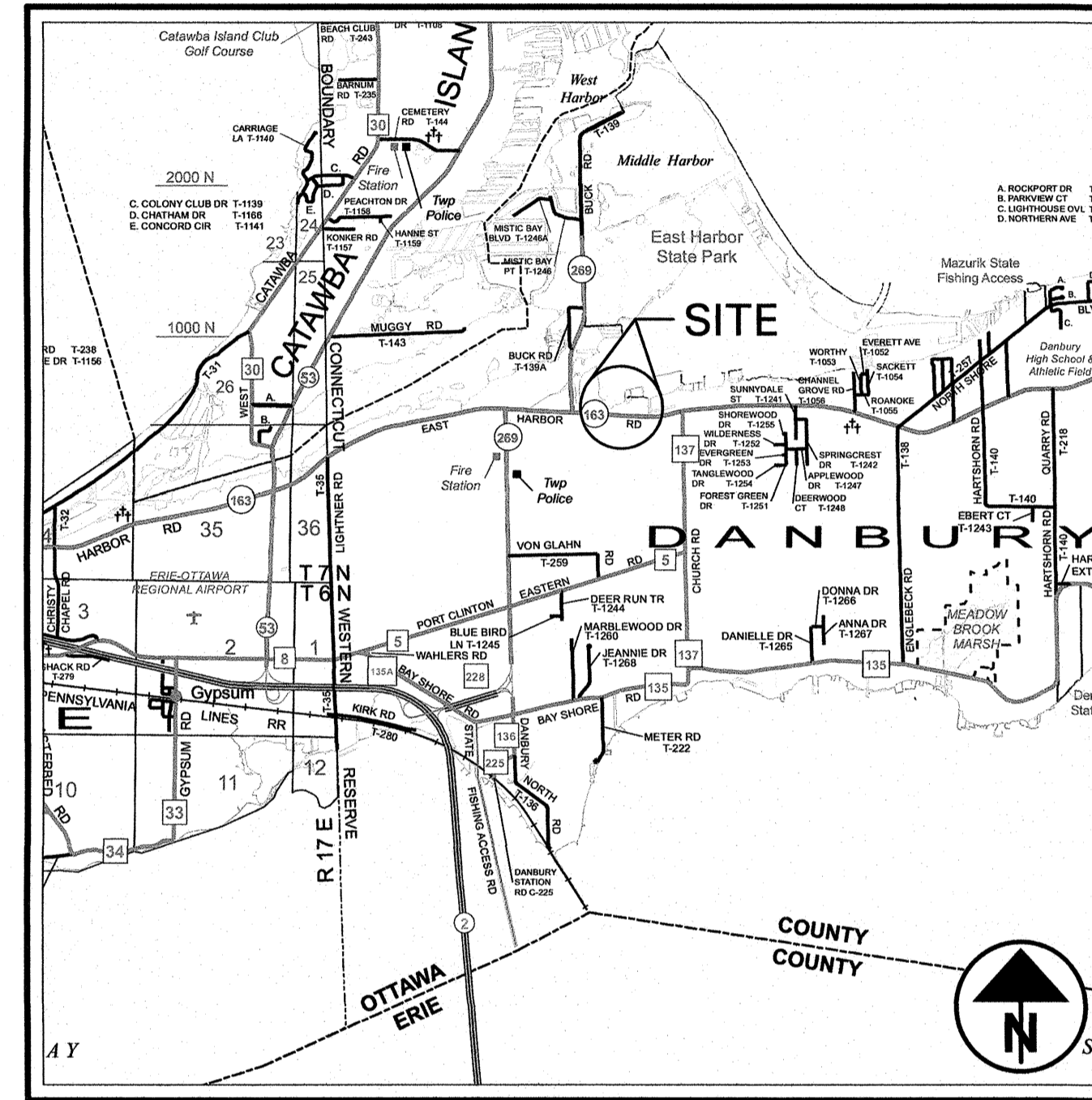


CONSTRUCTION PLANS FOR:  
**REGATTA SUBDIVISION**  
 2017

**LEGEND**

- SAN --- SANITARY SEWER (Ex)  
 - - - - - STORM SEWER (Ex)  
 --- W --- WATER LINE (Ex)  
 --- G --- GAS LINE (Ex)  
 --- T --- TELEPHONE LINE (Ex)  
 --- E --- ELECTRIC LINE (Ex)  
 --- CTV --- CABLE TV LINE (Ex)  
 - - - - - SWALE/DITCH (Pr)  
 --- W --- WATER LINE (Pr)  
 --- SAN --- SANITARY SEWER LINE (Pr)  
 --- STM --- STORM SEWER LINE (Pr)  
 --> UNDERDRAIN (Pr)  
 --- U --- PRIVATE UTILITIES EASEMENT (Pr)  
 --- SW --- SANITARY SEWER EASEMENT (Pr)  
 --- R/W --- RIGHT-OF-WAY  
 ○ I.P.F. IRON PIN FOUND  
 ⊕ I.P.F. IRON PIN AND CAP FOUND  
 ⊙ M.N.F. MAG NAIL FOUND  
 ⊕ P.K.F. PK NAIL FOUND  
 ∅ POWER POLE (Ex)  
 < GUY-WIRE (Ex)  
 + SIGN POST (Ex)  
 (S) SANITARY MANHOLE (Ex)  
 [M] WATER METER (Ex)  
 [V] WATER SERVICE VALVE (Ex)  
 [V] WATER VALVE (Ex)  
 [V] WATER TEST STATION (Ex)  
 [D] SATELLITE DISH (Ex)  
 [T] TELEPHONE BOX (Ex)  
 [C] CABLE TV AMPLIFIER (Ex)  
 +G GAS MARKER (Ex)  
 [V] GAS VALVE (Ex)  
 [S] SHRUB (Ex)  
 ● WATER VALVE (Pr)  
 [M] WATER METER (Pr)  
 [V] WATER SERVICE CONNECTION (Pr)  
 =W WATERLINE BLOW OFF (Pr)  
 [V] SANITARY SERVICE CONNECTION (Pr)



**LOCATION MAP**  
SCALE: NONE

LATITUDE: 41° 31' 54" N LONGITUDE: 82° 48' 58" W

**SITE ADDRESS:** 6041-6093 E HARBOR RD.  
 MARBLEHEAD, OH 43440  
**CONTACT:** JEFF ROSPENT  
 REGATTA DEVELOPMENT LLC  
 3751 DELWOOD DR  
 PORT CLINTON OH 43452  
 PHONE: 419-341-3199  
 LOCATED BETWEEN HARBOR COVE  
 AND HARBOR HAVEN MHP

**INDEX OF SHEETS:**

TITLE SHEET	1
EXISTING SITE PLAN	2
PROPOSED LAYOUT PLAN	3
ENTRANCE AND CUL-DE-SAC DETAILS	4
PROPOSED GRADING PLAN	5
PROPOSED DOCK AREA	6
ROAD PLAN AND PROFILE	7
PROPOSED UTILITY PLAN	8
UNDERGROUND STORAGE DETAIL	9
SANITARY SEWER PLAN AND PROFILE	10
SANITARY SEWER PLAN AND PROFILE	11
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CROSS SECTIONS	13
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WATER DETAILS AND GENERAL NOTES	15
SANITARY AND WATER NOTES	16
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TRAFFIC CONTROL DEALS	19
TRAFFIC CONTROL DEALS	20

**GENERAL NOTES:**

- ELEVATIONS ARE IN FEET, NAVD 88 DATUM.
- NAVD 88 CONVERSION - 0.21' = IGLD 1985.
- REGATTA PASSAGE DRIVE SHALL BE CONSTRUCTED WITH THE INTENT TO BECOME A PUBLIC ROADWAY WITH PUBLIC UTILITIES.
- PRIVATE UTILITIES (ELECTRIC, GAS, PHONE, CABLE, ETC.) SHALL BE INSTALLED WITHIN THE UTILITY EASEMENT WITH ROAD AND CROSSINGS KEPT TO AN ABSOLUTE MINIMUM.

**PLAN APPROVED BY:**

RONALD P. LAJTI JR., P.E., P.S. DATE \_\_\_\_\_  
 OTTAWA COUNTY ENGINEER

JAMES K. FREY, P.E., P.S. DATE \_\_\_\_\_  
 OTTAWA COUNTY SANITARY ENGINEER

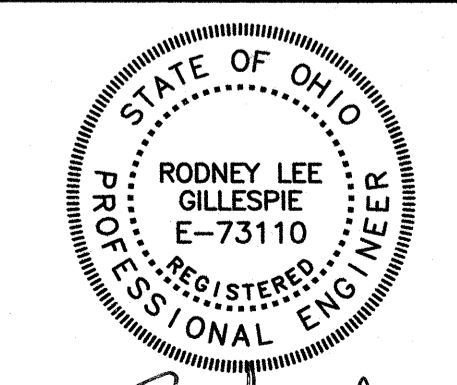
<b>UNDERGROUND UTILITIES</b>	
CONTACT BOTH SERVICES TWO WORKING DAYS BEFORE YOU DIG.	
 Call Before You Dig 1-800-362-2764 (Non-members must be called directly)	OIL & GAS PRODUCERS UNDERGROUND PROTECTION SERVICE 1-800-925-0988

PLANS PREPARED BY:

**BEC ASSOCIATES**  
 PROFESSIONAL ENGINEERING AND SURVEYING CONSULTANTS  
 6622 WEST HARBOR ROAD, PORT CLINTON, OHIO 43452  
 OFFICE: (419) 898-9200 FAX: (419) 898-2259

REV. BY	DATE	DESCRIPTION
SMC	1/9/18	REVISED PER COUNTY COMMENTS
SMC	12/18/17	SUB-SURFACE WQ DETENTION ADDED
SMC	8/31/17	REVISED WITH COUNTY ENGINEER COMMENTS
SMC	7/20/17	REVISED PER ODOT COMMENTS
DBT	7/11/17	FINAL CONSTRUCTION SET
SMC	4/5/17	BOWL ADDED TO DROP MANHOLE PER OCSE
DBT	3/16/17	SIGN ISLAND AND COMMENTS FROM OCSE
<b>DATE COMPLETED</b> 12/18/2017		

ENGINEERS SEAL:



SIGNED:   
 DATE: 1-16-18

CALCULATED  
DBT  
CHECKED  
RLG

TITLE SHEET

REGATTA SUBDIVISION

1  
20

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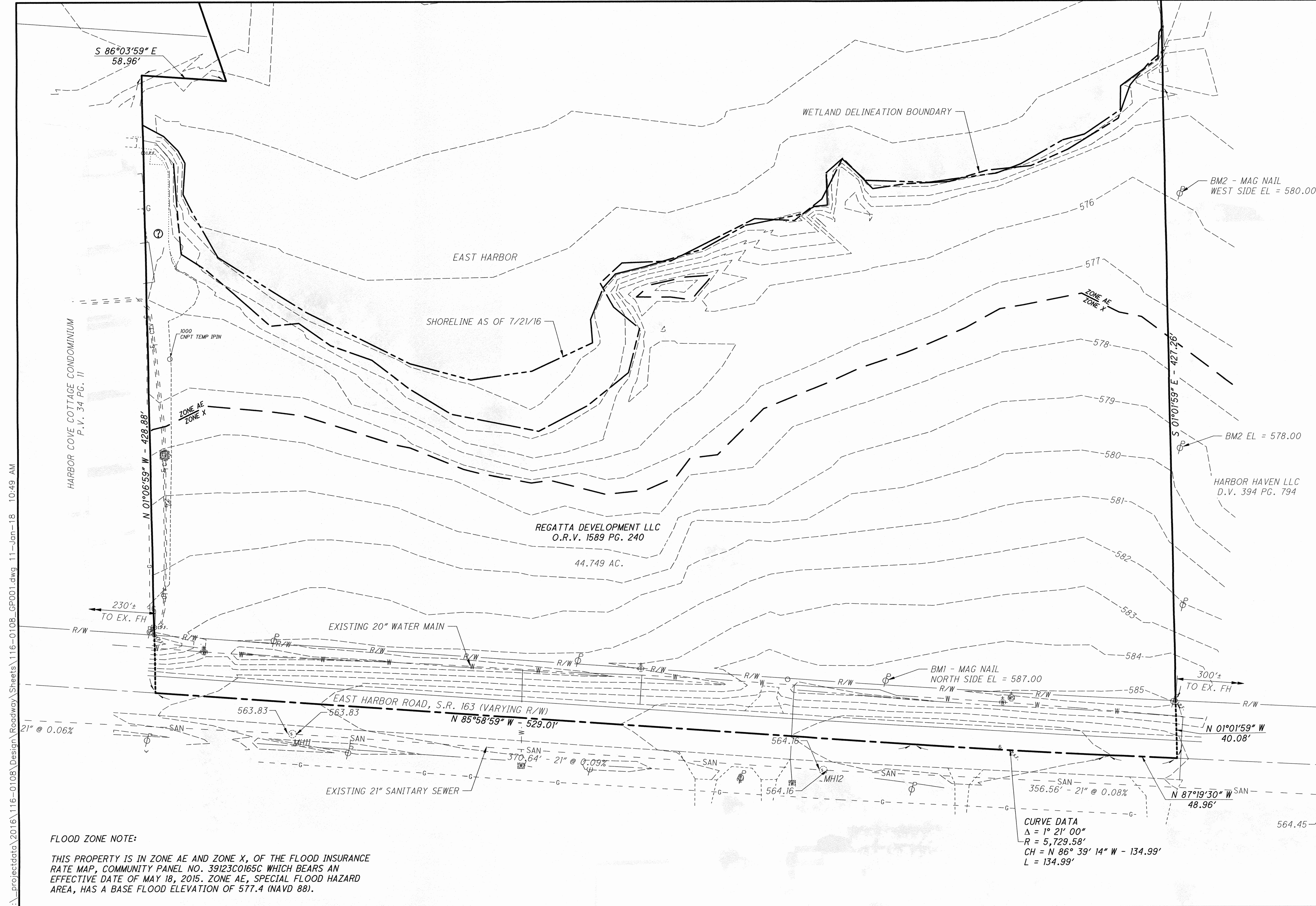


0 15 30 60  
HORIZONTAL  
SCALE IN FEET

CALCULATED  
DBT  
CHECKED  
RLG

EXISTING SITE PLAN

REGATTA SUBDIVISION



S 86°03'59" E  
58.96'

WETLAND DELINEATION BOUNDARY

EAST HARBOR

SHORELINE AS OF 7/21/16

BM2 - MAG NAIL  
WEST SIDE EL = 580.00

ZONE AE  
ZONE X

BM2 EL = 578.00

HARBOR HAVEN LLC  
D.V. 394 PG. 794

REGATTA DEVELOPMENT LLC  
O.R.V. 1589 PG. 240

44.749 AC.

230'±  
TO EX. FH

EXISTING 20" WATER MAIN

BM1 - MAG NAIL  
NORTH SIDE EL = 587.00

300'±  
TO EX. FH

EAST HARBOR ROAD, S.R. 163 (VARYING R/W)  
N 85°58'59" W - 529.01'

N 01°01'59" W  
40.08'

EXISTING 21" SANITARY SEWER

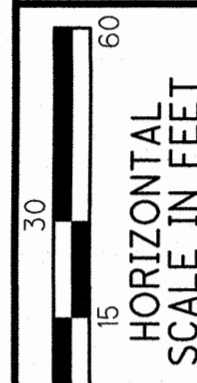
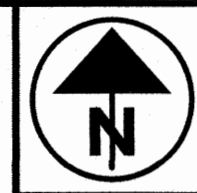
N 87°19'30" W  
48.96'

CURVE DATA  
 $\Delta = 1^\circ 21' 00''$   
 $R = 5,729.58'$   
 $CH = N 86^\circ 39' 14'' W - 134.99'$   
 $L = 134.99'$

FLOOD ZONE NOTE:

THIS PROPERTY IS IN ZONE AE AND ZONE X, OF THE FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NO. 39123C0165C WHICH BEARS AN EFFECTIVE DATE OF MAY 18, 2015. ZONE AE, SPECIAL FLOOD HAZARD AREA, HAS A BASE FLOOD ELEVATION OF 577.4 (NAVD 88).

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CALCULATED DBT CHECKED RLG

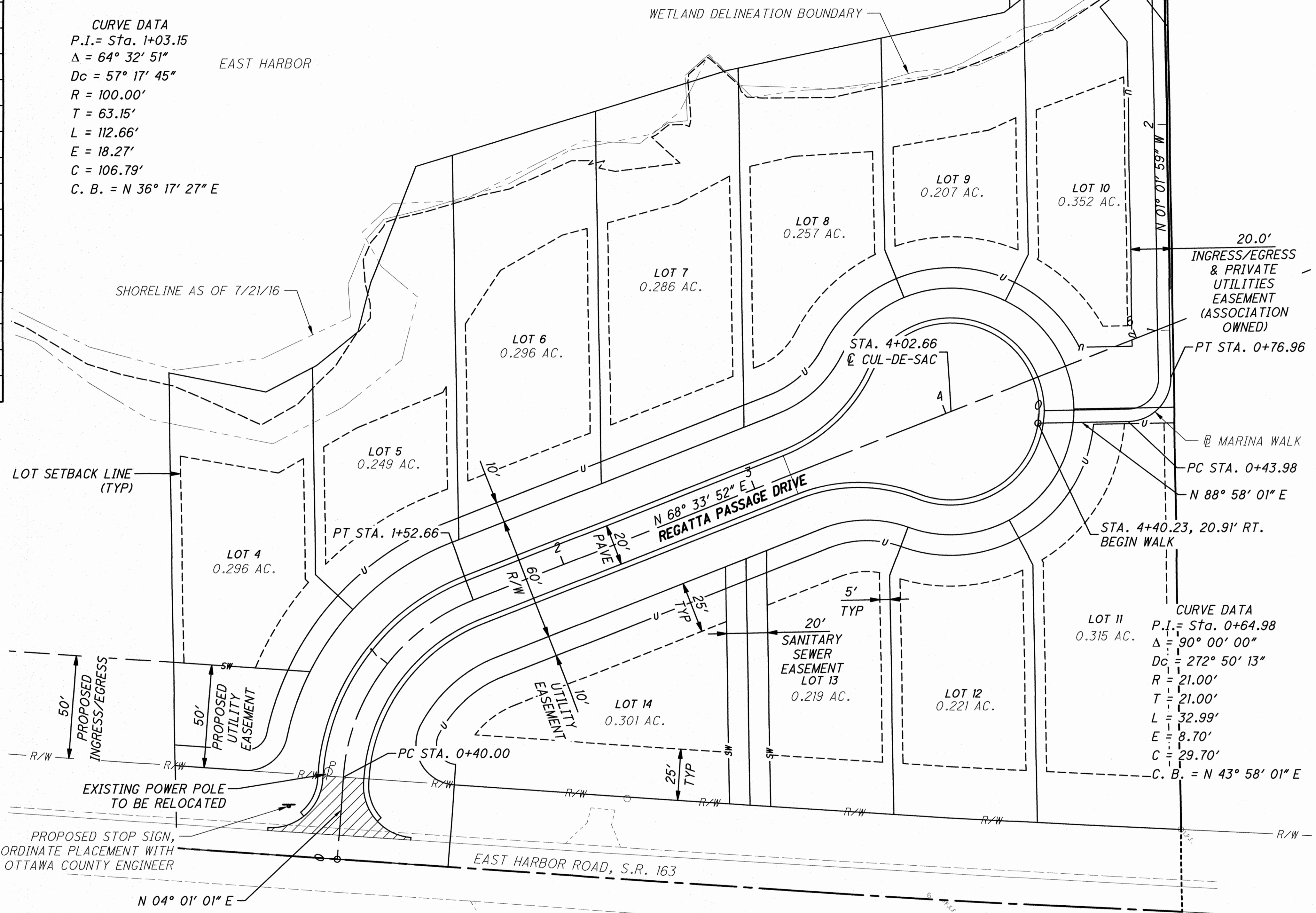
PROPOSED LAYOUT PLAN

REGATTA SUBDIVISION

GENERAL SUMMARY				
ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION
ROADWAY & SITE				
203	10000	5,167	CY	EXCAVATION *
203	20000	4,600	CY	EMBANKMENT *
PAVEMENT				
301	46000	164	CY	ASPHALT CONCRETE BASE, PG64-22
304	20000	405.0	CY	AGGREGATE BASE
407	10000	148.0	GAL	TACK COAT
408	10000	739.0	GAL	PRIME COAT
441	50000	51.0	CY	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG64-22
441	50200	62	CY	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, (448)
609	18000	930.0	LF	COMBINATION CURB AND GUTTER, TYPE 3
609	26000	176.0	LF	CURB, TYPE 6

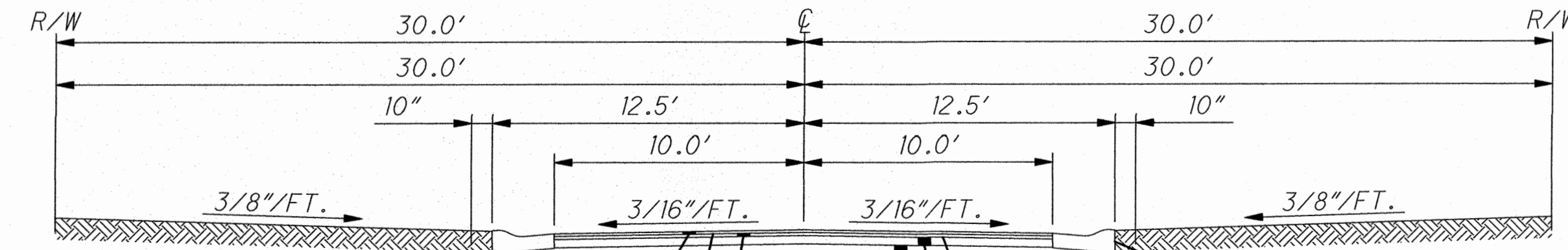
\* DIRT QUANTITIES NOT ADJUSTED, AS PART OF THIS REVISION

**CURVE DATA**  
 P.I. = Sta. 1+03.15  
 $\Delta = 64^\circ 32' 51''$   
 $Dc = 57^\circ 17' 45''$   
 $R = 100.00'$   
 $T = 63.15'$   
 $L = 112.66'$   
 $E = 18.27'$   
 $C = 106.79'$   
 $C. B. = N 36^\circ 17' 27'' E$



**PORTION OF DRIVE WAY WITHIN STATE RIGHT-OF-WAY SHALL MEET ODOT PAVEMENT BUILD-OUT SPECIFICATIONS AS FOLLOWS:**  
 1 1/2" 448 SURFACE  
 1 3/4" 448 INTERMEDIATE  
 8" 301 BASE ASPHALT  
 6" AGGREGATE BASE

**FRAME AND GRATE FOR CURB INLETS:**  
 NEENAH 3501-L2 FOR ODOT 2-2-B CATCHBASIN



- ITEM 441 - 1 1/4" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG64-22
- ITEM 407 - TACK COAT (0.10 GAL/SQ YD)
- ITEM 408 - PRIME COAT (0.50 GAL/SQ YD)
- ITEM 301 - 4" ASPHALT CONCRETE BASE, PG64-22
- ITEM 304 - 8" AGGREGATE BASE
- ITEM 609 - COMBINATION CURB AND GUTTER, TYPE 3
- ITEM 605 - 4" BASE PIPE UNDERDRAINS

PROPOSED TYPICAL ROAD CROSS SECTION

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HORIZONTAL SCALE IN FEET  
0 5 10 20

CALCULATED  
DBT  
CHECKED  
RLG

ENTRANCE AND CUL-DE-SAC DETAILS

REGATTA SUBDIVISION

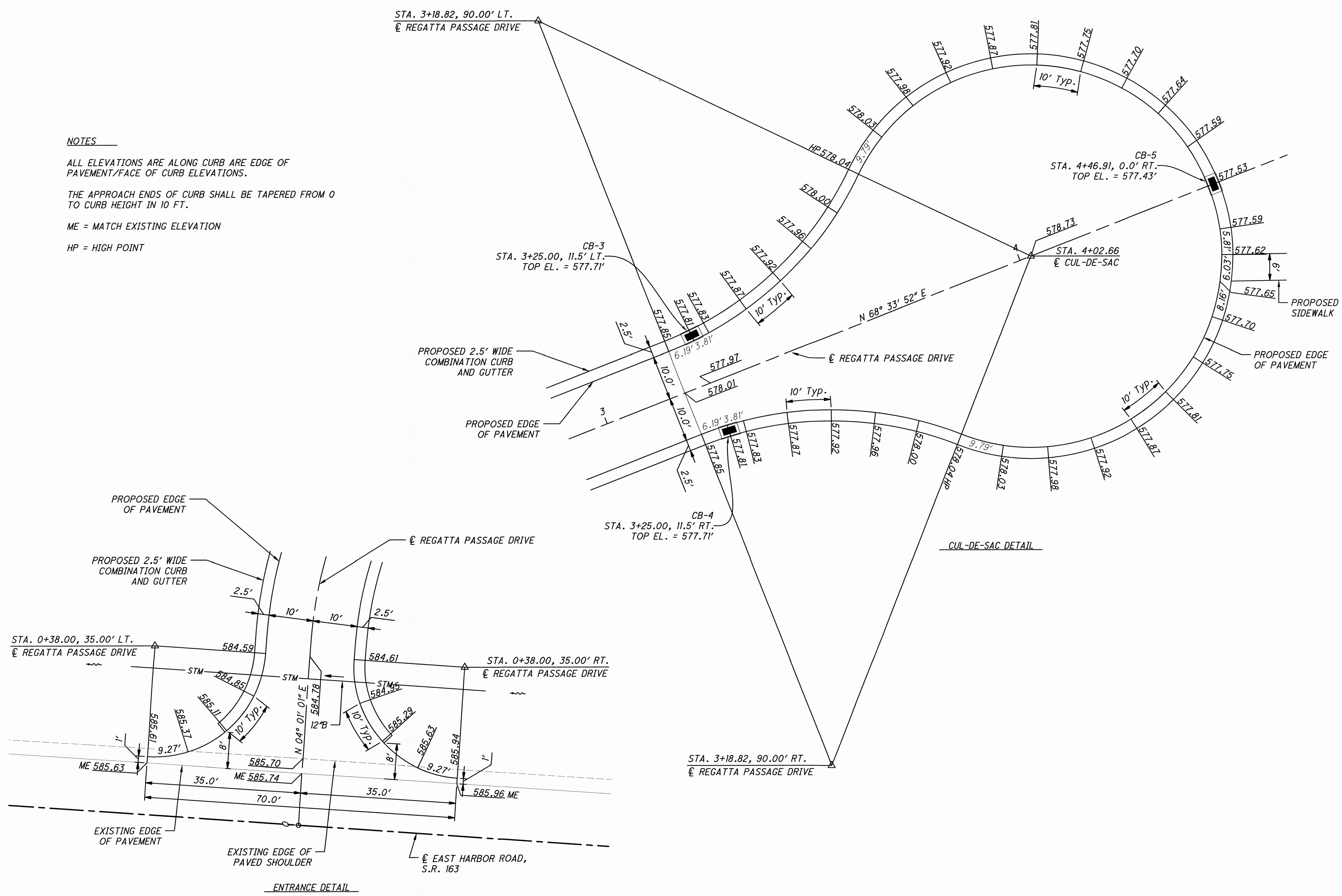
NOTES

ALL ELEVATIONS ARE ALONG CURB ARE EDGE OF PAVEMENT/FACE OF CURB ELEVATIONS.

THE APPROACH ENDS OF CURB SHALL BE TAPERED FROM 0 TO CURB HEIGHT IN 10 FT.

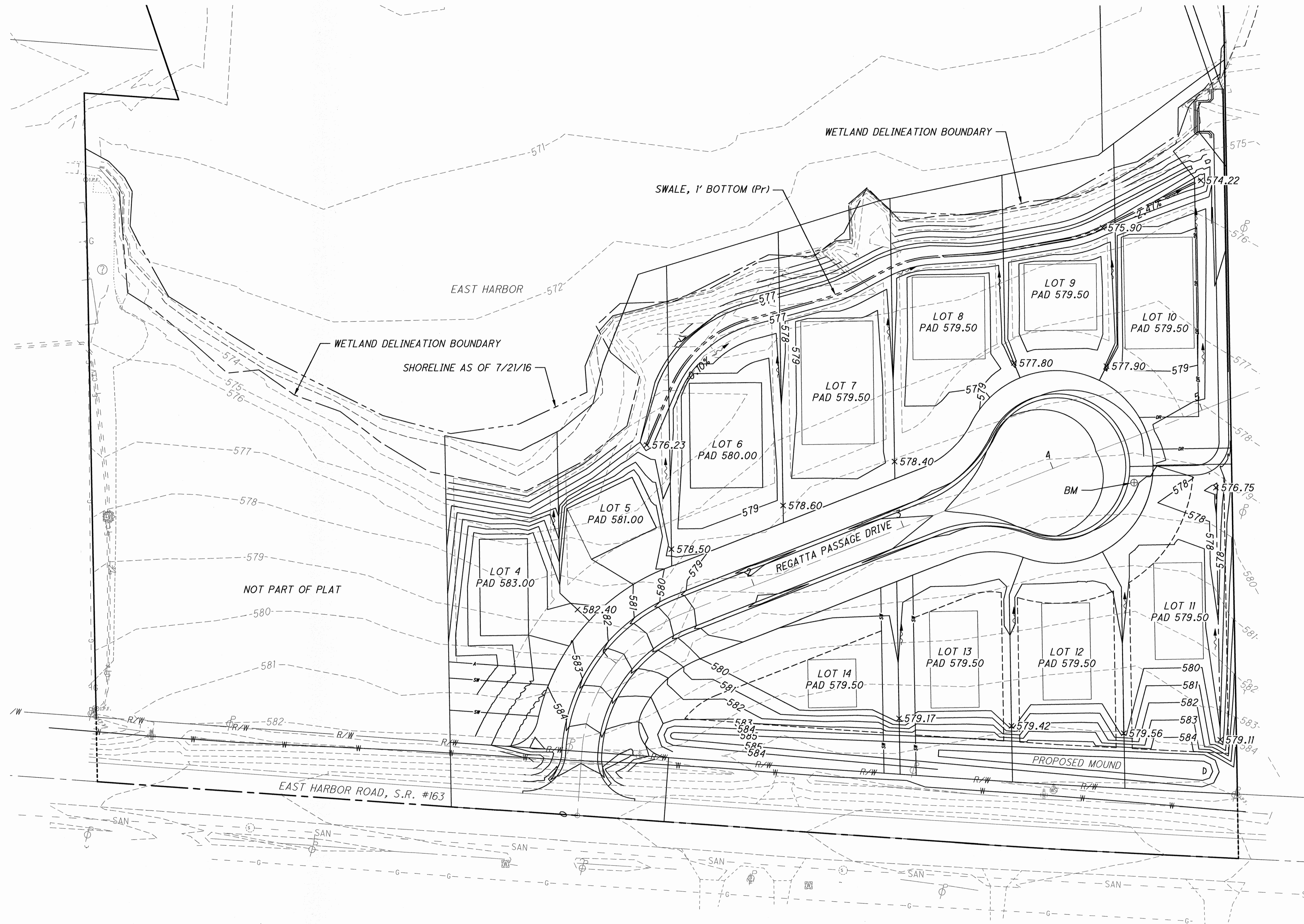
ME = MATCH EXISTING ELEVATION

HP = HIGH POINT

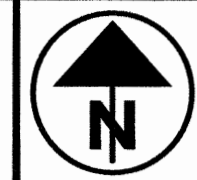


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**SITE BENCHMARK**  
 STA. 4+43.95, 26.8' RT.  
 ALUMINUM DISK IN CONCRETE  
 ELEVATION = 577.92



0 15 30 60  
 HORIZONTAL  
 SCALE IN FEET

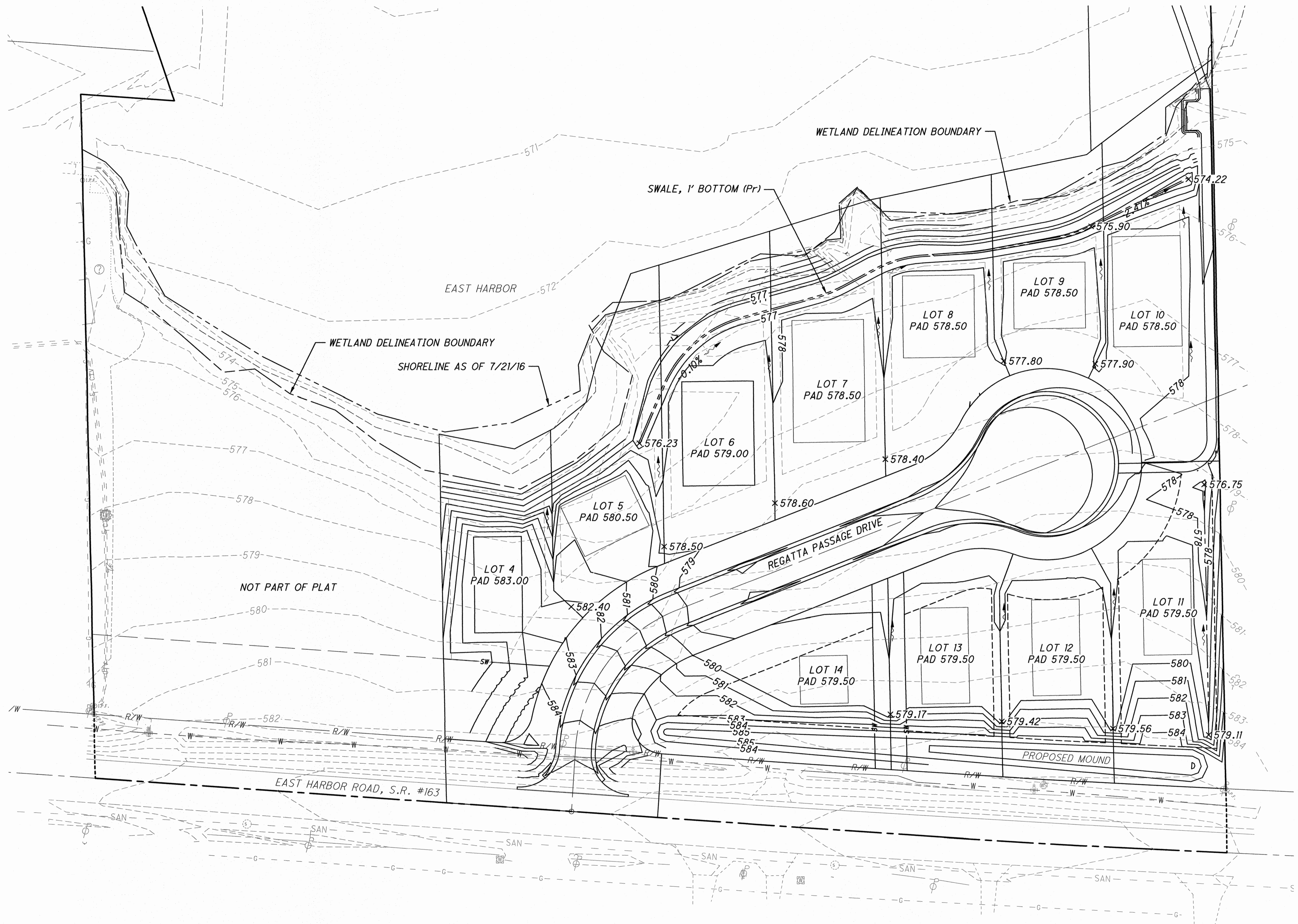
CALCULATED	DBT	CHECKED	RLG
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**PROPOSED GRADING PLAN**

**REGATTA SUBDIVISION**

5  
20

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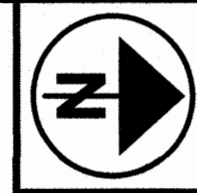
CALCULATED  
DBT  
CHECKED  
RLG

0 15 30 60  
HORIZONTAL  
SCALE IN FEET

**N**

**PROPOSED GRADING PLAN**

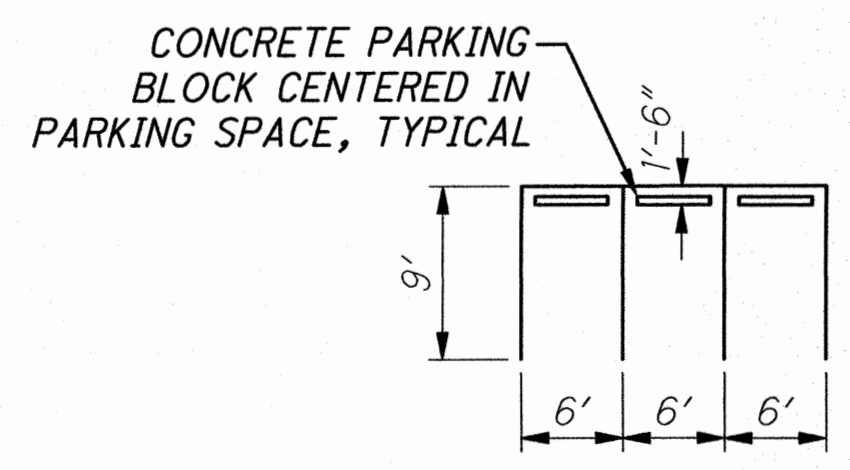
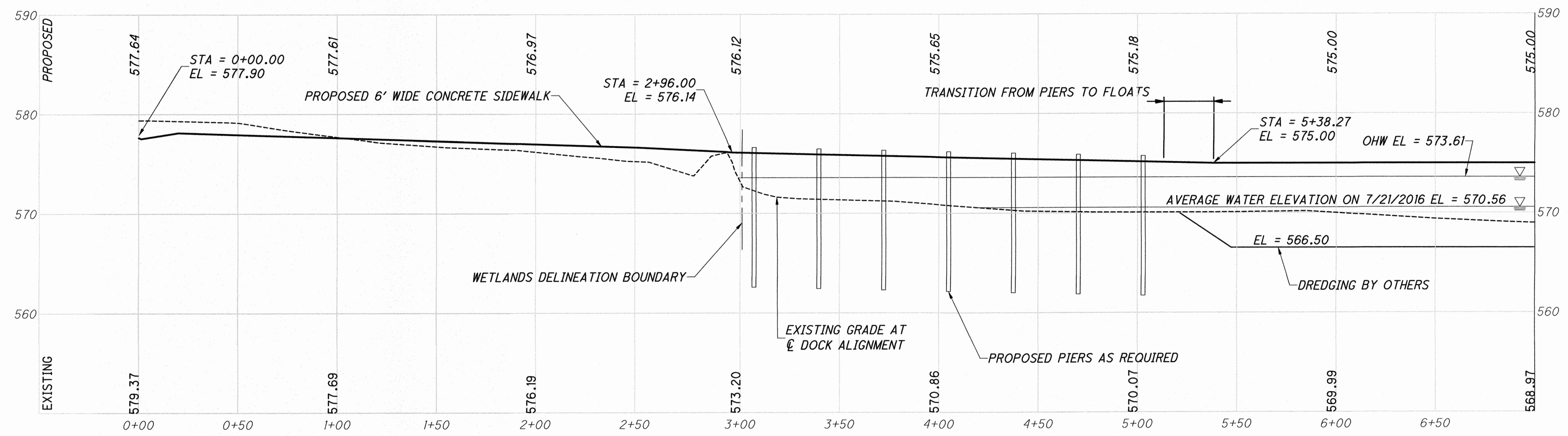
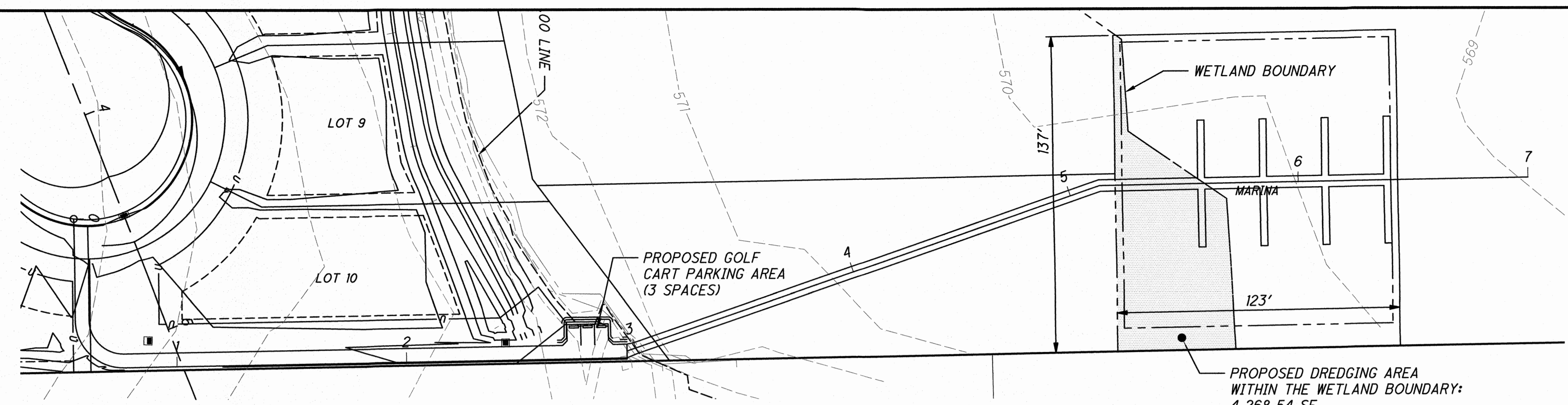
**REGATTA SUBDIVISION**



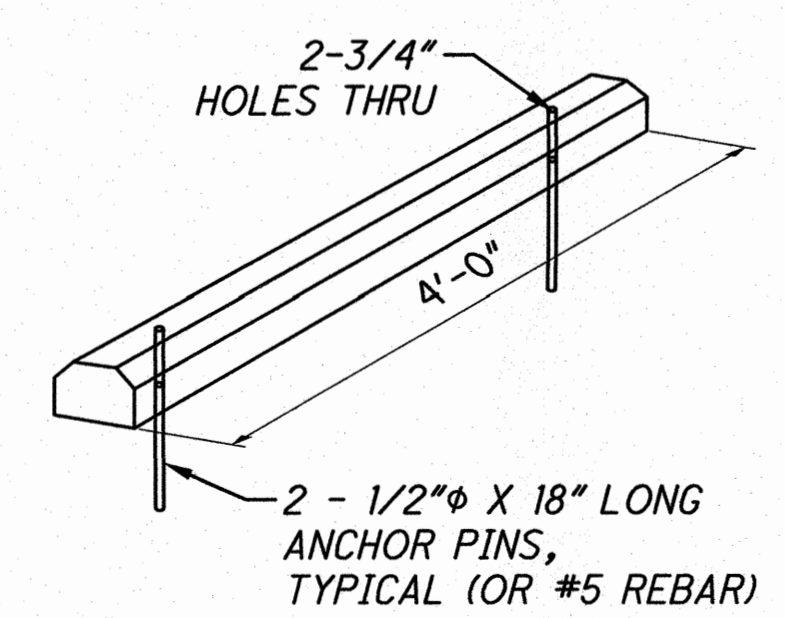
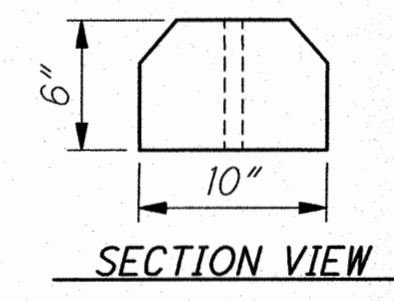
CALCULATED	DBT	CHECKED	RLC

**PROPOSED DOCK AREA**

**REGATTA SUBDIVISION**



GOLF CART PARKING AREA DETAIL  
NO SCALE

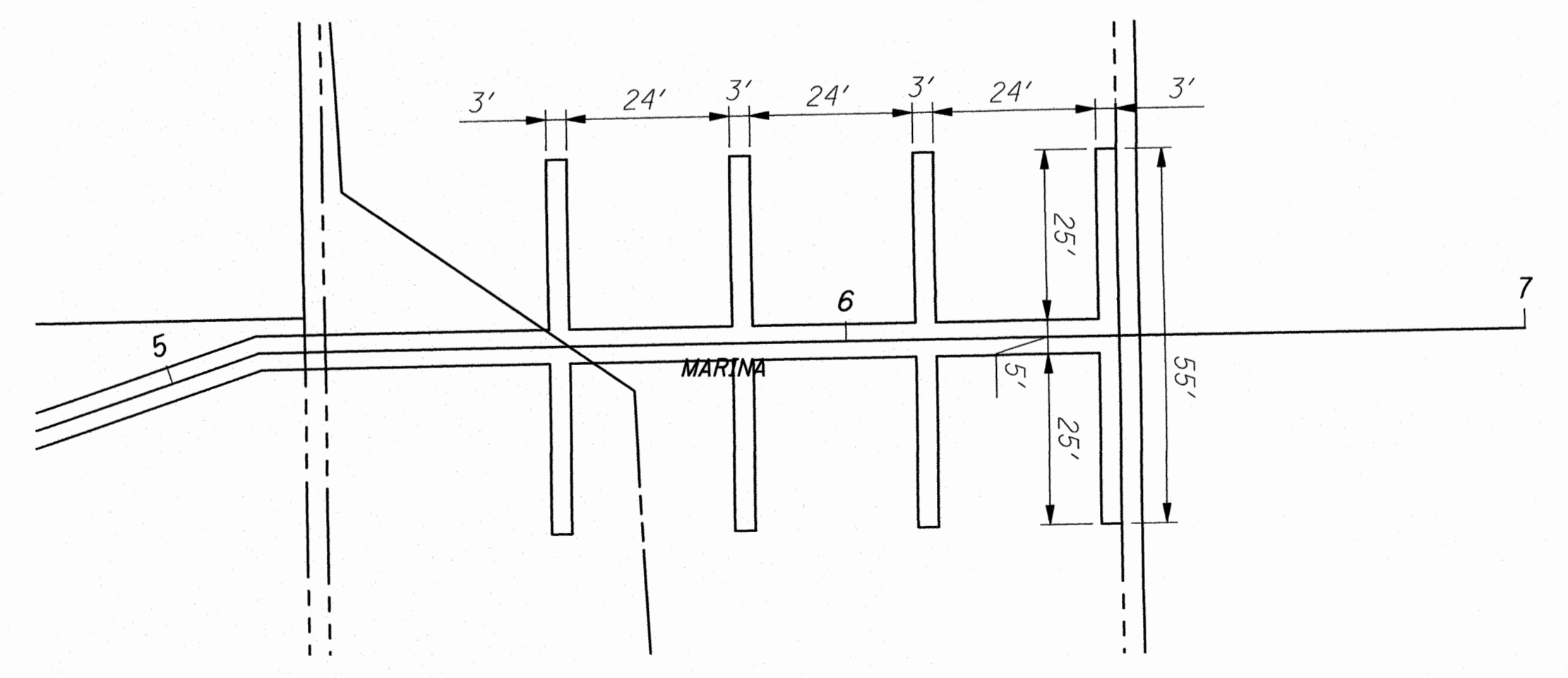


CONCRETE PARKING BLOCK DETAIL  
NO SCALE

**NOTE:**  
 PROPOSED FINGER DOCKS TO BE 3' WIDE X 25' LONG (LOT OWNERS MAY LENGTHEN TO 30' AT THEIR OWN EXPENSE).  
 PROPOSED DOCK WIDTH = 3'  
 FINGERS TO BE PROVIDED WITH ELECTRICAL AND WATER CONNECTIONS. WATER BIBS TO BE INSTALLED IN THE FOLLOWING PHASES:

- PHASE 1 WILL INCLUDE 4 WATER BIBS AND THE 7 WESTERN DOCKS - 1 DOCK PER PROPOSED LOT.
- ADDITION PHASES TO BE DETERMINED AT A LATER DATE.

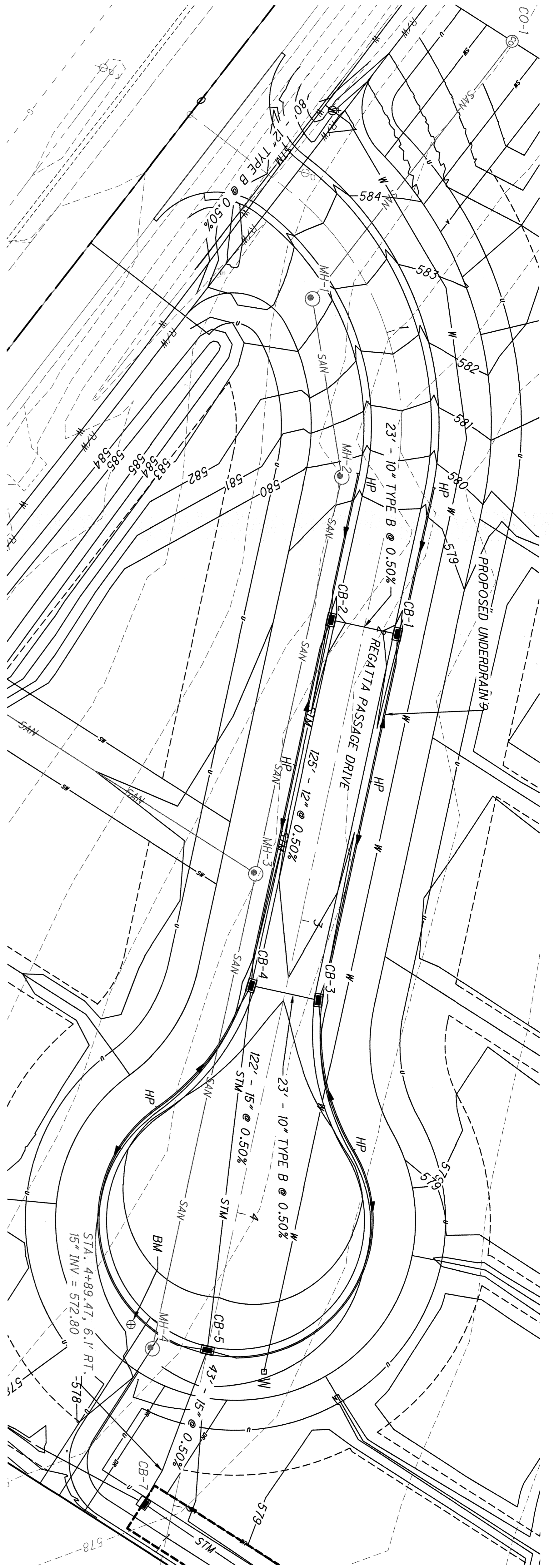
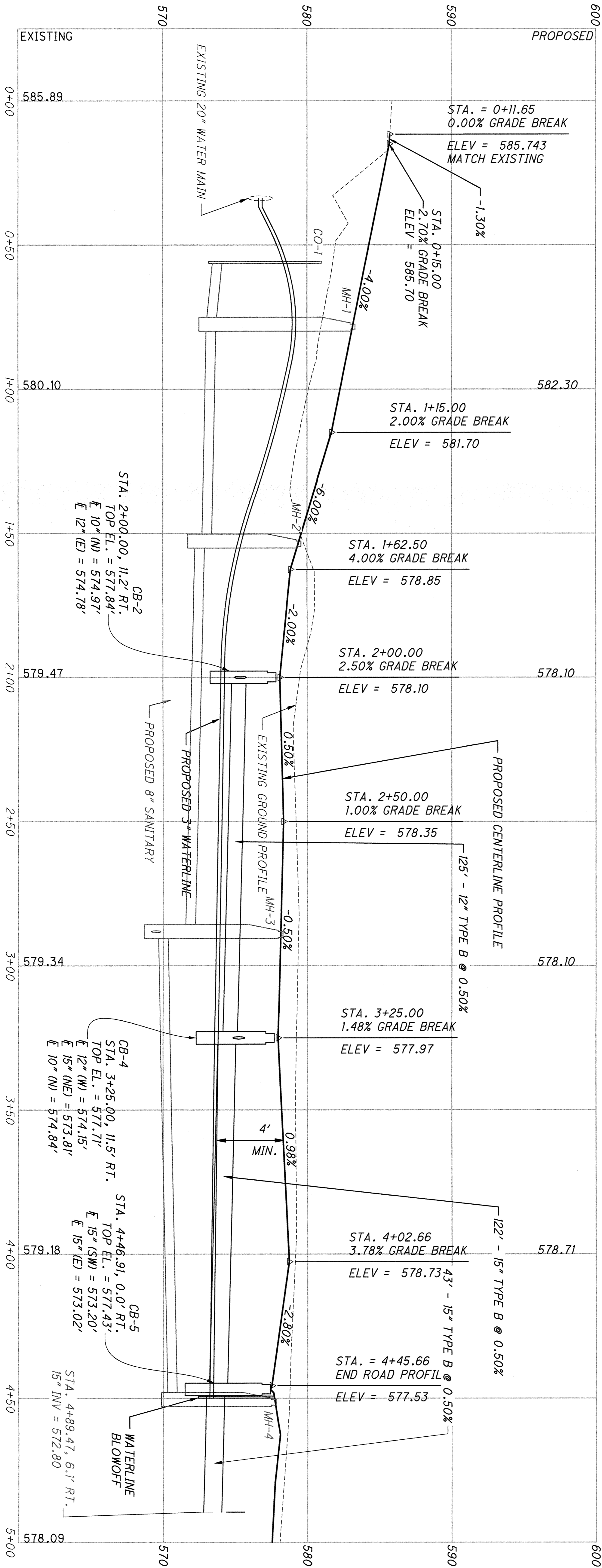
ALL WATER BIBS WILL REQUIRE AN ASSE 1011 HOSE CONNECTION VACUUM BREAKER.



ENLARGED DOCK DETAIL



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**SITE BENCHMARK**  
 STA. 4+43.95, 26.8' RT.  
 ALUMINUM DISK IN CONCRETE  
 ELEVATION = 577.92

HP = HIGH POINT OF UNDERDRAIN

CALCULATED	H: 0 10 20 40
DBT	V: 0 2 4 8
CHECKED	
RLG	

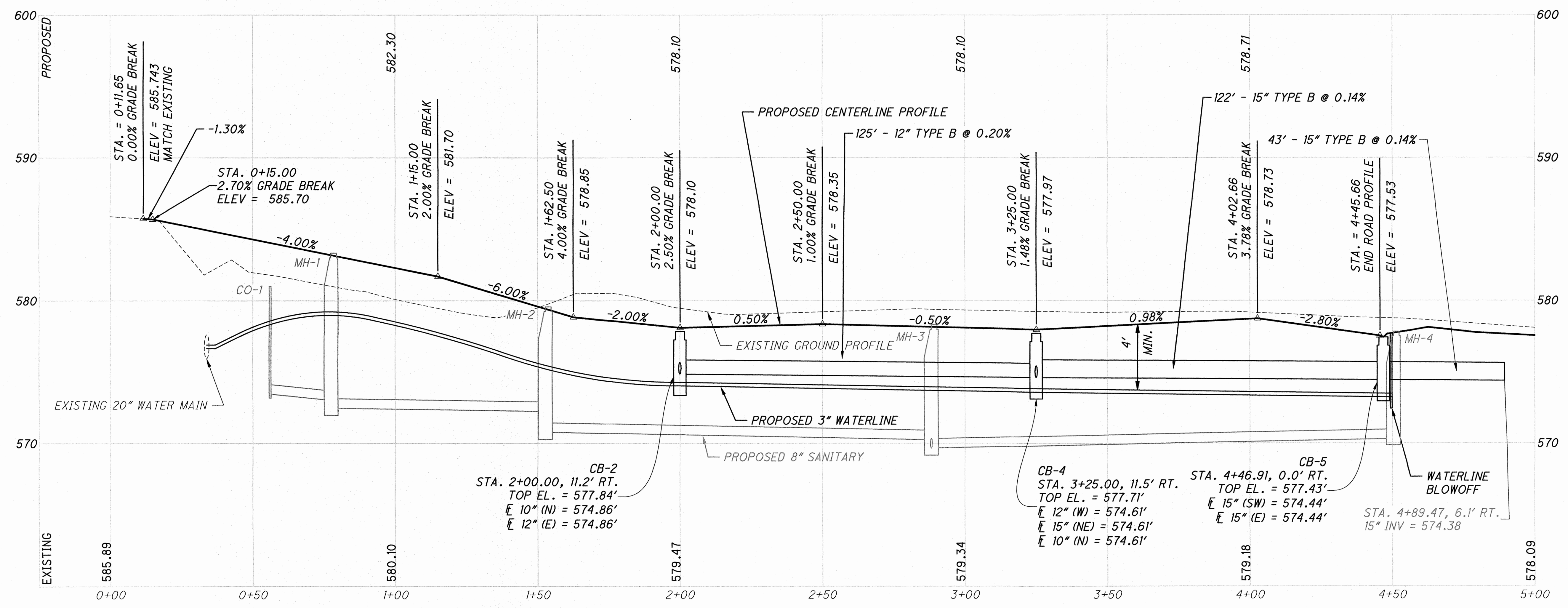
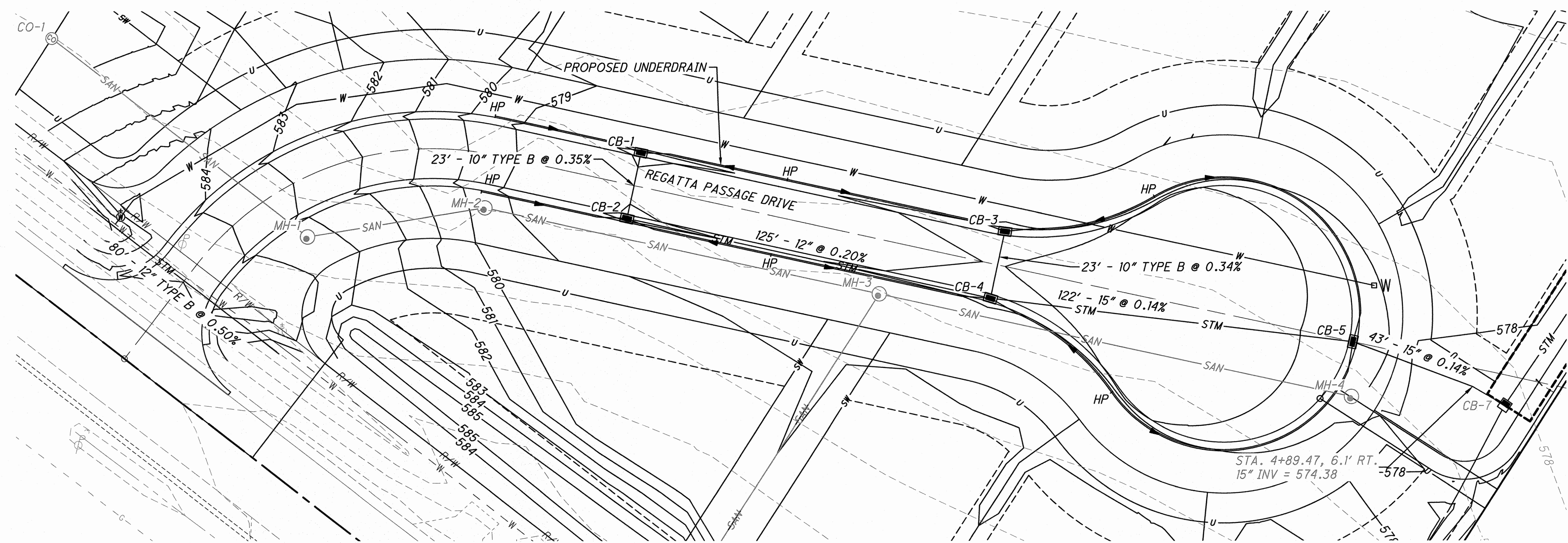




HP = HIGH POINT OF UNDERDRAIN



CALCULATED	DBT	CHECKED	RLG



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ROAD PLAN AND PROFILE

REGATTA SUBDIVISION

LOT #	LOT AREA (SF)	SANITARY SERVICE					WATER SERVICE		
		LOCATION	DISTANCE TO DOWNSTREAM MANHOLE	SERVICE LENGTH	SERVICE GRADE	FINISH EL. AT SERVICE	SERVICE DEPTH	LOCATION	SIZE
4	12,891.34	1+01.11, 31' L	36.31	56.41	1.00	582.64	9.14	0+90.18, 31' L	3/4"
5	10,831.79	1+11.74, 31' L	36.31	56.32	1.00	582.33	8.83	1+40.00, 31' L	3/4"
6	12,891.85	2+26.73, 31' L	57.76	47.57	1.00	578.73	7.78	2+07.00, 31' L	3/4"
7	12,470.94	2+36.73, 31' L	57.76	47.57	1.00	578.78	7.83	2+83.00, 31' L	3/4"
8	11,197.06	3+96.60, 60.7' L	112.11	77.27	1.00	578.53	7.45	3+42.00, 34.05' L	3/4"
9	9,017.95	4+06.59, 60.87' L	112.11	77.39	1.00	578.44	7.36	4+13.00, 60.12' L	3/4"
10	15,348.95	4+63.61, 2.41' L	147.51	31.53	1.00	578.12	7.35	4+58.95, 23.48' L	3/4"
11	13,725.15	4+14.92, 59.75' R	120.47	47.31	1.00	578.45	7.64	4+36.00, 51.08' R	3/4"
12	9,648.08	4+05.00, 60.95' R	120.47	48.20	1.00	578.45	7.63	3+89.00, 59.36' R	3/4"
13	9,528.78	3+11.00, 31' R	21.51	16.50	1.00	578.59	8.48	3+21.00, 31' R	3/4"
14	13,100.55	2+02.00, 31' R	87.49	16.50	1.00	579.07	8.32	2+12.00, 31' R	3/4"
DOCKS	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4+60.00, 20.80' R	1"

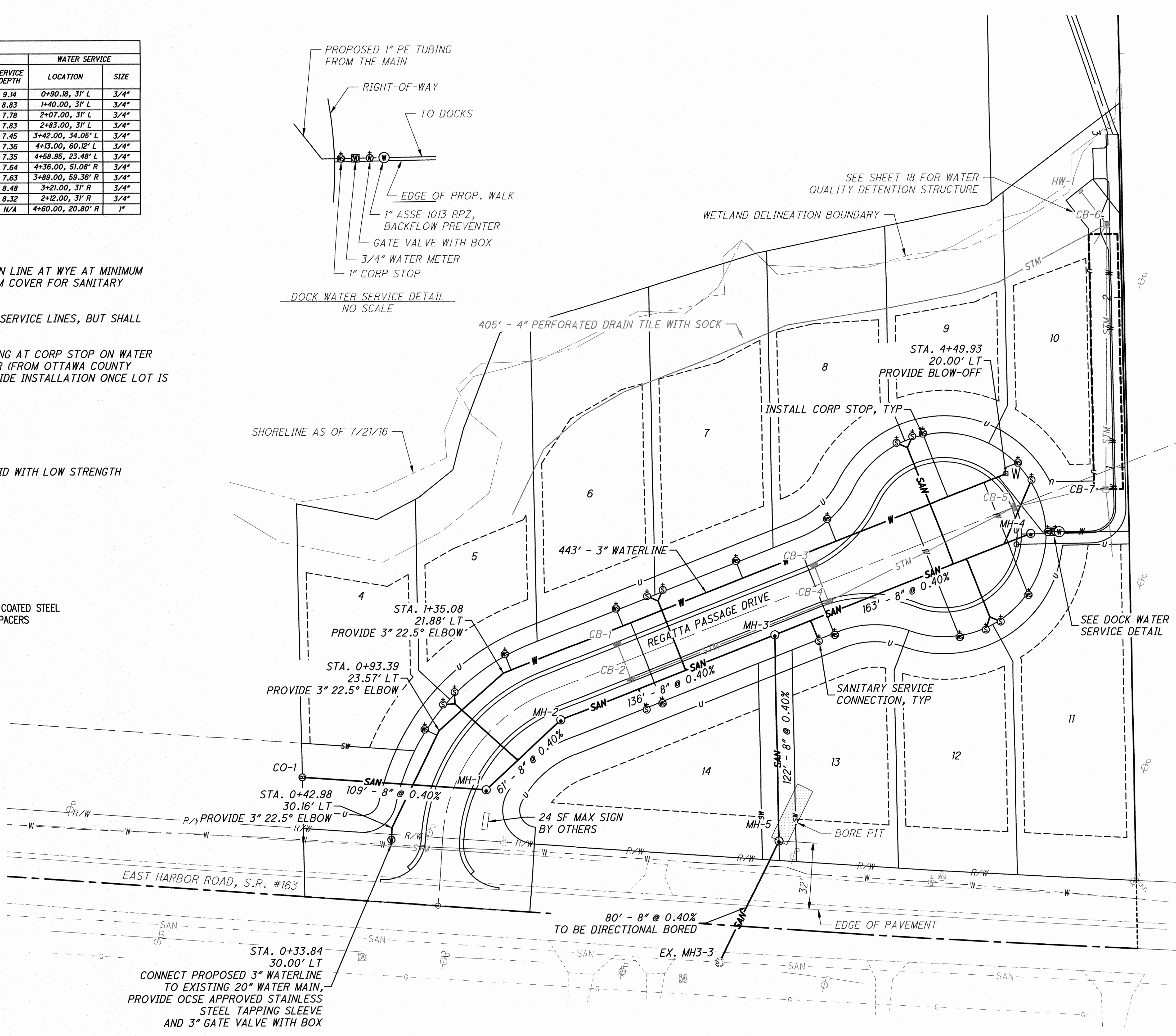
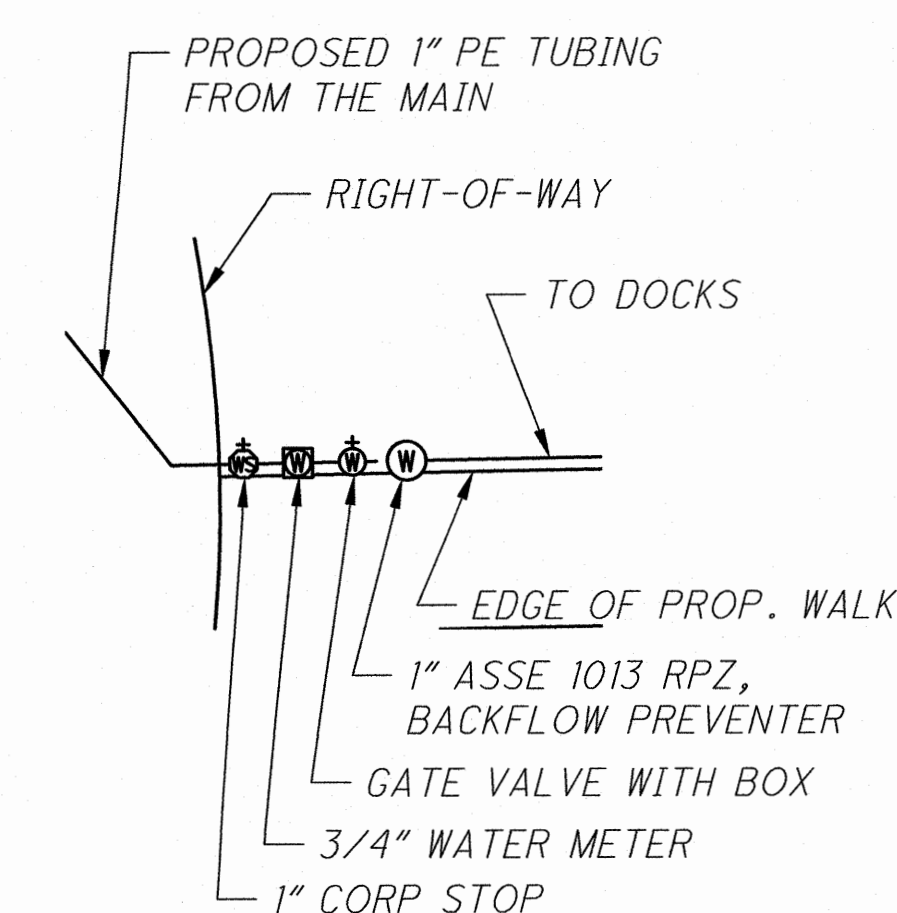
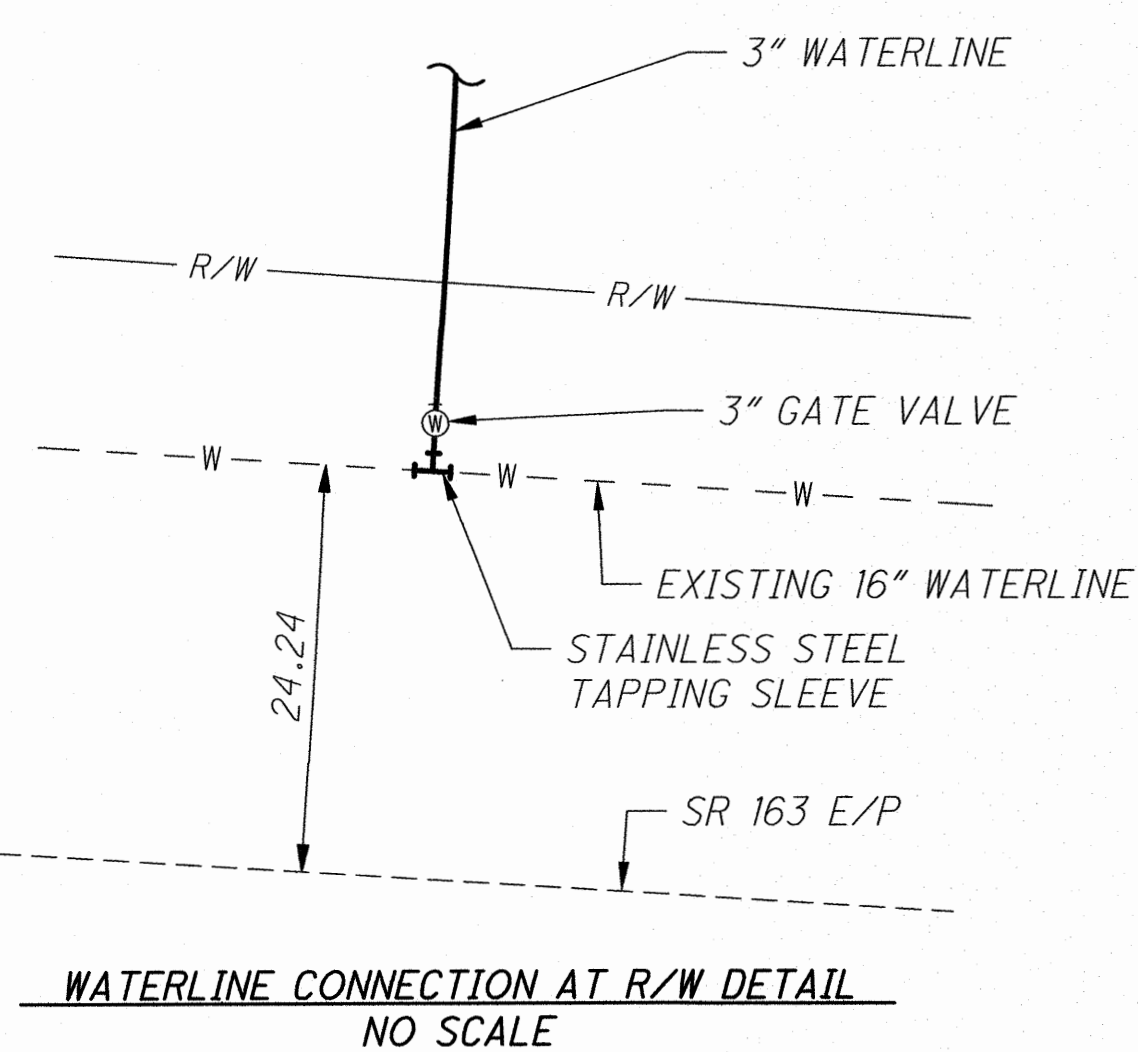
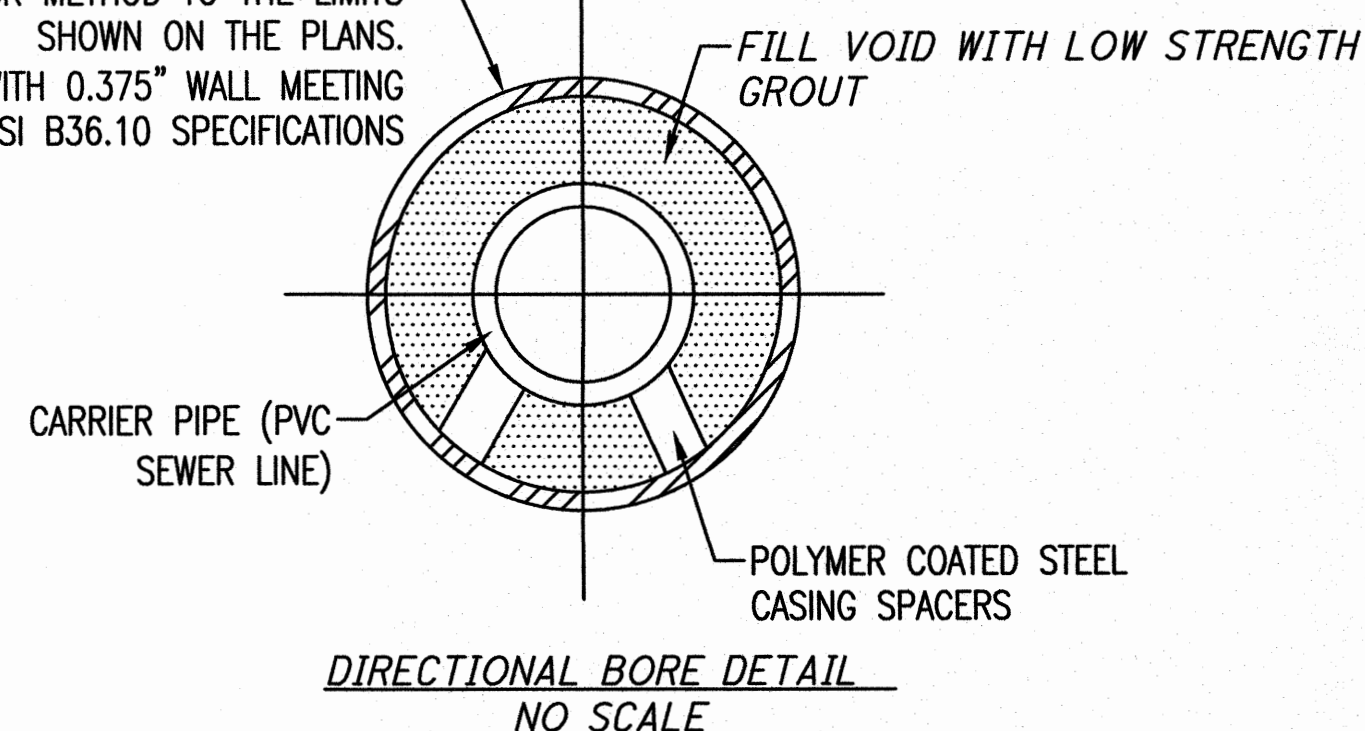
**NOTE:**

\* SERVICE DEPTH LISTED ASSUMES COMING OFF OF THE MAIN LINE AT WYE AT MINIMUM SERVICE LINE GRADE. COUNTY REQUIREMENT IS 4' MINIMUM COVER FOR SANITARY SERVICE AT THE R/W LINE.

SERVICE GRADE MAY BE INCREASED TO MINIMIZE DEPTHS OF SERVICE LINES, BUT SHALL CONTINUE TO MEET UTILITY CLEARANCE MINIMUMS.

CONTRACTOR TO INSTALL WATER SERVICE LINES, TERMINATING AT CORP STOP ON WATER SERVICE CONNECTIONS. LOT OWNER SHALL PURCHASE METER (FROM OTTAWA COUNTY SANITARY ENGINEER'S DEPARTMENT) AND OWNER SHALL PROVIDE INSTALLATION ONCE LOT IS DEVELOPED.

STEEL CASING TO BE INSTALLED BY BORING AND JACK METHOD TO THE LIMITS SHOWN ON THE PLANS. 24" OD PIPE WITH 0.375" WALL MEETING ANSI B36.10 SPECIFICATIONS



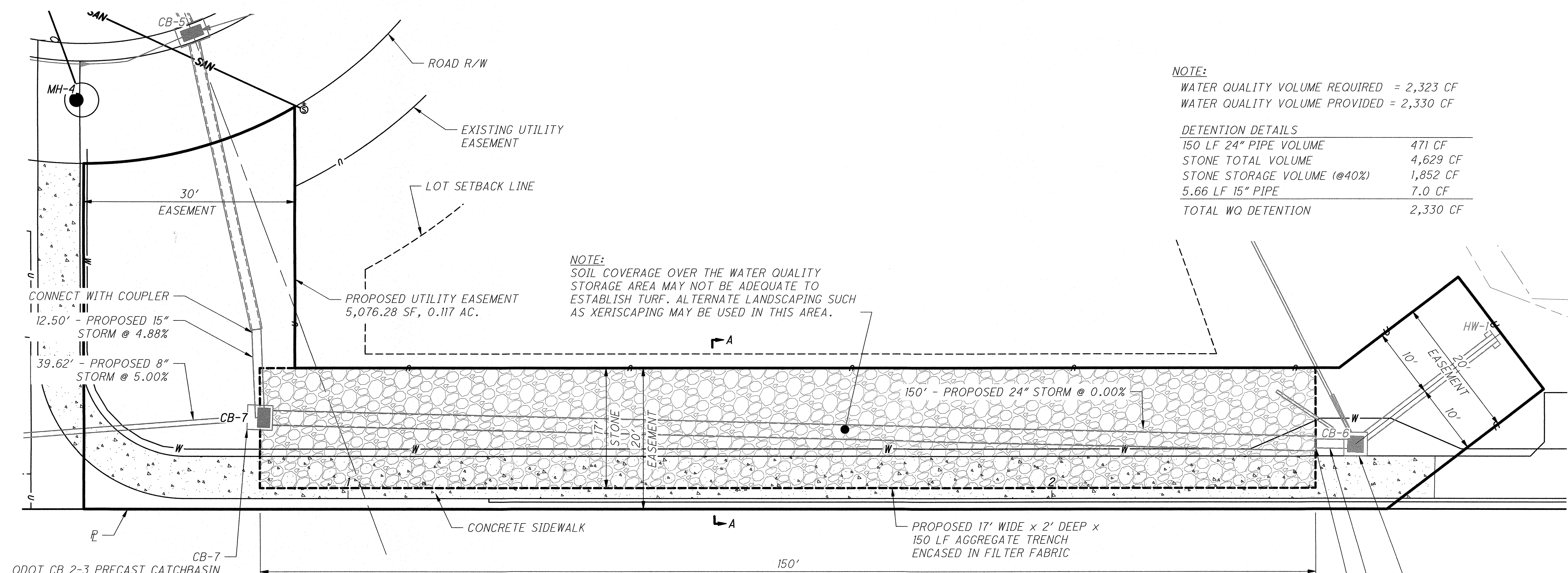
60  
30  
0  
HORIZONTAL SCALE IN FEET  
CALCULATED DBT CHECKED RLG

PROPOSED UTILITY PLAN

REGATTA SUBDIVISION  
8  
20

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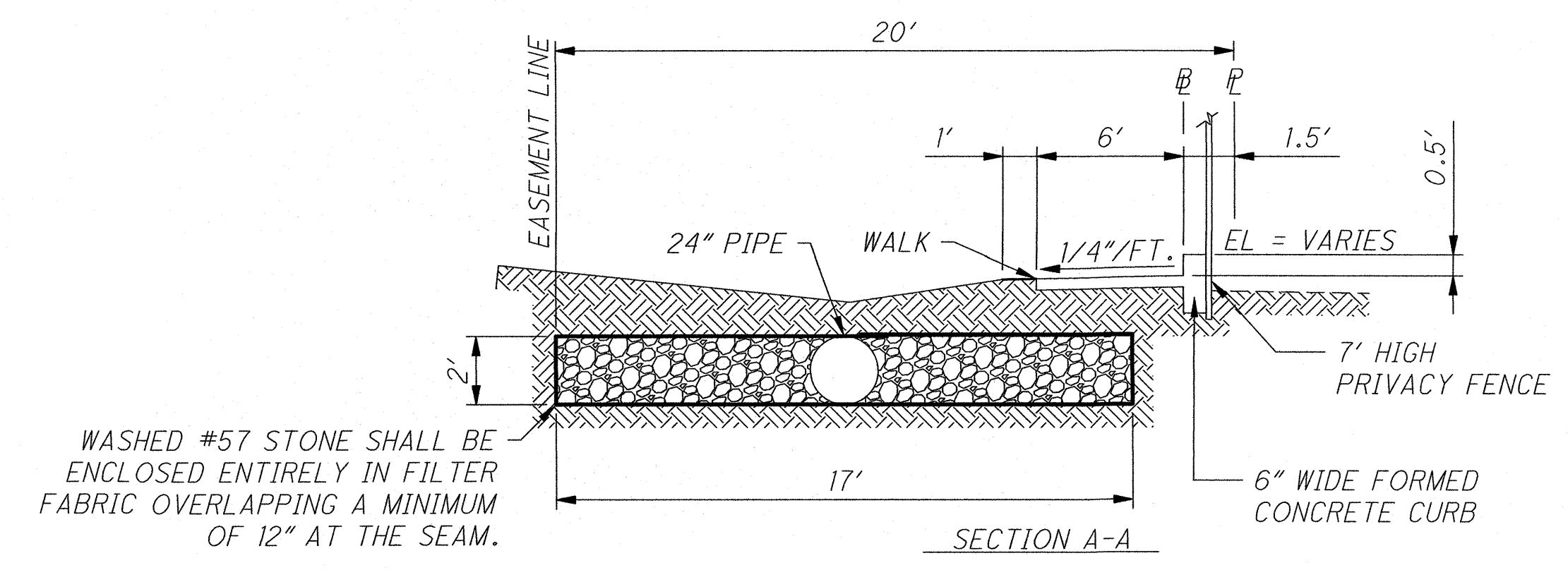
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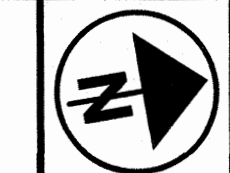
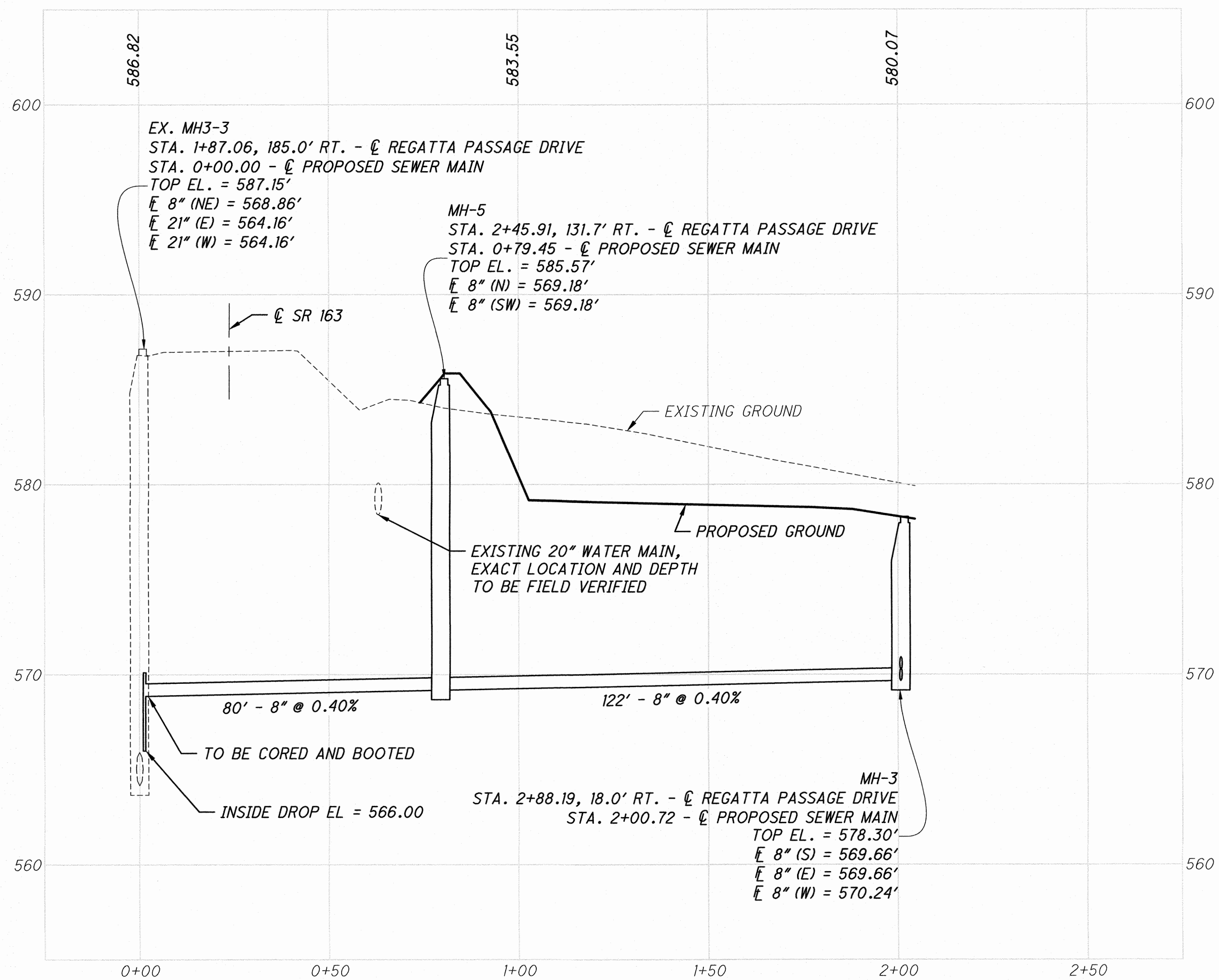
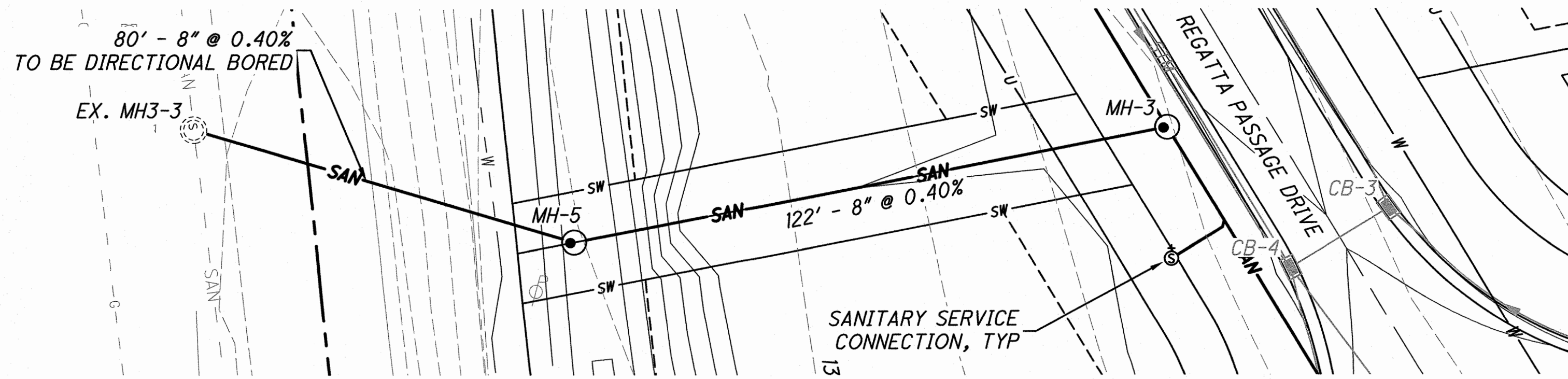
NOTE:

WATER QUALITY VOLUME REQUIRED = 2,323 CF  
WATER QUALITY VOLUME PROVIDED = 2,330 CF

DETENTION DETAILS	
150 LF 24" PIPE VOLUME	471 CF
STONE TOTAL VOLUME	4,629 CF
STONE STORAGE VOLUME (@40%)	1,852 CF
5.66 LF 15" PIPE	7.0 CF
TOTAL WQ DETENTION	2,330 CF



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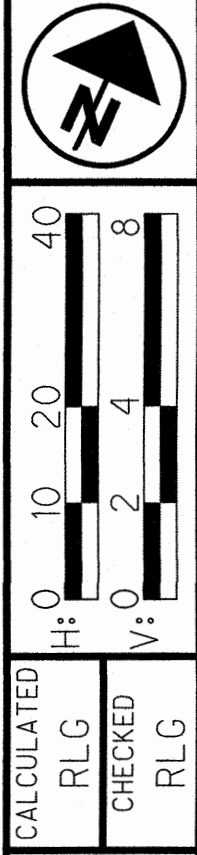
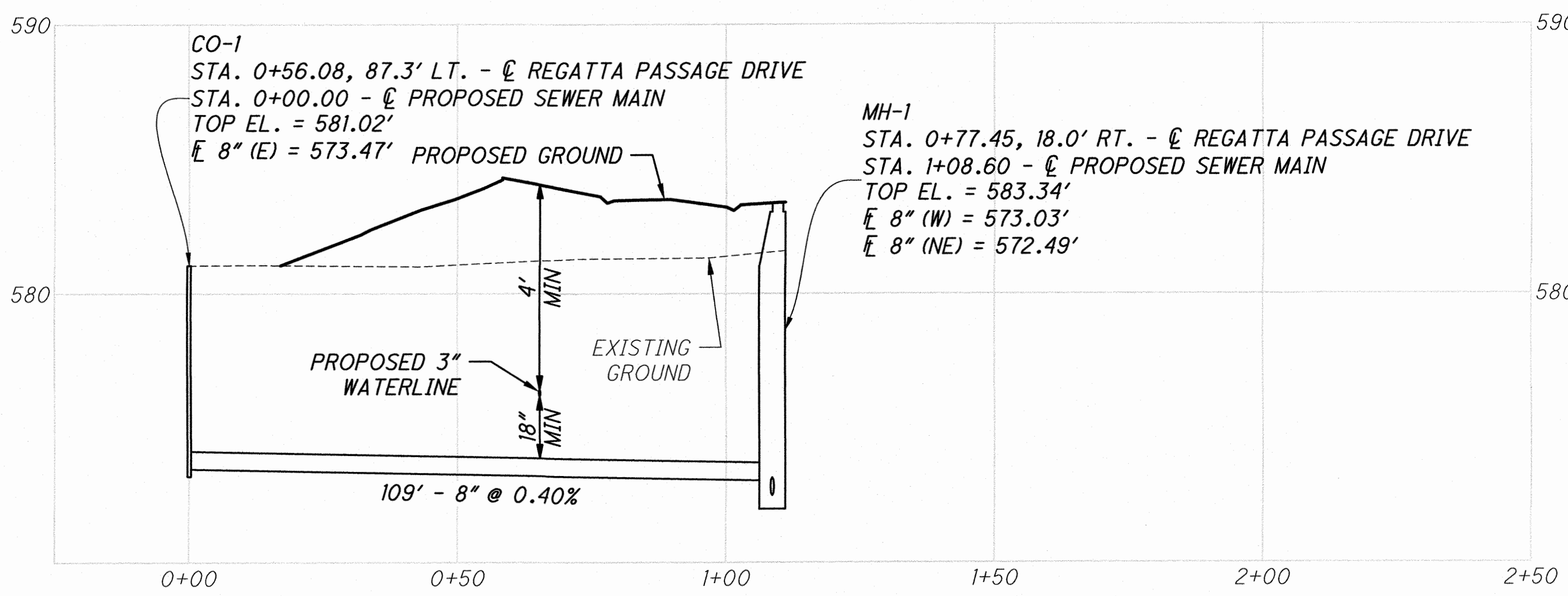
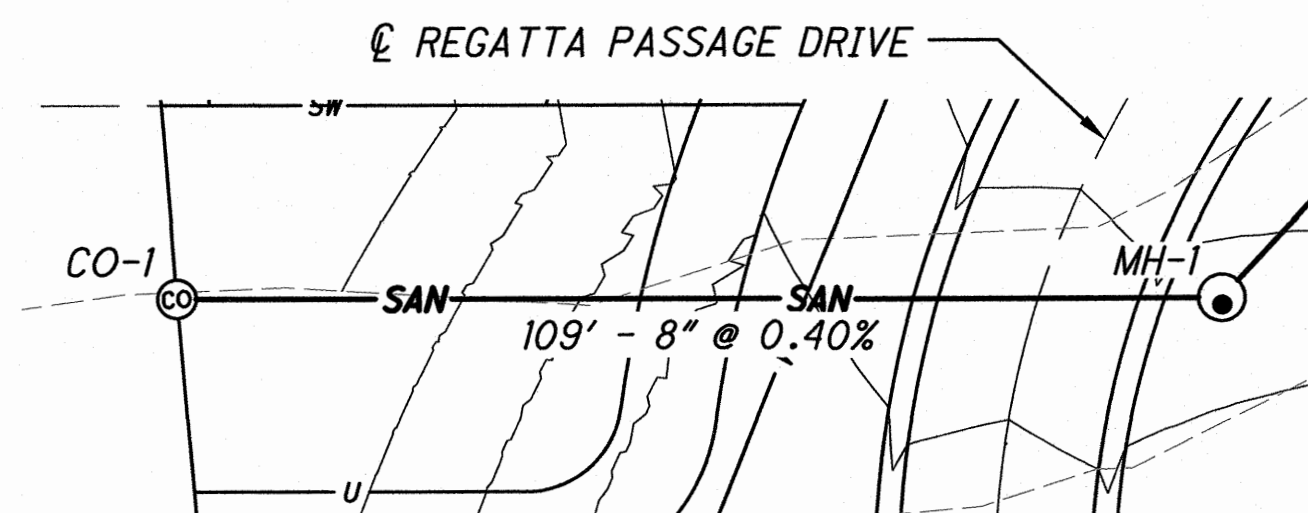
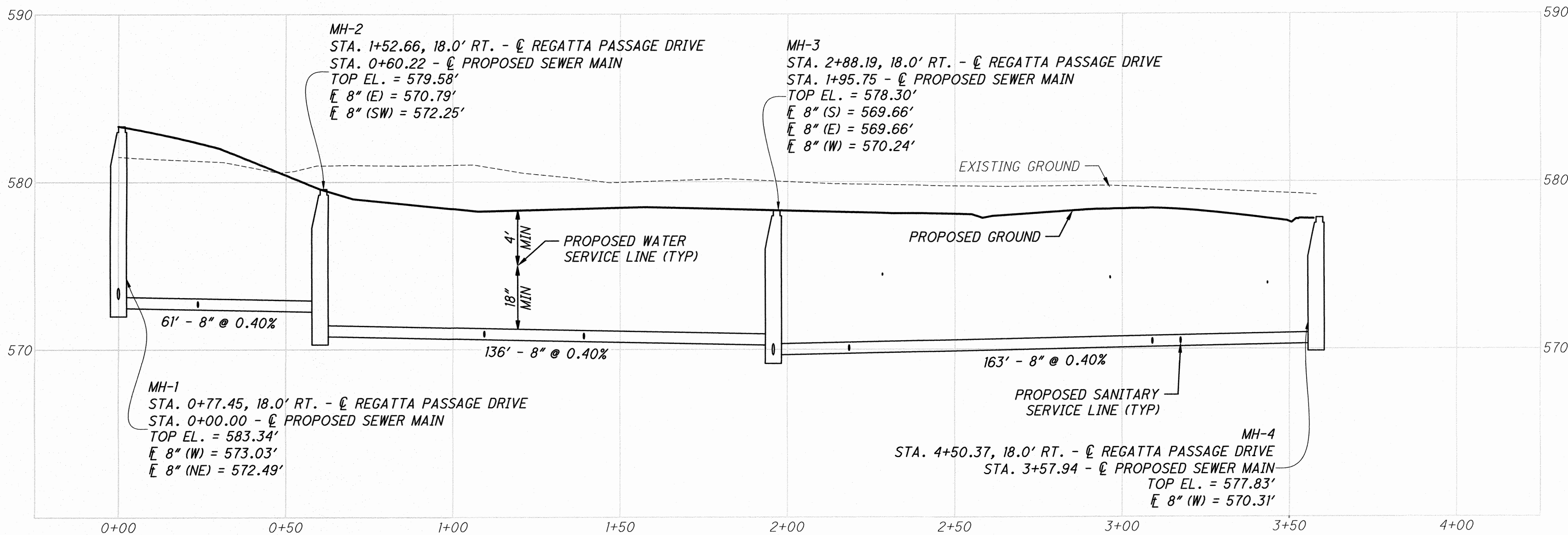
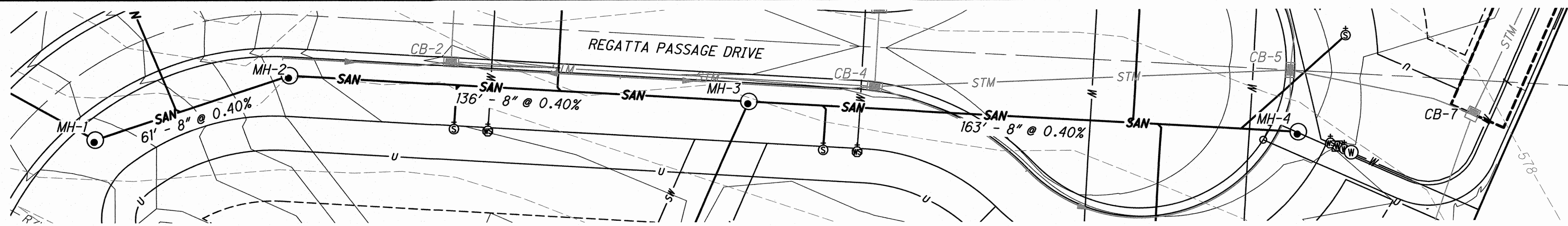


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**SANITARY SEWER PLAN AND PROFILE**

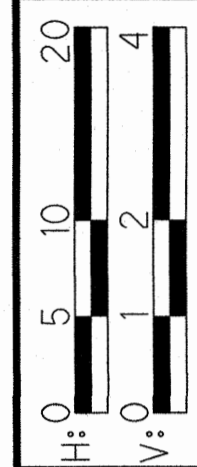
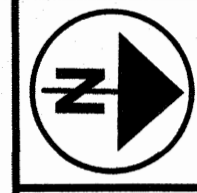
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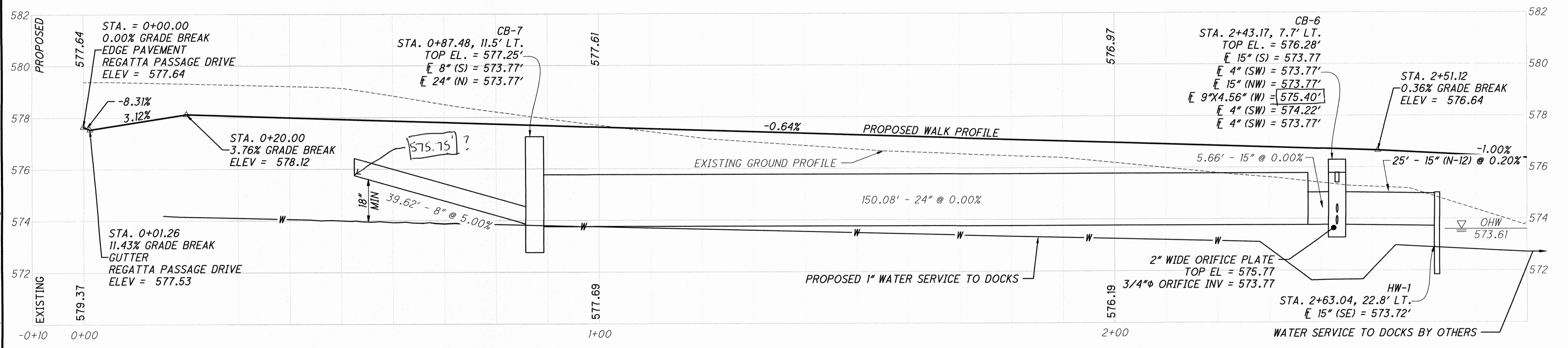
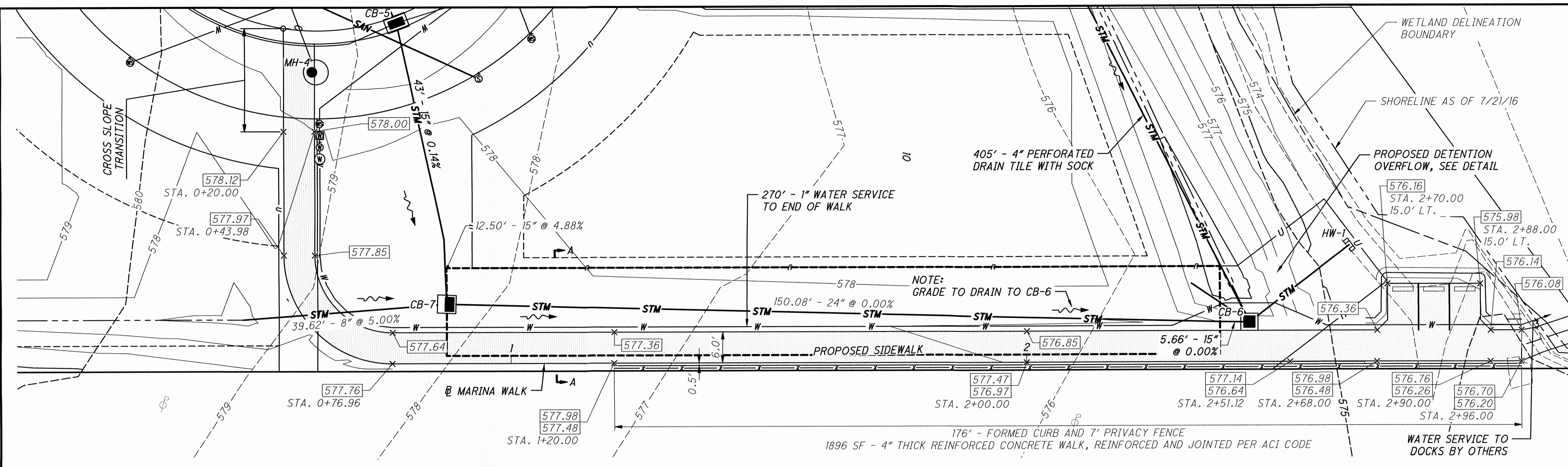
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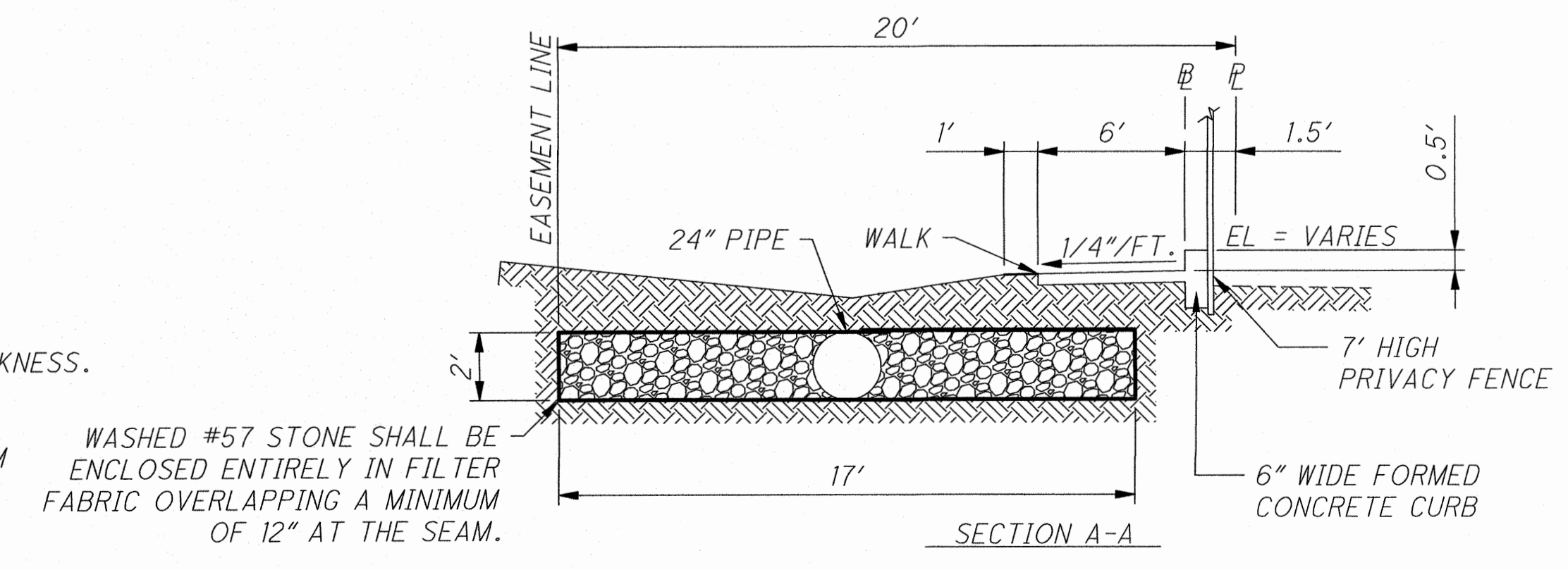
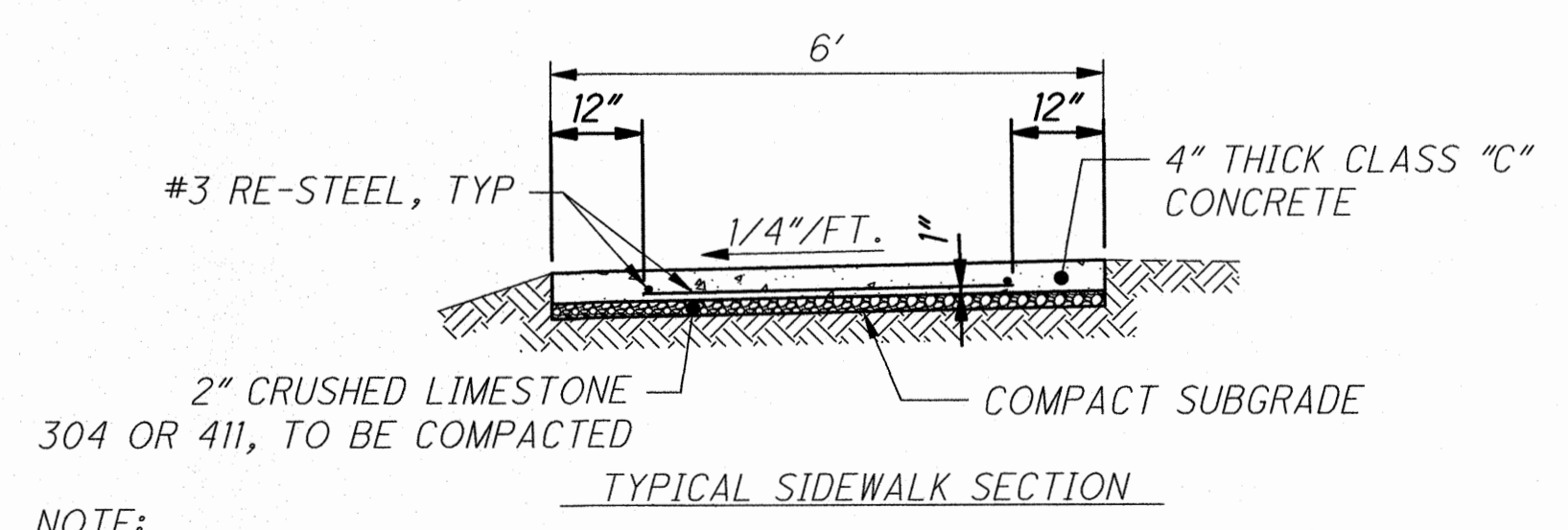
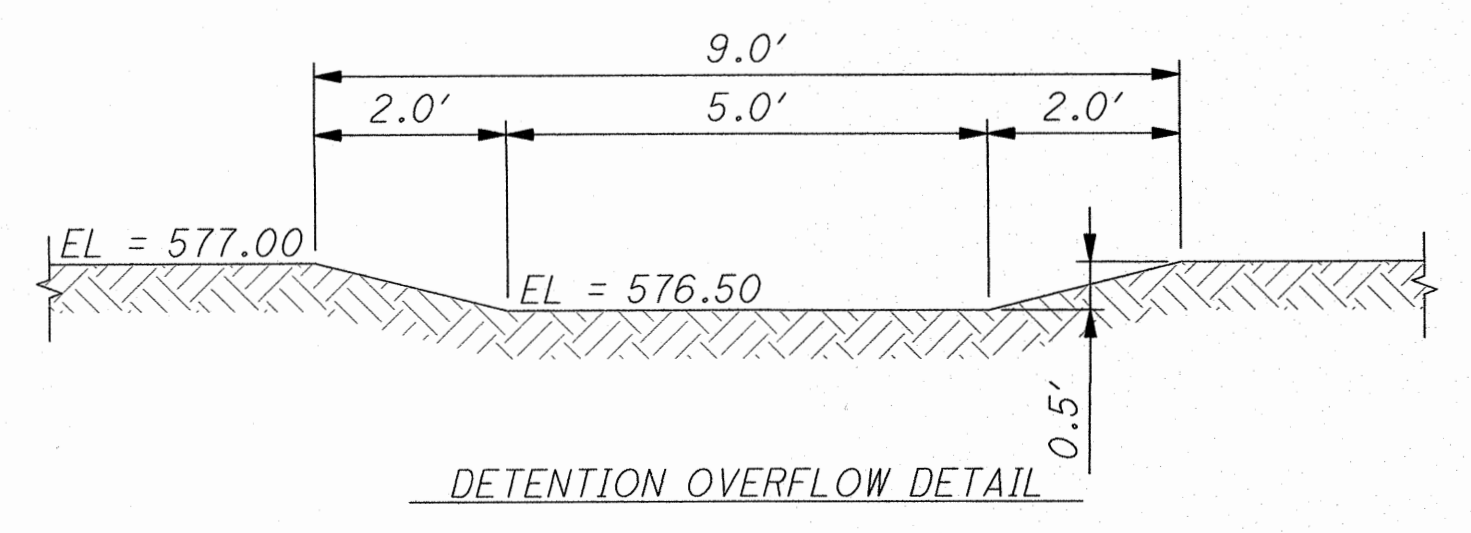
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STORM SEWER PLAN AND PROFILE

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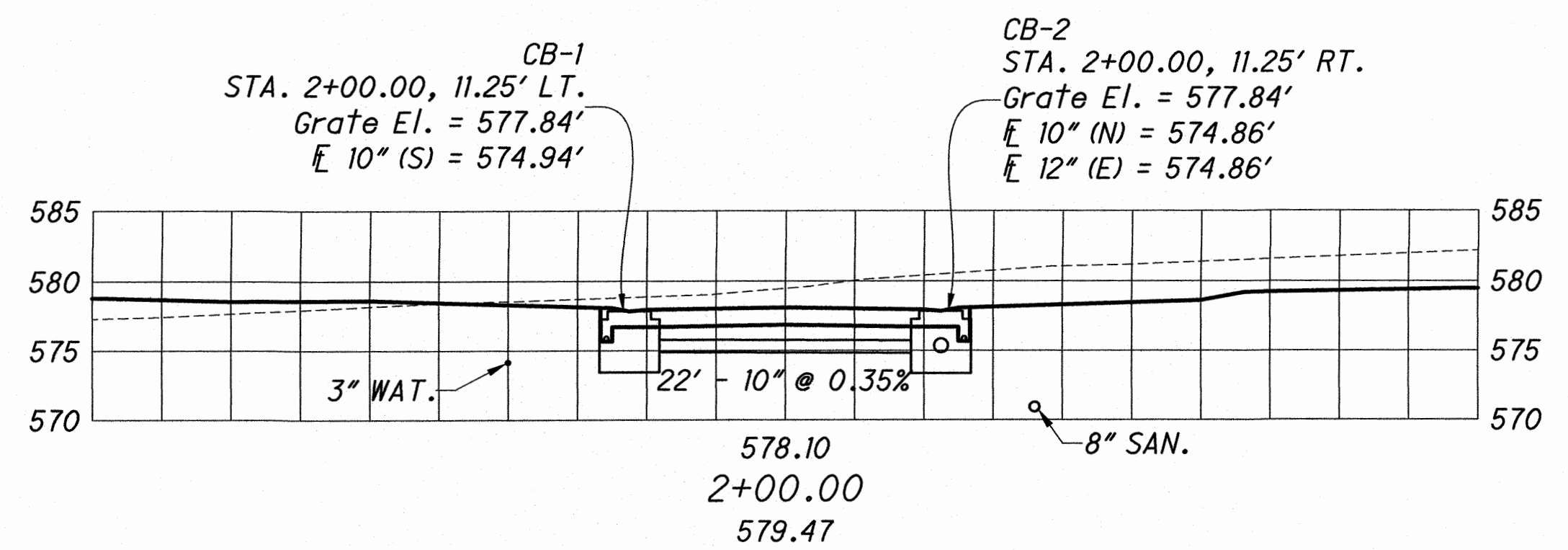
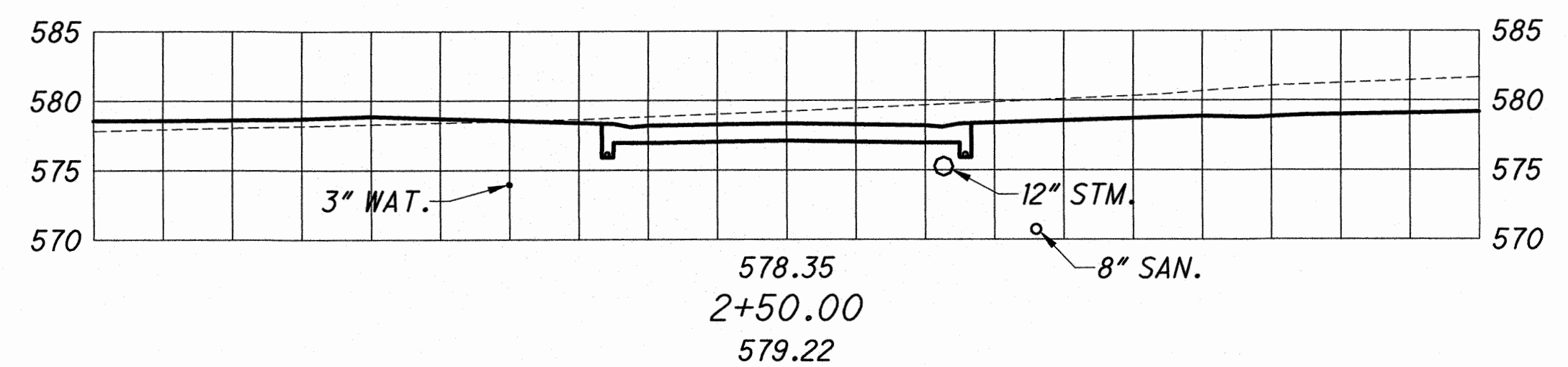
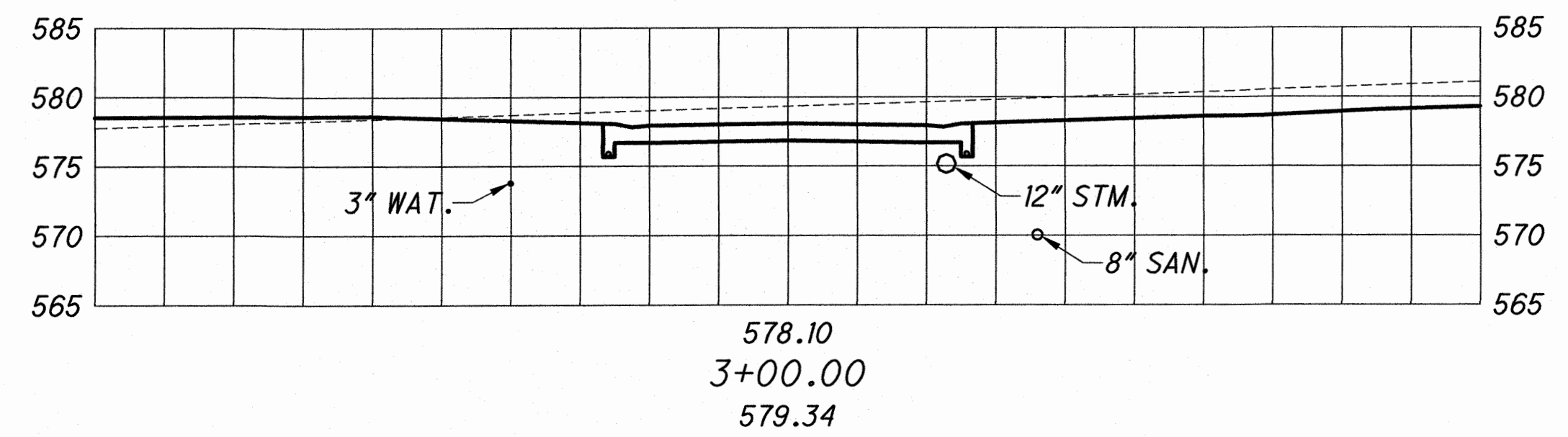
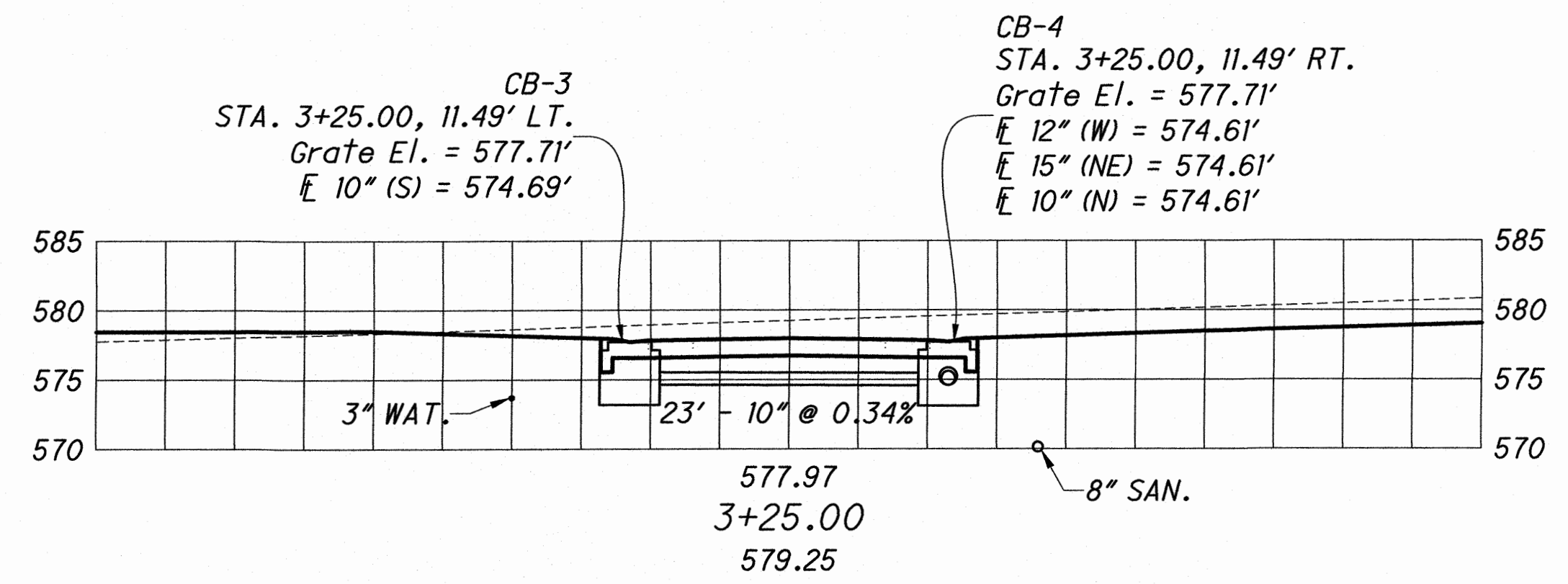
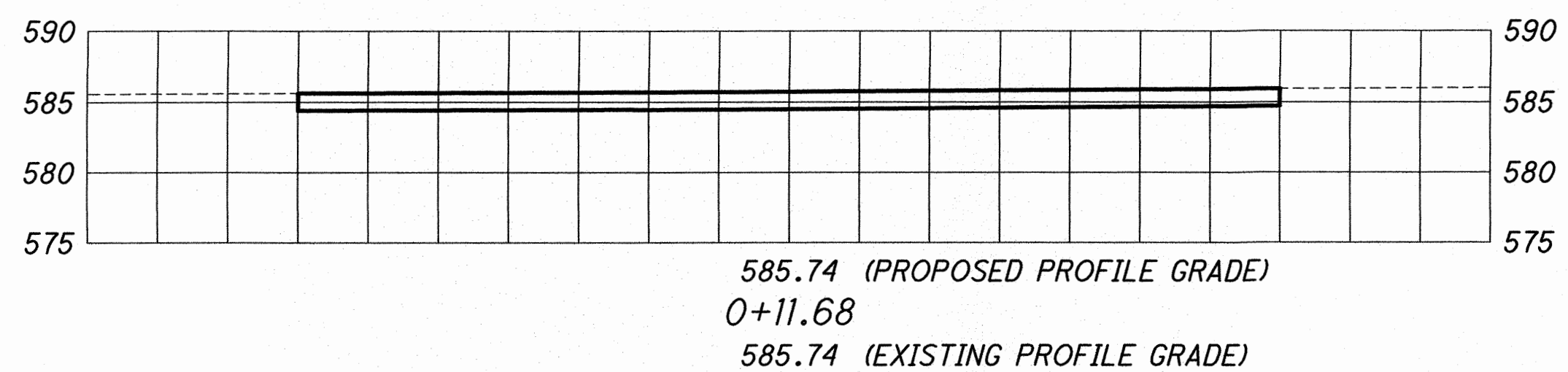
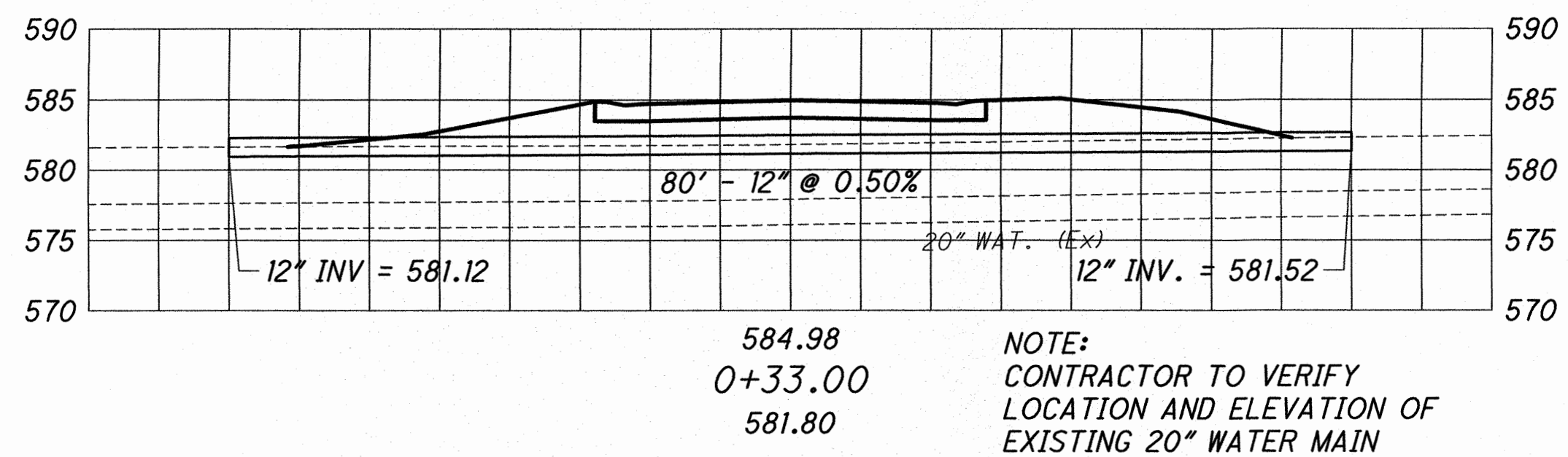
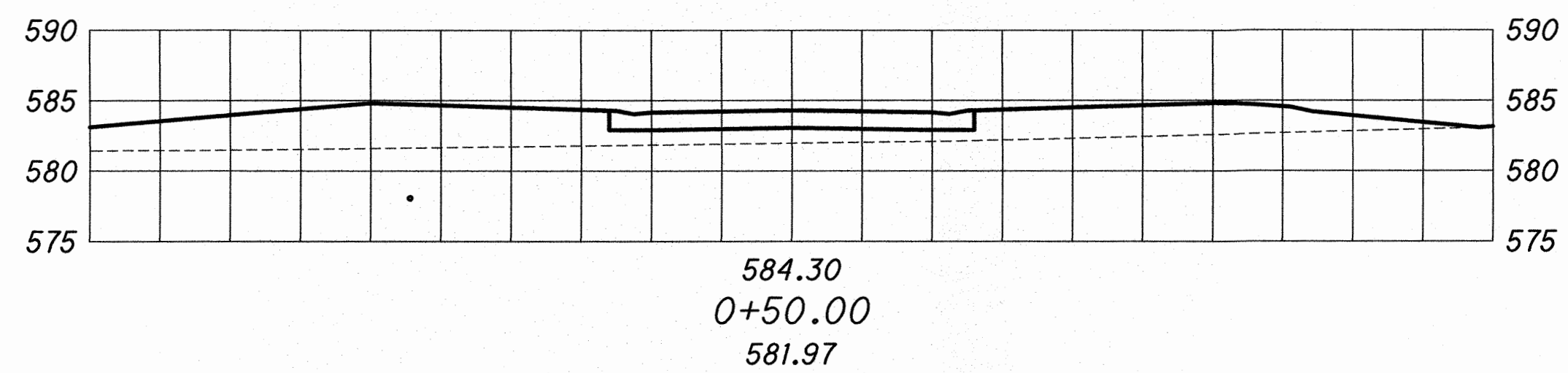
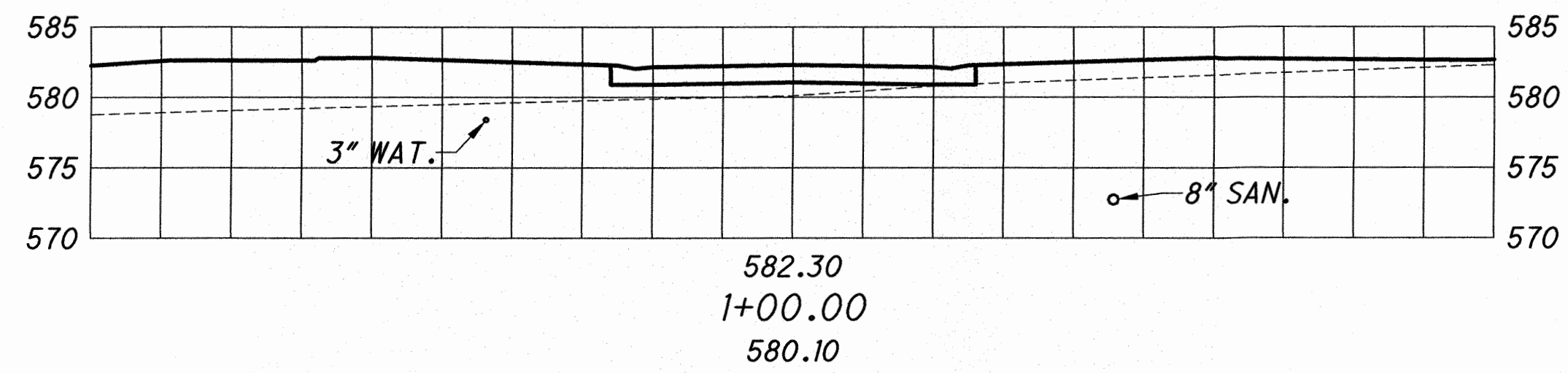
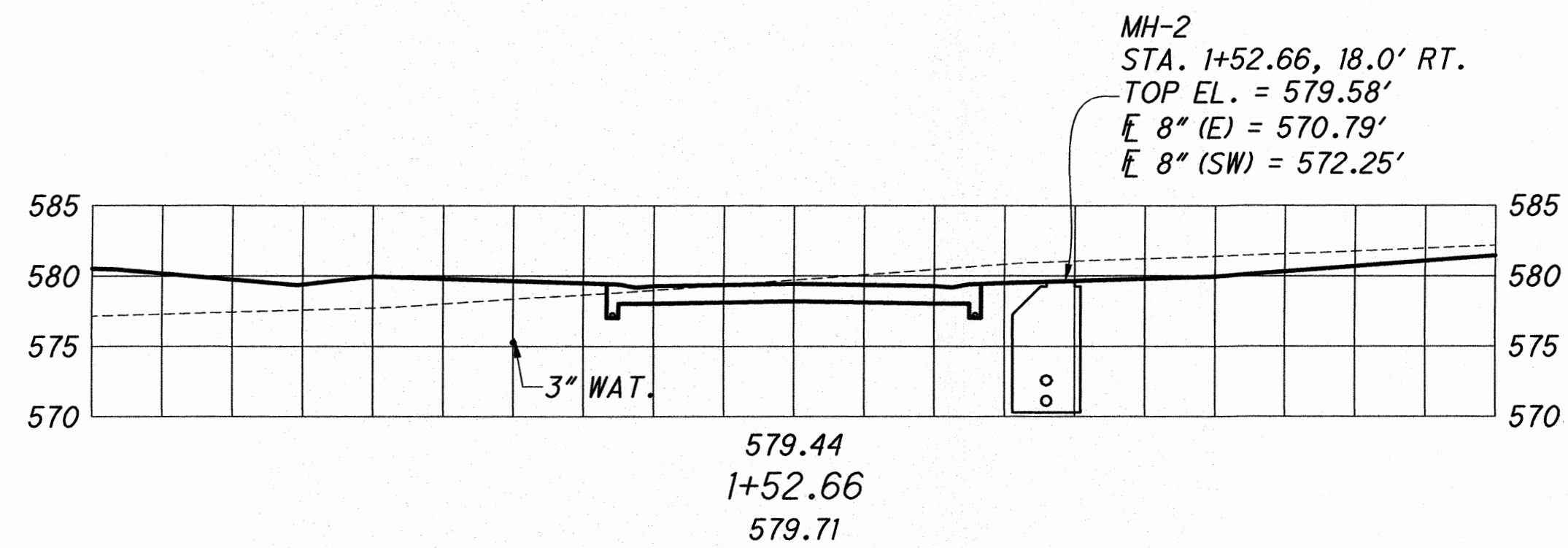


- LEGEND
- XXX.XX PROPOSED TOP OF CURB ELEVATION
  - XXX.XX PROPOSED TOP OF SIDEWALK ELEVATION
  - XXX.XX PROPOSED TOP OF SIDEWALK ELEVATION



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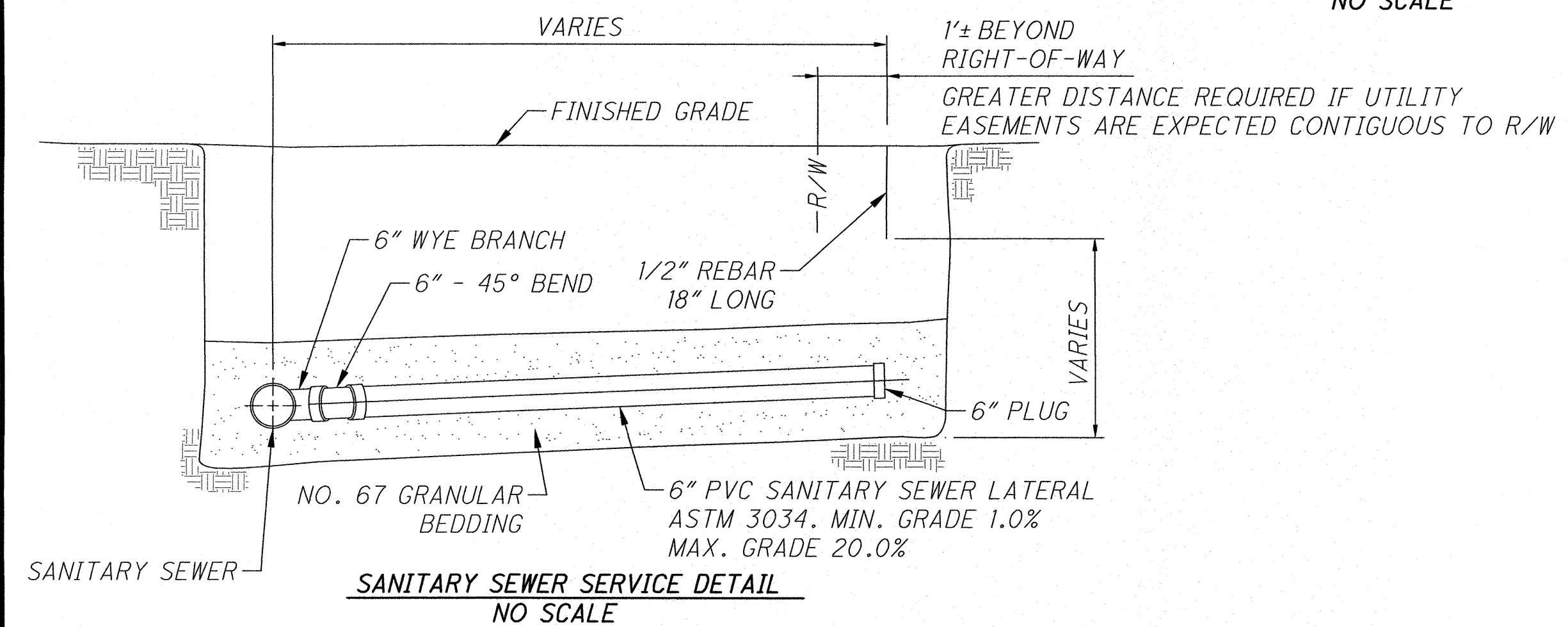
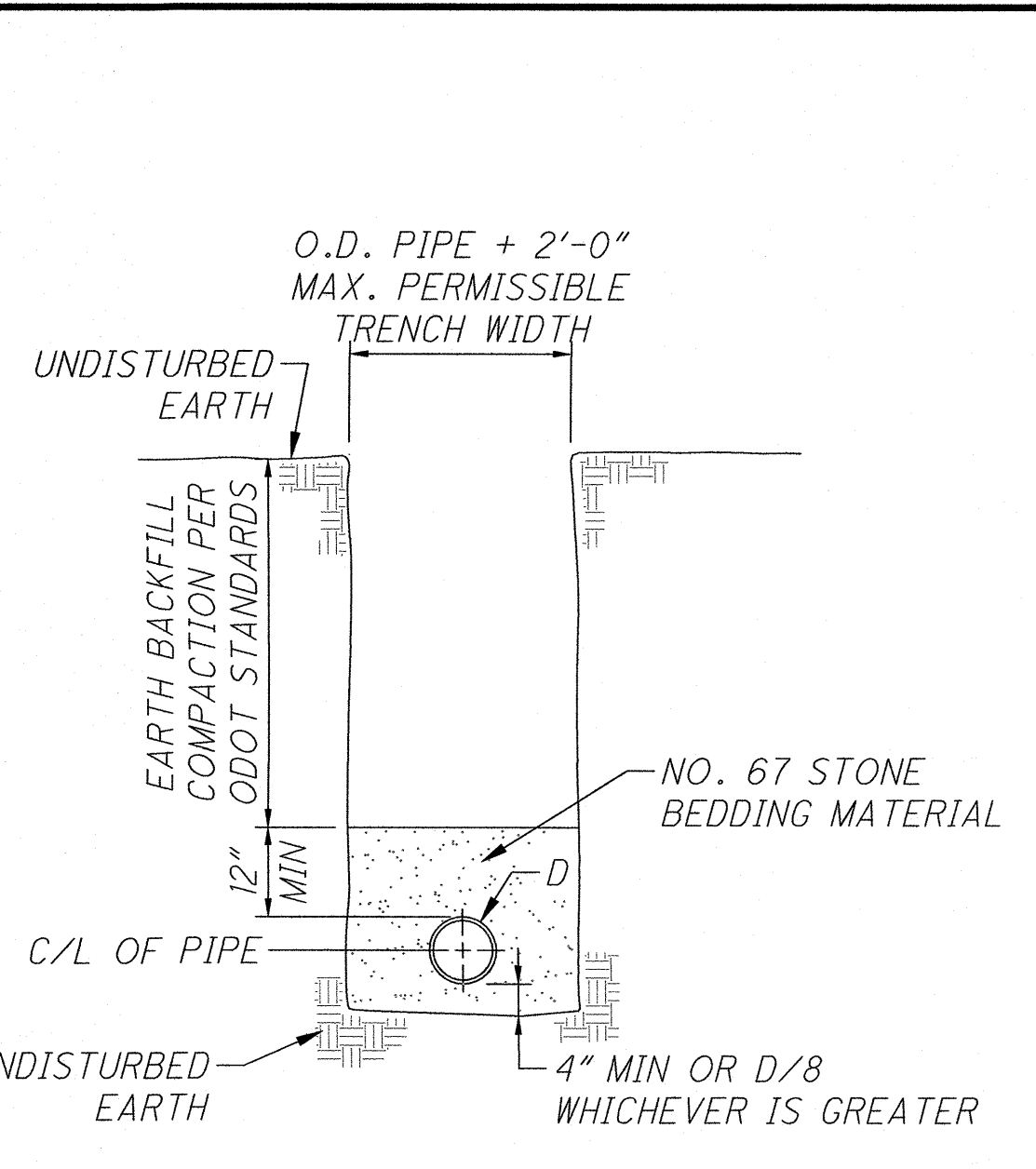
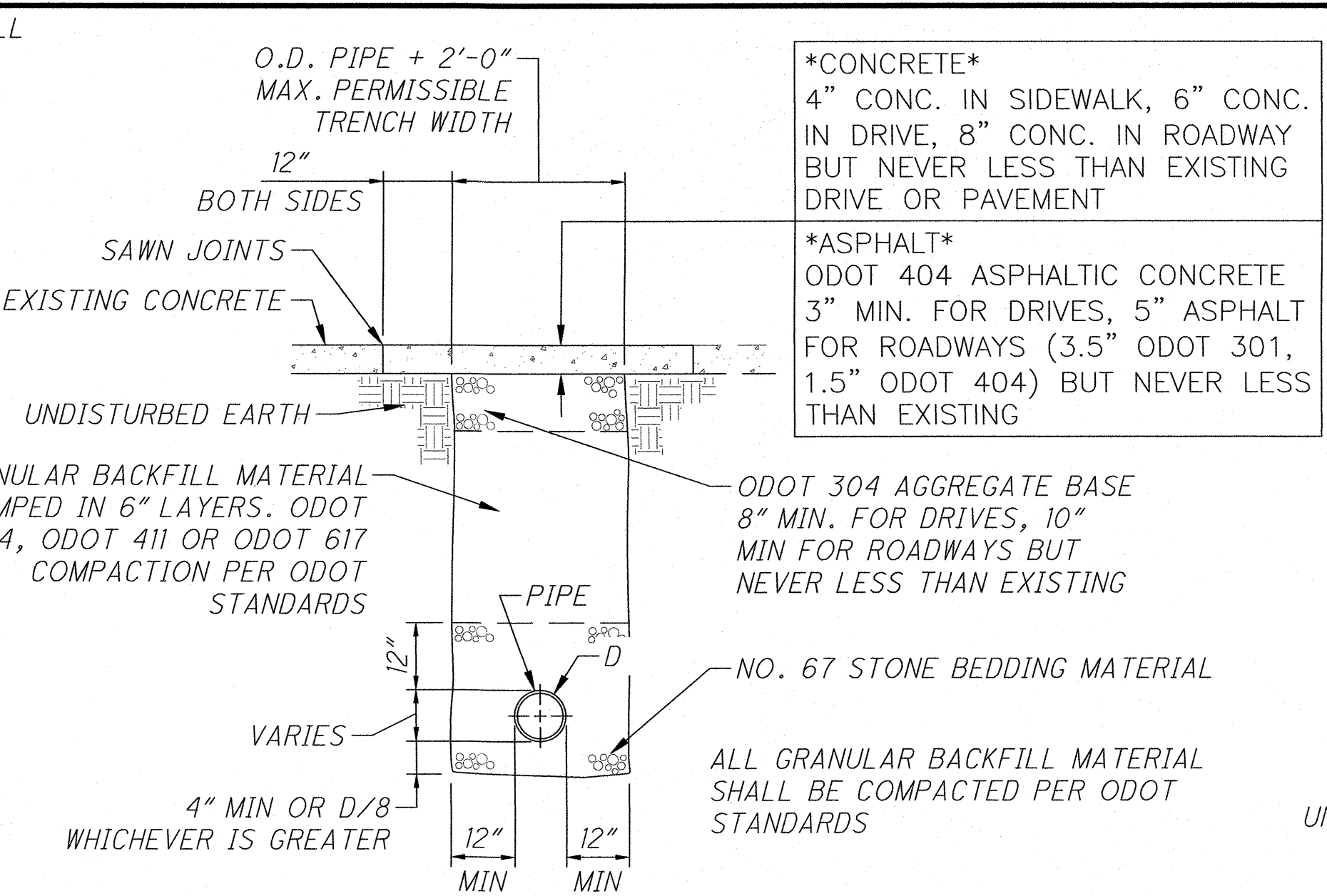
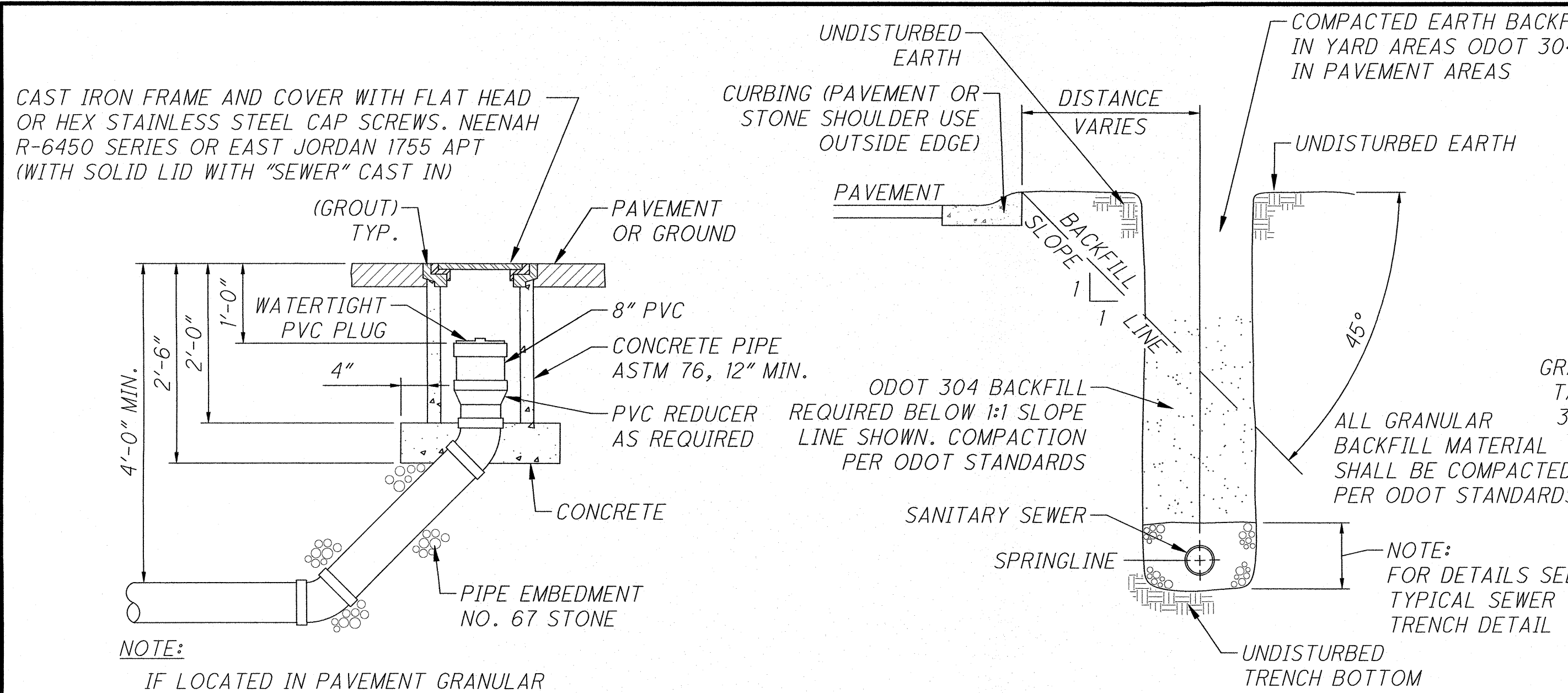
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CROSS SECTIONS

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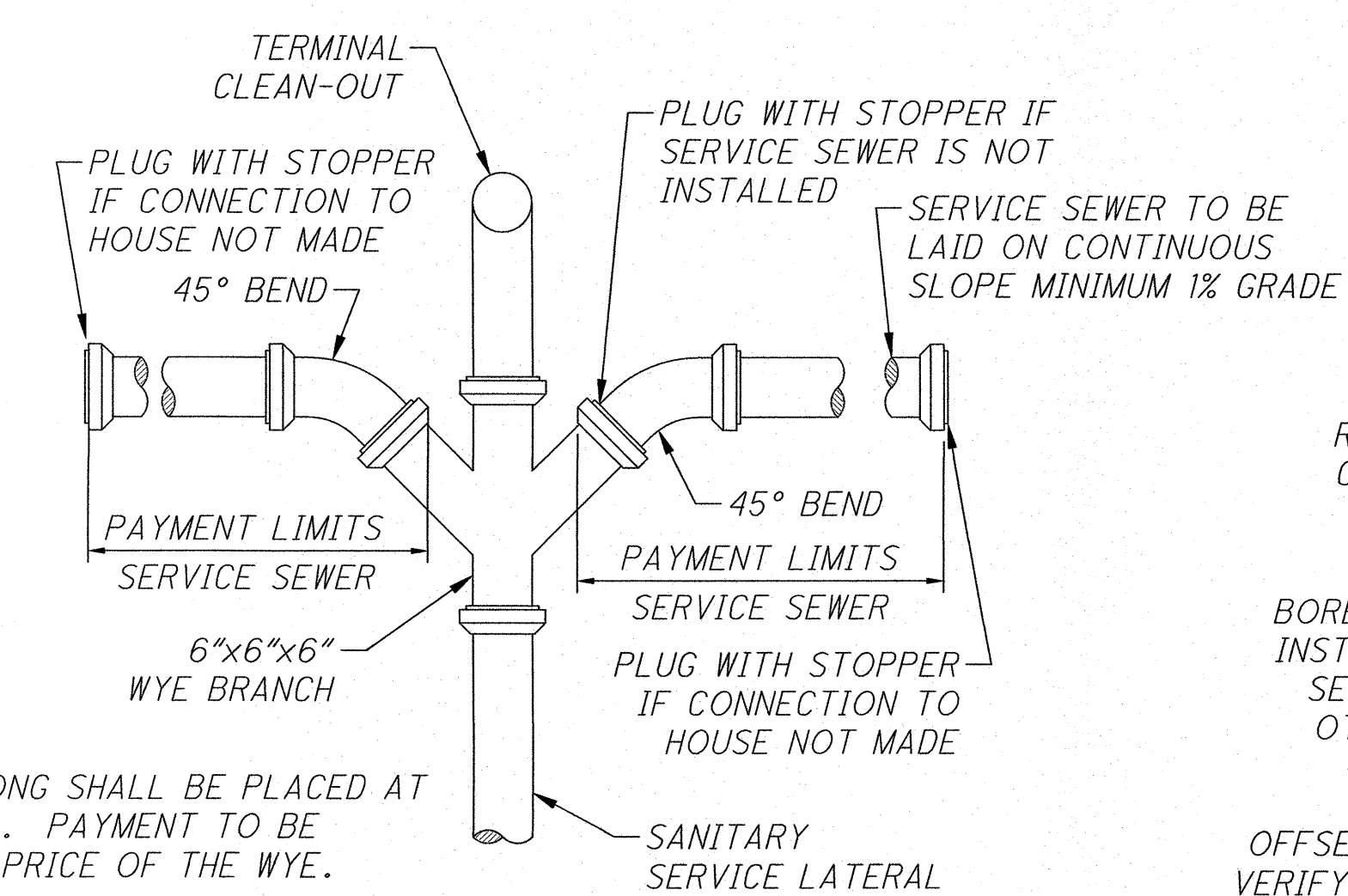
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NOTE:  
VERIFY LOCATION OF STEPS IN MANHOLE

ALL SANITARY SEWER MANHOLES ARE PERMIT REQUIRED CONFINED SPACES AND ENTRANCE MUST COMPLY WITH OSHA REGULATIONS

MANHOLES WITH A CASTING ELEVATION SET BELOW ELEV. 577.4 (NAVD88) SHALL BE SUPPLIED WITH WATERTIGHT CASTINGS SIMILAR TO NEENAH R-1916 OR EAST JORDAN 1040 PT

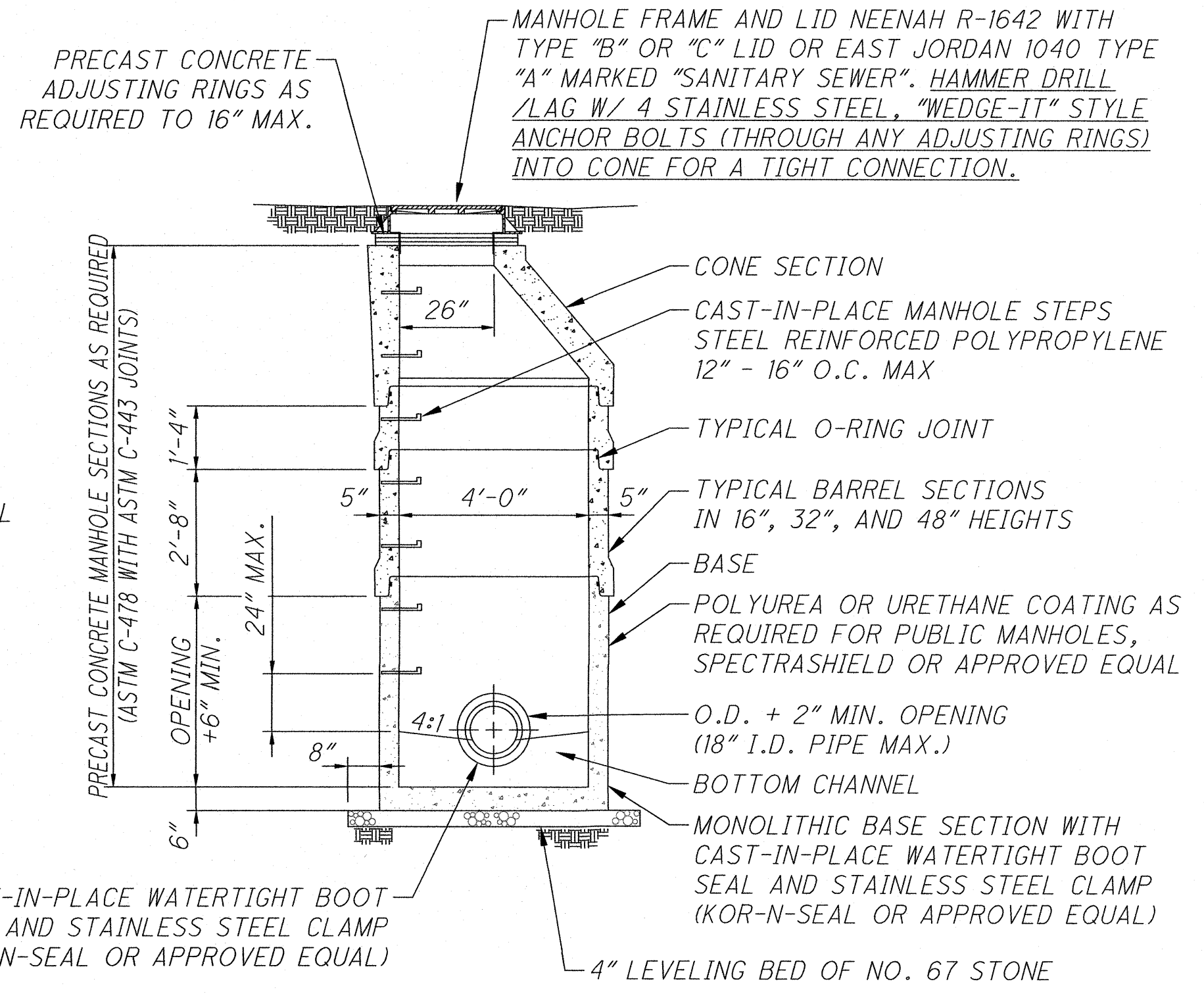
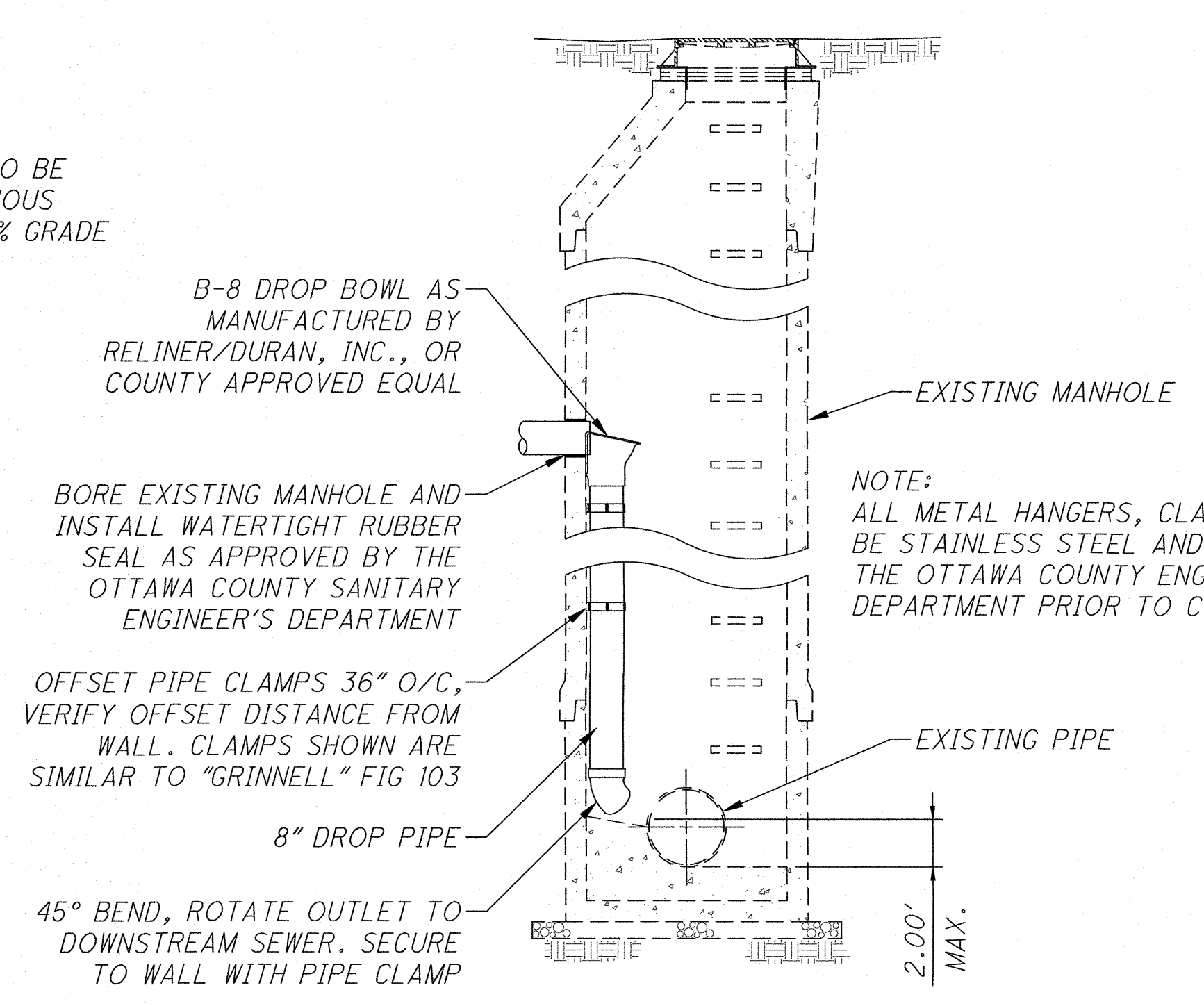


NOTES:  
1/2" REBAR 18" LONG SHALL BE PLACED AT EACH 6" STOPPER. PAYMENT TO BE INCLUDED IN THE PRICE OF THE WYE.

ALL LATERALS TO BE EXTENDED TO 1' PAST THE R/W LINE

WYE CONNECTION MAY BE USED ON SANITARY LATERALS TO MINIMIZE THE TRENCHES ALONG ROADWAY.

LOCATIONS TO BE FIELD ADJUSTED



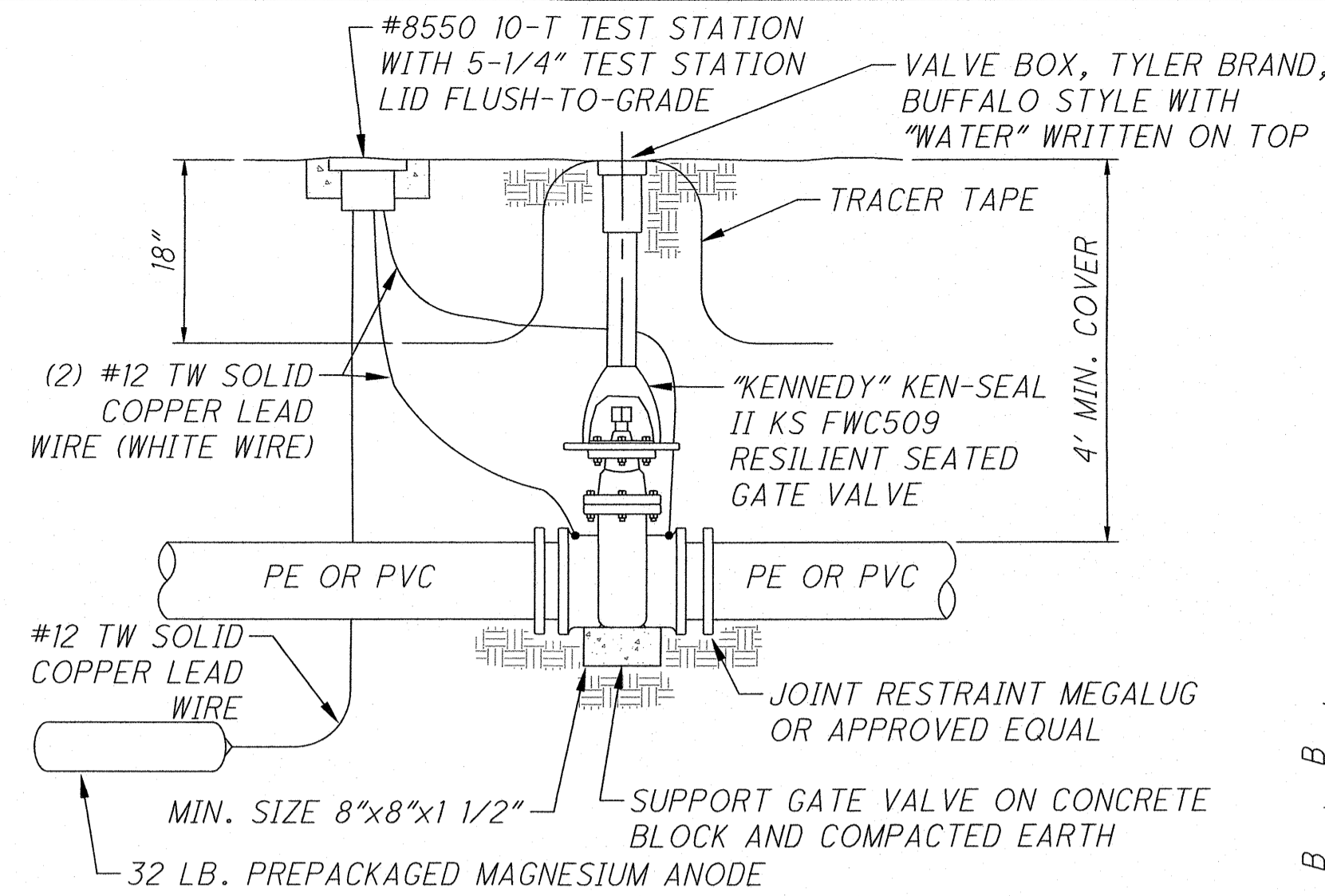


**GENERAL NOTES**

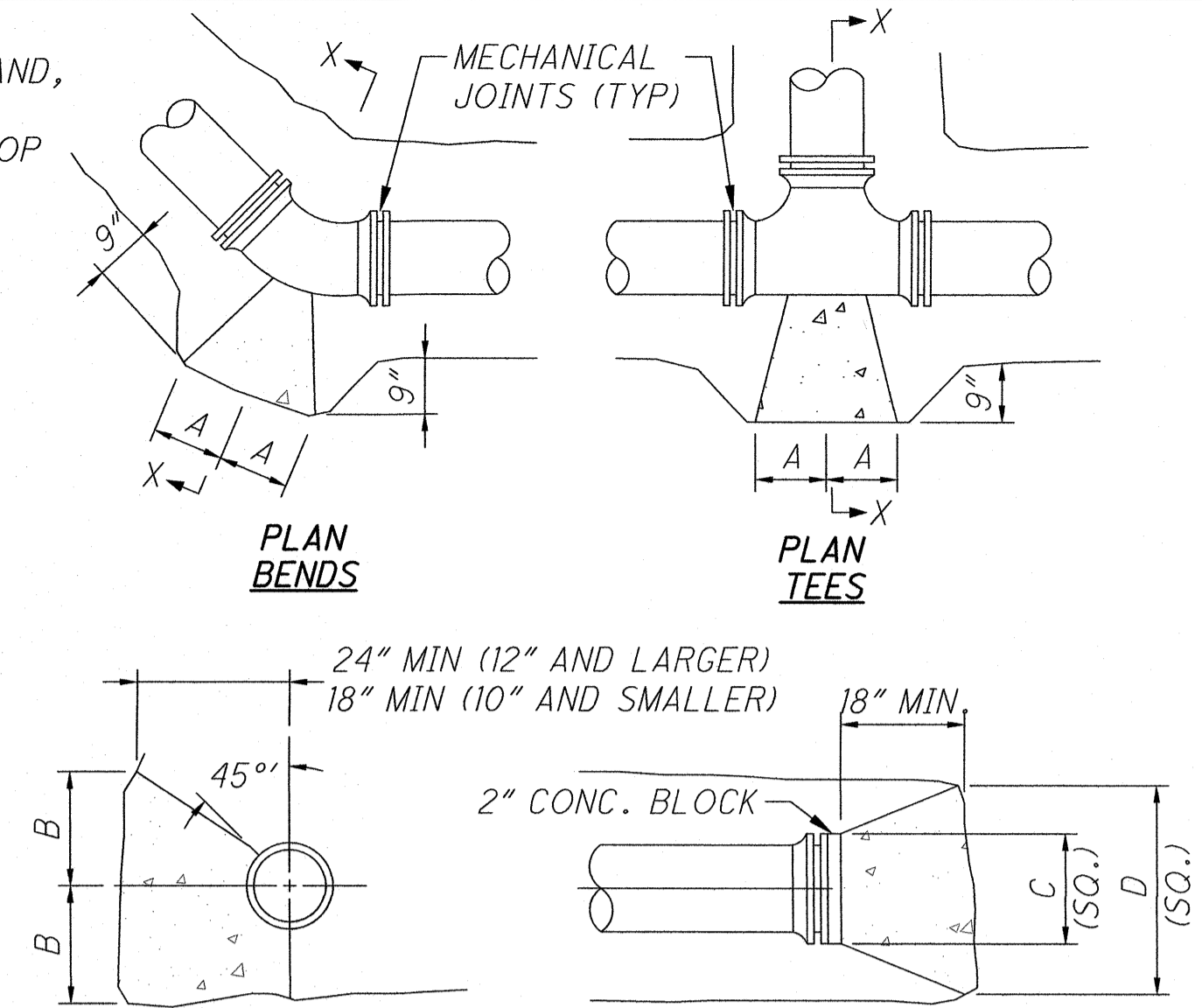
- CONTRACTORS SHALL BE RESPONSIBLE FOR COMPLYING WITH ALL FEDERAL, STATE AND LOCAL SAFETY STANDARDS AND REGULATIONS. CONTRACTORS SHALL BE RESPONSIBLE FOR KEEPING THE CONSTRUCTION SITE SAFE FOR ITS EMPLOYEES, EMPLOYEES OF OTTAWA COUNTY AND THE GENERAL PUBLIC.
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY ANY INFORMATION ON EXISTING WATER AND SANITARY SEWER IMPROVEMENTS OR ANY GENERAL FIELD INFORMATION SHOWN ON THE PLAN OR PROVIDED BY THE OTTAWA COUNTY SANITARY ENGINEERING DEPARTMENT (O.C.S.E.) PRIOR TO STARTING CONSTRUCTION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROPERLY RESTORING ANY DISTURBED AREAS AROUND EXISTING WATER AND/OR SANITARY SEWER INFRASTRUCTURE AS SOON AS REASONABLY POSSIBLE AFTER WORK HAS BEEN COMPLETED IN THAT IMMEDIATE AREA.
- THE LOCATION OF ALL EXISTING UTILITIES SHOWN ON THE PLANS ARE APPROXIMATE. THE EXACT LOCATION OF ALL UTILITIES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR SHALL NOTIFY THE OHIO UTILITIES PROTECTION SERVICE (OUPS) AT 1-800-362-2764 AND ALL UTILITIES TO LOCATE THEIR EXISTING

FACILITIES AT LEAST TWO (2) WORKING DAYS PRIOR TO START OF CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL DAMAGE TO UTILITIES CAUSED BY HIS OPERATIONS.

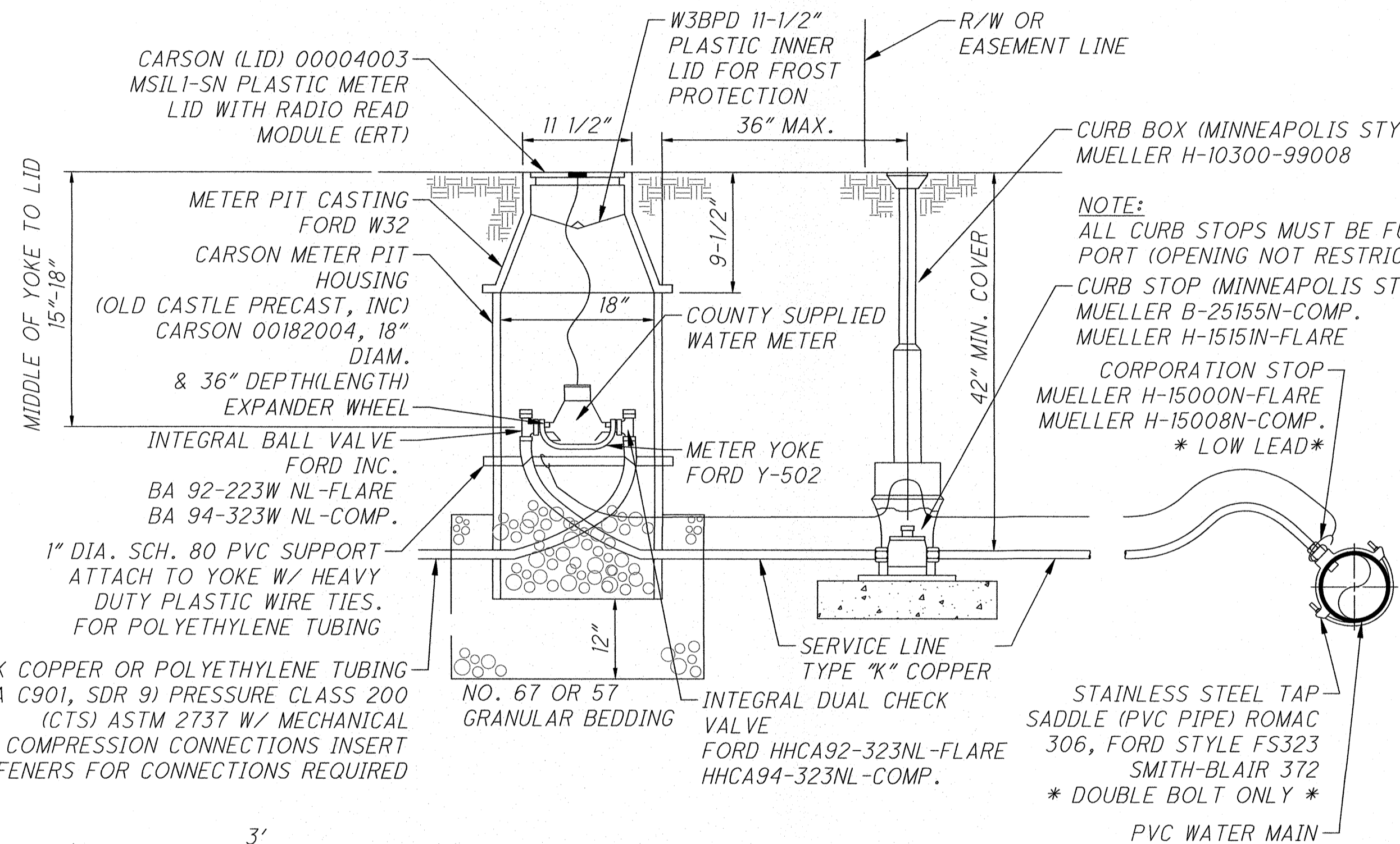
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROPERLY RESTORING ANY DISTURBED AREAS AROUND EXISTING WATER AND/OR SANITARY SEWER INFRASTRUCTURE AS SOON AS REASONABLY POSSIBLE AFTER WORK HAS BEEN COMPLETED IN THAT IMMEDIATE AREA.
- GRANULAR BEDDING USED FOR BEDDING AND BACKFILL OVER, UNDER AND AROUND THE SANITARY SEWER AND WATERLINE SHALL CONTAIN LESS THAN ONE (1) PERCENT GYPSUM BY WEIGHT, PER OCSE REGULATIONS. CONTRACTOR SHALL SUPPLY CERTIFICATION FROM SUPPLIER WHICH STATES THE PERCENTAGE OF GYPSUM CONTAINED IN THE MATERIAL BEING USED ON THE JOB. COMPLETE ROAD CLOSURES REQUIRE PRIOR COUNTY APPROVAL. ANY LANE CLOSURE OR ENCROACHMENT ON STATE HIGHWAYS REQUIRES AN ODOT PERMIT.
- THE CONTRACTOR SHALL MAINTAIN TRAFFIC AT ALL TIMES IN ACCORDANCE WITH THE REQUIREMENTS OF SPECIFICATION ITEM 614, AS OUTLINED IN THE CONSTRUCTION AND MAINTENANCE OPERATION SECTION OF THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, CURRENT EDITION IN EFFECT AT THE TIME OF CONTRACT AWARD.
- ROOF DRAINS, FOUNDATION DRAINS, SUMP PUMPS AND OTHER CLEAN WATER CONNECTIONS TO THE SANITARY SEWER ARE PROHIBITED.



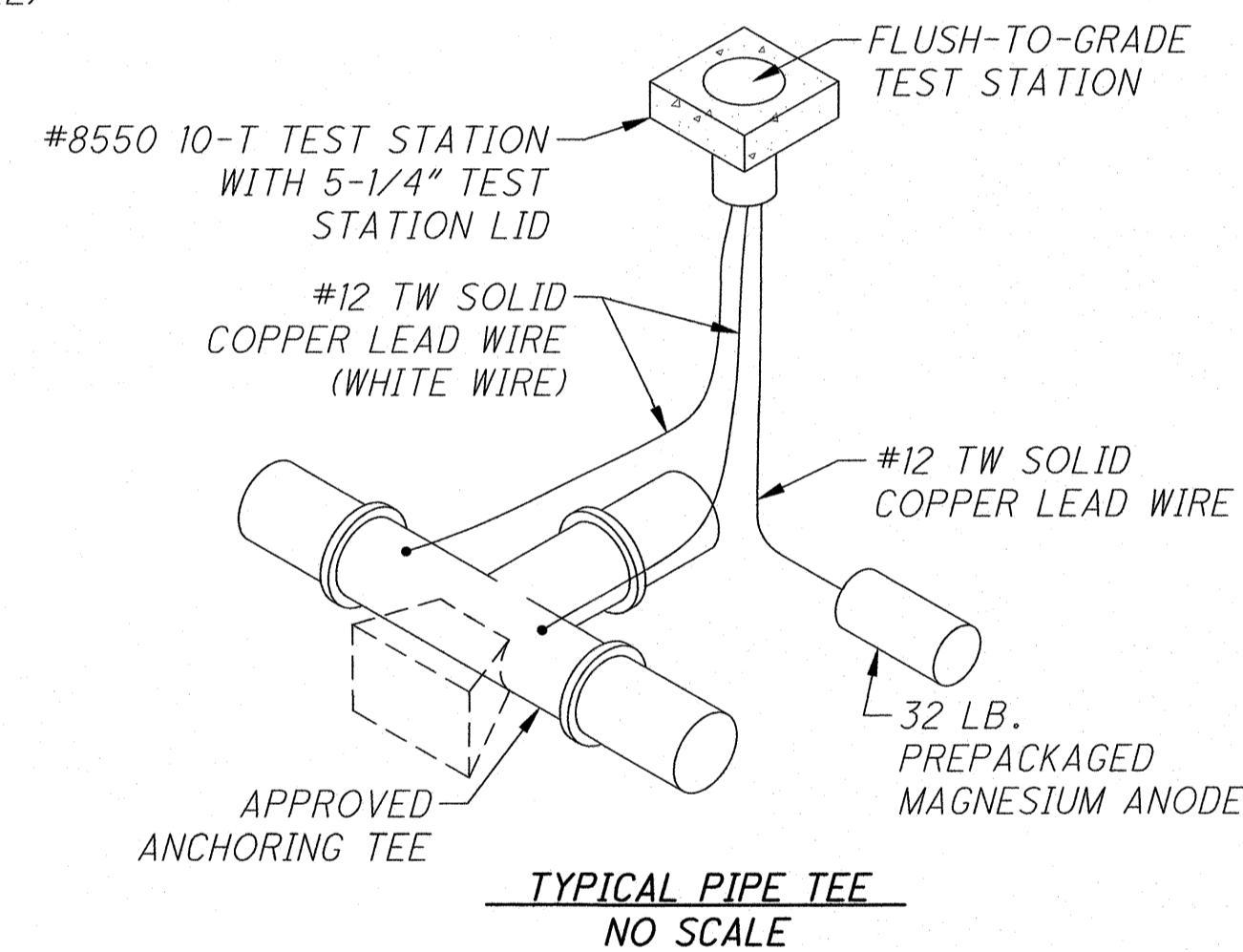
**GATE VALVE AND BOX (FOR 3" WATERLINES)**  
NO SCALE



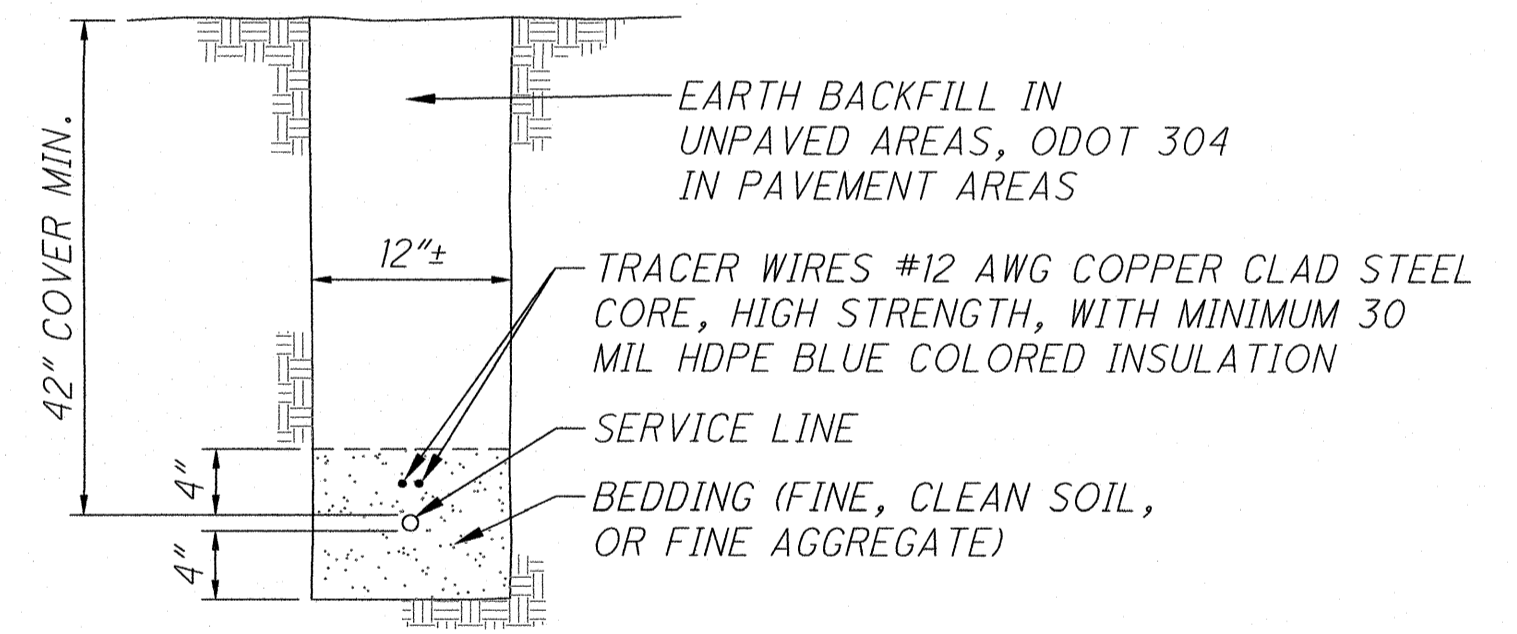
NOTE: BASED ON 100 P.S.I. STATIC PRESSURE PLUS A.W.W.A. WATER HAMMER. ALL BEARING SURFACES TO BE CARRIED TO UNDISTURBED SOIL. FOR PIPE SIZES SMALLER THAN 3", USE 3" BLOCKING SCHEDULE



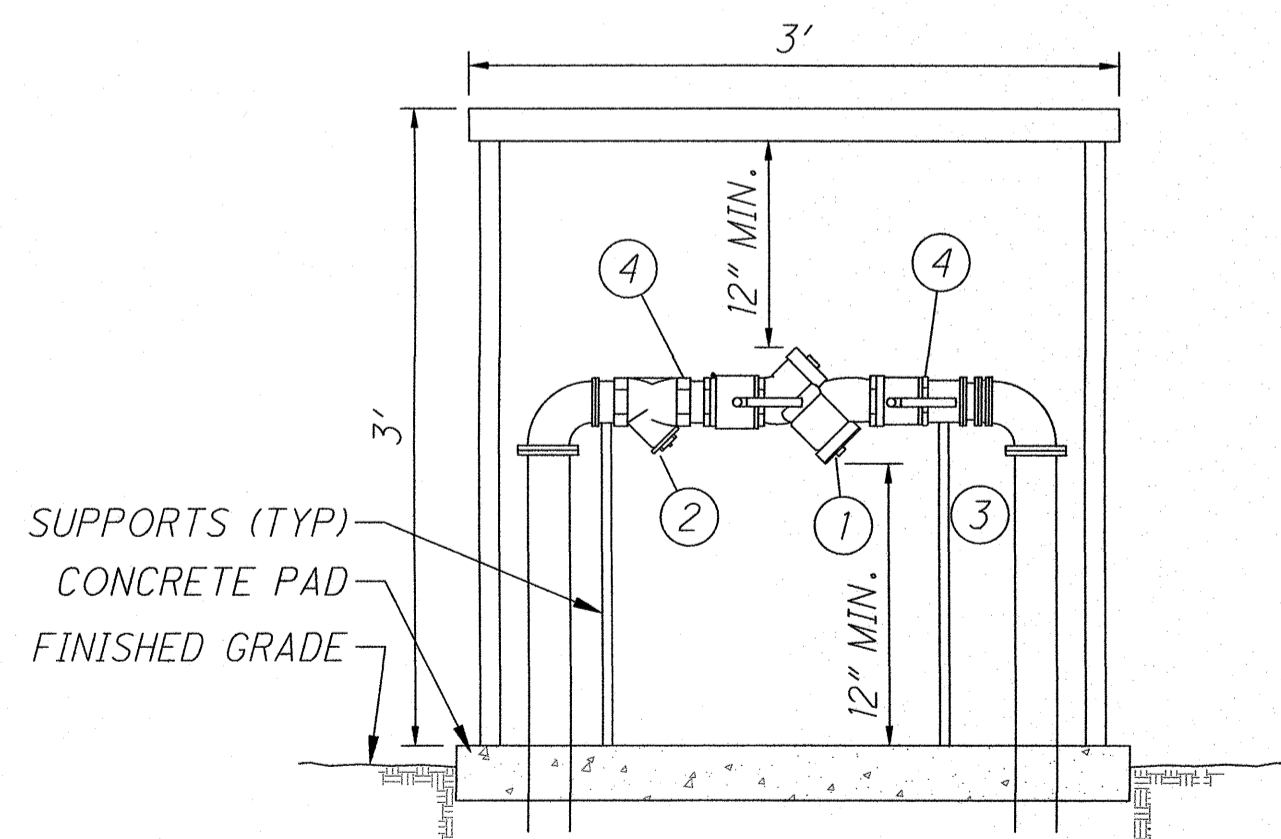
**3/4" METER PIT SETTING**  
NO SCALE



**TYPICAL PIPE TEE**  
NO SCALE

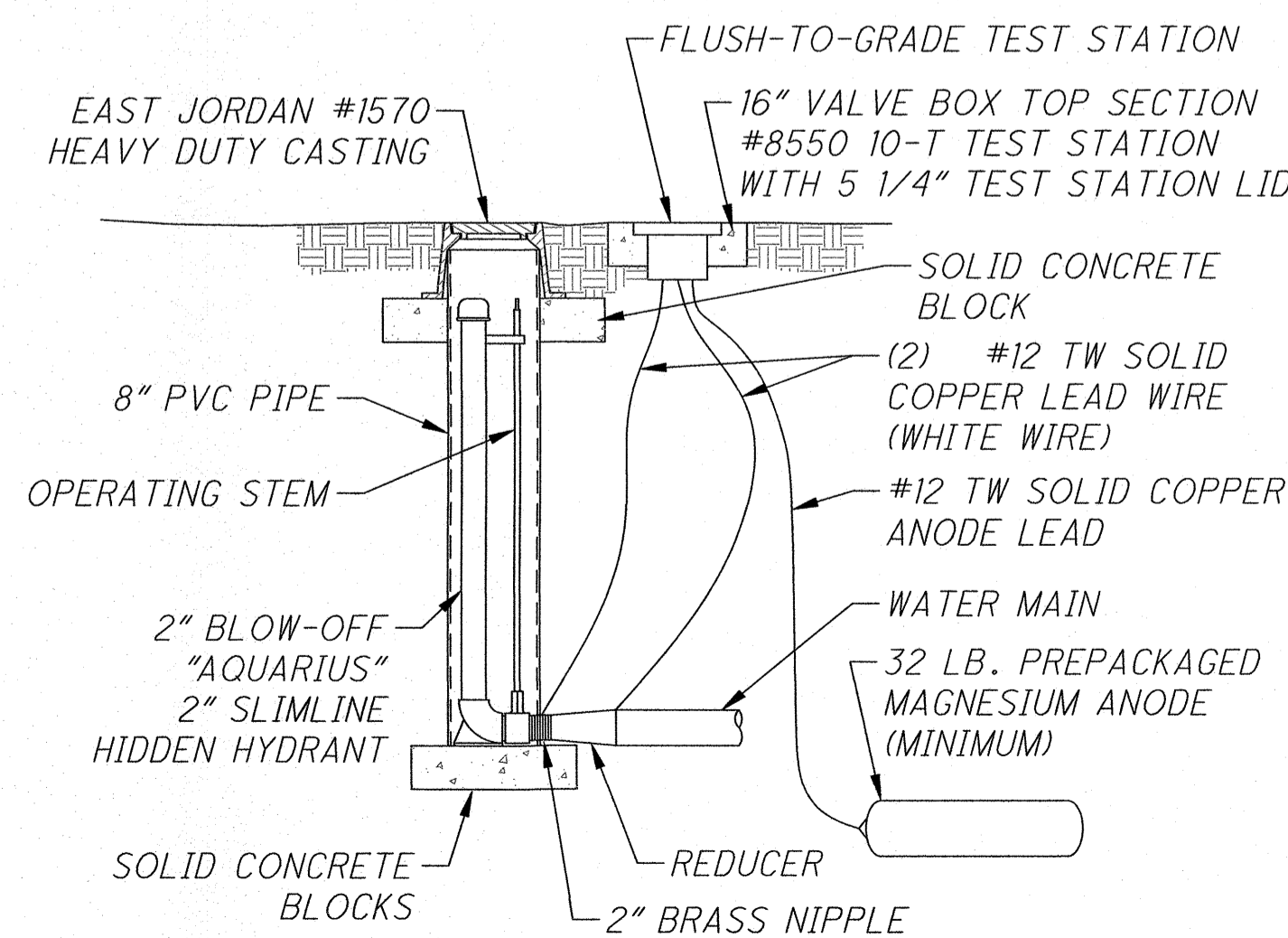


**SERVICE WATERLINE TRENCH DETAIL**  
NO SCALE

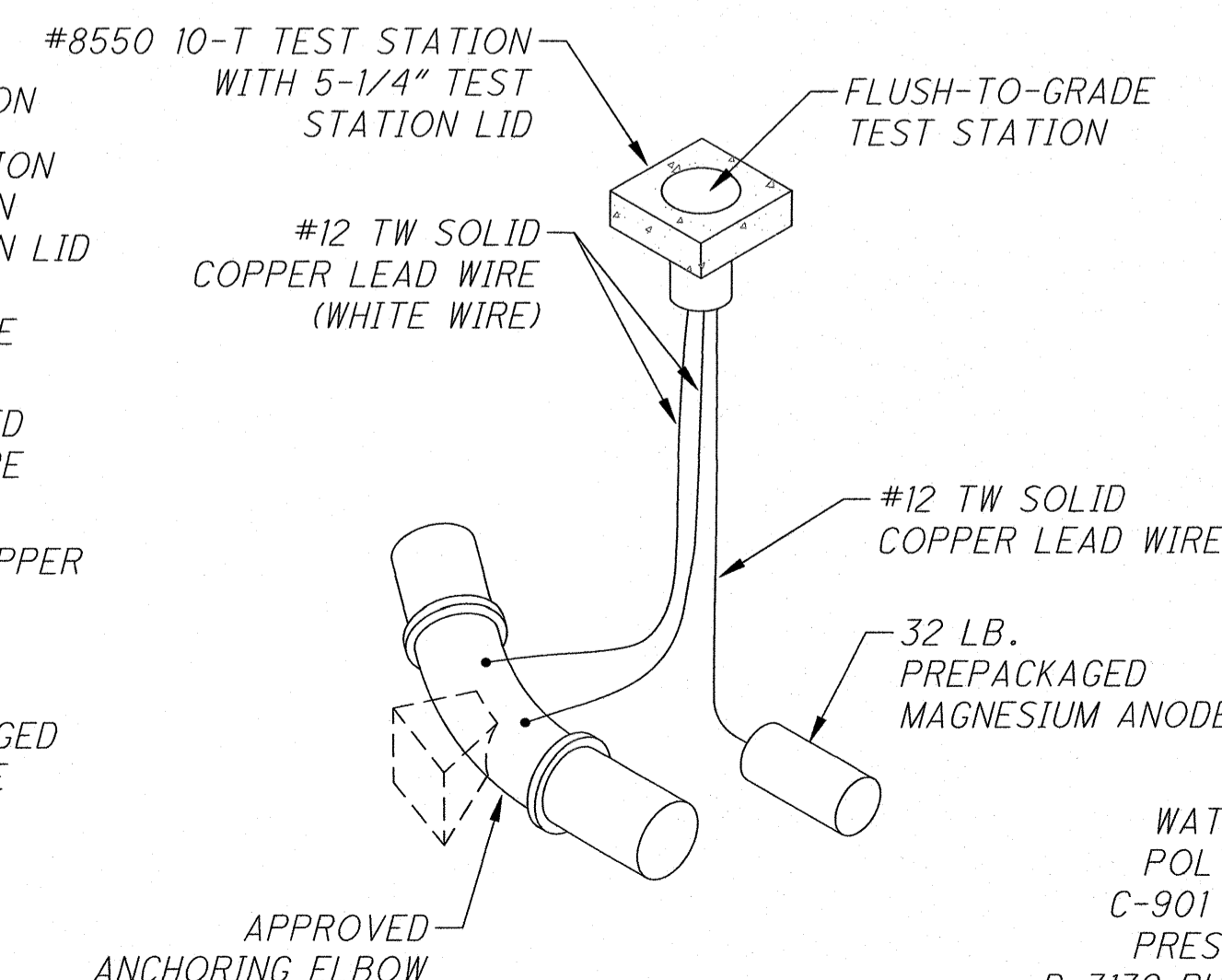


- 1" FEBCO SERIES 825Y REDUCED PRESSURE ZONE ASSEMBLY, ASSE 1013 OR APPROVED EQUAL
- FEBCO SERIES 650A 1" "Y" STRAINER
- ABOVE GRADE ENCLOSURE, NON-HEATED, MINIMUM 36"L X 36"H X 36"L
- CONNECT VIA UNIONS FOR UNIT REMOVAL

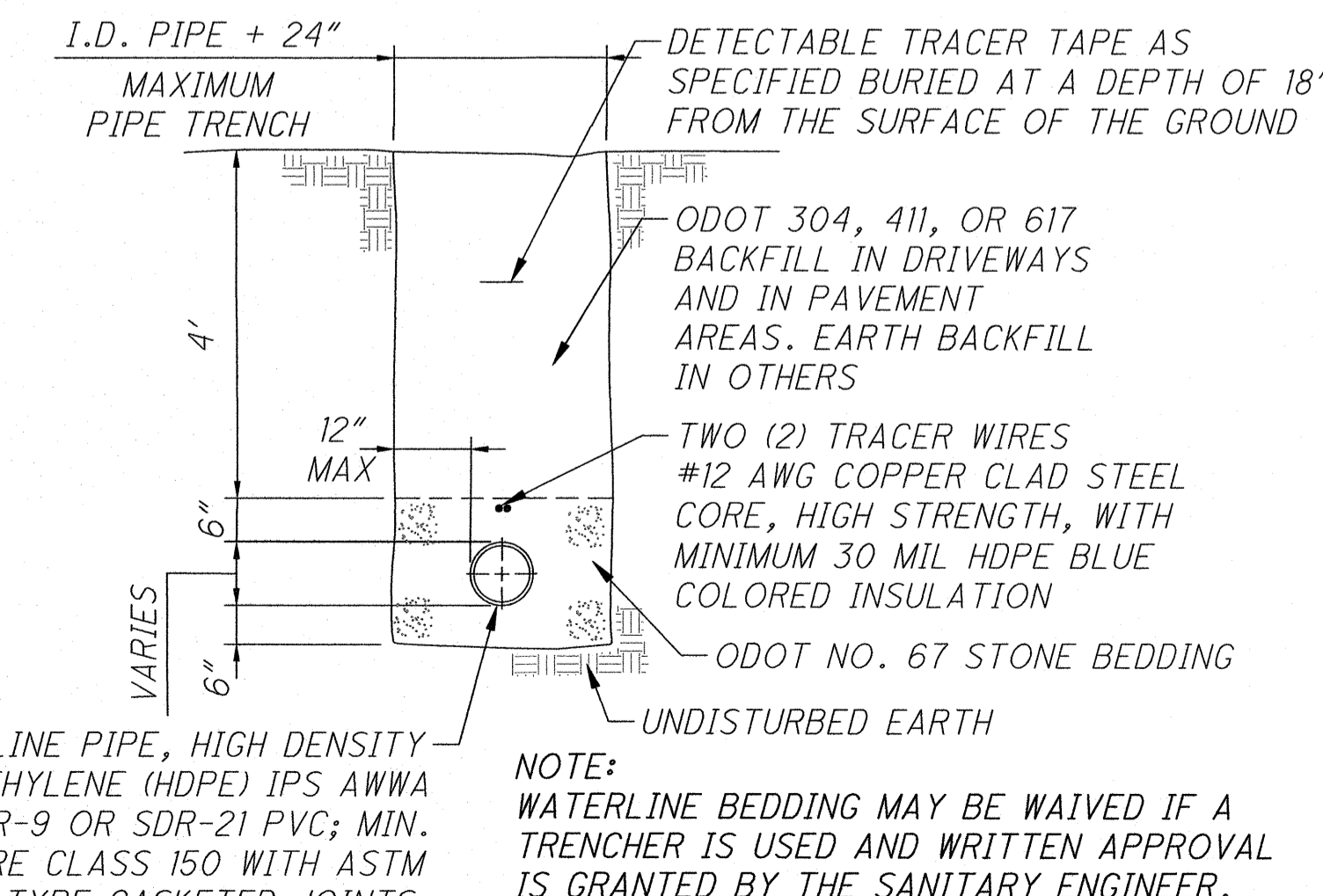
**REDUCED PRESSURE ZONE (RPZ) ASSEMBLY DETAIL**  
NO SCALE



**WATER MAIN BLOW-OFF DETAIL**  
NO SCALE



**TYPICAL PIPE BEND**  
NO SCALE



**WATERLINE TRENCH DETAIL**  
NO SCALE

NOTE: WATERLINE BEDDING MAY BE WAIVED IF A TRENCHER IS USED AND WRITTEN APPROVAL IS GRANTED BY THE SANITARY ENGINEER.

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**WATER DETAILS AND GENERAL NOTES**

**REGATTA SUBDIVISION**

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GRAVITY SANITARY SEWER NOTES

1. ALL SANITARY GRAVITY SEWERS 15 INCH IN DIAMETER AND SMALLER SHALL BE PVC, ASTM D-3034-SDR35 WITH PREMIUM JOINTS CONFORMING TO ASTM D-3212.
2. PRECAST SANITARY MANHOLES SHALL CONFORM TO ASTM SPECIFICATIONS DESIGNATION C-478 AND THE JOINTS BETWEEN SECTIONS SHALL CONFORM TO ASTM C-443 (RUBBER GASKET).
3. ALL SANITARY SEWERS SHALL BE TESTED FOR DEFLECTION AND INFILTRATION BY THE CONTRACTOR WHO SHALL BE LICENSED WITH THE SANITARY ENGINEERING DEPARTMENT. DEFLECTION SHALL NOT EXCEED 5 PERCENT. THE MAXIMUM RATE OF LEAKAGE OR INFILTRATION ALLOWABLE IS 100 GALLONS PER INCH OF PIPE DIAMETER PER MILE PER 24 HOURS. THE COST OF ALL MATERIALS, EQUIPMENT, LABOR AND INCIDENTALS NECESSARY FOR PERFORMING THE TEST AND MAKING ANY NECESSARY CORRECTIONS AND REPLACEMENTS SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
4. ALL SANITARY SEWERS SHALL BE INSTALLED WITH CONSTANT LINE AND GRADE USING LASER TECHNOLOGY.
5. ALL PIPE NOT CONNECTED DURING CONSTRUCTION OF THE PROJECT SHALL BE FITTED WITH PLUGS. AN 18 INCH LENGTH OF 1/2 INCH DIAMETER REBAR SHALL BE PLACED VERTICALLY ONE FOOT FROM THE PLUG AND EXTENDED TO ONE FOOT BELOW FINISH GRADE.
6. A MINIMUM OF 5 HORIZONTAL FEET SHALL SEPARATE THE SANITARY SEWER FROM ANY OTHER UTILITY EXCEPT FOR WATER LINES AND APPURTENANCES WHICH SHALL BE SEPARATED BY 10 FEET OF HORIZONTAL CLEARANCE AND 18 INCHES OF VERTICAL CLEARANCE WITH THE SANITARY SEWER BEING BELOW THE WATER LINE AND APPURTENANCES. WHEN IT IS NECESSARY TO CROSS WATER AND SANITARY SEWER MAINS, ALL UNDERGROUND UTILITIES SHALL CROSS MORE PERPENDICULAR THAN PARALLEL.
7. WHENEVER A SANITARY SEWER AND WATERLINE MUST CROSS, THE SEWER SHALL BE LAID AT SUCH AN ELEVATION THAT THE CROWN OF THE SEWER IS AT LEAST 18 INCHES BELOW THE BOTTOM OF THE WATER LINE. IF IT IS ABSOLUTELY IMPOSSIBLE TO MAINTAIN THE 18 INCH VERTICAL SEPARATION, THE SANITARY SEWER SHALL BE CONSTRUCTED OF WATER LINE TYPE MATERIALS WHICH WILL WITHSTAND A 50 PSI PRESSURE TEST. THESE REQUIREMENTS WILL EXTEND FOR A DISTANCE OF 10 FEET, MEASURED PERPENDICULAR, ON BOTH SIDES OF THE WATER LINE. CONSTRUCTION OF SEWERS IN STREAM BEDS IS NOT ACCEPTABLE EXCEPT FOR STREAM CROSSINGS.
8. MANHOLE COATINGS - THE INTERIOR SURFACE OF THE ENTIRE SANITARY SEWER MANHOLE SHALL BE COMPLETELY COATED IN THE FACTORY WITH POLYUREA OR URETHAN COATING AS REQUIRED FOR PUBLIC MANHOLES, SPECTRASHIELD OR APPROVED EQUAL.
9. TESTING REQUIREMENTS:  
  
UNLESS OTHERWISE DIRECTED BY THE ENGINEER, TESTS SHALL BE CONDUCTED ON THE SANITARY SEWER IN ACCORDANCE WITH SECTIONS OF THE OTTAWA COUNTY SEWER DISTRICT RULES AND REGULATIONS AS FOLLOWS:  
  
AIR TESTS FOR INFILTRATION AND EXFILTRATION-SECTION 7.0.4 AND ASTM F 1417  
TESTS FOR DEFLECTION- 7.0.5 AND ASTM D 2412  
VACUUM TESTING OF MANHOLES- 7.0.7 AND ASTM C 1244
10. PERMITS SHALL BE SECURED FOR SANITARY SEWER IMPROVEMENTS FROM THE O.C.S.E. PRIOR TO COMMENCING CONSTRUCTION. THE PROPERTY OWNER SHALL BE REQUIRED TO SECURE ALL REQUIRED PERMITS. COPIES OF SAID PERMITS SHOULD BE KEPT ON THE CONSTRUCTION SITE AND AVAILABLE FOR REVIEW AT ANYTIME. CONTRACTORS SHALL BE REQUIRED TO PROVIDE A VALID PERMIT NUMBER WHEN REQUESTING INSPECTIONS.
11. ALL SANITARY SEWER IMPROVEMENTS SHALL BE INSPECTED AND APPROVED BY THE OTTAWA COUNTY SANITARY ENGINEERING INSPECTOR PRIOR TO BACKFILLING THE IMPROVEMENTS. FORTY-EIGHT(48) HOURS NOTICE OF COMMENCING CONSTRUCTION SHALL BE GIVEN TO THE INSPECTOR PRIOR TO STARTING WORK. O.C.S.E. NOTIFICATIONS:  
  
FIELD OPERATIONS:  
DANBURY WASTEWATER TREATMENT PLANT  
AND REGIONAL WATER DIST. SYSTEM  
5785 E. VON GLAHN RD.  
LAKESIDE/MARBLEHEAD, OHIO 43440  
PHONE 419-734-5953  
FAX 419-734-7072  
  
OFFICE OPERATIONS:  
OTTAWA COUNTY SANITARY  
ENGINEERING (OFFICE)  
315 MADISON ST. ROOM 105  
PORT CLINTON, OHIO 43452  
PHONE 419-734-6725  
FAX 419-734-6858

12. CONNECTIONS OF DWELLINGS OR OTHER TYPE OF STRUCTURES SHALL NOT BE PERMITTED UNTIL THE SANITARY SEWER MAINS ARE INSTALLED, INSPECTED, AND APPROVED FOR USE UNLESS OTHERWISE STATED ON THE PERMIT ISSUED BY THE OTTAWA COUNTY SANITARY ENGINEERING DEPARTMENT. CLEAN WATER CONNECTIONS SUCH AS, BUT NOT LIMITED TO, SUMP PUMPS, DOWNSPOUTS, OR FOOTER DRAINS SHALL NOT BE PERMITTED TO BE CONNECTED TO THE SANITARY SEWER COLLECTION SYSTEM.
13. IT SHALL BE THE PROPERTY OWNER AND CONTRACTOR'S RESPONSIBILITY TO INSURE THAT ALL NECESSARY PERMITS OR APPROVALS ARE SECURED FROM ANY OTHER GOVERNMENTAL AGENCY, ASSOCIATION, OR ORGANIZATION THAT MAY HAVE THEIR JURISDICTION EFFECTED BY THE WATER AND/OR SANITARY SEWER IMPROVEMENTS.
14. MANHOLE CASTINGS - ALL MANHOLE CASTINGS SHALL BE SECURELY LAGGED WITH STAINLESS STEEL ANCHOR BOLTS TO THE MANHOLE TOP CONE SECTION, THROUGH ANY ADJUSTING RINGS.

WATERLINE NOTES

1. ALL WATER LINES AND ALL APPURTENANCES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE OTTAWA COUNTY REGIONAL WATER SYSTEM SPECIFICATIONS, TEN STATE STANDARDS, OHIO EPA, AWWA, AND THE DETAILS AND SPECIFICATIONS AS SHOWN ON THE WATERLINE DETAIL SHEET(S).
2. ALL WATER LINE PIPING 3-INCHES IN DIAMETER SHALL BE HIGH DENSITY POLYETHYLENE (HDPE) IPS AWWA C-901 SDR-9; PRESSURE CLASS 250 WITH GASKETED JOINTS MEETING THE REQUIREMENTS OF AWWA C-111/A-21.11 FOR TRENCH INSTALLATION, AND BUTT FUSION WELDED JOINTS FOR DIRECTIONAL BORE INSTALLATION, OR SHALL BE SDR-21 PVC WITH GASKETED JOINTS.
3. PIPING SHALL BE LAID TO A DEPTH WHICH WILL INSURE A MINIMUM COVER ABOVE THE PIPE NOT LESS THAN FOUR (4) FEET FROM THE PROPOSED GRADES.
4. ALL WATER LINE FITTINGS SHALL BE DUCTILE CAST IRON CONFORMING TO ANSI A21.10 WITH A MINIMUM CLASS OF 250 WITH MECHANICAL JOINT ENDS AS SPECIFIED IN ANSI A21.10. NO IMPORT DUCTILE CAST IRON FITTINGS SHALL BE ACCEPTED.
5. GATE VALVES 12-INCHES IN DIAMETER OR LESS SHALL BE COMPRESSION RESILIENT SEATED WITH MECHANICAL JOINTS AND NON RISING STEMS. VALVES SHALL TURN COUNTER CLOCKWISE, "LEFT" WITH A 2 INCH OPERATING NUT TO OPEN AND SHALL BE MODEL KS-FW AS MANUFACTURED BY KENNEDY.
6. VALVE BOXES SHALL BE PROVIDED FOR ALL GATE VALVES. VALVE BOXES SHALL BE BUFFALO STYLE, TYLER BRAND, WITH "WATER" WRITTEN ON TOP. NO IMPORT VALVE BOXES FOR GATE VALVES SHALL BE ACCEPTED.
7. CORROSION CONTROL THROUGH THE USE OF MAGNESIUM ANODES SHALL BE INSTALLED ON ALL DUCTILE CAST IRON COMPONENTS OF THE WATERLINE INCLUDING ALL FITTINGS, VALVES AND HYDRANTS. TEST STATIONS SHALL BE INSTALLED AT ALL OF THE ANODE LOCATIONS FOR MONITORING PURPOSES. (SEE DETAILED DRAWINGS). ONLY TEST STATIONS MANUFACTURED BY C.P. TEST SERVICES SHALL BE INSTALLED AT ANODE LOCATIONS.
8. MEGA-LUGS SHALL BE INSTALLED AT ALL BENDS, TEES, END CAPS, AND VALVES.
9. THE CONTRACTOR SHALL BE REQUIRED TO INSTALL A DETECTABLE TRACER TAPE AND TWO (2) TRACER WIRES DIRECTLY OVER AND ON THE CENTER OF THE MAIN FOR ENTIRE LENGTH TO PROVIDE A REFLECTION PATH (INDUCTIVE) TO DETERMINE PIPE ALIGNMENT AND LOCATION AFTER INSTALLATION. DETECTABLE TRACER TAPE SHALL BE 3" WIDE PIGMENTED IN BLUE WARNING COLORS AND SHALL READ "BURIED WATERLINE BELOW." WARNING TAPE SHALL BE MADE OF TOUGH HIGH DENSITY CROSS LAMINATED PLASTIC FILMS. THE MAXIMUM DEPTH OF THE BURIED TAPE IS 18 INCHES. TRACER WIRES SHALL BE INSTALLED AT THE TOP OF THE PIPE AND SHALL BE #12 AWG COPPER CLAD STEEL CORE, HIGH STRENGTH, WITH MINIMUM 30 MIL HDPE BLUE COLORED INSULATION. TRACER WIRE SHALL BE STRUNG AND BURIED CONTINUOUSLY ALONG THE WATERLINE AND TERMINATED INSIDE OF ALL VALVE BOXES, INCLUDING FIRE HYDRANT WATCH VALVES. CONTRACTOR SHALL PERFORM CONTINUITY TEST ON TRACER WIRE TO ENSURE CONTINUITY OF THE TRACER WIRE OVER THE LENGTH OF THE WATERLINE AND ACCESS IS AVAILABLE IN ALL VALVE BOXES.
10. MAINTAIN A MINIMUM OF 12 INCH VERTICAL SEPARATION AND MINIMUM OF FOUR (4) FEET HORIZONTAL SEPARATION BETWEEN ALL WATER MAINS AND STORM SEWERS, PER OEPA REQUIREMENTS.
11. MAINTAIN A MINIMUM OF 18 INCH VERTICAL SEPARATION AND MINIMUM OF 10' HORIZONTAL SEPARATION BETWEEN ALL WATER MAINS AND ALL SANITARY SEWERS, PER OEPA REQUIREMENTS. ALL OTHER UNDERGROUND UTILITIES REQUIRE A MINIMUM OF FIVE (5) FEET HORIZONTAL SEPARATION.
12. CONTRACTOR SHALL BE RESPONSIBLE FOR HYDROSTATIC PRESSURE TESTING AND DISINFECTION OF WATER MAINS AS REQUIRED BY THE OTTAWA COUNTY SANITARY ENGINEER PRIOR TO FINAL ACCEPTANCE. AFTER MAIN HAS BEEN DISINFECTED AND TESTED FOR LEAKAGE, BACTERIOLOGICAL SAMPLES SHALL BE COLLECTED PER COUNTY REGULATIONS.

13. THE OHIO ENVIRONMENTAL PROTECTION AGENCY REQUIRES CONFORMANCE TO THE 2003 EDITION OF "RECOMMENDED STANDARDS FOR WATER WORKS" THIS STANDARD SHALL BE EQUALED OR EXCEEDED FOR WATER LINES, SPECIAL ATTENTION SHALL BE GIVEN TO THE FOLLOWING SECTIONS OF PART 8:

- 8.1.1. MATERIALS CONFORM TO AWWA STANDARDS
- 8.1.2. MINIMUM 6 INCH DIAMETER FIRE PROTECTION
- 8.5.3. MINIMUM 4 FEET GROUND COVER
- 8.5.5. PRESSURE TESTING AWWA C-600-RESPONSIBILITY\*
- 8.5.6. DISINFECTION AWWA C-651-RESPONSIBILITY\*
- 8.6.2. 10 FEET HORIZONTAL SEPARATION WATER MAIN/SEWER
- 8.6.3. 18 INCH VERTICAL SEPARATION WATER MAIN/SEWER
- 8.6.6. NO ENTRY AND/OR CONTACT WITH SEWER MANHOLE. ANY DEVIATION FROM THE ABOVE WILL NOT BE PERMITTED UNLESS SPECIFICALLY INCLUDED IN THE SPECIFICATIONS OR OTHERWISE SHOWN ON THESE PLANS.

\*NOTE: IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PERFORM THIS TEST PROPERLY. RESPONSIBILITY FOR SUPERVISION AND APPROVAL RESTS WITH THE WATER SUPPLIER OR LOCAL GOVERNMENTAL AGENCY.

IN CASES WHERE ONE OR MORE OF THE ABOVE MENTIONED OHIO EPA STANDARDS FALL SHORT OF LOCAL STANDARDS, THE LATTER SHALL GOVERN. ALL WATERLINE PIPING SHALL BE LAID TO A DEPTH WHICH WILL INSURE A MINIMUM COVER ABOVE THE PIPE NOT LESS THAN FOUR (4) FEET FROM THE PROPOSED GRADES.

WATER SERVICE LINES AND CONNECTIONS

1. SERVICE LATERALS: FOR 3/4" AND 1" DIAMETER SERVICE LINES TYPE "K" COPPER WITH FLARED OR COMPRESSION FITTINGS OR POLYETHYLENE TUBING AWWA C901. SDR9, PRESSURE CLASS 200 (CTS), ASTM D2737, WITH MECHANICAL COMPRESSION FITTINGS AND INSERT STIFFENERS FOR CONNECTIONS SHALL BE USED. FOR ALL 1 1/2" AND 2" DIAMETER SERVICE LINES POLYETHYLENE TUBING AWWA C901. SDR9, PRESSURE CLASS 200 (CTS), ASTM D2737, WITH MECHANICAL COMPRESSION FITTINGS AND INSERT STIFFENERS FOR CONNECTIONS SHALL BE USED.
2. SADDLES: SERVICE SADDLES ARE REQUIRED WHEN TAPPING ANY PVC MAIN LINE. ALL SERVICE SADDLES SHALL BE ALL STAINLESS STEEL, INCL. FLANGE, TYPE 304 GRADE 18-8 AND AS RECOMMENDED BY THE PIPE MANUFACTURER. SERVICE SADDLES SHALL BE A MINIMUM OF 6" WIDE WITH A DOUBLE BOLT. WELDS USED IN THE SADDLE CONSTRUCTION SHALL CONFORM TO ALL AWS CODES AND BE CHEMICALLY PASSIVATED. SERVICE SADDLES USED WITH 12" DIAMETER AND UNDER PVC PIPE SHALL BE ROMAC "306" SERIES, STYLE FS323 AS MANUFACTURED BY FORD METER BOX COMPANY OR APPROVED EQUAL.
3. CORPORATION STOPS: ALL SERVICES 3/4" TO 2" SHALL HAVE A CORPORATION STOP UNLESS OTHERWISE NOTED. ALL CORPORATION STOPS MUST BE FULL PORT VALVE (OPENING NOT RESTRICTED) CORPORATION STOPS SHALL BE:  
  
3/4"-1" MUELLER COMPANY, MODEL H-15000N-FLARE OR MODEL H-15008N-COMP.  
  
1 1/2"-2" MUELLER COMPANY, MODEL H-15013N  
  
3" AND LARGER: MUELLER COMPANY, STAINLESS STEEL TAPPING SLEEVE (4"-24"), OR AS APPROVED BY THE COUNTY
4. CURB STOPS: ALL SERVICES 3/4" TO 2" SHALL HAVE A CURB STOP UNLESS NOTED. CURB STOPS SHALL BE:  
  
3/4"-1" MUELLER COMPANY, MODEL H-1515IN-FLARE OR MODEL B-25155N-COMP.  
  
1 1/2"-2" MUELLER COMPANY, MODEL B-25155N (COMPRESSION STYLE)  
  
3"-12" KENNEDY, "KEN SEAL II" GATE VALVE
5. CURB BOXES: EACH STOP SHALL BE PROVIDED WITH A CURB BOX. CURB BOXES SHALL BE:  
  
3/4" MUELLER COMPANY, MODEL H-10300-99008 (MINNEAPOLIS STYLE). MINIMUM OF 54" EXTENDED LENGTH. LID SHALL READ "WATER"  
  
1" MUELLER COMPANY, MODEL H-10300-99008 (MINNEAPOLIS STYLE). MINIMUM OF 54" EXTENDED LENGTH. LID SHALL READ "WATER"  
  
1 1/2"-2" MUELLER COMPANY, MODEL H-10302-99007 (MINNEAPOLIS STYLE). MINIMUM OF 54" EXTENDED LENGTH. LID SHALL READ "WATER"  
  
3" AND LARGER: TYLER BRAND (BUFFALO STYLE) OR EQUAL AND AS APPROVED. LID SHALL READ "WATER"

6. METER PITS: ALL COUNTY, OWNED, OPERATED, AND MAINTAINED METER PITS SHALL BE LOCATED WITHIN 3 FEET OF THE CURB STOP AND BOX UNLESS OTHERWISE APPROVED BY THE SANITARY ENGINEER AND SHALL MEET THE FOLLOWING SPECIFICATIONS:

\*5/8"-3/4" CARSON METER PIT HOUSING (OLD CASTLE PRECAST, INC) CARSON 00182004, 18" DIAMETER, 36" DEPTH(LENGTH) WITH FORD W32 METER PIT CASTING. CARSON (LID) 00004003 MS-IL1-DN PLASTIC METER LID WITH RADIO READ MODULE (ERT).

\*3/4"-1" CARSON METER PIT HOUSING (OLD CASTLE PRECAST, INC.) CARSON 00242004, 24" DIAMETER, 36" DEPTH(LENGTH) WITH FORD METER BOX CO. EXTENSION RING EXT-1 CASTING. CARSON (LID) 00004003 MS-IL1-SN PLASTIC METER LID WITH RADIO READ MODULE (ERT).

\*1 1/2"-2" CARSON METER PIT HOUSING (OLD CASTLE PRECAST, INC.) CARSON 00362003, 36" DIAMETER, 36" DEPTH(LENGTH) WITH 2" METER BOX LID (CASTING) FORD MC-36-MB-T

\*3" AND LARGER PRECAST CONCRETE METER VAULT 8.0'x 6.0' +/- (PER COUNTY REVIEW).

7. METER SETTING: THE METER SETTING SHALL MEET THE FOLLOWING SPECIFICATIONS:

\*5/8", 3/4" & 1" - FORD METER BOX CO., Y-500 SERIES METER YOKE. SHALL HAVE INTEGRAL ANGLE YOKE BALL VALVE INLET. SHALL HAVE INTEGRAL ANGLE DUAL CHECK VALVE OUTLET.

\*1 1/2"-2" - MUELLER B-2423-2N SERIES METER SETTER. SHALL HAVE INTEGRAL ANGLE YOKE BALL VALVE. SHALL HAVE ANGLE DUAL CHECK VALVE OUTLET.

\*3" & LARGER: AS AGREED UPON BY THE METER MANUFACTURER AND THE COUNTY. TYPICALLY A FLANGED CONNECTION ON EACH END. SHALL HAVE AN INLET AND OUTLET GATE VALVE (SEE CURB VALVES). SHALL HAVE AN APPROVED DUAL TYPE CHECK VALVE (SEPARATE)

8. WATER METERS: THE OTTAWA COUNTY REGIONAL WATER SYSTEM UTILIZES A RADIO READ METERING SYSTEM AND ALL METERS ARE TO REGISTER IN U.S. GALLONS. THE METERS MEET THE FOLLOWING SPECIFICATIONS:

\*5/8"-1 1/2" INVENSYS, MODEL SR POSITIVE DISPLACEMENT METERS

\*2"-6" INVENSYS, MODEL SRH, COMPOUND METER

9. REMOTE SYSTEM- A REMOTE SYSTEM, INVENSYS MODEL ECR WP,TR-PL WITH FACTORY ASSEMBLED ITRON AND END CAP AND CABLE FOR USE WITH A 50 W ITRON RADIO READ PIT ERT SYSTEM AND COMPATIBLE WITH THE ONE IN USE BY THE OTTAWA COUNTY SANITARY ENGINEERING DEPARTMENT SHALL BE FURNISHED AND INSTALLED WITH EACH WATER METER.

**STORM WATER POLLUTION PREVENTION NOTES**

ALL ITEMS SPECIFIED AS AN ODOT ITEM SHALL BE GOVERNED BY THE CURRENT STATE OF OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATION HANDBOOK. ALL OTHER ITEMS SHOULD CONFORM TO SPECIFICATIONS CONTAINED IN THE O.D.N.R. MANUAL - RAINWATER AND LAND DEVELOPMENT.

THIS CONTRACT DRAWING SHALL BE MADE AVAILABLE ON SITE AT ALL TIMES AND PRESENTED UPON REQUEST. IF UNFORESEEN EROSION IS ENCOUNTERED, ADDITIONAL EROSION AND SEDIMENTATION CONTROL MEASURES MAY BE REQUESTED BY THE OWNER, CITY ENGINEER, PROJECT ENGINEER, OR SOIL CONSERVATION SERVICE REPRESENTATIVE, AT ANY TIME. SUCH REQUESTS SHALL BE IMPLEMENTED IMMEDIATELY AT CONTRACTOR'S EXPENSE.

ALL EROSION AND SEDIMENTATION CONTROL ITEMS SHALL BE INSTALLED AS SHOWN ON THE STORM WATER POLLUTION PREVENTION DETAIL SHEET.

PLAN ODOT ITEM 207 TEMPORARY SEEDING AND MULCHING IN ALL AREAS THAT SHALL BE INACTIVE FOR 21 DAYS OR MORE. ALL DISTURBED AND ERODED EARTH SHALL BE REGRADED AND SEEDING WITHIN 7 DAYS WITH SEEDING, AS DEFINED ABOVE AND AS SHOWN ON THE TABLE BELOW, TO ESTABLISH STABILITY AND PROVIDE SEDIMENT CONTROL. WHERE POSSIBLE, TEMPORARY SEEDING GROWTH SHALL NOT BE MOWED UNTIL IT HAS GONE TO SEED FOR 1 YEAR.

**TEMPORARY SEEDING SPECIFICATION:**

SEEDING DATES	TYPE	APPLICATION RATE/1,000 SF.
MARCH 1 - AUGUST 15	OATS	3 LBS.
	PERENNIAL RYE GRASS	1 LBS.
	TALL FESCUE 3	1 LBS.
AUGUST 16 - NOVEMBER 1	RYE OR WHEAT	3 LBS.
	PERENNIAL RYE GRASS	1 LBS.
	TALL FESCUE	1 LBS.
AFTER NOVEMBER 1	STRAW OR HAY MULCH	2 - 3 BALES
	SEED BED PREPARATION LIME	100 LBS.
	10-10-10 OR 12-12-12 FERTILIZER	12-15 LBS.

SILT FENCE SEDIMENT BARRIERS AND SEDIMENT PITS SHALL BE INSTALLED AROUND ALL EXISTING OR NEW STORM INLETS, CATCH BASINS, YARD DRAINS. STRAW BALES SHALL BE STACKED TWO (2) HIGH. INSTALL ROCK CHECK DAMS FOR HEADWALL INLETS TO CONTROL SOIL EROSION.

EROSION CONTROL MEASURES SHALL BE INSTALLED AROUND DIRT OR TOPSOIL STOCKPILES AND OTHER TEMPORARILY DISTURBED AREAS AS SHOWN ON THESE PLANS AND AS DIRECTED BY THE ENGINEER.

TEMPORARY SEDIMENTATION AND EROSION CONTROL MEASURES MUST BE INSPECTED AND LOGGED BY THE CONTRACTOR FOR THE OHIO EPA, LOGGING SHALL BE WEEKLY AND AFTER RAIN STORMS.

UTILITY COMPANIES MUST COMPLY WITH ALL STORM WATER POLLUTION PREVENTION MEASURES AS DEFINED ON THE STORM WATER POLLUTION PREVENTION PLANS, DETAILS AND NOTES.

ALL EXISTING WATER COURSES WITHIN THE PROJECT LIMITS SHALL BE TEMPORARILY PROTECTED DURING LAND CLEARING AND GRADING OPERATIONS. SOILS WITHIN 50 FEET OF SAID WATER COURSES SHALL BE STABILIZED WITHIN 2 DAYS OR THE INITIAL CLEARING/GRADING OPERATION AS SHOWN ON PLANS.

ALL DISTURBED AREAS SHALL BE STABILIZED WITHIN 7 DAYS OF FINAL GRADING.

IT IS THE CONTRACTORS RESPONSIBILITY TO MAINTAIN ALL SEDIMENTATION AND EROSION CONTROL AT ALL TIMES.

ALL STORM WATER POLLUTION PREVENTION PRACTICES WILL BE INSTALLED FIRST BEFORE ANY EARTH MOVING OCCURS.

THE FOLLOWING EROSION AND SEDIMENT CONTROL MEASURES WILL BE USED ON THIS SITE:  
SILT FENCES, STORM DRAIN INLET, CHECK DAMS, AND FILTER STONE.

**CONSTRUCTION SEQUENCE**

GENERAL CONSTRUCTION ACTIVITIES:  
THIS PROJECT WILL PROVIDE BUILDING SITES.

GENERAL CONSTRUCTION SEQUENCE:  
TEMPORARY SEDIMENTATION AND EROSION CONTROL ITEMS SHALL BE INSTALLED.

INSTALLATION OF SITE IMPROVEMENTS:  
AT COMPLETION OF SITE IMPROVEMENTS, TEMPORARY OR PERMANENT SEEDING AND MULCHING SHALL BE INSTALLED AS DESIGNATED ON THE STORM WATER POLLUTION PREVENTION PLAN.

AT COMPLETION OF PERMANENT STORM WATER CONTROL STRUCTURES AND SITE IS SUFFICIENTLY STABLE.

**SILT FENCE CONSTRUCTION SPECIFICATIONS:**

THE HEIGHT OF A SILT FENCE SHALL NOT EXCEED 36", OR BE LESS THAN 16". STORAGE HEIGHT SHALL NEVER EXCEED 18" OR HALF THE TOTAL HEIGHT ABOVE GROUND. THE FENCE LINE SHALL FOLLOW THE CONTOURS AS CLOSELY AS POSSIBLE. IF POSSIBLE, THE FILTER FABRIC SHALL BE CUT FROM A CONTINUOUS ROLL TO AVOID THE USE OF JOINTS. WHEN JOINTS ARE NECESSARY, FILTER CLOTH SHALL BE SECURELY WRAPPED AROUND THE POST. POSTS SHALL BE SPACED A MAXIMUM OF 10 FEET APART AND DRIVEN SECURELY INTO THE GROUND (MINIMUM OF 16 INCHES) ON THE DOWNSLOPE SIDE OF THE GEOTEXTILE. WHEN EXTRA STRENGTH FABRIC IS USED WITHOUT THE WIRE SUPPORT FENCE, POST SPACING SHALL NOT EXCEED 6 FEET. WHERE POSSIBLE, VEGETATION SHALL BE PRESERVED FOR 5' UPSLOPE ± FROM THE SILT FENCE. IF VEGETATION IS REMOVED, IT SHALL BE RESTORED WITHIN 7 DAYS FROM INSTALLATION. TURN THE ENDS OF THE FENCE UPHILL APPROXIMATELY 2 FEET. A TRENCH SHALL BE EXCAVATED APPROXIMATELY 4 INCHES WIDE AND 6 INCHES DEEP ALONG THE LINE OF POSTS AND UPSLOPE FROM THE BARRIER. SUPPORT FENCE SHALL BE FASTENED SECURELY TO THE UPSLOPE SIDE OF THE POSTS USING HEAVY-DUTY WIRE STAPLES AT LEAST 1 INCH LONG, TIE WIRES, OR HOG RINGS. THE WIRE SHALL EXTEND INTO THE TRENCH A MINIMUM OF 2 INCHES AND SHALL NOT EXTEND MORE THAN 36 INCHES ABOVE THE ORIGINAL GROUND SURFACE. THE STANDARD-STRENGTH FILTER FABRIC SHALL BE STAPLED OR WIRED TO THE FENCE, AND 8 INCHES OF THE FABRIC SHALL EXTEND INTO THE TRENCH. THE FABRIC SHALL NOT EXTEND MORE THAN 36 INCHES ABOVE THE ORIGINAL GROUND SURFACE. FILTER FABRIC SHALL NOT BE STAPLED TO EXISTING TREES. WHEN EXTRA-STRENGTH FILTER FABRIC AND CLOSER POST SPACING ARE USED, THE WIRE MESH SUPPORT FENCE MAY BE ELIMINATED. IN SUCH A CASE, THE FILTER FABRIC IS STAPLED OR WIRED DIRECTLY TO THE POSTS. THE TRENCH SHALL BE BACKFILLED AND THE SOIL COMPACTED OVER THE TOE OF THE FILTER FABRIC. SILT FENCES PLACED AT THE TOE OF A SLOPE SHALL BE SET AT LEAST 10 FEET FROM THE TOE IN ORDER TO INCREASE PONDING VOLUME. SILT FENCES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFUL PURPOSE, BUT NOT BEFORE THE UPSLOPE AREA HAS BEEN PERMANENTLY STABILIZED, AND ANY SEDIMENT STORED BEHIND THE SILT FENCE HAS BEEN REMOVED.

**INSPECTION AND MAINTENANCE:**

SILT FENCES AND FILTER BARRIERS SHALL BE INSPECTED WEEKLY AND AFTER EACH SIGNIFICANT STORM (1/2" IN 24 HR.). ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY. SEDIMENT SHALL BE REMOVED WHEN IT REACHES 1/3 HEIGHT OF THE FENCE (9 INCHES MAXIMUM). THE REMOVED SEDIMENT SHALL VEGETATE OR BE OTHERWISE STABILIZED. SILT FENCES SHALL BE REPLACED WHEN THE FENCE IS NO LONGER DETAINING WATER FOR SEDIMENTATION.

**DROP INLET SEDIMENT BARRIERS SILT FENCE SEDIMENT BARRIER:**

INLET PROTECTION SHALL BE CONSTRUCTED EITHER BEFORE UPSLOPE LAND DISTURBANCE BEGINS, OR BEFORE THE STORM DRAIN BECOMES OPERATIONAL. SUPPORT POSTS FOR A SILT FENCE MUST BE STEEL FENCE POSTS, OR 2 x 4- INCH WOOD, LENGTH 3 FEET MINIMUM, SPACING 3 FEET MAXIMUM, WITH A TOP FRAME SUPPORT. THE EARTH AROUND THE INLET SHALL BE EXCAVATED TO A DEPTH OF AT LEAST 18 INCHES. THE POSTS SHALL BE DRIVEN 18 INCHES INTO THE GROUND AT FOUR CORNERS OF THE INLET AND THE TOP PORTION OF THE FRAME ASSEMBLED USING THE OVERLAP JOINT METHOD SHOWN IN THE SILT FENCE DETAIL. THE TOP OF THE FRAME SHALL BE AT LEAST 6 INCHES BELOW ADJACENT ROADS IF PONDED WATER WOULD POSE A SAFETY HAZARD TO TRAFFIC. WIRE MESH SHALL BE OF SUFFICIENT STRENGTH TO SUPPORT FABRIC WITH WATER FULLY IMPOUNDED AGAINST IT. IT SHALL BE STRETCHED TIGHTLY AROUND THE FRAME AND FASTENED SECURELY TO THE FRAME. GEOTEXTILE SHALL HAVE AN EQUIVALENT OPENING SIZE OF 20-40 SIEVE AND BE RESISTANT TO SUNLIGHT. IT SHALL BE STRETCHED TIGHTLY AROUND THE FRAME AND FASTENED SECURELY. IT SHALL EXTEND FROM THE TOP OF THE FRAME TO 18 INCHES BELOW THE INLET NOTCH ELEVATION. THE GEOTEXTILE SHALL OVERLAP ACROSS ONE SIDE OF THE INLET SO THE ENDS OF THE CLOTH ARE NOT FASTENED TO THE SAME POST. BACKFILL SHALL BE PLACED AROUND THE INLET IN COMPACTED 6-INCH LAYERS UNTIL THE EARTH IS EVEN WITH NOTCH ELEVATION ON ENDS AND TOP ELEVATION ON SIDES. A COMPACTED EARTH DIKE OR A CHECK DAM SHALL BE CONSTRUCTED IN THE DITCH LINE BELOW THE INLET IF THE INLET IS NOT IN A DEPRESSION AND IF RUNOFF BYPASSING THE INLET WILL NOT FLOW TO A SETTLING POND. THE TOP OF EARTH DIKES SHALL BE AT LEAST 6 INCHES HIGHER THAN THE TOP OF THE FRAME. FOR CURB INLETS, DANDY BAG TYPE INLET PROTECTION MEASURES SHALL BE USED.

**INSPECTION AND MAINTENANCE:**

INSPECT THE BARRIER AFTER EACH RAIN AND PROMPTLY MAKE REPAIRS AS NEEDED. SEDIMENT SHALL BE REMOVED AFTER EACH SIGNIFICANT STORM (1/2" IN 24 HOURS) TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN. THE REMOVED SEDIMENT SHALL BE DEPOSITED IN AN AREA THAT WILL NOT CONTRIBUTE SEDIMENT OFF-SITE AND CAN BE PERMANENTLY STABILIZED. FOR GRAVEL FILTERS: IF THE GRAVEL BECOMES CLOGGED WITH SEDIMENT IT MUST BE CAREFULLY REMOVED FROM THE INLET AND EITHER CLEANED OR REPLACED.

**INSPECTION AND MAINTENANCE:**

INSPECT AND CLEAN THE BARRIER AFTER EACH SIGNIFICANT STORM (1" IN 24 HOURS) AND REMOVE SEDIMENT FROM BEHIND THE STRUCTURE AFTER EVERY STORM. SEDIMENT AND GRAVEL SHALL ALSO BE IMMEDIATELY REMOVED FROM THE TRAVELED WAY OF ROADS. THE REMOVED SEDIMENT SHALL BE REPLACED WHERE IT CANNOT ENTER A STORM DRAIN, STREAM, OR BE TRANSPORTED OFF SITE.

**STORM SEWER**

THE CONTRACTOR MAY USE THE FOLLOWING MATERIAL SPECIFICATIONS IN PREPARING THE UNIT PRICE BID FOR THE STORM SEWER CONDUIT.

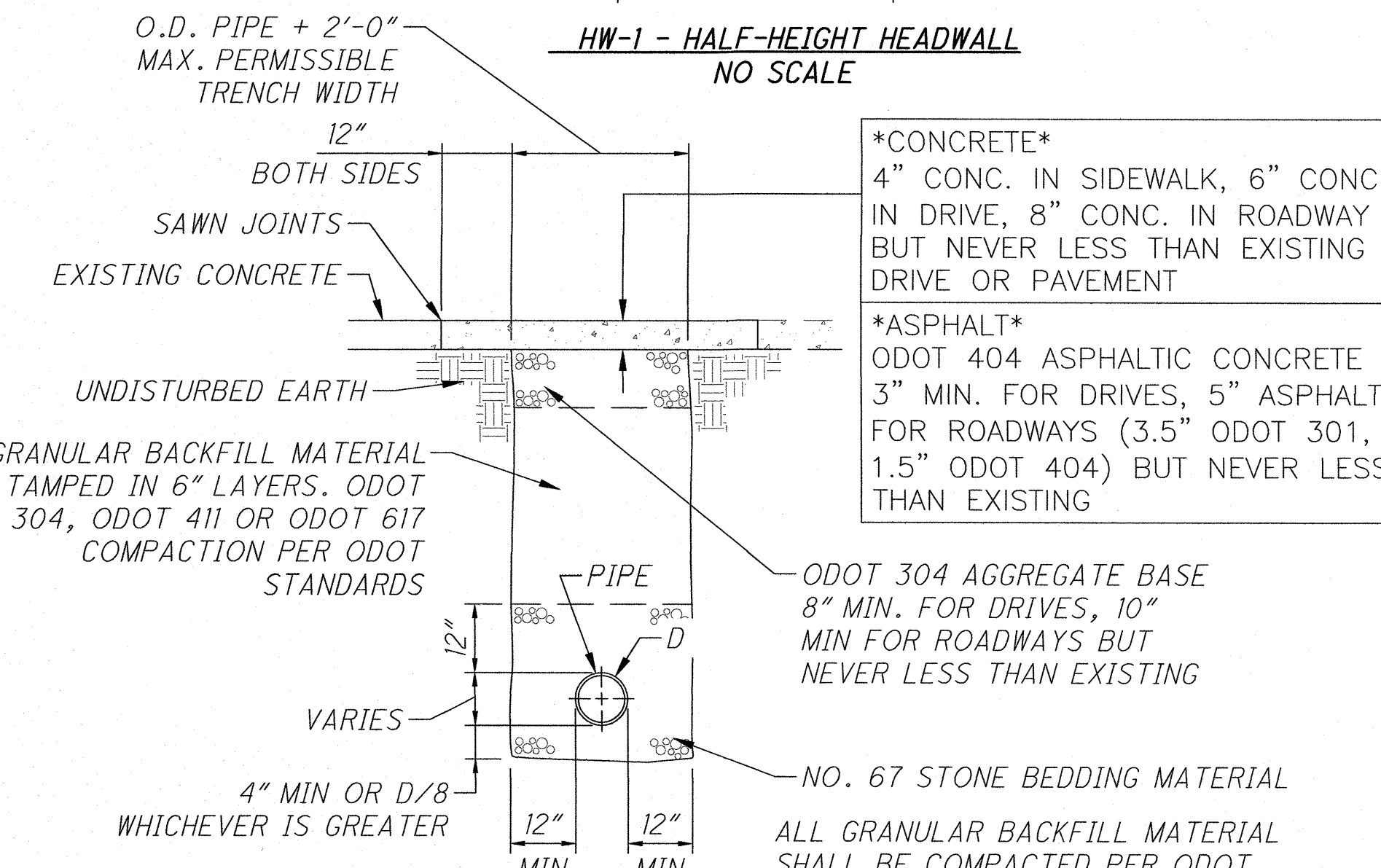
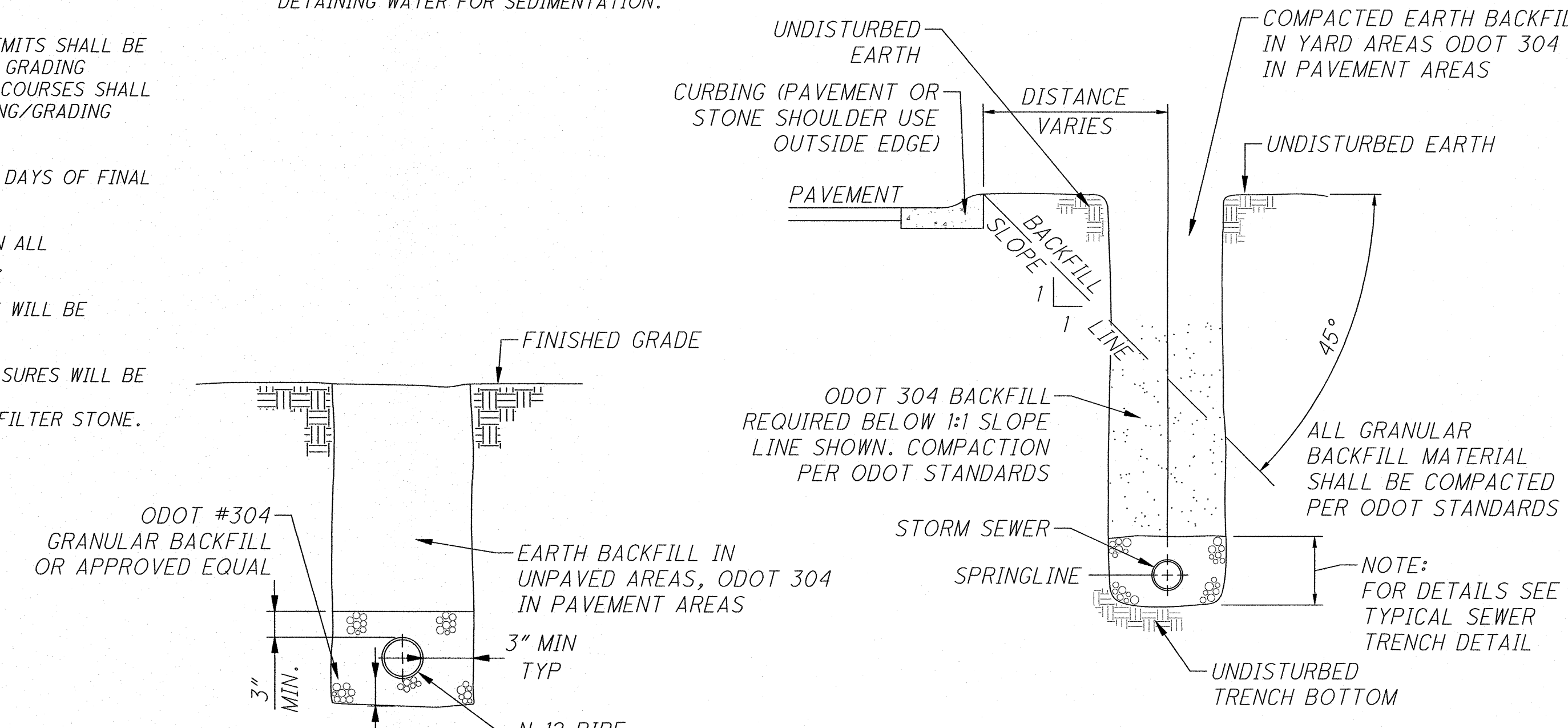
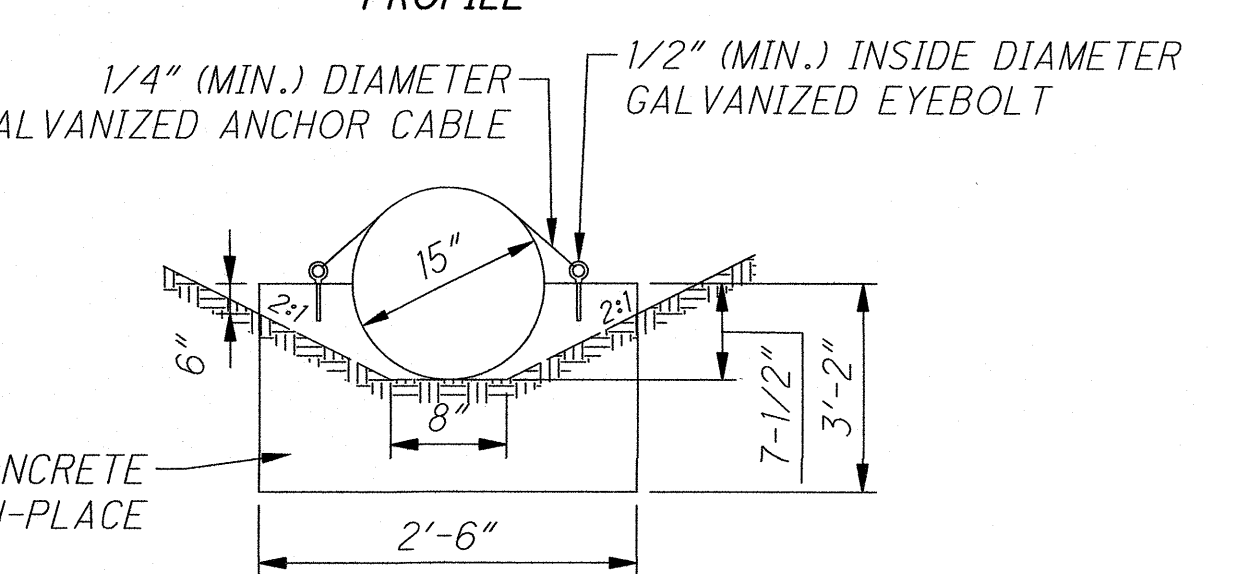
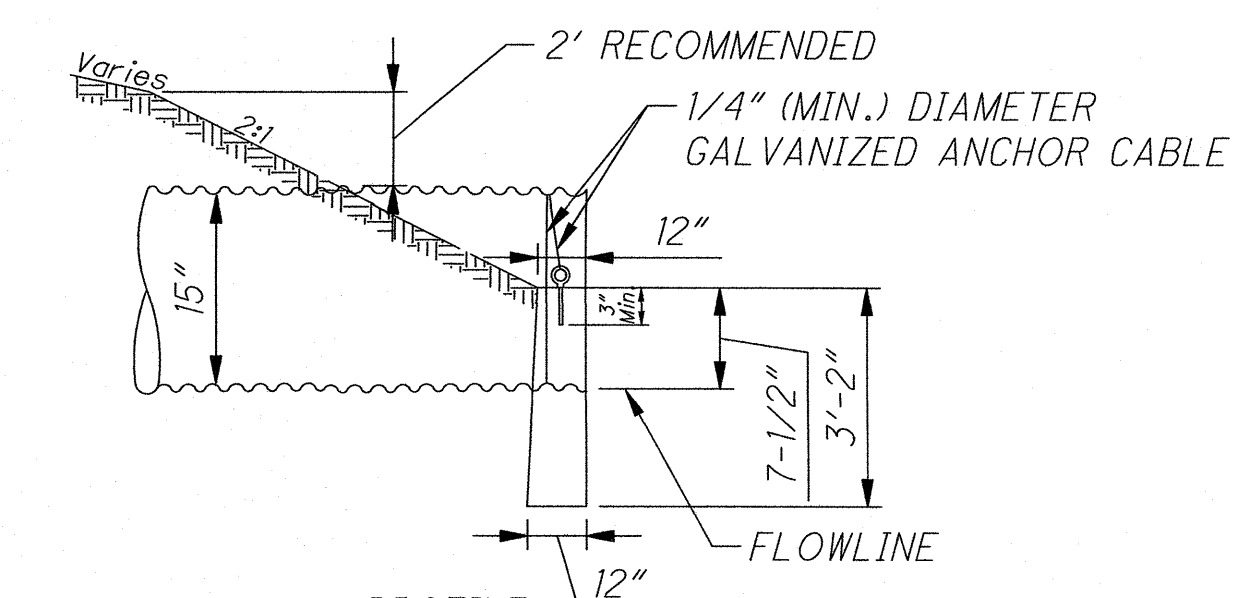
1. STORM SEWER - FOR SIZES 8" - 18" USE ODOT TYPE "B" STORM SEWER PIPE MEETING ODOT 707.33 SPECIFICATIONS OR OTTAWA COUNTY APPROVED EQUIVALENT
2. UNDERDRAINS - FOR SIZE 4" UNDERDRAIN PIPE USE ODOT TYPE "F" SHALLOW PIPE UNDER DRAIN PERFORATED CONDUIT, OR OTTAWA COUNTY APPROVED EQUIVALENT
3. CULVERT AT DRIVE WAY - FOR SIZE 12" USE REINFORCED CONCRETE PIPE PER ODOT 706.02 SPECIFICATIONS OR OTTAWA COUNTY APPROVED EQUIVALENT

TO INSURE PROPER HORIZONTAL AND VERTICAL ALIGNMENT OF THE STORM SEWERS DURING CONSTRUCTION, THE CONTRACTOR SHALL USE A LASER ALIGNMENT DEVICE CAPABLE OF BOTH HORIZONTAL AND VERTICAL ADJUSTMENT.

ALL TRENCHES FOR THE STORM SEWER SHALL CONFORM TO THE STANDARD DRAWINGS HEREIN FOR STORM SEWERS. NO SEPARATE PAYMENT FOR TRENCH AND BEDDING WILL BE MADE. COST SHALL BE INCLUDED IN THE CONTRACT UNIT PRICES FOR THE STORM SEWER.

ALL CATCH BASINS SHALL CONFORM TO ODOT STANDARD DETAIL CB 2-2-B WITH A 12" SUMP BELOW THE LOWEST INVERT.

FRAME AND GRATE FOR CURB INLETS SHALL BE NEENAH 3501-L2 FOR ODOT 2-2-B CATCH BASIN. CURB INLET GRADE ELEVATIONS FOR CB-1 THROUGH CB-5 ARE LOCATED 15" BEHIND EDGE OF PAVEMENT.



**N-12 PIPE TYPICAL TRENCH DETAIL**  
NO SCALE

**GRANULAR BACKFILL OF STORM SEWER TRENCH ALONG PUBLIC STREET OR ROAD**  
NO SCALE

**TRENCH DETAIL IN PAVEMENT**  
NO SCALE

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**INLET PROTECTION**

**INSTALLATION:** STAND GRATE ON END, PLACE CASTING IN BAG, FLIP GRATE OVER SO THAT OPEN END IS UP, PULL BACK SLACK, TUCK FLAP IN. BE SURE END OF GRATE IS COMPLETELY COVERED BY FLAP OR BAG WILL NOT FIT PROPERLY. HOLDING HANDLES, CAREFULLY PLACE THE BAG WITH GRATE INSERTED INTO CATCH BASIN FRAME. NO CASTING SHALL BE WRAPPED WITH LOOSE GEOSYNTHETIC MATERIAL, ONLY A BAG TYPE SYSTEM IS ACCEPTABLE.

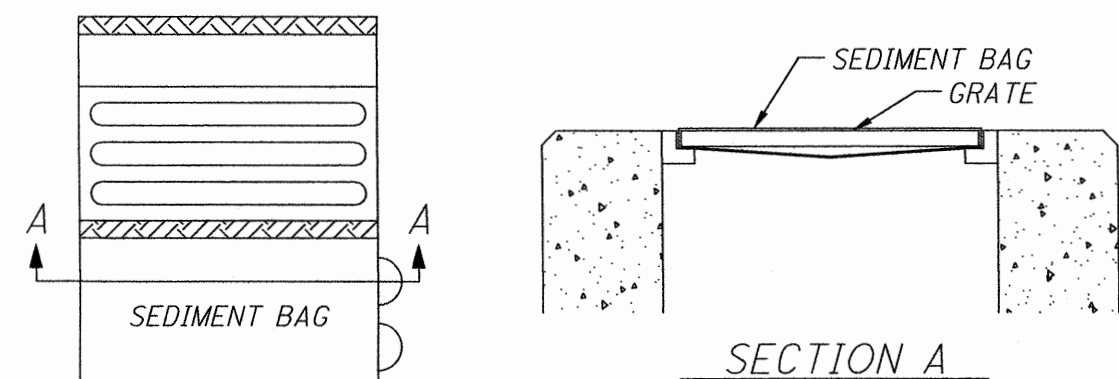
**MAINTENANCE:** AFTER SILT HAS DRIED, REMOVE IT FROM THE SURFACE OF THE BAG WITH BROOM.

SEDIMENT BAGS SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL.

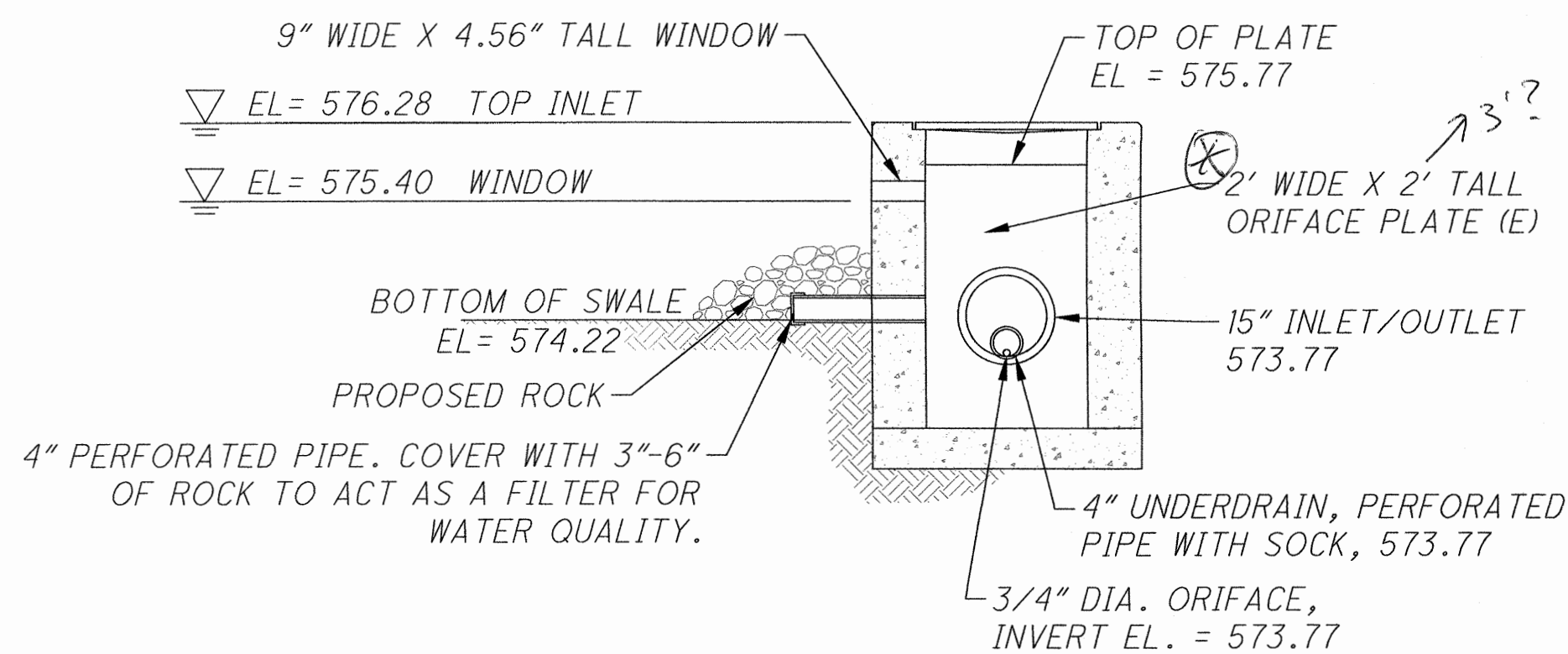
NECESSARY REPAIRS TO BARRIERS OR REPLACEMENT OF SEDIMENT BAGS SHALL BE ACCOMPLISHED PROMPTLY.

SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH RAINFALL. SEDIMENT DEPOSITS MUST BE REMOVED WHEN THE LEVEL OF DEPOSITION REACHES APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER.

ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SEDIMENT BAG BARRIER IS NO LONGER REQUIRED SHALL BE DRESSED TO CONFORM TO THE EXISTING GRADE, PREPARED AND SEEDED.



TO BE USED ON CATCH BASINS



**CB-6 - WATER QUALITY DETENTION STRUCTURE DETAIL**  
NO SCALE

- LEGEND**
- (SF) --- SILT FENCE
  - (PS) PERMANENT SEEDING
  - (CE) CONSTRUCTION ENTRANCE
  - (CD) ROCK CHECK DAM
  - (●) INLET PROTECTION

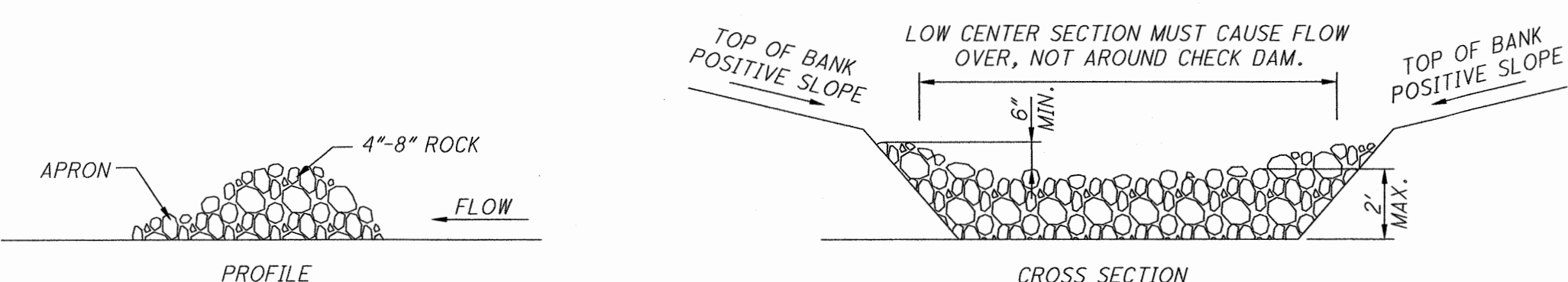
**THIS SITE CONSISTS OF THE FOLLOWING SOIL TYPES:**

- NPA - NAPPANEE SILTY CLAY LOAM, 0 TO 3 PERCENT SLOPES
- TP - TOLEDO SILTY CLAY, 0 TO 1 PERCENT SLOPES, FLOODED

**NOTE:**  
**MAINTENANCE OF THIS STRUCTURE IS CRITICAL TO THE PERFORMANCE OF THE WATER QUALITY DETENTION SYSTEM. REQUIRED MAINTENANCE OF THIS STRUCTURE SHALL BE MADE PART OF THE HOME OWNERS ASSOCIATION COVENANTS AND REQUIREMENTS, AS WELL AS THE STRUCTURE BEING PLACED UNDER A MAINTENANCE AGREEMENT WITH THE OTTAWA COUNTY SOIL AND WATER CONSERVATION DISTRICT.**

**ROCK CHECK DAM NOTES:**

1. THE ROCK CHECK DAM SHALL BE CONSTRUCTED OF 4"-8" INCH DIAMETER STONE, PLACED SO THAT IT COMPLETELY COVERS THE WIDTH OF THE CHANNEL.
2. THE TOP OF THE ROCK CHECK DAM SHALL BE CONSTRUCTED SO THAT THE CENTER IS APPROXIMATELY 6 IN. LOWER THAN THE OUTER EDGES, SO WATER WILL FLOW ACROSS THE CENTER AND NOT AROUND THE ENDS.
3. THE MAXIMUM HEIGHT OF THE ROCK CHECK DAMS AT THE CENTER OF THE WEIR SHALL NOT EXCEED 3FT.
4. SPACING BETWEEN DAMS SHALL BE AS SHOWN IN THE PLANS.
5. THE MID POINT OF THE ROCK CHECK DAM SHALL BE A MINIMUM OF 6" LOWER THAN THE SIDES IN ORDER TO DIRECT ACROSS THE CENTER AND AWAY FROM THE CHANNEL SIDES.
6. THE BASE OF THE CHECK DAM SHALL BE ENTRENCHED APPROXIMATELY 6".
7. SPACING OF THE CHECK DAMS SHALL BE IN A MANNER SUCH THAT THE TOE OF THE UPSTREAM DAM IS AT THE SAME ELEVATION AS THE TOP OF THE DOWNSTREAM DAM.
8. A SPLASH APRON SHALL BE CONSTRUCTED WHERE CHECK DAMS ARE EXPECTED TO BE IN USE FOR AN EXTENDED PERIOD OF TIME. A STONE APRON SHALL BE CONSTRUCTED IMMEDIATELY DOWNSTREAM OF THE CHECK DAM TO PREVENT FLOWS FROM UNDERCUTTING THE STRUCTURE. THE APRON SHOULD BE 6 INCHES THICK AND ITS LENGTH TWO TIMES THE HEIGHT OF THE DAM.
9. STONE PLACEMENT SHALL BE PERFORMED EITHER BY HAND OR MECHANICALLY AS LONG AS THE CENTER OF THE CHECK DAM IS LOWER THAN THE SIDES AND EXTENDS ACROSS THE ENTIRE CHANNEL.
10. SIDE SLOPES SHALL BE A MINIMUM OF 2:1.



**ROCK CHECK DAM DETAIL**  
SCALE: NONE

**SILT FENCE NOTES**

SILT FENCE SEDIMENT BARRIER UTILIZES STANDARD STRENGTH OR EXTRA STRENGTH SYNTHETIC FILTER FABRICS. IT IS DESIGNED FOR SITUATIONS IN WHICH ONLY SHEET OR OVERLAND FLOWS ARE EXPECTED.

THE HEIGHT OF A SILT FENCE SHALL NOT EXCEED 36 INCHES (HIGHER FENCES MAY IMPOUND VOLUMES OF WATER SUFFICIENT TO CAUSE FAILURE TO THE STRUCTURE)

THE FILTER FABRIC SHALL BE PURCHASED IN A CONTINUOUS ROLL CUT TO THE LENGTH OF THE BARRIER TO AVOID THE USE OF JOINTS. WHEN JOINTS ARE NECESSARY FILTER CLOTH SHALL BE SPLICED TOGETHER ONLY AT A SUPPORT POST WITH A MINIMUM 6-INCH OVERLAYS AND SECURELY SEALED.

WHEN STANDARD STRENGTH FILTER FABRIC IS USED A WIRE MESH SUPPORT FENCE SHALL BE FASTENED SECURELY TO THE UPSLOPE SIDE OF THE POSTS USING HEAVY DUTY WIRE STAPLES AT LEAST 1 INCH LONG, TIE WIRES OR HOG RINGS. THE WIRE SHALL EXTEND INTO THE TRENCH A MINIMUM OF 2 INCHES AND SHALL NOT EXTEND MORE THAN 36 INCHES ABOVE THE ORIGINAL GROUND SURFACE.

POSTS SHALL BE SPACED A MAXIMUM OF 10 FEET APART AT THE BARRIER LOCATION AND DRIVEN SECURELY INTO THE GROUND (MINIMUM OF 12 INCHES). WHEN EXTRA STRENGTH FABRIC IS USED WITHOUT THE WIRE SUPPORT, FENCE POST SPACING SHALL NOT EXCEED 6 FEET.

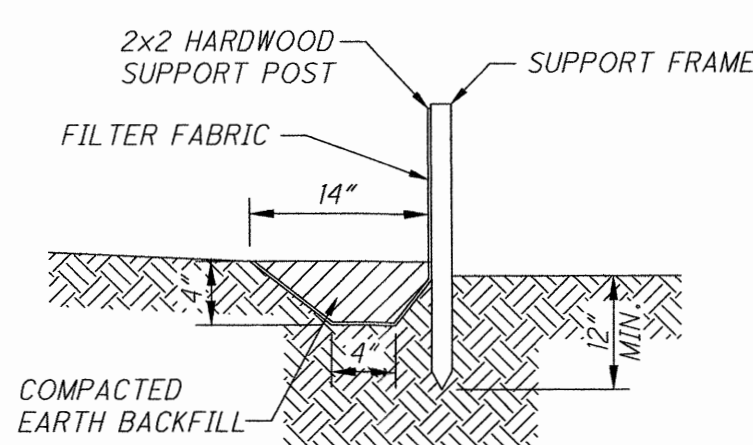
A TRENCH SHALL BE EXCAVATED APPROXIMATELY 4 INCHES WIDE AND 4 INCHES DEEP ALONG THE LINE OF POSTS AND UPSLOPE FROM THE BARRIER.

THE STANDARD STRENGTH FILTER FABRIC SHALL BE STAPLED OR WIRED TO THE FENCE AND 8 INCHES OF THE FABRIC SHALL BE EXTENDED INTO THE TRENCH. THE FABRIC SHALL NOT EXTEND MORE THAN 36 INCHES ABOVE THE ORIGINAL GROUND SURFACE. FILTER FABRIC SHALL NOT BE STAPLED TO EXISTING TREES.

WHEN EXTRA STRENGTH FILTER FABRIC AND CLOSER POST SPACING ARE USED THE WIRE MESH SUPPORT FENCE MAY BE ELIMINATED. IN SUCH A CASE THE FILTER FABRIC IS STAPLED OR WIRED DIRECTLY TO THE POSTS.

THE TRENCH SHALL BE BACKFILLED AND SOIL COMPACTED OVER THE FILTER FABRIC.

SILT FENCES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFUL PURPOSE BUT NOT BEFORE THE UPSLOPE AREA HAS BEEN PERMANENTLY STABILIZED.



**SILT FENCE DETAIL**  
SCALE: NONE

**CONSTRUCTION ENTRANCE**

STONE SIZE - NO. 2 (2-1/2" TO 1-1/2") OR ITS EQUIVALENT.

LENGTH - AS EFFECTIVE, BUT NOT LESS THAN 50 FEET.

THICKNESS - NOT LESS THAN EIGHT (8) INCHES.

WIDTH - TWENTY (20) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS.

FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.

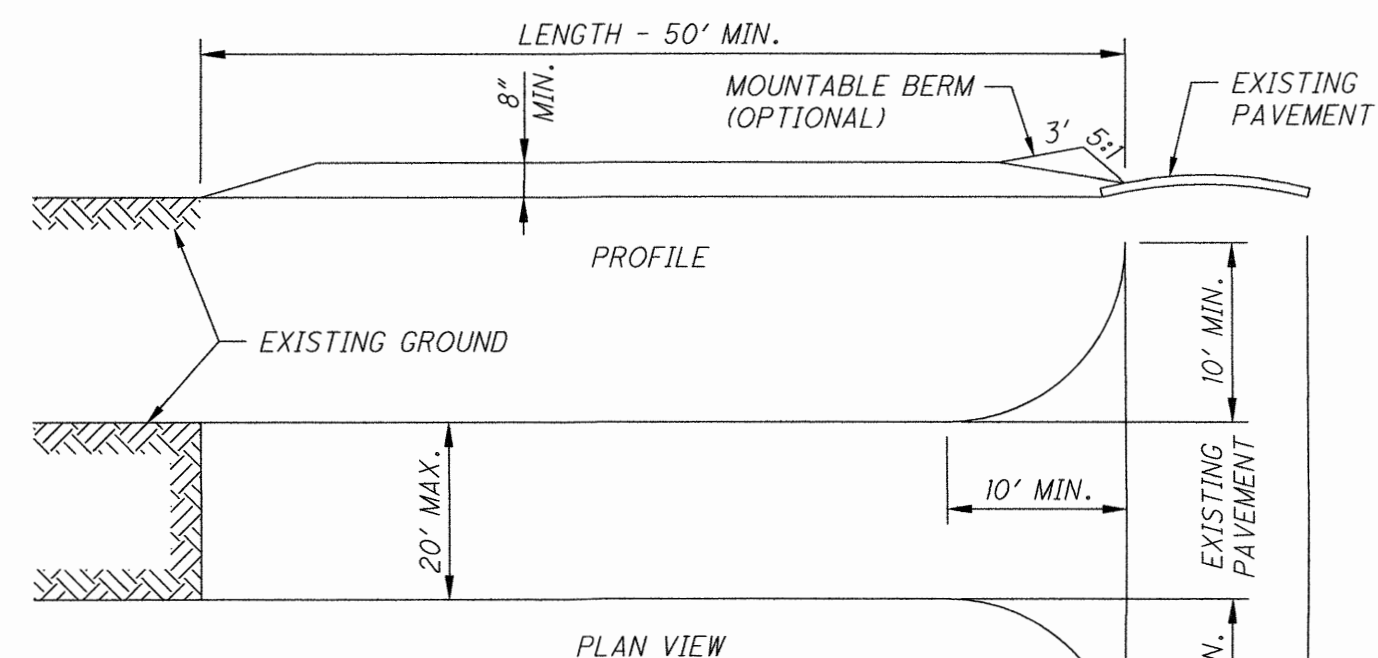
SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE.

WASHING - WHEN NECESSARY, WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAP. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE THROUGH USE OF SAND BAGS, GRAVEL, BOARDS OR OTHER APPROVED METHODS.

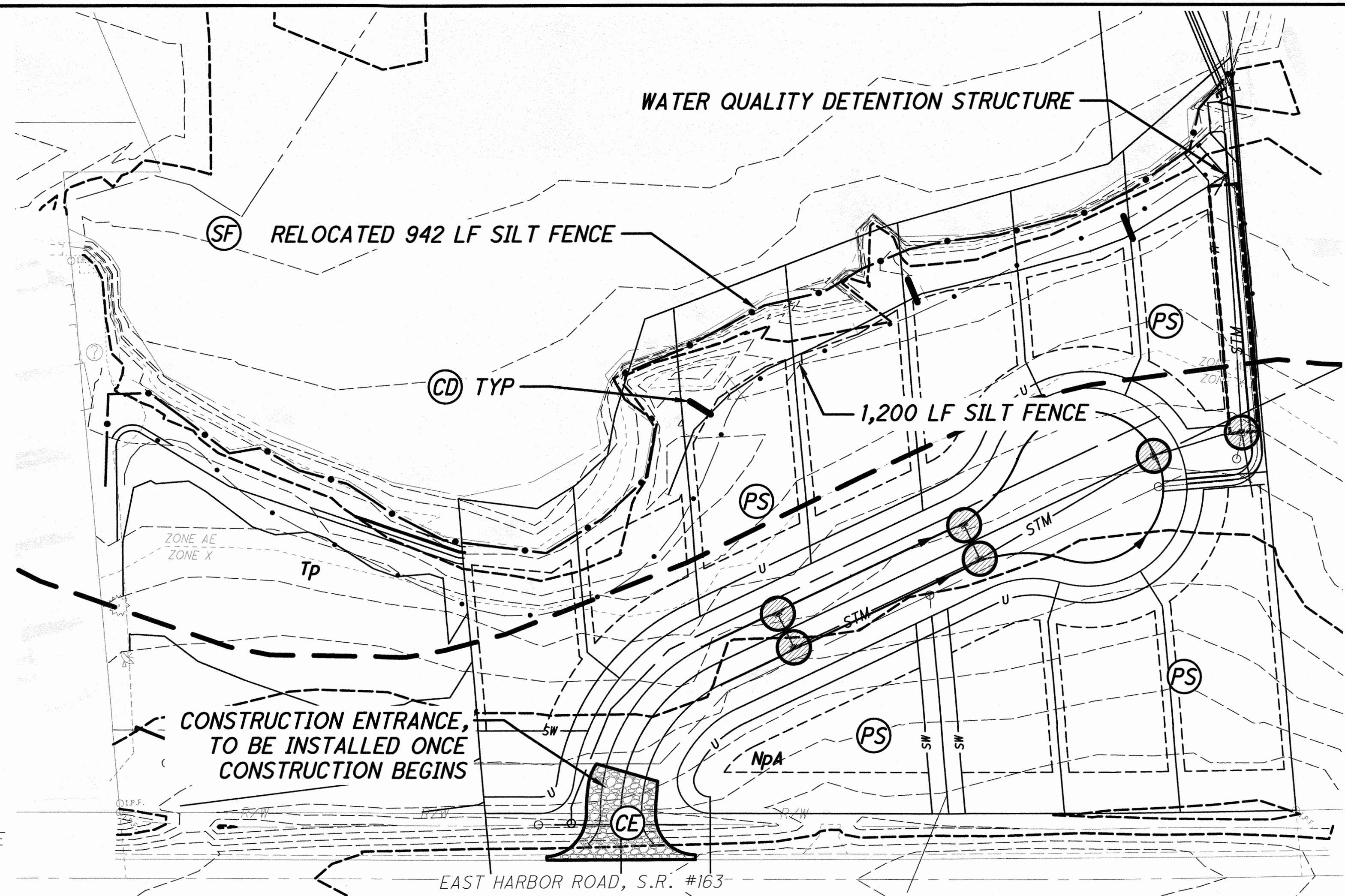
MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED IMMEDIATELY.

PERIODIC INSPECTION AND REQUIRED MAINTENANCE SHALL BE PERFORMED AFTER EACH RAIN.

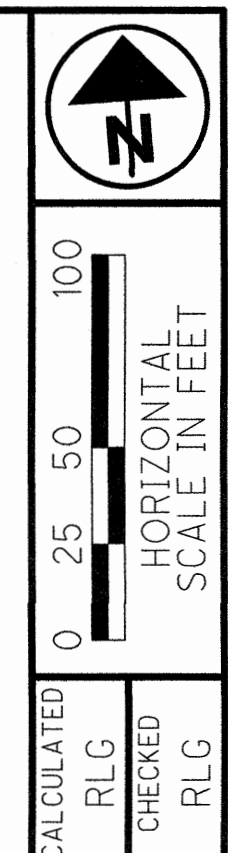
THIS CONSTRUCTION SHALL INCLUDE ALL MATERIALS AND COSTS RELATIVE TO CONSTRUCTING, MAINTAINING, REMOVAL AND RESTORATION OF STABILIZED ENTRANCE WITHIN THE VARIOUS CONSTRUCTION ITEMS.



**CONSTRUCTION ENTRANCE**  
SCALE: NONE



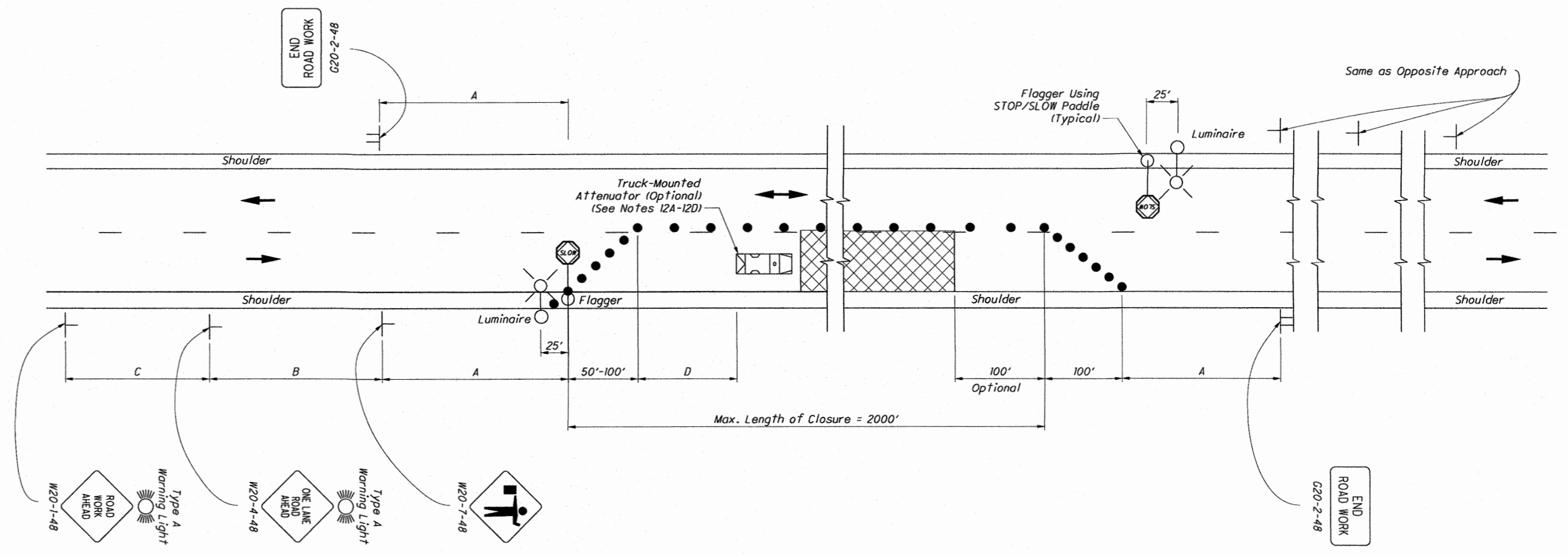
**WATER QUALITY DETENTION STRUCTURE**



**SWP3 PLAN**

**REGATTA SUBDIVISION**

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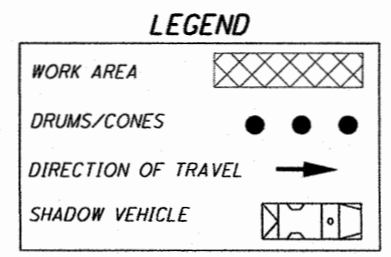


**TABLE I (SIGN SPACING)**

ROAD TYPE	A	B	C
Two-Lane (40 MPH)	100	100	100
Two-Lane (45-50 MPH)	350	350	350
Two-Lane (55-60 MPH)	500	500	500

**TABLE II**

SPEED LIMIT (MPH)	BUFFER (FT) MIN.
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570

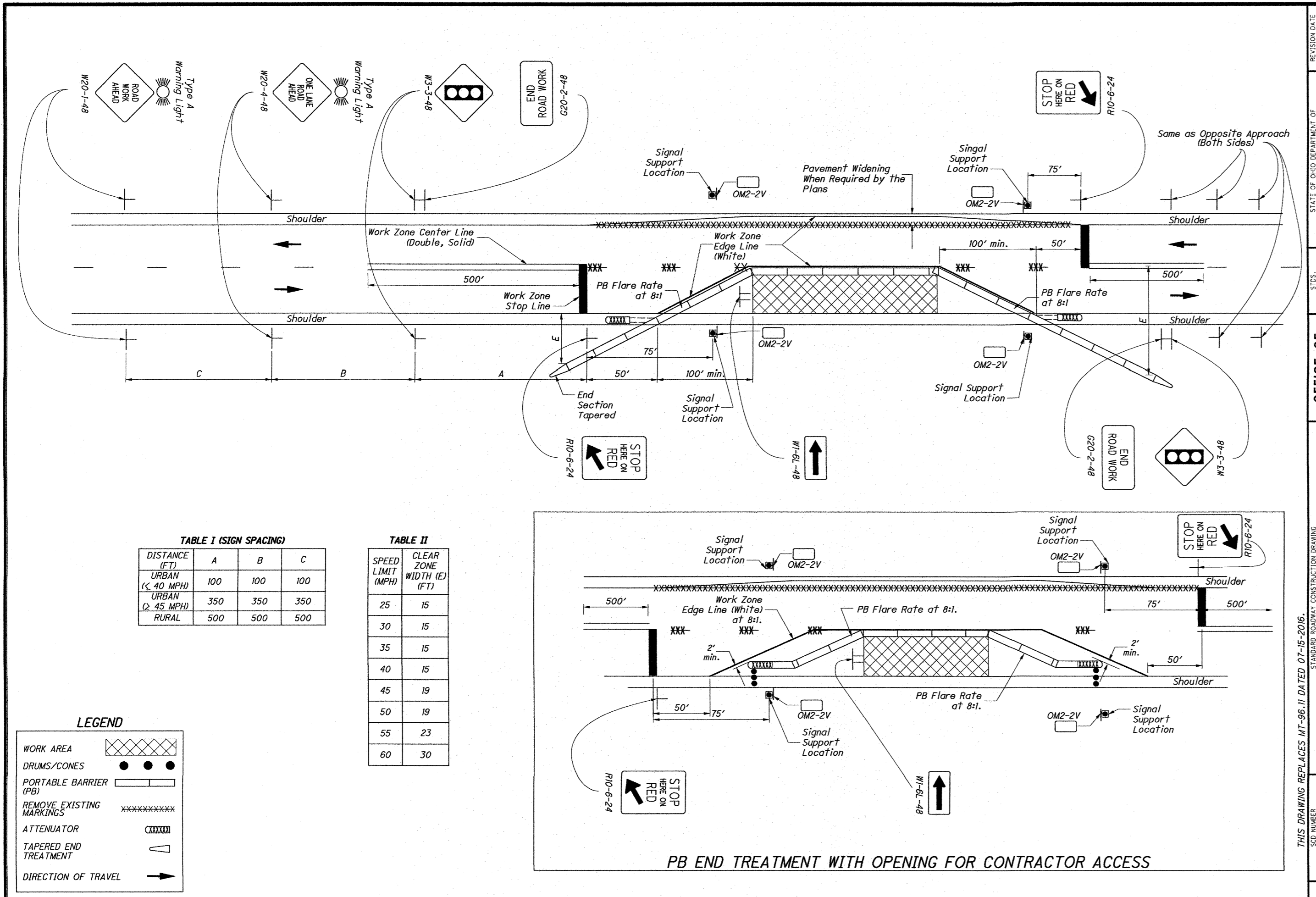


**NOTES:**

- FLAGGERS**
- Flaggers, one for each direction, shall be used to control traffic continuously for as long as a one lane operation is in effect. The flaggers shall be able to communicate with each other at all times.
- LENGTH OF CLOSURE**
- Several small work areas close together should be combined into one work zone. However, the closure shall not be more than 2000' long unless approved by the Engineer. The minimum length between closures shall be 2000'. Only one side of the road shall be closed in any one work zone.
- SIGN LOCATION AND SPACING**
- The minimum spacing between work zone signs is shown in Table I. Maximum spacing should not be greater than 1.5 times the distances shown in Table I.
  - Sign spacing should be adjusted to avoid conflict with existing signs. Minimum spacing to existing signs shall be 200' for speeds of 45 mph or less and a minimum of 400' for speeds of 50 mph or greater.
  - The location of the advance warning signs should be adjusted to provide for adequate sight distance for the existing vertical and horizontal roadway alignment.
- ADJUSTMENTS FOR SIGHT DISTANCE**
- The location of the flagger station and the advance warning signs should be adjusted to provide for adequate sight distance for the existing vertical and horizontal roadway alignment.
- BASIC SIGNING**
- ROAD WORK AHEAD (W20-1) signs shall be provided on entrance ramps or roadways entering the work limits.
  - END ROAD WORK (G20-2) signs are only required for lane closures of more than 1 day. If it is intended that these signs be placed on the mainline, on all exit ramps, and on roadways exiting the work limits.
  - Overlapping of signing for adjacent projects should be avoided where the messages could be confusing. Any ROAD WORK AHEAD (W20-1) or END ROAD WORK (G20-2) sign which falls within the limits of another traffic control zone shall be omitted or covered during the period when both projects are active.
- SIGNING DETAILS**
- The Advisory Speed (W13-1P) plaque shall be used when specified in the plans.
  - 36" warning signs may be used when the approach speed limit is 40 mph or less.
- FLASHING WARNING LIGHTS**
- Type A flashing warning lights shown on the ROAD WORK AHEAD (W20-1) signs and on the LANE CLOSED AHEAD (W20-5) signs are required whenever a night lane closure is necessary.
- DRUMS / CONES**
- Drum spacing shall be as follows:
    - Spacing along the closure shall be 40' center-to-center.
    - Spacing along the approach taper shall be 10' center-to-center.
  - Cones may be substituted for drums as follows:
    - Cones used for daytime traffic control shall have a minimum height of 28".
    - Cones used for nighttime traffic control shall have a minimum height of 42".
    - Use of cones at night shall be prohibited along tapers.
  - Provisions shall be made to stabilize the cones and drums to prevent them from blowing over.
  - A minimum of two drums shall be used to close the paved shoulder.
- (RESERVED FOR FUTURE USE)**
- AREA ILLUMINATION**
- Adequate area illumination of each flagger station shall be provided at night. Use of portable flood lighting is acceptable. Luminaires shall be located adjacent to each flagger station.
  - To ensure the adequacy of floodlight placement and the elimination of glare, the Contractor and the Engineer shall drive through the worksite each night when the lighting is in place. Light placement and shielding shall be adjusted to the satisfaction of the Engineer.
- INTERSECTION / DRIVEWAY ACCESS**
- Within the length of closure, provision shall be made to control traffic entering from intersecting streets and major drives as necessary to prevent wrong-way movements and to keep vehicles off of new pavement not ready for traffic. The Contractor shall:
    - Place across the closed lane, either three drums (cones) or barricades, and/or
    - Provide an additional flagger at every public street intersection and major driveway.
- Drums (cones) placed across the closed lane shall be located 25' beyond the projected pavement edges of the driveway or cross highway, as shown in Standard Construction Drawings ISCDs MT-97.11 or MT-97.12. For barricades, see STD MT-101.60.
- Existing STOP signs shall be relocated as necessary to assure proper location for the traffic conditions.
- The method of control shall be subject to the approval of the Engineer.
- SHADOW VEHICLE**
- The shadow vehicle shall be in place and unoccupied whenever workers are in the work area. This vehicle shall be removed from the pavement whenever workers are not in the work area.
  - The shadow vehicle shall be equipped with a high-intensity yellow rotating, flashing, oscillating, or strobe lights.
  - The vehicle shall be equipped with a truck-mounted attenuator when called for in the plans.
  - Other protective devices may be used in lieu of the shadow vehicle shown when approved by the Engineer.
- CHIP SEAL OPERATIONS**
- For chip seal operations, additional signing shall be incorporated in the advanced warning area.
    - The LOOSE GRAVEL (W8-7) and FRESH TAR (W21-2) signs shall both be used in advance of the chip seal operation.
    - Repeat the LOOSE GRAVEL sign with a 35 mph Advisory Speed (W13-1) plaque every half mile per CMS 422.09.
    - The FRESH TAR and the LOOSE GRAVEL signs shall both be used for signing of side roads intersecting the work area.

THIS DRAWING REPLACES MT-97.10 DATED 07-18-2014.  
 STATE OF MICHIGAN DEPARTMENT OF TRANSPORTATION  
 OFFICE OF ROADWAY ENGINEERING  
 FLAGGER CLOSING 1 LANE OF A 2-LANE HIGHWAY - STATIONARY OPERATION  
 REGATTA SUBDIVISION  
 MT-97.10  
 2 / 2  
 REVISION DATE: 07-18-2014  
 CHECKED: RLC  
 CALCULATED: RLC  
 DESIGNER: Soisson  
 DRAWN BY: Reynaldo Stargell

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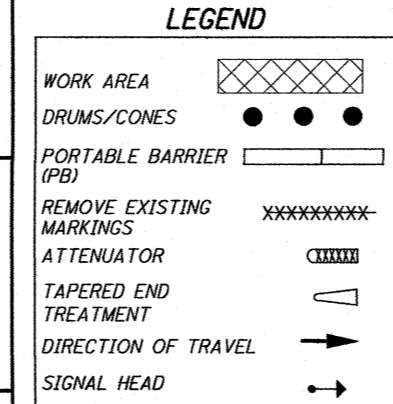
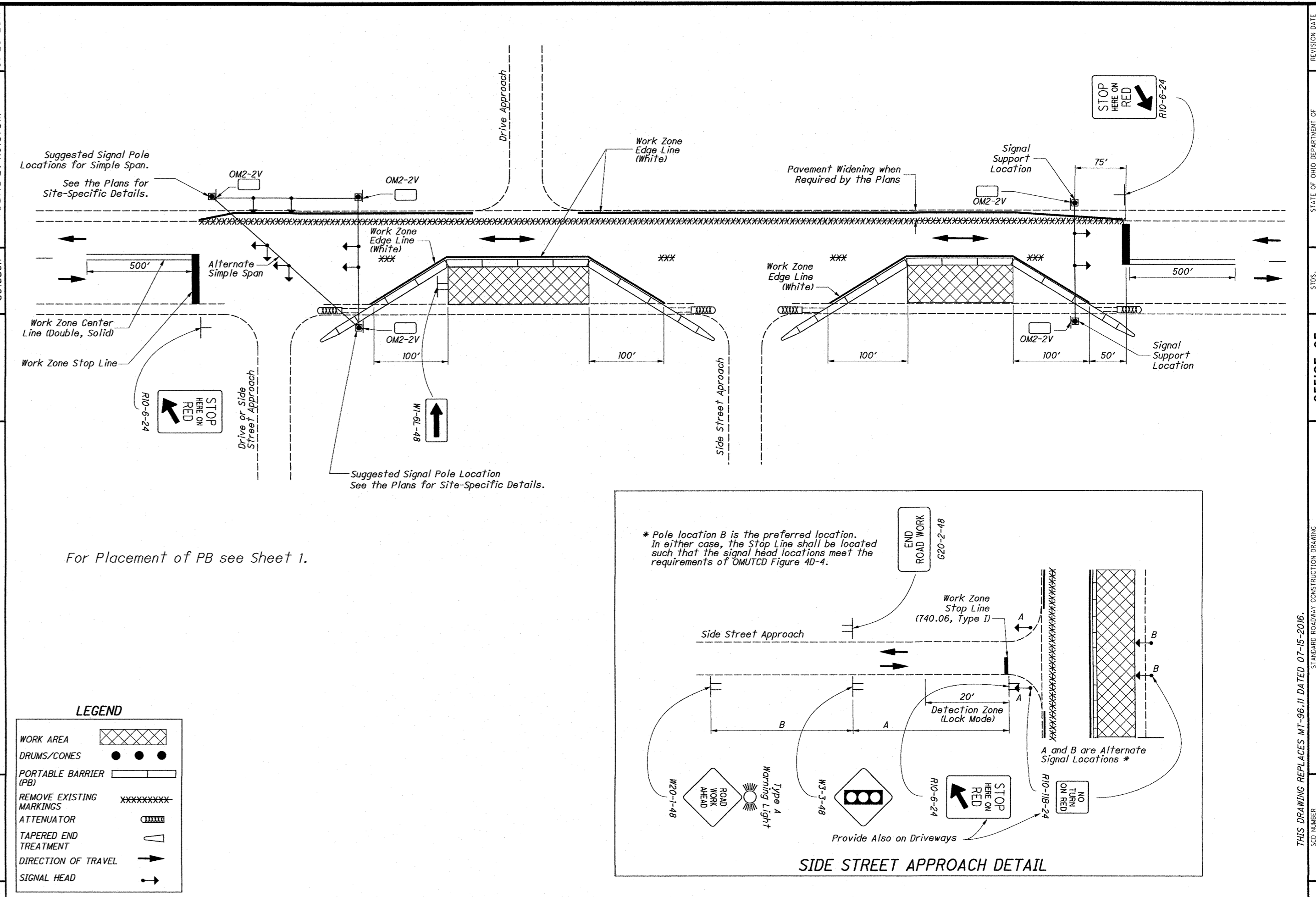
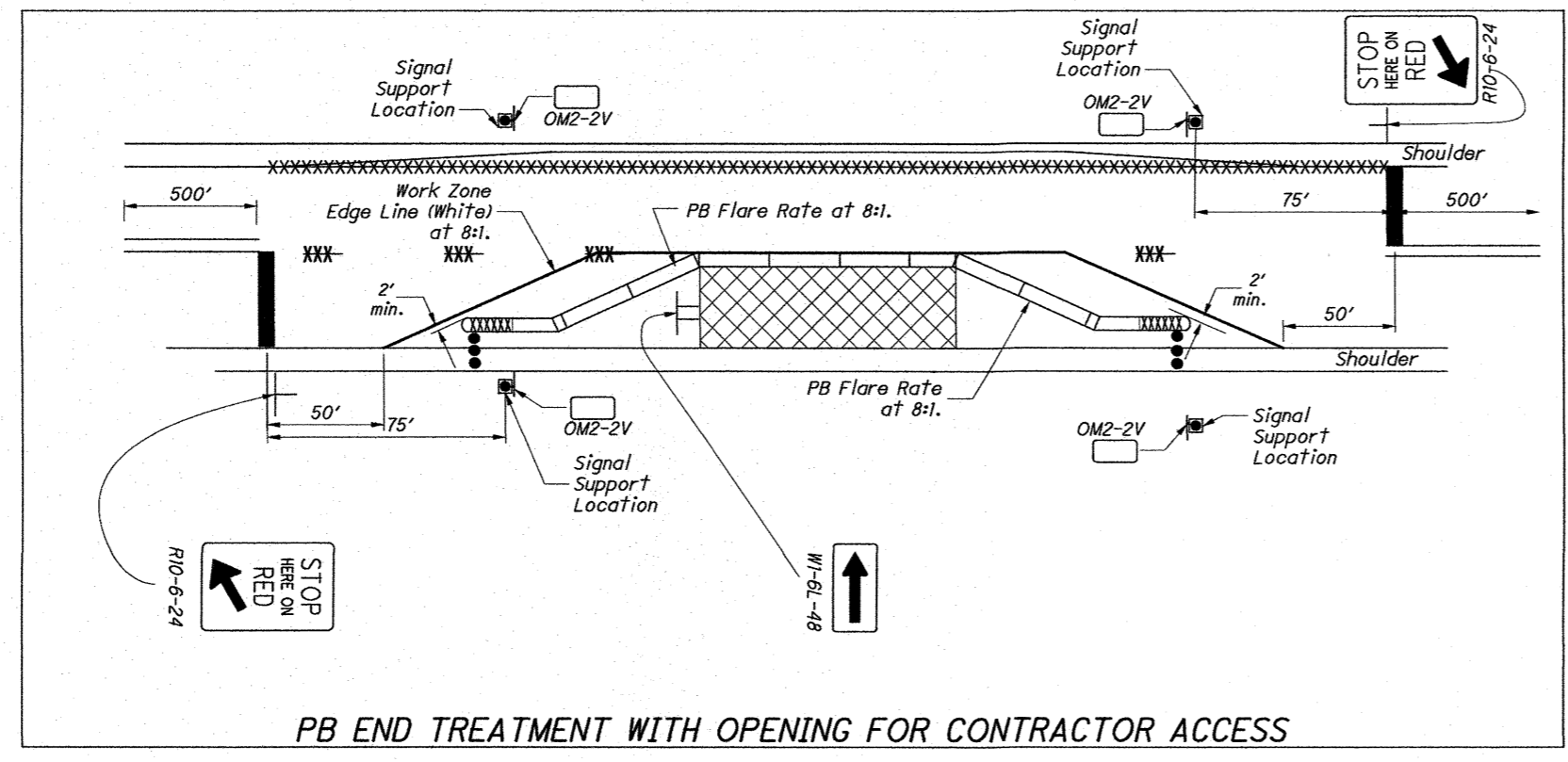
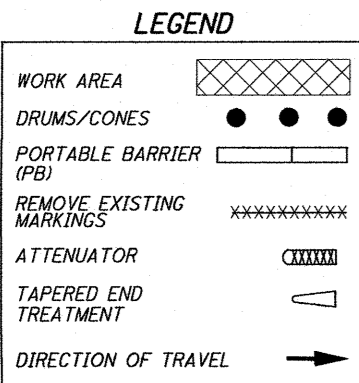


**TABLE I (SIGN SPACING)**

DISTANCE	A	B	C
URBAN (< 40 MPH)	100	100	100
URBAN (40-45 MPH)	350	350	350
RURAL	500	500	500

**TABLE II**

SPEED LIMIT (MPH)	CLEAR ZONE WIDTH (FT)
25	15
30	15
35	15
40	15
45	19
50	19
55	23
60	30



**NOTES:**

**SIGNAL EQUIPMENT**

- 1A. All traffic signal equipment used in this installation, such as signal cable, signal heads, or signal controller shall be in conformance with specifications CMS 632, 633, 732 and 733.
- 1B. The performance test of CMS 632.286, the working drawing requirements of 632.04 and 633.04, the wiring diagram and service manual requirement of 633.05 and the testing and prequalification requirement of 633.06 are waived.
- 1C. Used equipment is acceptable.
- 1D. Conflict monitors or Malfunction Management Units (MMUs) typical of traditional traffic control signal operation shall be used.
- 1E. At least one and preferably both of the signal faces for the through movement shall be located per Ohio Manual of Uniform Traffic Control Devices (OMUTCD) Figure 40-4.
- 1F. Exclusively side-mounted signals are only permitted on facilities with a speed limit of 40 mph or less. If exclusively side mounted, signal heads shall be located directly across the highway from each other.
- 1G. For conventional signal mounting, see Standard Construction Drawing (SCD) MT-96.20.
- 1H. If the posted speed limit is 45 mph or greater the minimum number of overhead signal heads shall be per OMTCD Table 40-1.
- 1I. For requirements of portable traffic signals, see Supplemental Specification 961 and Supplement 1050. Portable traffic signals shall only be used when approved by the Engineer. Portable traffic signals, when approved for use, shall be provided per the ODOT Approved List.
- 1J. Portable traffic signals shall be located off of the pavement or behind drums or portable barrier or guardrail.
- 1K. When using portable traffic signals, if a FCC license is required the contractor shall keep a copy on file.
- 1L. When using portable traffic signals, the Contractor shall inspect them at least once each hour for the first eight hours after it is set up or reconfigured. Thereafter, it shall be inspected at least every twenty-four hours, including weekends. The inspections are to determine that it is operating properly and efficiently, that the signals are properly aimed, and that the battery charge remains sufficient.

**SIGNAL OPERATION**

- 2A. Signals shall be installed and operated in accordance with the requirements of Part 4 of the OMTCD, except as exceeded otherwise in the specifications.
- 2B. Signal timing settings shall be as shown in the plans or provided to the Contractor by the Engineer prior to implementation of the signal control.
- 2C. If the signal fails or is changed to flashing operation, red shall be flashed to all approaches on all signal heads.

**SIGNING**

- 3A. The spacing between work zone signs, as shown in Table 1, are minimums. Maximum spacing should not be greater than 1.5 Times the distances shown in Table 1.

- 3B. Sign spacing should be adjusted to avoid conflict with existing signs. Minimum spacing to existing signs shall be 200' for speeds of 45 mph or less and a minimum of 400' for speeds of 50 mph or greater.

- 3C. The location of the advance warning signs should be adjusted to provide for adequate sight distance for the existing vertical and horizontal roadway alignment.

- 3D. Overlapping of signing for adjacent projects should be avoided. The messages could be confusing. Any ROAD WORK AHEAD (W20-1) sign or END ROAD WORK (E20-2) sign which falls within the limits of another work zone shall be omitted or covered during the period when both projects are active.

- 3E. 36" warning signs may be used when the approach speed limit is 40 mph or less.

- 3F. Provide a NO TURN ON RED (R10-1b-24) sign on each side road and driveway approach located between the mainline stop bars, as shown on Sheet 2 of this drawing. Mounting shall be as follows:
  - a) If the signal heads are side-mounted, the sign should be placed below the right-most signal head.
  - b) If the signal heads are overhead mounted, the sign should be placed to the right of the right-most signal head.

- 3G. END ROAD WORK (E20-2) signs are only required for lane closures of more than one day.

- 3H. All existing signs (STOP, STOP AHEAD, etc.) which conflict with the work zone traffic signals or other traffic control shall be covered or removed.

- 3I. The STOP HERE ON RED (R10-6a) sign may be used in place of the R10-6 shown.

**TREE AND BRUSH TRIMMING**

4. Tree or brush trimming to provide adequate sight distance to sign and signals shall be provided as determined by the Engineer. Payment for this work shall be included in the lump sum bid for CMS 614 - Maintaining Traffic.

**PAVEMENT MARKING AND RAISED PAVEMENT MARKERS (RPMS)**

- 5A. If a lane closure of greater than 3 days is required, then the following shall be performed:
  - a) Existing conflicting pavement markings shall be removed or covered as per CMS 614.16.
  - b) Existing conflicting RPMS shall be removed.
  - c) 12" work zone stop lines shall be provided.
  - d) Work Zone Center Lines, Double, Solid shall be provided when existing Center Line, Solid, Double is not in place.
  - e) Work Zone Edge Lines shall be provided.
- 5B. Work zone edge lines which would conflict with final traffic lanes shall be removable (CMS 740.06, Type II) tape unless the area will be resurfaced prior to completion of the project.
- 5C. After completion of the work, pavement markings other than CMS 740.06, Type I shall be removed in accordance with CMS 614.11. The original marking shall be restored at no additional cost.
- 5D. All work zone edge lines shall be white.

**PORTABLE BARRIER (PB)**

- 6A. A tapered end section may be used at locations where the last full section of PB can be extended outside of the clear zone for approaching traffic. See Table II for clear zone widths.

- 6B. Where PB is located beyond the edge of the paved shoulder, the cross slope within the clear zone, including the surface on which the PB is placed, shall be graded to 10:1 or flatter. If the cross slope is steeper than 10:1, the PB shall be terminated on the paved shoulder. The PB shall be extended along the paved shoulder as necessary to satisfy the length of need, and then terminated using an impact attenuator.

- 6C. An impact attenuator shall be used where the last full section of PB will be located within the clear zone.

- 6D. When used, impact attenuators shall be installed parallel to traffic. Also, the last full section of PB, adjacent to the impact attenuator, shall be located parallel to traffic.

- 6E. For impact attenuator installation procedures, refer to manufacturer's installation instructions.

- 6F. If it is necessary to provide the Contractor with access to the work area behind the PB, an opening shall be provided behind the impact attenuator, with maximum width of 8' between the impact attenuator and the outside edge of the paved shoulder.

- 6G. The opening for the Contractor shall be kept closed by placing 3 drums side-by-side across the opening near the impact attenuator. The drums shall be out of position only during ingress and egress of work vehicles and supply vehicles.

**BARRIER DELINEATION**

- 7A. PB shall be delineated as per SCD MT-101.70.
- 7B. Existing barrier between work zone stop lines shall be delineated with CMS 614 - Object Markers.

**DRUMS / CONES**

- 8A. Drums may be used in lieu of PB only if called for in the plans.
- 8B. Drum spacing shall be as follows:
  - a) Spacing along the two-way traffic taper shall be 10' center-to-center.
  - b) Spacing along the closure shall be 40' center-to-center within the work area.
- 8C. Cones may be substituted for drums as follows:
  - a) Cones used for daytime traffic control shall have a minimum height of 28".
  - b) Cones used for nighttime traffic control shall have a minimum height of 42".
  - c) Use of cones of night shall be prohibited along tapers.
  - d) Where cones are substituted for drums in tapered sections, intermixing of channelizing devices within the same run will not be permitted. Either cones shall be used for the entire length of the tapered section, or drums shall be used for the entire run.
- 8D. Provisions shall be made to stabilize the cones and drums to prevent them from blowing over.
- 8E. A minimum of 2 drums shall be used to close the paved shoulder.

**FLASHING WARNING LIGHTS**

9. Type A flashing warning lights shown on the ROAD WORK AHEAD (W20-1) signs and on the ONE LANE ROAD AHEAD (W20-4) signs are required whenever a night lane closure is necessary.

**LIGHTING**

- 10A. Lighting shall be provided when called for in the plans.
- 10B. If conventional type work zone lighting is provided, wattage shall be as called for in the plans.

THIS DRAWING REPLACES MT-96.11 DATED 07-16-2016. DATE: 02-26-2018. DRAWING NUMBER: 116-0108-0108\_BP001.dwg. PROJECT NUMBER: 116-0108. PROJECT NAME: Basemaps. SHEET NUMBER: 116-0108-0108\_BP001.dwg. SHEET TOTAL: 3. STATE OF MONTANA DEPARTMENT OF TRANSPORTATION: David L. Holstein. DATE: 01-20-2017. DIVISION: ENGINEERING. PROJECT: SIGNALIZED CLOSING 1 LANE OF A 2-LANE HIGHWAY. DRAWING TITLE: SIGNALIZED CLOSING 1 LANE OF A 2-LANE HIGHWAY. DESIGNER: Soisson. CHECKED: RLG. CALCULATED: RLG.