BE PROPERLY SCARIFIED AFTER MASS GRADING PRIOR TO FILLING WITH THE 6A WASHED ROUND STONE TO MAINTAIN FILTRATION AND PREVENT COMPACTION OF SOILS IN THE TRENCHES.
- INSTALL WATER MAINS AND SANITARY SEWER AND STORM SEWER.
- IMMEDIATELY INSTALL STONE FILTERS ON ALL CATCH BASINS AND INLETS. (TEMPORARY)
- INSTALL ALL PUBLIC UTILITIES COMPLETE (GAS, ELECTRIC, TELEPHONE, AND CABLE TV).
- INSTALL PAVEMENT DRIVES.
- INSTALL SILTATION FENCE ALONG PAVEMENT WHERE YARDS SLOPE TOWARD PAVEMENT. (TEMPORARY)
- REPAIR AND/OR REPLACE ALL LOW POINT AND PAVEMENT CATCH BASIN FILTERS AS NEEDED. (TEMPORARY)
- INSTALL DRIVEWAYS AND SIDEWALKS.
- FINISH GRADE, REDISTRIBUTE TOP SOIL, AND ESTABLISH VEGETATION ON ALL DISTURBED GROUND AREAS. COMPLETE LANDSCAPING. ALL AREAS WITHIN 20 FEET OF PAVED AREAS NEED TO BE PERMANENTLY STABILIZED.
- CLEAN PAVEMENT AND STORM SEWERS OF ALL SEDIMENT.
- REMOVE TEMPORARY SOIL EROSION CONTROL MEASURES AFTER PERMANENT VEGETATION HAS BEEN ESTABLISHED.
- IT IS THE RESPONSIBILITY OF THE DEVELOPER TO INSURE THAT ALL SOIL EROSION CONTROL MEASURES ARE INSTALLED AND MAINTAINED.
- DUST MUST BE CONTROLLED AT ALL TIMES.
- ALL MUD TRACKED ON PUBLIC ROADS AND INTERIOR ROADS SHALL BE REMOVED DAILY.
- ALL SOIL EROSION CONTROLS MUST BE REMOVED FROM THE ROAD RIGHT(S)-OF-WAY DAILY.
- VEGETATION MUST BE ACCEPTABLY ESTABLISHED PRIOR TO FINAL RELEASE OF THE CONSTRUCTION DEPOSIT BY CITY OF NOVI.

PROGRAM PROPOSAL FOR THE CONTINUED MAINTENANCE OF ALL PERMANENT SOIL EROSION AND SEDIMENT CONTROL DEVICES

THE OWNER IS RESPONSIBLE FOR THE CONTINUED MAINTENANCE OF THE DETENTION BASIN. MAINTENANCE SHOULD BE PERFORMED FOLLOWING ANY STORM AND SHOULD INCLUDE:

- CHECKING THE DEPTH OF SEDIMENT DEPOSIT TO ENSURE THE CAPACITY OF THE BASIN IS ADEQUATE FOR STORM WATER AND SEDIMENT DEPOSITION, AND FOR THE REMOVING OF SEDIMENT.
- CHECKING THE BASIN FOR PIPING, SEEPAGE, OR OTHER MECHANICAL DAMAGE.
- CHECKING FOR THE PRESENCE OF ANY SOIL CAKING, WHICH WOULD PREVENT PROPER DRAINAGE FROM THE BASIN.
- CHECKING THE OUTFALL TO ENSURE DRAINAGE IS NOT CAUSING ANY EROSION VELOCITIES AND TO ENSURE THE OULET IS NOT CLOGGED.

ANY PROBLEM DISCOVERED DURING THE MAINTENANCE CHECKS SHOULD BE ADDRESSED IMMEDIATELY. SEDIMENT REMOVED DURING CLEANING SHOULD BE PLACED AT AN UPLAND AREA AND STABILIZED SO THAT IT DOES NOT RE-ENTER THE DRAINAGE.

SOILS BY MCDOWELL & ASSOCIATES CONDUCTED 6-14-2022

BORING #1

- 1' MOIST DARK BROWN CLAYEY TOPSOIL W/VEGETATION
- 3' FIRM MOIST BROWN SILTY CLAY W/SAND & PEBBLES AND WET BROWN SILT SEAMS
- 3' STIFF MOIST BROWN SILTY CLAY W/SAND AND PEBBLES AND WET BROWN SILT SEAMS
- 2' VERY STIFF MOIST BROWN SILTY CLAY W/SAND AND PEBBLES
- 4' EXTREMELY STIFF MOIST BROWN SILTY CLAY WITH SAND AND PEBBLES AND OCCASIONAL STONES.
- 8'-6" EXTREMELY STIFF MOIST BROWN SILTY CLAY WITH SAND AND PEBBLES AND OCCASIONAL STONES.

GW@ 2'-6" AND 4'
GW AFTER DRILLING @ 19'

BORING #2

- 8" MOIST DARK BROWN CLAYEY TOPSOIL W/SAND & PEBBLES
- 3'-4" VERY STIFF MOIST BROWN SILTY CLAY W/SAND & PEBBLES AND WET BROWN SILT SEAMS
- 2' EXTREMELY STIFF MOIST BROWN CLAY W/SAND & PEBBLES
- 3' EXTREMELY STIFF MOIST VARIEGATED SILTY CLAY W/SAND AND PEBBLES AND WET BROWN SILT SEAMS
- 5' VERY STIFF MOIST BROWN SILTY CLAY WITH SAND & PEBBLES AND WET BROWN SILT SEAMS
- 4' EXTREMELY STIFF MOIST VARIEGATED SILTY CLAY W/SAND AND PEBBLES AND WET BROWN SILT SEAMS
- 2'-6" VERY STIFF MOIST BLUE SILTY CLAY W/SAND & PEBBLES AND WET GRAY FINE SAND SEAMS

GW@ 6'-6"
GW AFTER DRILLING @ 9'

BORING #3

- 2' MOIST BROWN AND DARK BROWN SLIGHTLY CLAYEY TOPSOIL, FILL
- 10" STIFF MOIST VARIEGATED SILTY CLAY WITH TOPSOIL STREAKS, FILL
- 5'-2" STIFF MOIST BROWN SILTY CLAY WITH OCCASIONAL WET BROWN SILTY SAND SEAMS.
- 1'-6" EXTREMELY STIFF MOIST BROWN SILTY SANDY CLAY W/PEBBLES
- 3'-6" VERY STIFF MOIST BROWN SILTY SANDY CLAY W/PEBBLES & OCCASIONAL WET BROWN SAND SEAMS.
- 7' VERY STIFF MOIST BLUE SILTY SANDY CLAY WITH PEBBLES.
- 6" STIFF MOIST BLUE SILTY SANDY CLAY W/PEBBLES AND OCCASIONAL WET GRAY SAND LENSES

GW@ 5'
GW AFTER DRILLING @ 8'9"

BORING #4

- 3" MOIST DARK BROWN SANDY TOPSOIL, FILL
- 1'-9" MEDIUM COMPACT MOIST BROWN FINE SAND W/TRACE OF SILT, FILL
- 1'-6" COMPACT MOIST BROWN CLAYEY SAND, FILL
- 2'-6" STIFF TO VERY STIFF MOIST VARIEGATED SILTY SANDY CLAY W/PEBBLES.
- 4'-6" EXTREMELY STIFF MOIST BROWN SILTY SANDY CLAY WITH PEBBLES.
- 2'-6" STIFF MOIST BLUE SANDY CLAY WITH PEBBLES AND OCCASIONAL WET GRAY SAND SEAMS.

GW@ 13'9"

BORING #5

- 7" MOIST DARK BROWN SANDY TOPSOIL
- 11" COMPACT MOIST BROWN FINE SAND
- 2' VERY STIFF MOIST VARIEGATED SILTY CLAY WITH TRACE OF ROOTS
- 2'-6" EXTREMELY STIFF MOIST VARIEGATED SILTY CLAY W/TRACES OF SAND & PEBBLES
- 2' VERY STIFF MOIST VARIEGATED SILTY CLAY WITH TRACES OF SAND AND PEBBLES.
- 5' VERY STIFF MOIST BROWN SILTY SANDY CLAY WITH PEBBLES.
- 7'-6" STIFF MOIST BLUE SILTY SANDY CLAY WITH PEBBLES.

GW NOT OBSERVED

BORING #6

- 3" MOIST DARK BROWN SANDY TOPSOIL
- 2'-3" STIFF MOIST BROWN SILTY SANDY CLAY WITH PEBBLES.
- 1'-3" FIRM MOIST BROWN SANDY CLAY WITH PEBBLES AND OCCASIONAL MOIST BROWN CLAYEY SAND SEAMS.
- 6'-3" STIFF MOIST BROWN SANDY CLAY WITH PEBBLES AND OCCASIONAL MOIST BROWN CLAYEY SAND SEAMS.
- 2' EXTREMELY STIFF MOIST VARIEGATED SILTY SANDY CLAY W/PEBBLES
- 4'-3" STIFF MOIST BROWN SILTY SANDY CLAY WITH PEBBLES AND OCCASIONAL STONES MOIST BROWN SAND SEAMS.
- 1'-9" STIFF MOIST VARIEGATED SILTY SANDY CLAY WITH PEBBLES AND WET BROWN SAND SEAMS.
- 6'-6" STIFF MOIST BLUE SILTY SANDY CLAY WITH PEBBLES

GW@ 13'3"
GW AFTER DRILLING @ 19'

BORING #7

- 2" MOIST DARK BROWN SANDY TOPSOIL.
- 1'6" COMPACT MOIST BROWN CLAYEY SAND WITH GRAVEL AND WET BROWN SILT SEAMS
- 2'-6" STIFF MOIST BROWN SILTY SANDY CLAY WITH PEBBLES.
- 7'-7" EXTREMELY STIFF MOIST BROWN SILTY SANDY CLAY WITH PEBBLES.
- 3'-4" VERY COMPACT WET BROWN FINE SAND WITH TRACE OF GRAVEL.

GW@ 12'2"
GW AFTER DRILLING @ 12'6"

BORING #8

- 2'-6" FIRM MOIST DARK BROWN/BLACK SANDY CLAYEY TOPSOIL, FILL
- 4'-6" FIRM MOIST BROWN SILTY SANDY CLAY WITH PEBBLES.
- 4'-6" EXTREMELY STIFF MOIST BROWN SILTY SANDY CLAY W/PEBBLES
- 9" STIFF MOIST BLUE SILTY SANDY CLAY W/ PEBBLES & OCCASIONAL WET GRAY SAND LENSES.

GW BEFORE AND AFTER DRILLING @ 13'3"

BORING #9

- 6" MOIST DARK BROWN TO BLACK SANDY TOPSOIL
- 2" STIFF MOIST VARIEGATED SILTY SANDY CLAY W/PEBBLES.
- 6" EXTREMELY STIFF MOIST BROWN SILTY SANDY CLAY W/PEBBLES.
- 7" VERY STIFF MOIST BLUE SILTY SANDY CLAY W/TRACE OF PEBBLES.

GW NOT OBSERVED

NOTE:

THE DEVELOPER AND ONSITE CONTRACTOR WILL BE RESPONSIBLE FOR ALL SOIL EROSION CONTROL MEASURES BOTH ON A WEEKLY BASIS AS WELL AS WITHIN 24 HOURS OF EVERY STORM EVENT.

DETAIL LEGEND

- (A) S1-4 CURB & GUTTER INLET FILTER OR S1-4A CURB & INLET FILTER (ALTERNATE A)
- (B) SP-2 SILT FENCE
- (C) SP-9 TEMPORARY STONE ACCESS DRIVE
- (E) RIP RAP PERMANENT (SEE DETAILS ON DETAIL SHEET)
- (F) SI-3A LAWN LOW POINT INLET FILTER ALT "A"

ALL MEASURES OF SECC ARE TEMPORARY EXCEPT RIP RAP AT END SECTIONS ARE PERMANENT.

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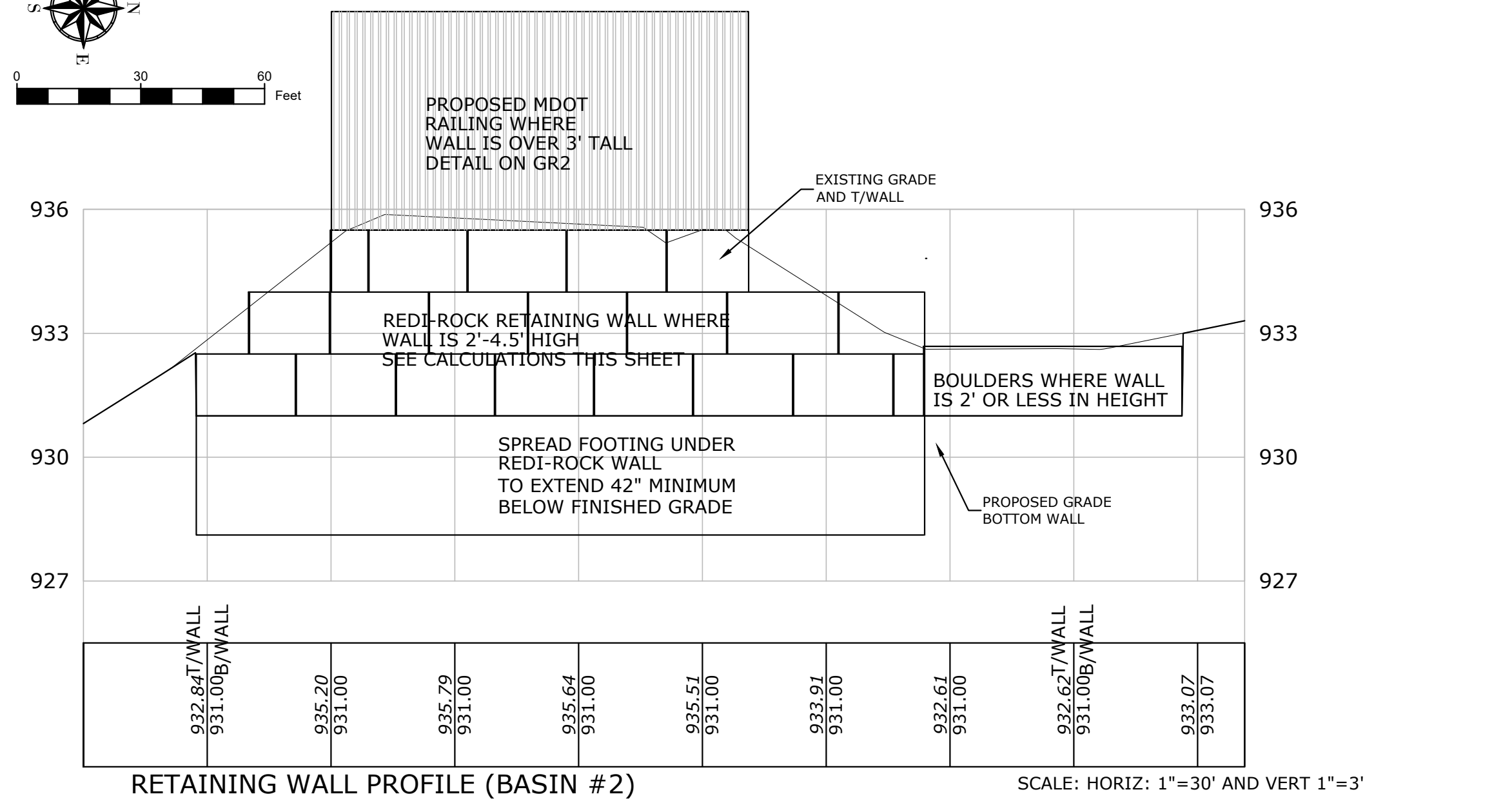
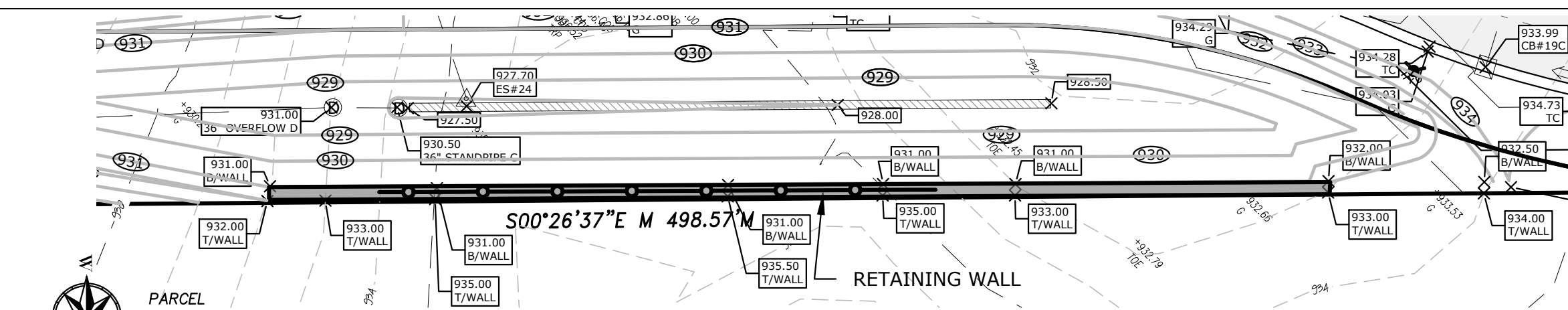
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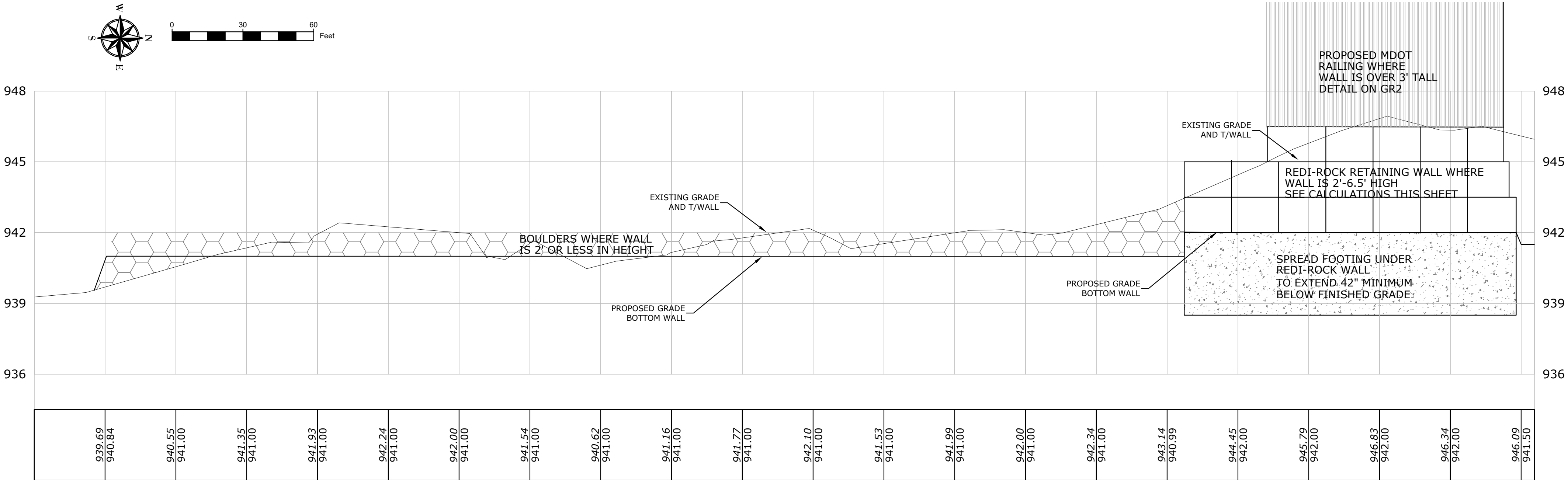
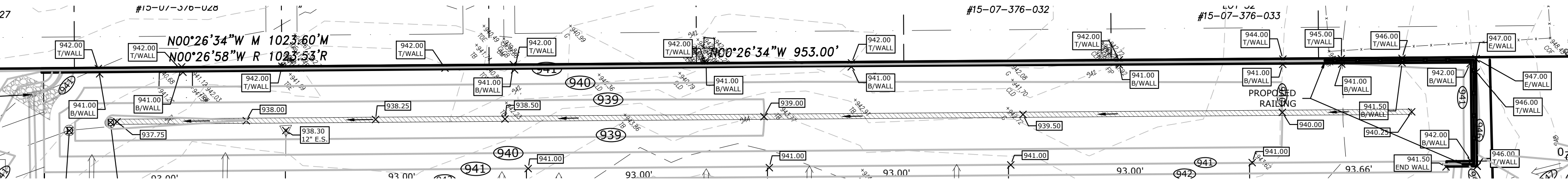
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RETAINING WALL PROFILE (BASIN #2) SCALE: HORIZ: 1"=30' AND VERT 1"=3'



RETAINING WALL PROFILE (BASIN #1) SCALE: HORIZ: 1"=30' AND VERT 1"=3'

A building permit is required, including signed and sealed engineered drawings, for any retaining wall that exceeds 4 feet from the bottom of the foundation to the top of the wall per 2015 MRC, Section 105.2(a)(iii).

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WALTON OAKS
RETAINING WALL DESIGN
WALTON BOULEVARD, CITY OF ROCHESTER HILLS
THREE GENERATIONS ROCHESTER HILLS SITE PLANS

ISSUE DATES

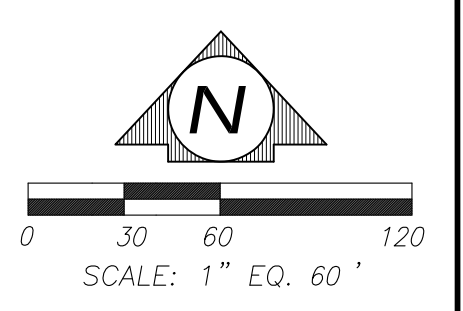
CONSTRUCTION	8/21/2023

DRAWN	MCS
DESIGNED	MCS
APPROVED	MCP
P.E. JOB No.	21-419
SCALE	1"=30'
1 of 1	CONSTRUCTION

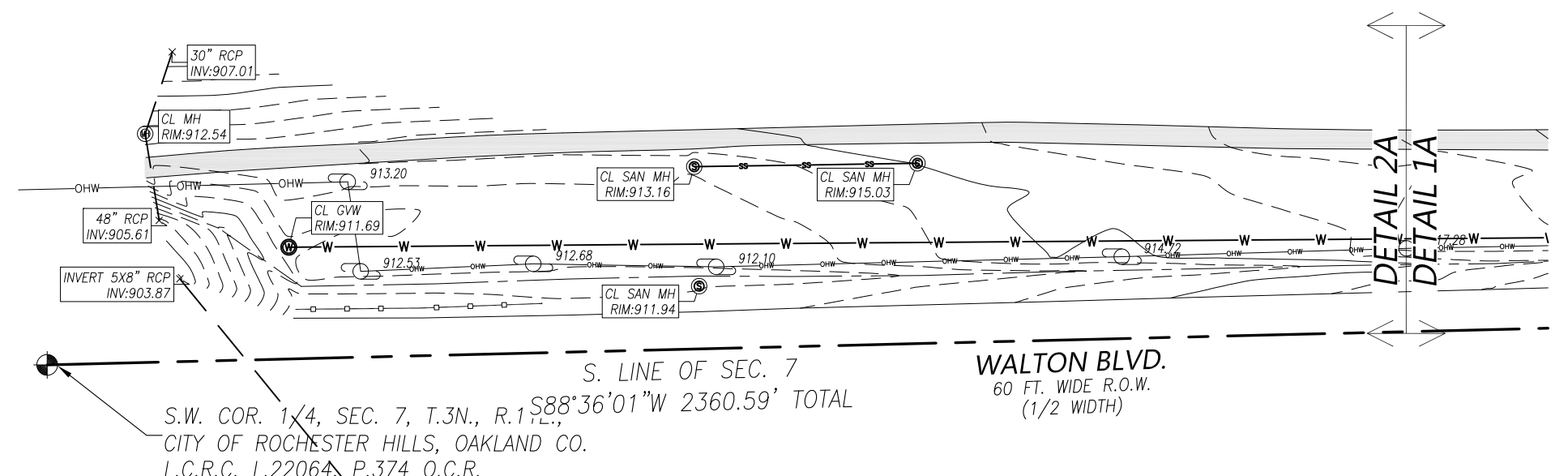
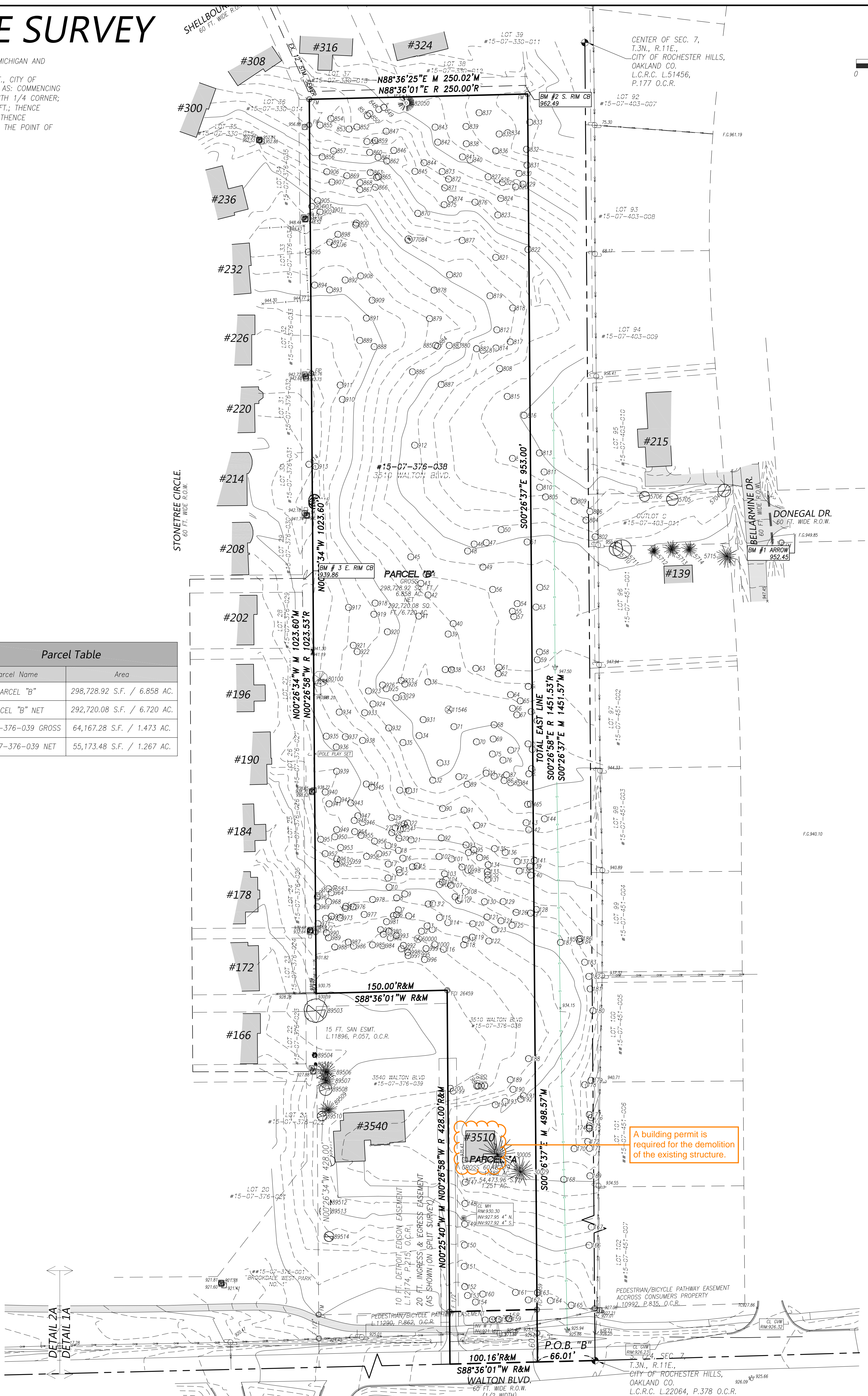
ROCHESTER HILLS MICHIGAN
JSC2022-0002
PFSC2024-0001
Revision #1
Received 3/5/2024
City of Rochester Hills
Planning & Economic
Development

OVERALL SITE SURVEY

LEGAL DESCRIPTION:
 CITY OF ROCHESTER HILLS, COUNTY OF OAKLAND, STATE OF MICHIGAN AND DESCRIBED AS FOLLOWS:
 A PART OF THE SOUTHWEST 1/4 OF SECTION 7, T.3N., R.11E., CITY OF ROCHESTER HILLS, MICHIGAN, MORE PARTICULARLY DESCRIBED AS: COMMENCING AT A POINT DISTANT S.88°36'01"W., 100 FT.; THENCE S.88°36'01"W., 66.01 FT. FROM THE SOUTH 1/4 CORNER; THENCE S.88°36'01"W., 100 FT.; THENCE N.00°26'58"W., 428 FT.; THENCE S.88°36'01"E., 250 FT.; THENCE S.00°26'58"E., 1451.53 FT. TO THE POINT OF BEGINNING.
 SIDWELL NO. 15-07-376-038
 ADDRESS: 3510 WALTON BLVD.



Parcel Table	
Parcel Name	Area
PARCEL "B"	298,728.92 S.F. / 6.858 AC.
PARCEL "B" NET	292,720.08 S.F. / 6.720 AC.
#15-07-376-039 GROSS	64,167.28 S.F. / 1.473 AC.
#15-07-376-039 NET	55,173.48 S.F. / 1.267 AC.

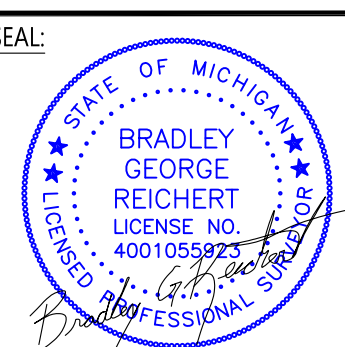


BENCHMARK:
 BM #1 ARROW ATOP THE FIRE HYDRANT LOCATED AT THE S.E. CORNER OF BELLARME DR. & DONEGAL DR. ELEVATION 952.45 NAVD88 DATUM
 BM #2 S. RIM OF A CATCH BASIN LOCATED N. OF THE N.E. CORNER OF THE SITE. ELEVATION 962.49 NAVD88 DATUM
 BM #3 E. RIM OF A CATCH BASIN LOCATED WEST OF SITE BETWEEN # 202 & # 208 STONETREE CIRCLE ELEVATION 939.86 NAVD88 DATUM

REICHERT SURVEYING INC.
 P. 248.651.0592
 F. 248.656.7099
 Mail@ReichertSurveying.com
 140 Flumerfelt Lane
 Rochester, MI 48306

LEGEND:

	FOUND IRON		EXISTING GRAVEL		EXISTING UTILITY POLE
	SET IRON		EXISTING PAVER STONE		EXISTING WATER SHUT OFF
	RECORD DISTANCE		EXISTING BUILDING		EXISTING GATE VALVE
	EXISTING CONCRETE		EXISTING STORM SEWER		EXISTING HYDRANT
	EXISTING ASPHALT		EXISTING SANITARY SEWER		EXISTING UTILITY PEDESTAL
	EXISTING LANDSCAPED AREA		EXISTING WATERMAIN		EXISTING BOULDER RET. WALL
	EXISTING FENCE		EXISTING OVERHEAD WIRES		EXISTING WELL
	EXISTING STORM STRUCTURE		EXISTING GAS SHUT OFF		EXISTING SANITARY STRUCTURE
	EXISTING DOWN SPOUT		EXISTING GRADE		PROPOSED CONCRETE
	EXISTING UTILITY PEDESTAL		PROPOSED GRADE		PROPOSED BUILDING
	EXISTING BOULDER RET. WALL		PROP. DRAINAGE ARROW		PROPOSED BUILDING
	EXISTING WELL		PROP. MAJOR CONTOURS		PROPOSED BUILDING
	EXISTING GAS SHUT OFF		PROP. MINOR CONTOURS		PROPOSED BUILDING
	EXISTING SANITARY STRUCTURE				PROPOSED BUILDING



PREPARED FOR:
THREE OAKS COMMUNITIES, LLC
 P.O. BOX 8307
 ANN ARBOR, MI 48107-4653
 (248) 703-4653

OVERALL SITE SURVEY
 CITY OF ROCHESTER HILLS, COUNTY OF OAKLAND, STATE OF MICHIGAN AND DESCRIBED AS FOLLOWS: THE NORTH 953 FEET OF THE FOLLOWING DESCRIBED PARCEL: A PART OF THE SOUTHWEST 1/4 OF SECTION 7, T.3N., R.11E., CITY OF ROCHESTER HILLS, MICHIGAN.

ROCHESTER HILLS MICHIGAN

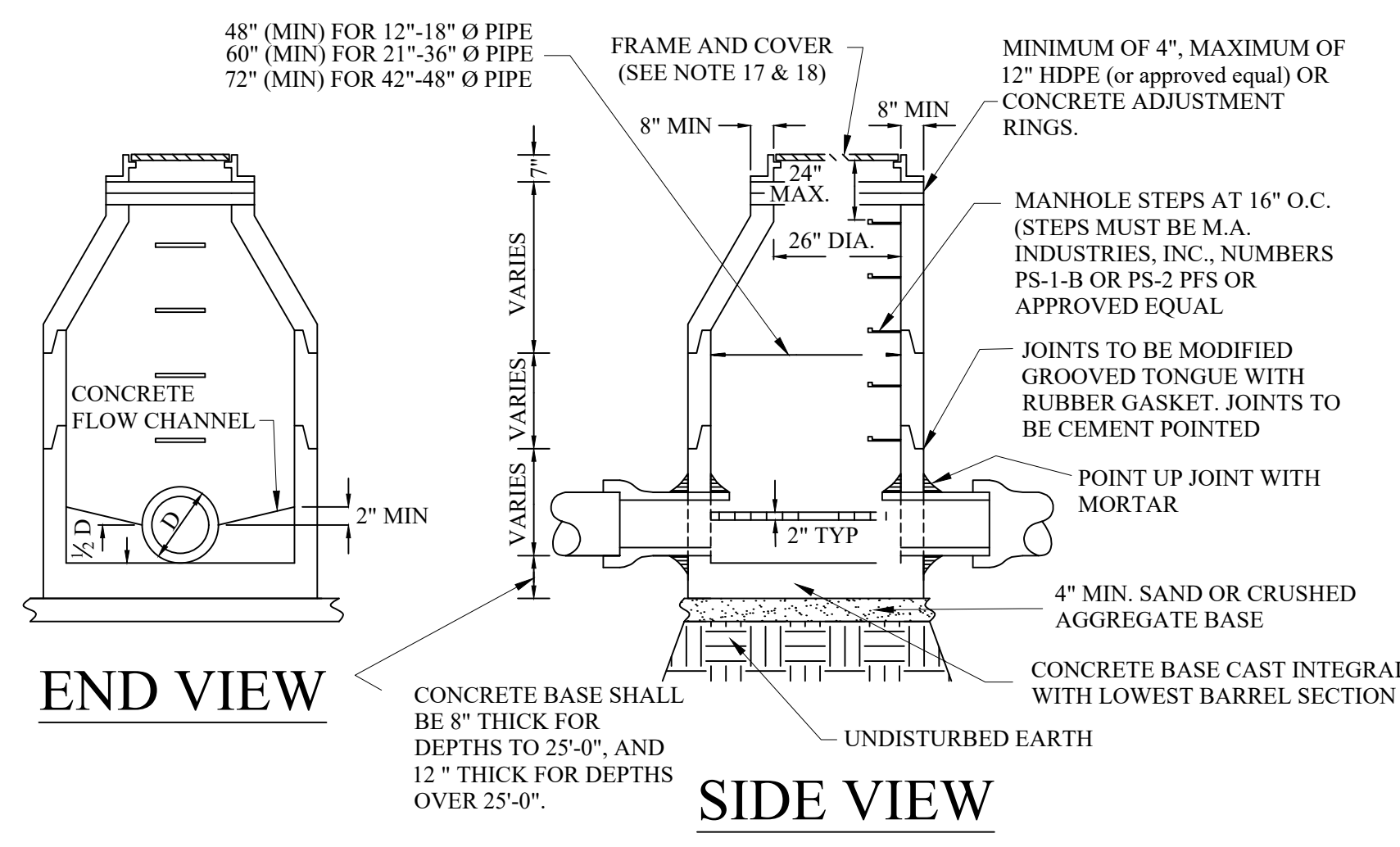
JSC2022-0002
 PFSC2024-0001
 Revision #1

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 City of Rochester Hills
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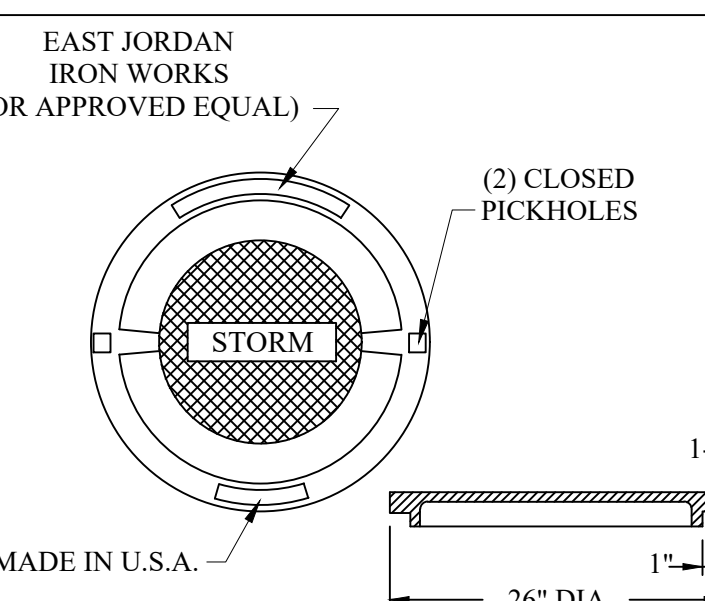
DATE: 2/17/21 SCALE: 1"=60' DRAWN: B.G.R.
 JOB # 21-001 SHEET: 1 OF 4 CHECK: G.H.R.

3 FULL WORKING DAYS BEFORE YOU DIG CALL

811
 Know what's below
 Call before you dig
 MISS DIG System, Inc.
 1-800-482-7171 www.missdig.net



PRE-CAST STORM MANHOLE



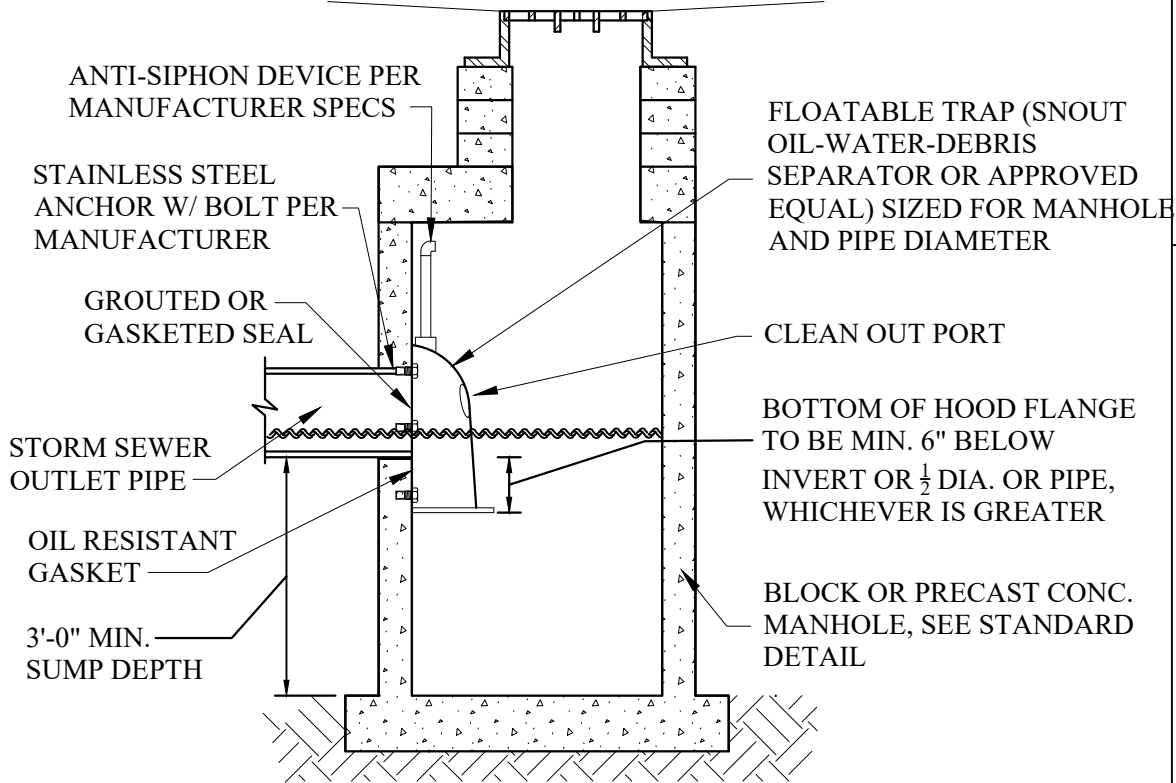
EAST JORDAN IRON WORKS (OR APPROVED EQUAL)

MADE IN U.S.A.

26" DIA.

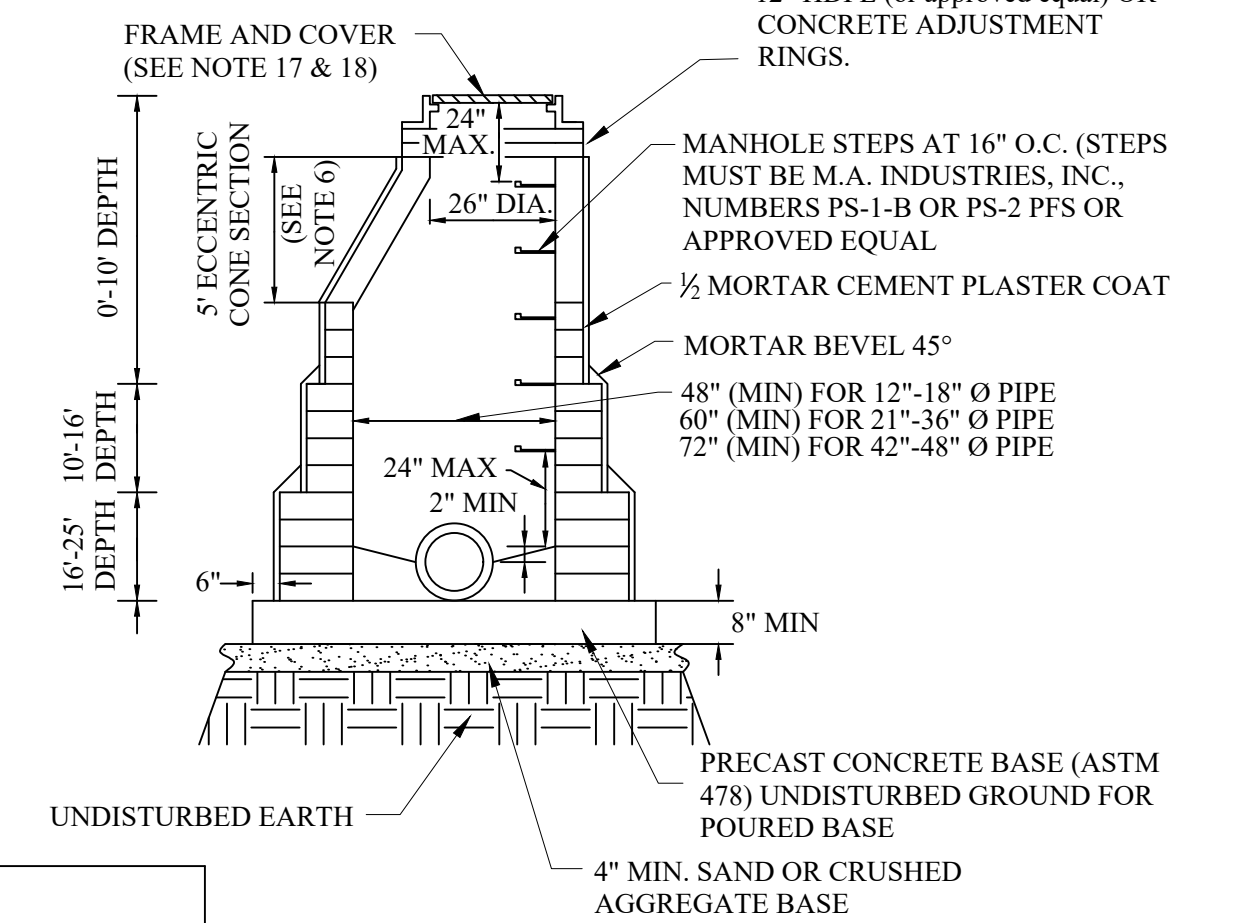
1-1/2" THICK

EAST JORDAN HEAVY DUTY MATERIAL ASTM A48 CL.35 COVER WT. 150 LBS., CATALOG NO. 1040A PATTERN NO. 1040A, PRODUCT NO. 1040XX OAKCASTD. 2" RAISED LETTERS, 1" RAISED LETTERS ALL RECESSED FLUSH

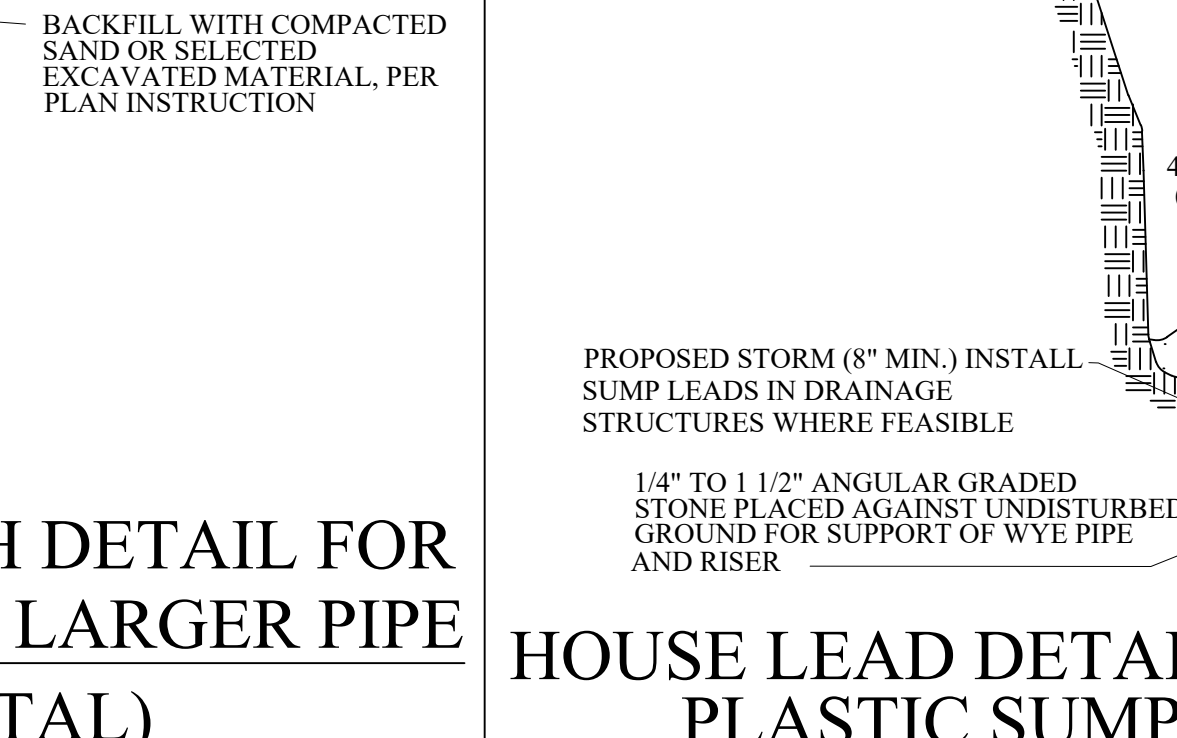
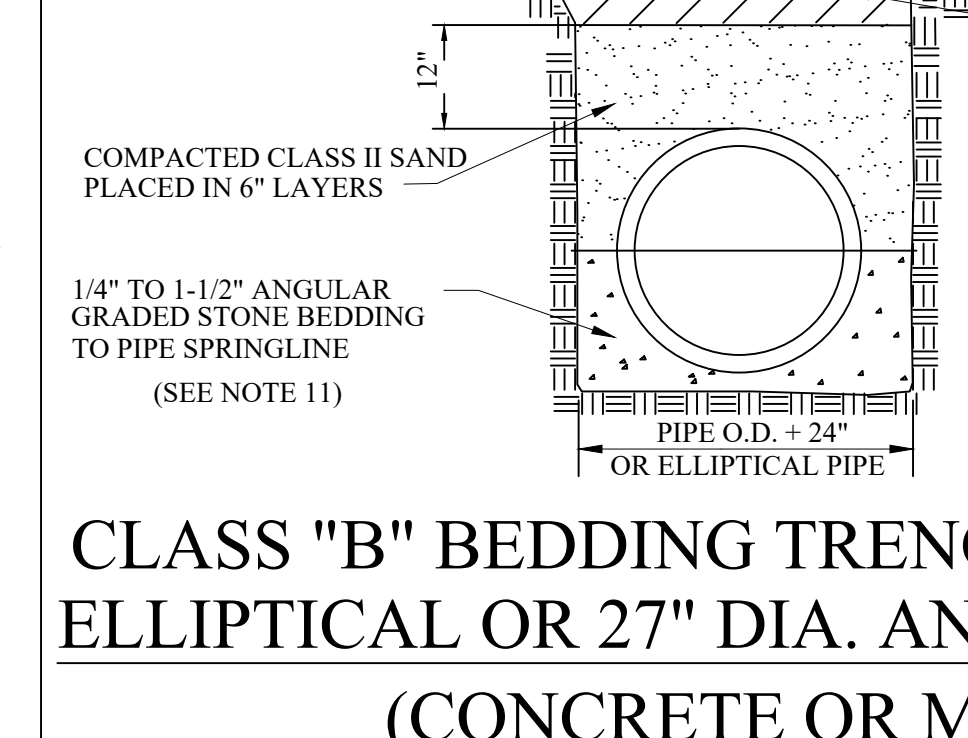
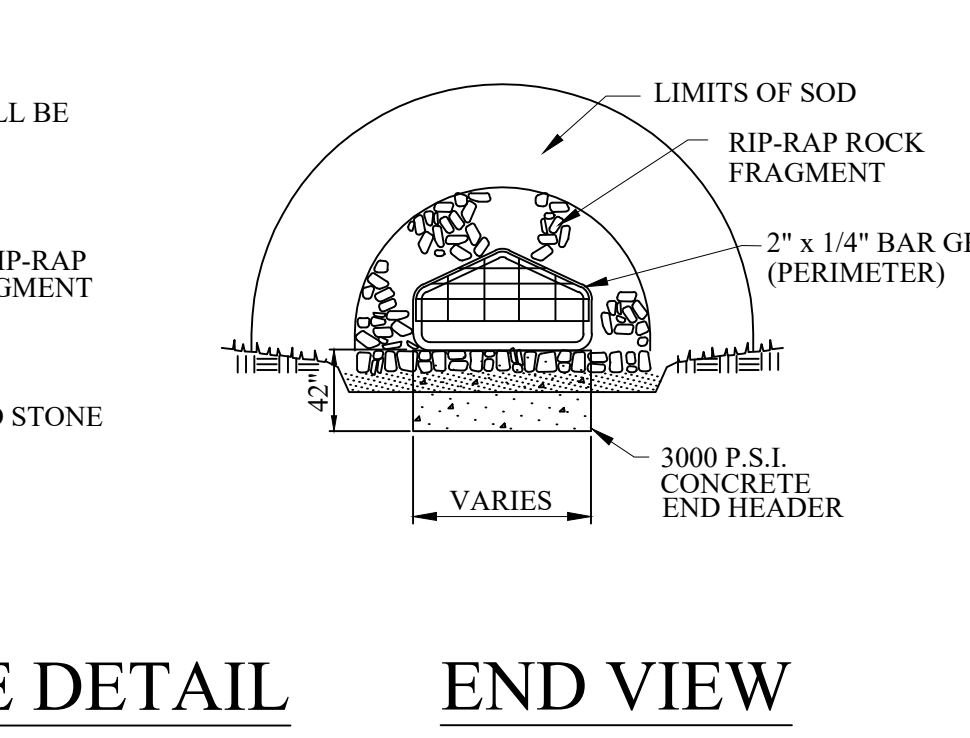
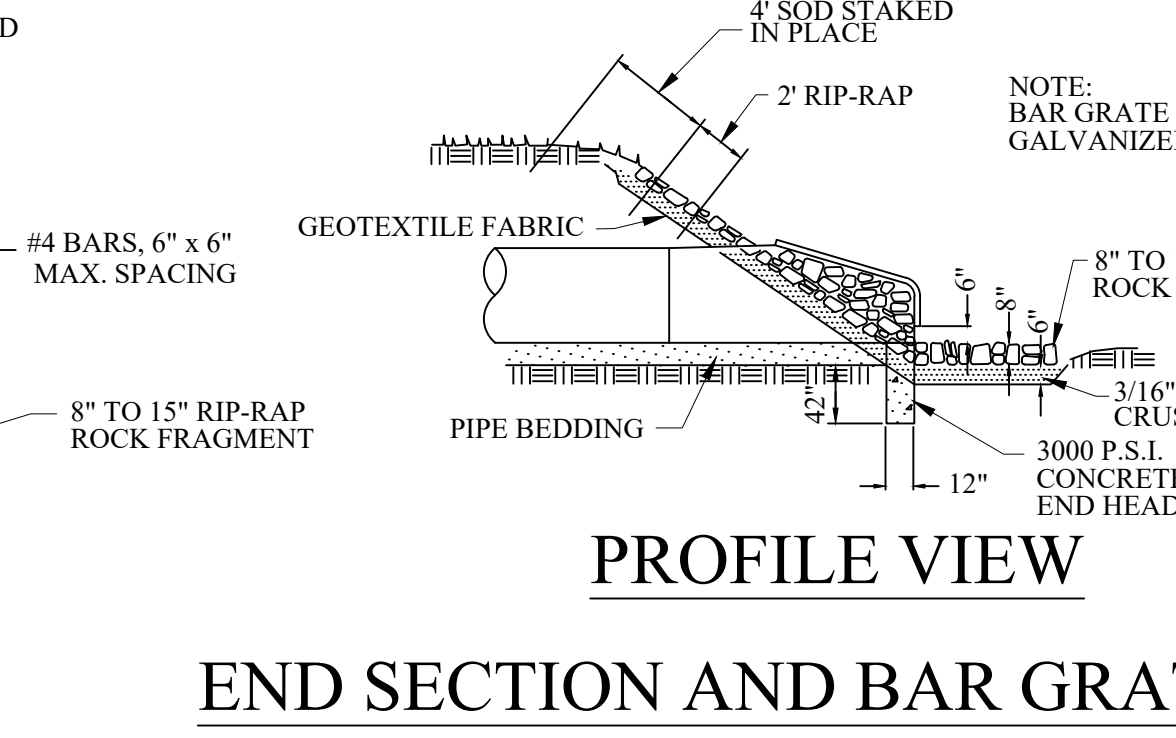
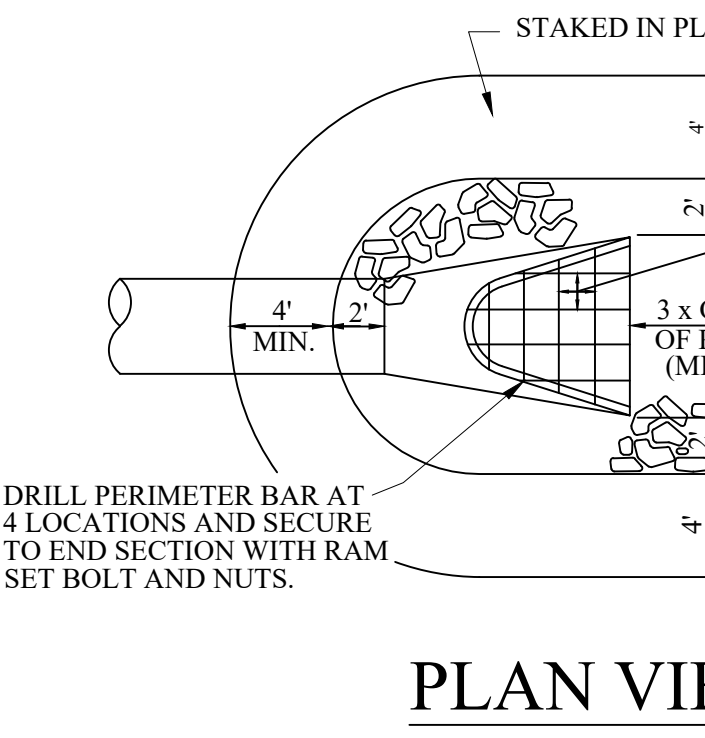
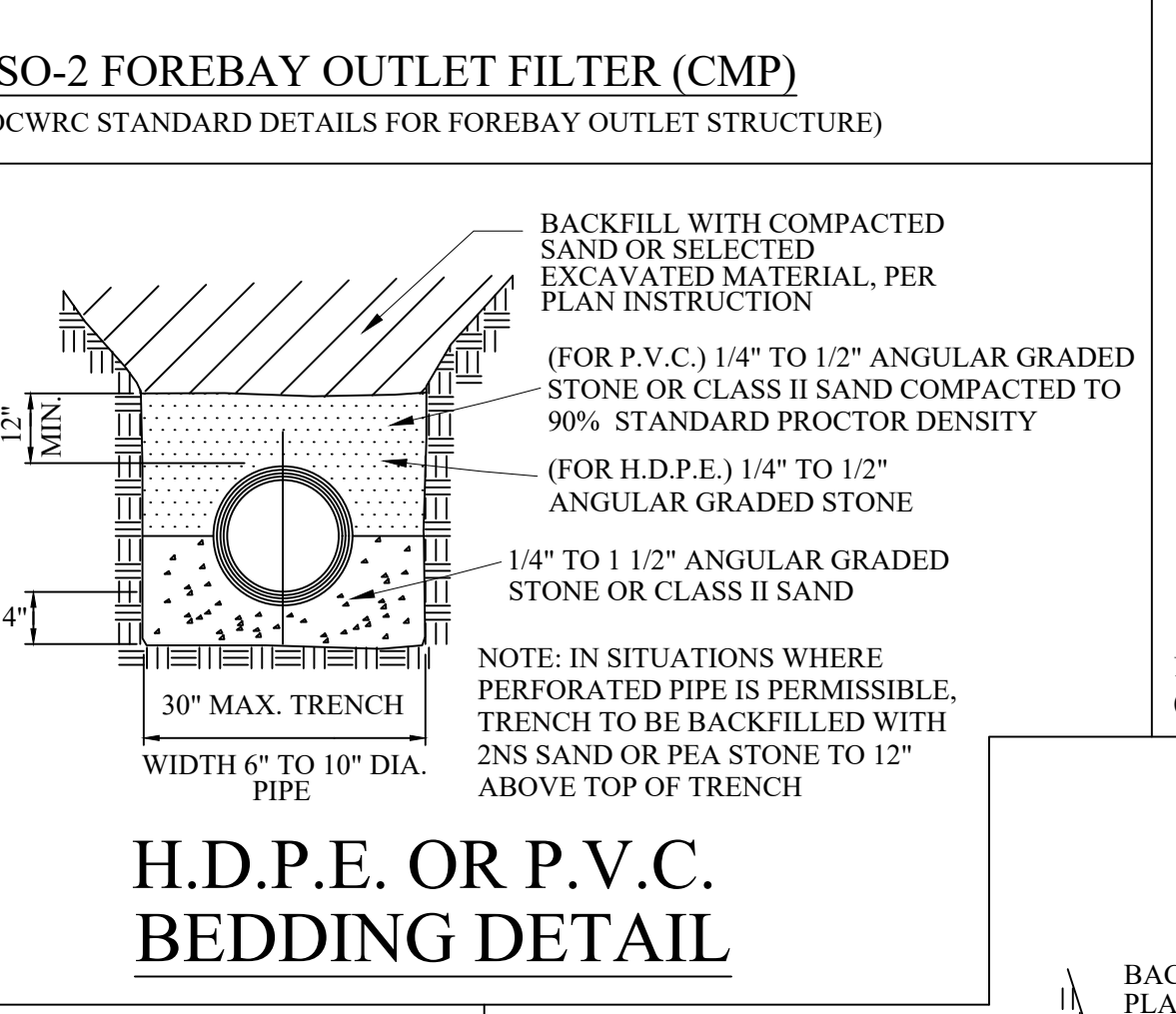
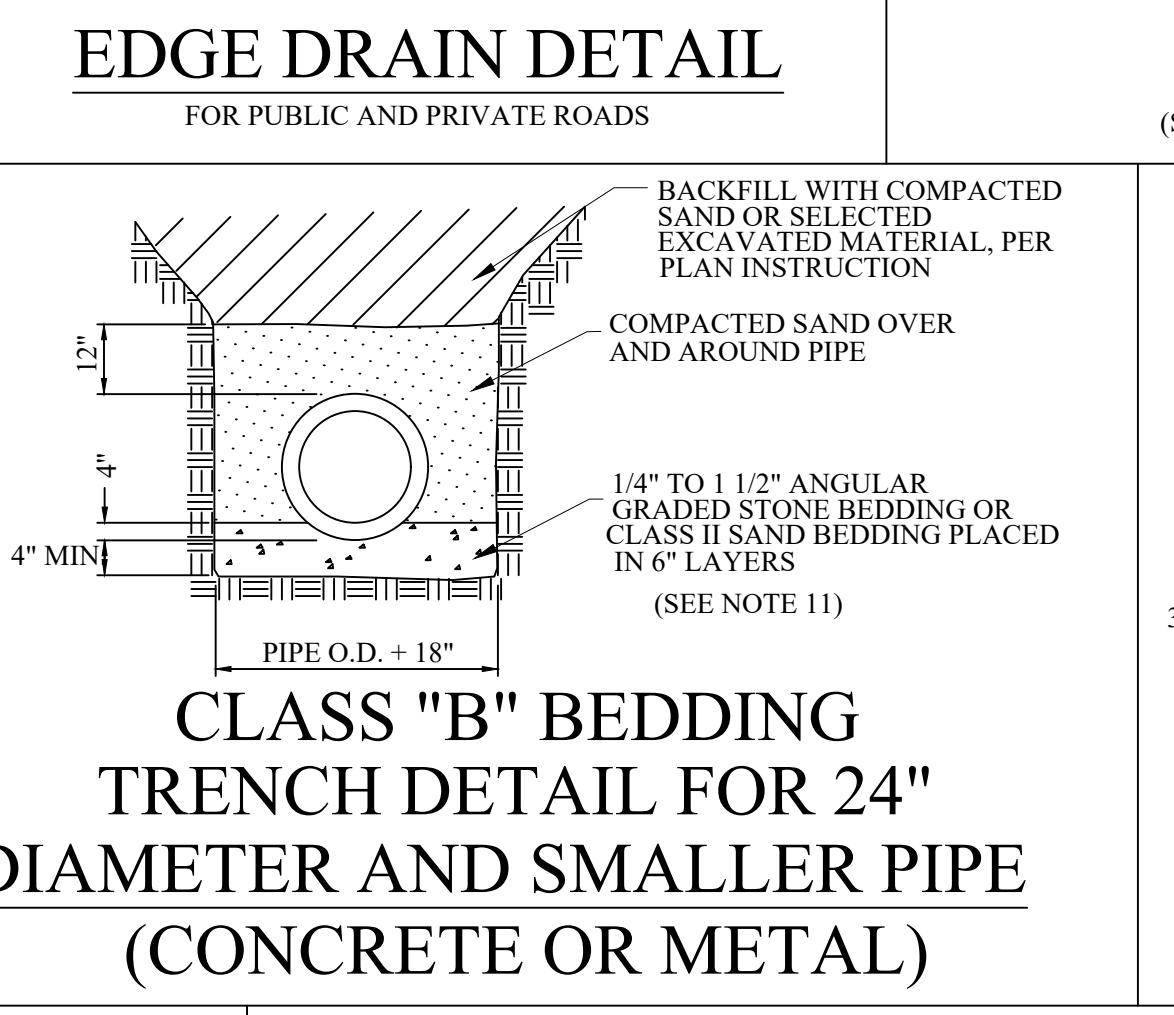
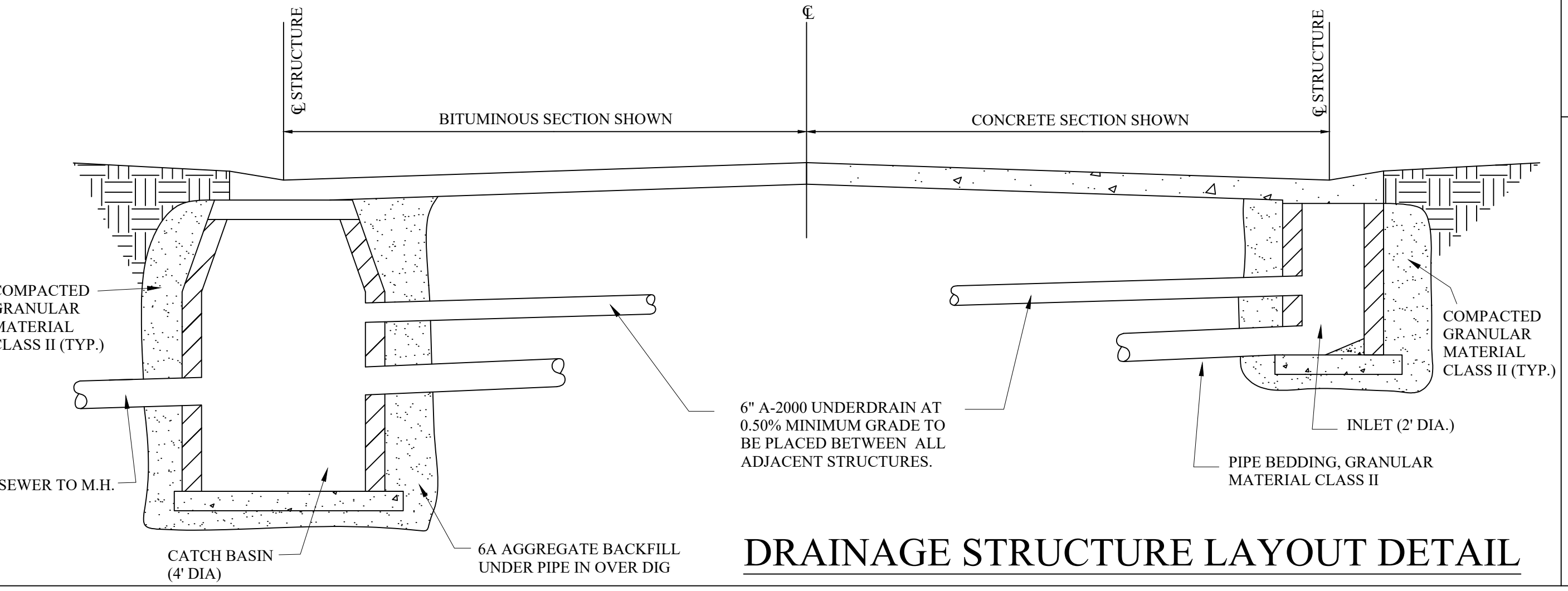
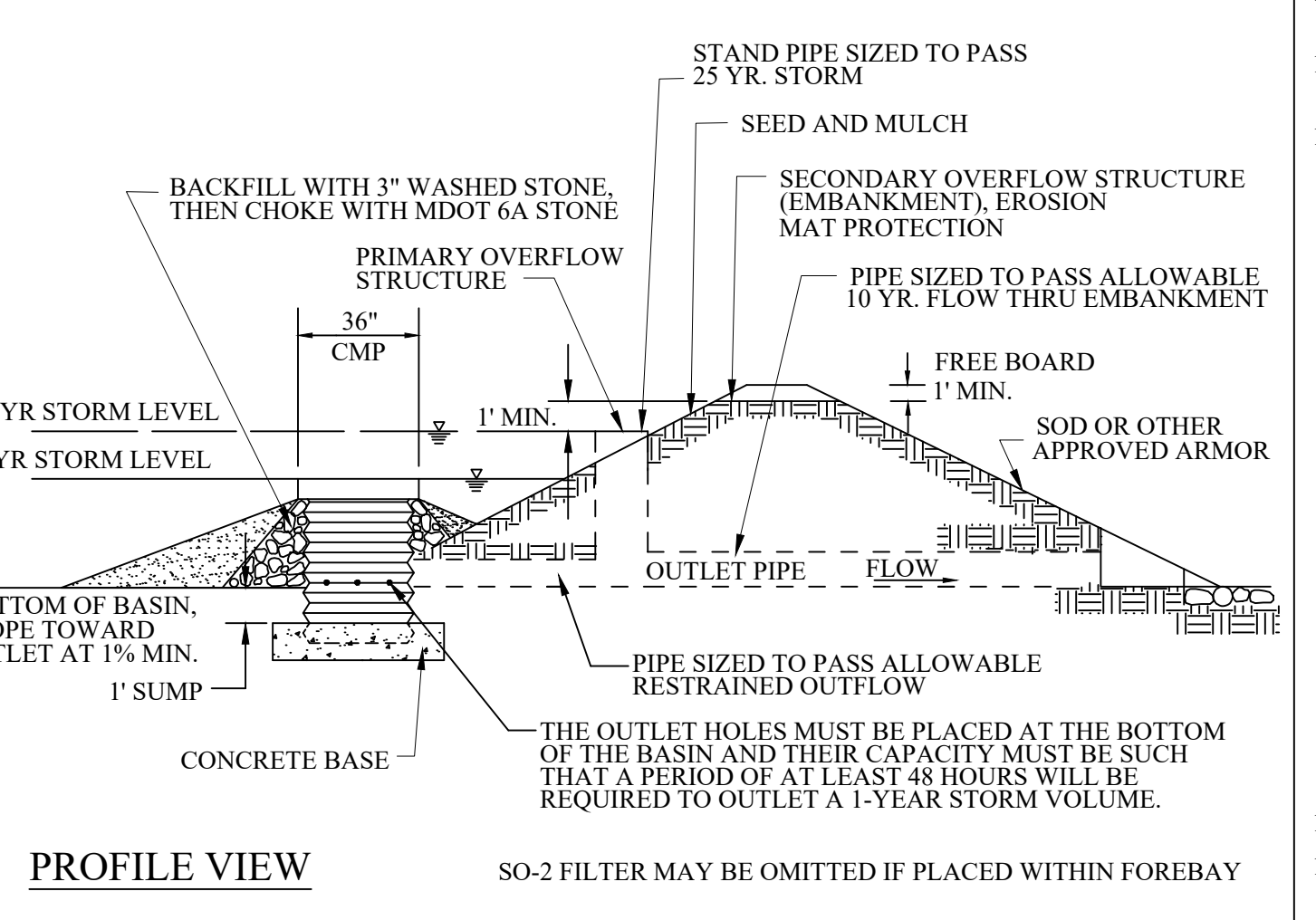
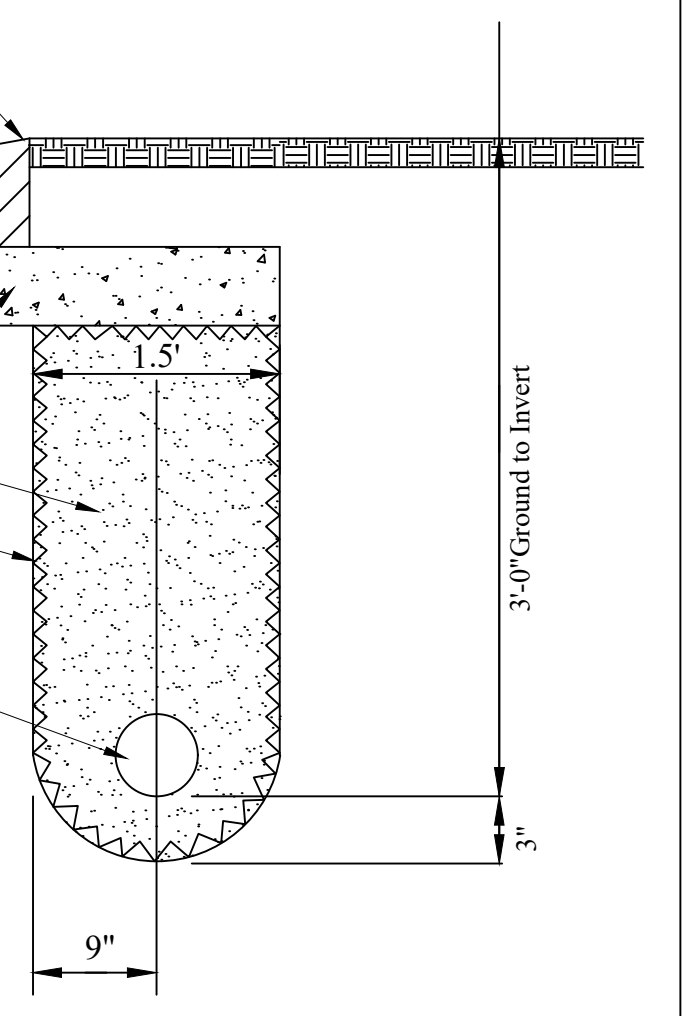
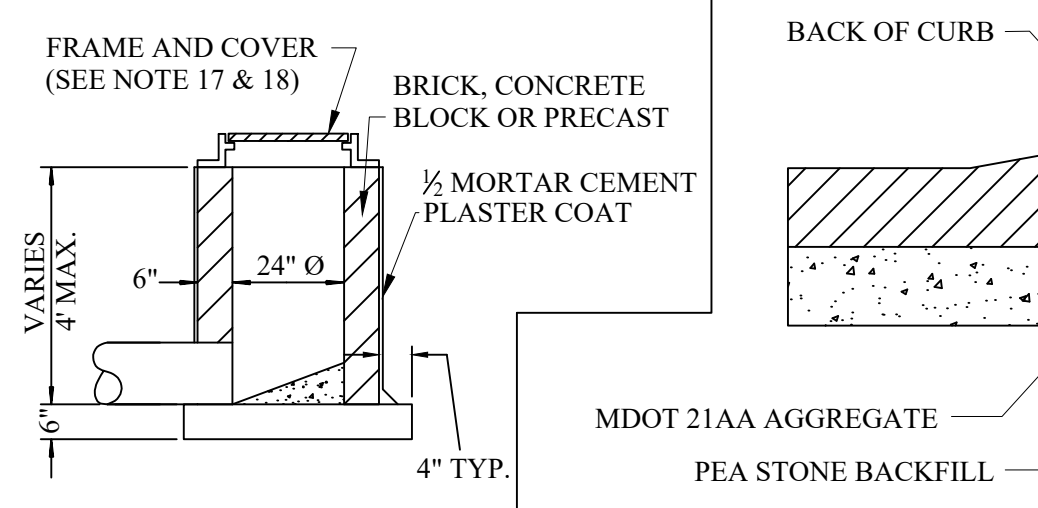
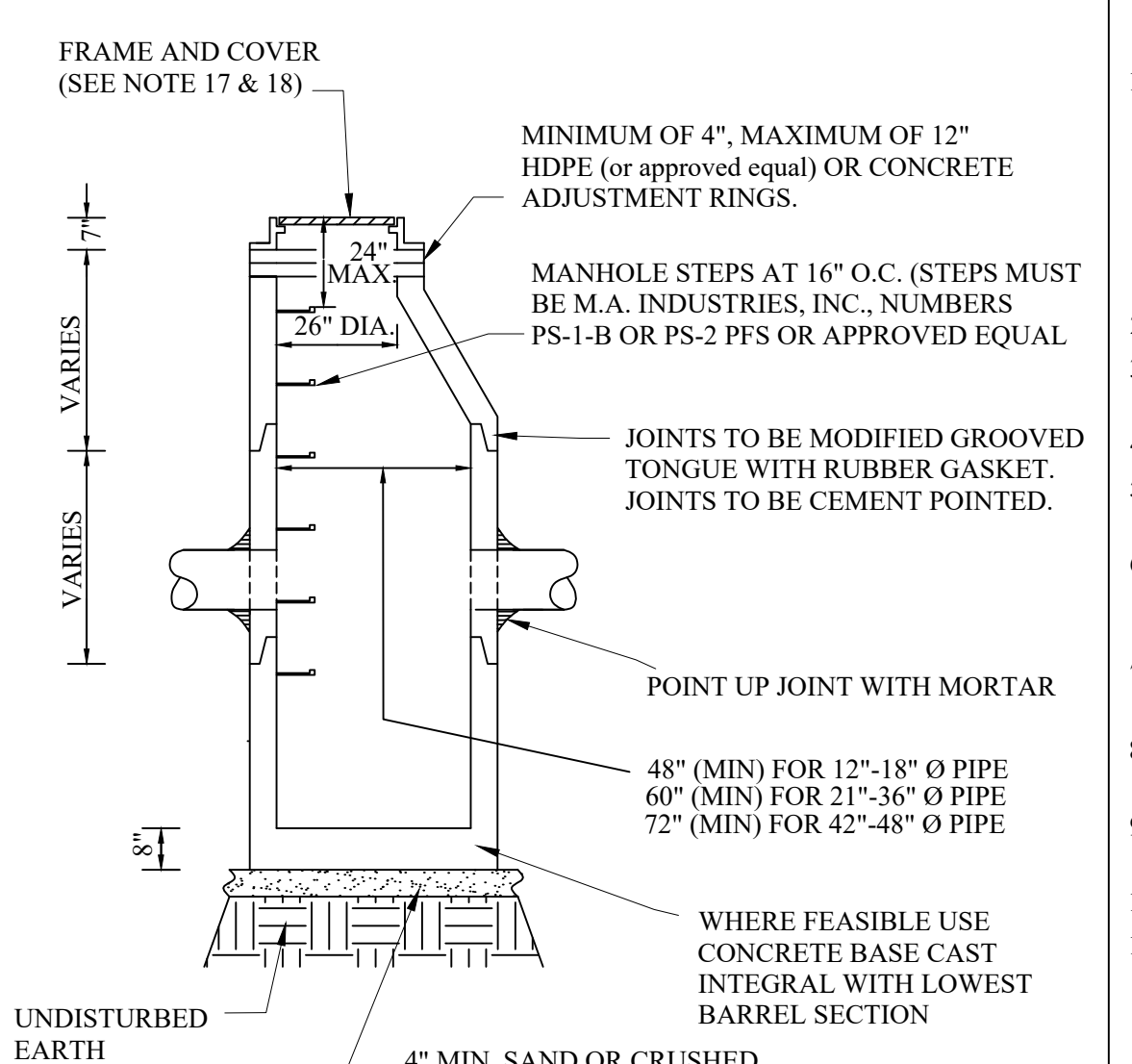
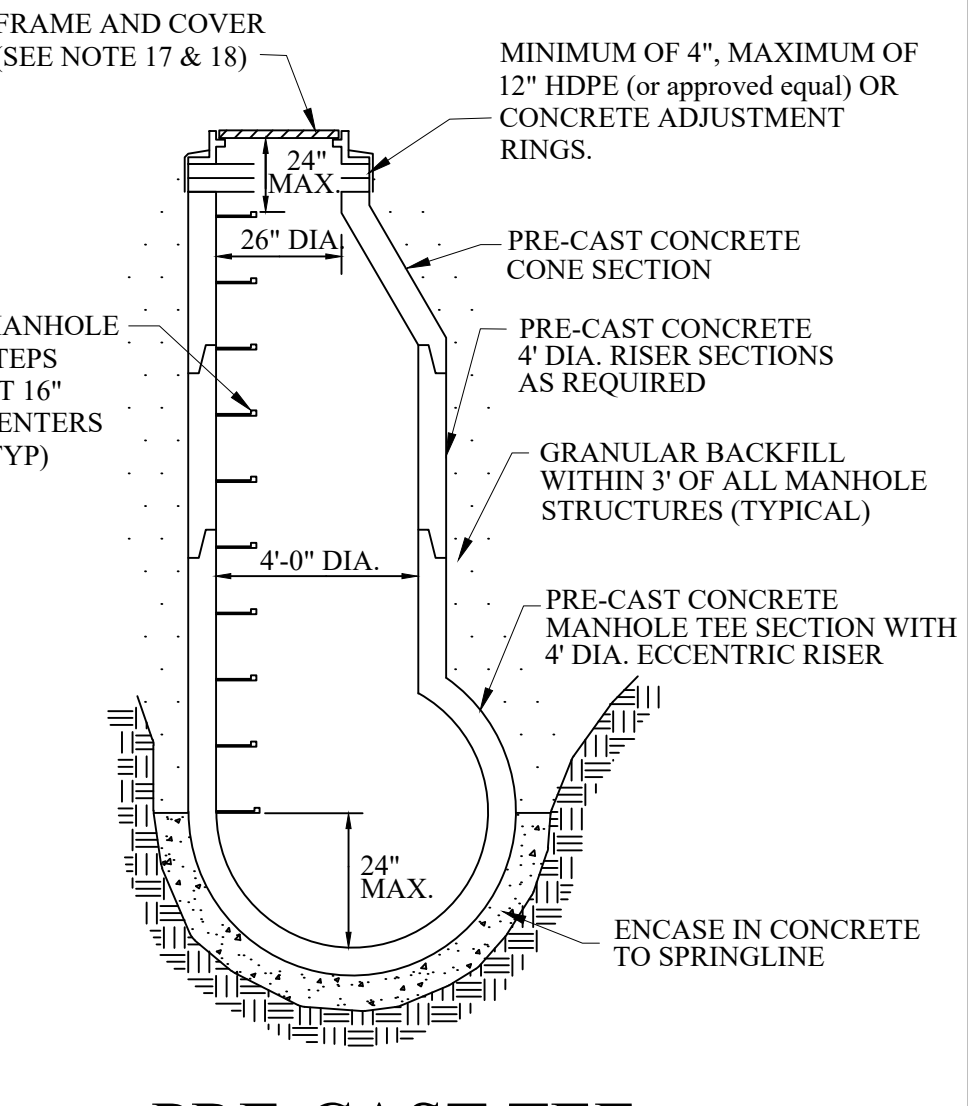


NOTE: QUANTITY OF FLOATABLE TRAPS REQUIRED FOR A SITE IS DEPENDENT ON TRAFFIC AND EXPECTED POLLUTANT LOAD. MINIMUM SUMP DEPTH TO BE 2 1/2 TIMES OUTLET PIPE DIAMETER OR 3 FEET, WHICHEVER IS GREATER. FLOATABLE TRAP AND ANTI-SIPHON DEVICE TO BE SIZED TO MANHOLE STRUCTURE.

DEPTH	BRICK	BLOCK
0'-10"	8"	6"
10'-16"	12"	8"
16'-25"	16"	12"



(NOTE: PERMITTED BY CITY ONLY FOR SPECIAL CIRCUMSTANCES)



GENERAL NOTES:

- ALL EXISTING AND NEW STORM SYSTEMS SHALL BE CLEANED AND FLUSHED ONCE SITE IS 90% BUILT OUT AND VEGETATED. SEDIMENT, ROCK, AND OTHER DEBRIS SHALL BE COLLECTED AND DISPOSED OF IN A PROPER MANNER. IN NO CASE SHALL DEBRIS BE FLUSHED DOWN A STORM OR SANITARY SEWER FOR DISPOSAL. ALL DAMAGED IRRIGATION AND HOUSE DRAINAGE PIPE, DRAIN TILES, SEWER LATERALS AND CULVERTS SHALL BE REPAIRED EXPEDITIOUSLY. DEBRIS COLLECTED SHALL BE DISPOSED IN A COMMERCIAL LANDFILL OR OTHER APPROVED LOCATION.
 - STORM SEWER PIPE SHALL BE OF SIZE AND TYPE NOTED ON THE APPROVED PLANS.
 - REINFORCED CONCRETE PIPE (RCP) SHALL BE MODIFIED GROOVED TONGUE JOINTS WITH O-RING TYPE RUBBER GASKET, PER ASTM C443.
 - ALL CATCH BASIN LEADS AND INLET LEADS SHALL BE ASTM C76-CLASS IV PIPE.
 - MINIMUM PIPE SIZE FOR SEWERS, CATCH BASIN LEADS, AND INLET LEADS SHALL BE 12" NOMINAL INTERNAL DIAMETER.
 - ECCENTRIC CONES SHALL BE PROVIDED ON ALL STRUCTURES, REGARDLESS OF THE MATERIAL USED. PRECAST REINFORCED CONCRETE MANHOLE, BLOCK, OR BRICK TO PROVIDE A TRUE VERTICAL FACE FOR PLACEMENT OF MANHOLE STEPS.
 - THE INSIDE JOINTS OF PIPES SIZES 42" AND LARGER DIAMETER SHALL BE POINTED UP WITH MORTAR UPON COMPLETION OF BACKFILLING OPERATIONS.
 - ALL PIPES SHALL HAVE CLASS, LOT NUMBER, AND DATE OF MANUFACTURE CONSPICUOUSLY MARKED ON EACH LENGTH BY MANUFACTURER.
 - ALL END SECTIONS 18" AND LARGER SHALL BE PROVIDED WITH A GALVANIZED BAR SCREEN.
 - PRECAST REINFORCED CONCRETE SECTIONS SHALL CONFORM TO ASTM 2478.
 - IN DRY, STABLE SOILS, PEASTONE (EQUIVALENT TO M.D.O.T. 34R SPECIFICATIONS) MAY BE SUBSTITUTED FOR THE STANDARD BEDDING. IF THE TRENCH IS WET OR UNSTABLE A GEOTEXTILE FABRIC MUST BE USED TO LINE THE TRENCH PRIOR TO THE PLACEMENT OF THE 2NS SAND, PEASTONE, OR 1/4" - 1-1/2" ANGULAR GRADED STONE.
 - SCHEDULE INSPECTIONS 48 HOURS PRIOR TO START OF CONSTRUCTION BY CALLING THE CITY'S INSPECTION LINE AT 248-841-2510. FULL TIME INSPECTION SHALL BE REQUIRED FOR ALL UNDERGROUND STORM SEWER CONSTRUCTION.
 - THE CONTRACTOR SHALL CONTACT MISS DIG 72 HOURS BEFORE CONSTRUCTION AT (811) TO LOCATE EXISTING UNDERGROUND UTILITIES.
 - PRIOR TO START OF CONSTRUCTION CONTRACTOR SHALL HAVE IN HIS POSSESSION A CURRENT SOIL EROSION CONTROL PERMIT AS ISSUED BY THE OCWRC.
 - MINIMUM SUMP DEPTH IS 2' FOR CATCH BASINS, MINIMUM SUMP DEPTH IS 3' FOR CATCH BASINS WITH FLOATABLE TRAP INSTALLATIONS.
 - AS A MEANS OF INSURING PROPER INSTALLATION OF THE STORM SEWER PIPE, AT THE DISCRETION OF THE CITY ENGINEER, THE CONTRACTOR SHALL VIDEO INSPECT, ACCORDING TO THE CITY OF ROCHESTER HILLS VIDEO INSPECTION STANDARDS, 100% OF THE STORM SEWER PIPE 12" AND LARGER IN DIAMETER. IF VIDEO INSPECTION IS REQUIRED BY THE CITY ENGINEER THE CONTRACTOR SHALL PROVIDE 24 HOURS NOTICE TO THE CITY OF ROCHESTER HILLS PRIOR TO VIDEO INSPECTION, SO A REPRESENTATIVE MAY BE PRESENT. ROCHESTER HILLS WILL BE PROVIDED WITH A DIGITAL COPY OF THE VIDEO INSPECTION AND LOG IN ACCORDANCE WITH THE CITY OF ROCHESTER HILLS VIDEO INSPECTION STANDARDS.
- PROJECTS THAT THE CITY ENGINEER MAY IMPOSE THESE REQUIREMENTS ARE:
- ALL PUBLIC PROJECTS OR PROJECTS BEING CONSTRUCTED ON PUBLIC PROPERTY.
 - ANY PROJECT INVOLVING A DEVELOPMENT, SUBDIVISION, SITE CONDOMINIUM, CONDOMINIUM, OR ASSOCIATION.
 - ANY PROJECT THAT WILL RESULT IN MORE THAN ONE OWNER RESPONSIBLE FOR THE OPERATION AND MAINTENANCE OF THE COMPLETE STORM DRAINAGE SYSTEM.

COVERS FOR MANHOLES, CATCH BASINS, AND INLETS

- MANHOLE FRAME AND COVER SHALL BE EJ 1040, TYPE A COVER OR EQUIVALENT.
 - CATCH BASINS AND INLET FRAME AND COVER SHALL BE AS FOLLOWS:
 - EJ 7045 WITH TYPE M1 GRATE AND 7050 T2 ADJUSTABLE BACK, OR EQUAL, FOR USE WITH CONCRETE CURB AND GUTTER, (STRAIGHT CURB/M.D.O.T. F CURB) AND WITH CONCRETE PAVEMENT WITH INTEGRAL CURB.
 - EJ 7085 WITH TYPE M1 GRATE OR EQUAL, FOR USE WITH CONCRETE B-2 MODIFIED CURB AND GUTTER, AND WITH CONCRETE WITH B-2 MODIFIED INTEGRAL CURB.
 - EJ 7065 WITH TYPE M1 GRATE AND 7060 T1 DRIVE OVER CURB BACK, OR EQUAL, FOR USE WITH MOUNTABLE CURB AND GUTTER, AND WITH CONCRETE PAVEMENT WITH MOUNTABLE INTEGRAL CURB.
 - EJ FRAME 1040 WITH TYPE N OVAL GRATE OR TYPE O2 BEEHIVE GRATE, OR EQUAL, FOR USE ON OPEN DITCH STRUCTURES AND ON CATCH BASINS LOCATED IN SWALES, AND IN EASEMENTS OUTSIDE THE PUBLIC STREET RIGHT-OF-WAY.
 - EJ FRAME 7045Z WITH TYPE M4 VANE STYLE INLET GRATE (RIGHT HAND FLOW OR LEFT HAND FLOW) AND 7060 T1 BACK OR 7050 T2 BACK DEPENDING ON CURB STYLE, OR EQUAL, FOR USE WITH RELIEF BASINS WHICH ARE ON LONGITUDINAL ROAD SLOPES OF 4% OR GREATER.
 - EJ FRAME 5100 WITH TYPE M1 SINUSOIDAL GRATE, OR EQUAL, FOR USE IN NON-CURB PAVEMENT AREAS.
- NOTE: COVERS MUST HAVE THE "DUMP NO WASTE! DRAINS TO WATERWAY" LETTERING (WHEN APPLICABLE).



REVISIONS	DATE	APPROVED BY

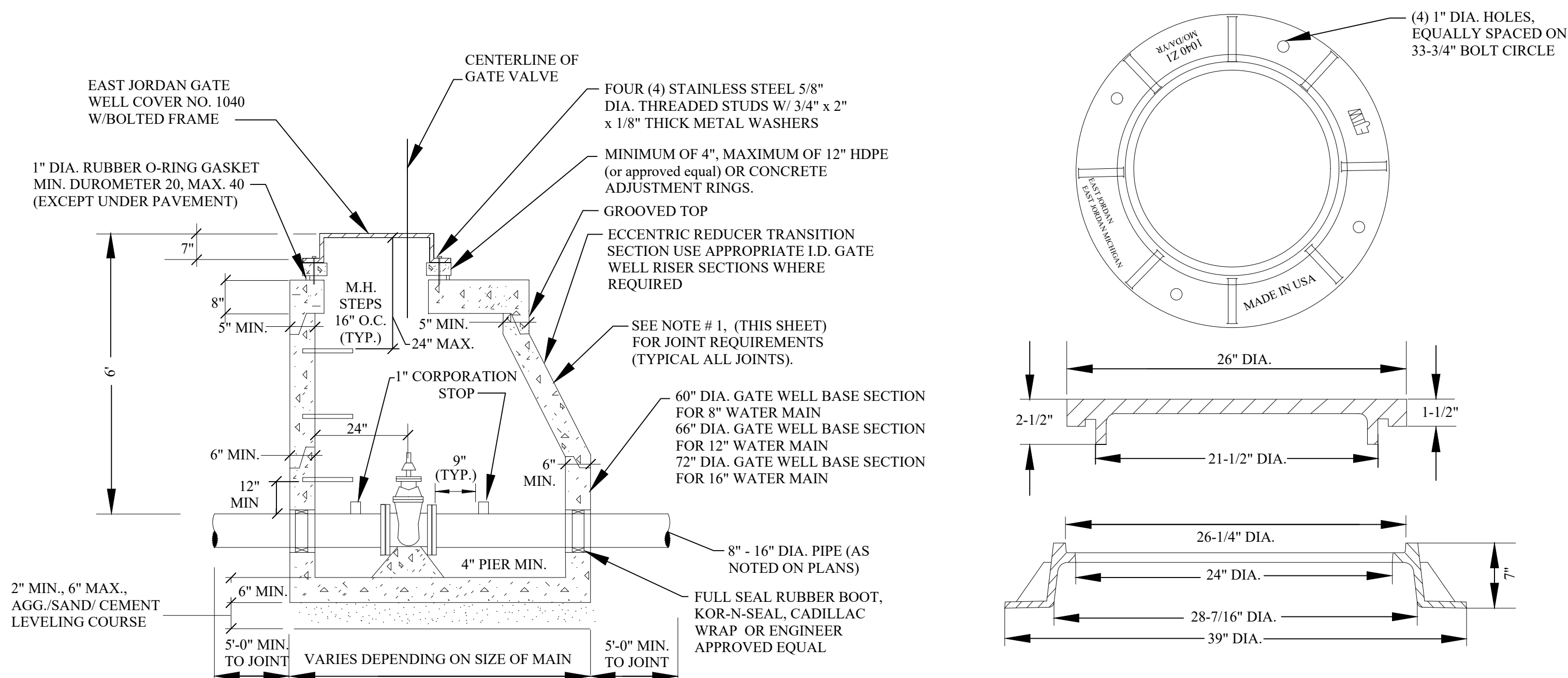
APPROVED BY CITY COUNCIL, DATE: _____

PREPARED BY ENGINEERING DIVISION DEPARTMENT OF PUBLIC SERVICES

NOTIFY ROCHESTER HILLS ENGINEERING DEPARTMENT @ 248-841-2510 48 HRS. PRIOR TO START OF CONSTRUCTION

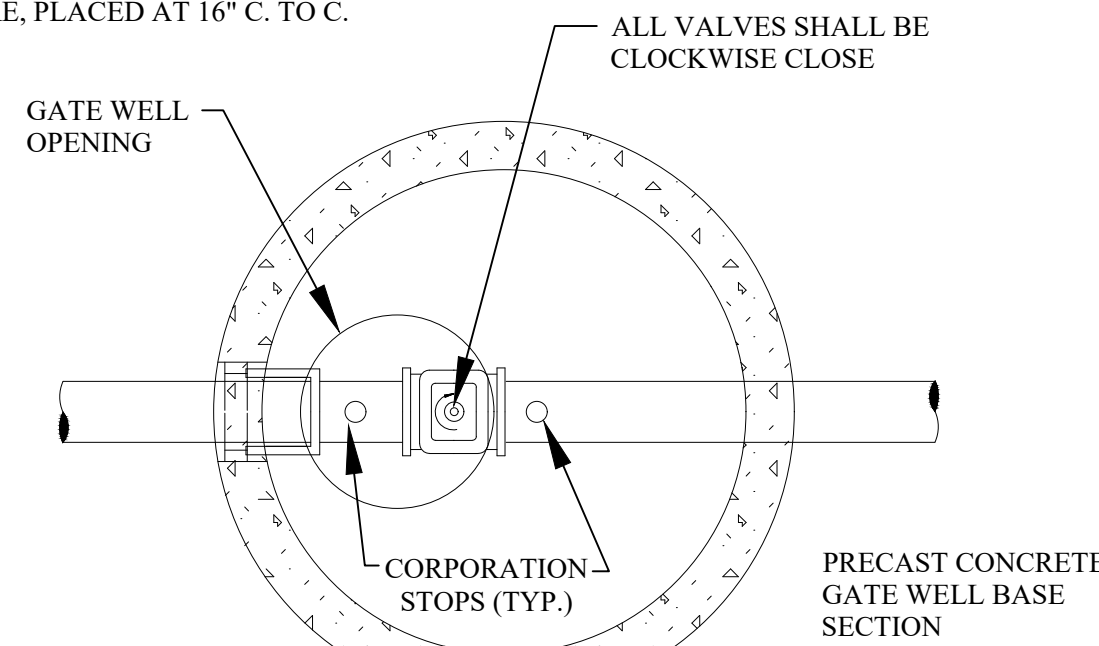
City of Rochester Hills
1000 Rochester Hills Drive, Rochester Hills, Michigan 48309

STORM SYSTEM STANDARD DETAILS

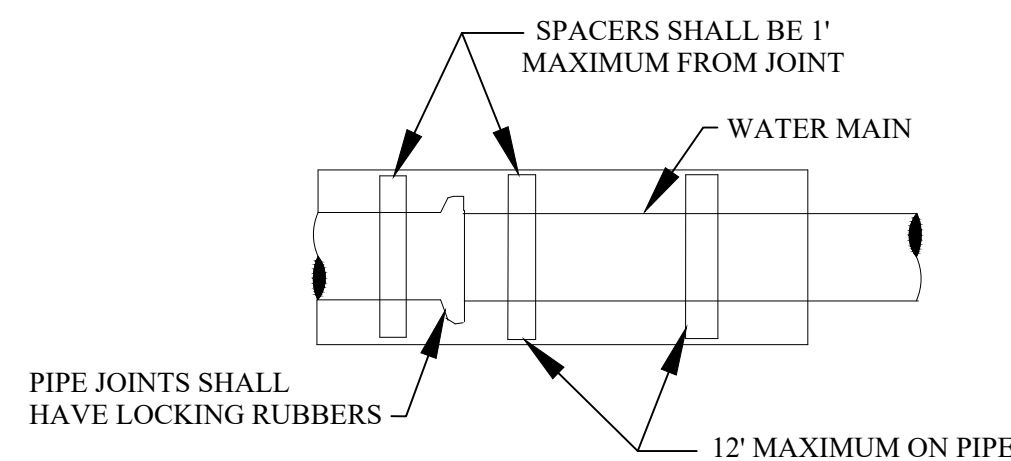


ALL GATE WELLS

MANHOLE STEPS TO BE PLASTIC COATED STEEL MEETING THE REQUIREMENTS IN ASTM D 2146, TYPE II, GRADE 49108. M.A. INDUSTRIES P.S.I. POLYPROPYLENE OR APPROVED EQUAL. STEPS TO BE INSTALLED DURING MANHOLE MANUFACTURE, PLACED AT 16" C. TO C.



GATE WELL (TYPICAL)



WATER MAIN IN CASING SECTION

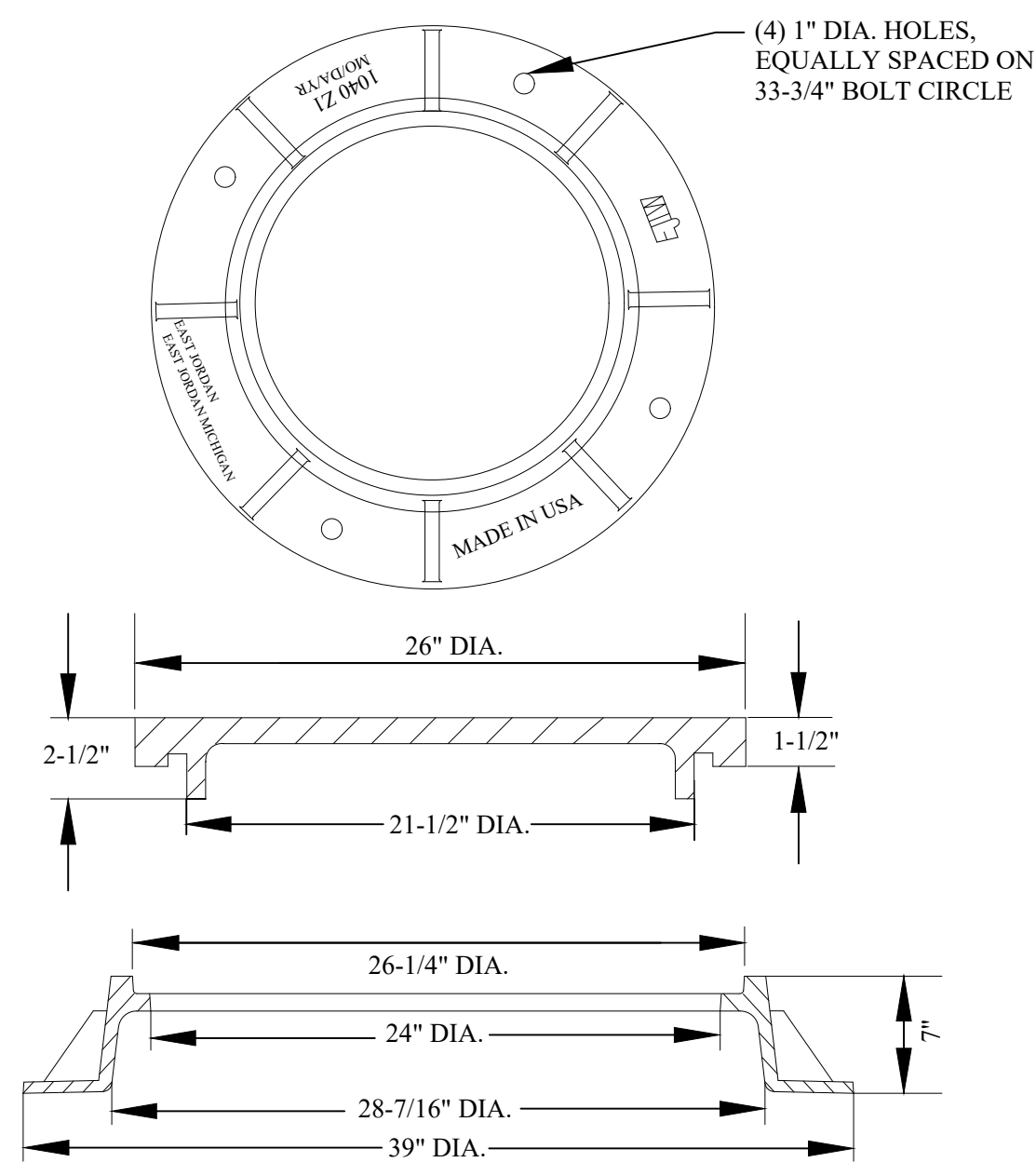
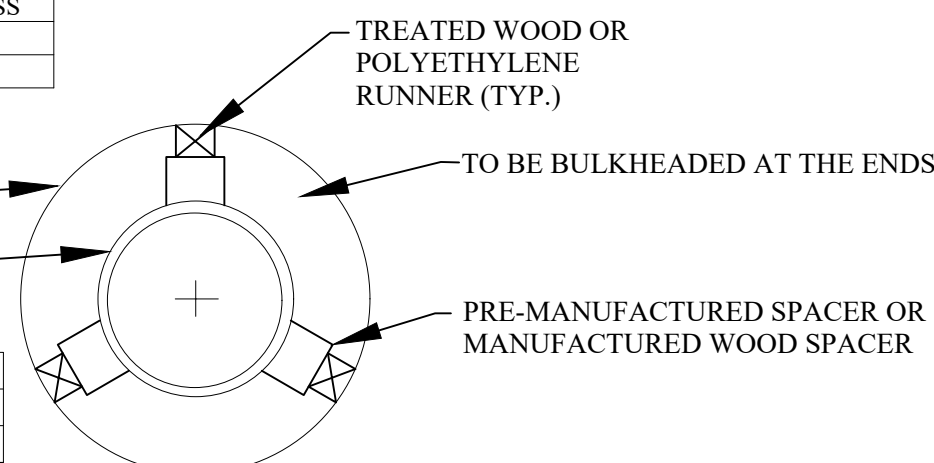
UNLESS OTHERWISE SPECIFIED, MINIMUM CASING PIPE SHALL BE ASTM A-139 GRADE B, WALL THICKNESS AS FOLLOWS:

NOMINAL SIZE	MINIMUM WALL THICKNESS
8" - 42"	0.375
48" - 60"	0.500

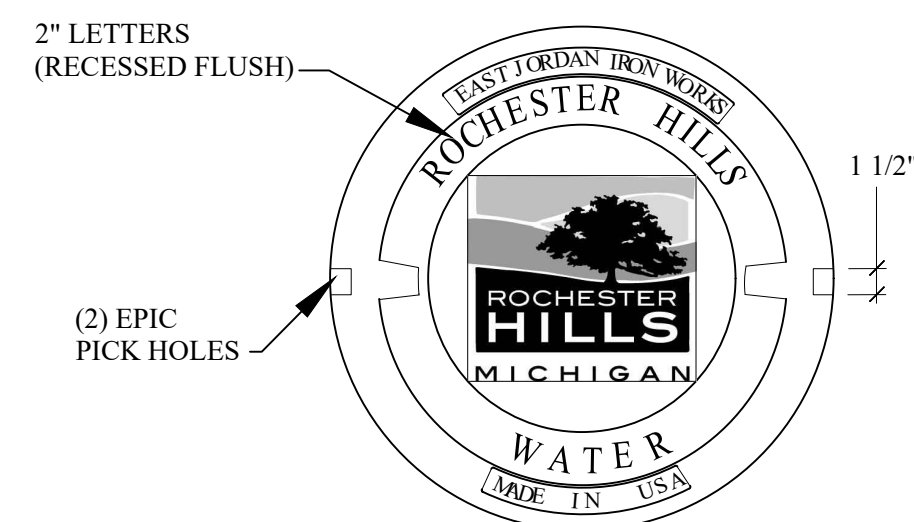
CASING SHOULD BE A MINIMUM OF 1 1/2 TIMES THE PIPE SIZE

WATER PIPE	REQUIRED QUANTITY OF RUNNERS IN ACCORDANCE WITH SIZE
TO 14" DIA.	3 RUNNERS
16" TO 36" DIA.	6 RUNNERS
38" TO 48" DIA.	8 RUNNERS

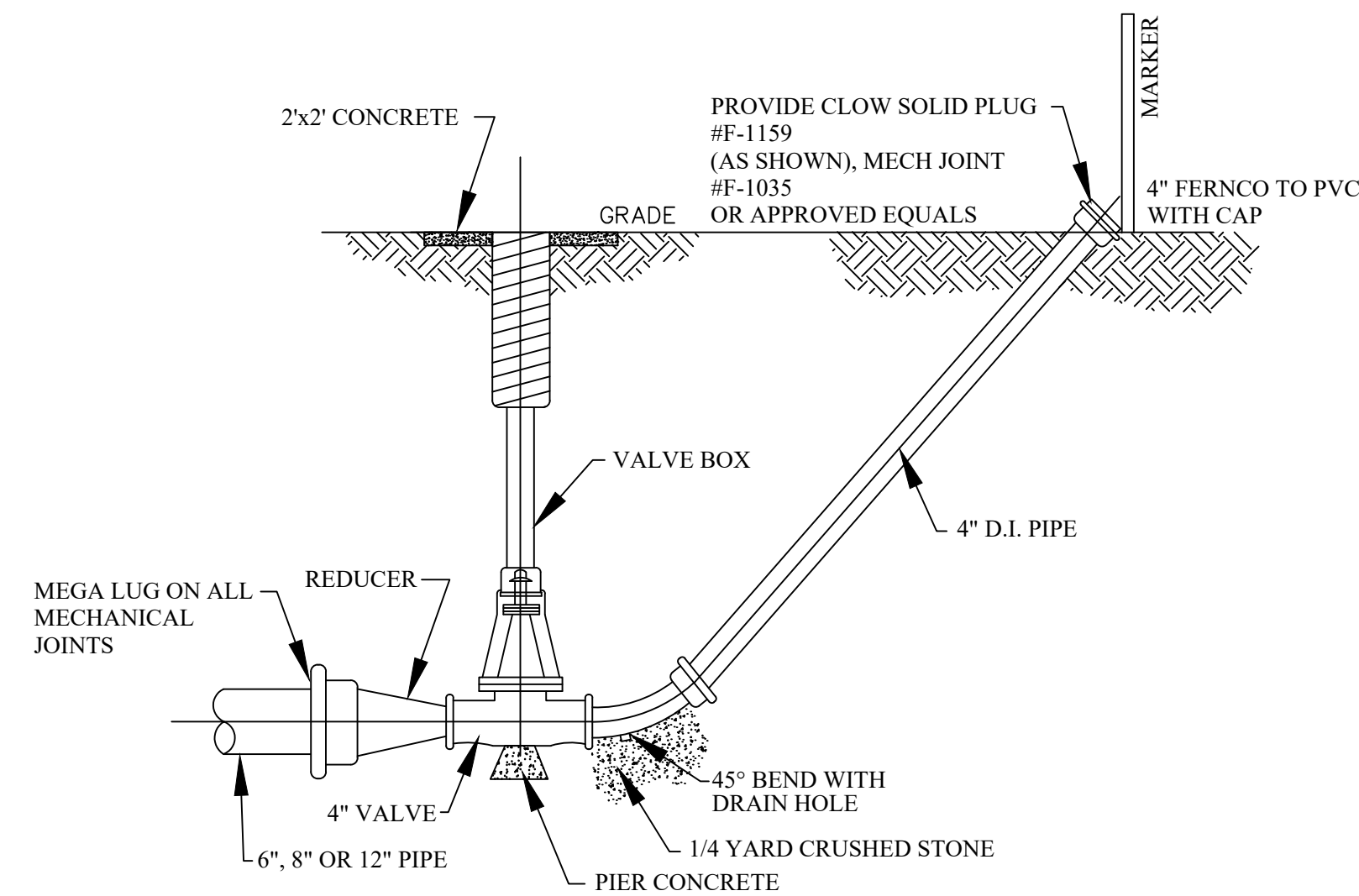
SUPPORT FOR WATER MAIN CONSTRUCTED IN CASING PIPE



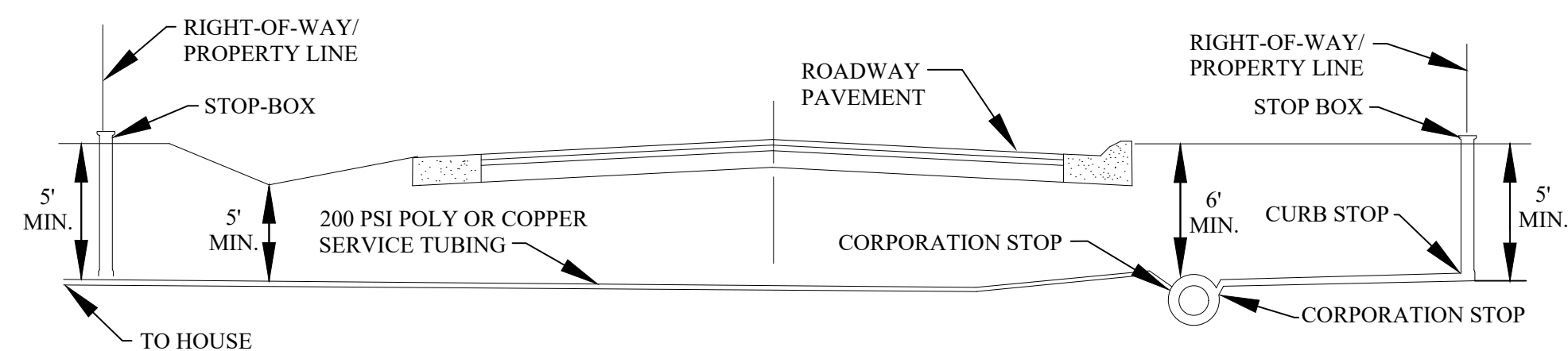
FRAME



LETTERING LAYOUT FOR GATE WELL COVERS

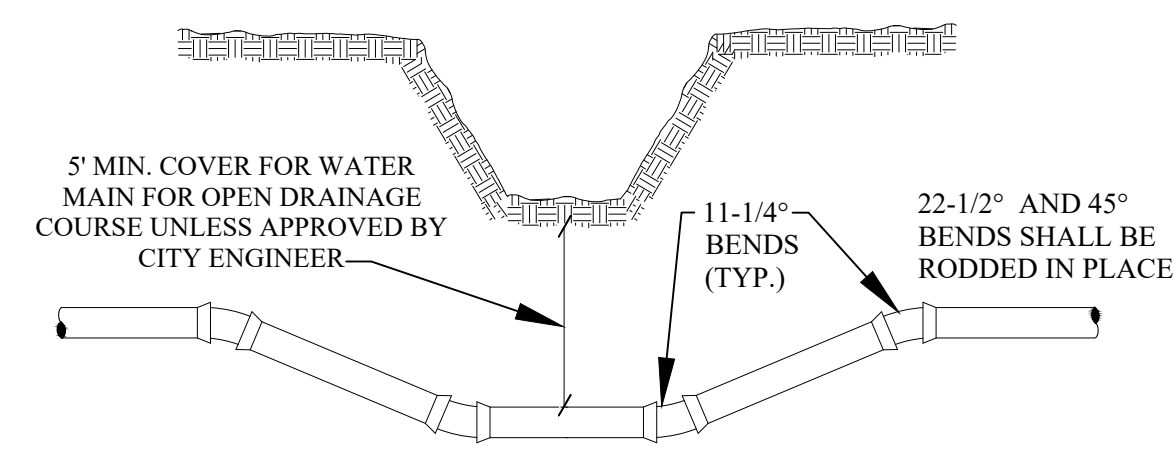


DETAIL OF 4" BLOWOFF

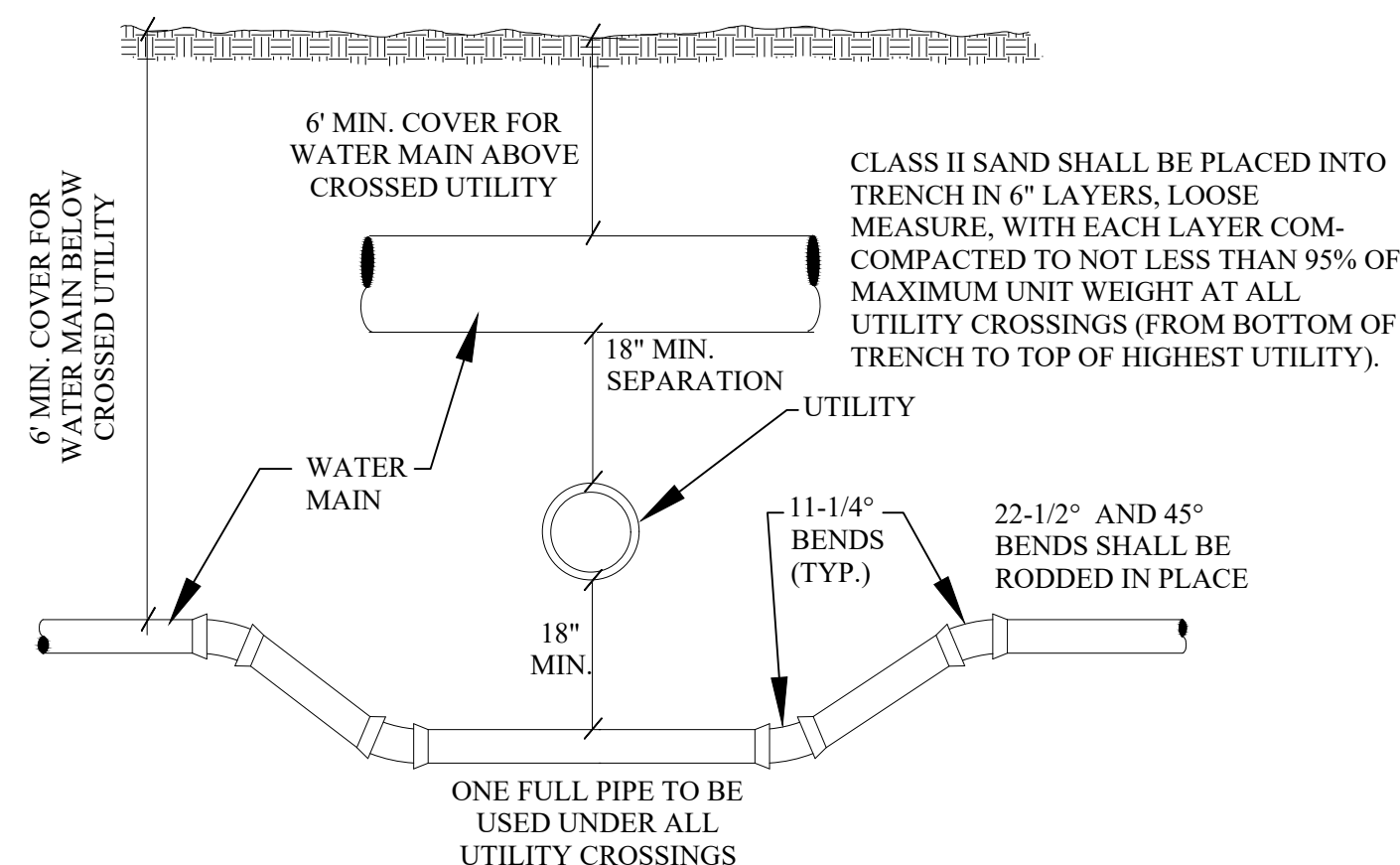


TYPICAL PUBLIC ROAD WATER SERVICE CONNECTION

- NOTES:
 1. WATER SERVICE SHUT-OFF TO BE PLACED AT PROPERTY LINE.
 2. LATERAL LOCATION SHALL BE AS REQUESTED BY THE ABUTTING PROPERTY OWNER.
 3. ROCHESTER HILLS DPS PERFORMS SERVICE LEAD TAPS UP TO 2" DIAMETER.

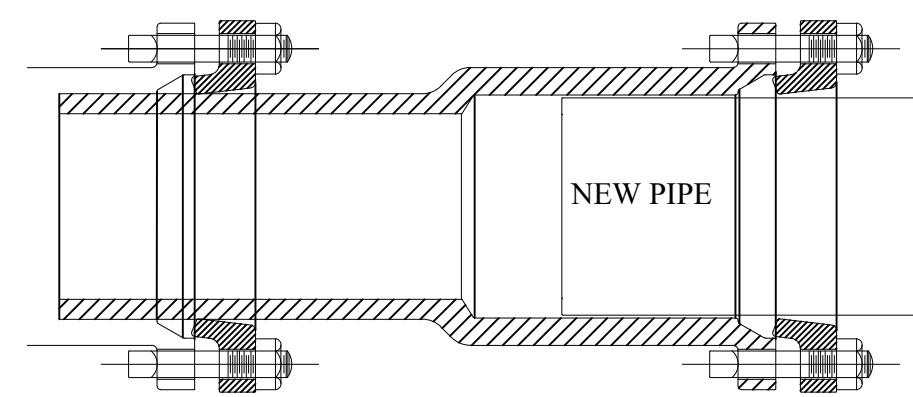


DITCH CROSSING

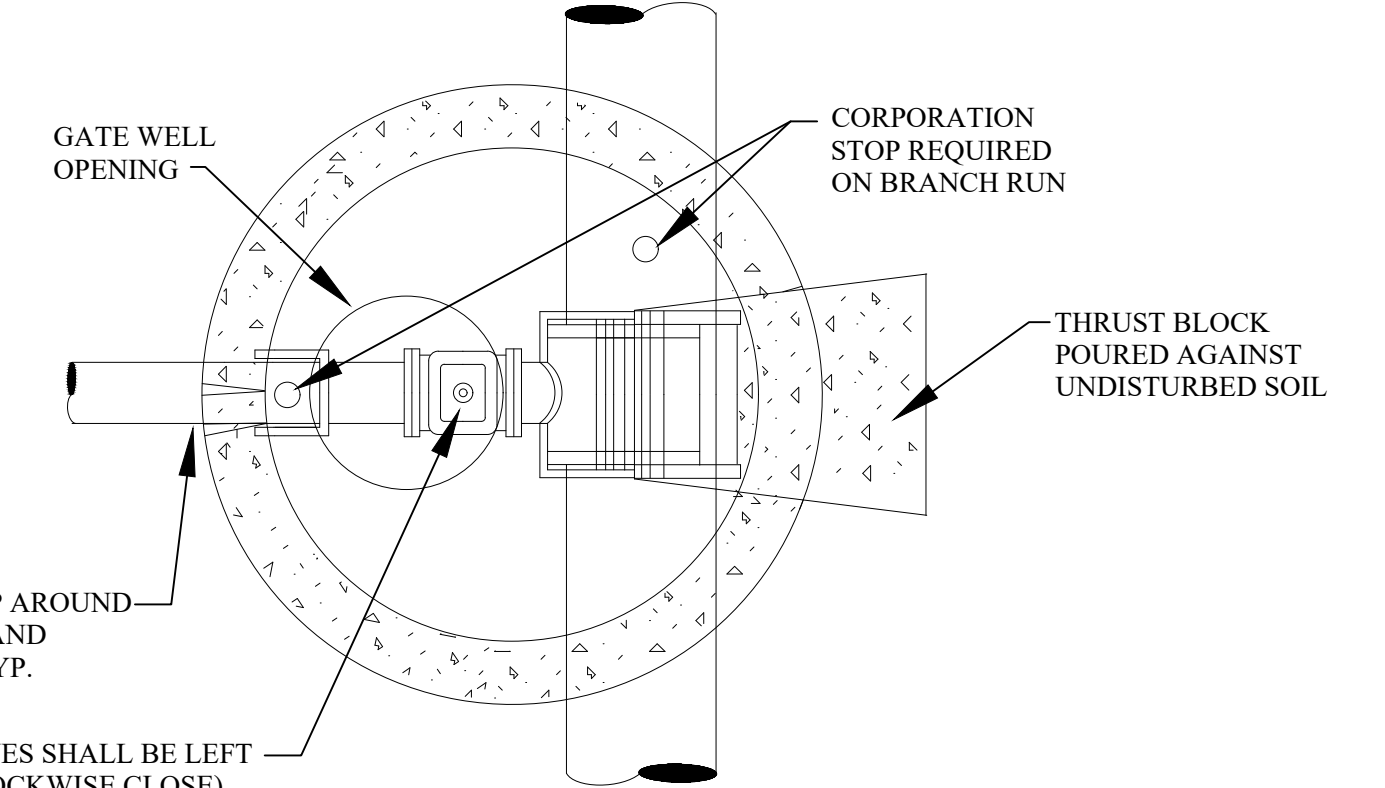


UTILITY CROSSING

EAST JORDAN MJ x PE DUAL-PURPOSE CUTTING-IN SLEEVE OR APPROVED EQUAL

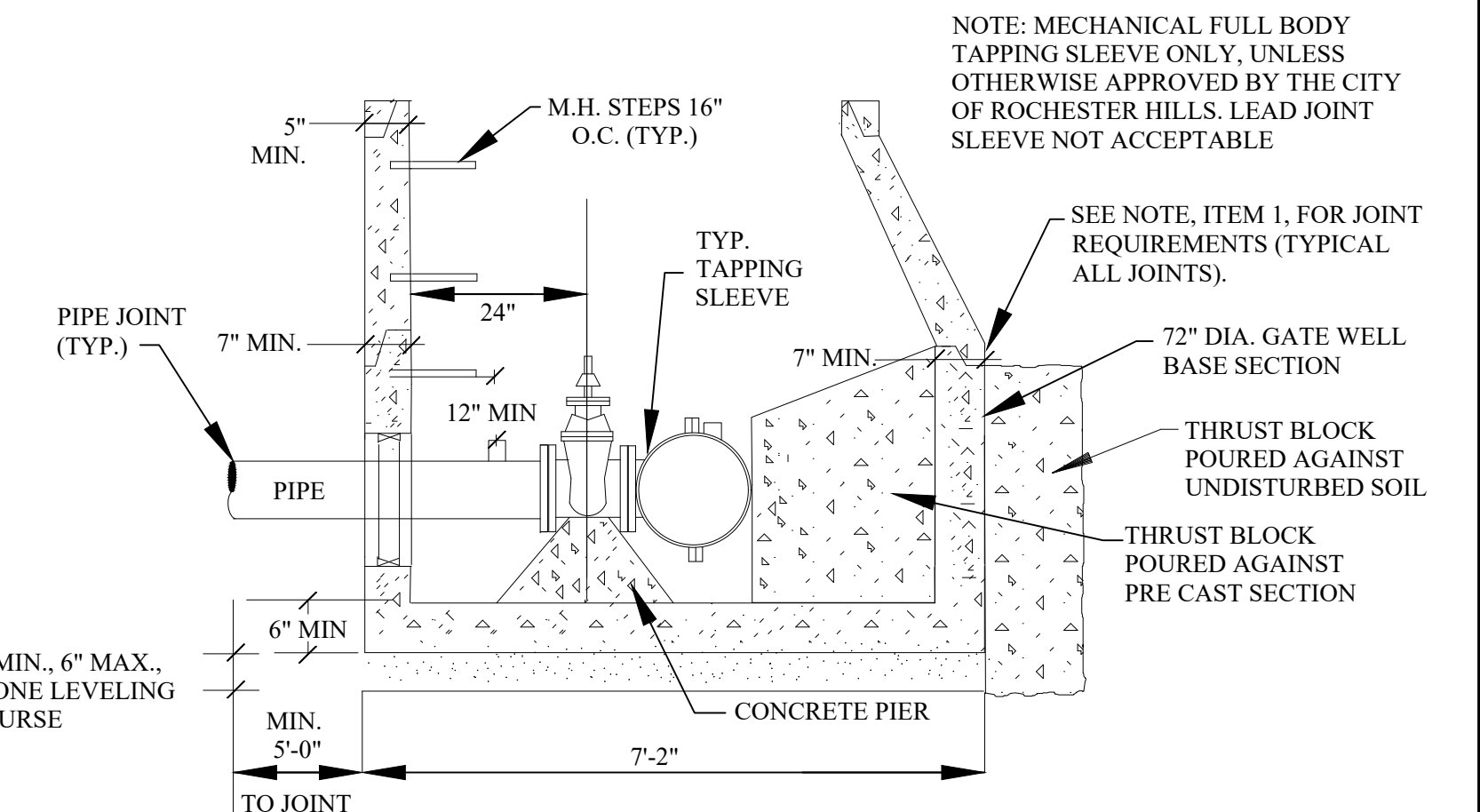


BOTTLE SLEEVE



PLAN TAPPING SLEEVE VALVE & WELL (TYPICAL)

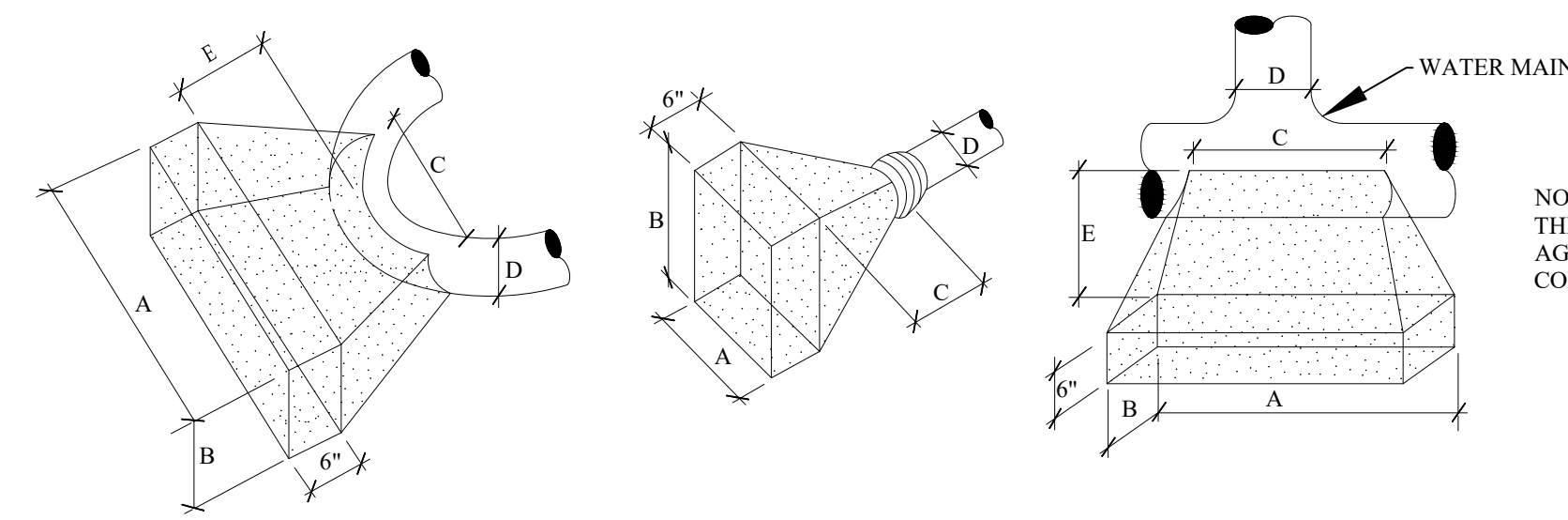
ALL VALVES SHALL BE LEFT OPEN (CLOCKWISE CLOSE)



TAPPING SLEEVE, VALVE AND WELL (TYPICAL)

NOTES:

- ALL PRECAST CONCRETE GATE WELL SECTIONS SHALL BE MANUFACTURED TO CONFORM WITH A.S.T.M. C478, STANDARD SPECIFICATIONS FOR PRECAST REINFORCED CONCRETE MANHOLE SECTIONS. EXCEPT WALL THICKNESS SHALL BE AS SHOWN ON THESE DETAILS. ALL JOINTS FOR PRECAST CONCRETE GATE WELL SECTIONS SHALL BE "MODIFIED GROOVE TONGUE" WITH GASKET MANUFACTURED TO CONFORM WITH A.S.T.M. C 443, STANDARD SPECIFICATION FOR JOINTS FOR CIRCULAR CONCRETE SEWER AND CULVERT PIPE USING RUBBER GASKETS.
- CONTRACTOR SHALL INSTALL VALVES, TAPPING SLEEVES AND GATE WELL STRUCTURES IN STRICT COMPLIANCE WITH MEASUREMENTS PROVIDED ON SHEET 16.c. 2-4" BETWEEN GATE WELL WALL & CENTERLINE OF OPERATING NUT TO ALLOW PROPER OPERATION OF VALVE THROUGH GATE WELL OPENING. FAILURE TO DO SO WILL REQUIRE CONTRACTOR TO CORRECT AT HIS EXPENSE.
- TAPPING SLEEVES SHALL BE MANUFACTURED BY ROMAC INDUSTRIES; MUELLER; EAST JORDAN; SMITH-BLAIR OR APPROVED EQUAL AND APPROVED BY THE CITY OF ROCHESTER HILLS. FULL BODY SLEEVES MUST BE USED EXCEPT FOR REINFORCED CONCRETE PRESSURE PIPE OR A.C. PIPE.
- FOR ALL PIPE USE A 1" CORPORATION STOP. NO CORPS SHALL BE USED IN CONCRETE PRESSURE PIPE.
- RUBBER O-RINGS SHALL NOT BE USED IN PAVEMENT.



FOR 90° BENDS OR SMALLER

D	A	B	C	E MIN.
20"	8"	6.5"	3.5"	2.5"
16"	6"	4"	2.5"	2"
12"	4"	3"	2"	1.75"
10"	3"	3"	2"	1.75"
8"	3"	2"	2"	1.5"
6"	2"	1.5"	2"	1.25"

FOR PLUGS

D	A	B	C MIN.
20"	7"	5"	2.5"
16"	4'-10"	4'-10"	2"
12"	4'-4"	3"	1'-9"
10"	3"	2"	1'-6"
8"	2'-10"	2'-6"	1'-6"
6"	1'-6"	1'-6"	3"

FOR TEES

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"

NOTE: 3000 PSI CONCRETE TO BE USED. THRUST BLOCK TO ABUT & REST AGAINST UNDISTURBED SOIL OR EARTH COMPACTED TO 95% MODIFIED PROCTOR.

THRUST BLOCK DETAILS



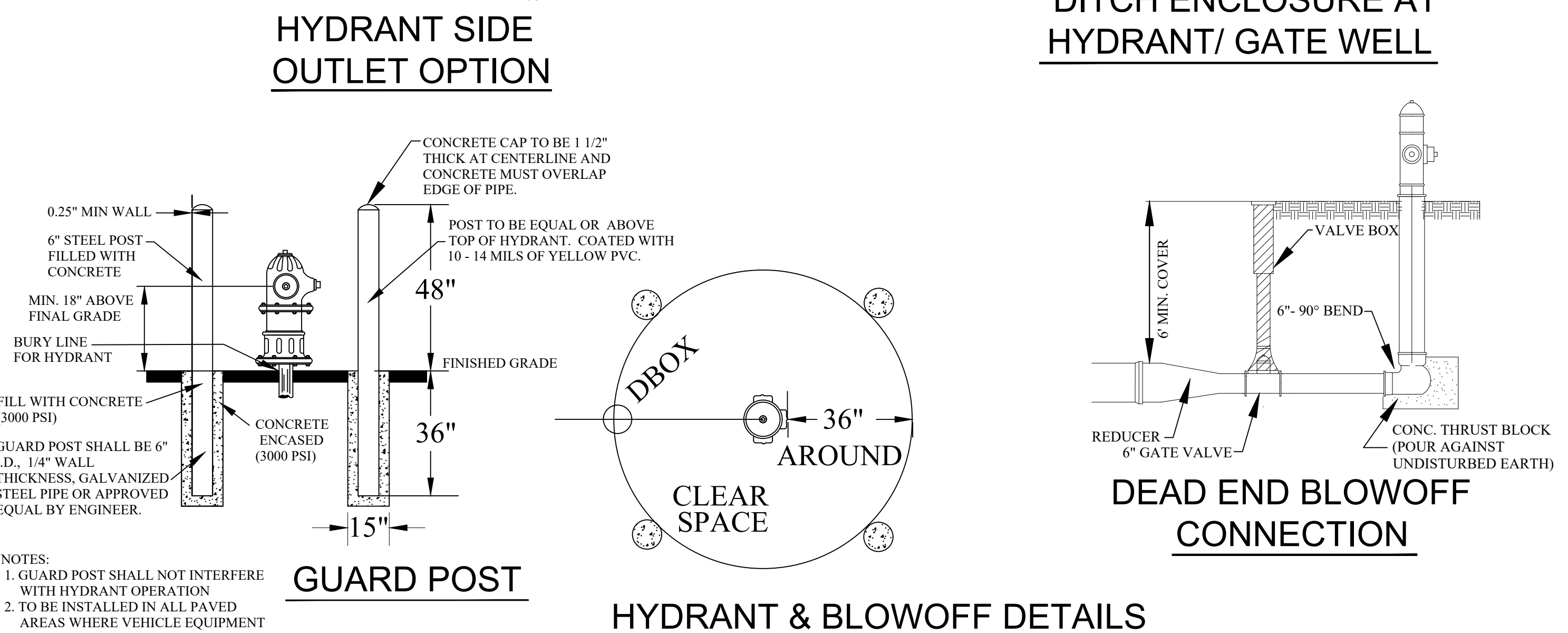
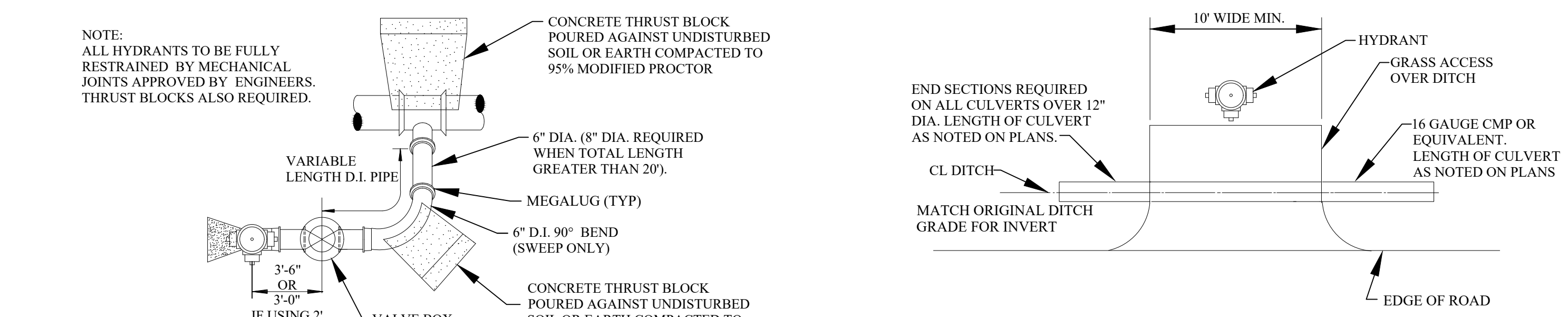
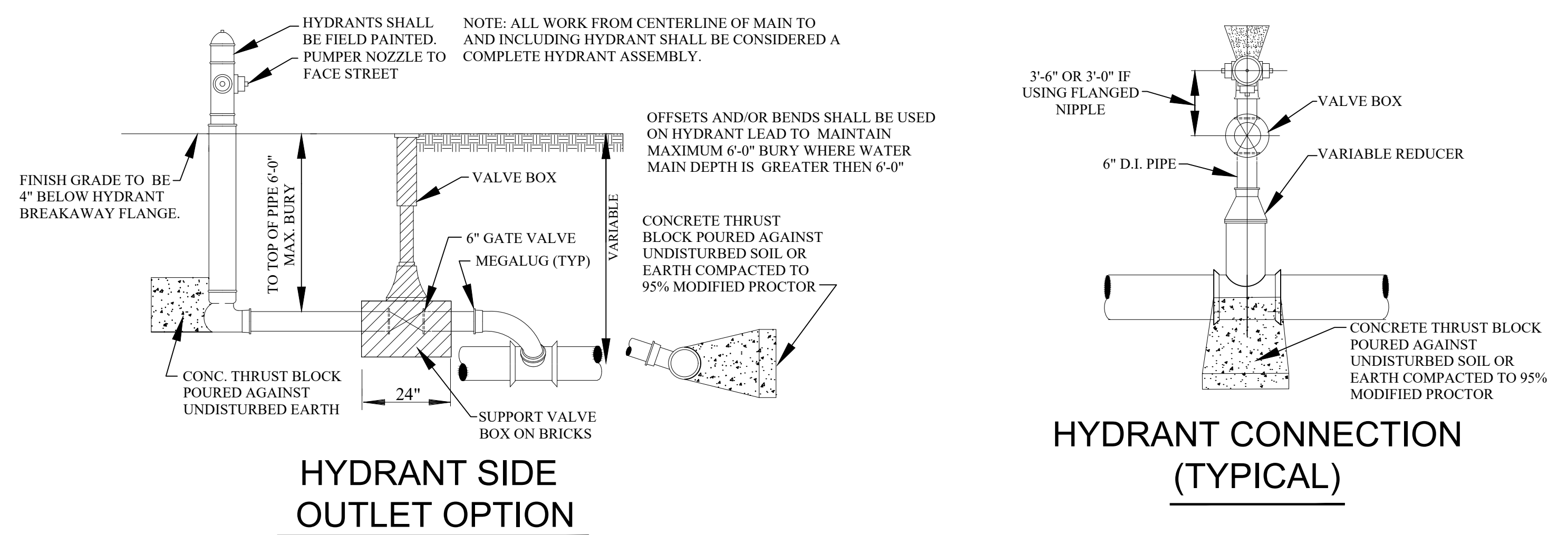
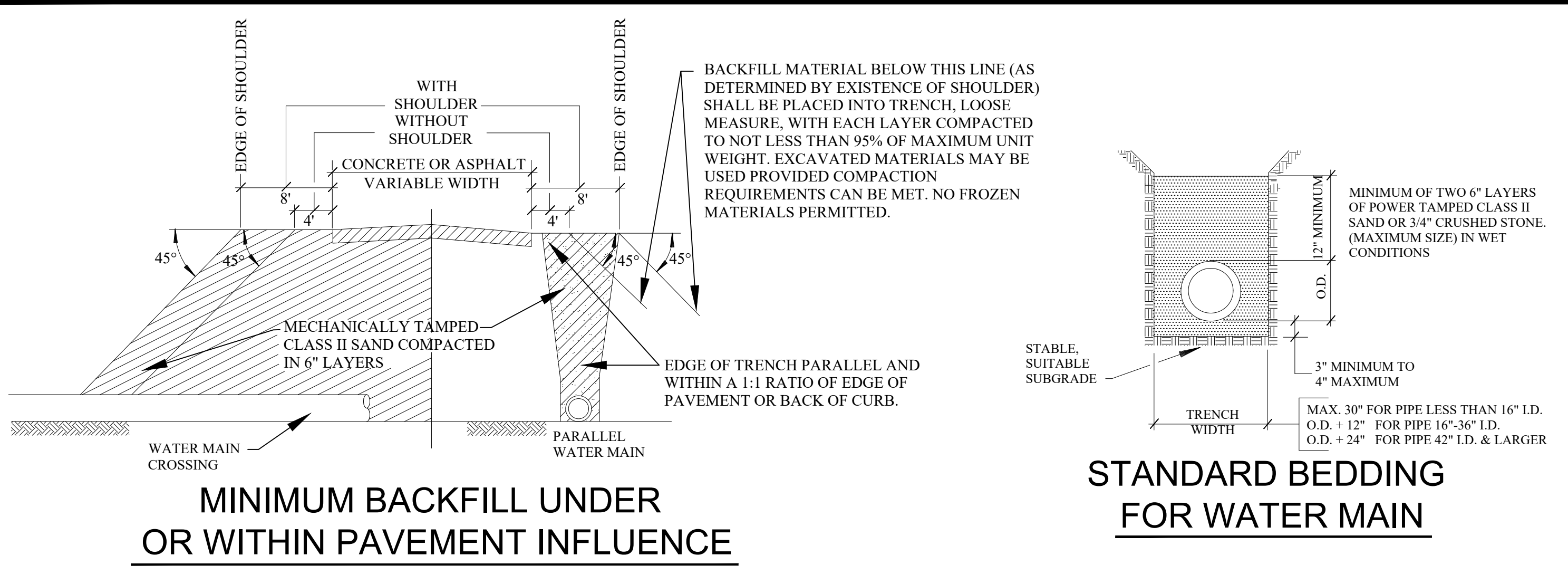
REVISIONS	DATE	APPROVED BY
		CITY COUNCIL, DATE: SEPTEMBER 23, 2019
		PREPARED BY ENGINEERING DIVISION DEPARTMENT OF PUBLIC SERVICES

NOTIFY ROCHESTER HILLS ENGINEERING DIVISION @ 248-841-2510 48 HRS. PRIOR TO START OF CONSTRUCTION

City of Rochester Hills
 1000 Rochester Hills Drive, Rochester Hills, Michigan 48309

WATER MAIN STANDARD DETAILS

NOT TO SCALE	DATE: 1/10/2018
SHEET 1 OF 2	REV 04/22/2022



REVISIONS	DATE	APPROVED BY	NOTIFY ROCHESTER HILLS ENGINEERING DIVISION @ 248-841-2510 48 HRS. PRIOR TO START OF CONSTRUCTION
REVISION TO FIRE HYDRANT PER EGLE	10-23-2023	CITY COUNCIL, DATE: SEPTEMBER 23, 2019	
REV. ADDED #14 UNDER GENERAL NOTES	12-12-2023	PREPARED BY ENGINEERING DIVISION DEPARTMENT OF PUBLIC SERVICES	

- ### GENERAL NOTES
- ALL CONSTRUCTION PROCEDURES AND MATERIALS SHALL CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE CITY OF ROCHESTER HILLS.
 - A PRE-CONSTRUCTION MEETING SHALL BE SCHEDULED BY THE CITY OF ROCHESTER HILLS AND HELD PRIOR TO THE START OF CONSTRUCTION.
 - CONTRACTOR MUST CONTACT MISS DIG (811) AT LEAST THREE WORKING DAYS PRIOR TO THE START OF CONSTRUCTION FOR UNDERGROUND UTILITY LOCATIONS. ALL UTILITIES SHALL BE STAKED BEFORE CONSTRUCTION BEGINS.
 - ALL WATER MAIN EASEMENTS SHALL BE PROVIDED PRIOR TO CONSTRUCTION AND ACCEPTANCE OF THE WATER DISTRIBUTION SYSTEM.
 - WATER MAINS SHALL BE CONSTRUCTED WITH A MINIMUM COVER OF 6 FEET BELOW FINISHED GRADES, INCLUDING OPEN DRAINAGE COURSES.
 - ALL TRENCHES UNDER OR WITHIN A 1:1 RATIO OF EXISTING OR PROPOSED PAVEMENT OR DRIVEWAYS, SHALL BE BACKFILLED WITH COMPACTED CLASS II SAND TO GRADE (95% MAXIMUM UNIT DENSITY).
 - WHERE TWO UTILITIES CROSS, PROVIDE CLASS II BACKFILL MATERIAL IN SIX (6) INCH COMPACTED LAYERS TO TOP OF HIGHEST UTILITY.
 - WHERE WATER MAINS DIP UNDER OTHER UTILITIES, THE SECTIONS WHICH ARE DEEPER THAN NORMAL SHALL BE CONSTRUCTED WITH 11-1/4" VERTICAL BENDS, 22 1/2° OR 45° BENDS MUST BE RODDED AND PROPERLY ANCHORED.
 - ALL PRECAST CONCRETE GATE WELL SECTIONS SHALL BE IN ACCORDANCE WITH A.S.T.M. C478, STANDARD SPECIFICATIONS FOR PRECAST REINFORCED CONCRETE MANHOLE SECTIONS. WALL THICKNESS SHALL BE AS SHOWN ON THESE DETAILS. ALL JOINTS FOR PRECAST CONCRETE GATE WELL SECTIONS SHALL BE "MODIFIED GROOVE TONGUE" WITH GASKET MANUFACTURED TO CONFORM WITH A.S.T.M. C 443, STANDARD SPECIFICATION FOR JOINTS FOR CIRCULAR CONCRETE SEWER AND CULVERT PIPE USING RUBBER GASKETS.
 - CONTRACTOR SHALL INSTALL VALVES, TAPPING SLEEVES AND GATE WELL STRUCTURES IN STRICT COMPLIANCE WITH MEASUREMENTS PROVIDED ON SHEET 1 (2'-0" BETWEEN GATE WELL WALL & CENTERLINE OF OPERATING NUT) TO ALLOW PROPER OPERATION OF VALVE THROUGH GATE WELL OPENING.
 - ALL CROSS-CONNECTION CONTROL DEVICES SHALL BE INSTALLED AS REQUIRED BY THE ROCHESTER HILLS PLUMBING INSPECTOR AND IN ACCORDANCE WITH THE STANDARDS OF THE OAKLAND COUNTY WATER RESOURCE COMMISSIONER OPERATION AND MAINTENANCE DIVISION AND THE MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF DRINKING WATER AND RADIOLOGICAL PROTECTION.
 - ALL WATER SERVICE CONNECTIONS TWO (2) INCHES AND SMALLER SHALL BE MADE BY THE CITY OF ROCHESTER HILLS, DEPARTMENT OF PUBLIC SERVICES AFTER WATER MAIN ACCEPTANCE AND APPLICABLE PERMITS ARE OBTAINED.
 - ALL FITTINGS AND BENDS SHOULD BE BLOCKED IN ACCORDANCE WITH THRUST BLOCK DETAILS, UNLESS ALTERNATE THRUST RESTRAINT SYSTEM, AS INDICATED PLANS AND SPECIFICATIONS, IS APPROVED BY THE CITY OF ROCHESTER HILLS DEPARTMENT OF PUBLIC SERVICE.
 - FOR ANY DIRECT TAPPING OF ASBESTOS CEMENT WATER MAIN, THE CLOSEST DOWNSTREAM HYDRANT SHALL BE FLUSHED DURING THE TAPPING PROCEDURE.

- ### WATER MAIN MATERIALS NOTES
- TEMPORARY CONNECTIONS, WHICH MAY BE MADE FOR CHLORINATING AND FLUSHING PURPOSES, SHALL INCLUDE A TESTABLE DOUBLE CHECK VALVE BACKFLOW PREVENTER WITH CURRENT CERTIFICATION.
 - CORPORATION STOPS USED FOR INSERTION INTO MAINS SHALL BE FORD TYPE B-44. ALL STOPS SHALL HAVE BRONZE CAST BODIES, KEYS, STEM WASHERS AND NUTS. INLET THREADS SHALL CONFORM TO THE LATEST VERSION OF AWWA C800.
 - ALL DUCTILE IRON PIPE (D.I.P.) WATER MAIN SHALL BE DESIGNED FOR 150 PSI MINIMUM WORKING PRESSURE. A ZINC COATING WITH CLASS 52 MAY BE PROPOSED AND IS SUBJECT TO FINAL DECISION FOR APPROVAL BY THE CITY ENGINEER.
 - THE DUCTILE IRON PIPE TO BE FURNISHED AND DELIVERED UNDER THIS SPECIFICATION SHALL MEET ALL THE REQUIREMENTS OF THE CURRENT AWWA C151 (ANSI A21.5), EXCEPT AS OTHERWISE SPECIFIED HEREIN. PIPE SHALL BE DOUBLE CEMENT-LINED AND SEAL COATED WITH AN APPROVED BITUMINOUS SEAL COAT IN ACCORDANCE WITH AWWA C104 (ANSI A21.4).
 - DUCTILE IRON PIPE SHALL BE CLASS 54 FOR SIZES THREE (3) INCH THROUGH TWENTY (20) INCHES SIZE. TWENTY-FOUR (24) INCH AND LARGER SHALL BE CLASS 55 DUCTILE IRON PIPE.
 - PIPES TWENTY-FOUR (24) INCHES AND LARGER IN NOMINAL DIAMETER SHALL MEET ALL THE REQUIREMENTS OF THE CURRENT AWWA C100 FOR DUCTILE IRON WATER PIPE.
 - MECHANICAL JOINTS FOR DUCTILE IRON WATER MAIN SHALL BE IN ACCORDANCE WITH AWWA C111 (ANSI A21.11).
 - FLANGE JOINTS FOR DUCTILE IRON WATER MAIN SHALL BE IN ACCORDANCE WITH AWWA C110 (ANSI A21.10).
 - FITTINGS FOR DUCTILE IRON PIPE SHALL BE DUCTILE IRON AND SHALL MEET REQUIREMENTS OF AWWA C110 (ANSI A21.10) OR AWWA C153 (ANSI A21.53). DUCTILE IRON FITTINGS SHALL BE RATED FOR 350 PSI. PIPE SIZES TWENTY-FOUR (24) INCH DIAMETER AND LESS, AND 250 PSI FOR PIPE SIZES OVER TWENTY-FOUR (24) INCH DIAMETER. DUCTILE IRON FLANGE FITTINGS SHALL BE RATED FOR 250 PSI FOR ALL PIPE DIAMETERS.
 - ALL DUCTILE IRON PIPE, FITTINGS AND HYDRANTS SHALL BE ENCASED WITH POLYETHYLENE ENCASEMENT IN ACCORDANCE WITH THE REQUIREMENTS OF A.N.S.I./A.W.W.A. STANDARD SPECIFICATION D1248 AND AWWA C105. POLYETHYLENE TUBE MATERIAL SHALL HAVE A THICKNESS OF .008" (8-MILS). ADHESIVE TAPE SHALL BE A GENERAL PURPOSE ADHESIVE TAPE 2" WIDE AND APPROXIMATELY 10-MILS THICK, SUCH AS SCOTCHRAP. NO.50, POLYKEN NO. 900, OR TAPECOAT CT.

- ### VALVE AND SLEEVE NOTES
- GATE VALVES, SIZES THREE (3) INCH THROUGH SIXTEEN (16) INCH AND TAPPING VALVES SHALL MEET THE CITY OF ROCHESTER HILLS STANDARD AS DETAILED WITH NON-RISING STEM. (EAST JORDAN, AMERICAN FLOW CONTROL, MUELLER)
 - ALL IN LINE GATE VALVES EIGHT (8) INCH AND LARGER SHALL BE IN WELLS. SPECIFICATIONS SHALL INCLUDE THE DIRECTION OF OPERATION OF ALL VALVES (CLOCKWISE CLOSURE). VALVE BOX USE TO BE APPROVED BY ENGINEERING DIVISION.
 - ALL GATE WELL COVERS SHALL BE CITY OF ROCHESTER HILLS STANDARD AS DETAILED.
 - ALL GATE VALVES WITH OPERATING NUTS AT A DISTANCE GREATER THAN FIVE (5) FEET BELOW GROUND SURFACE SHALL BE PROVIDED WITH AN EXTENSION STEM. THE LENGTH OF THE EXTENSION STEM SHALL REACH WITHIN FIVE (5) FEET FROM THE GROUND SURFACE. WHEN AN EXTENSION STEM IS USED, IT SHALL BE HELD IN PLACE BY AN EXTENSION STEM GUIDE SUITABLY FASTENED TO THE WALL OF THE GATE WELL. THE EXTENSION STEM SHALL BE MECHANICALLY ATTACHED TO THE OPERATING NUT. DETAILS OF THE EXTENSION SYSTEM AND THE METHOD OF INSTALLATION SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
 - BUTTERFLY VALVES SHALL BE USED FOR VALVES GREATER THAN 16-INCH DIAMETER AND SHALL BE MODEL 2F11 AS MANUFACTURED BY HENRY PRATT COMPANY OR APPROVED EQUAL.
 - TAPPING VALVES SHALL BE SERIES "A" AS MANUFACTURED BY EAST JORDAN OR RESILIENT SEATED GATE VALVES AS APPROVED BY THE CITY OF ROCHESTER HILLS ENGINEERING SERVICES.
 - TAPPING SLEEVES SHALL BE MANUFACTURED BY ROMAC INDUSTRIES; MUELLER; EAST JORDAN; SMITH-BLAIR OR APPROVED EQUAL AND APPROVED BY THE CITY OF ROCHESTER HILLS. FULL BODY SLEEVES MUST BE USED EXCEPT FOR REINFORCED CONCRETE PRESSURE PIPE OR A.C. PIPE.
 - THE MAXIMUM SCALE SHALL BE ONE (1) INCH EQUALS FIFTY (50) FEET.
 - THE SIZE, LENGTH, CLASS AND MANUFACTURER OF PIPE INSTALLED SHALL BE INDICATED.
 - THE SIZE, BRAND AND MODEL NUMBERS OF ALL VALVES AND HYDRANTS INSTALLED SHALL BE INDICATED.
 - A TOTAL AS-BUILT DRAWING QUANTITY LIST SHALL BE INCLUDED, AS WELL AS AN AS-BUILT DRAWING QUANTITY LIST ON EACH INDIVIDUAL SHEET.
 - THE LOCATIONS SHALL BE SHOWN ON THE PLANS WITH AN ACCURACY OF ONE (1) FOOT.
 - THE OFFSET OF THE WATER MAIN FROM PROPERTY LINES SHALL BE INDICATED.
 - ALL GATE VALVE WELLS, HYDRANTS AND ALL WATER SYSTEM APPURTENANCES SHALL BE LOCATED FROM TWO FIXED OBJECTS (MANHOLES, BUILDING CORNERS ECT.).
 - ALL UNDERGROUND APPURTENANCES, SUCH AS GATE VALVE WELLS, METER PITS, PRESSURE REDUCING VALVE PITS, ETC. SHALL BE LOCATED FROM THE NEAREST HYDRANT THAT IS CONNECTED TO THE SAME WATER MAIN AS THE APPURTENANCE.
 - THE LOCATION AND SIZE OF EVERY RESTRAINED JOINT SHALL BE NOTED.
 - THE ACCURATE LOCATION OF ALL UTILITY CROSSINGS WHERE THE VERTICAL SEPARATION, IS LESS THAN 18" SHALL BE NOTED.
 - AS-BUILT SHALL BE PREPARED IN ACCORDANCE WITH THE CITY OF ROCHESTER HILLS AS-BUILT GUIDELINES AS PROVIDED AT THE PRE-CONSTRUCTION MEETING.

HYDRANT REQUIREMENTS

- ALL HYDRANTS SHALL BE CONSTRUCTED WITH A SIX (6) INCH COMPANION GATE VALVE IN A THREE (3) PIECE, ADJUSTABLE DUCTILE IRON VALVE BOX, WHICH SHALL INCLUDE A FIVE AND ONE-QUARTER (5-1/4) INCH SCREW SHAFT. VALVE BOXES SHALL BE SERIES 6860 AS MANUFACTURED BY TYLER PIPE OR APPROVED EQUAL.
- ALL HYDRANTS SHALL BE EAST JORDAN NO. 4-BR-250 TRAFFIC MODEL, OR CITY APPROVED EQUAL. SELF-DRAINING HYDRANTS SHALL NOT BE USED. HYDRANTS SHALL HAVE BREAKAWAY FLANGE.
- ALL HYDRANTS SHALL BE PAINTED RED ABOVE GROUND WITH A FINISH COAT OF RUST-OLEUM SAFETY RED OR APPROVED EQUAL. HYDRANT CAPS SHALL BE PAINTED SAME COLOR AS THE HYDRANT.
- ALL FIRE HYDRANT JOINTS SHALL BE TOTALLY RESTRAINED BY THE USE OF RESTRAINED JOINT. THRUST BLOCKS ARE ALSO REQUIRED.
- REFER TO AWWA C502 FOR ALL PROPOSED FIRE HYDRANTS.

ACCEPTANCE OF NEW WATER MAINS

- PRIOR TO WATER MAIN ACCEPTANCE THE FOLLOWING CONDITIONS MUST BE MET: 1) PRESSURE TESTING AND BACTERIA TESTING MUST BE COMPLETED IN ACCORDANCE WITH THE CITY OF ROCHESTER HILLS 2) ALL EASEMENT AND RIGHT-OF-WAY ACQUISITION MUST BE ACCEPTED BY THE CITY OF ROCHESTER HILLS ENGINEERING SERVICES 3) THE CITY OF ROCHESTER HILLS MUST BE PROVIDED WITH THE BILL OF SALE AND 4) ALL MYLAR "AS-BUILT DRAWINGS" MUST BE ACCEPTED AND APPROVED BY THE CITY OF ROCHESTER HILLS, ENGINEERING SERVICES. THE CITY OF ROCHESTER HILLS INSPECTION DIVISION MUST WITNESS THE CONNECTION OF THE WATER MAIN TO THE EXISTING WATER MAIN. AFTER WHICH RESIDENTIAL AND COMMERCIAL TAPS WILL BE ALLOWED.
- THE CONTRACTOR SHALL NOTIFY THE CITY OF ROCHESTER HILLS, INSPECTION DEPARTMENT (248.841.2510) FOR PRESSURE TESTING, BACTERIOLOGICAL SAMPLING, CONNECTIONS TO EXISTING WATER MAIN AND FINAL FIELD REVIEW. A FORTY-EIGHT (48) HOUR ADVANCE NOTICE IS REQUIRED.
- THE CONTRACTOR SHALL DISINFECT AND PRESSURE TEST ALL NEW WATER MAIN IN ACCORDANCE WITH ROCHESTER HILLS STANDARDS. THE WATER MAIN SHALL PASS A 150 PSI PRESSURE TEST 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.
- WHERE CONTRACTOR SUPPLIED GAUGES ARE REQUIRED, MINIMUM SIZE SHALL BE 3 1/2" DIAMETER OR LARGER GRADUATED IN ONE (1) OR TWO (2) POUND INCREMENTS FROM 1 TO 160 P.S.I. OR HIGHER AND HAVE CURRENT CERTIFICATION.
- PRESSURE TESTING AND BACTERIA TESTING MUST BE COMPLETED AND APPROVED PRIOR TO CONNECTING TO THE EXISTING WATER MAIN.

CITY OF ROCHESTER HILLS WATER SYSTEMS AS-BUILT DRAWING SPECIFICATIONS

IN AREAS WHERE WATER SYSTEMS ARE OPERATED AND MAINTAINED BY THE CITY OF ROCHESTER HILLS DEPARTMENT OF PUBLIC SERVICES, FINAL ACCEPTANCE OF THE WATER SYSTEM MUST BE RENDERED BY THE DEPARTMENT OF PUBLIC SERVICES, BEFORE THE SYSTEM CAN BE USED FOR THE SERVICE INTENDED.

ONE ITEM REQUIRED FOR FINAL ACCEPTANCE SHALL BE THE SUBMISSION OF AS-BUILT DRAWINGS TO THE CITY OF ROCHESTER HILLS, DPS, BY THE DESIGN ENGINEER. AS-BUILT DRAWINGS SHALL BE DEFINED AS AND CONTAIN THE FOLLOWING INFORMATION:

- FINAL AS-BUILT DRAWINGS SHALL BE PROVIDED IN REPRODUCIBLE PDF FORMAT VIA DIGITAL STORAGE MEDIA. XEROX OR ANY HEAT PROCESS REPRODUCTIONS WILL NOT BE ACCEPTED.
- ALONG WITH THE PDF PLAN SET PROVIDE TWO (2) SETS OF BLACK-LINED DRAWINGS AND THE PLANS ON ELECTRONIC MEDIA IN AUTOCAD FORMAT (LATEST VERSION).
- EACH AND EVERY SHEET SHALL BE SEALED BY THE DESIGN ENGINEER, ALONG WITH THE FOLLOWING CERTIFICATION STATEMENT ON THE COVER SHEET:

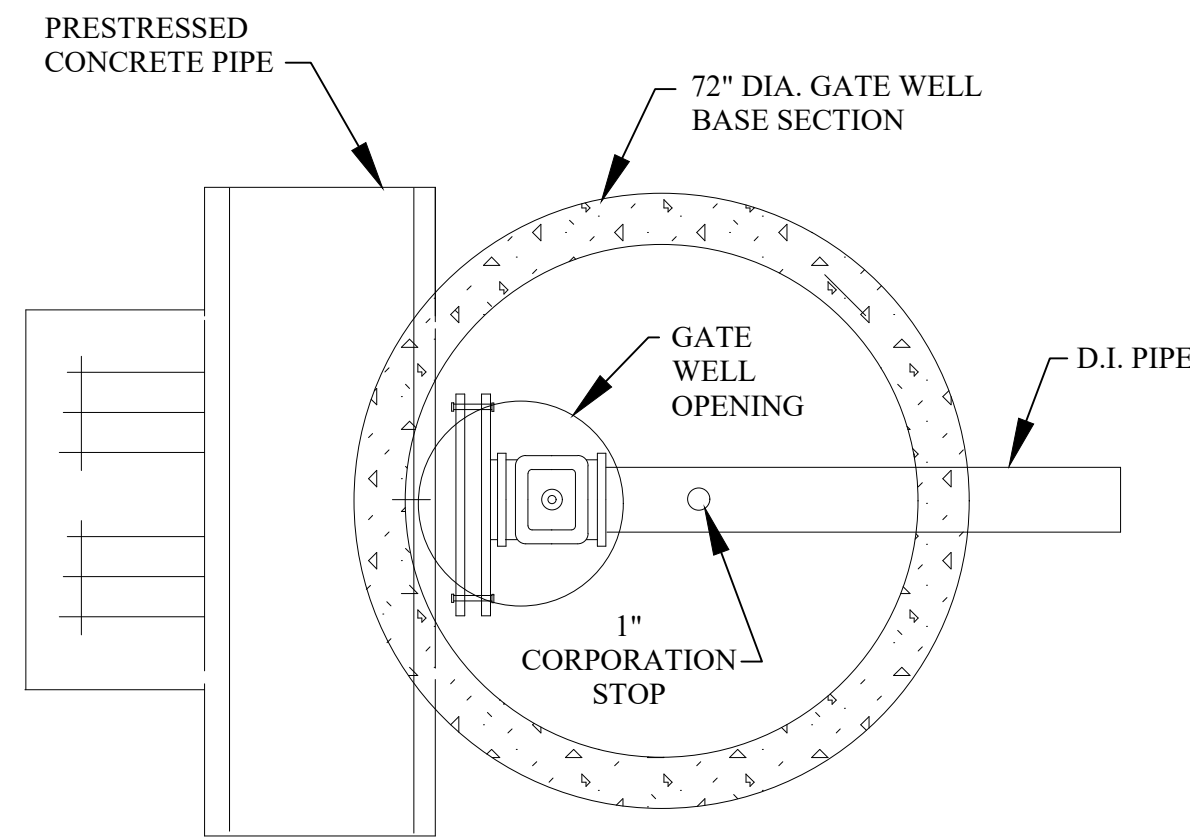
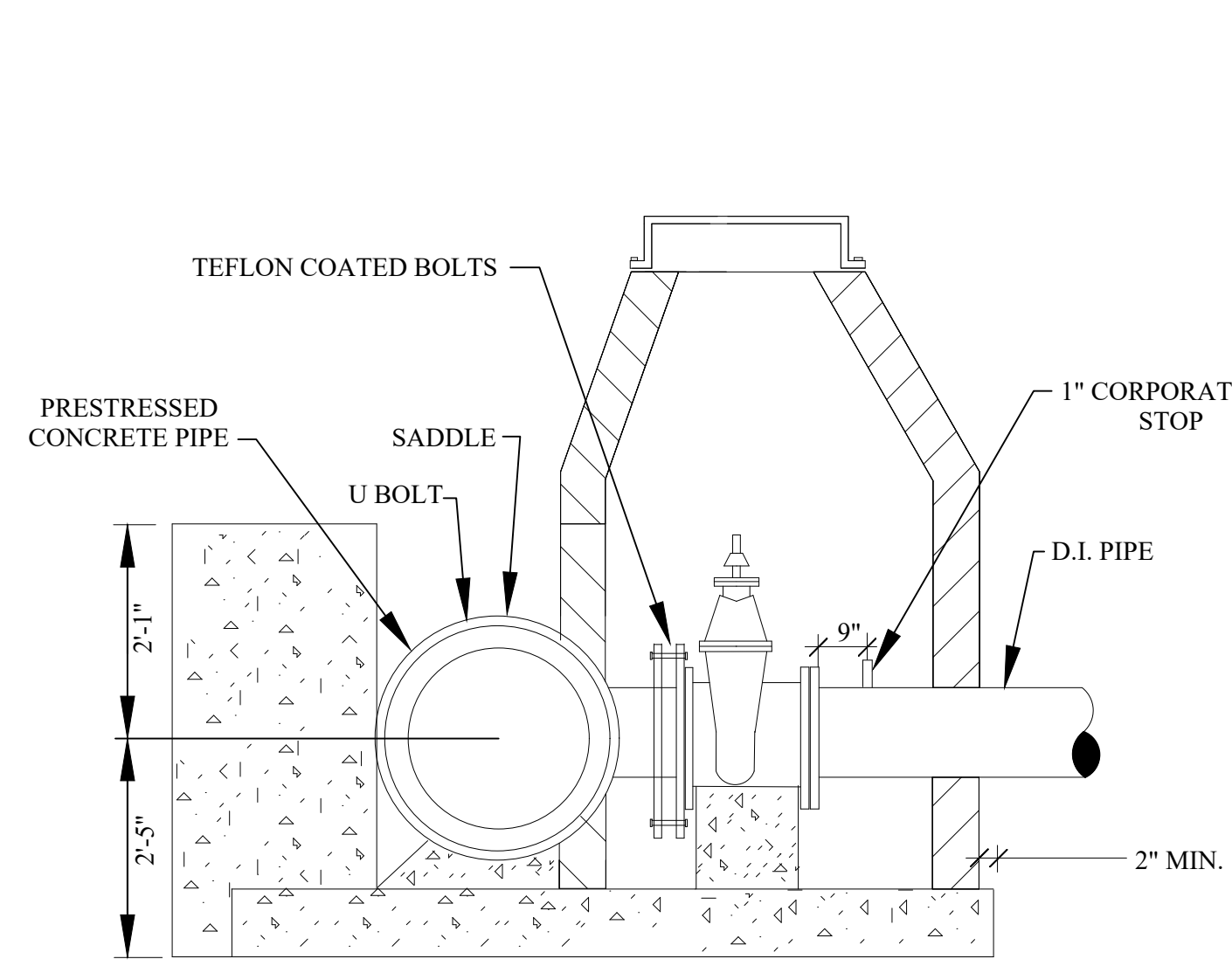
I HEREBY CERTIFY THAT OUR FIRM HAS PREPARED THESE AS-BUILT DRAWINGS OF THE IMPROVEMENTS AS CONSTRUCTED, AND THAT TO THE BEST OF MY KNOWLEDGE THOSE IMPROVEMENTS NOTED AS "AS BUILT" WERE CONSTRUCTED IN SUBSTANTIAL CONFORMANCE WITH THE APPROVED CONSTRUCTION PLANS; AND ALSO THAT THE WATER MAIN AND STRUCTURES, AS CONSTRUCTED, LIE WITHIN THE EASEMENT DESCRIPTIONS REQUIRED BY THE CITY OF ROCHESTER HILLS.

(COMPANY NAME)

(ENGINEER'S SIGNATURE)

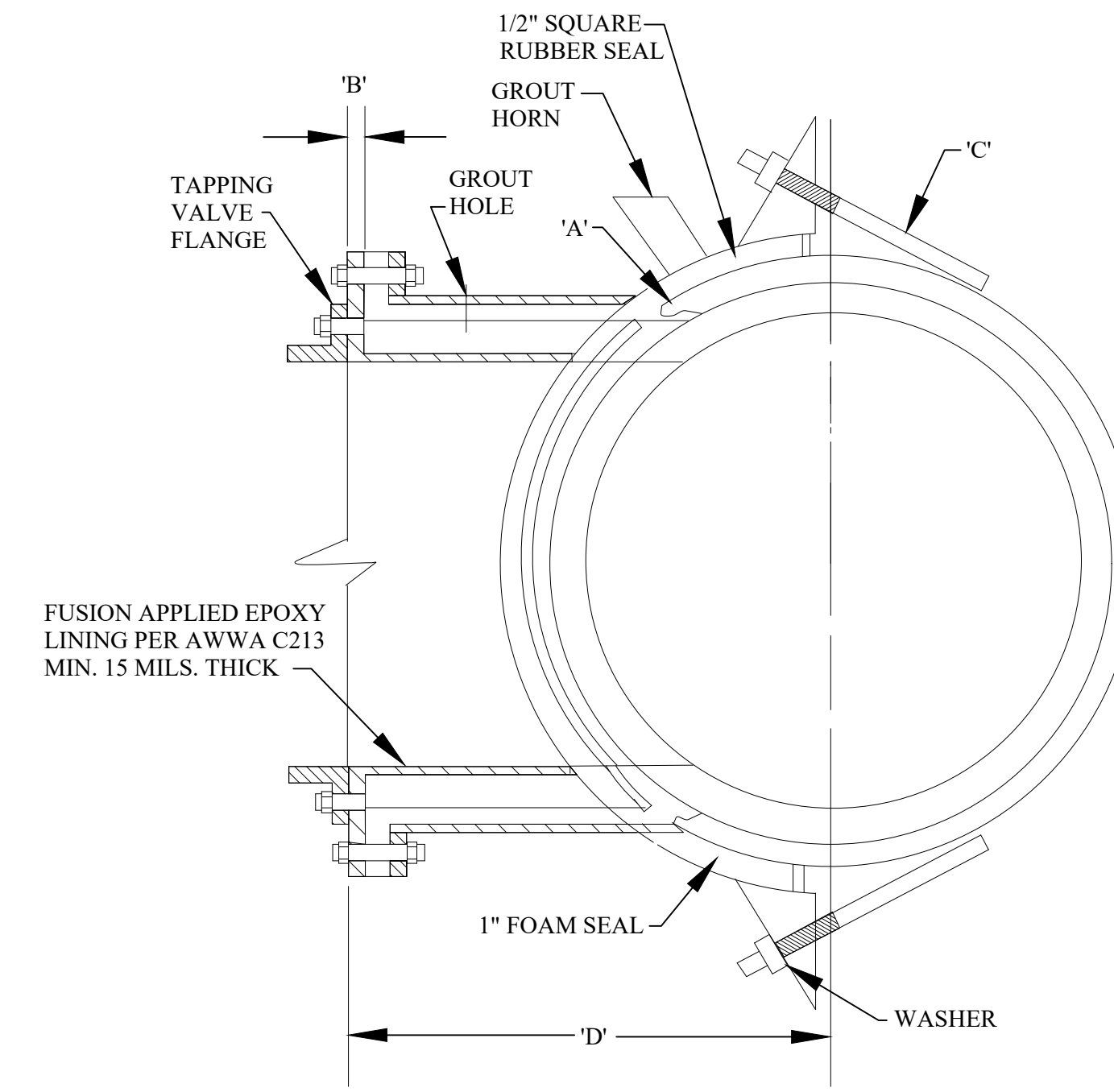
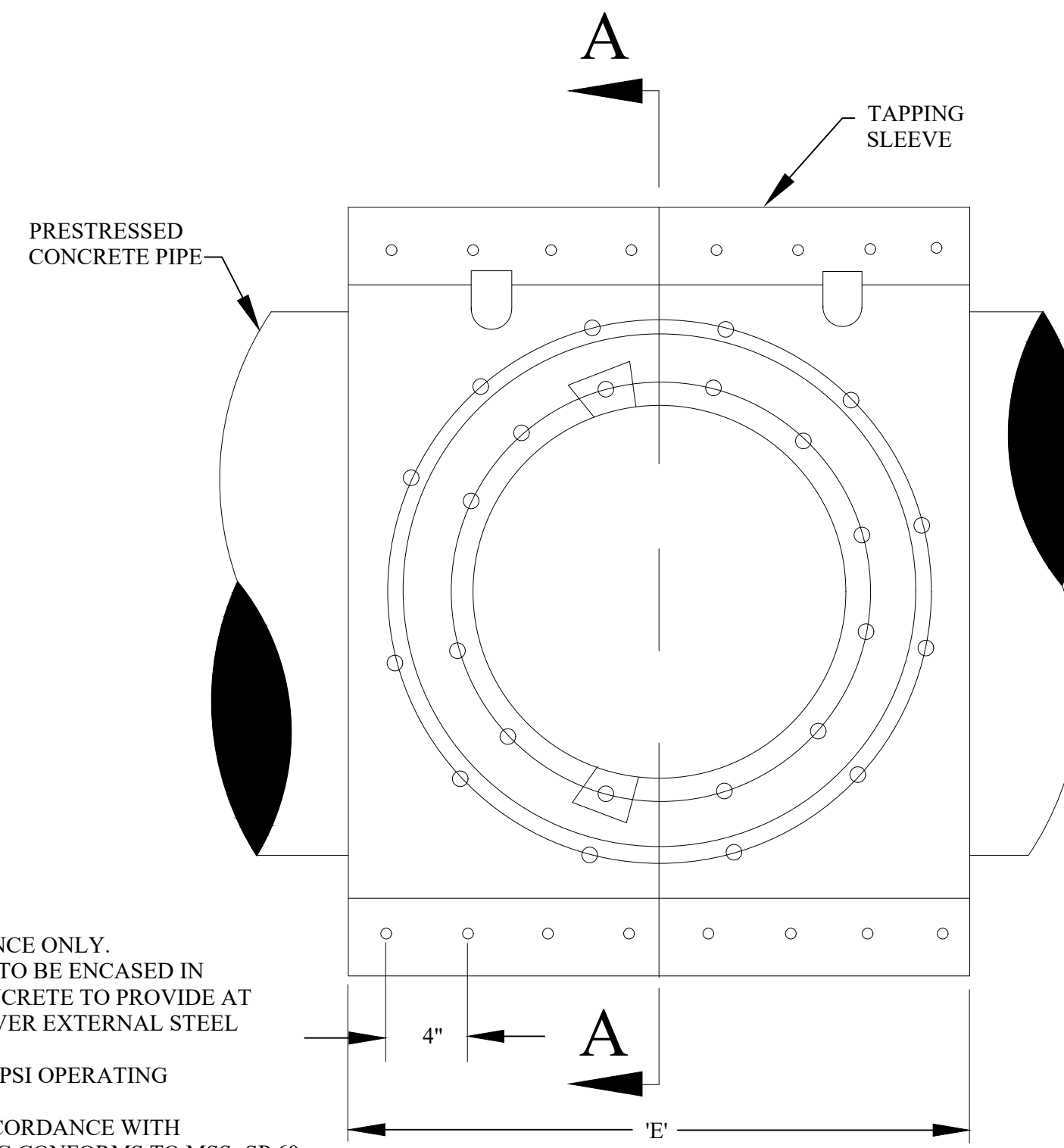
PROFESSIONAL ENGINEER NO. _____

ENGINEER SEAL



- NOTES: 1) THESE DIMENSIONS ARE FOR REFERENCE ONLY.
 2) ENTIRE SADDLE, INCLUDING STRAPS, TO BE ENCASED IN PORTLAND CEMENT MORTAR OR CONCRETE TO PROVIDE AT LEAST ONE (1) INCH OF THICKNESS OVER EXTERNAL STEEL SURFACES PRIOR TO BACKFILLING.
 3) TAP SADDLES ARE DESIGNED FOR 150 PSI OPERATING PRESSURE.
 4) FLANGE DRILLED AND TAPPED IN ACCORDANCE WITH AWWA C207 CLASS D, CENTERING RING CONFORMS TO MSS-SP 60.
 5) GROUT SHALL SET A MINIMUM OF TWENTY-FOUR (24) HOURS PRIOR TO PRESSURE TESTING.

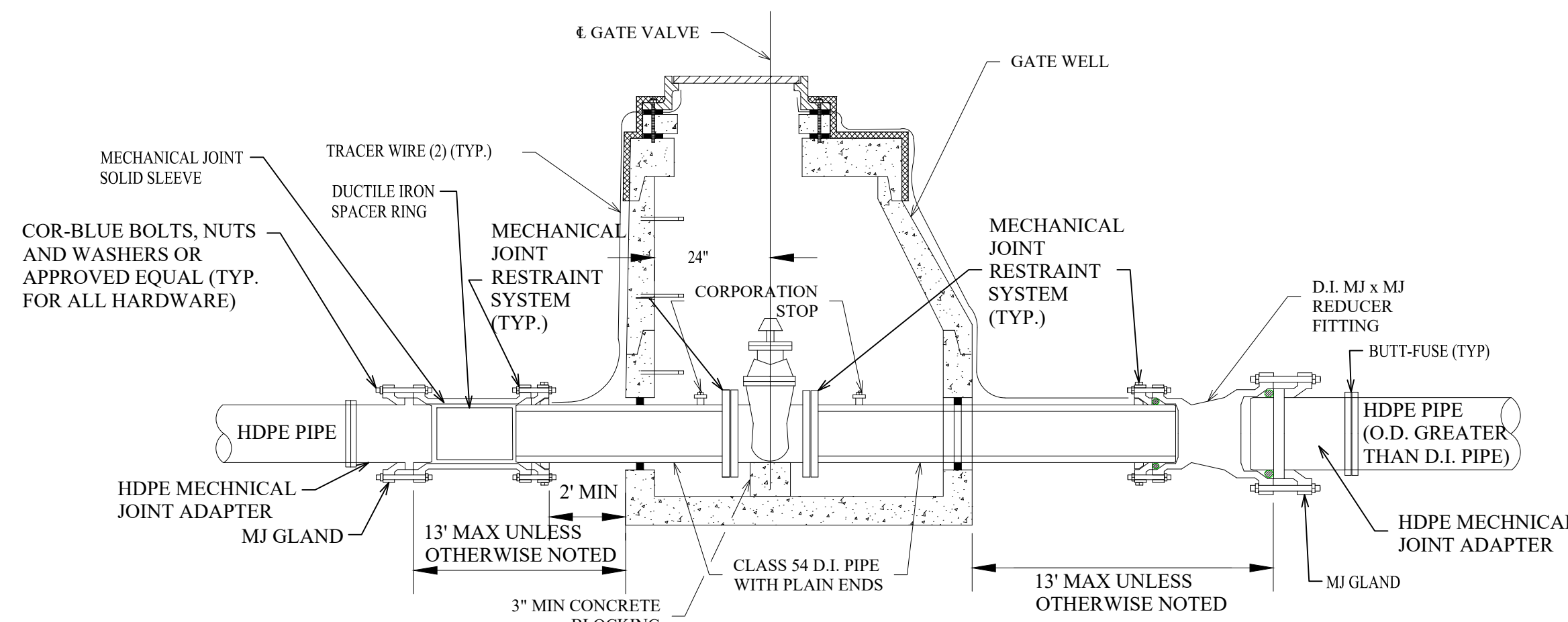
CONCRETE PRESSURE TAP VALVE & WELL ASSEMBLY W/ CONCRETE ENCASEMENT



SECTION A-A

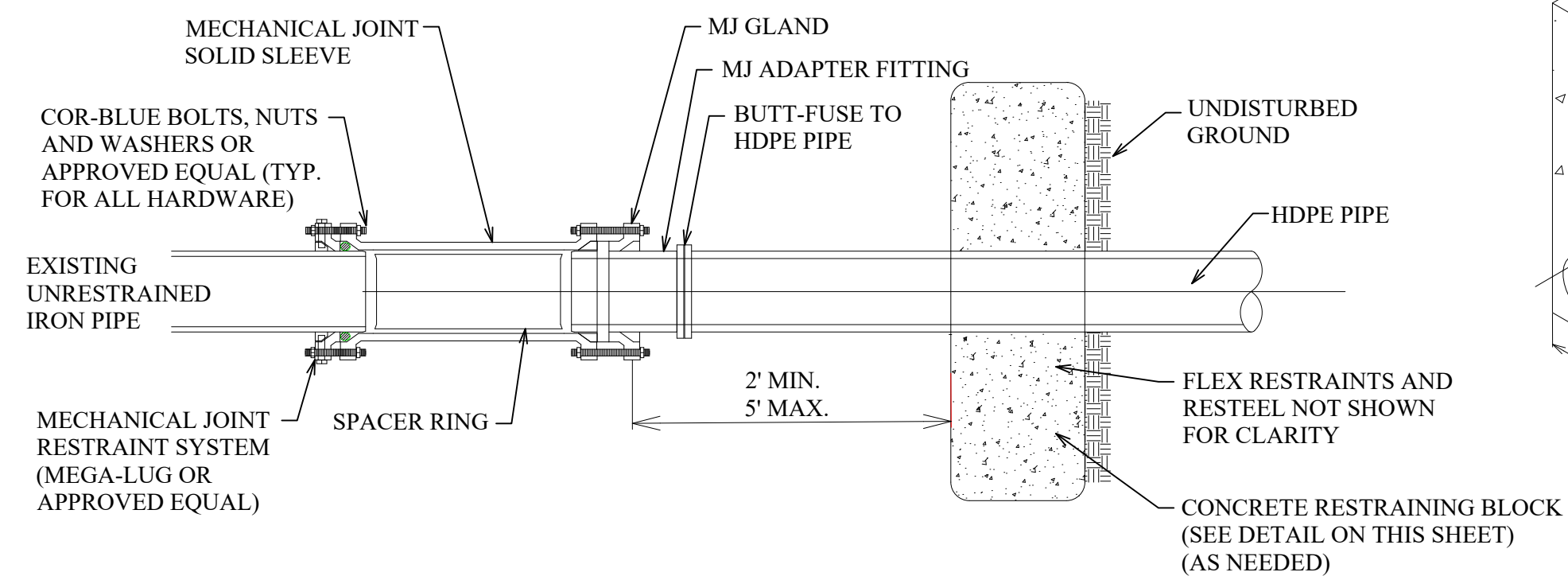
PIPE SIZE X TAP SIZE	A	B	C	D	E
16" X 4"	1/4"	7/8"	6	14-1/16"	24"
16" X 6"	1/4"	1-1/8"	6	14-5/16"	24"
16" X 8"	1/4"	1-1/8"	6	14-5/16"	24"
16" X 10"	1/4"	1-3/8"	7	14-9/16"	28"
16" X 12"	1/4"	1-3/8"	8	14-9/16"	32"
20" X 4"	1/4"	7/8"	6	16-1/2"	24"
20" X 6"	1/4"	1-1/8"	6	16-1/2"	24"
20" X 8"	1/4"	1-1/8"	6	16-1/2"	24"
20" X 10"	1/4"	1-3/8"	7	17"	28"
20" X 12"	1/4"	1-3/8"	8	17"	32"
24" X 4"	1/4"	7/8"	6	18-3/4"	24"
24" X 6"	1/4"	1-1/8"	6	19"	24"
24" X 8"	1/4"	1-1/8"	6	19"	24"
24" X 10"	1/4"	1-3/8"	7	19-1/4"	28"
24" X 12"	1/4"	1-3/8"	8	19-1/4"	32"
30" X 4"	1/4"	7/8"	6	22-1/8"	24"
30" X 6"	1/4"	1-1/8"	6	22-3/8"	24"
30" X 8"	1/4"	1-1/8"	6	22-3/8"	24"
30" X 10"	1/4"	1-3/8"	7	22-5/8"	28"
30" X 12"	1/4"	1-3/8"	8	22-5/8"	32"
36" X 4"	1/4"	7/8"	6	25-1/2"	24"
36" X 6"	1/4"	1-1/8"	6	25-3/4"	24"
36" X 8"	1/4"	1-1/8"	7	25-3/4"	28"
36" X 10"	1/4"	1-3/8"	8	26"	32"
36" X 12"	1/4"	1-3/8"	9	26"	36"
42" X 4"	1/4"	7/8"	6	28-7/8"	24"
42" X 6"	1/4"	1-1/8"	7	29-1/8"	28"
42" X 8"	1/4"	1-1/8"	8	29-1/8"	32"
42" X 10"	3/8"	1-3/8"	9	29-3/8"	36"
42" X 12"	3/8"	1-3/8"	10	29-3/8"	40"
48" X 4"	3/8"	7/8"	7	32-1/4"	28"
48" X 6"	3/8"	1-1/8"	7	32-1/2"	28"
48" X 8"	3/8"	1-1/8"	7	32-1/2"	28"
48" X 10"	3/8"	1-3/8"	7	32-3/4"	28"
48" X 12"	3/8"	1-3/8"	9	32-3/4"	36"

CONCRETE TAPPING SLEEVE DETAILS

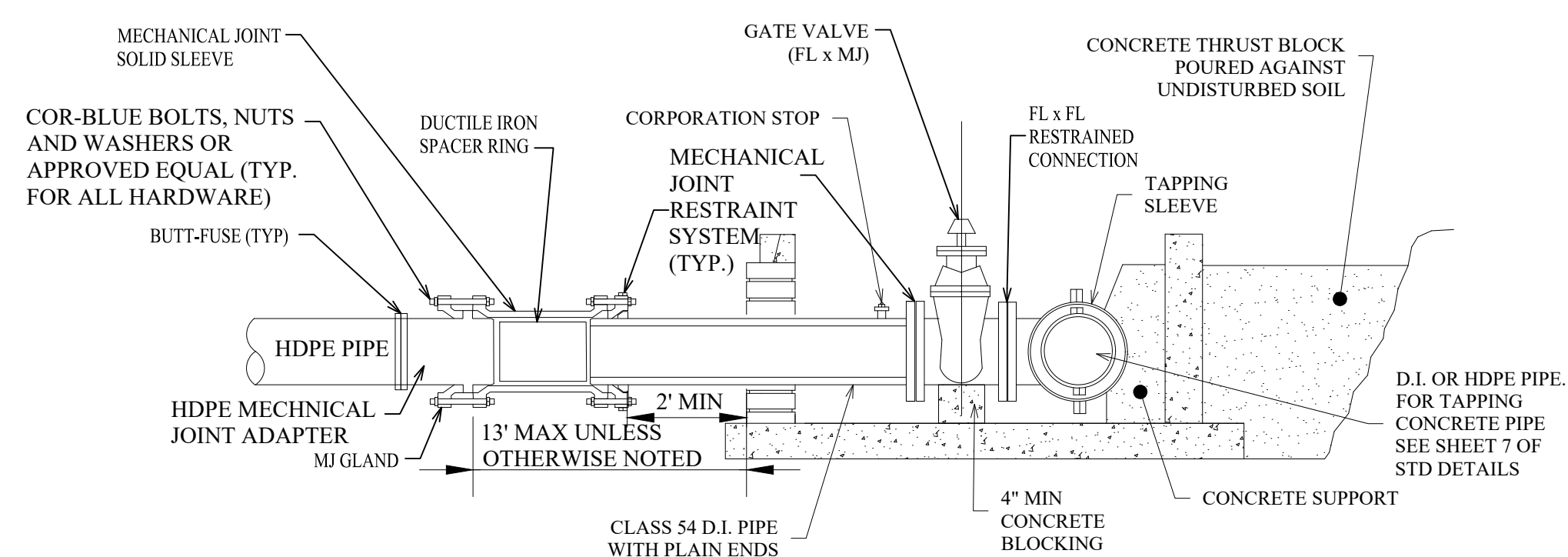


TYPICAL HDPE CONNECTION TO GATE VALVE

- NOTES:
 1. WHERE GATE VALVE IS IN LINE WITH THE HDPE WATER MAIN, INSTALL D.I. PIPE THROUGH GATE WELL MAKING CONNECTION TO HDPE PIPE OUTSIDE OF GATE WELL AS SHOWN.
 2. TRACER WIRES SHALL BE INSTALLED ALONG THE OUTSIDE OF THE GATE WELL AND BENEATH THE FRAME AND COVER.

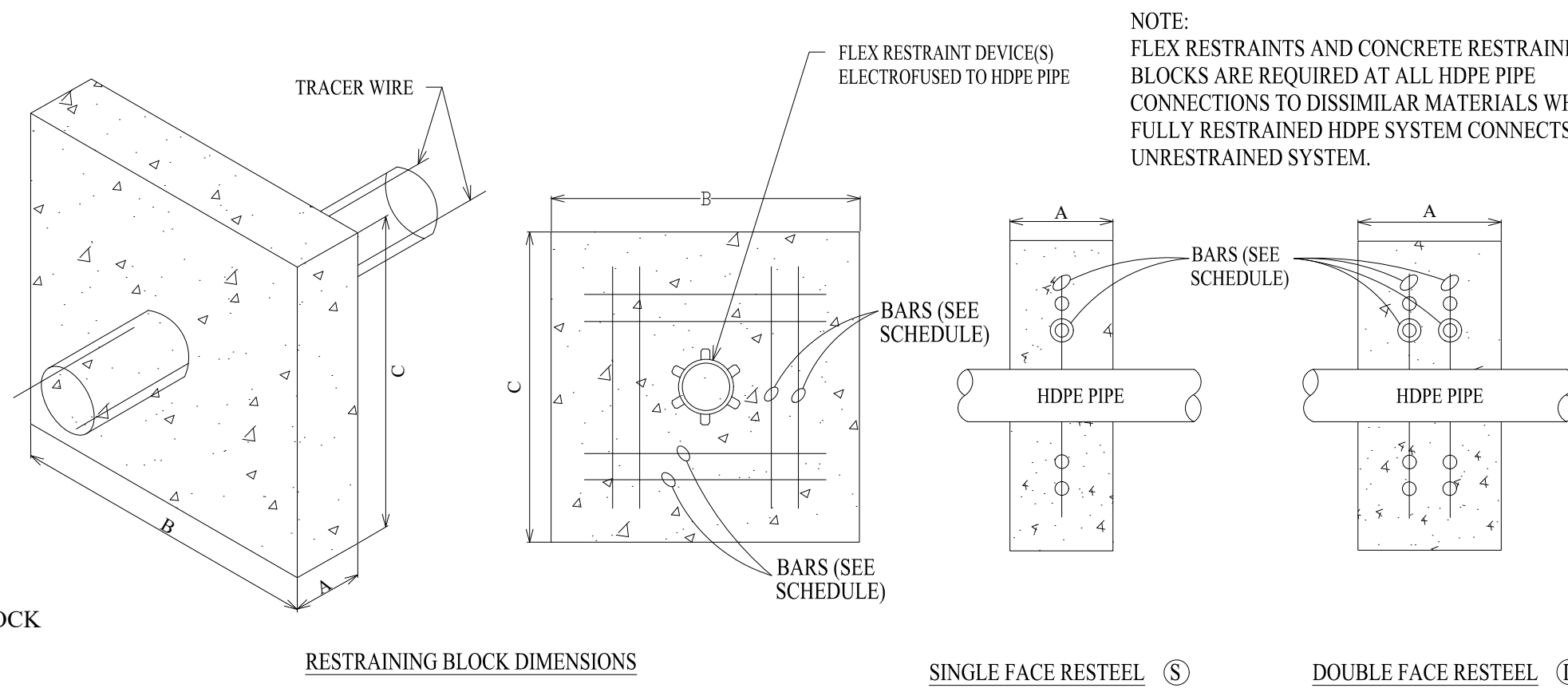


HDPE TO EXISTING WATER MAIN TRANSITION

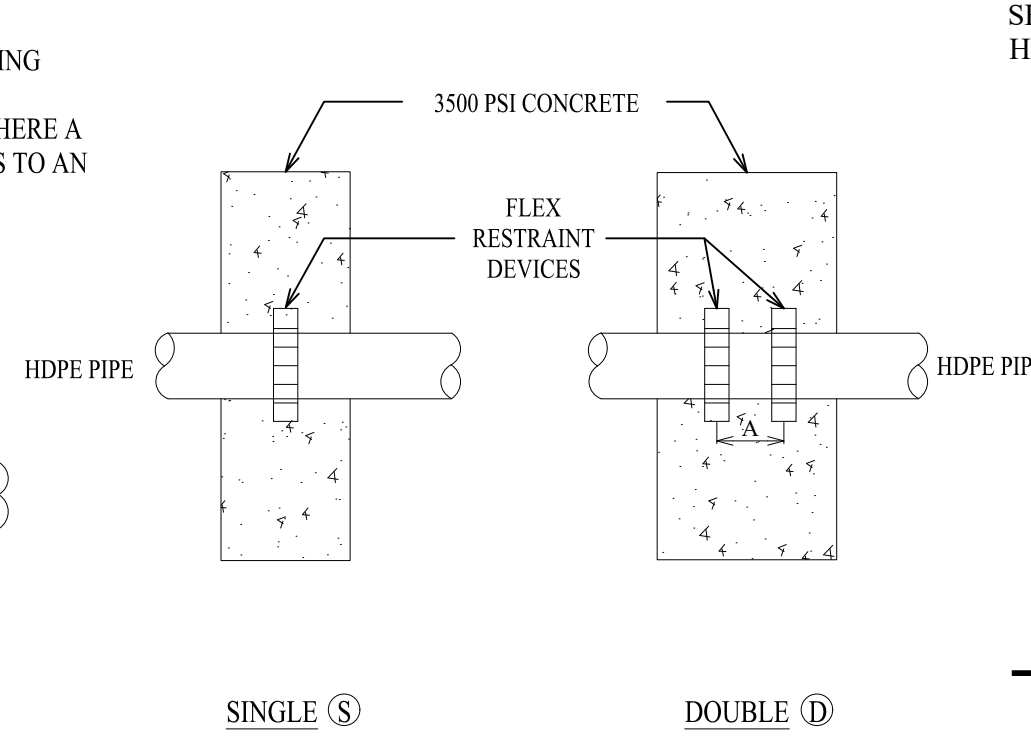


HDPE TAPPING SLEEVE, VALVE & WELL

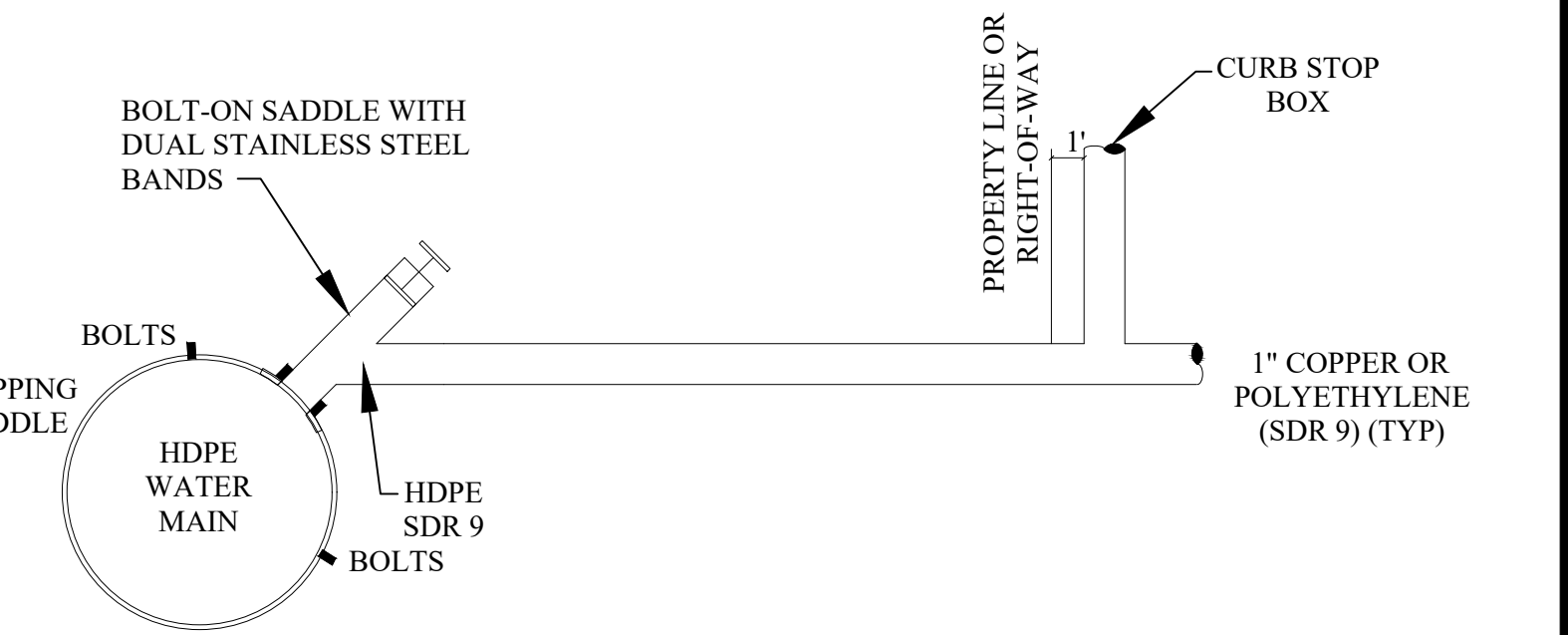
- NOTES:
 1. SEE SHEET 1 OF THE WATER MAIN STANDARD DETAIL SHEETS FOR GENERAL TAPPING SLEEVE VALVE AND WELL DETAILS.
 2. TAPPING SLEEVES FOR HDPE PIPE REQUIRE AN OUTLET SEAL GASKET AND SPRING WASHERS IN ADDITION TO THE REQUIREMENTS DETAILED IN SHEET 2 (JCM 452, ROMAC S8TH OR APPROVE EQUAL).



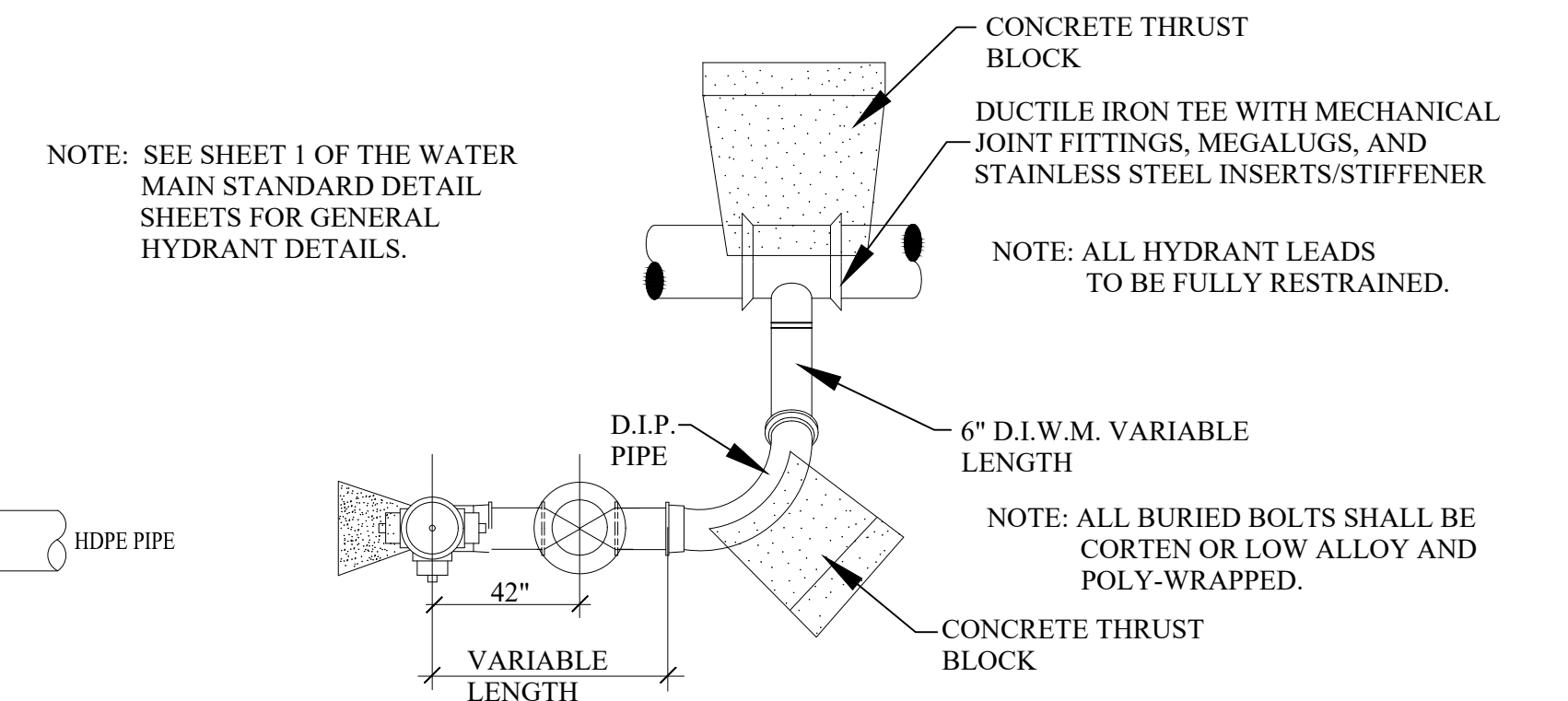
RESTRAINING BLOCK RESTEEL



RESTRAINING BLOCK RESTRAINTS



HOUSE LEAD DETAIL HDPE TO COPPER OR POLYETHYLENE (SDR 9)



PLAN HYDRANT SIDE OUTLET

- NOTE: SEE SHEET 1 OF THE WATER MAIN STANDARD DETAIL SHEETS FOR GENERAL HYDRANT DETAILS.

- NOTE: ALL HYDRANT LEADS TO BE FULLY RESTRAINED.
 NOTE: ALL BURIED BOLTS SHALL BE CORTEN OR LOW ALLOY AND POLY-WRAPPED.

REVISIONS	DATE
REVISED HDPE TO EX. WM TRANSITION	3/28/2023

APPROVED BY
 CITY COUNCIL, DATE: SEPTEMBER 23, 2019
 PREPARED BY ENGINEERING DIVISION
 DEPARTMENT OF PUBLIC SERVICES

NOTIFY ROCHESTER HILLS
 ENGINEERING DIVISION @
 248-841-2510 48 HRS. PRIOR
 TO START OF
 CONSTRUCTION

City of Rochester Hills
 1000 Rochester Hills Drive, Rochester Hills, Michigan 48309

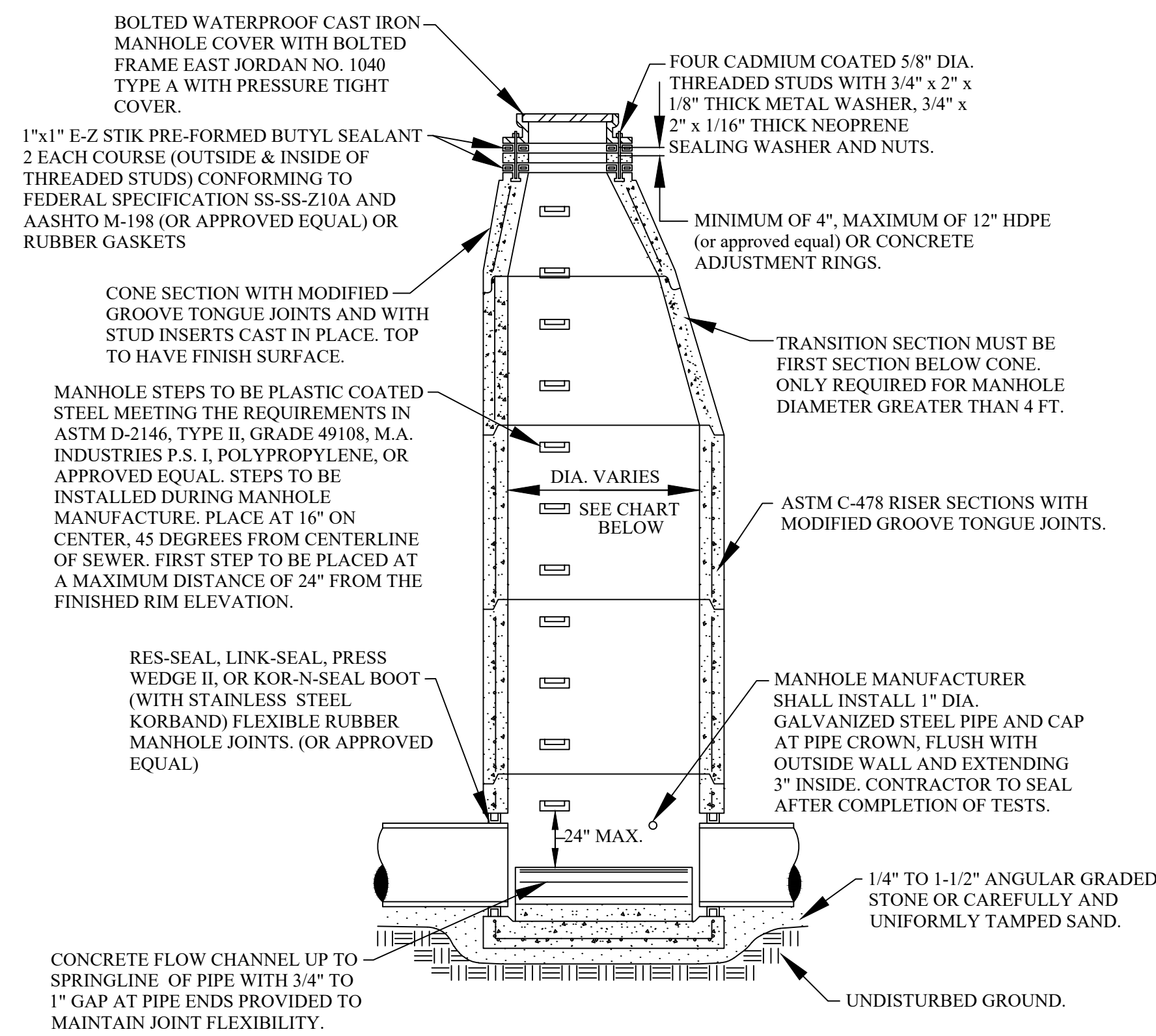
**WATER MAIN
 SPECIAL DETAILS**

NOT TO SCALE	DATE: 1/10/2019
SHEET 1 OF 1	REV 12/10/2021



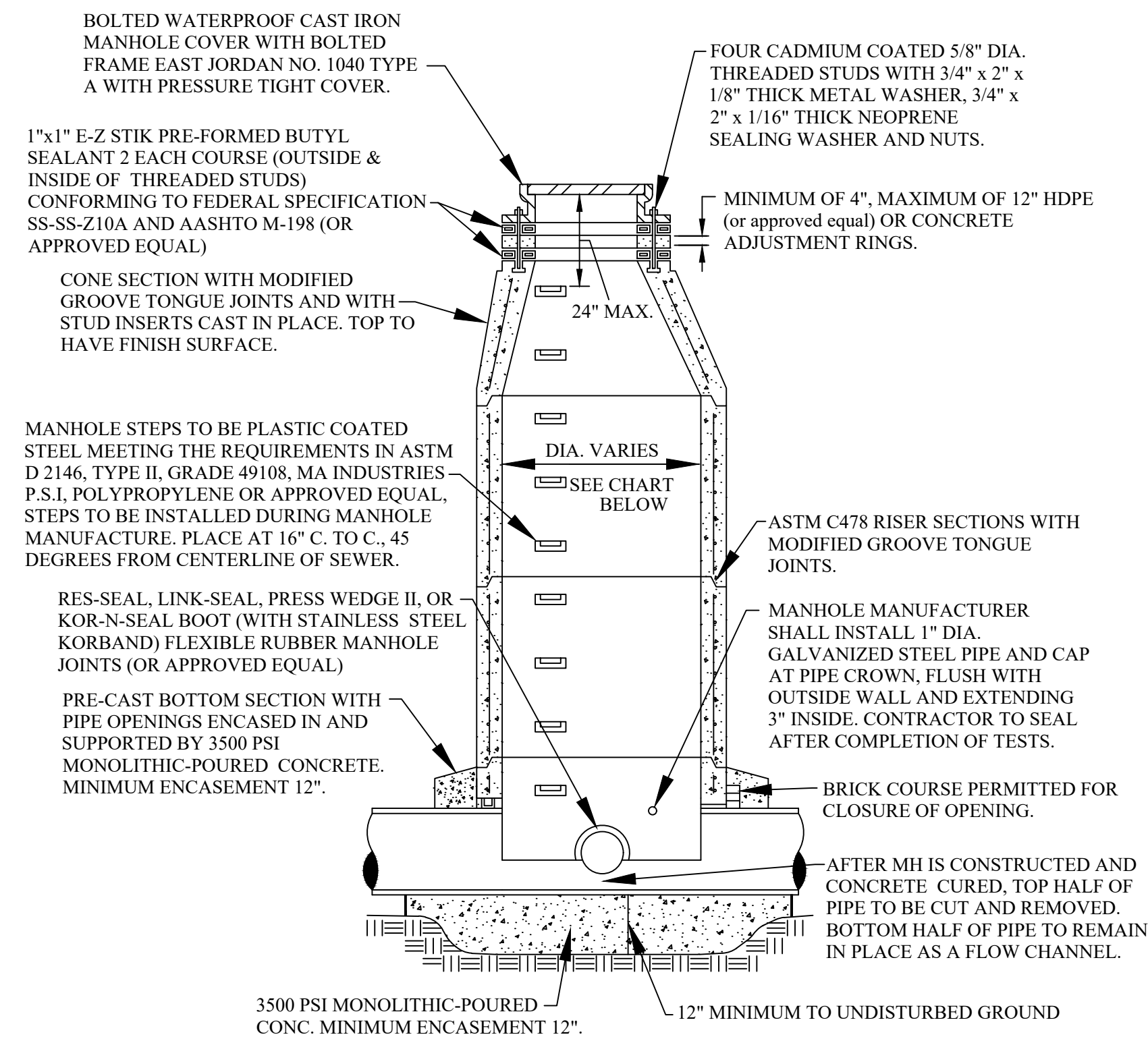
SANITARY SEWER CONSTRUCTION NOTES

- ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE CITY OF ROCHESTER HILLS AND THE OAKLAND COUNTY WATER RESOURCES COMMISSIONER (OCWRC). ALL SANITARY SEWER CONSTRUCTION SHALL HAVE FULL-TIME INSPECTION SUPERVISED BY THE CITY OF ROCHESTER HILLS INSPECTION SERVICES.
- NO SEWER INSTALLATION SHALL HAVE AN INFILTRATION EXCEEDING 100 GALLONS PER INCH DIAMETER PER MILE OF PIPE IN A 24 HOUR PERIOD, AND NO SINGLE RUN OF SEWER BETWEEN MANHOLES SHALL EXCEED 100 GALLONS PER INCH DIAMETER PER MILE. AIR TESTS IN LIEU OF INFILTRATION TESTS SHALL BE AS SPECIFIED IN THE OAKLAND COUNTY WATER RESOURCES COMMISSIONER STANDARDS. PRELIMINARY-AIR TESTS ARE WITNESSED BY THE CITY AND FINAL AIR TESTS ARE WITNESSED BY BOTH THE CITY AND THE OCWRC. ONLY PIPE AND PIPE JOINTS APPROVED BY THE CITY MAY BE USED FOR SANITARY SEWER CONSTRUCTION.
- LOCATED IN THE FIRST MANHOLE UPSTREAM FROM THE POINT OF ALL CONNECTIONS TO AN EXISTING SEWER, OR EXTENSION, A TEMPORARY 12-INCH DEEP SUMP SHALL BE PROVIDED IN THE FIRST MANHOLE ABOVE THE CONNECTION WHICH WILL BE FILLED IN AFTER SUCCESSFUL COMPLETION OF ANY ACCEPTANCE TEST UP TO THE STANDARD FILLET PROVIDED FOR THE FLOW CHANNEL. A WATERTIGHT BULKHEAD SHALL BE PROVIDED ON THE DOWNSTREAM SIDE OF THE SUMP MANHOLE.
- AT ALL TIMES WHEN LAYING OF NEW PIPE IS NOT ACTUALLY IN PROGRESS, THE UPSTREAM OPEN END OF THE PIPE SHALL BE CLOSED BY TEMPORARY WATERTIGHT PLUGS OR BY OTHER APPROVED MEANS. IF WATER IS IN THE TRENCH WHEN WORK IS RESUMED, THE PLUG SHALL NOT BE REMOVED UNTIL THE DANGER OF WATER ENTERING THE PIPE HAS PASSED. ALL MAIN LINE PIPE SHALL BE LAID WITH A PIPE LASER BEAM FOR LINE AND GRADE. A TARGET MUST BE INSTALLED AT THE END OF THE PIPE BEING LAID.
- SELF-LEVELING ACCESS ASSEMBLY STRUCTURES SHALL BE USED FOR ADJUSTING STRUCTURES WITHIN ASPHALT AND CONCRETE PAVEMENT.
- ALL SEWER PIPE SHALL BE INSTALLED IN CLASS "B" BEDDING OR BETTER.
- ALL NEW MANHOLES SHALL HAVE CITY APPROVED FLEXIBLE, WATERTIGHT SEALS WHERE PIPES PASS THROUGH WALLS. MANHOLES SHALL BE OF PRE CAST SECTIONS WITH MODIFIED GROOVE TONGUE AND BUTYL TYPE JOINTS. PRE CAST MANHOLE CONE SECTIONS SHALL BE CITY APPROVED MODIFIED ECCENTRIC CONE TYPE. ALL MANHOLES SHALL BE PROVIDED WITH BOLTED, WATERTIGHT COVERS.
- AT ALL CONNECTIONS TO MANHOLES IN ALL SEWERS, OR EXTENSIONS, DROP CONNECTIONS WILL BE REQUIRED WHEN THE DIFFERENCE IN INVERT ELEVATIONS EXCEEDS 18 INCHES.
- GROUND WATER, STORM WATER, CONSTRUCTION WATER, DOWN SPOUT DRAINAGE OR WEEP TILE DRAINAGE SHALL NOT BE ALLOWED TO ENTER ANY SANITARY SEWER INSTALLATION.
- PRIOR TO ANY EXCAVATION, THE CONTRACTOR SHALL CONTACT MISS DIG THREE (3) DAYS IN ADVANCE (811) FOR THE LOCATION OF UNDERGROUND PIPELINE AND CABLE FACILITIES AND SHALL ALSO NOTIFY REPRESENTATIVES OF OTHER UTILITIES LOCATED IN THE VICINITY OF THE WORK.
- AN 18 INCH MINIMUM VERTICAL SEPARATION AND A 10 FOOT MINIMUM HORIZONTAL SEPARATION MUST BE MAINTAINED BETWEEN SANITARY SEWER AND ALL OTHER UTILITIES.
- AS A MEANS OF INSURING PROPER INSTALLATION OF THE SANITARY SEWER PIPE, THE CONTRACTOR SHALL VIDEO INSPECT, ACCORDING TO THE CITY OF ROCHESTER HILLS VIDEO INSPECTION STANDARDS, 100% OF THE SANITARY SEWER PIPE. THE CONTRACTOR SHALL PROVIDE 24 HOURS NOTICE TO THE CITY OF ROCHESTER HILLS PRIOR TO VIDEO INSPECTION, SO A REPRESENTATIVE MAY BE PRESENT. ROCHESTER HILLS WILL BE PROVIDED WITH A DIGITAL COPY OF THE VIDEO INSPECTION AND LOG IN ACCORDANCE WITH THE CITY OF ROCHESTER HILLS INSPECTION STANDARDS.



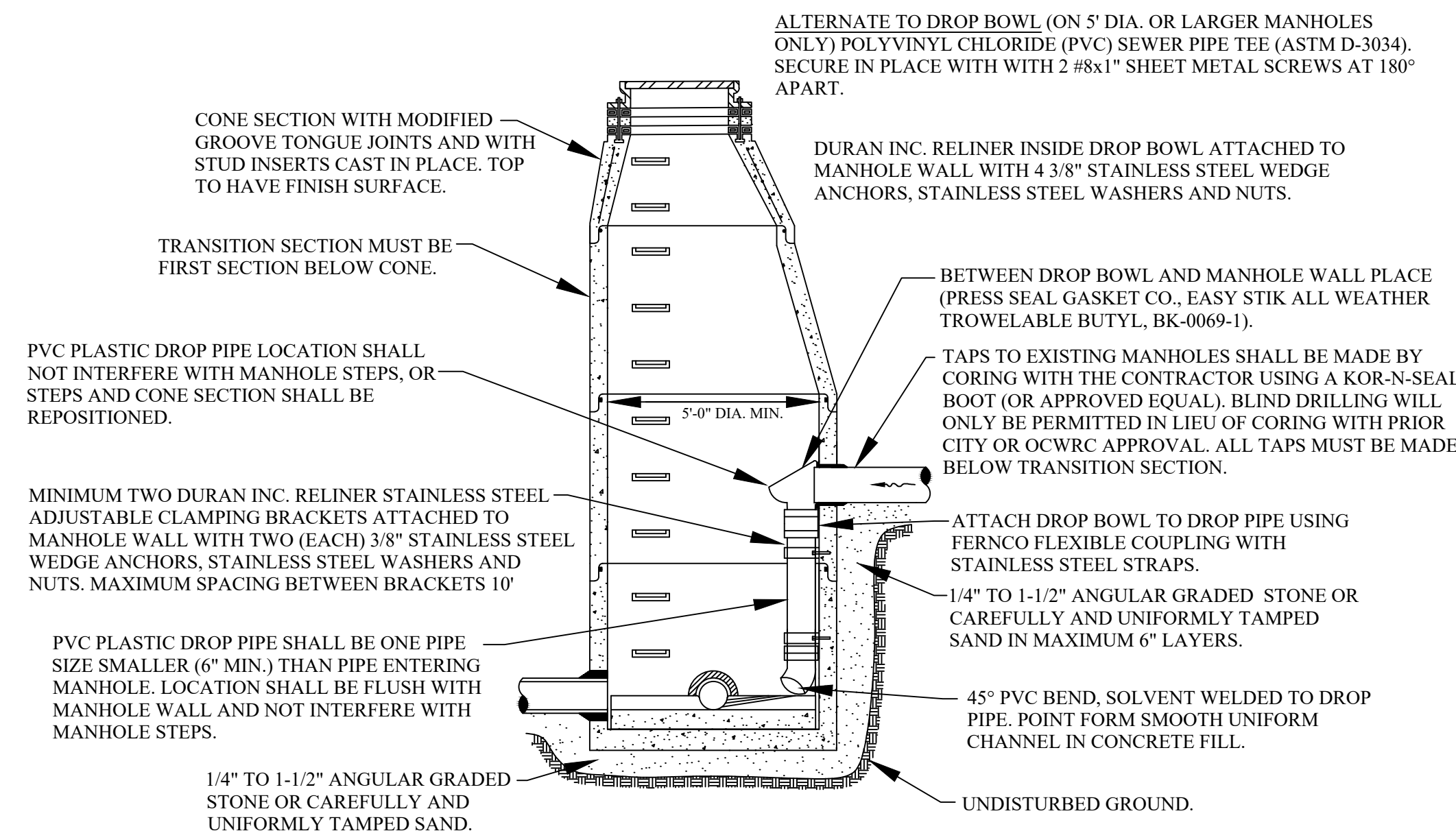
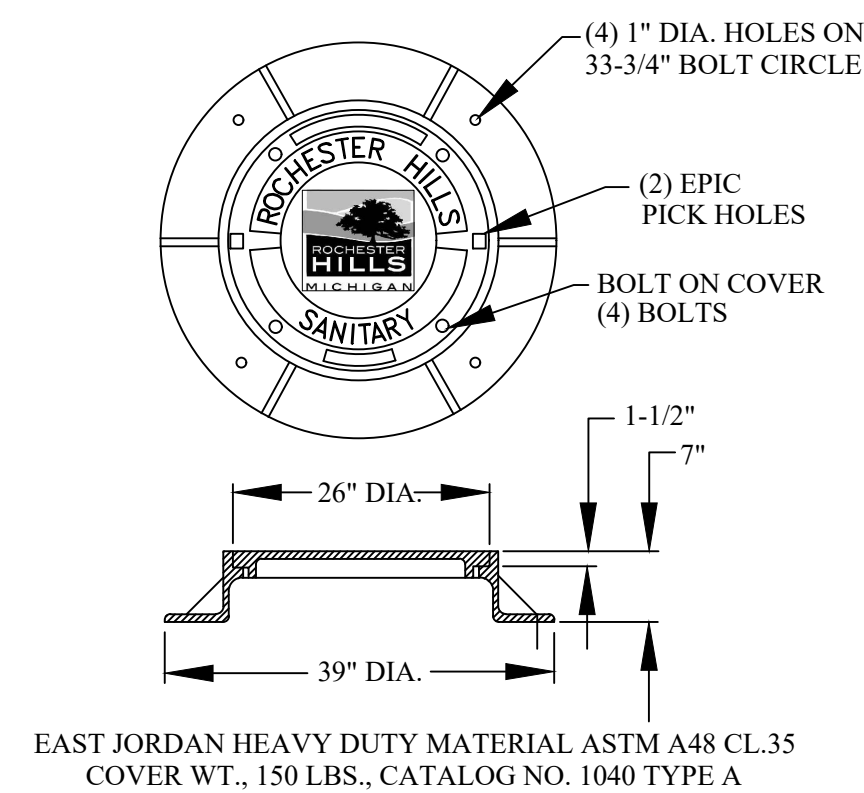
MANHOLE SIZING CHART

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"



MANHOLE SIZING CHART

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



NOTE: INTERIOR DROP CONNECTION PERMITTED ONLY WHEN APPROVED BY CITY ENGINEER.

**SANITARY SEWER
STANDARD DETAILS**

NOT TO SCALE DATE: 1/10/2019

SHEET 1 OF 2

City of Rochester Hills
1000 Rochester Hills Drive, Rochester Hills, Michigan 48309

NOTIFY ROCHESTER HILLS ENGINEERING DIVISION @ 248-841-2510 48 HRS. PRIOR TO START OF CONSTRUCTION

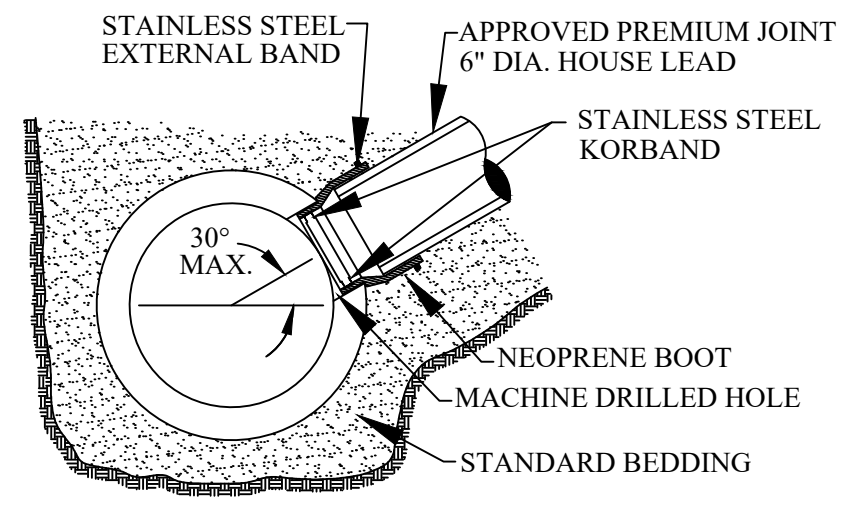
APPROVED BY CITY COUNCIL, DATE: _____
PREPARED BY ENGINEERING DIVISION DEPARTMENT OF PUBLIC SERVICES

REVISIONS

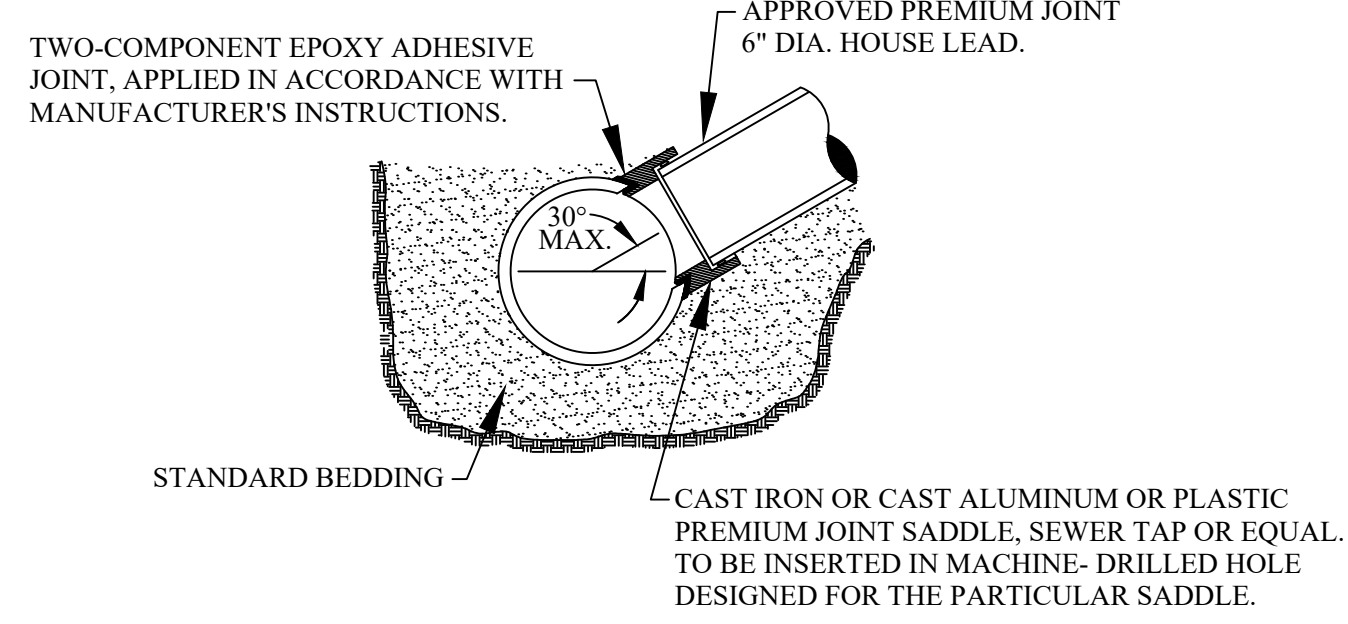
DATE

CITY OF ROCHESTER HILLS GRAVITY BUILDING LEAD REQUIREMENTS AND DETAILS

- ALL BUILDING LEAD WORK MUST BE PERFORMED UNDER THE CITY OF ROCHESTER HILLS INSPECTION.
- FOR ALL CITY OF ROCHESTER HILLS SYSTEMS CALL 248-841-2510 48-HOURS PRIOR TO SCHEDULING INSPECTION.
FOR ALL OCWRC-OPERATED SYSTEMS, CALL 248-858-1110 48-HOURS IN ADVANCE PRIOR TO SCHEDULING INSPECTION.
- SANITARY SEWER MAY NOT BE USED AS A DE-WATERING OUTLET.
- FITTINGS SHALL BE OF THE SAME MATERIAL AS THE PIPE. FERNCO STRONGBACK COUPLING (OR APPROVED EQUAL) IF DISSIMILAR PIPES ARE CONNECTED. IF DISSIMILAR FITTINGS MUST BE USED, TRANSITION CEMENT/GLUE IS REQUIRED.
- APPROVED BUILDING LEAD PIPE FOR GRAVITY SEWER LEADS:
 - PVC PLASTIC, ASTM D3034, SDR 23.5
 - SOLID WALL PVC SCHEDULE 40, ASTM D-2665
 - ANY DEVIATIONS FROM ABOVE SPECIFICATIONS REQUIRES APPROVAL BY CITY ENGINEER.
- FOR 6" LEADS A CLEANOUT MUST BE INSTALLED EVERY 100 FT. FOR 4" LEADS A CLEANOUT MUST BE INSTALLED EVERY 50 FT. 90° BENDS NOT ALLOWED EXCEPT FROM THE HORIZONTAL TO THE VERTICAL WITHIN 5 FEET OF THE BUILDING.

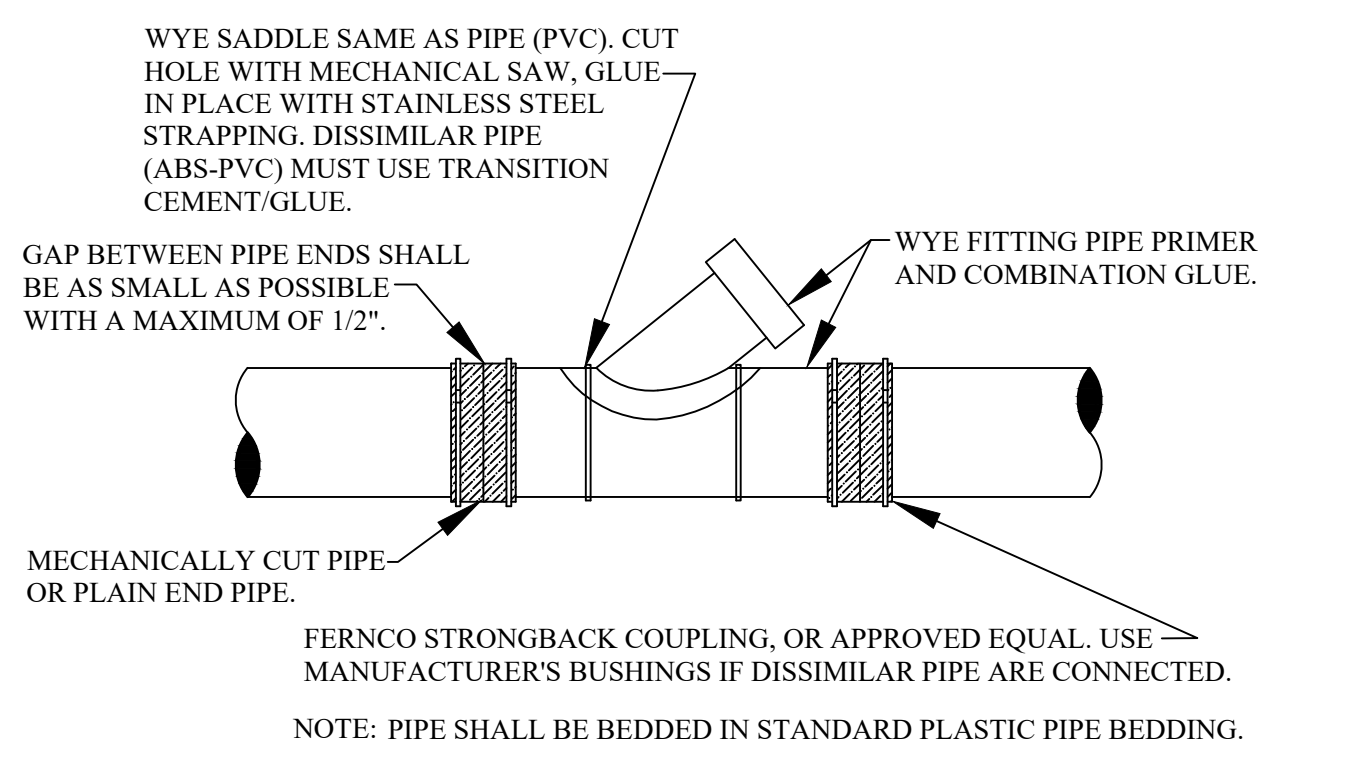


KOR-N-TEE TAP FOR CONCRETE PIPE



NOTE: SURFACE OF MAIN SEWER SHALL BE CLEANED WITH AN ABRASIVE GRINDER PRIOR TO EPOXY APPLICATION. DUE TO VARIATION OF SET-UP TIME OF EPOXY ADHESIVE WITH TEMPERATURE, ANCHOR STRAPS SHALL BE USED TO SECURE SADDLE IN POSITION IN COLD WEATHER OR WHENEVER WORK IS TO PROCEED PRIOR TO COMPLETE CURE OF EPOXY.

SEWER TAP-OVER 12" MAIN SEWER PIPES VITRIFIED CLAY



WYE SADDLE OR WYE PIPE INSERTION WITH FLEXIBLE COUPLINGS (RIGID PIPE)

CITY OF ROCHESTER HILLS SANITARY SEWER SYSTEM AS-BUILT DRAWING SPECIFICATIONS

IN AREAS WHERE SANITARY SEWER SYSTEMS ARE OPERATED AND MAINTAINED BY THE CITY OF ROCHESTER HILLS DEPARTMENT OF PUBLIC SERVICES, PRELIMINARY ACCEPTANCE OF THE SANITARY SEWER SYSTEM MUST BE RENDERED BY THE DEPARTMENT OF PUBLIC SERVICES, BEFORE THE SYSTEM CAN BE USED FOR THE SERVICE INTENDED.

ONE ITEM REQUIRED FOR PRELIMINARY ACCEPTANCE SHALL BE THE SUBMISSION OF AS-BUILT DRAWINGS TO THE CITY OF ROCHESTER HILLS ENGINEERING DIVISION, BY THE DESIGN ENGINEER. AS-BUILT DRAWINGS SHALL BE DEFINED AS AND CONTAIN THE FOLLOWING INFORMATION:

- FINAL AS-BUILT DRAWINGS SHALL BE PROVIDED IN REPRODUCIBLE PDF FORMAT VIA DIGITAL STORAGE MEDIA. XEROX OR ANY HEAT PROCESS REPRODUCTIONS WILL NOT BE ACCEPTED.
- ALONG WITH THE PDF PLAN SET PROVIDE TWO (2) SETS OF BLACK-LINED DRAWINGS AND THE PLANS ON ELECTRONIC MEDIA IN AUTOCAD FORMAT (LATEST VERSION).
- THE COVER SHEET SHALL BE SEALED BY THE PROJECT DESIGN ENGINEER, ALONG WITH THE FOLLOWING CERTIFICATION STATEMENT.

I HEREBY CERTIFY THAT OUR FIRM HAS PREPARED THESE AS-BUILT DRAWINGS OF THE IMPROVEMENTS AS CONSTRUCTED, AND THAT TO THE BEST OF MY KNOWLEDGE THOSE IMPROVEMENTS NOTED AS "AS BUILT" WERE CONSTRUCTED IN SUBSTANTIAL CONFORMANCE WITH THE APPROVED CONSTRUCTION PLANS, AND ALSO THAT THE SANITARY SEWER AND STRUCTURES, AS CONSTRUCTED, LIE WITHIN THE EASEMENT DESCRIPTIONS REQUIRED BY THE CITY OF ROCHESTER HILLS.

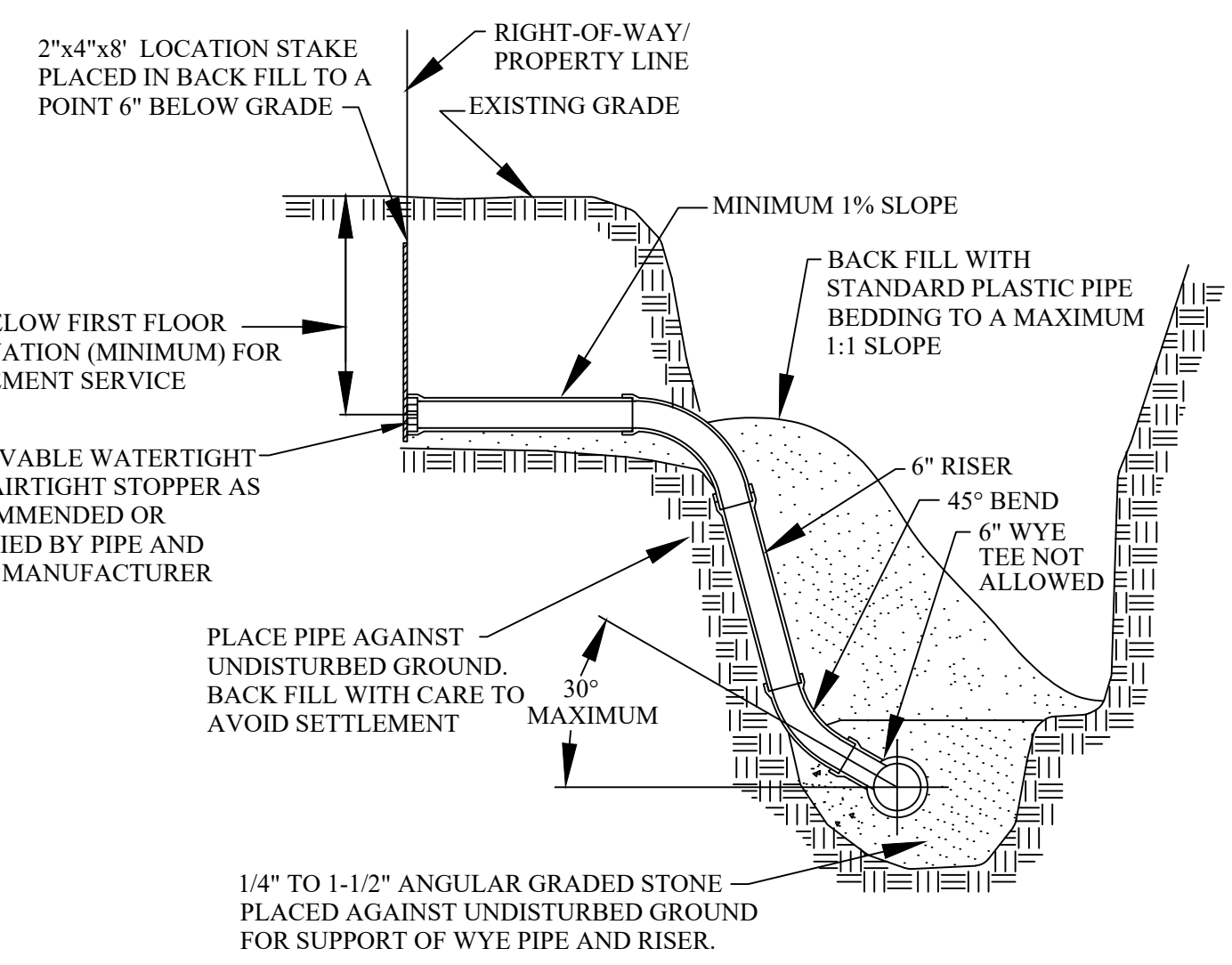
(COMPANY NAME)

(ENGINEER'S SIGNATURE)

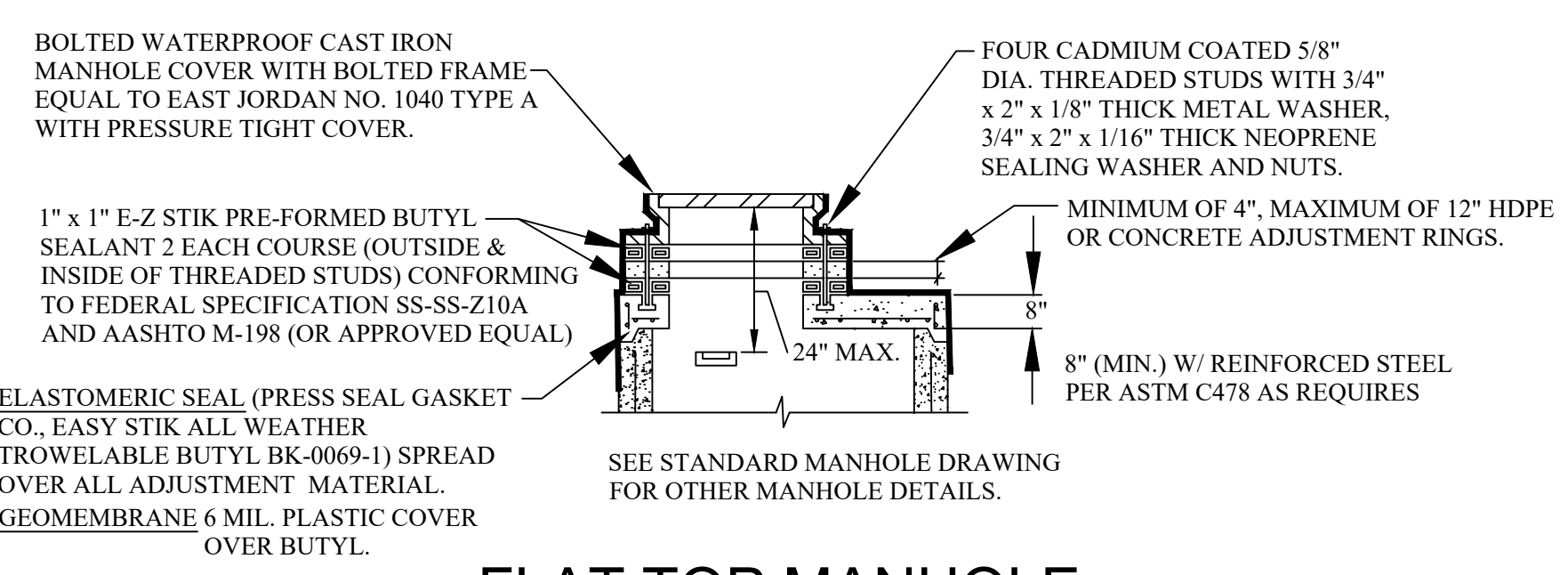
PROFESSIONAL ENGINEER NO. _____

ENGINEER SEAL

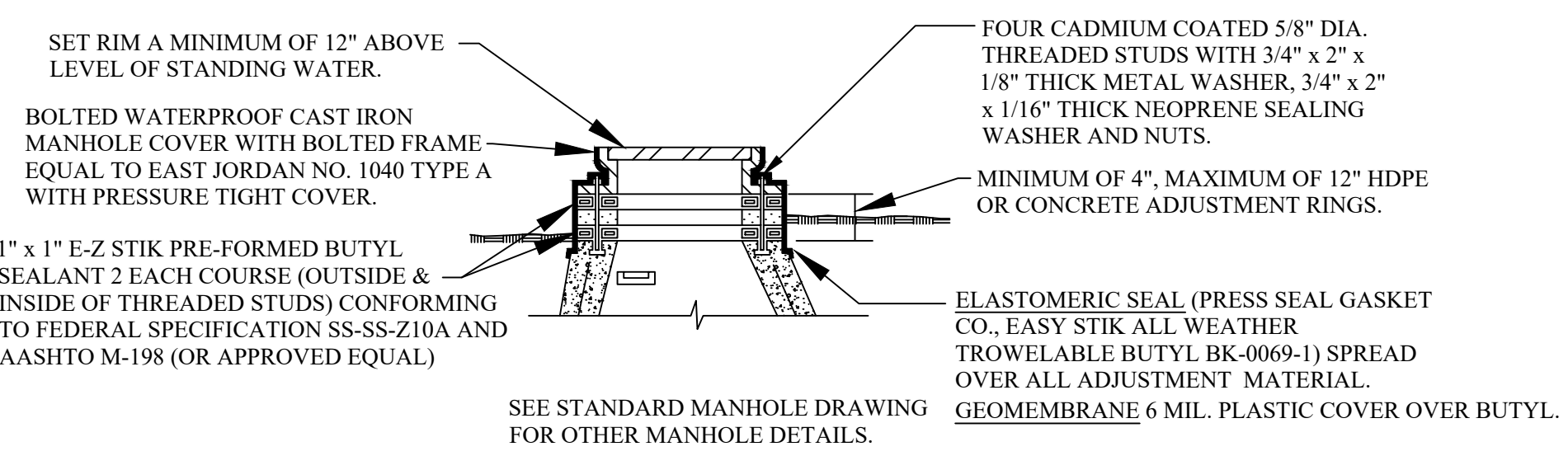
- THE MAXIMUM SCALE SHALL BE ONE (1) INCH EQUALS FIFTY (50) FEET.
- THE SIZE, LENGTH, CLASS AND MANUFACTURER OF PIPE INSTALLED SHALL BE INDICATED.
- THE SIZE, MANUFACTURER AND MODEL NUMBERS OF ALL VALVES AND PUMPS INSTALLED SHALL BE INDICATED.
- A TOTAL AS-BUILT DRAWING QUANTITY LIST SHALL BE INCLUDED.
- THE LOCATIONS SHALL BE SHOWN ON THE PLANS WITH AN ACCURACY OF ONE (1) FOOT.
- THE OFFSET OF THE SANITARY MAIN FROM PROPERTY LINES SHALL BE INDICATED.
- ALL MANHOLES, VALVE WELLS, PUMPS AND ALL SANITARY SYSTEM APPURTENANCES SHALL BE LOCATED FROM TWO FIXED OBJECTS (MANHOLES, BUILDING CORNERS ETC.).
- ALL UNDERGROUND APPURTENANCES, SUCH AS TFC/ARV WELLS, METER PITS, GRINDER PUMPS AND PUMP STATION PITS, ETC. SHALL BE LOCATED FROM THE NEAREST MANHOLE THAT IS CONNECTED TO THE SAME SANITARY MAIN AS THE APPURTENANCE.
- THE ACCURATE LOCATION OF ALL UTILITY CROSSINGS WHERE THE VERTICAL SEPARATION IS LESS THAN 18" SHALL BE NOTED.
- AS-BUILTS SHALL BE PREPARED IN ACCORDANCE WITH CITY OF ROCHESTER HILLS AS-BUILT GUIDELINES AS PROVIDED AT THE PRE-CONSTRUCTION MEETING.



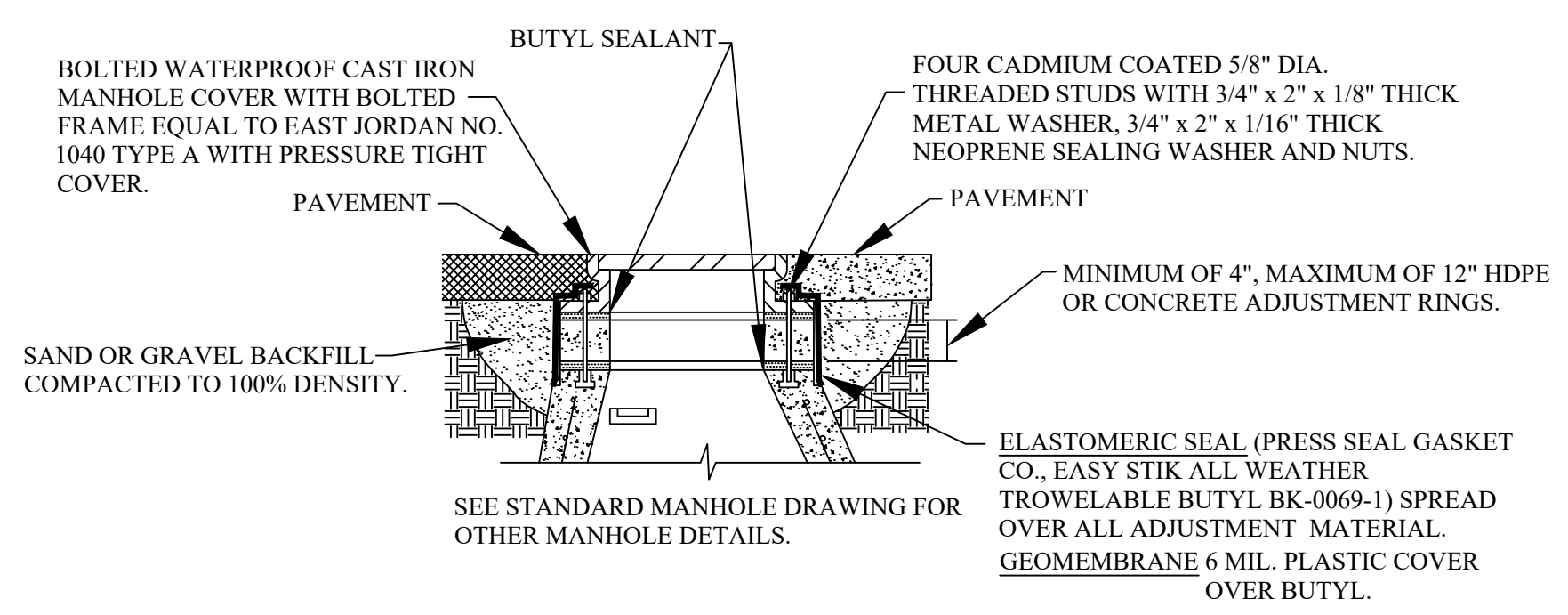
HOUSE LEAD DETAIL



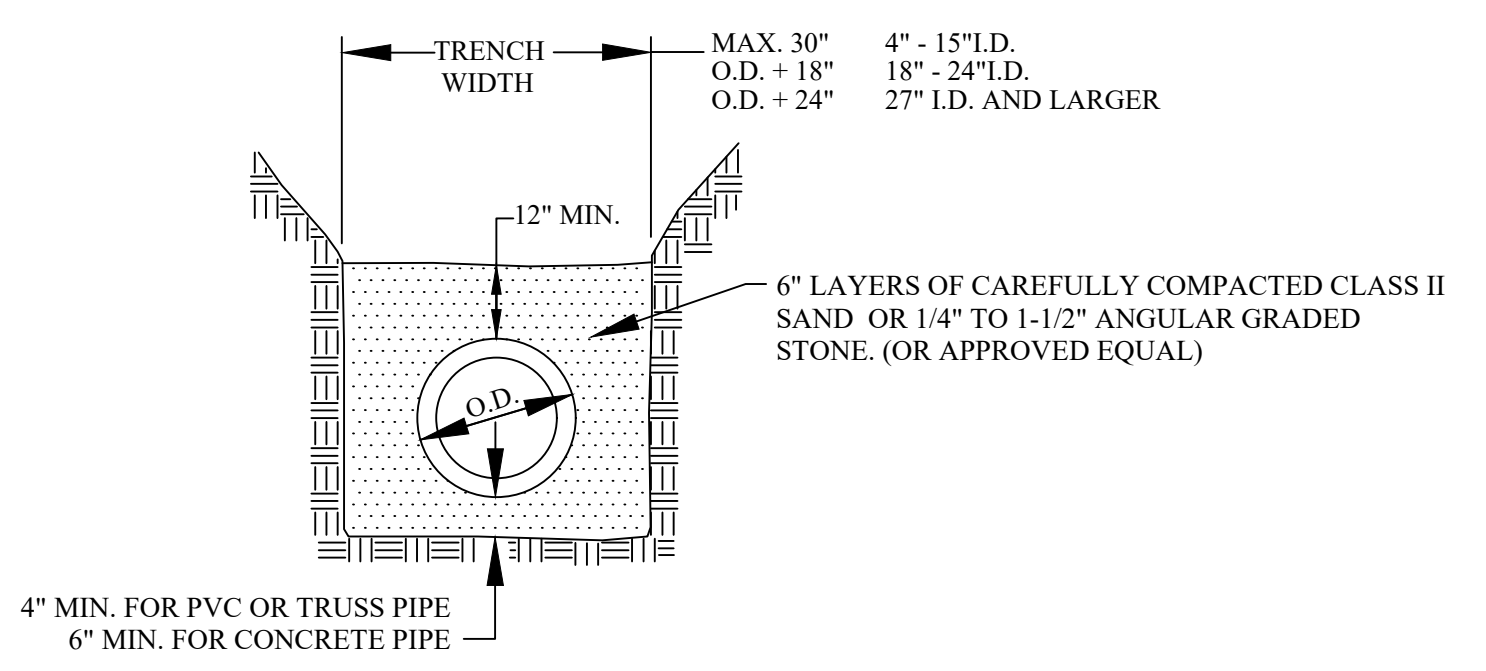
FLAT TOP MANHOLE



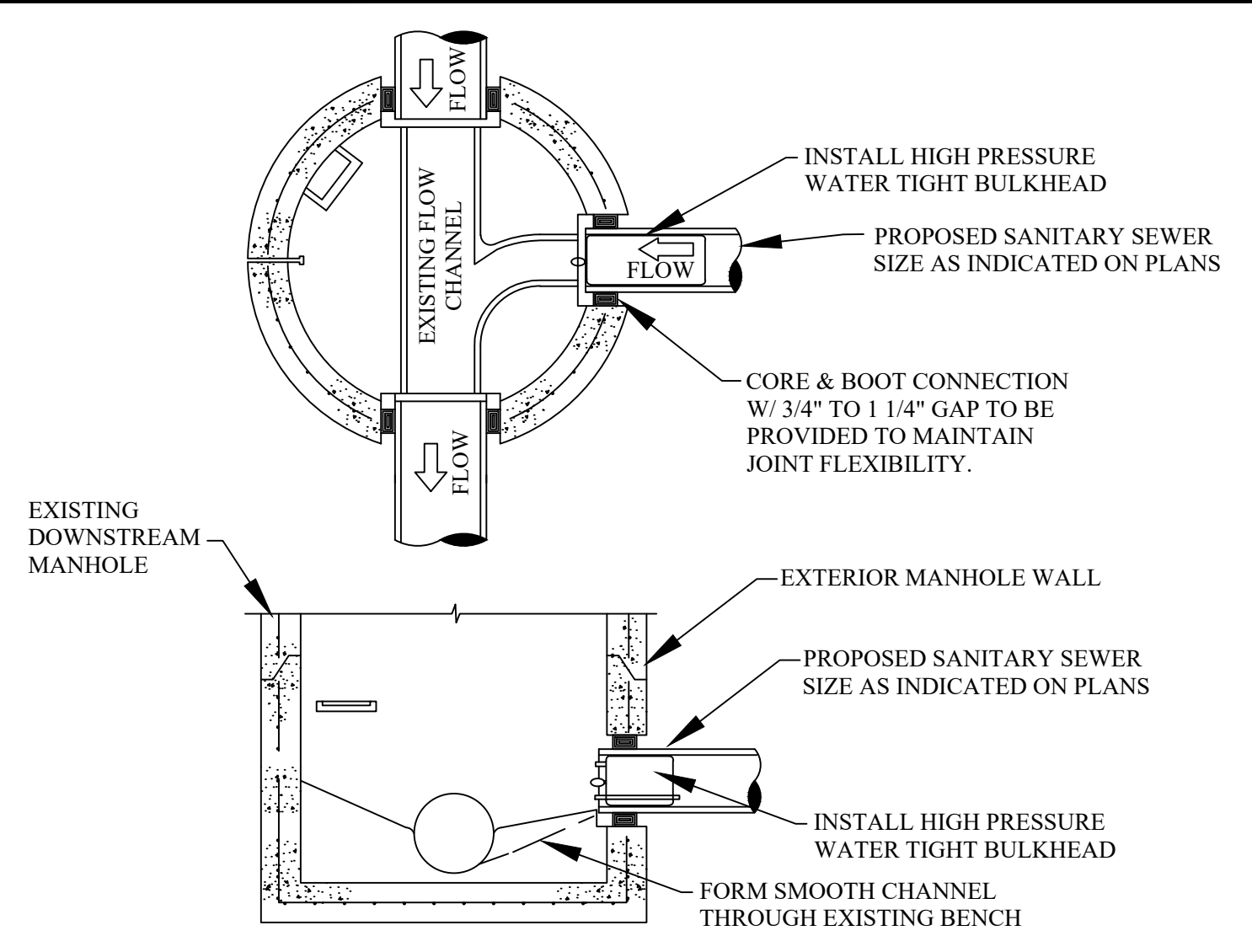
ADJUSTMENT DETAIL FOR MANHOLE TOPS WITHIN FLOOD PRONE AREAS



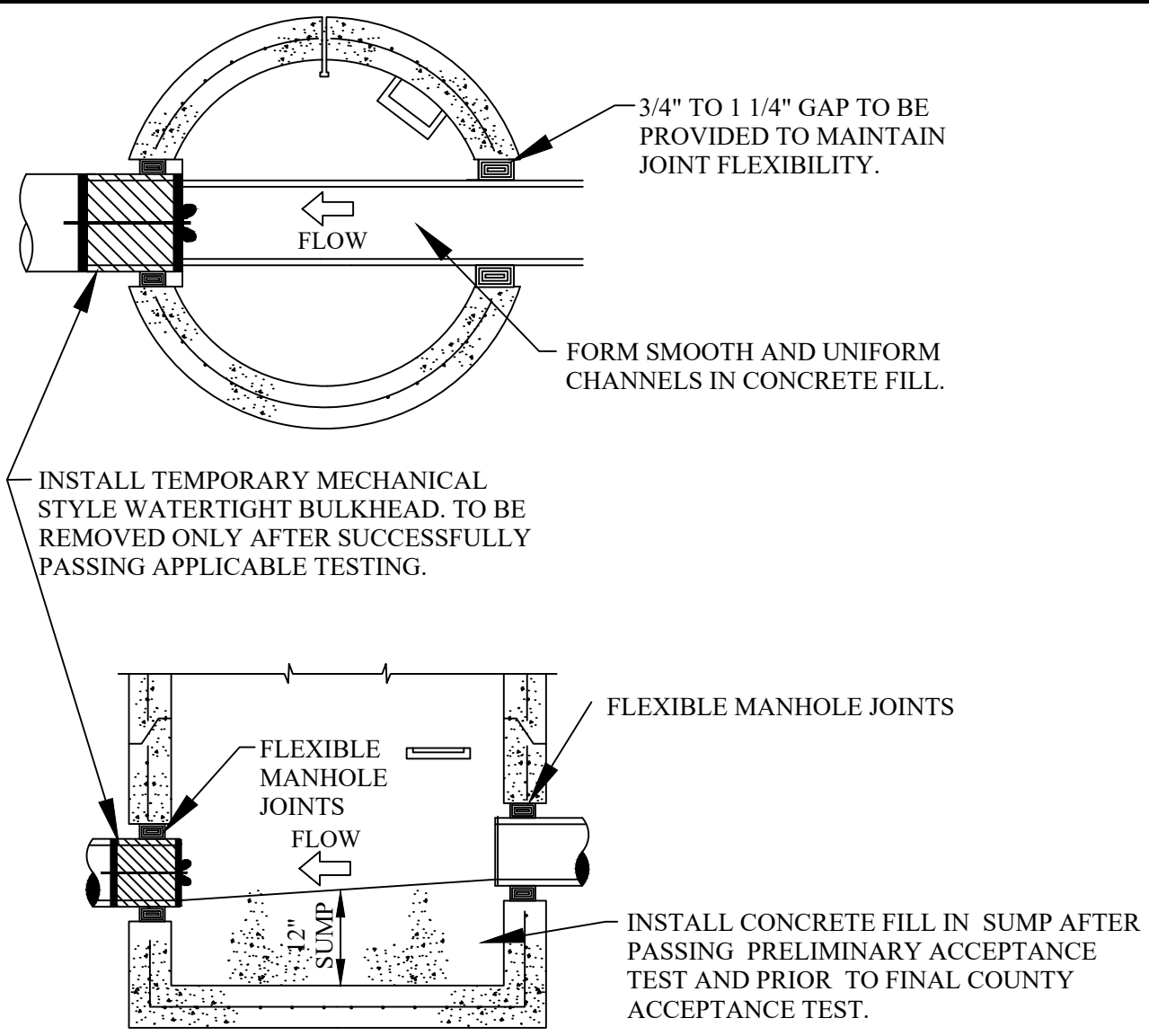
ADJUSTMENT DETAIL MANHOLE TOPS WITHIN PAVEMENT AREAS



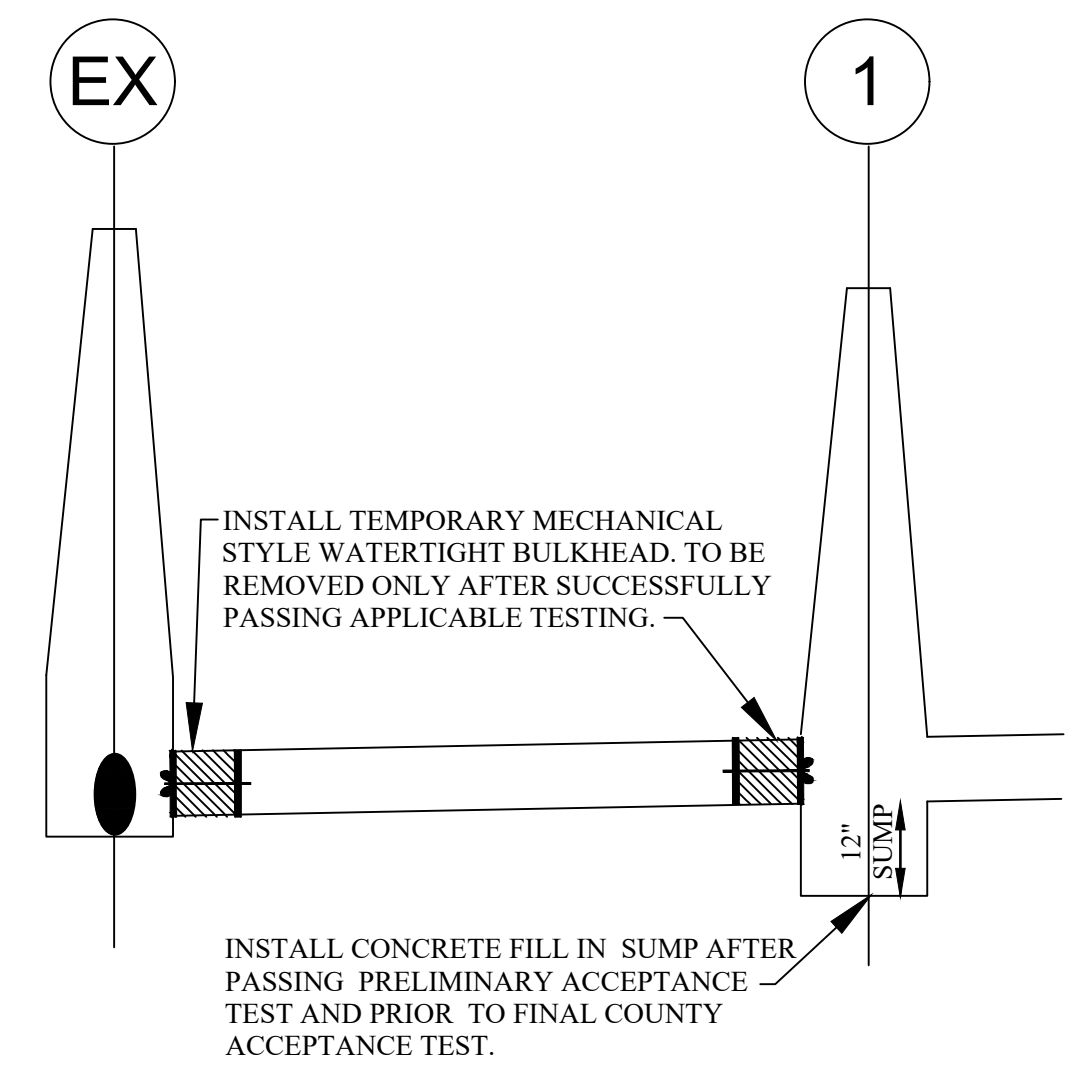
STANDARD BEDDING (CLASS B)



TESTING BULKHEAD IN EXISTING MANHOLE



FIRST MANHOLE UPSTREAM FROM SANITARY TAP



PROFILE OF BULKHEADS AND ONE FOOT SUMP

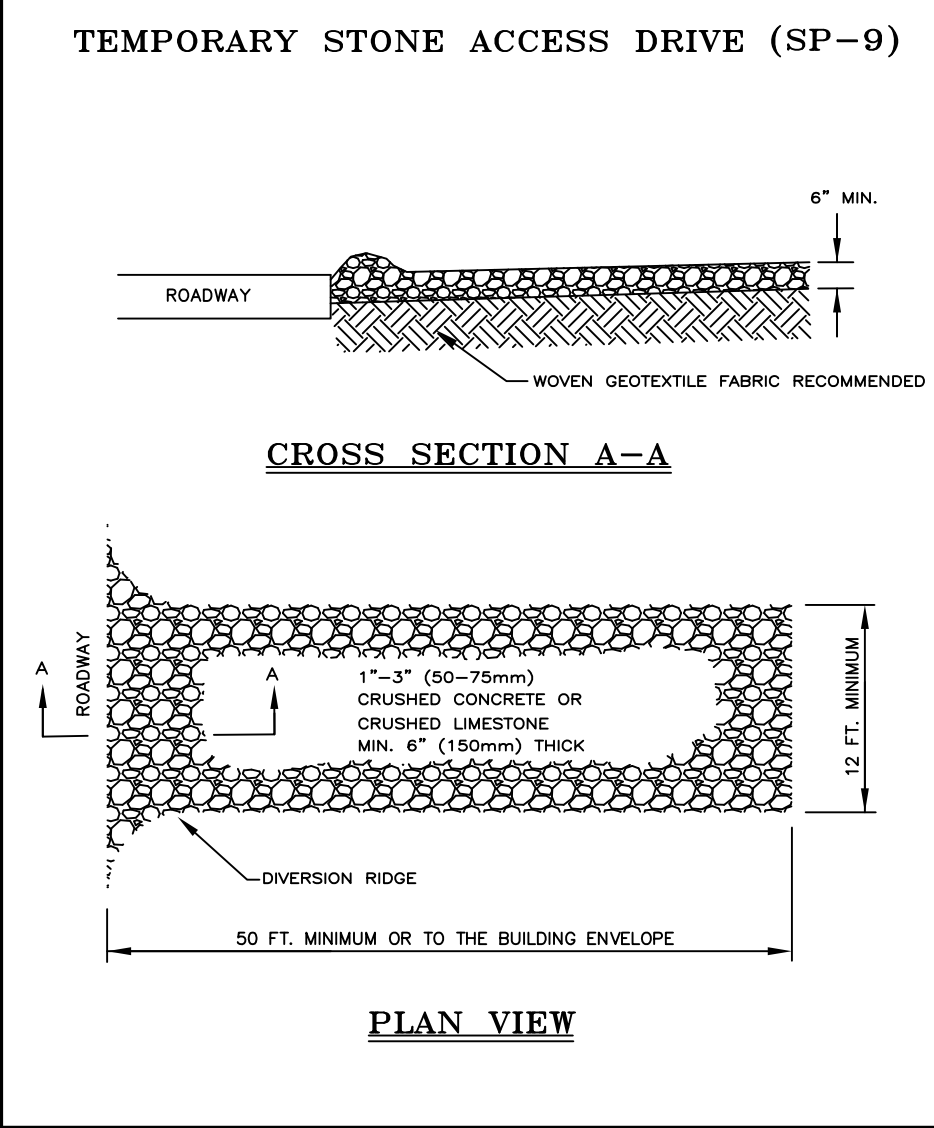
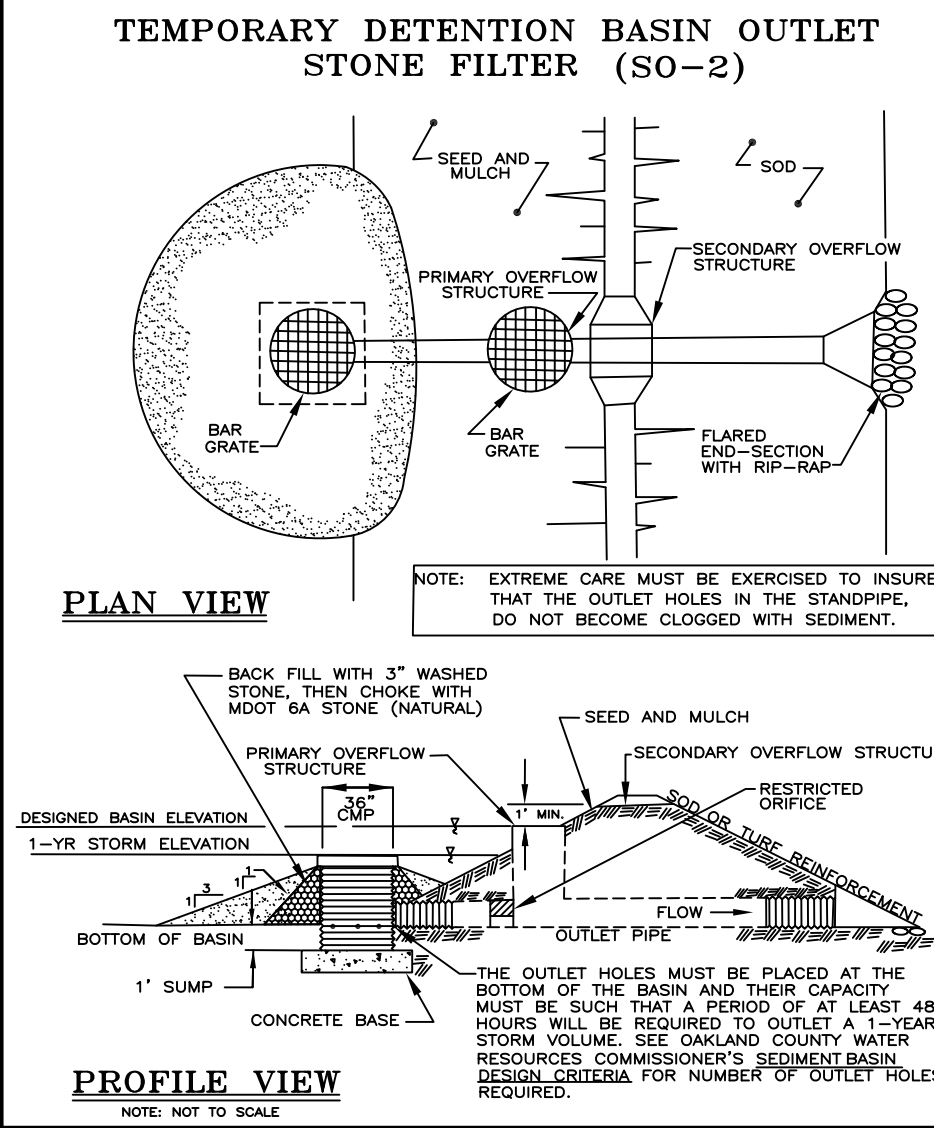
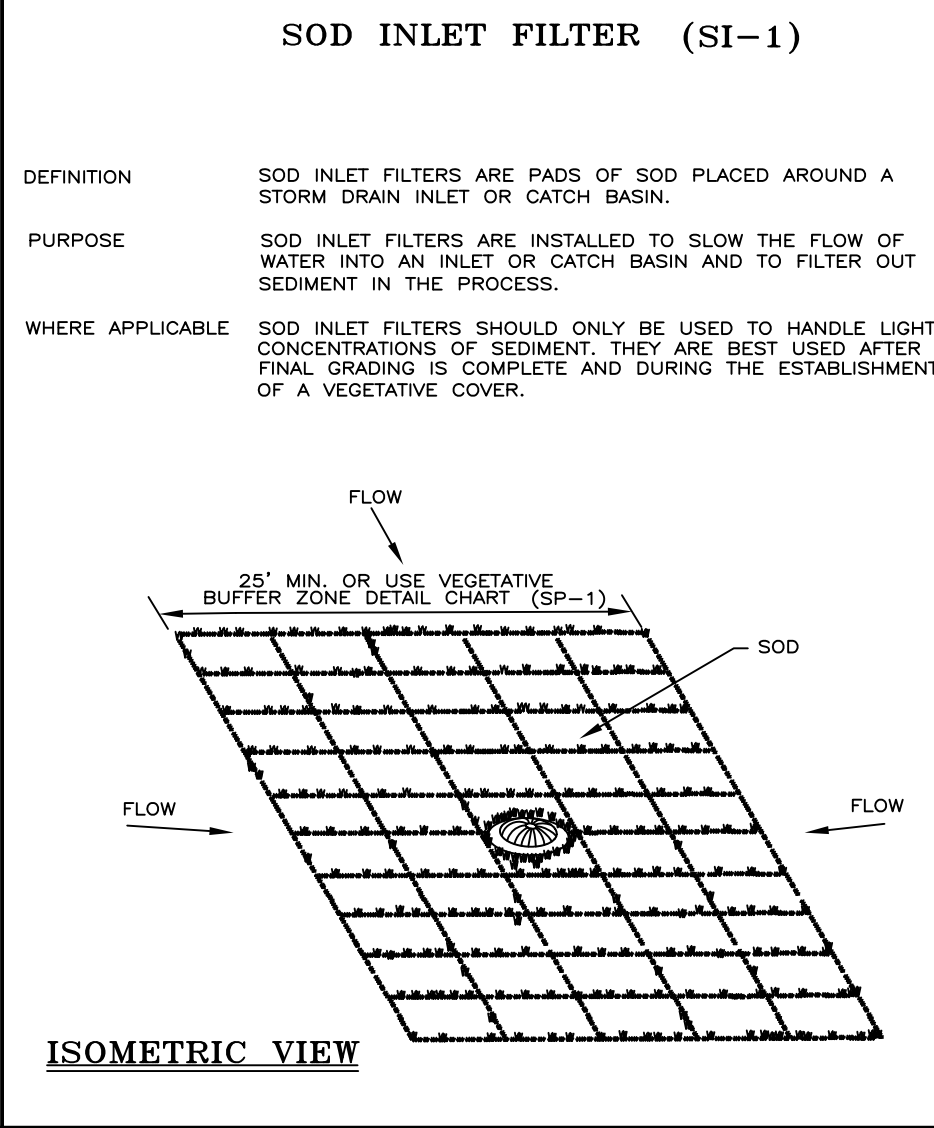
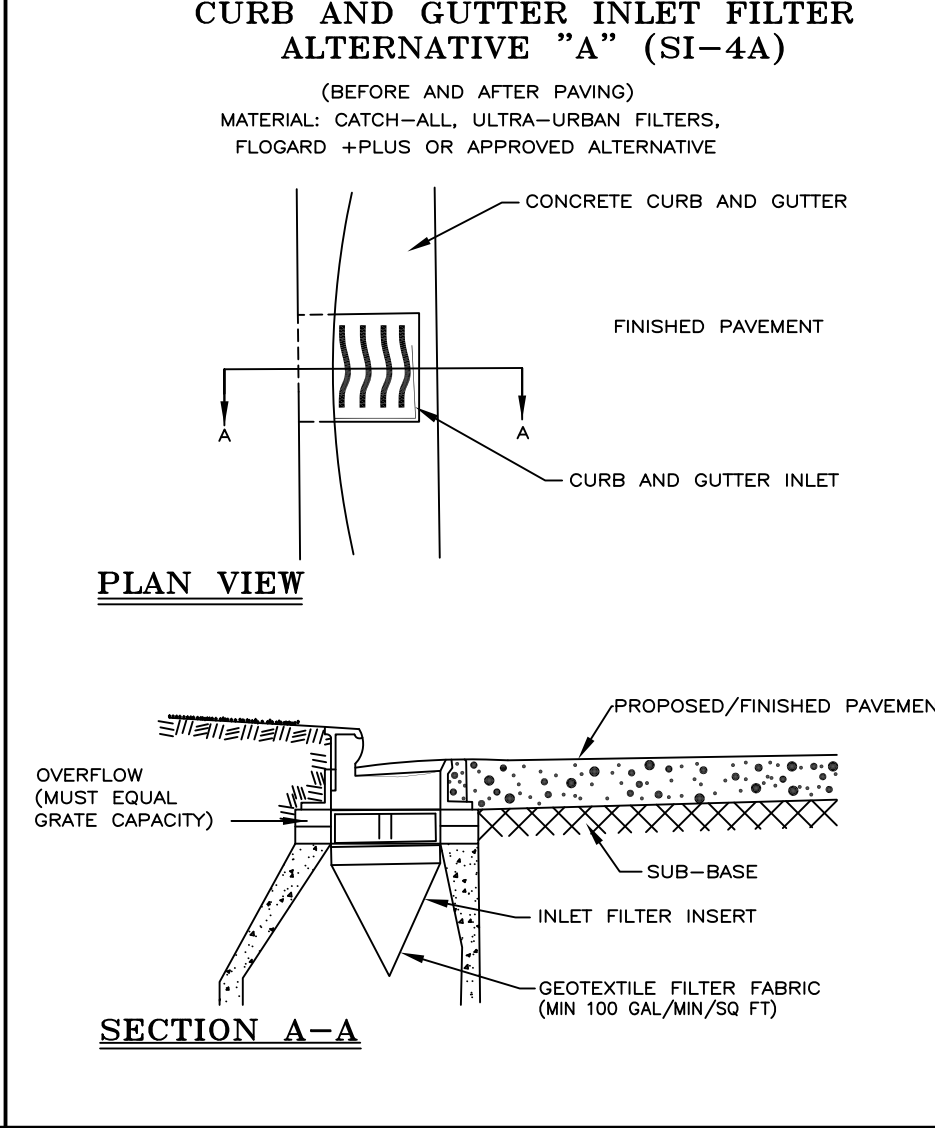
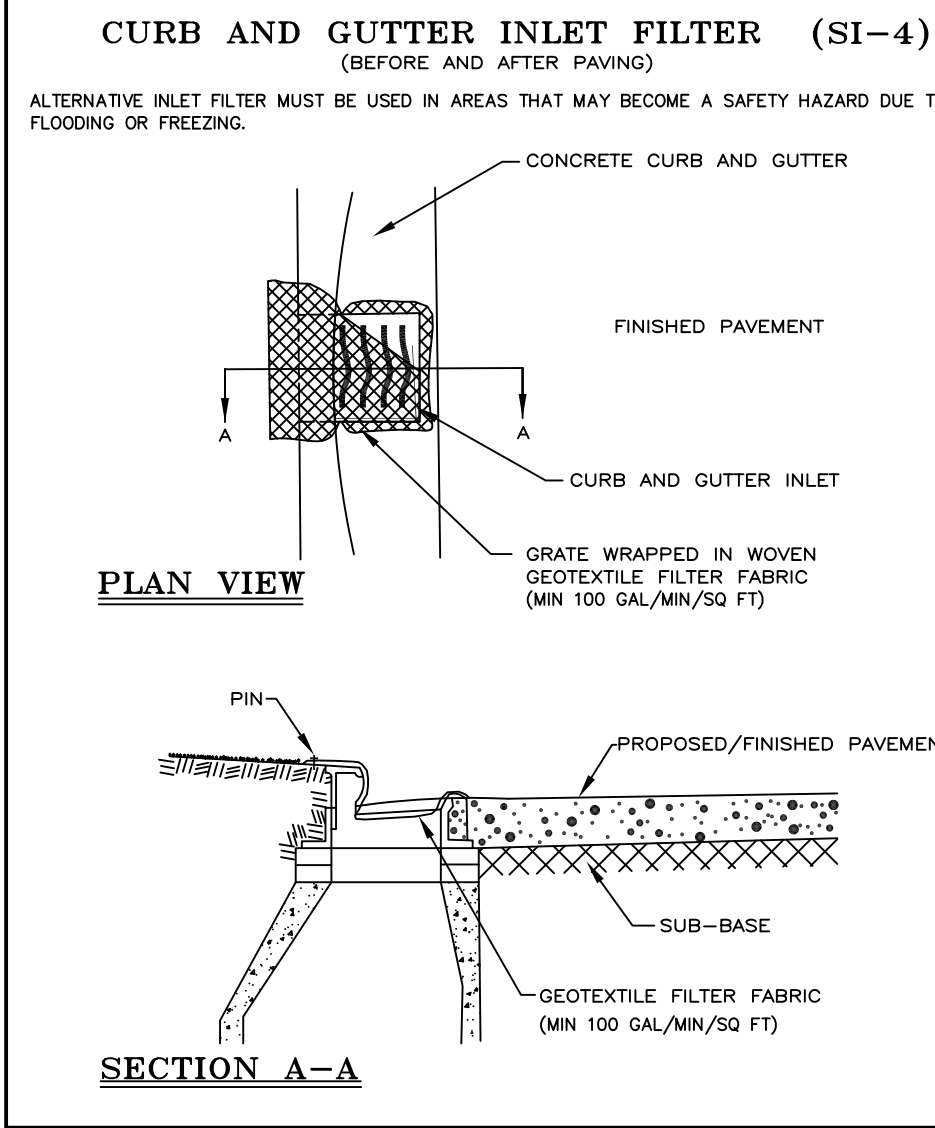
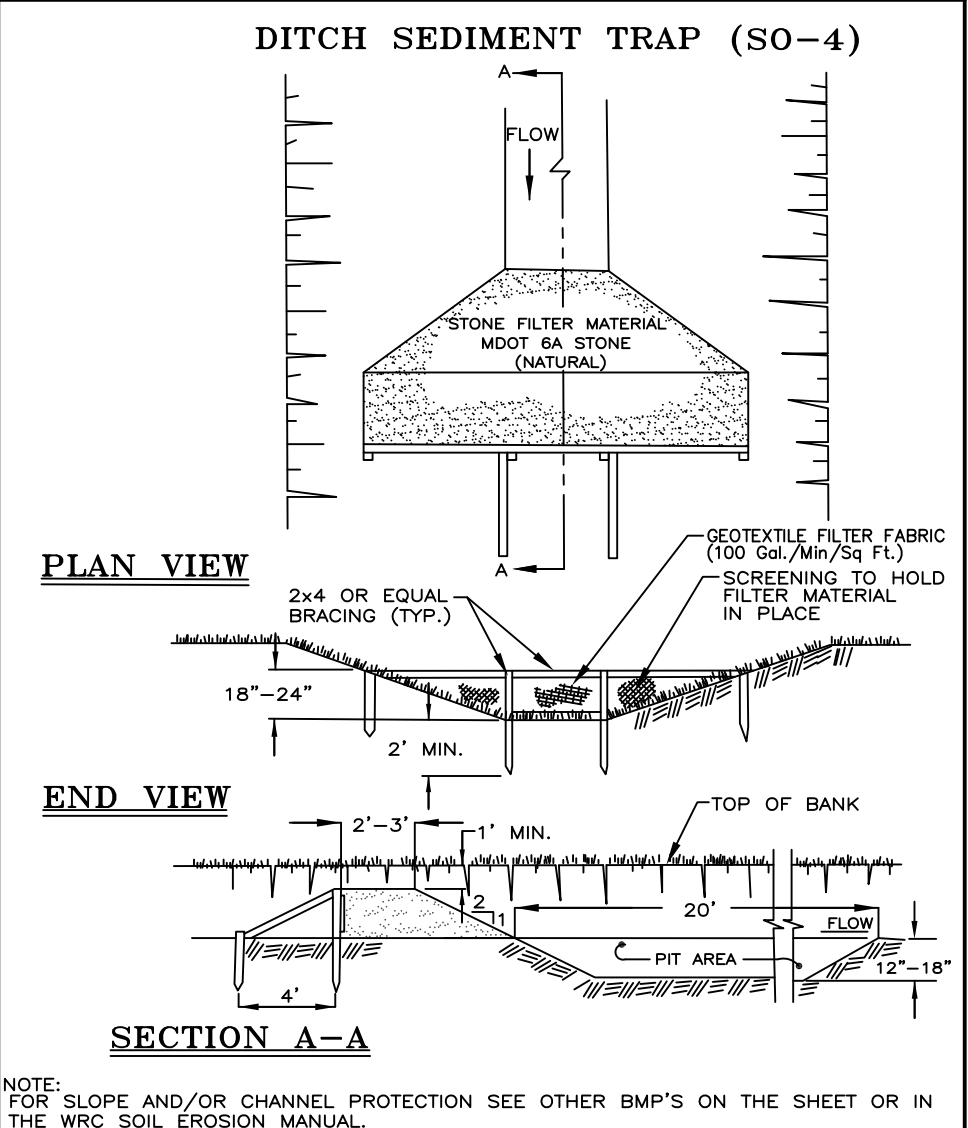
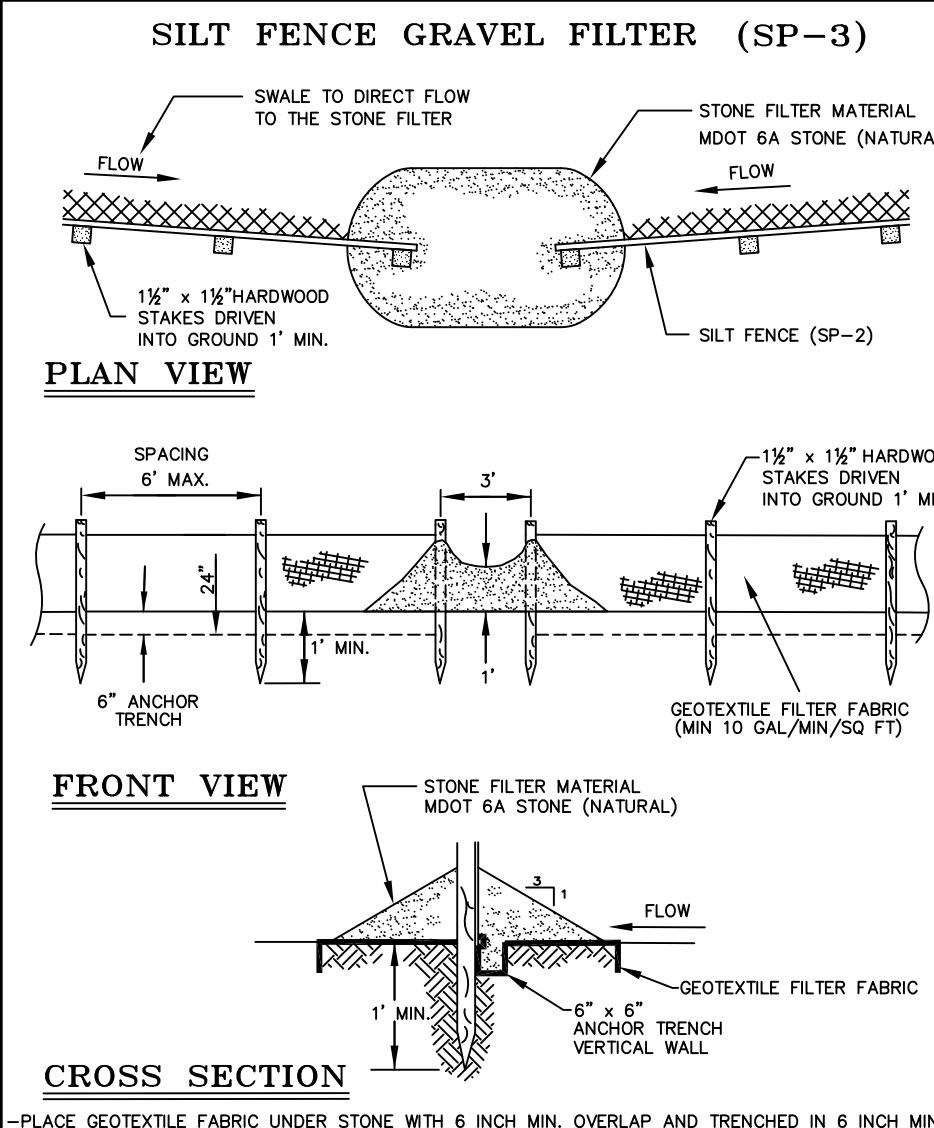
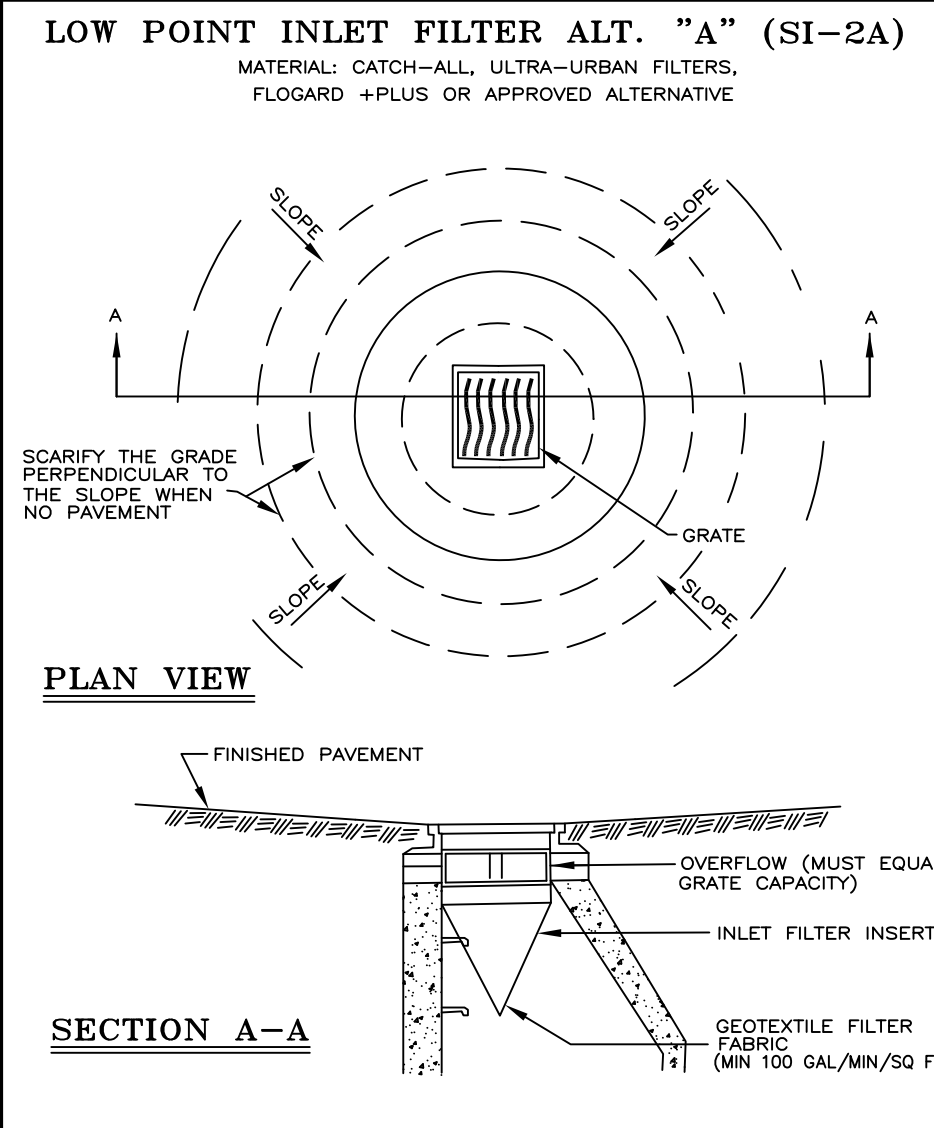
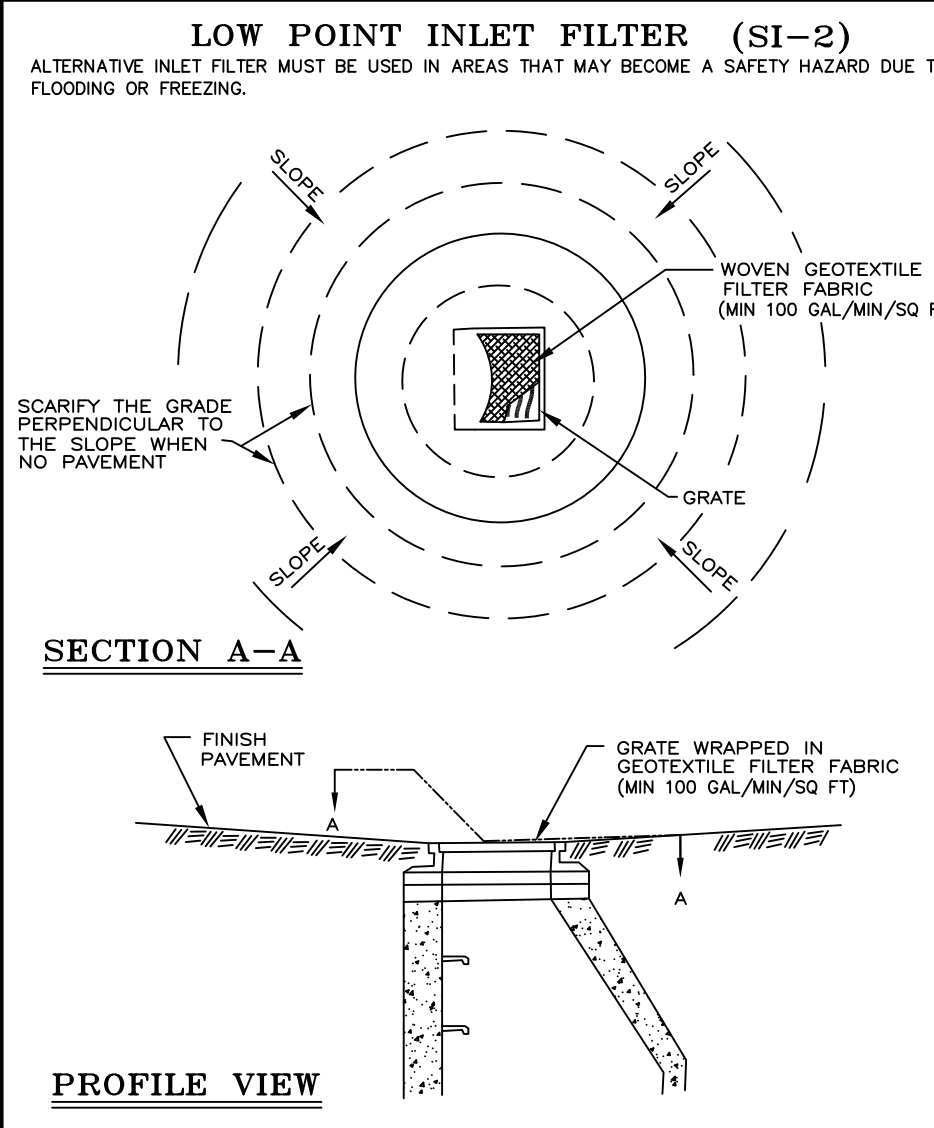
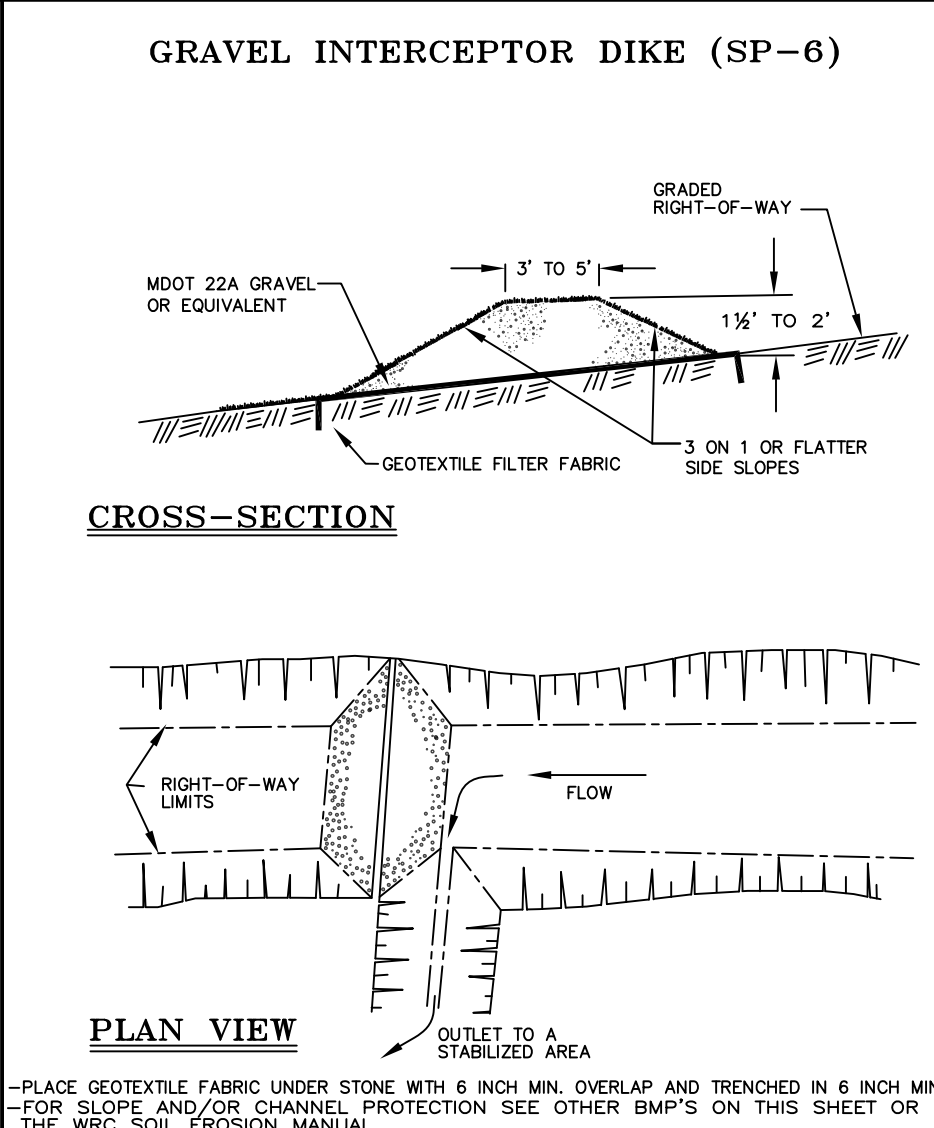
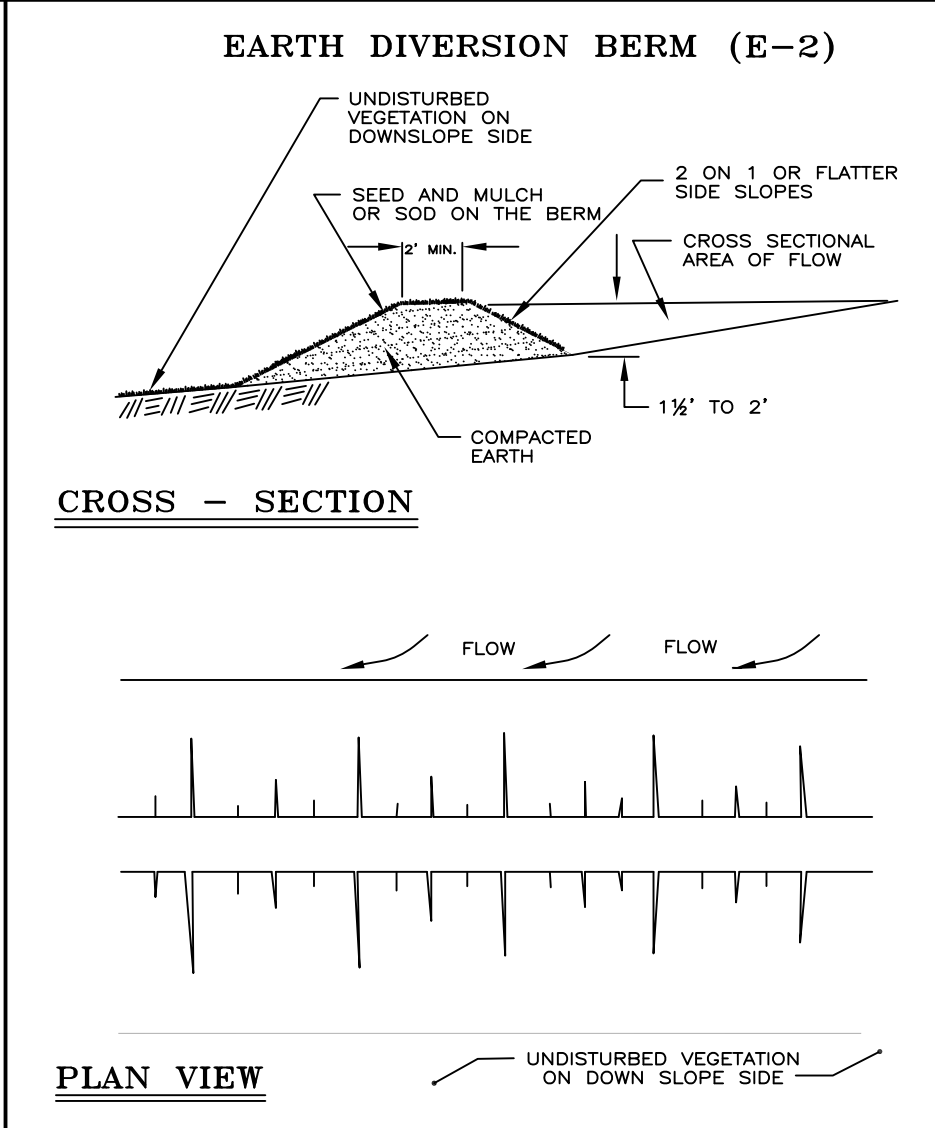
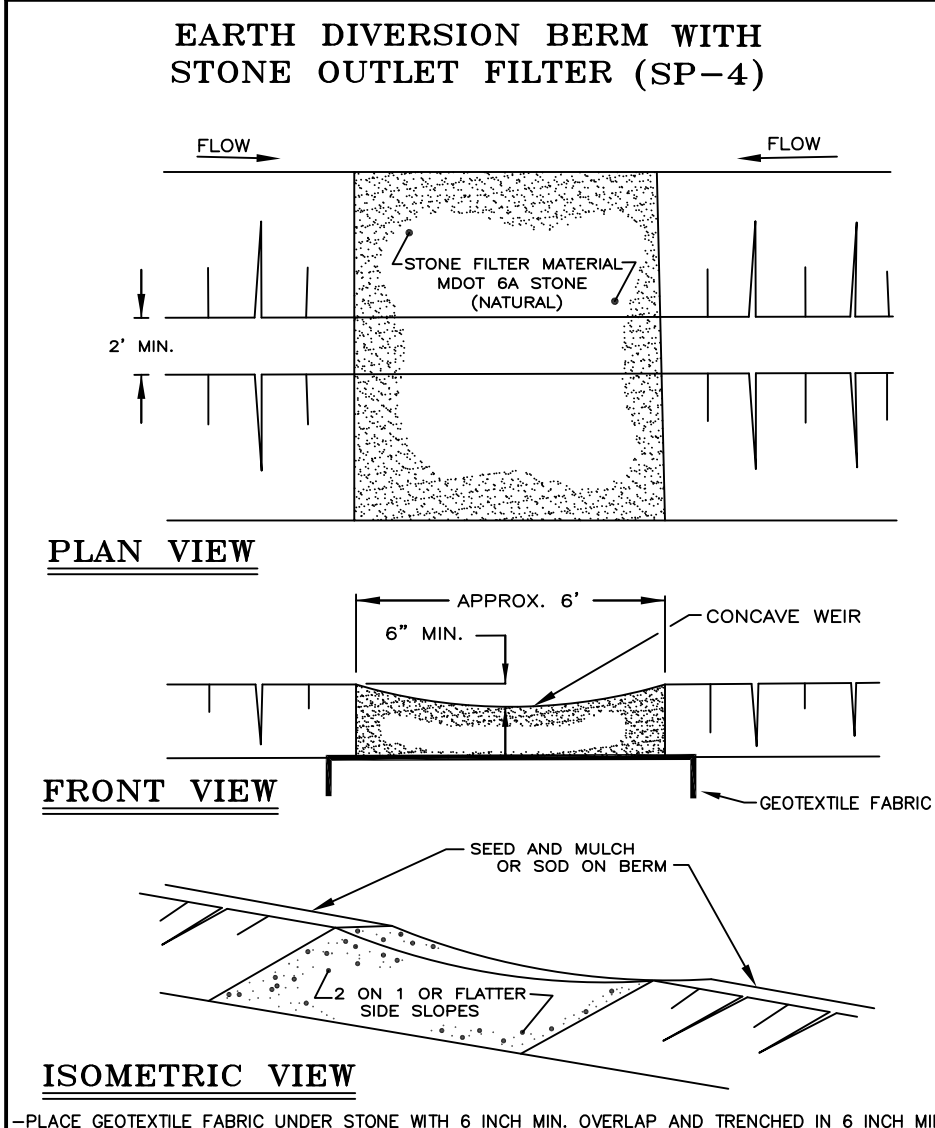
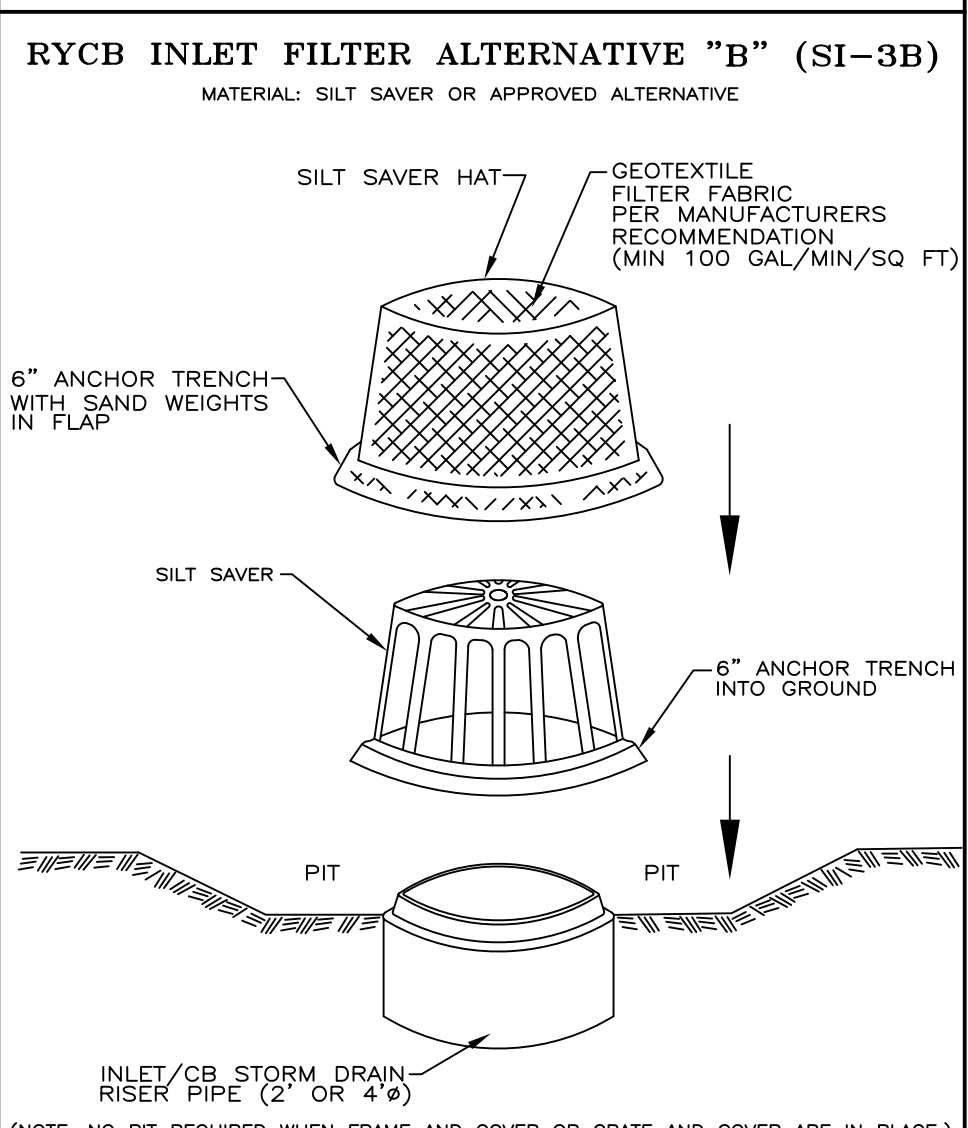
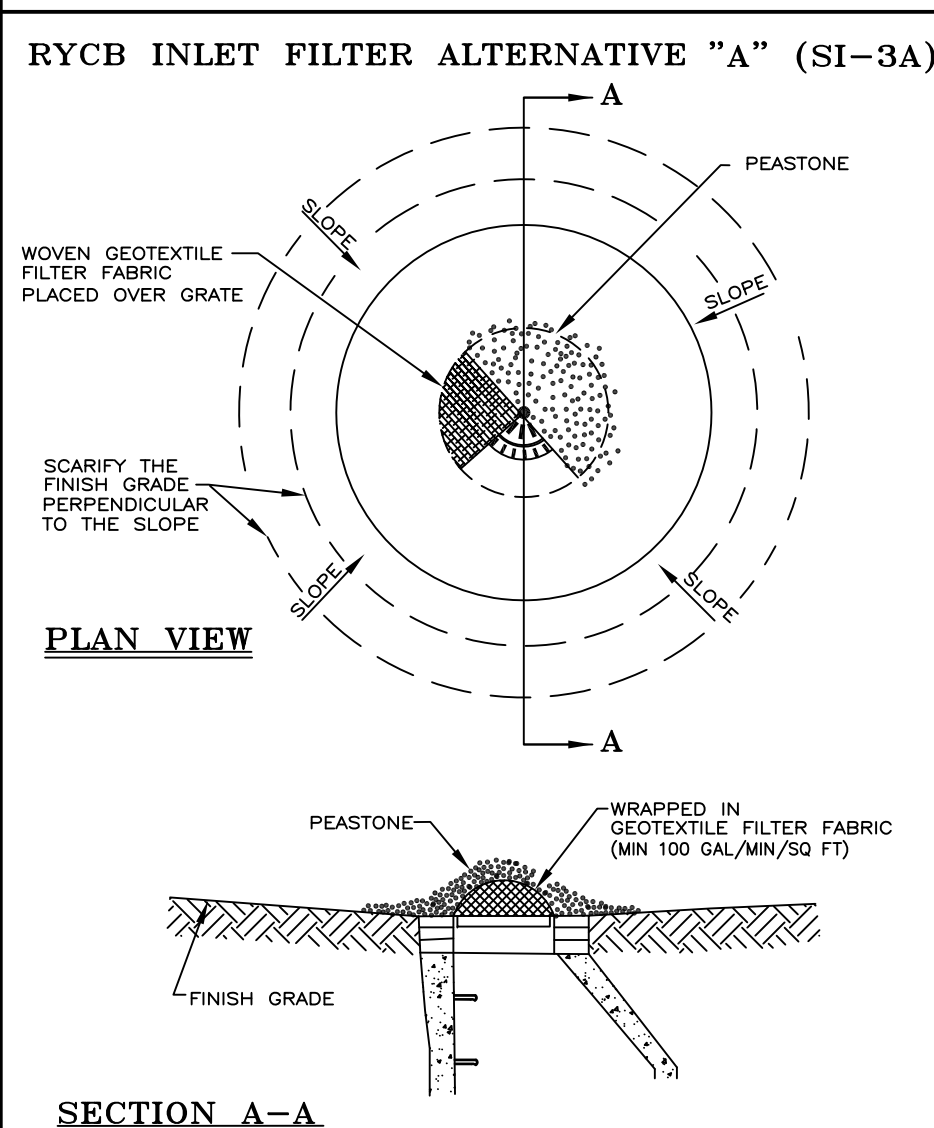
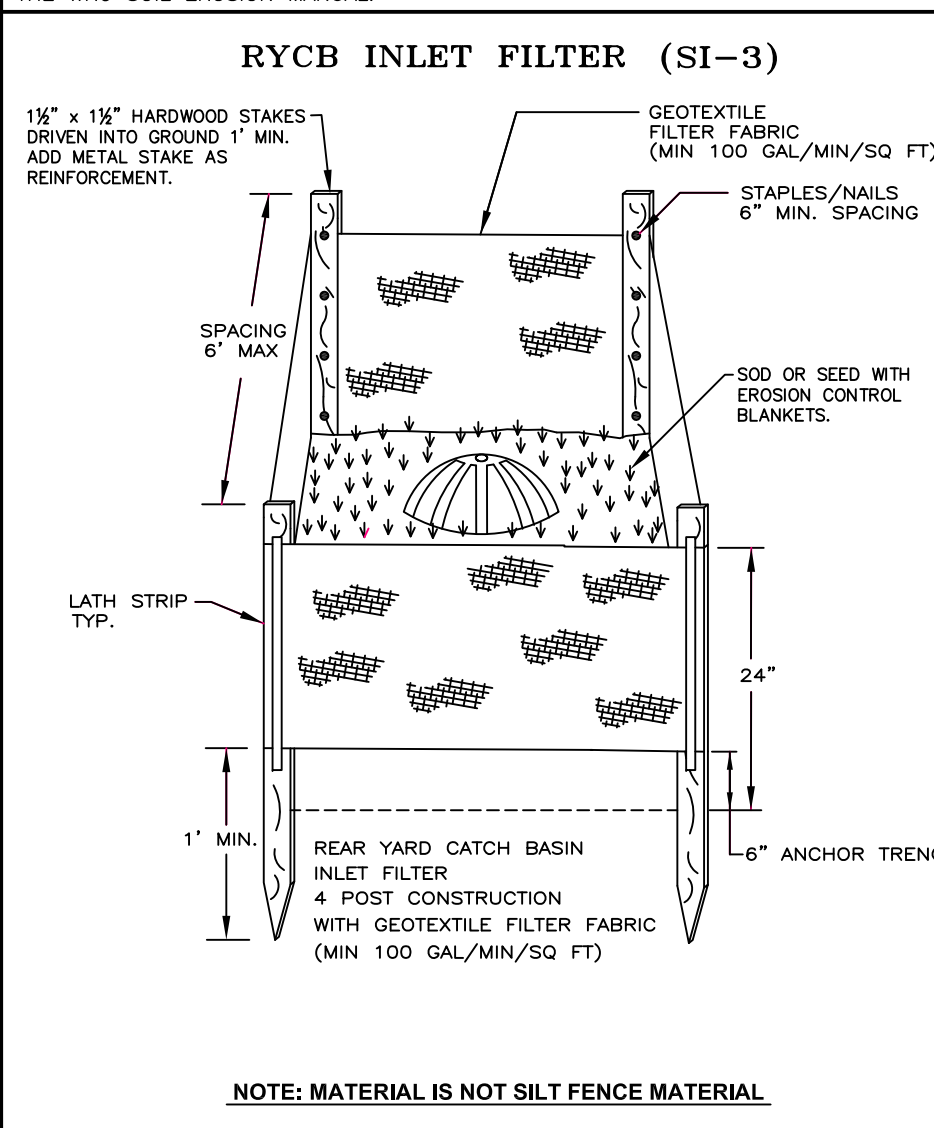
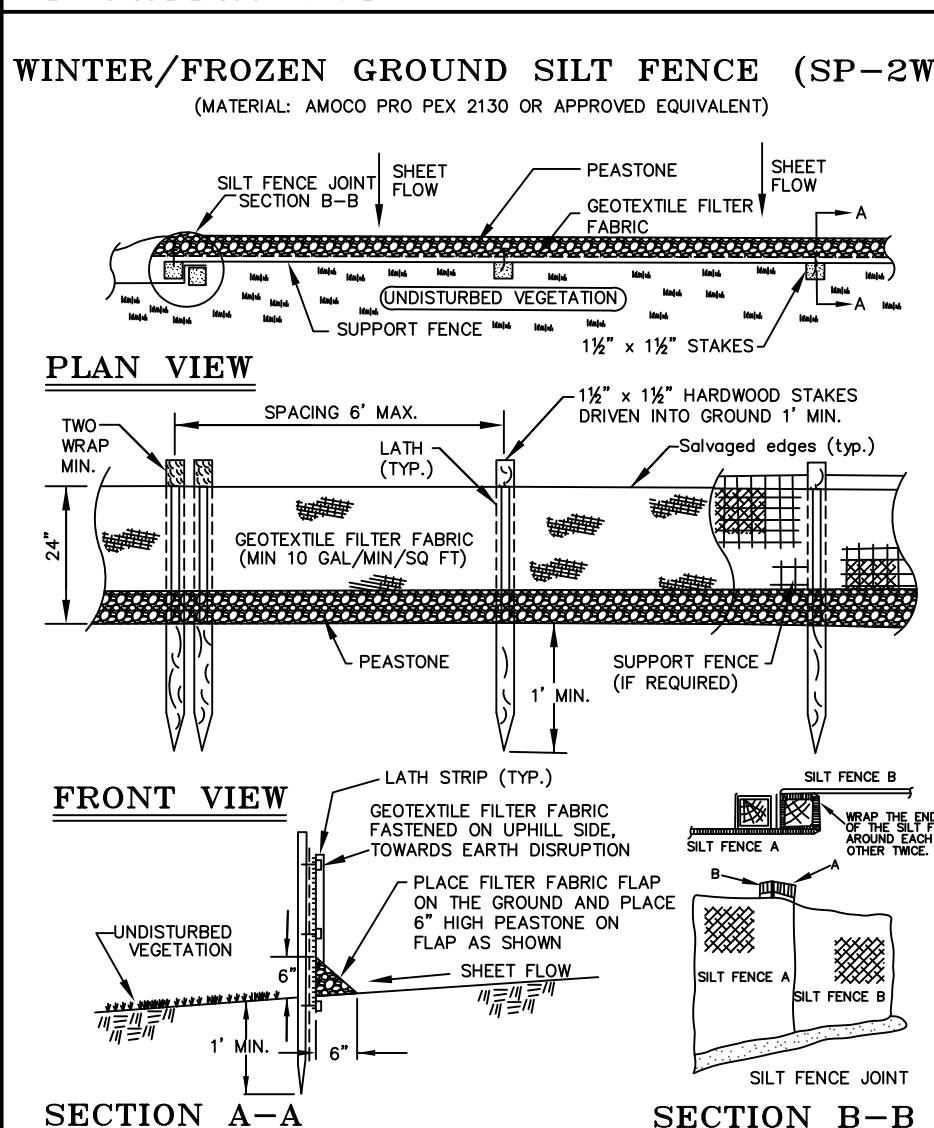
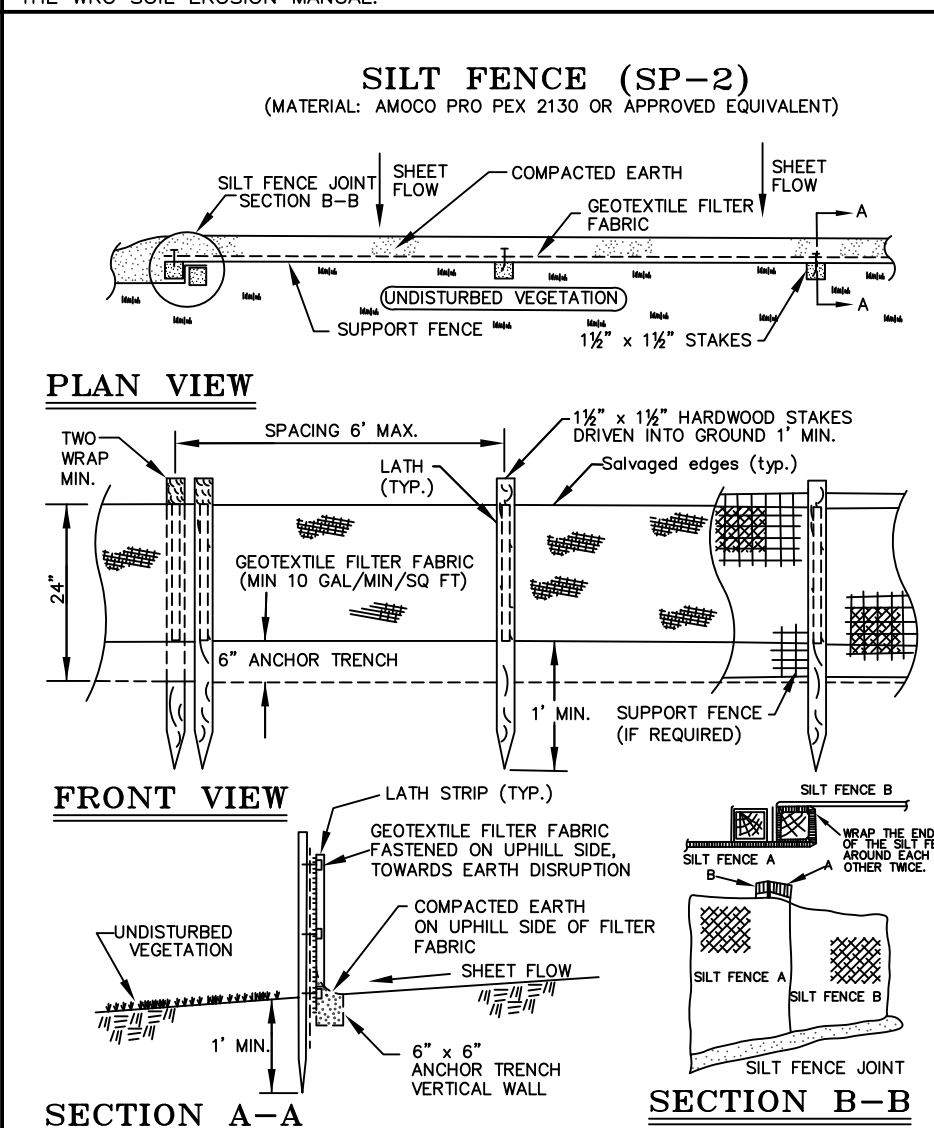
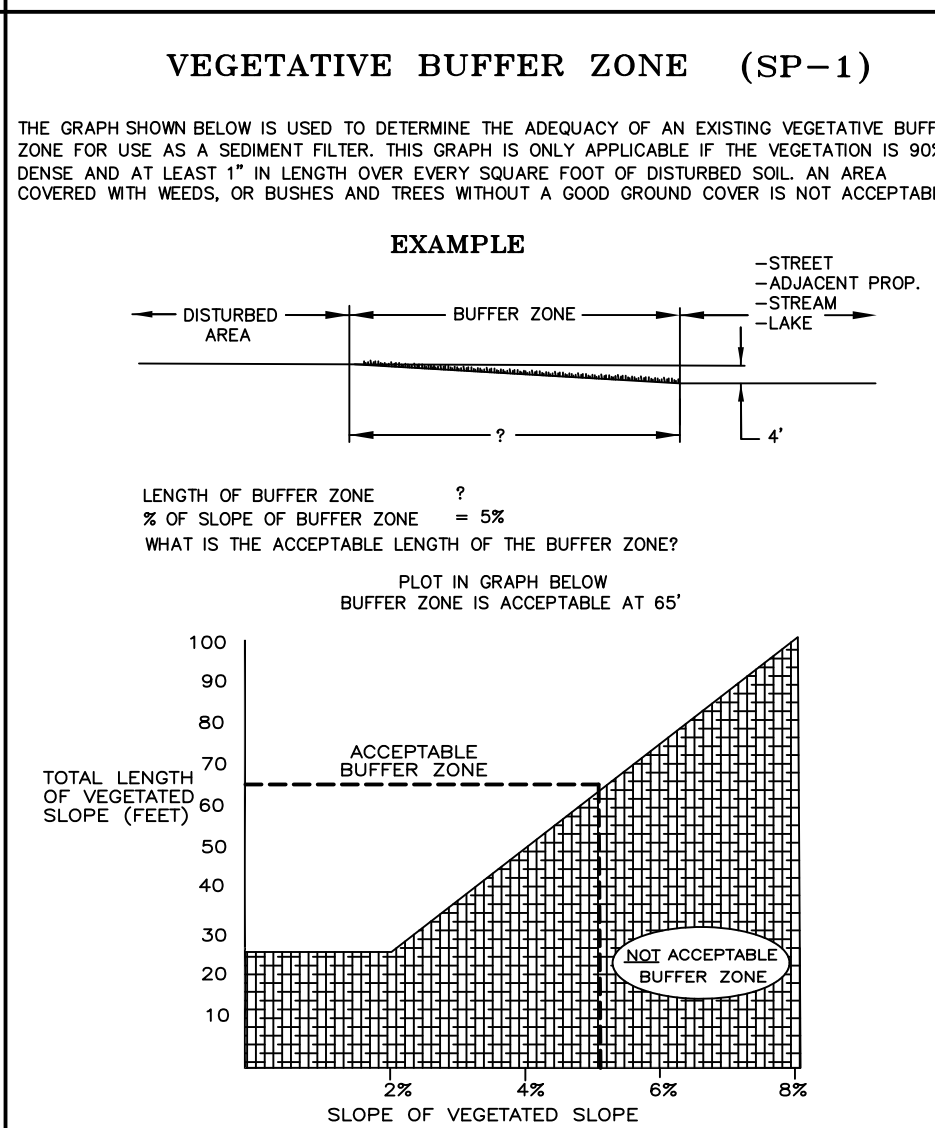
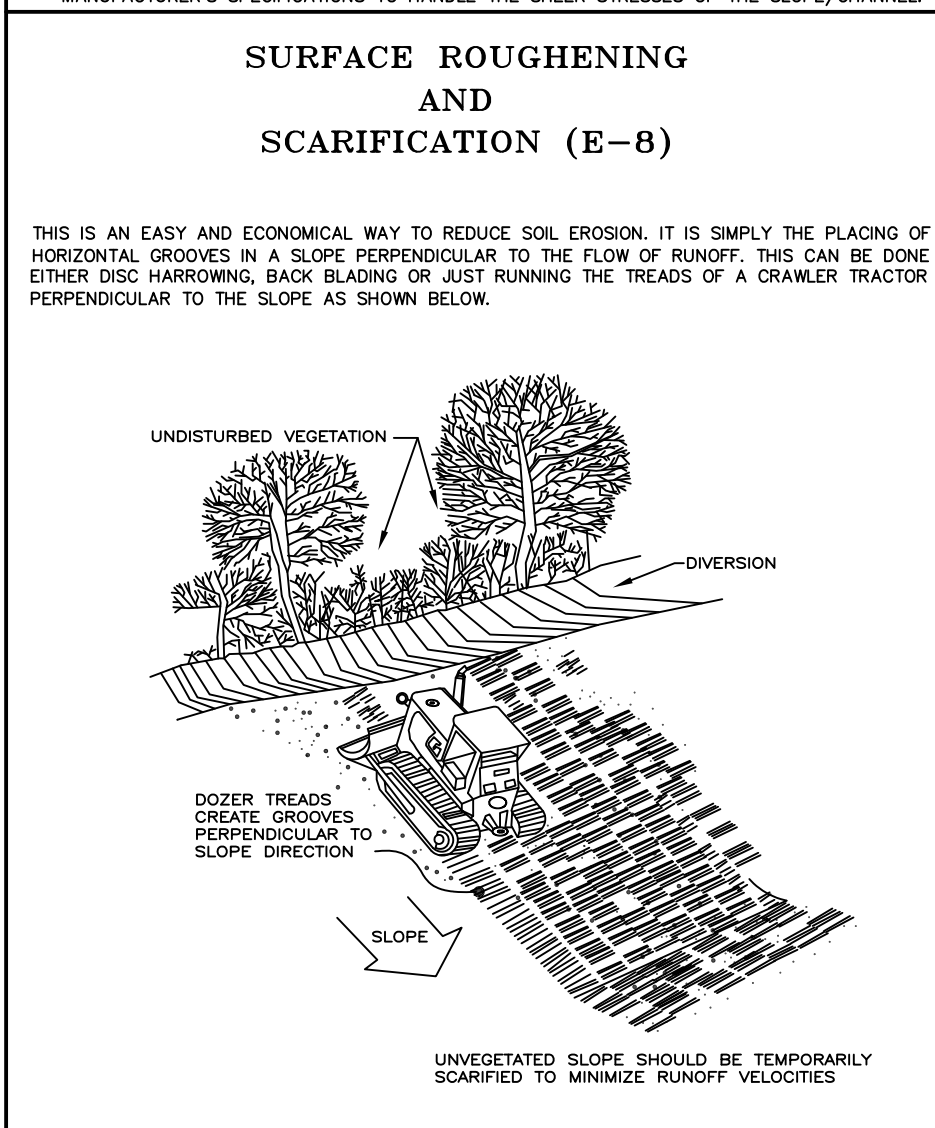
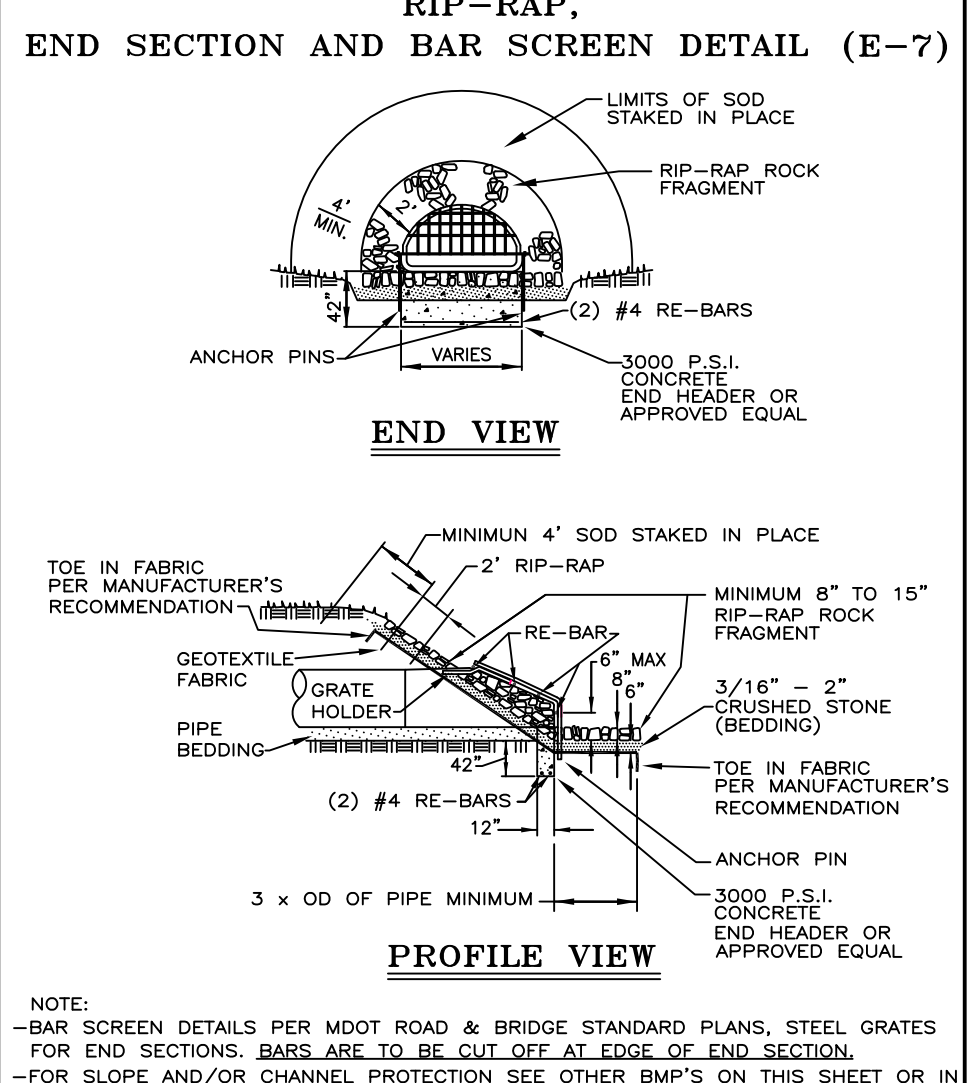
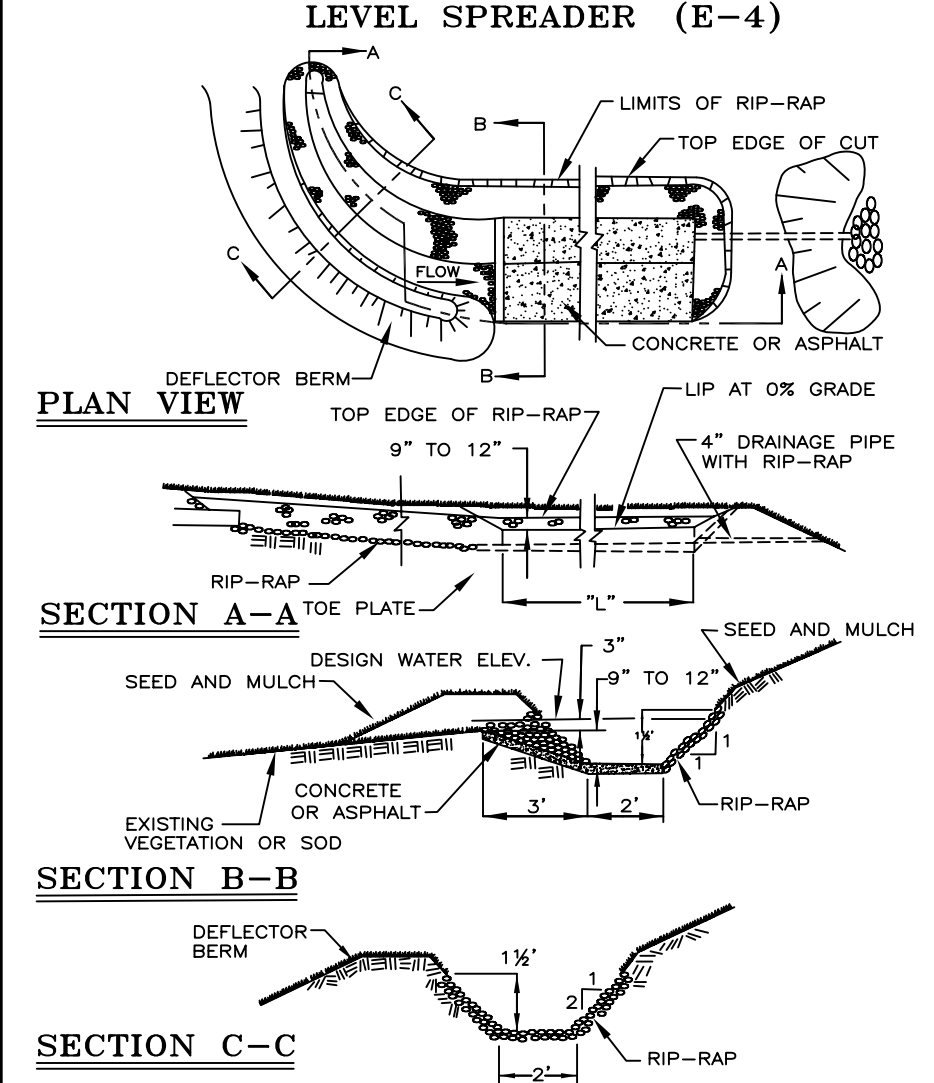
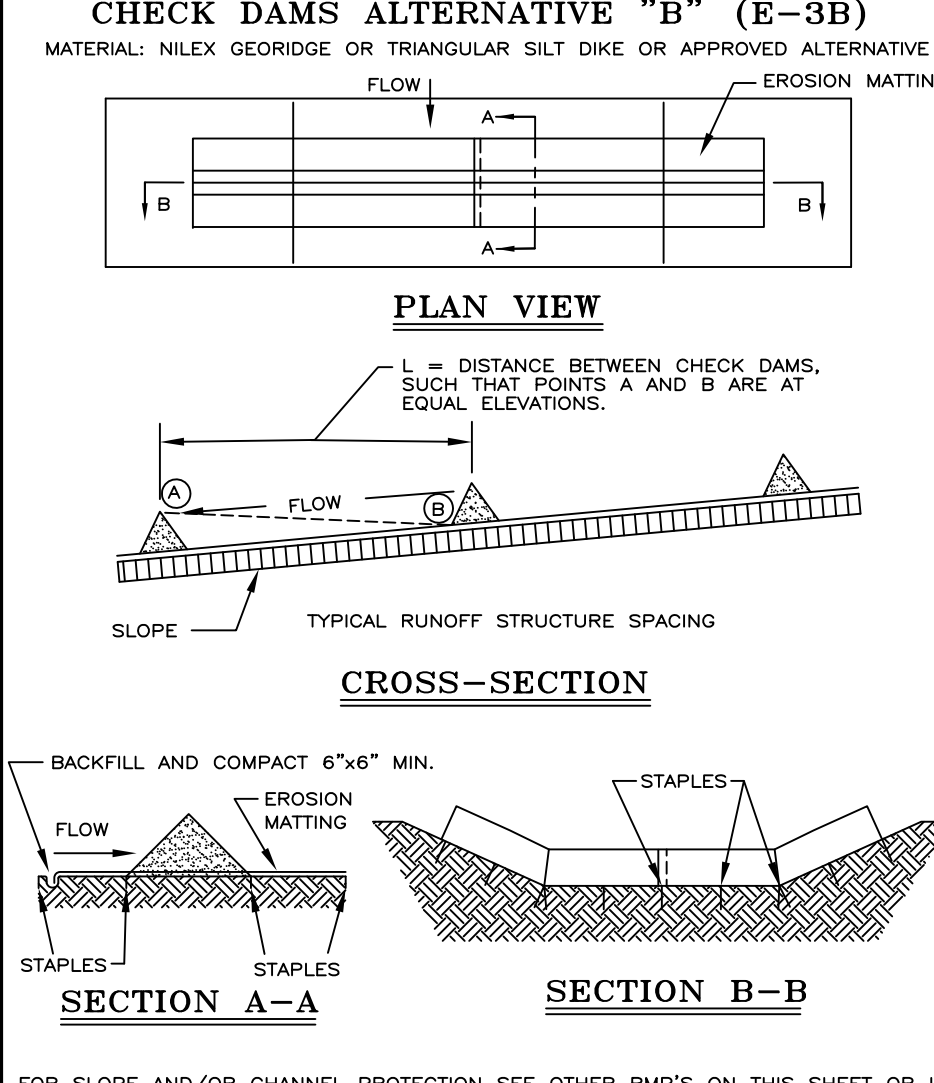
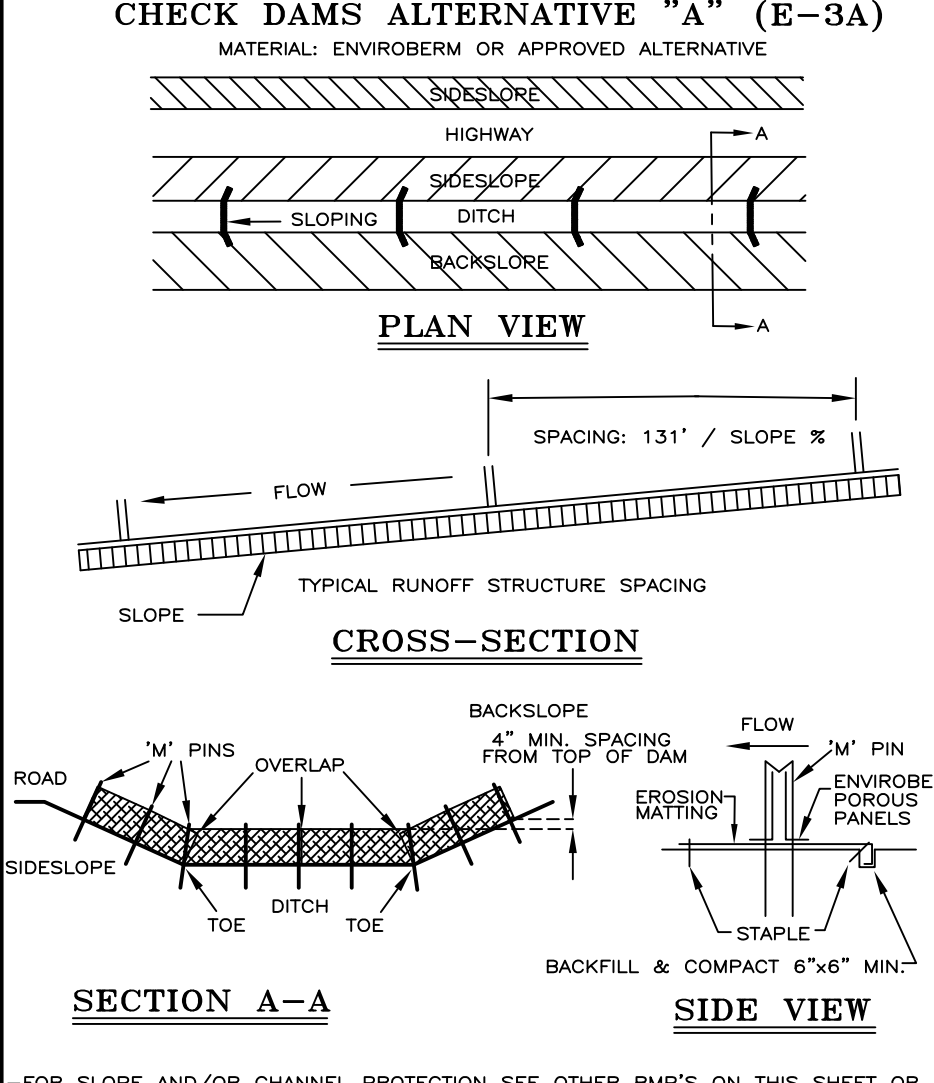
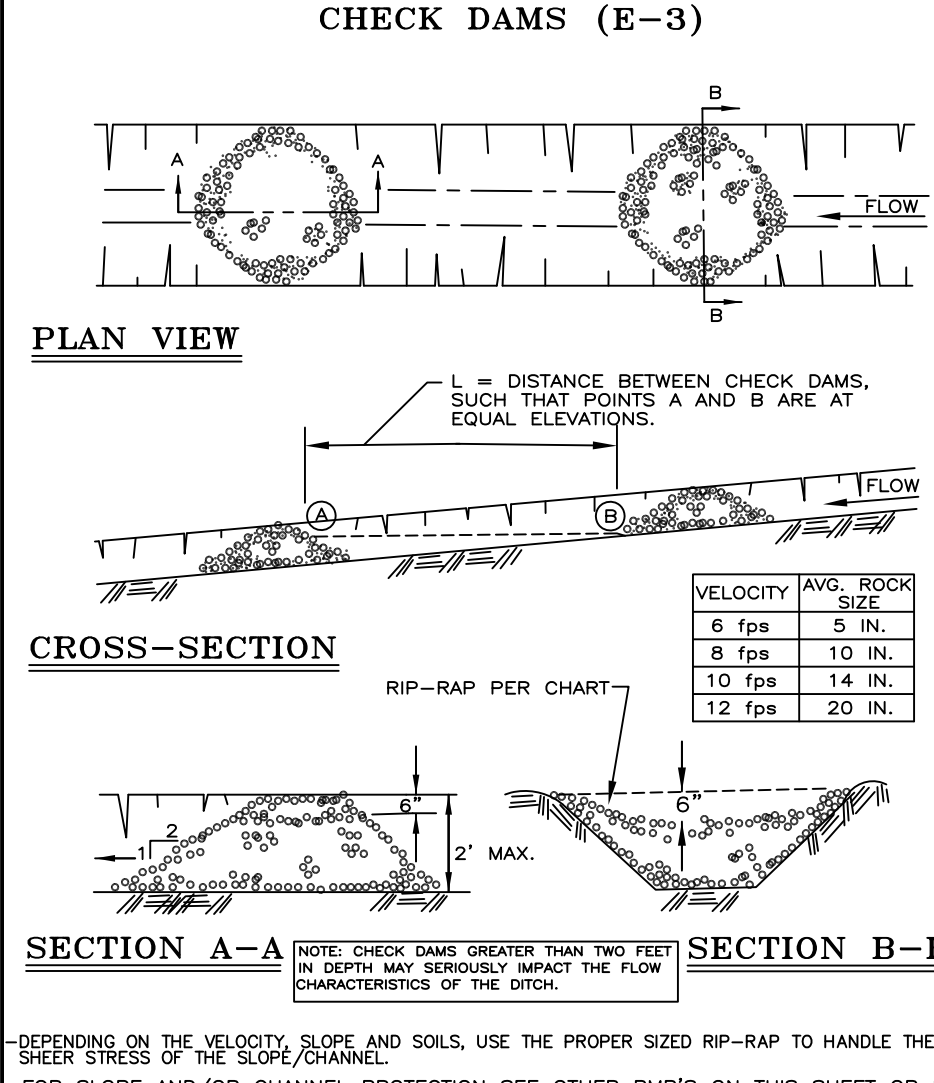
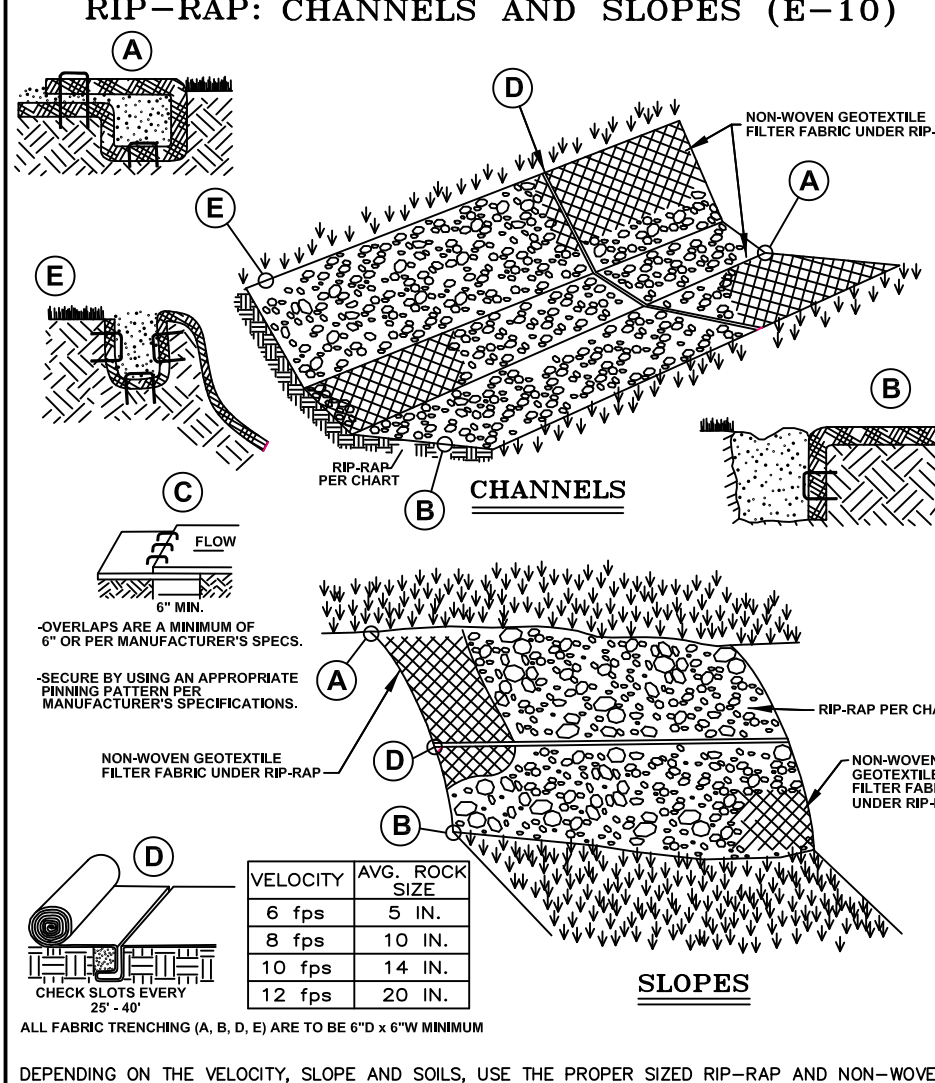
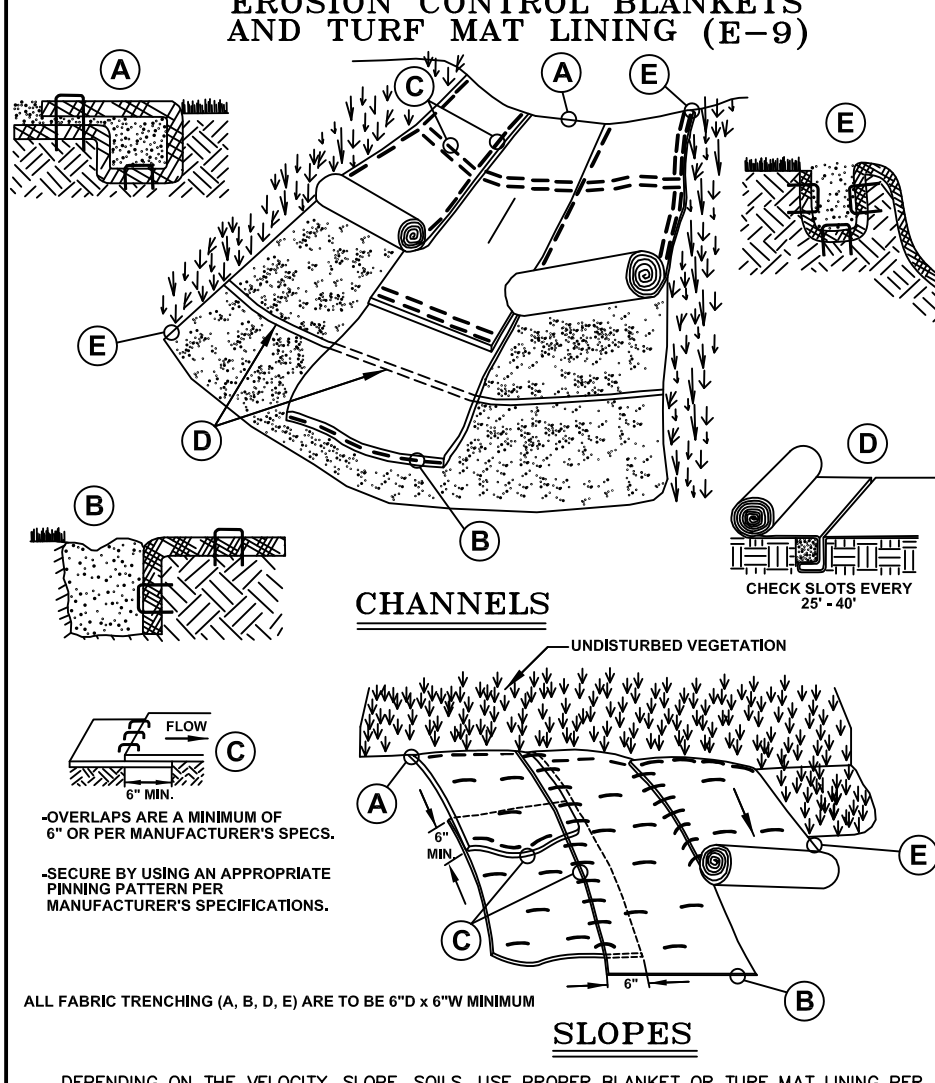
REVISIONS	DATE	APPROVED BY
WYE SADDLE REVISION	12-22-22	CITY COUNCIL, DATE: SEPTEMBER 23, 2019
PREPARED BY ENGINEERING DIVISION DEPARTMENT OF PUBLIC SERVICES		

NOTIFY ROCHESTER HILLS ENGINEERING DIVISION @ 248-841-2510 48 HRS. PRIOR TO START OF CONSTRUCTION

City of Rochester Hills
1000 Rochester Hills Drive, Rochester Hills, Michigan 48309

SANITARY SEWER STANDARD DETAILS

NOT TO SCALE	DATE: 1/10/2019
SHEET 2 OF 2	



NOTE:

ALL OF THE DETAILS SHOWN ON THIS SHEET, ALONG WITH INFORMATION PERTAINING TO PLAN PREPARATION, DESIGN CRITERIA AND GENERAL NOTES, ETC., ARE INCLUDED IN THE OAKLAND COUNTY WATER RESOURCES COMMISSIONER'S EROSION CONTROL MANUAL. PLEASE CONTACT THE EROSION CONTROL UNIT AT (248) 858-5389 TO OBTAIN A COPY OF THE MANUAL. OR GO ONLINE AT WWW.OAKGOV.COM/WATER

SOIL EROSION AND SEDIMENTATION CONTROL DETAILS

REVISION BLOCK

REV	DATE	DESCRIPTION
1	01/10/11	ISSUED
2	02/01/11	REVISED VEGETATIVE BUFFER ZONE DETAIL AND EROSION CONTROL BLANKETS AND TURF MAT LINING DETAIL
3	02/01/11	REVISIONS TO RYCB INLET FILTER DETAIL
4	02/01/11	STANDARDIZED COMMITTEE APPROVAL / NAME CHANGES

ORIG. DATE: 01/10/11
SCALE: NONE
DESIGNED BY: WRC
DRAWN BY: Mapping

ONE PUBLIC WORKS DRIVE, BLDG 95 WEST WATERFORD, MICHIGAN 48308-1001

SHEET NO: 1 OF 1

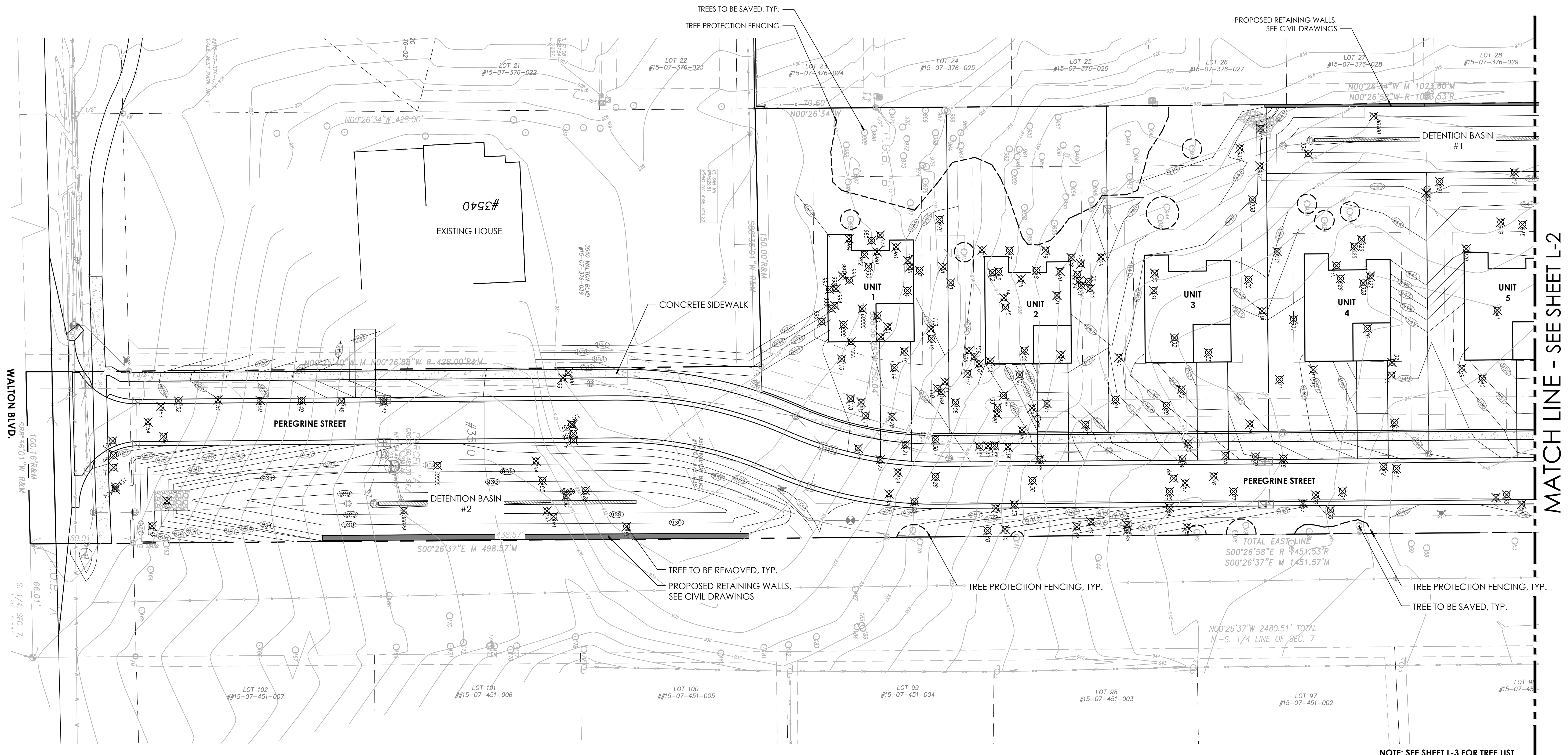
Issued For:

08.30.2021	Preliminary PUD Review
04.04.2022	Revision
07.22.2022	Revision
10.04.2022	Revision
11.07.2022	Revision
01.03.2023	Revision
03.15.2023	Revision
04.03.2023	Revision
06.06.2023	Permits / Construction
01.02.2024	Revision per Township
02.26.2024	Revision per Township

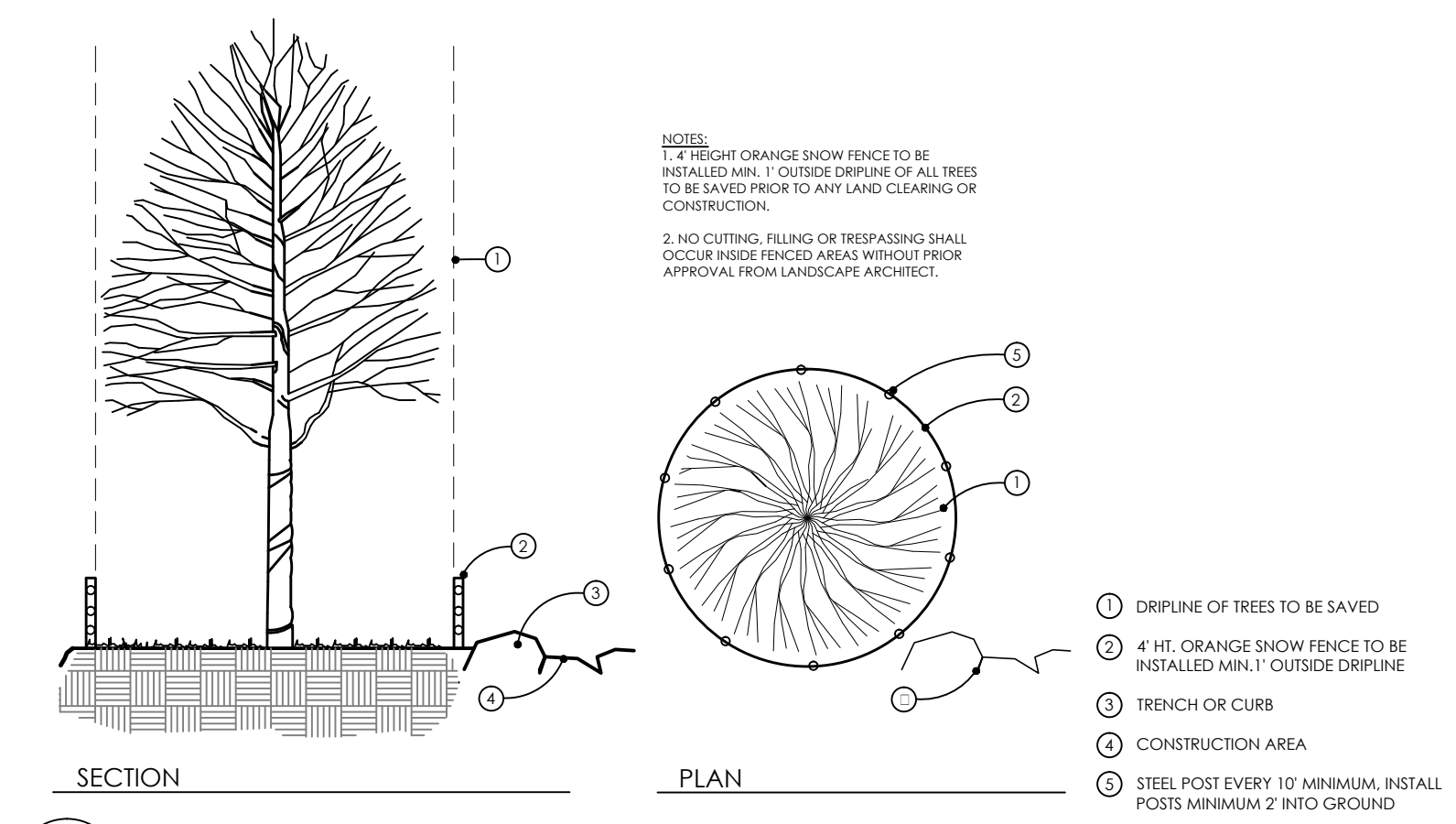
Project:
WALTON OAKS
A Planned Unit Development
East Walton Boulevard
Rochester Hills, Michigan

Project Sponsor:
Three Oaks Communities, LLC
P.O. Box 8307
Ann Arbor, MI 48107

Sheet Name:
Tree Removal & Preservation Plan - South



NOTE: SEE SHEET L-3 FOR TREE LIST



SECTION
TREE PROTECTION
NOT TO SCALE

TREE PROTECTION NOTE

No person may conduct any construction or development activity within the drip line of any regulated tree not approved for removal, including but not limited to land clearing, grubbing, trenching, grading, or filling, nor shall any person place solvents, building material, construction equipment, soil deposits, or other harmful materials within the drip line unless authorized by the parks and natural resources department.

During construction or development activity, persons shall not attach any device or wire to any regulated tree not approved for removal.

Replacement and relocated trees must be staked, fertilized, and mulched and shall be guaranteed by the tree removal permit holder to exhibit a normal growth cycle for at least one year following planting

Tree Mitigation Calculations

Regulated Trees Surveyed	361 (Poor / Dead have been removed)
Tree Exemptions	58 (building envelope)
Remaining Regulated Trees	303 (361-103)
Trees Required to be Saved	121 (303 x 40%)
Regulated Trees Saved	126
Percentage of Trees Saved	41.5% (126/303)
Regulated Trees Removed	184
Regulated Trees Required	184 (1 to 1 replacement ratio)
Specimen Trees Removed	37 (1,074")
Specimen Trees Saved	31
Specimen Trees Credits	31 (1 - 2" tree credit per saved tree)
Specimen Trees Required	476" ((1,074" * 50% = 537" / 2 = 269 2" trees - 31 credits)
Regulated Replacements Required	184
Regulated Replacements Provided	184
Specimen Replacements Required	476"
Specimen Replacements Provided	480" (159 3" trees - 69 3" deciduous & 91 12" evergreen)

*The trees identified as being in poor condition are in such a state of decline with some showing signs of disease, it is our belief that these trees will be dead within the next two (2) years

this should say 160 - 3" trees. If trees are not at least 3" or 12" (evergreens) in size, then they will count as 2" tree replacements as originally called-for.

Seal:



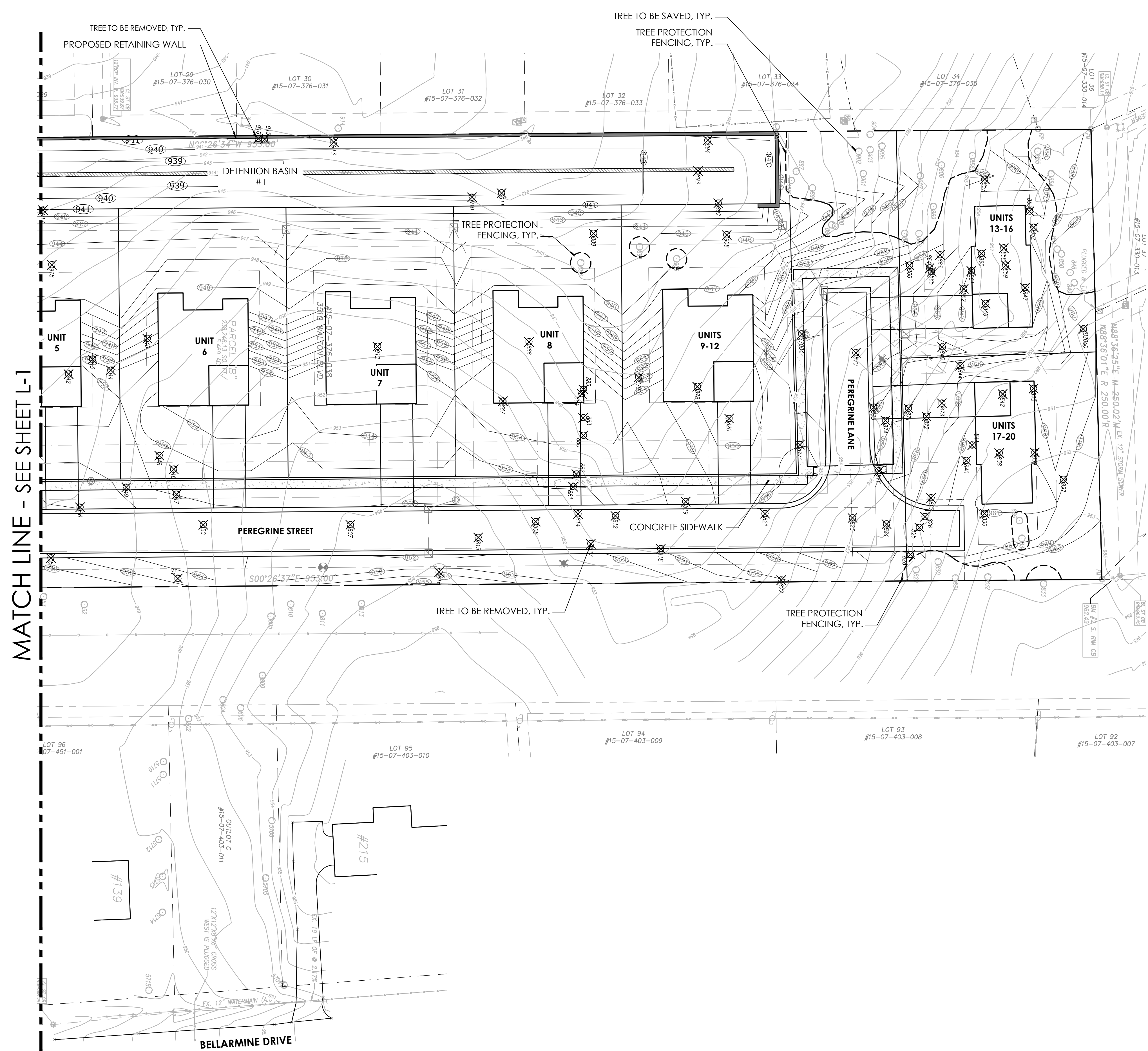
Drawn: JG
Checked: JG
Date: 06.2021
Scale: 1" = 30'-0"

Issued For:	Revision:
08.30.2021	Preliminary PUD Review
04.04.2022	Revision
07.22.2022	Revision
10.04.2022	Revision
11.07.2022	Revision
01.03.2023	Revision
03.15.2023	Revision
04.03.2023	Revision
06.06.2023	Permits / Construction
02.26.2024	Revision per Township

Project:
WALTON OAKS
A Planned Unit Development
East Walton Boulevard
Rochester Hills, Michigan

Project Sponsor:
Three Oaks Communities, LLC
P.O. Box 8307
Ann Arbor, MI 48107

Sheet Name:
Tree Removal & Preservation Plan - North



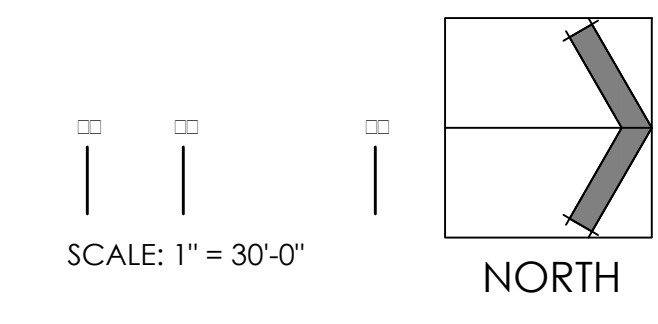
MATCH LINE - SEE SHEET L-1

Seal:



Drawn: JG
Checked: JG
Date: 06.2021
Scale: 1" = 30'-0"

Project Number:
22.004
Sheet Number:
L-2



Tag No.	DBH (in.)	Common Name	Botanical Name	Condition	Elevation	Specimen	Remove	Exempt
1	12	Elm	<i>Ulmus americana</i>	Good	932.81		X	X
2	15	Black Locust	<i>Robinia pseudoacacia</i>	Good	932.56		X	X
3	11	Black Locust	<i>Robinia pseudoacacia</i>	Fair	932.74		X	X
4	12	Black Locust	<i>Robinia pseudoacacia</i>	Good	933.15		X	X
5	11	Black Locust	<i>Robinia pseudoacacia</i>	Fair	933.06		X	X
6	12	Black Locust	<i>Robinia pseudoacacia</i>	Poor	933.17		X	X
7	13	Black Locust	<i>Robinia pseudoacacia</i>	Fair	933.33		X	X
8	7	Hawthorn	<i>Crataegus</i>	Fair	934.16		X	X
9	15	Black Locust	<i>Robinia pseudoacacia</i>	Good	934.52		X	X
10	16	Elm	<i>Ulmus americana</i>	Good	935.35		X	X
11	36	Black Walnut	<i>Juglans nigra</i>	Good	936.56	X	X	X
12	38	Black Walnut	<i>Juglans nigra</i>	Good	937.37	X	X	X
13	20	Black Walnut	<i>Juglans nigra</i>	Good	937.51	X	X	X
14	11	White Oak	<i>Quercus alba</i>	Good	937.20	X	X	X
15	8	White Oak	<i>Quercus alba</i>	Good	937.28	X	X	X
16	10	Black Walnut	<i>Juglans nigra</i>	Fair	938.35	X	X	X
17	18	Black Walnut	<i>Juglans nigra</i>	Fair	937.58	X	X	X
18	27	Black Walnut	<i>Juglans nigra</i>	Good	939.13	X	X	X
19	14	Black Maple	<i>Acer nigrum</i>	Good	939.25	X	X	X
20	22	Black Walnut	<i>Juglans nigra</i>	Good	940.00	X	X	X
21	10	Elm	<i>Ulmus americana</i>	Poor	939.88		X	X
22	11	Elm	<i>Ulmus americana</i>	Good	941.35		X	X
23	12	Black Walnut	<i>Juglans nigra</i>	Fair	941.05		X	X
24	14	Black Walnut	<i>Juglans nigra</i>	Good	940.78		X	X
25	13	Black Walnut	<i>Juglans nigra</i>	Good	940.55		X	X
26	13	Elm	<i>Ulmus americana</i>	Fair	940.98		X	X
27	27	Black Walnut	<i>Juglans nigra</i>	Good	940.38		X	X
28	33	Black Walnut	<i>Juglans nigra</i>	Good	939.92	X	X	X
29	35	Black Walnut	<i>Juglans nigra</i>	Good	941.05	X	X	X
30	28	Black Walnut	<i>Juglans nigra</i>	Good	942.74	X	X	X
31	16	Black Walnut	<i>Juglans nigra</i>	Good	943.44	X	X	X
32	10	Black Walnut	<i>Juglans nigra</i>	Good	944.95	X	X	X
33	18	Black Cherry	<i>Prunus serotina</i>	Dead	945.41	X	X	X
34	12	White Oak	<i>Quercus alba</i>	Good	945.25	X	X	X
35	46	Black Walnut	<i>Juglans nigra</i>	Good	944.52	X	X	X
36	6	Elm	<i>Ulmus americana</i>	Good	945.96		X	X
37	13	Red Oak	<i>Quercus rubra</i>	Good	946.40	X	X	X
38	24	Red Oak	<i>Quercus rubra</i>	Good	946.51	X	X	X
39	17	Elm	<i>Ulmus americana</i>	Good	946.73		X	X
40	17	Elm	<i>Ulmus americana</i>	Good	947.04		X	X
41	9	Mulberry	<i>Morus alba</i>	Fair	946.12		X	X
42	9	Ash	<i>Fraxinus</i>	Good	947.08		X	X
43	10	Elm	<i>Ulmus americana</i>	Poor	947.26		X	X
44	13	Elm	<i>Ulmus americana</i>	Dead	948.08		X	X
45	16	Elm	<i>Ulmus americana</i>	Good	947.74		X	X
46	7	Ash	<i>Fraxinus</i>	Good	950.24		X	X
47	6.5	Apple	<i>Malus ssp.</i>	Good	950.19		X	X
48	8.6	Black Cherry	<i>Prunus serotina</i>	Good	949.70		X	X
49	13	Scotch Pine	<i>Pinus sylvestris</i>	Good	948.92		X	X
50	29	Scotch Pine	<i>Pinus sylvestris</i>	Good	950.74		X	X
51	8.5,5	Apple	<i>Malus ssp.</i>	Good	949.65		X	X
52	9	Apple	<i>Malus ssp.</i>	Good	948.35		X	X
53	9	Honeylocust	<i>Gleditsia triacanthos</i>	Good	948.06		X	X
54	8	Black Cherry	<i>Prunus serotina</i>	Dead	948.39		X	X
55	10	Black Cherry	<i>Prunus serotina</i>	Poor	948.28		X	X
56	8	Ash	<i>Fraxinus</i>	Good	948.12		X	X
57	11.7,5	Apple	<i>Malus ssp.</i>	Good	948.44		X	X
58	28	Scotch Pine	<i>Pinus sylvestris</i>	Good	948.74		X	X
59	29	Scotch Pine	<i>Pinus sylvestris</i>	Good	948.85		X	X
60	14	Red Oak	<i>Quercus rubra</i>	Good	946.81		X	X
61	8,7,8	Black Cherry	<i>Prunus serotina</i>	Poor	948.13		X	X
62	25	Black Walnut	<i>Juglans nigra</i>	Good	947.63	X	X	X
63	15	Black Cherry	<i>Prunus serotina</i>	Fair	947.33		X	X
64	8	Elm	<i>Ulmus americana</i>	Good	946.17		X	X
65	9	Red Oak	<i>Quercus rubra</i>	Good	946.14		X	X
66	8	Elm	<i>Ulmus americana</i>	Good	945.58		X	X
67	10	Elm	<i>Ulmus americana</i>	Good	945.42		X	X
68	11	Ulmus americana	<i>Ulmus americana</i>	Good	945.09		X	X
69	13	Elm	<i>Ulmus americana</i>	Good	944.46		X	X
70	9	Elm	<i>Ulmus americana</i>	Good	944.65		X	X
71	7	Elm	<i>Ulmus americana</i>	Good	945.21		X	X
72	11	Black Maple	<i>Acer nigrum</i>	Good	944.68		X	X
73	8	Ash	<i>Fraxinus</i>	Fair	943.86		X	X
74	9	Black Cherry	<i>Prunus serotina</i>	Poor	944.31		X	X
75	8	Elm	<i>Ulmus americana</i>	Good	944.34		X	X
76	18	Elm	<i>Ulmus americana</i>	Good	944.54		X	X
77	10	Elm	<i>Ulmus americana</i>	Good	944.75		X	X
78	13	Elm	<i>Ulmus americana</i>	Good	945.70		X	X
79	8	Red Oak	<i>Quercus rubra</i>	Good	945.25		X	X
80	19	Scotch Pine	<i>Pinus sylvestris</i>	Good	945.67	X	X	X
81	11	Elm	<i>Ulmus americana</i>	Good	945.47		X	X
82	12	Blue Spruce	<i>Picea pungens</i>	Good	945.22		X	X
83	16	Elm	<i>Ulmus americana</i>	Good	945.55		X	X
84	22	Black Cherry	<i>Prunus serotina</i>	Poor	944.92	X	X	X
85	13	Elm	<i>Ulmus americana</i>	Fair	944.71		X	X
86	8	Elm	<i>Ulmus americana</i>	Good	944.70		X	X
87	10	Black Cherry	<i>Prunus serotina</i>	Good	944.68		X	X
88	9	Hawthorn	<i>Crataegus</i>	Good	N/F		X	X
89	8	Elm	<i>Ulmus americana</i>	Good	943.75		X	X
90	7	Black Walnut	<i>Juglans nigra</i>	Fair	942.90		X	X
91	9	Elm	<i>Ulmus americana</i>	Good	942.09		X	X
92	9	Elm	<i>Ulmus americana</i>	Good	940.27		X	X
93	18	Elm	<i>Ulmus americana</i>	Dead	940.04		X	X
94	16	Black Locust	<i>Robinia pseudoacacia</i>	Good	939.29		X	X
95	10	Elm	<i>Ulmus americana</i>	Fair	940.40		X	X
96	7	Black Cherry	<i>Prunus serotina</i>	Fair	939.63		X	X
97	21	Black Cherry	<i>Prunus serotina</i>	Poor	942.41	X	X	X
98	13	Elm	<i>Ulmus americana</i>	Good	938.34		X	X
99	17	Black Locust	<i>Robinia pseudoacacia</i>	Good	938.62		X	X
100	10.5	Black Locust	<i>Robinia pseudoacacia</i>	Good	937.96		X	X
101	12	Black Locust	<i>Robinia pseudoacacia</i>	Good	937.82		X	X
102	17	Black Locust	<i>Robinia pseudoacacia</i>	Good	938.25		X	X
103	11	Black Locust	<i>Robinia pseudoacacia</i>	Good	938.60		X	X
104	6	Elm	<i>Ulmus americana</i>	Fair	939.09		X	X
105	11	Black Locust	<i>Robinia pseudoacacia</i>	Fair	935.43		X	X
106	15	Black Locust	<i>Robinia pseudoacacia</i>	Good	938.02		X	X
107	14	Black Locust	<i>Robinia pseudoacacia</i>	Poor	936.18		X	X
108	11	Elm	<i>Ulmus americana</i>	Good	936.56		X	X
109	16	Black Cherry	<i>Prunus serotina</i>	Good	935.87		X	X
110	13	Black Locust	<i>Robinia pseudoacacia</i>	Good	935.65		X	X
111	14	Black Locust	<i>Robinia pseudoacacia</i>	Good	935.65		X	X
112	19	Black Locust	<i>Robinia pseudoacacia</i>	Good	934.28		X	X
113	7	Ash	<i>Fraxinus</i>	Fair	934.12		X	X
114	12	Black Walnut	<i>Juglans nigra</i>	Good	933.70		X	X
115	17	Black Locust	<i>Robinia pseudoacacia</i>	Good	933.70		X	X
116	11	Black Locust	<i>Robinia pseudoacacia</i>	Poor	932.03		X	X
117	8	Black Locust	<i>Robinia pseudoacacia</i>	Good	932.89		X	X
118	9	Hawthorn	<i>Crataegus</i>	Good	932.64		X	X
119	15	Elm	<i>Ulmus americana</i>	Good	933.20		X	X
120	13	Black Locust	<i>Robinia pseudoacacia</i>	Fair	934.06		X	X
121	16	Black Locust	<i>Robinia pseudoacacia</i>	Good	935.19		X	X
122	16	Black Locust	<i>Robinia pseudoacacia</i>	Good	933.79		X	X
123	10	Elm	<i>Ulmus americana</i>	Good	934.74		X	X
124	10.6	Apple	<i>Malus ssp.</i>	Poor	935.48		X	X
125	14	Black Locust	<i>Robinia pseudoacacia</i>	Good	935.61		X	X
126	13	Black Cherry	<i>Prunus serotina</i>	Fair	937.01		X	X
127	9	Elm	<i>Ulmus americana</i>	Good	937.02		X	X
128	11	Elm	<i>Ulmus americana</i>	Good	937.61		X	X
129	9	Elm	<i>Ulmus americana</i>	Good	937.30		X	X
130	10	Elm	<i>Ulmus americana</i>	Good	936.37		X	X

Tag No.	DBH (in.)	Common Name	Botanical Name	Condition	Elevation	Specimen	Remove	Exempt
131	11	Elm	<i>Ulmus americana</i>	Good	938.34		X	X
132	10	Elm	<i>Ulmus americana</i>	Good	938.51		X	X
133	12	Elm	<i>Ulmus americana</i>	Good	938.64		X	X
134	8	Elm	<i>Ulmus americana</i>	Good	939.74		X	X
135	9	Ash	<i>Fraxinus</i>	Poor	941.20		X	X
136	9,8,8,8	Black Cherry	<i>Prunus serotina</i>	Fair	941.69		X	X
137	10	Elm	<i>Ulmus americana</i>	Fair	940.67		X	X
138	7	Ash	<i>Fraxinus</i>	Poor	939.70		X	X
139	10,8	Elm	<i>Ulmus americana</i>	Good	940.09		X	X
140	6	Elm	<i>Ulmus americana</i>	Fair	939.51		X	X
141	10	Apple	<i>Malus ssp.</i>	Good	940.70		X	X
142	13	Elm	<i>Ulmus americana</i>	Good	943.10		X	X
143	9	Black Walnut	<i>Juglans nigra</i>	Good	943.34		X	X
144	12	Elm	<i>Ulmus americana</i>	Good	943.76		X	X
145	9	Elm	<i>Ulmus americana</i>	Good	944.53		X	X
146	13	Elm	<i>Ulmus americana</i>	Good	944.58		X	X
147	24	Sugar Maple	<i>Acer saccharum</i>	Good	940.00	X	X	X
148	20	Sugar Maple	<i>Acer saccharum</i>	Good	940.00	X	X	X
149	14	Sugar Maple	<i>Acer saccharum</i>	Good	940.00	X	X	X
150	22	Sugar Maple	<i>Acer saccharum</i>	Good	940.00	X	X	X
151	27	Sugar Maple	<i>Acer saccharum</i>	Good	940.00	X	X	X
152	19	Sugar Maple	<i>Acer saccharum</i>	Good	940.00	X	X	X
153	18	Sugar Maple	<i>Acer saccharum</i>	Good	940.00	X	X	X
154	20	Sugar Maple	<i>Acer saccharum</i>	Good	940.00	X	X	X
155	28,8	Norway Spruce	<i>Picea abies</i>	Good	940.55		X	X
156	22	Norway Spruce	<i>Picea abies</i>	Good	940.55		X	X
157	11	Norway Spruce	<i>Picea abies</i>	Good	940.55		X	X
158	29	Norway Spruce	<i>Picea abies</i>	Good	940.55		X	X
159	13	Elm	<i>Ulmus americana</i>	Poor	940.55		X	X
160	20,12	Silver Maple	<i>Acer saccharinum</i>	Good	940.55		X	X
161	24	Silver Maple	<i>Acer saccharinum</i>	Good	940.55		X	X
162	19	Silver Maple	<i>Acer saccharinum</i>	Good	940.55		X	X
163	8,12	Silver Maple	<i>Acer saccharinum</i>	Good	940.55		X	X
164	14	Sugar Maple	<i>Acer saccharum</i>	Good	940.55		X	X
165	28	Silver Maple	<i>Acer saccharinum</i>	Good	940.55		X	X
166	7	Elm	<i>Ulmus americana</i>	Good	940.55		X	X
167	14	Elm	<i>Ulmus americana</i>	Good	940.55		X	X
168	24,15	Apple	<i>Malus ssp.</i>	Poor	940.55		X	X
169	23	Red Maple	<i>Acer rubrum</i>	Good	940.55		X	X
170	19	Silver Maple	<i>Acer saccharinum</i>	Good	940.55		X	X
171	22	Red Maple	<i>Acer rubrum</i>					

Issued For:

08.30.2021	Preliminary PUD Review
04.04.2022	Revision
07.22.2022	Revision
10.04.2022	Revision
11.07.2022	Revision
01.03.2023	Revision
03.15.2023	Revision
04.03.2023	Revision
06.06.2023	Permits / Construction
01.23.2024	Revision per Township
02.26.2024	Revision per Township

Project:
WALTON OAKS
A Planned Unit Development
East Walton Boulevard
Rochester Hills, Michigan

Project Sponsor:
Three Oaks Communities, LLC
P.O. Box 8307
Ann Arbor, MI 48107

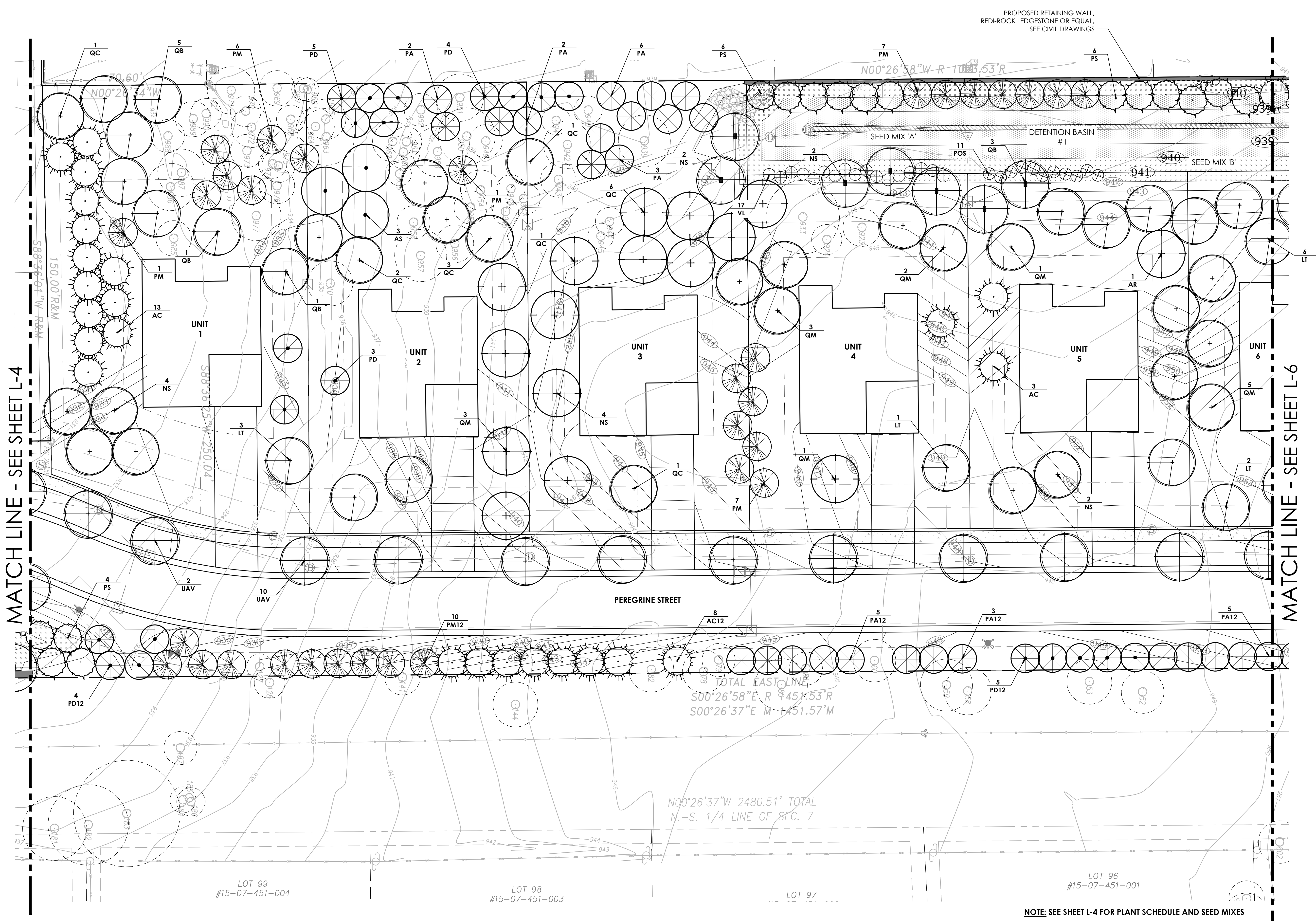
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**Landscape Plan
Central**

Seal:



Drawn: JG
Checked: JG
Date: 06.2021
Scale: 1" = 20'-0"

Project Number:
22.004
Sheet Number:
L-5
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MATCH LINE - SEE SHEET L-4

MATCH LINE - SEE SHEET L-6

Issued For:

08.30.2021	Preliminary PUD Review
04.04.2022	Revision
07.22.2022	Revision
10.04.2022	Revision
11.07.2022	Revision
01.03.2023	Revision
03.15.2023	Revision
04.03.2023	Revision
06.06.2023	Permits / Construction
01.02.2024	Revision per Township
01.23.2024	Revision per Township

Project:
WALTON OAKS
A Planned Unit Development
East Walton Boulevard
Rochester Hills, Michigan

Project Sponsor:
Three Oaks Communities, LLC
P.O. Box 8307
Ann Arbor, MI 48107

Sheet Name:

Landscape Plan North

Scale:



Drawn: JG
Checked: JG
Date: 06.2021
Scale: 1" = 20'-0"

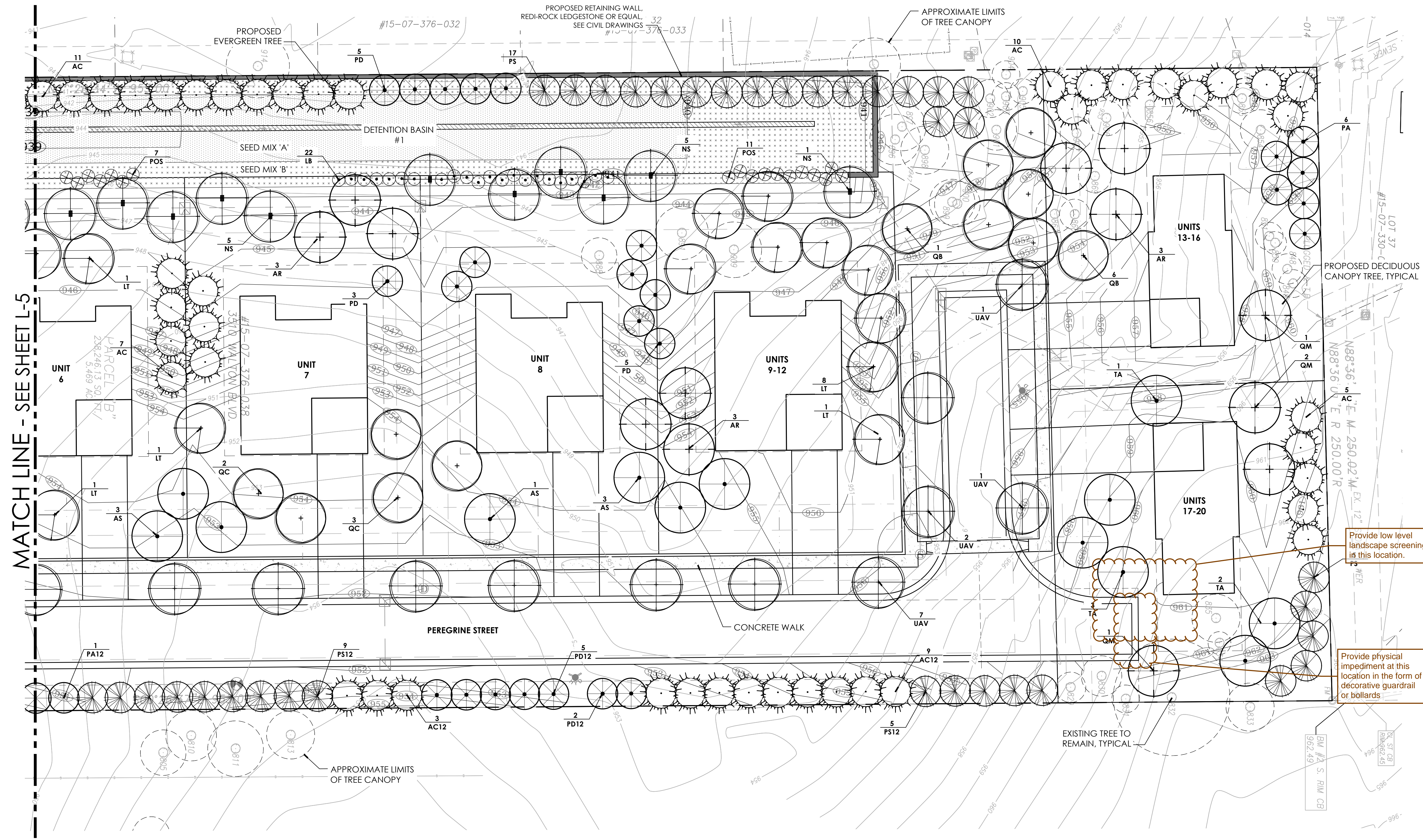
Project Number:

22.004

Sheet Number:

L-6

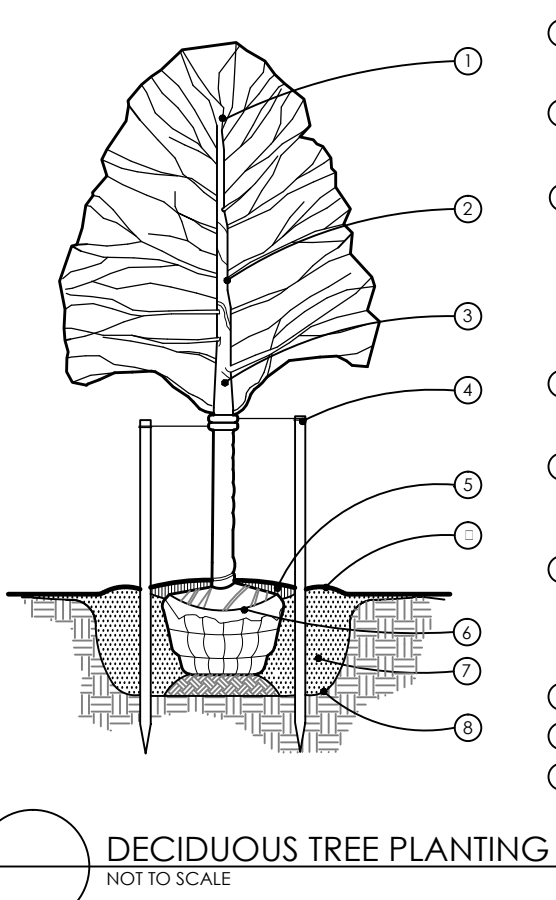
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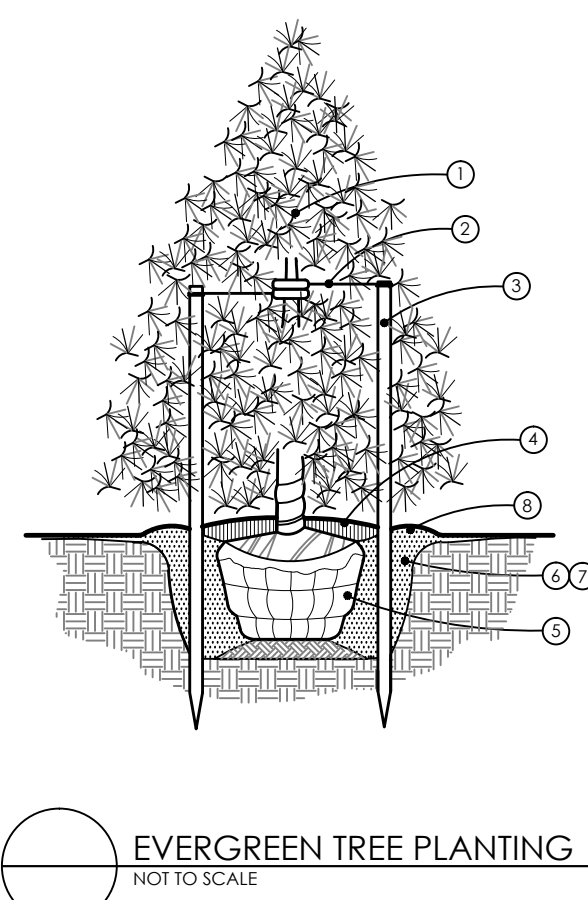
MATCH LINE - SEE SHEET L-5

Provide low level landscape screening in this location.

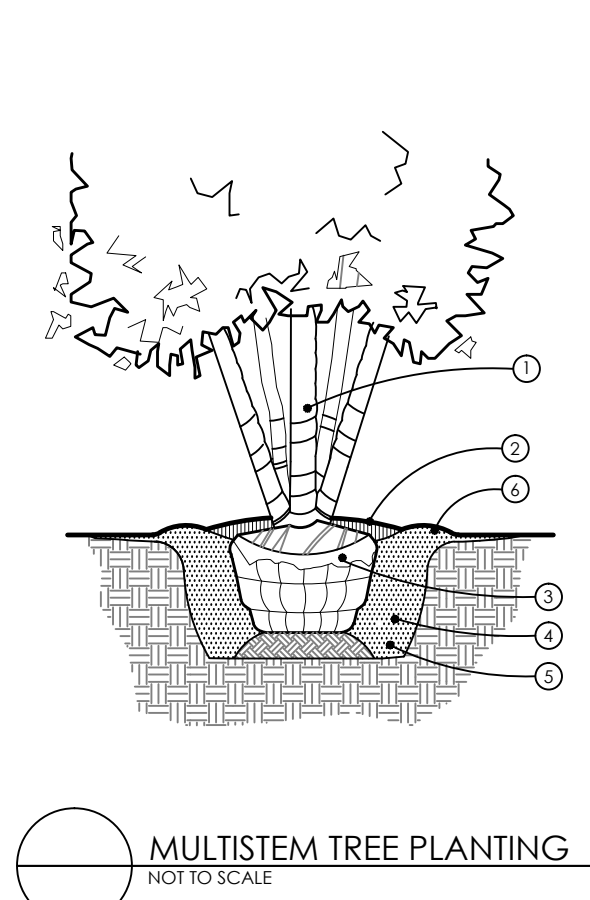
Provide physical impediment at this location in the form of decorative guardrail or bollards.



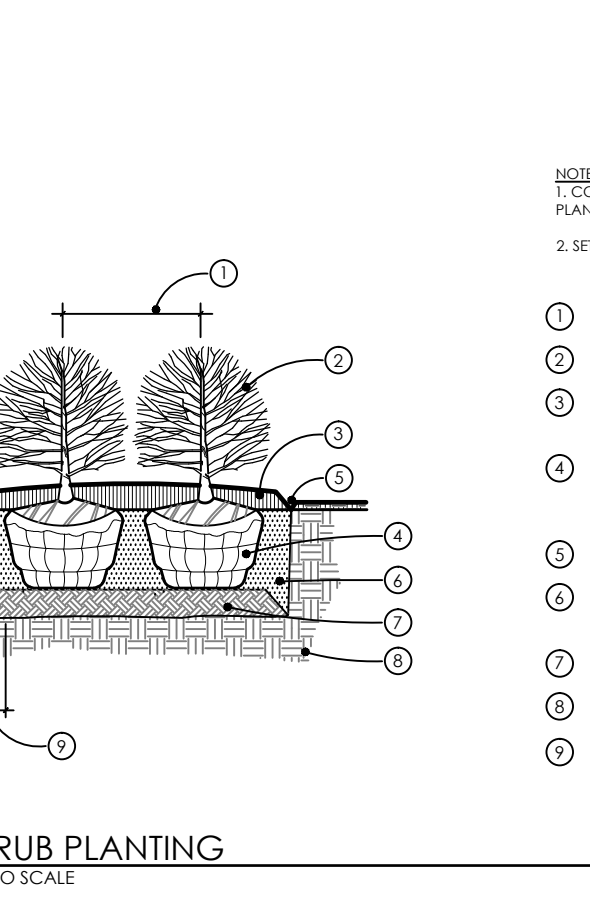
- REMOVE SECONDARY LEADERS. DO NOT PRUNE TERMINAL LEADER OR BRANCH TOPS. PRUNE ALL DEAD AND BROKEN BRANCHES.
 - REMOVE ALL TAGS, STRINGS, PLASTICS, AND ANY OTHER MATERIALS WHICH ARE UNSIGHTLY OR COULD CAUSE GIRDLING.
 - STAKE TREES JUST BELOW FIRST BRANCH W/ 2" 3" WIDE BELT-LIKE FABRIC STRAPS ONLY. ABRIDGE OR APPROVED EQUAL. (CONNECT FROM TREE TO STAKE OPPOSITE FROM EACH OTHER, AND ALLOW FOR SOME "FLEXING") DO NOT USE WIRE OR ROPE THROUGH A HOSE. REMOVE AFTER ONE YEAR.
 - (2) 2"x2" HARDWOOD STAKES OR EQUIVALENT DRIVEN 6" OUTSIDE OF ROOTBALL. REMOVE AFTER ONE YEAR.
 - COVER PLANTING W/ 3" DOUBLE SHREDDED HARDWOOD BARK MULCH. MINIMUM 6" DIA. LEAVE 3" CIRCLE OF BARE SOIL AROUND THE BASE OF THE TRUNK.
 - REMOVE ALL NON-BIODEGRADABLE MATERIALS FROM THE ROOTBALL. FOLD DOWN ALL BURLAP AND REMOVE WIRE BASKET FROM THE TOP 1/3 OF THE ROOTBALL.
 - PLANT MIX
 - TREE PIT TO BE 3 TIMES WIDTH OF ROOTBALL
 - 4" TOPSOIL SAUCER
- 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. CONTRACTOR TO VERIFY PERCOLATION OF PLANTING PIT PRIOR TO INSTALLATION.



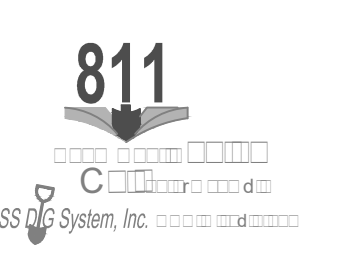
- REMOVE ALL TAGS, STRINGS, PLASTICS, AND ANY OTHER MATERIALS WHICH ARE UNSIGHTLY OR COULD CAUSE GIRDLING.
 - STAKE TREES WITH 2-3" WIDE BELT-LIKE FABRIC STRAPS ONLY. ABRIDGE OR APPROVED EQUAL. (CONNECT FROM TREE TO STAKE OPPOSITE FROM EACH OTHER, AND ALLOW FOR SOME "FLEXING") DO NOT USE WIRE OR ROPE THROUGH A HOSE. REMOVE AFTER ONE YEAR.
 - (2) 2"x2" HARDWOOD STAKES OR EQUIVALENT DRIVEN 6" OUTSIDE OF ROOTBALL. REMOVE AFTER ONE YEAR.
 - COVER PLANTING W/ 3" SHREDDED HARDWOOD BARK MULCH. MINIMUM 6" DIAMETER. CONNECT EVERGREEN PLANTINGS WHERE POSSIBLE.
 - REMOVE ALL NON-BIODEGRADABLE MATERIALS FROM THE ROOTBALL. FOLD DOWN ALL BURLAP AND REMOVE WIRE BASKET FROM THE TOP 1/3 OF THE ROOTBALL.
 - PLANT MIX
 - TREE PIT TO BE 3 TIMES WIDTH OF ROOTBALL
 - 4" TOPSOIL SAUCER
- 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. CONTRACTOR TO VERIFY PERCOLATION OF PLANTING PIT PRIOR TO INSTALLATION.



- REMOVE ALL TAGS, STRINGS, PLASTICS, AND ANY OTHER MATERIALS WHICH ARE UNSIGHTLY OR COULD CAUSE GIRDLING.
 - COVER PLANTING W/ 3" DOUBLE SHREDDED HARDWOOD BARK MULCH. MINIMUM 6" DIA. LEAVE 3" CIRCLE OF BARE SOIL AROUND BASE OF THE STEMS.
 - REMOVE ALL NON-BIODEGRADABLE MATERIALS FROM THE ROOTBALL. FOLD DOWN ALL BURLAP AND REMOVE WIRE BASKET FROM THE TOP 1/3 OF THE ROOTBALL.
 - PLANT MIX
 - TREE PIT TO BE THREE TIMES WIDTH OF ROOTBALL
 - 4" TOPSOIL SAUCER
- NOTE:
CONTRACTOR TO VERIFY PERCOLATION OF PLANTING PIT PRIOR TO INSTALLATION.
2. SET TOP OF ROOTBALL 3" ABOVE FINISH GRADE



- SEE PLAN FOR SPACING
 - SHRUBS. SEE PLANT SCHEDULE
 - 3" DEPTH DOUBLE SHREDDED HARDWOOD MULCH. SPECIAL
 - REMOVE ALL NON-BIODEGRADABLE TWINE FROM ENTIRE ROOTBALL. REMOVE BURLAP FROM TOP 1/2 OF ROOTBALL.
 - SHOVEL CUT OR METAL EDGE. SEE PLAN
 - EXCAVATE EXISTING SOIL TO 12" DEPTH. REPLACE WITH PLANT MIX
 - SCAFFRY TO 4" DEPTH AND RECOMPACT
 - UNDISTURBED SUBGRADE
 - MINIMUM 8" BETWEEN ROOTBALL AND EDGE OF PLANTING PIT
- NOTE:
CONTRACTOR TO VERIFY PERCOLATION OF PLANTING PIT PRIOR TO INSTALLATION.
2. SET TOP OF ROOTBALL 2" ABOVE FINISH GRADE



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SCALE: 1" = 20'-0"

