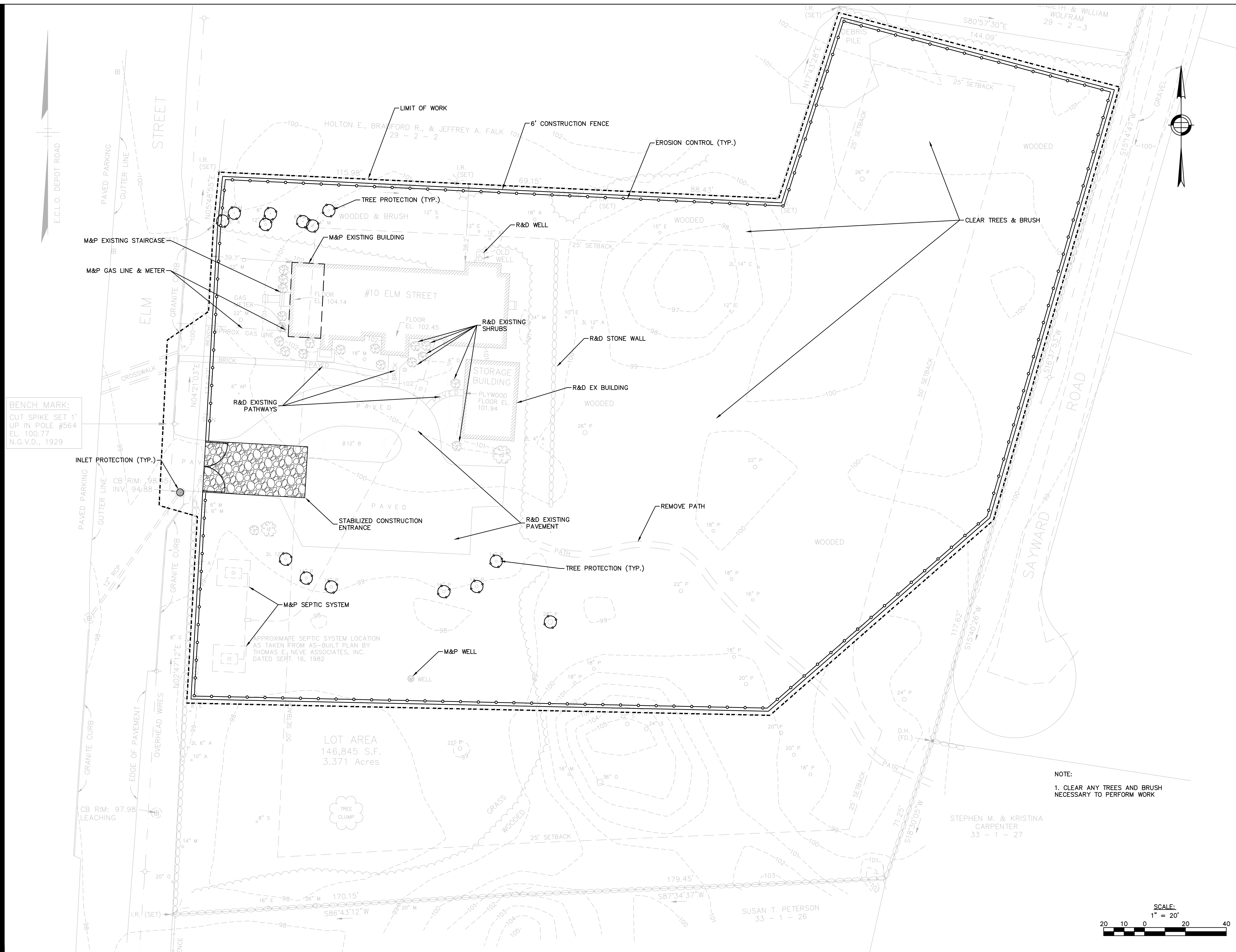
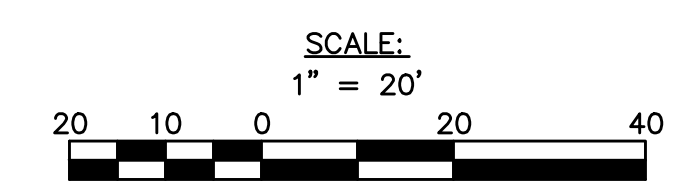


2/1/2021 7:16 PM Q:\14051 Boxford Sr. Ctr\Civil\CAD\14051ceec.dwg



BENCH MARK:
 CUT SPIKE SET 1'
 UP IN POLE #564
 EL. 100.77
 N.G.V.D., 1929

NOTE:
 1. CLEAR ANY TREES AND BRUSH
 NECESSARY TO PERFORM WORK



**THE CENTER
 AT 10 ELM
 COMMUNITY/
 STREET
 SENIOR CENTER**

**TOWN OF
 BOXFORD**

TOWN HALL
 7A SPOFFORD ROAD
 BOXFORD, MA 01921

G | R | L | A

Gorman Richardson Lewis Architects
 239 South Street Hopkinton, MA 01748
 www.grlarchitects.com

PROJECT: TOWN OF BOXFORD THE CENTER AT 10 ELM STREET COMMUNITY/ SENIOR CENTER - SCHEMATIC DESIGN - 09/24/2020
 CLIENT: TOWN HALL, 7A SPOFFORD ROAD, BOXFORD, MA 01921
 FIRM: G | R | L | A
 KEY PLAN: [Blank]
 REVISIONS: [Table with 3 columns: No., Description, Date]
 COPYRIGHT: © COPYRIGHT 2020
 SEAL ORIENTATION: [Blank]
 DATA: [Table with 2 columns: Date, Proj. No., Scale, Drawn By, Checked By]
 TITLE: CIVIL EROSION CONTROL PLAN
 SHEET: C-200

No.	Description	Date

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Date:	02/02/2021
Proj. No.:	2020120.01
Scale:	1" = 20'-0"
Drawn By:	BB
Checked By:	DC

**CIVIL EROSION
 CONTROL PLAN**

C-200

2020120.01 - TOWN OF BOXFORD THE CENTER AT 10 ELM STREET COMMUNITY/ SENIOR CENTER - SCHEMATIC DESIGN - 09/24/2020

LINE #	LENGTH	DIRECTION
L1	1.00	S88°55'09"E
L2	37.04	N45°31'31"E
L3	27.85	S87°00'50"E
L4	34.58	S42°01'28"E
L5	4.10	S47°59'10"W
L6	3.50	S2°59'10"W
L8	23.16	N87°00'50"W
L9	3.39	N87°00'50"W
L11	3.50	N2°59'10"E
L12	13.00	S2°59'10"W
L13	4.03	S87°00'50"E
L14	15.00	N2°59'10"E
L15	135.00	S87°00'50"E
L16	15.00	S2°59'10"W
L17	6.50	S87°00'50"E

LINE #	LENGTH	DIRECTION
L18	19.50	S87°00'50"E
L19	22.00	S2°59'10"W
L20	19.50	N87°00'50"W
L21	6.50	N87°00'50"W
L23	15.00	S2°59'10"W
L24	207.00	N87°00'50"W
L25	14.90	N2°59'10"E
L27	94.82	N88°55'09"W
L29	6.28	S5°29'55"W
L30	6.60	N45°31'31"E
L31	22.77	S87°00'50"E
L32	28.97	N88°55'09"W

CURVE #	LENGTH	RADIUS	DELTA
C1	15.71	10.00	90°00'00"
C3	7.95	10.00	45°33'21"
C5	16.57	20.00	47°27'39"
C7	15.71	20.00	45°00'00"
C10	3.14	2.00	90°00'00"
C11	3.14	2.00	90°00'00"
C12	4.69	3.00	89°30'06"
C16	4.71	3.00	90°00'00"
C18	4.71	3.00	90°00'00"
C19	4.81	3.00	91°54'18"
C20	14.75	10.00	84°29'02"
C21	7.04	3.00	134°26'39"
C23	4.14	5.00	47°27'39"
C25	15.92	5.29	172°31'22"

ZONING TABLE		
ADDRESS: 10 ELM STREET, BOXFORD, MA		
ZONE: O		
LAND USE CODE: 9560		
	REQUIRED	PROPOSED
FRONTAGE	250'	363'
FRONT YARD SETBACK	50'	39.53'
SIDE YARD SETBACK	25'	33.79'
REAR YARD SETBACK	25'	240.65'
PARKING SPACES	-	35

THE CENTER
AT 10 ELM
COMMUNITY/
STREET
SENIOR CENTER

TOWN OF
BOXFORD

TOWN HALL
7A SPOFFORD ROAD
BOXFORD, MA 01921

G | R | L | A

Gorman Richardson Lewis Architects
239 South Street Hopkinton, MA 01748
www.grlarchitects.com

PROJECT

CLIENT

FRM

KEY PLAN

REMARKS

REVISIONS

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SEAL ORIENTATION

DATA

TITLE

SHEET

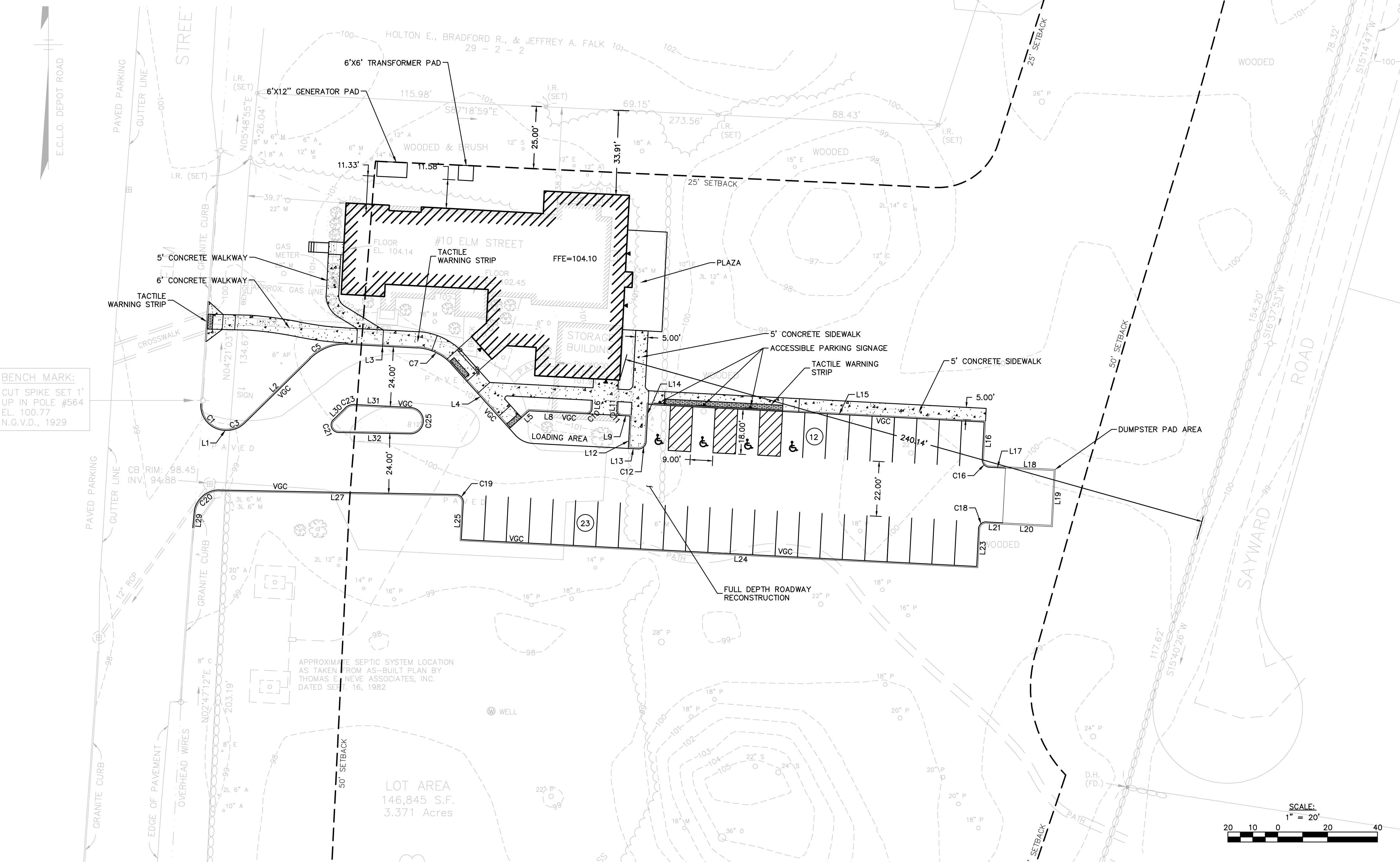
No.	Description	Date

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Date: 02/02/2021
Proj. No.: 2020120.01
Scale: 1" = 20'-0"
Drawn By: BB
Checked By: DC

CIVIL LAYOUT
PLAN

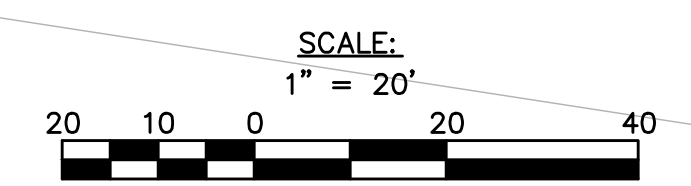
C-300



BENCH MARK:
CUT SPIKE SET 1'
UP IN POLE #564
EL. 100.77
N.G.V.D., 1929

APPROXIMATE SEPTIC SYSTEM LOCATION
AS TAKEN FROM AS-BUILT PLAN BY
THOMAS E. NEVE ASSOCIATES, INC.
DATED SEPTEMBER 16, 1982

LOT AREA
146,845 S.F.
3.371 Acres



THE CENTER
AT 10 ELM
COMMUNITY/
STREET
SENIOR CENTER

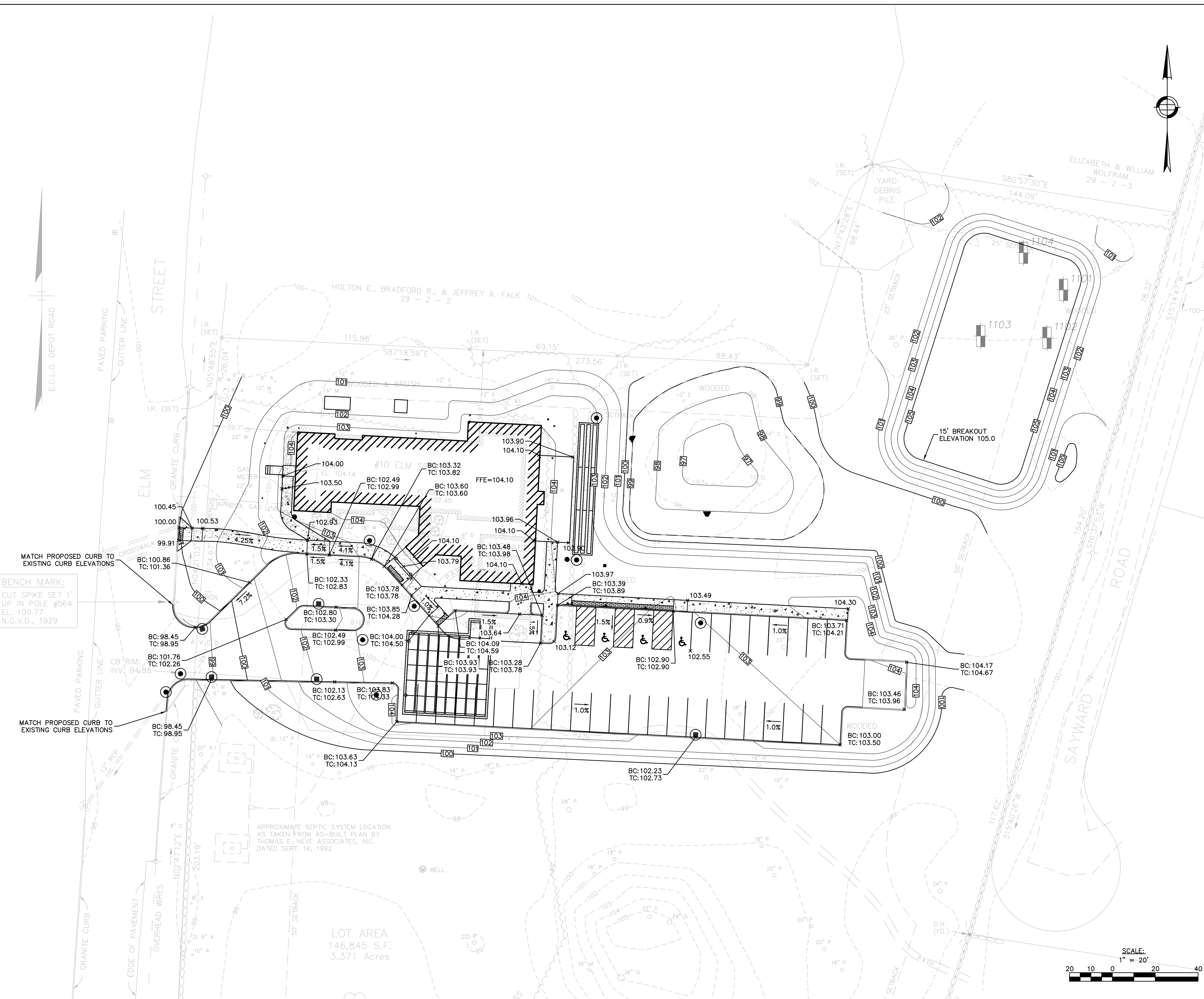
TOWN OF
BOXFORD

TOWN HALL
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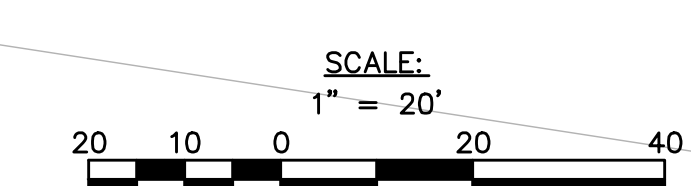
2020120.01 - TOWN OF BOXFORD THE CENTER AT 10 ELM STREET COMMUNITY/ SENIOR CENTER - SCHEMATIC DESIGN - 09/24/2020



BENCH MARK:
CUT SPIKE SET 1'
UP IN POLE #564
EL. 100.77
N.G.V.D., 1929

APPROXIMATE SEPTIC SYSTEM LOCATION
AS TAKEN FROM AS-BUILT PLAN BY
THOMAS E. NEVE ASSOCIATES, INC.
DATED SEPT. 16, 1982

LOT AREA
146,845 S.F.
3.371 Acres



PROJECT	THE CENTER AT 10 ELM COMMUNITY/ STREET SENIOR CENTER																																	
CLIENT	TOWN OF BOXFORD																																	
FRM	G R L A																																	
KEY PLAN																																		
REMARKS																																		
REVISIONS	<table border="1"> <thead> <tr> <th>No.</th> <th>Description</th> <th>Date</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table>	No.	Description	Date																														
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DATE	Date: 02/02/2021																																	
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	Scale: 1" = 20'-0"																																	
	Drawn By: BB																																	
	Checked By: DC																																	
TITLE	CIVIL GRADING PLAN																																	
SHEET	C-400																																	

THE CENTER AT 10 ELM COMMUNITY/ STREET SENIOR CENTER

TOWN OF BOXFORD

TOWN HALL
7A SPOFFORD ROAD
BOXFORD, MA 01921

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239 South Street Hopkinton, MA 01748
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CLIENT
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KEY PLAN

REMARKS

REVISIONS

NO. Description Date

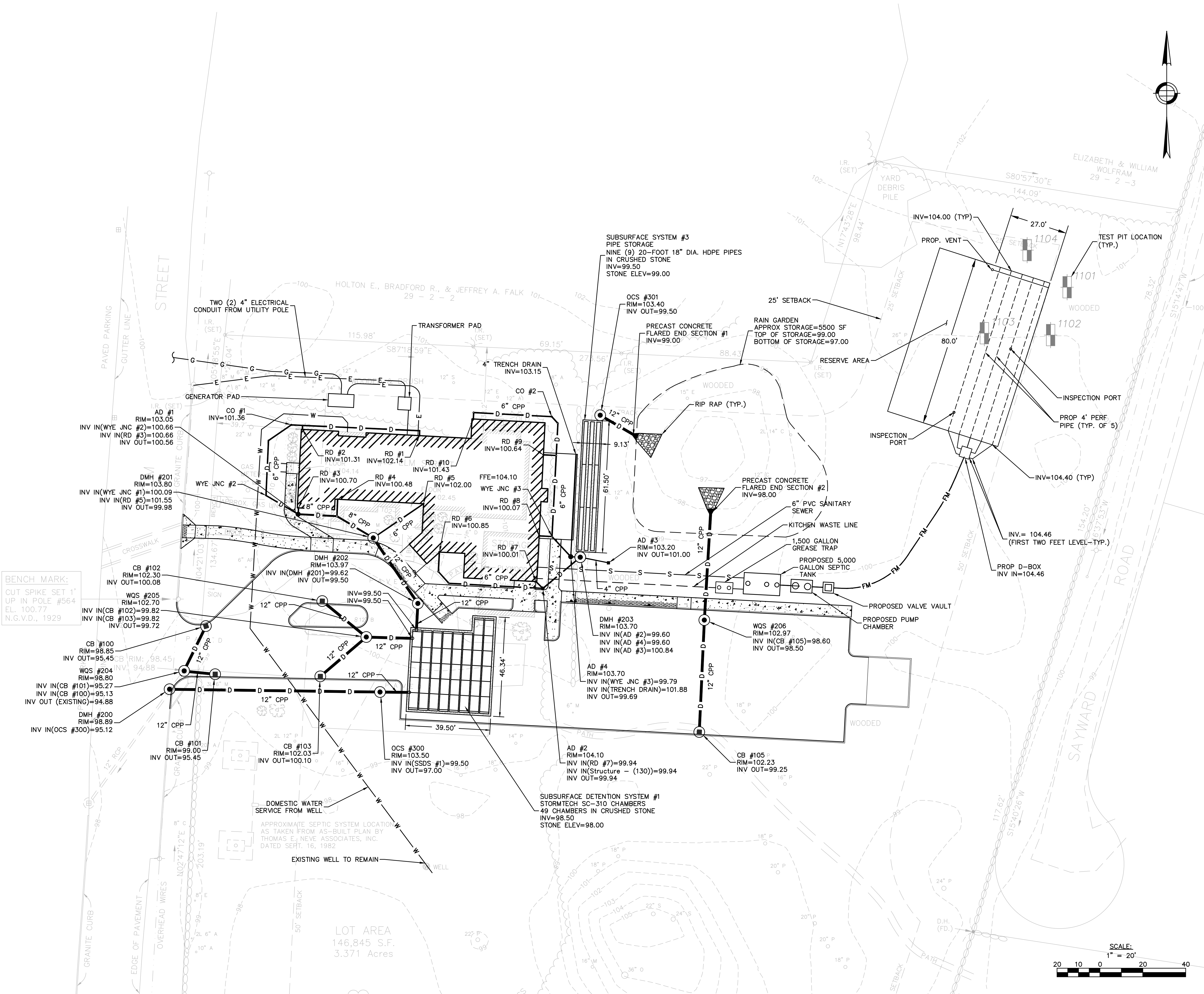
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DATE

Date: 02/02/2021
Proj. No.: 2020120.01
Scale: 1" = 20'-0"
Drawn By: BB
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CIVIL UTILITY PLAN

SHEET TITLE
C-500

2020120.01 - TOWN OF BOXFORD THE CENTER AT 10 ELM STREET COMMUNITY/ SENIOR CENTER - SCHEMATIC DESIGN - 09/24/2020



BENCH MARK:
CUT SPIKE SET 1'
UP IN POLE #564
E.L. 100.77
N.G.V.D., 1929

DOMESTIC WATER SERVICE FROM WELL
APPROXIMATE SEPTIC SYSTEM LOCATION AS TAKEN FROM AS-BUILT PLAN BY THOMAS E. NEVE ASSOCIATES, INC. DATED SEPT. 16, 1982

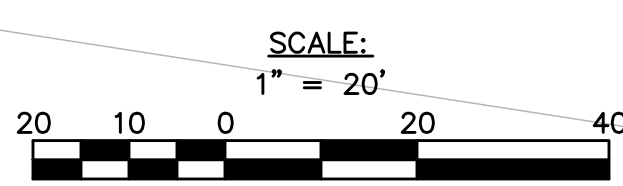
SUBSURFACE DETENTION SYSTEM #1
STORMTECH SC-310 CHAMBERS
49 CHAMBERS IN CRUSHED STONE
INV=98.50
STONE ELEV=98.00

PRECAST CONCRETE FLARED END SECTION #1
INV=99.00

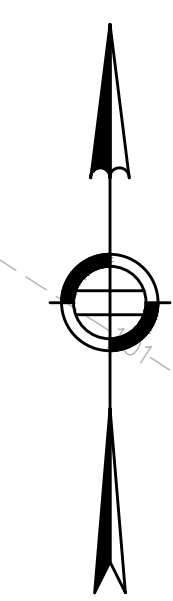
PRECAST CONCRETE FLARED END SECTION #2
INV=98.00

PROPOSED 5,000 GALLON SEPTIC TANK

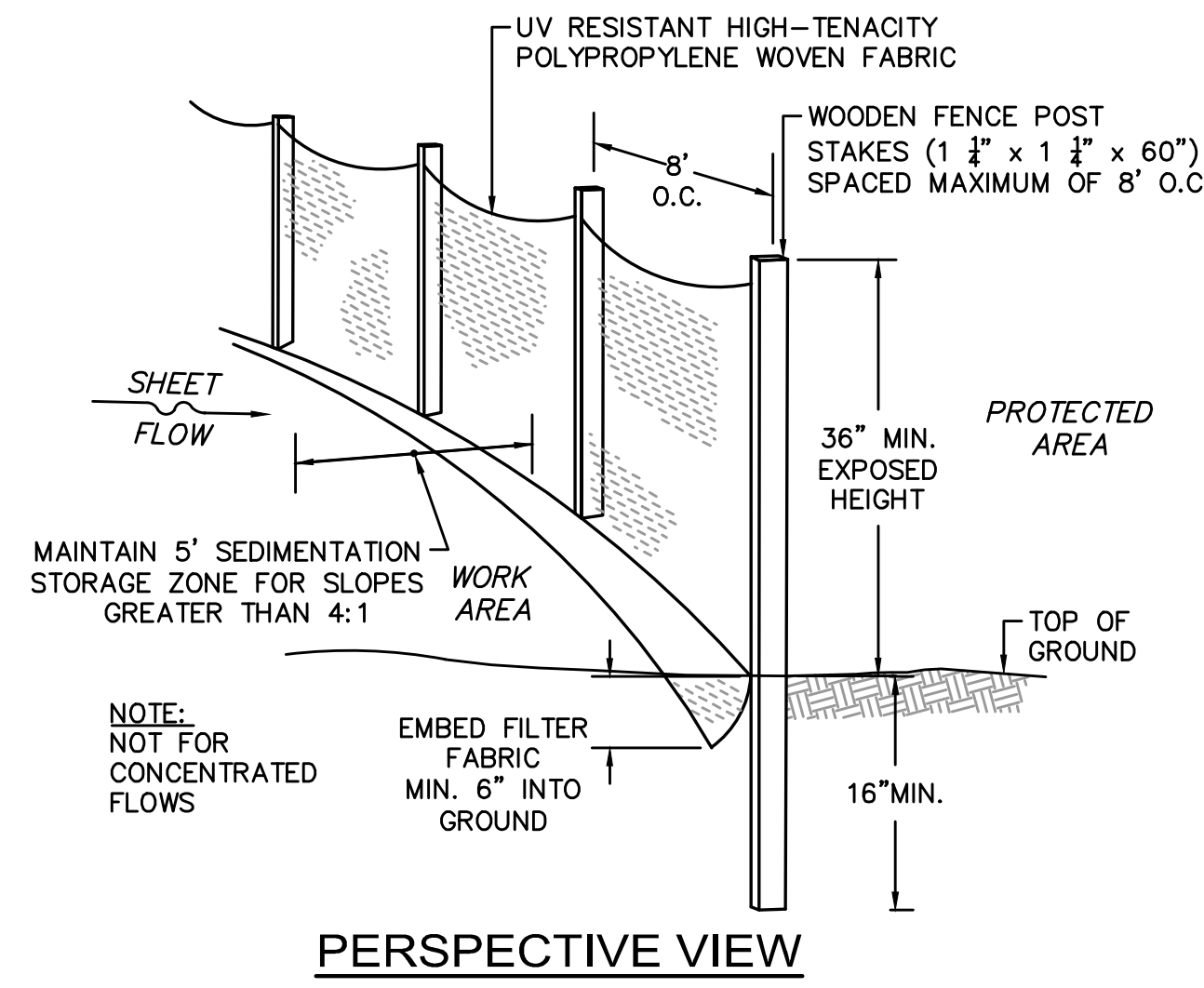
PROPOSED VALVE VAULT
PROPOSED PUMP CHAMBER



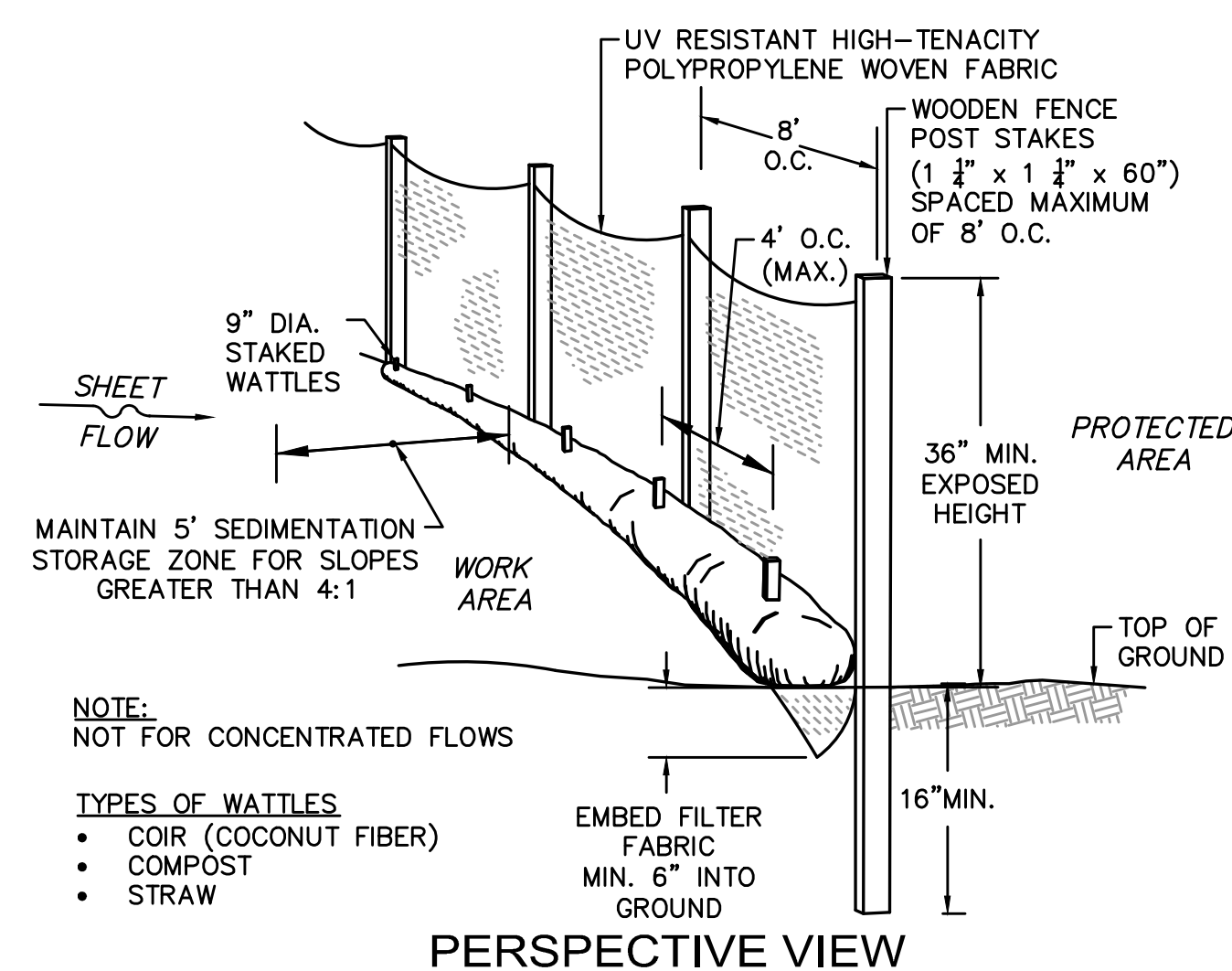
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1" = 20'



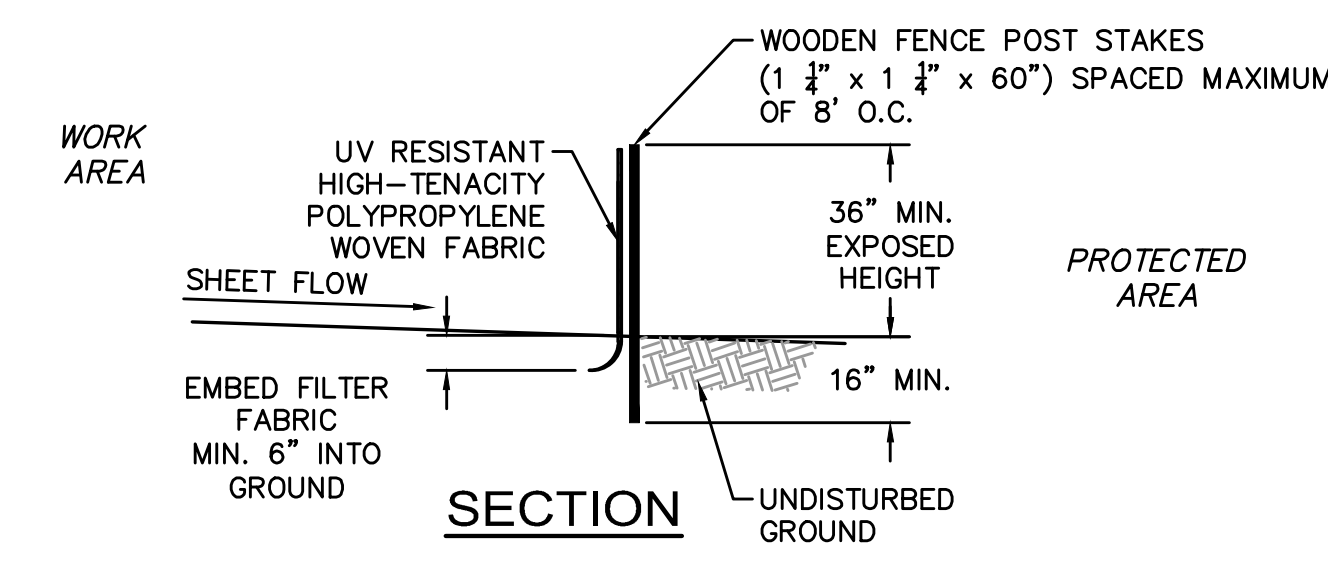
LOT AREA
146,845 S.F.
3.371 Acres



PERSPECTIVE VIEW

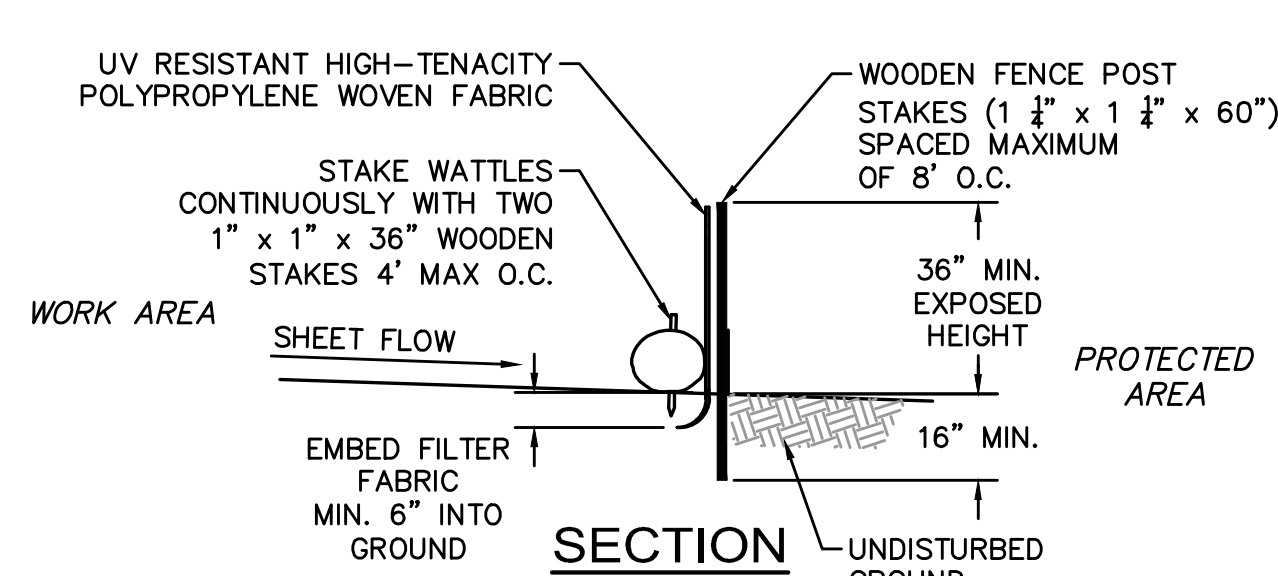


PERSPECTIVE VIEW



SECTION

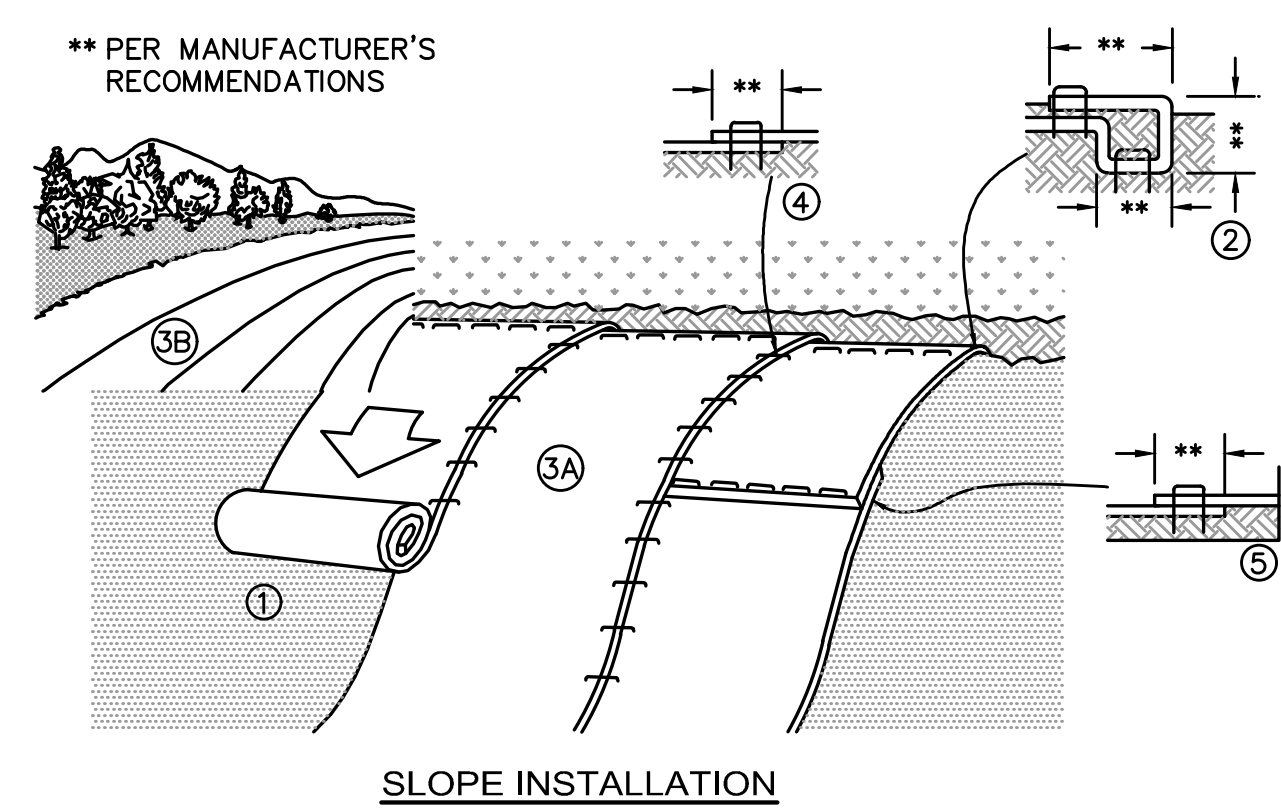
PERIMETER PROTECTION BARRIER (A)



SECTION

PERIMETER PROTECTION BARRIER (B)
SILT FENCE DETAIL WITH WATTLES

NOT TO SCALE



SLOPE INSTALLATION

NOTES:

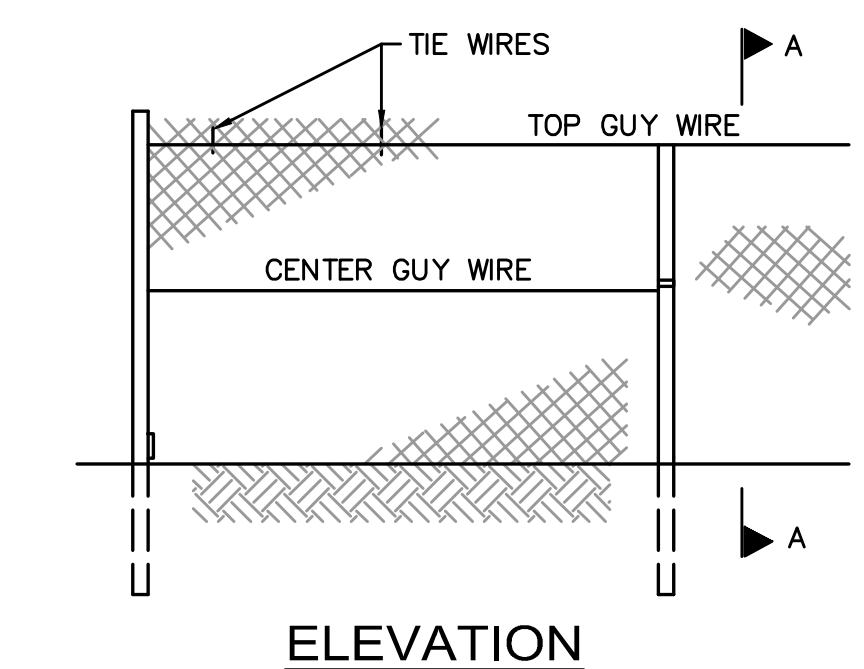
1. PREPARE SOIL BEFORE INSTALLING EROSION CONTROL BLANKETS (ECB'S), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE ECB'S IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING PORTION OF ECB'S BACK OVER SEED AND COMPACTED SOIL. SECURE ECB'S OVER COMPACTED SOIL WITH A ROW OF STAKES/STAPLES SPACED ACCORDANCE TO THE MANUFACTURER'S RECOMMENDATIONS ACROSS THE WIDTH OF THE ECB'S.
3. ROLL THE ECB'S DOWN (A) OR HORIZONTALLY (B) ACROSS THE SLOPE. ECB'S WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL ECB'S MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAKES/STAPLES IN APPROPRIATE LOCATIONS AS SHOWN ON THE STAKE/STAPLE PATTERN GUIDE.
4. THE EDGES OF PARALLEL ECB'S MUST BE STAKED/STAPLED WITH OVERLAP DEPENDING ON ECB'S TYPE. SEE THE MANUFACTURER'S RECOMMENDATIONS.
5. CONSECUTIVE ECB'S SPICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN OVERLAP (SEE THE MANUFACTURER'S RECOMMENDATIONS). STAKE/STAPLE THROUGH OVERLAPPED AREA, ACROSS ENTIRE ECB'S WIDTH PER MANUFACTURER'S RECOMMENDATIONS.
6. IN LOOSE SOIL CONDITIONS, THE USE OF STAKE OR STAPLE LENGTHS GREATER THAN 6\"/>
- 7. THE CONTRACTOR SHALL FOLLOW ALL INSTALLATION INSTRUCTIONS AS RECOMMENDED BY THE MANUFACTURER.

TEMPORARY EROSION CONTROL
BLANKET FOR STEEP SLOPES DETAIL

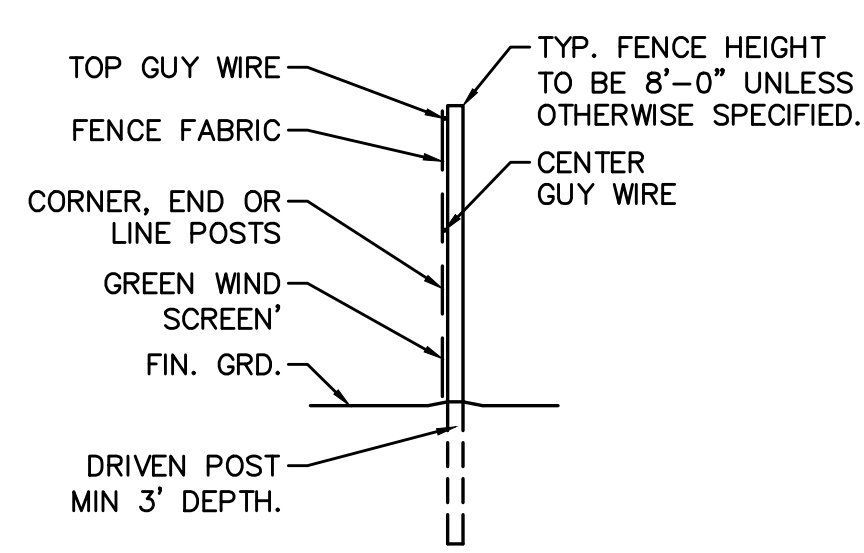
NOT TO SCALE

CONSTRUCTION FENCE
AND GATE NOTES

1. FABRIC SHALL BE 0.148\"/>
- 2. THE FENCE FABRIC SHALL BE ZINC COATED STEEL OR ALUMINUM COATED STEEL.
- 3. FENCE POSTS SHALL RECEIVE THE SAME COATING AND TREATMENT AS THE FENCE FABRIC (DESCRIBED ABOVE).
- 4. THE CONTRACTOR SHALL ADD A GREEN WIND SCREEN
- 5. LINE POSTS SHALL BE 2 1/2\"/>
- 6. THE CONTRACTOR IS RESPONSIBLE FOR SURFACE RESTORATION ONCE THE FENCE IS REMOVED.
- 7. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF THE TEMPORARY CONSTRUCTION FENCE AT THE CONCLUSION OF THE PROJECT.



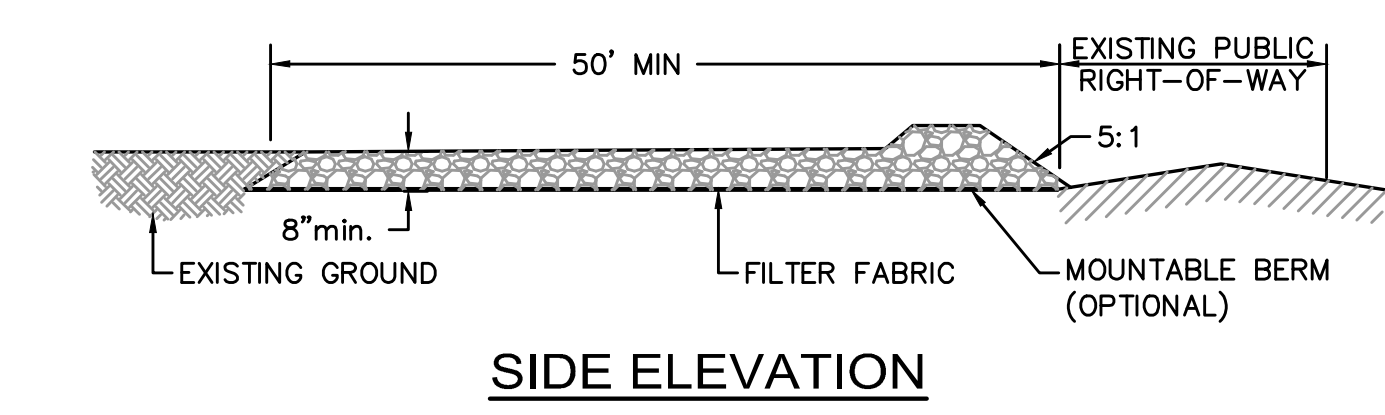
ELEVATION



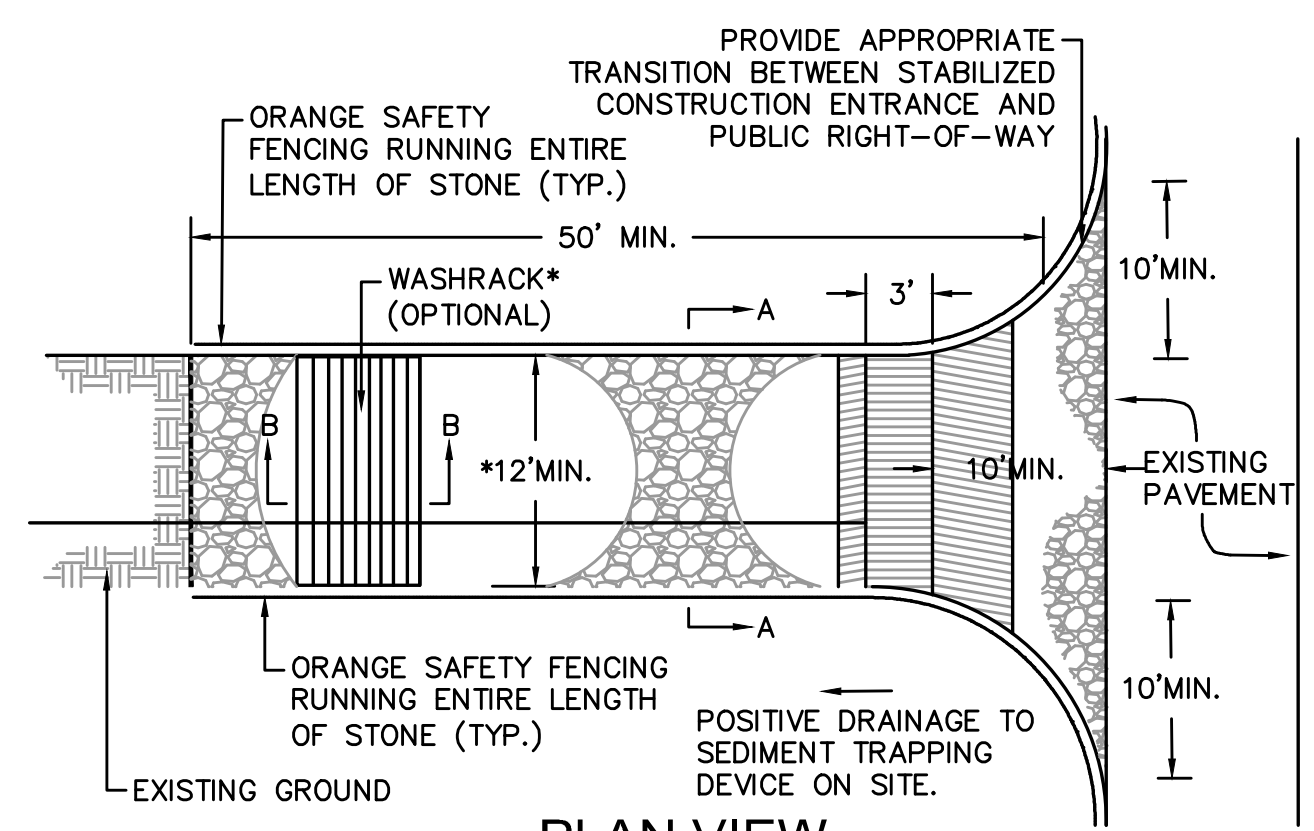
SECTION A-A

CHAIN LINK CONSTRUCTION FENCE

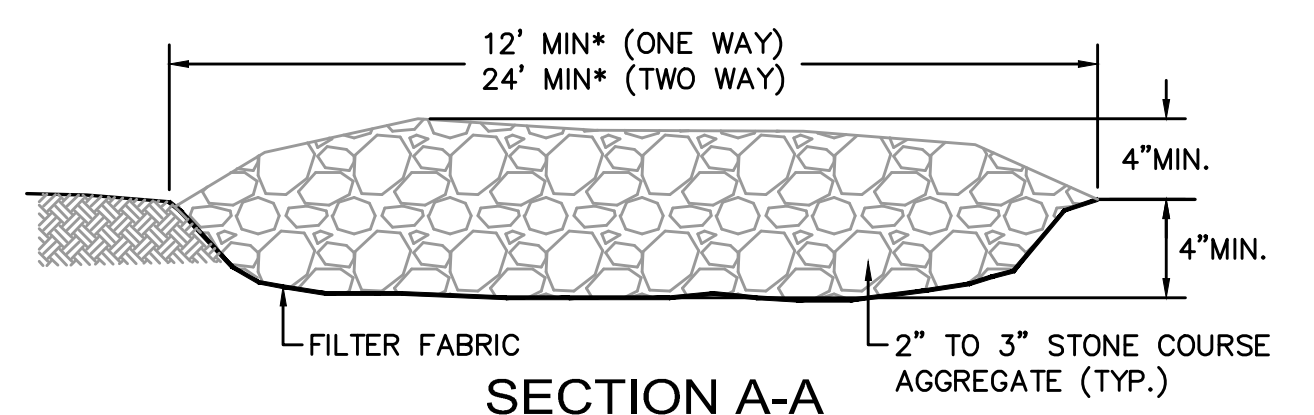
NOT TO SCALE



SIDE ELEVATION

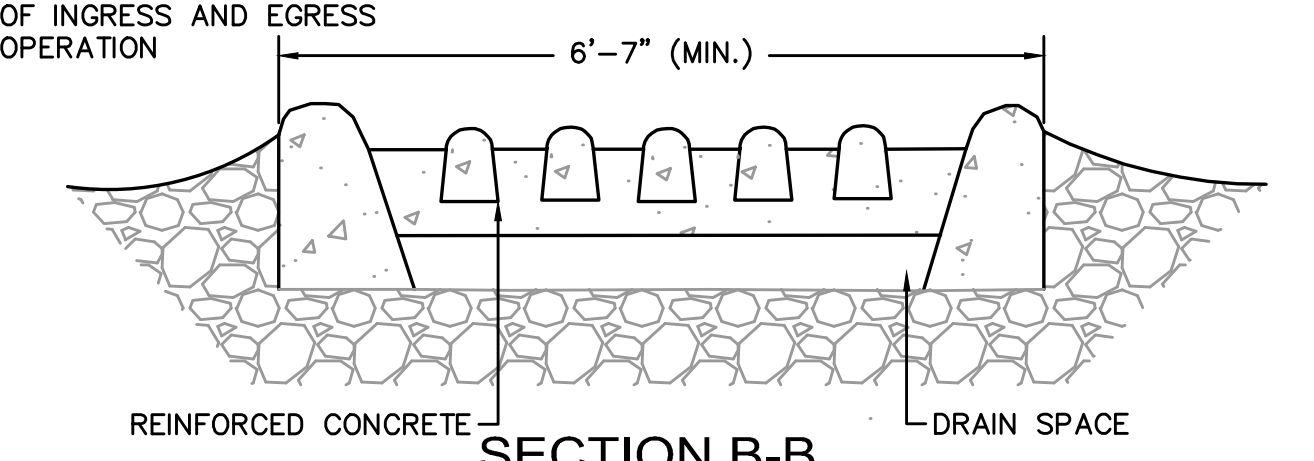


PLAN VIEW



SECTION A-A

* MUST EXTEND FULL WIDTH OF INGRESS AND EGRESS OPERATION



SECTION B-B

CONSTRUCTION SPECIFICATIONS

CONSTRUCTION SPECIFICATIONS

LENGTH - GREATER THAN OR EQUAL TO 50 FEET

WIDTH - TWELVE FOOT MINIMUM (ONE WAY), TWENTY FOUR FOOT MINIMUM (TWO WAY), BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS.

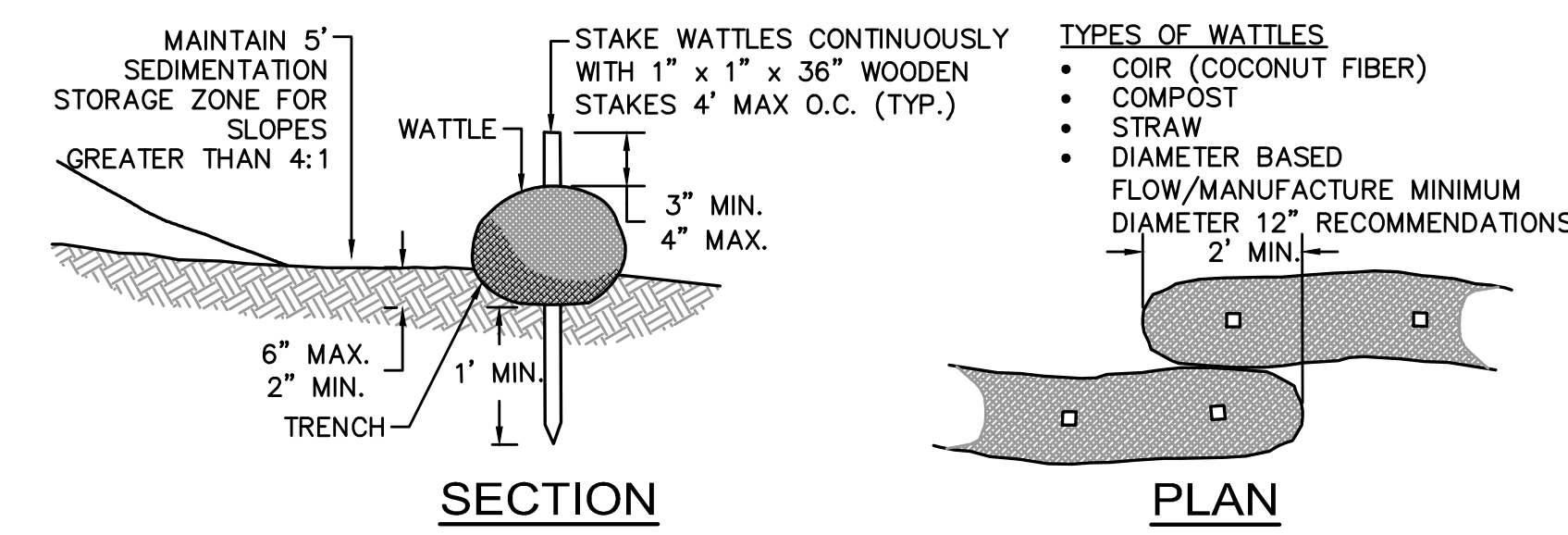
SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM SHALL BE PERMITTED.

THICKNESS - 8"

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

PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED.

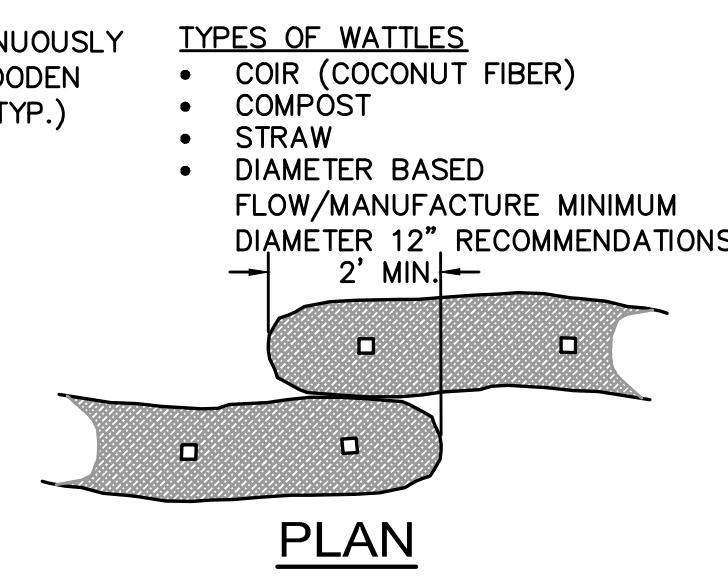
STABILIZED CONSTRUCTION ENTRANCE



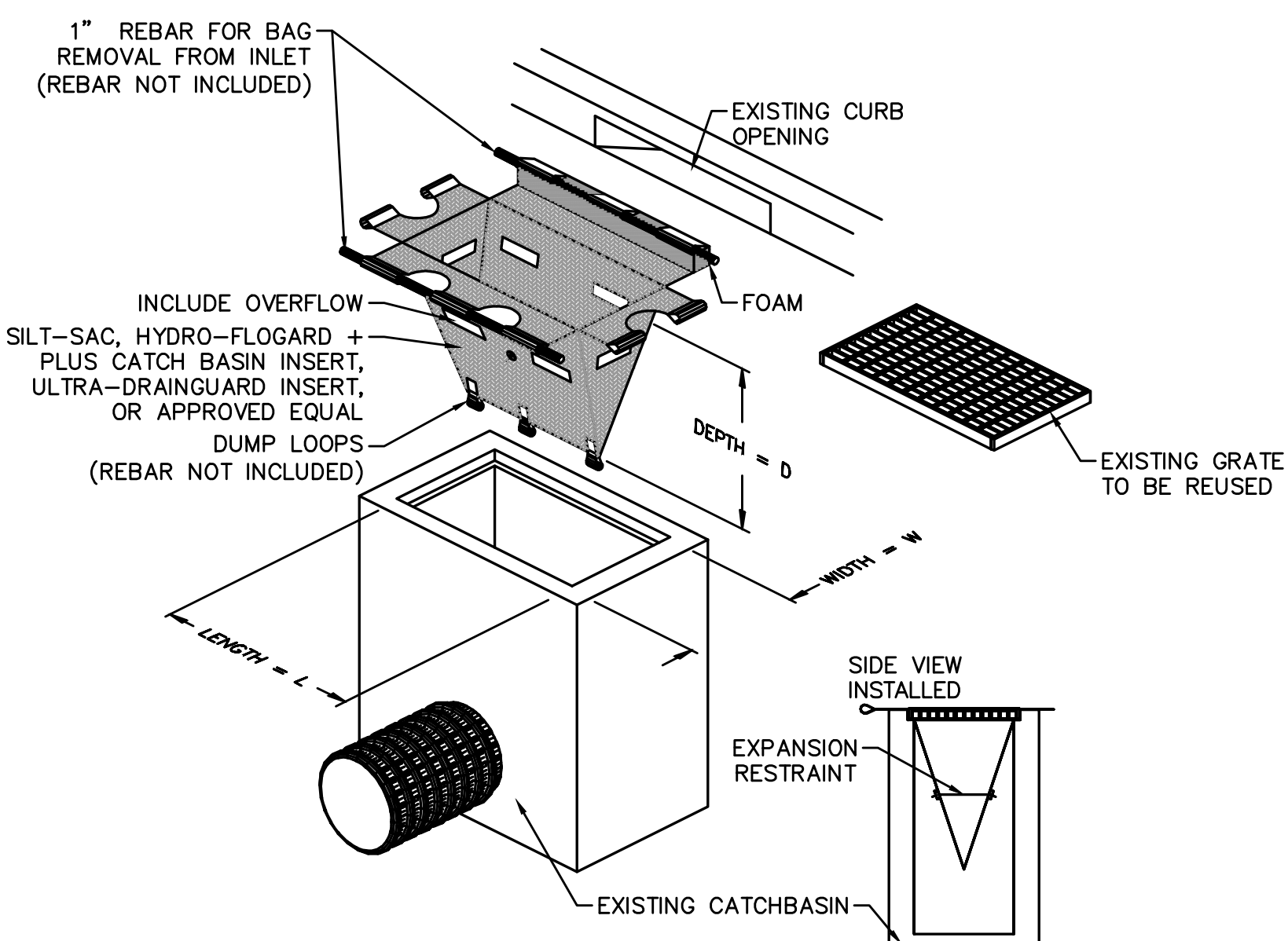
SECTION

WATTLES - SLOPE PROTECTION FOR SLOPES LESS THAN 10:1

NOT TO SCALE



PLAN



INLET PROTECTION (2)

CATCH BASIN W/ SILTATION SACK

NOT TO SCALE

THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE THE INLET DRAINS SHEET, OVERLAND OR CONCENTRATED FLOWS (NOT GREATER THAN 1 CFS). THE METHOD CAN DRAIN FLAT AREA TO STEEP SLOPES. INLET CAPACITY WILL BE DECREASED WITH THIS METHOD AND THE CONTRACTOR SHALL EXPECT PONDING DURING HIGH FLOW EVENTS.

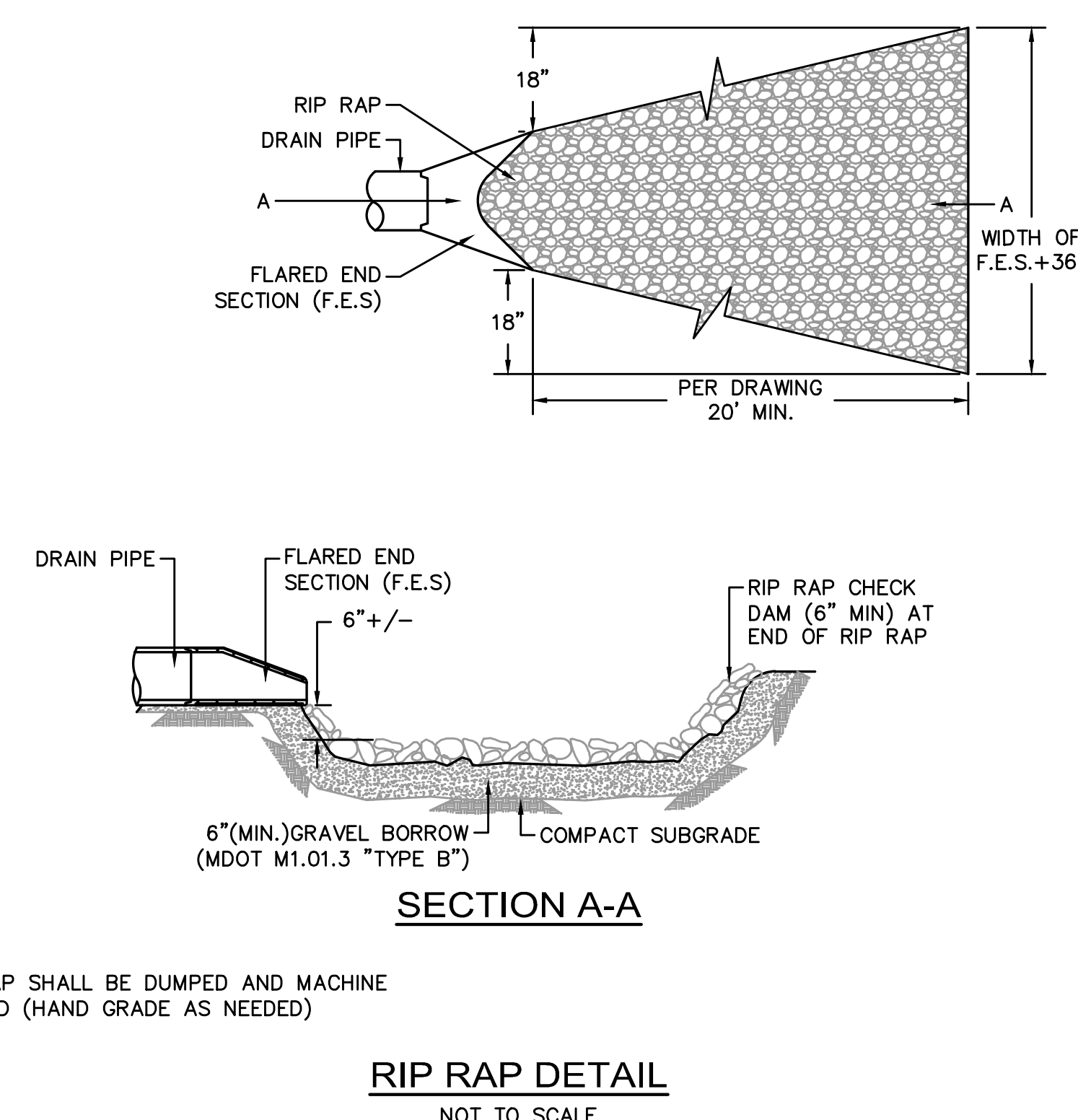
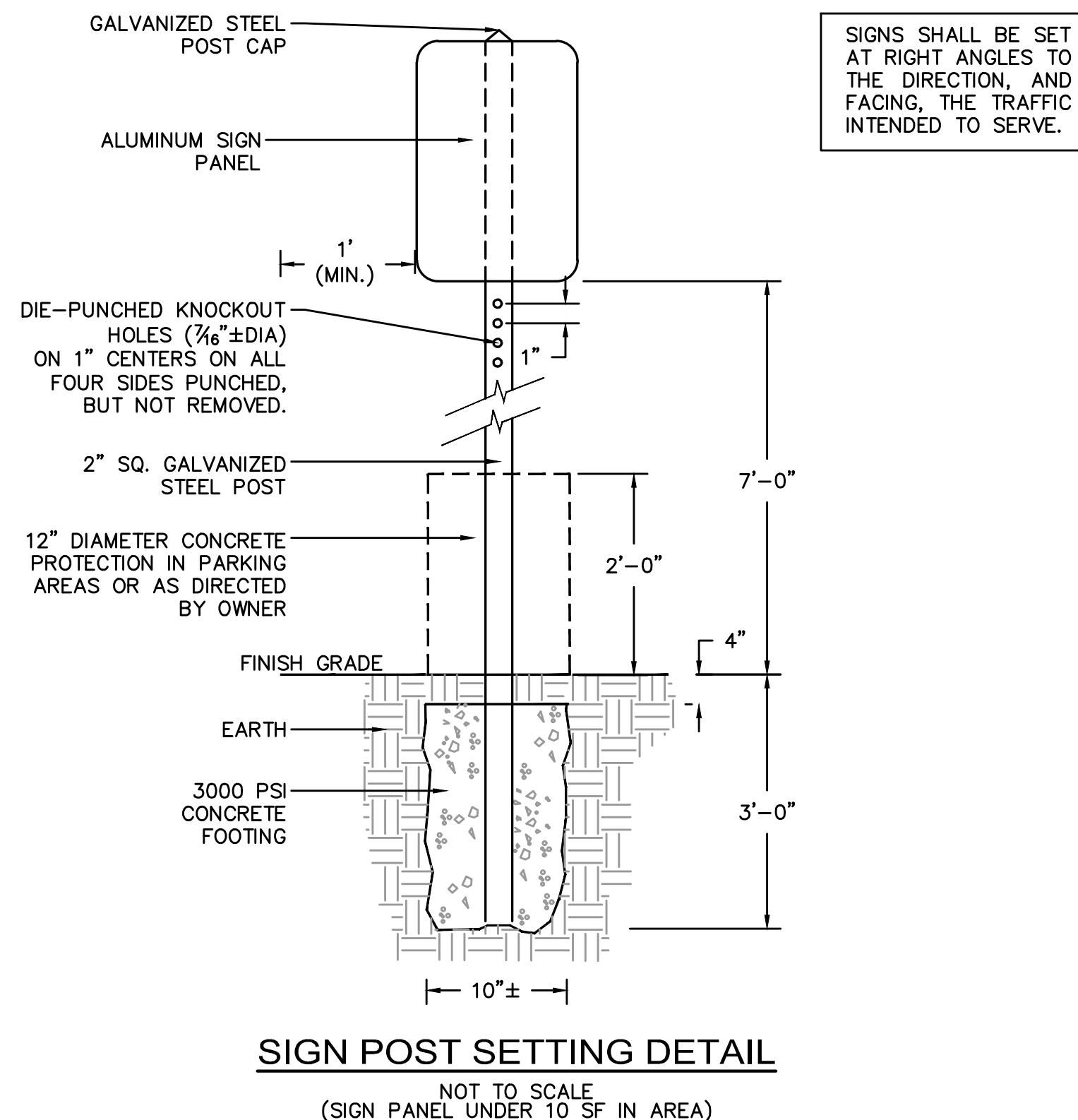
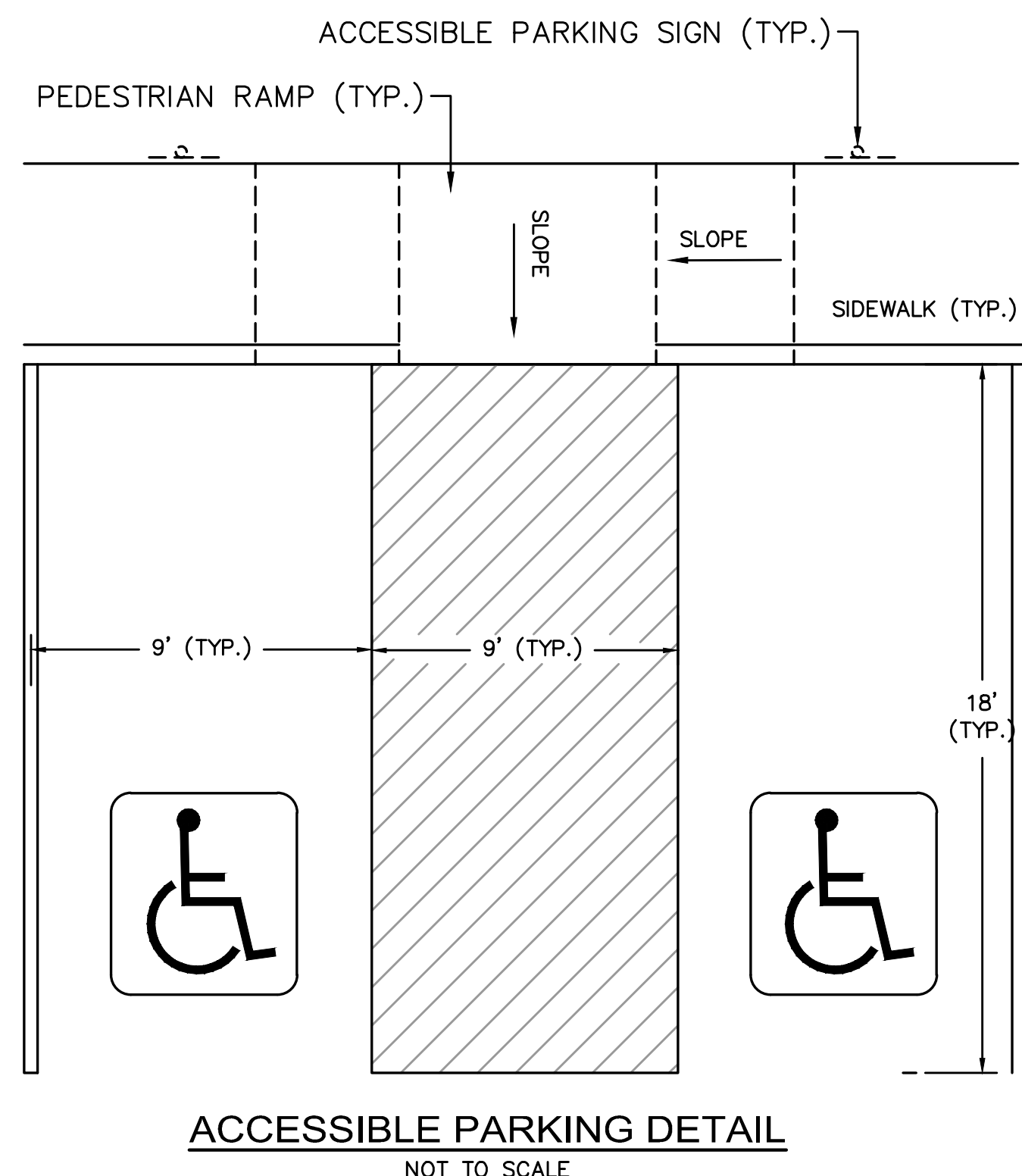
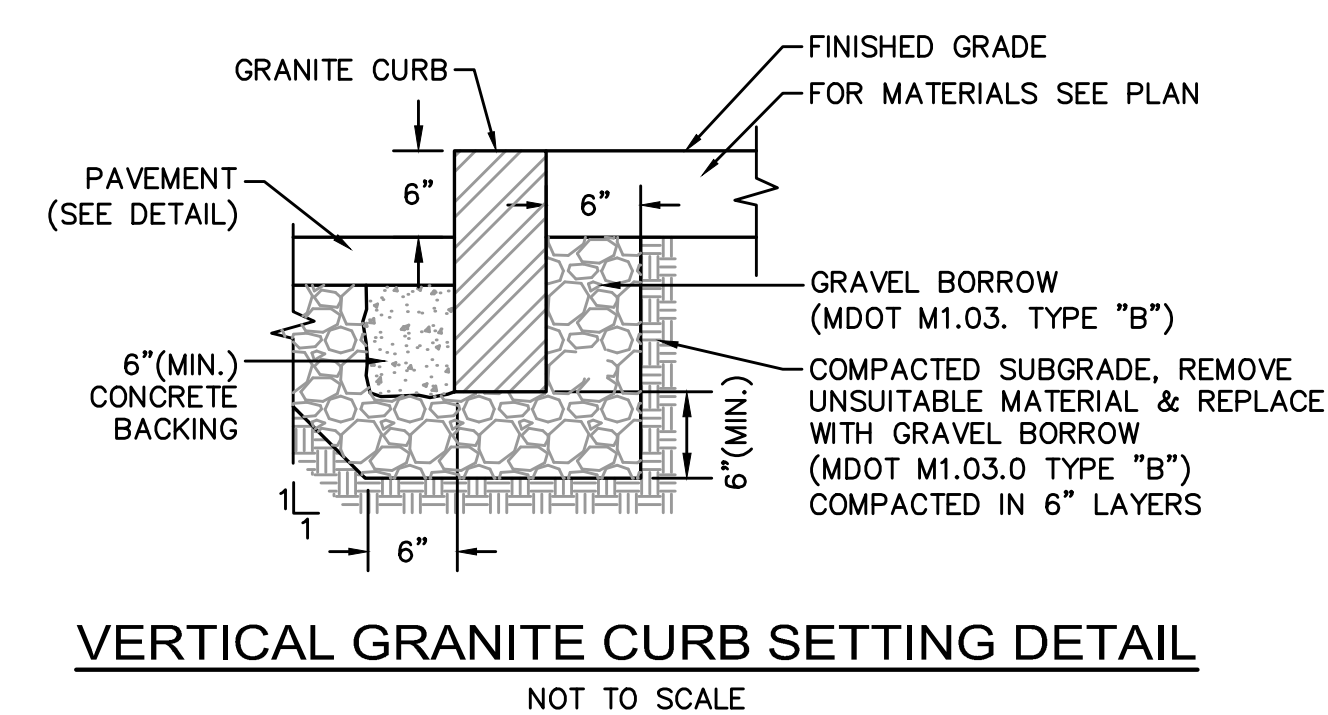
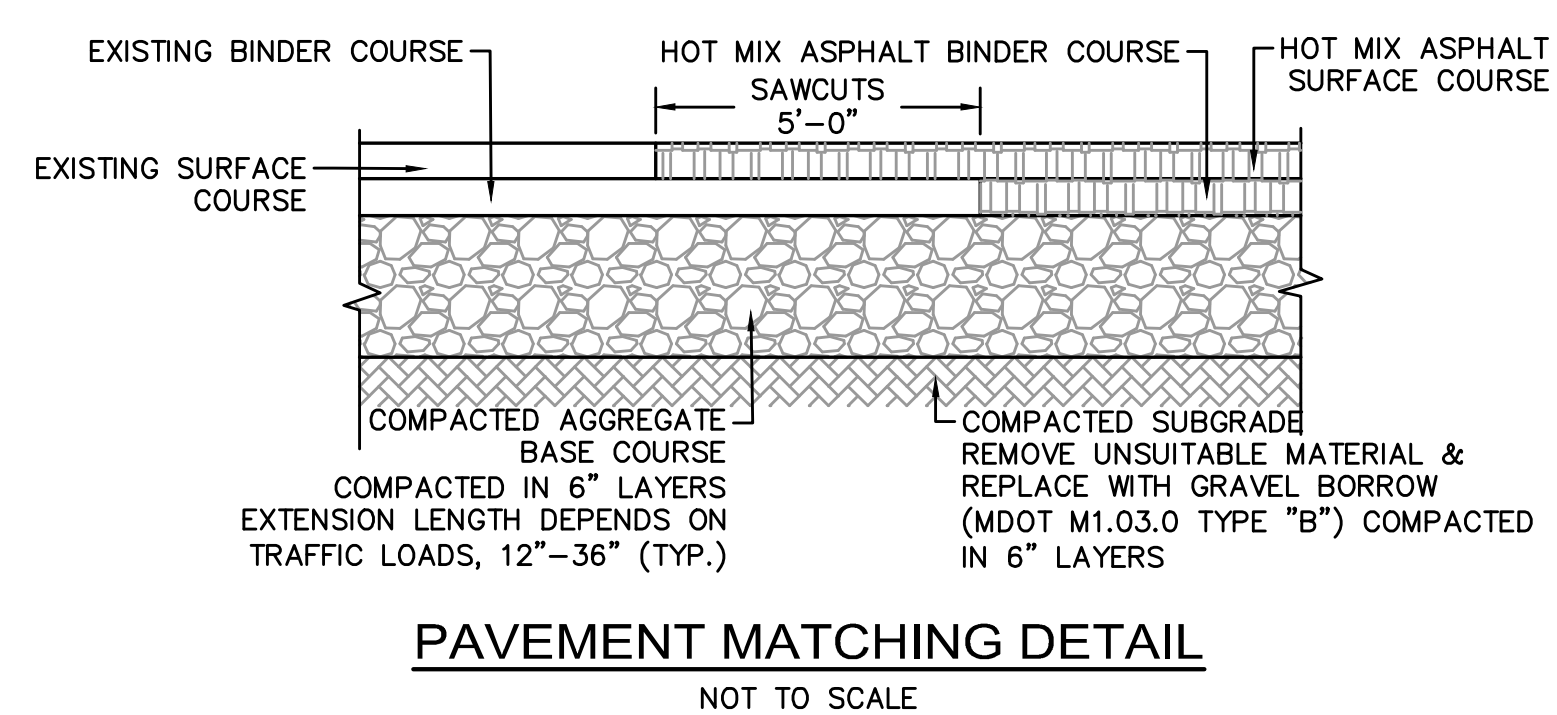
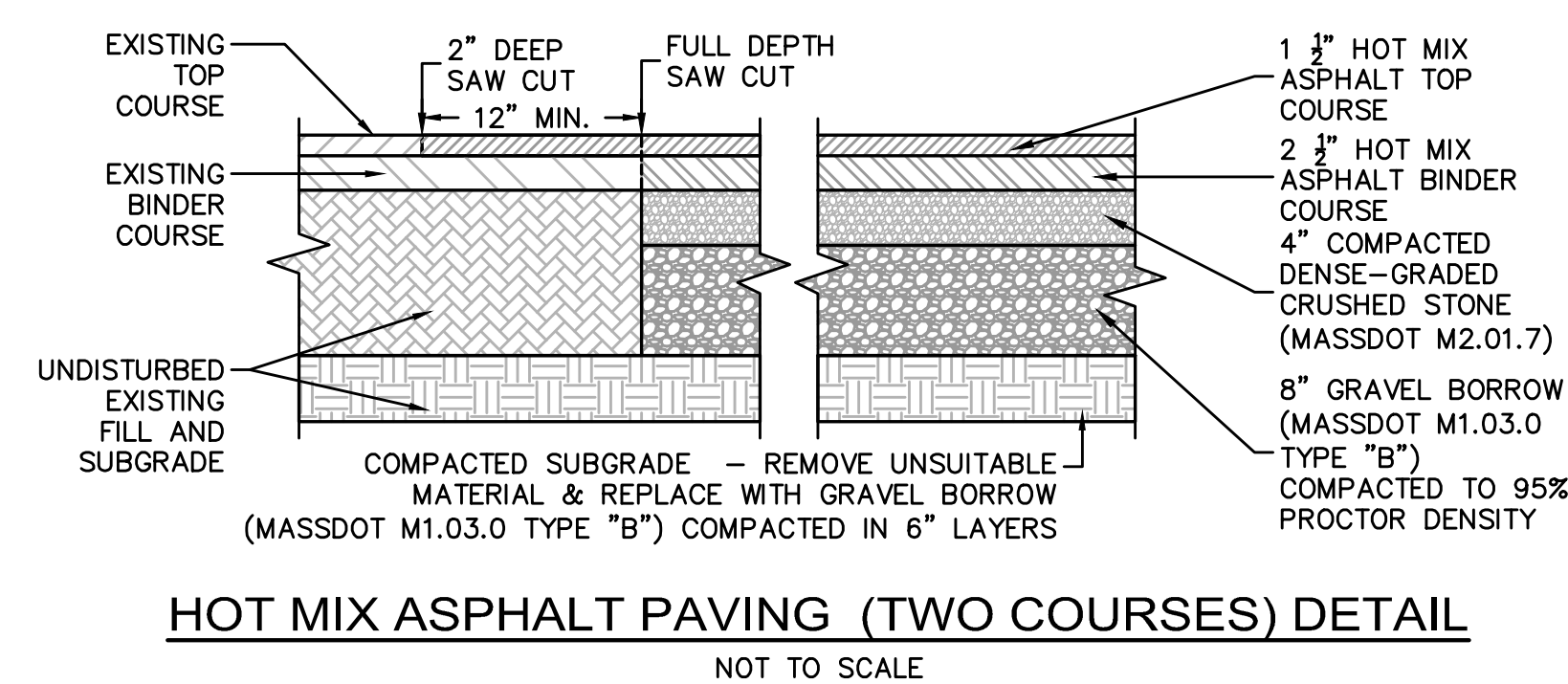
No.	Description	Date

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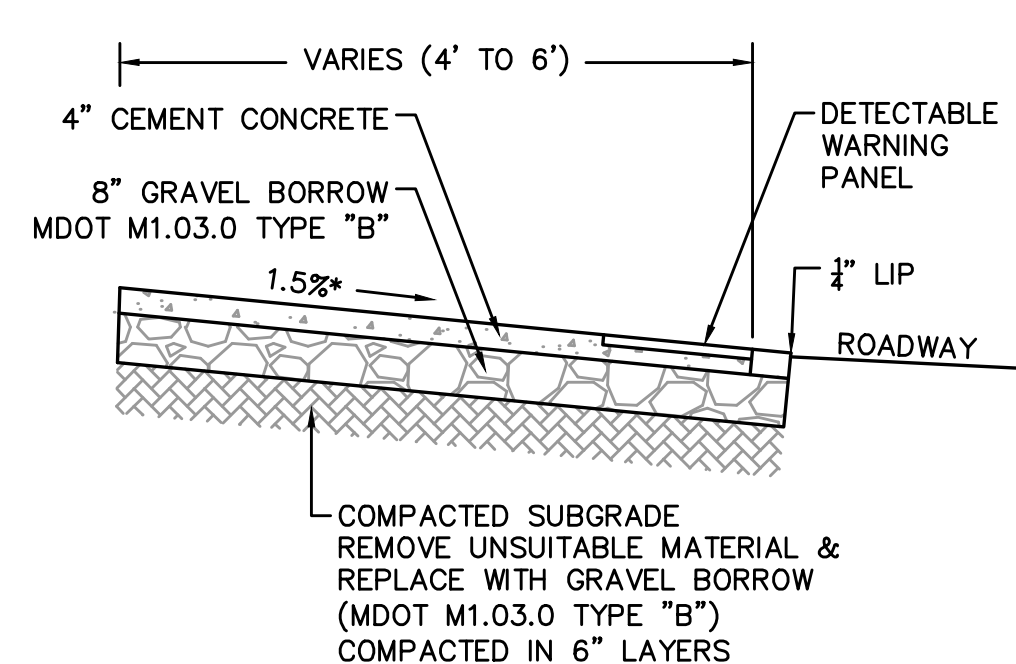
CIVIL DETAILS I

PROJECT CLIENT FROM REVISIONS COPYRIGHT SEAL / ORIENTATION DATA SHEET



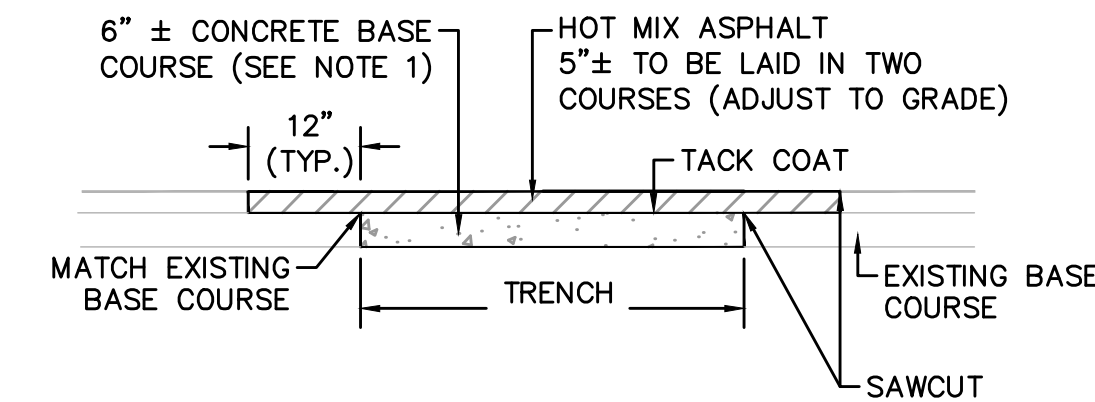
ROADWAY PROFILE GRADE	HIGH SIDE TRANSITION LENGTH
ROADWAY PROFILE GRADE %	HIGH SIDE TRANSITION LENGTH (FEET)
0	6'-6"
0-1	7'-8"
1-2	9'-0"
2-3	11'-0"
3-4	14'-0"
>4	15' (MAX.)

NOTE-BASED ON A DESIGN SLOPE OF 7.5% & A REVEAL OF 6"

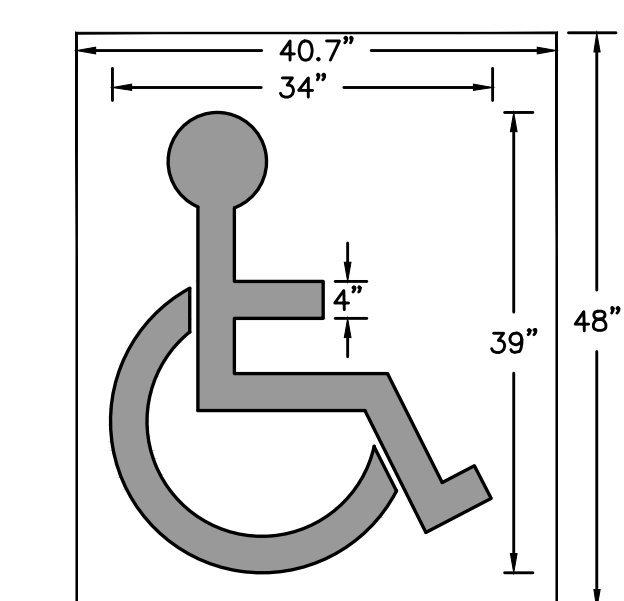
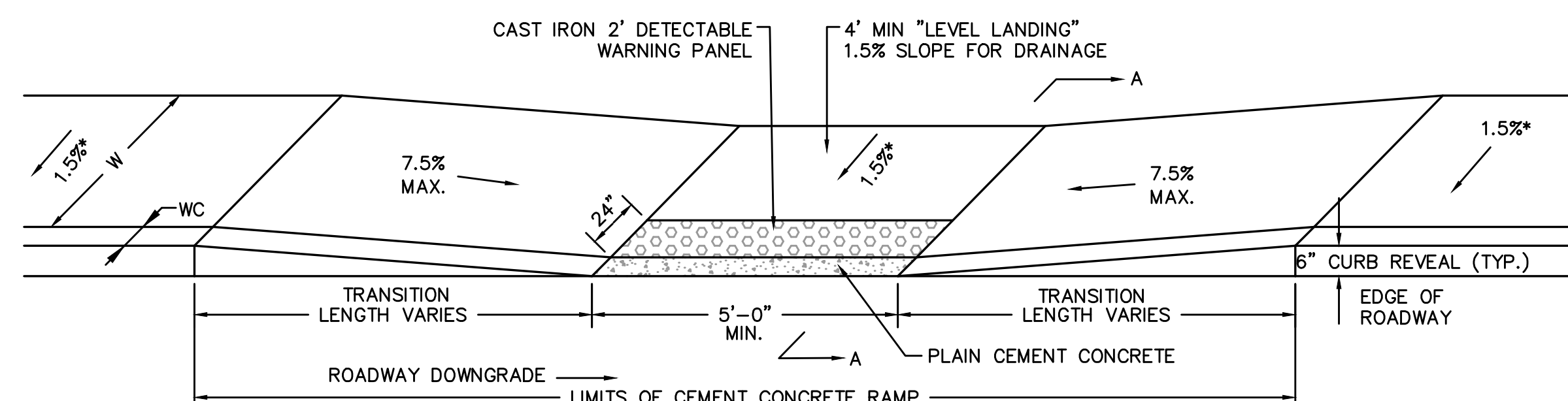


SECTION A-A

LEGEND
W = SIDEWALK WIDTH (VARIES 4' TO 6")
Wc = CURB WIDTH (VARIES 0" TO 6")
* = TOLERANCE FOR CONSTRUCTION (± 0.5%)



NOTES:
1. PROPOSED CONCRETE BASE COURSE SHALL BE LEVEL WITH THE TOP OF THE EXISTING BASE COURSE



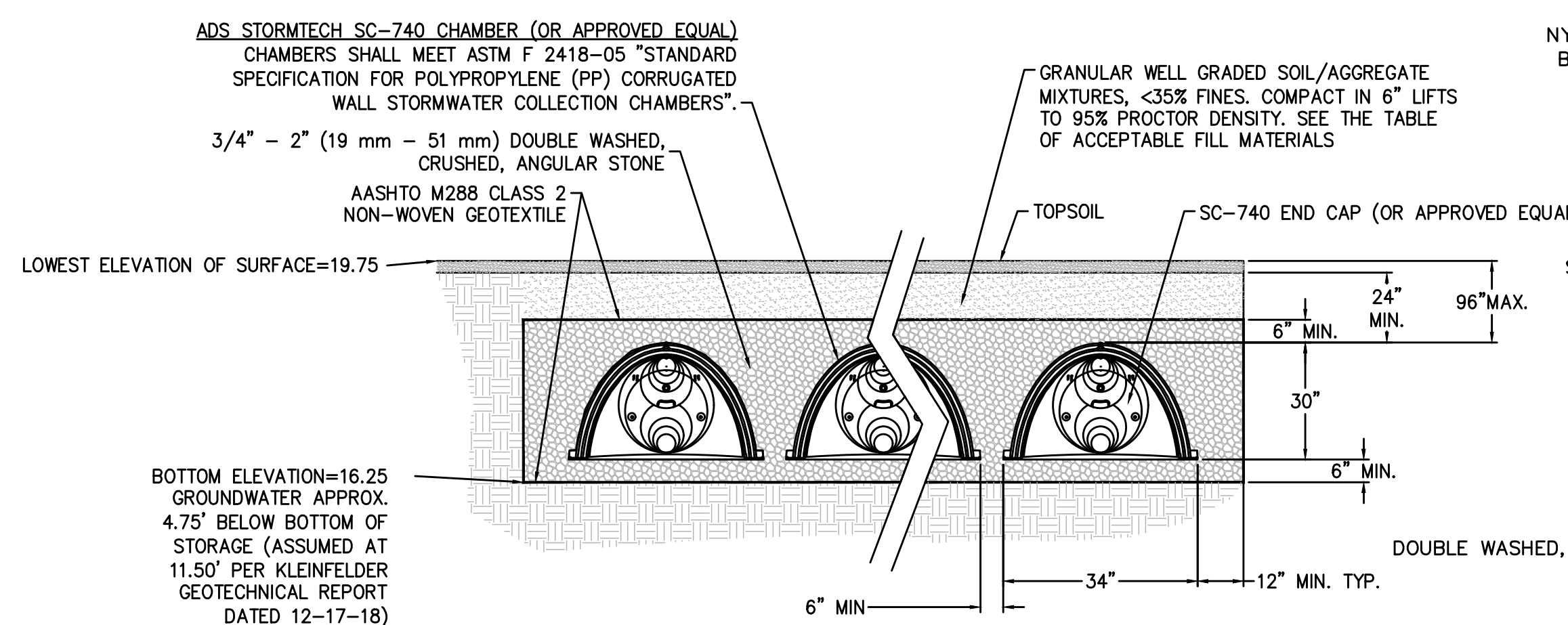
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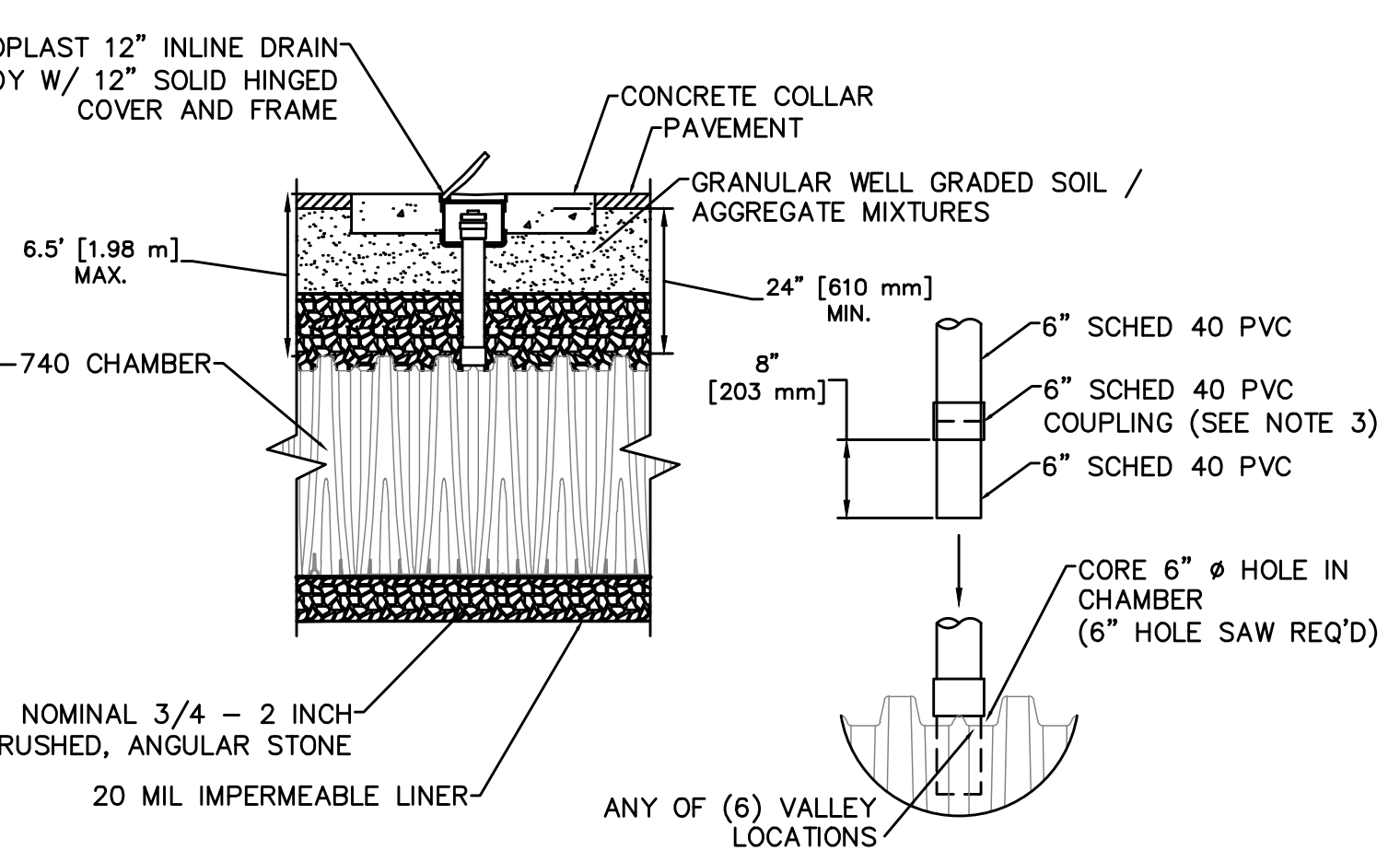
CIVIL DETAILS II

C-601

2/11/2021 7:16 PM Q:\14051 Boxford Sr. Ctr\Civil\CAD\14051cdt.dwg



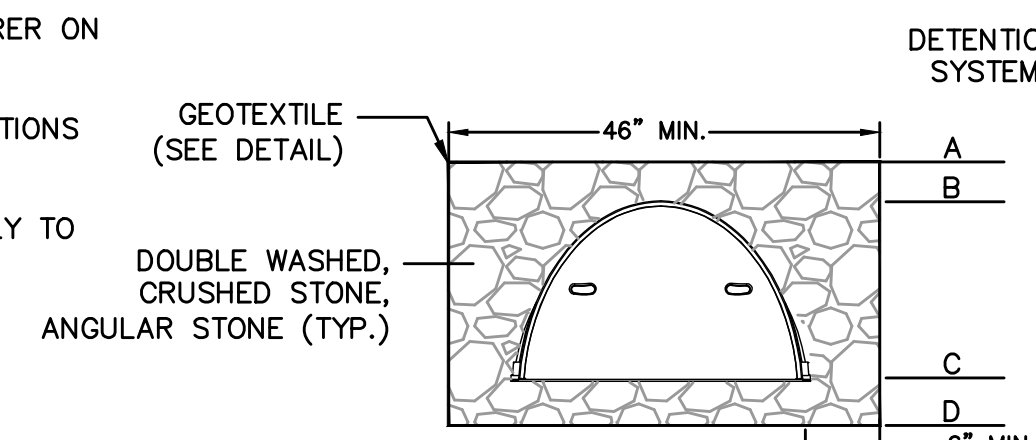
CROSS SECTION
NOT TO SCALE



INSPECTION PORT
NOT TO SCALE

CONNECTION DETAIL
NTS

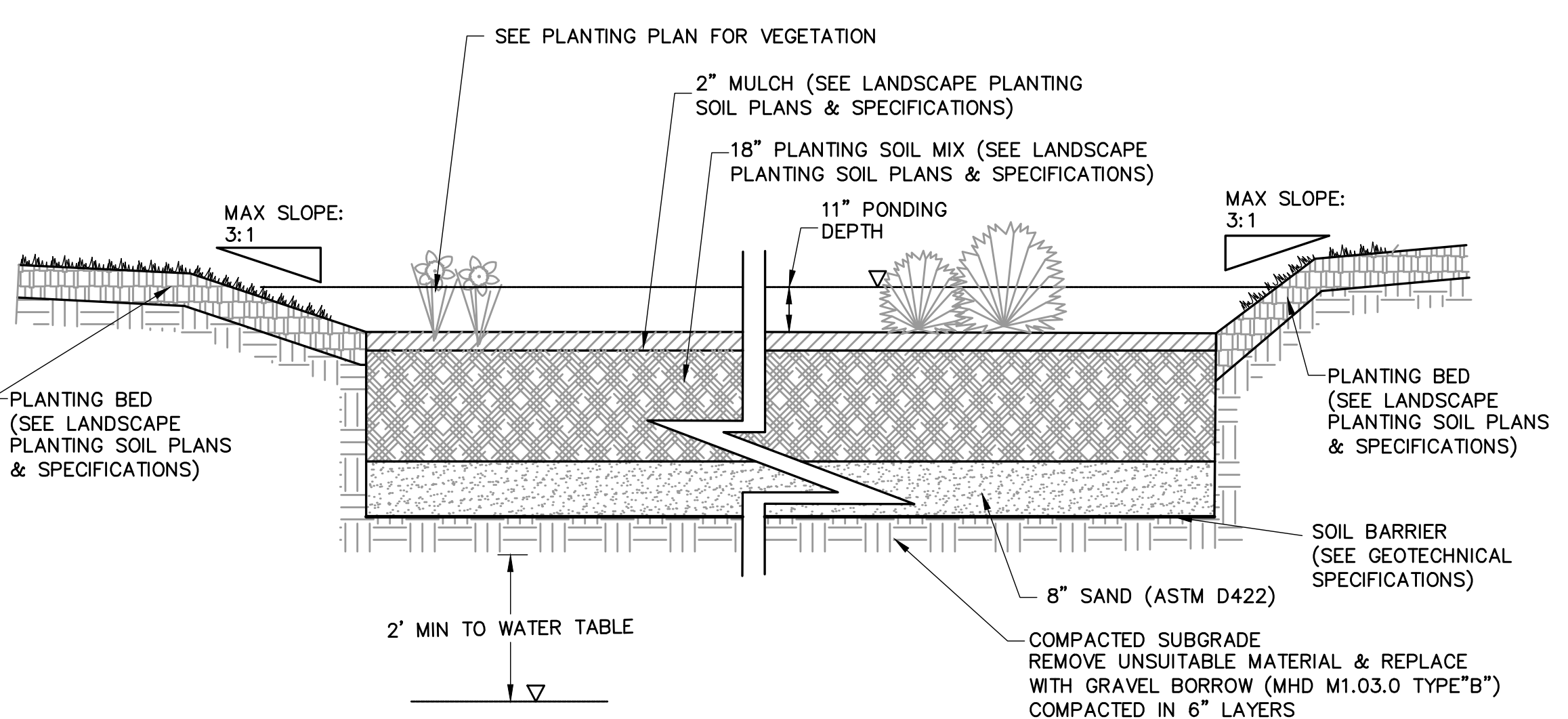
- NOTES:
- 1) DETAILS PROVIDED ARE FOR GENERAL REFERENCE PURPOSES ONLY. THE CONTRACTOR SHALL COORDINATE WITH THE MANUFACTURER ON THE DESIGN SHOP DRAWINGS TO BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
 - 2) THE INSTALLED CHAMBER SYSTEM SHALL PROVIDE THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS SECTION 12.12 FOR EARTH AND LIVE LOADS, WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCE.
 - 3) PERIMETER STONE MUST ALWAYS BE BROUGHT UP EVENLY WITH BACKFILL OF BED. PERIMETER STONE MUST EXTEND HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH STRAIGHT OR SLOPED SIDEWALLS.
 - 4) INSPECTION PORTS MAY BE CONNECTED THROUGH ANY OF (6) CHAMBER CORRUGATION VALLEYS
 - 5) ALL SCHEDULE 40 FITTINGS TO BE SOLVENT CEMENTED.



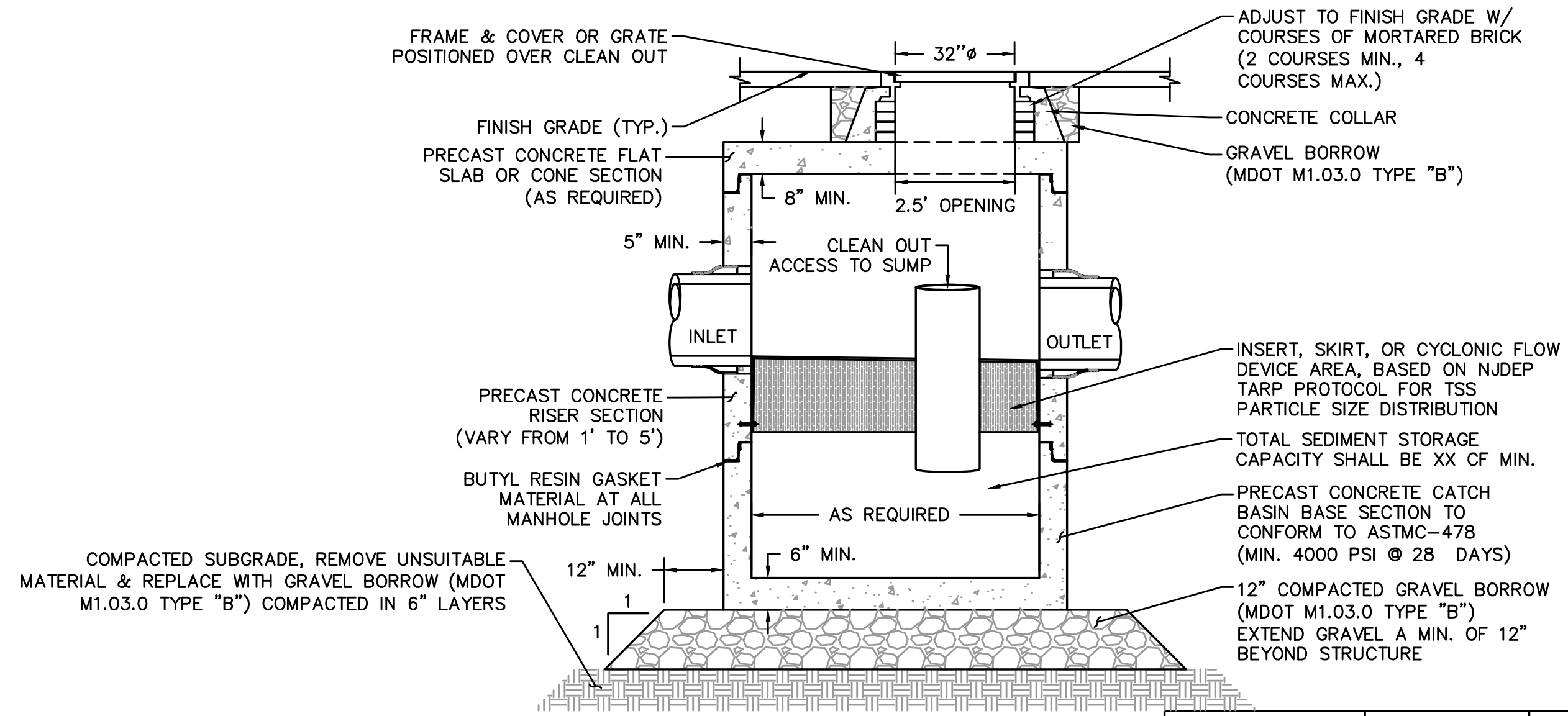
ELEVATION SECTION

SYSTEM	ELEVATIONS			
	A	B	C	D
SYSTEM #1 (42 CHAMBERS)	102.50	102.00	99.50	99.00

**STORMTECH SC-740
SUBSURFACE INFILTRATION SYSTEM**
NOT TO SCALE



BIORETENTION BASIN
NOT TO SCALE

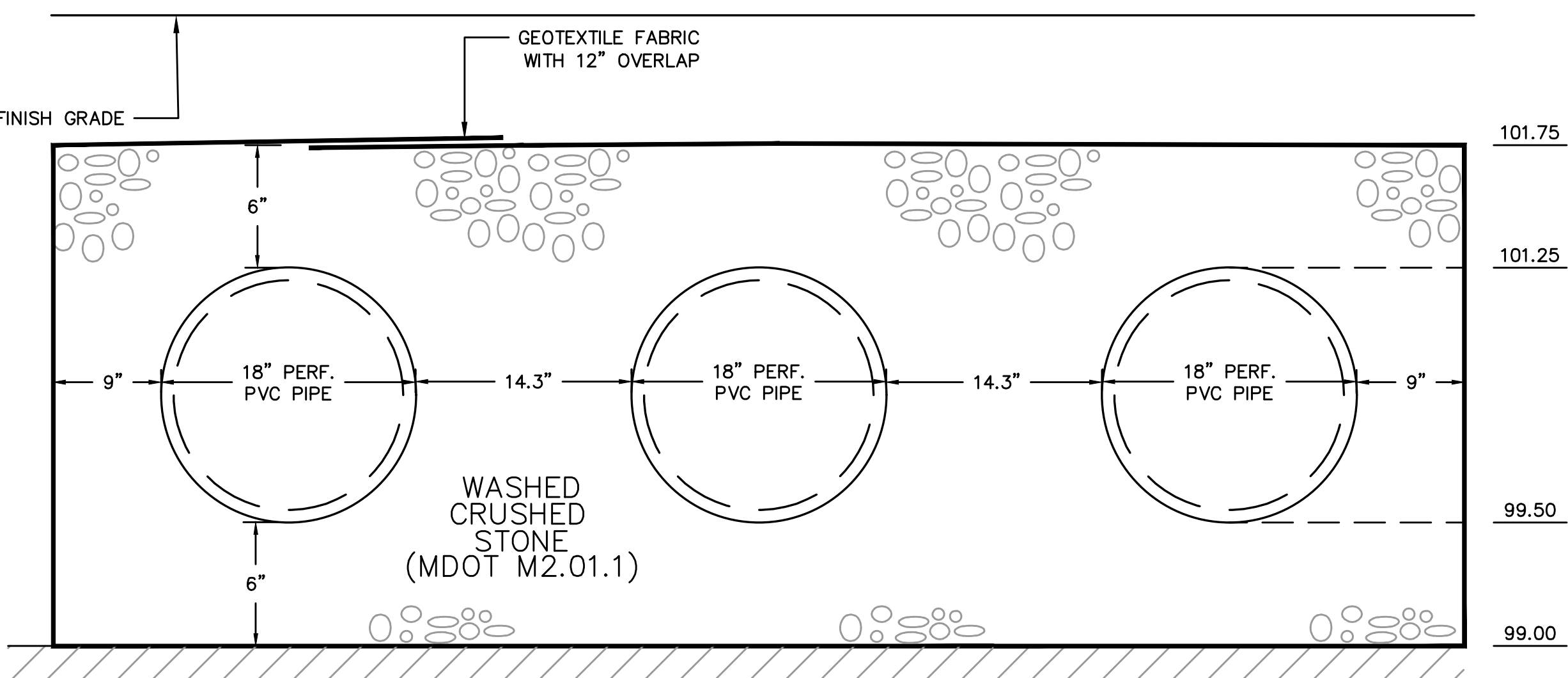


WATER QUALITY STRUCTURE DETAIL
NOT TO SCALE

- NOTE:
1. THE USE OF FLEXIBLE CONNECTIONS IS RECOMMENDED AT THE INLET AND OUTLET WHERE APPLICABLE.
 2. THE COVER SHOULD BE POSITIONED OVER THE OUTLET DROP PIPE AND THE OIL CLEANOUT PIPE.
 3. STRUCTURE DESIGNED FOR H2O LOADING

STRUCTURE NAME	MINIMUM WQF	PEAK FLOW RATE*	MINIMUM SEDIMENT STORAGE CAPACITY
WQS#204	0.07 CFS	0.33 CFS	1 CF
WQS#205	0.19 CFS	0.46 CFS	7 CF
WQS#206	0.37 CFS	1.74 CFS	7 CF

* PEAK FLOW RATE BASED ON RATIONAL ANALYSIS FOR A 25-YEAR STORM EVENT. STRUCTURE SHALL BE ABLE TO PASS PEAK FLOW RATE WITHOUT CAUSING A BACKWATER CONDITION.



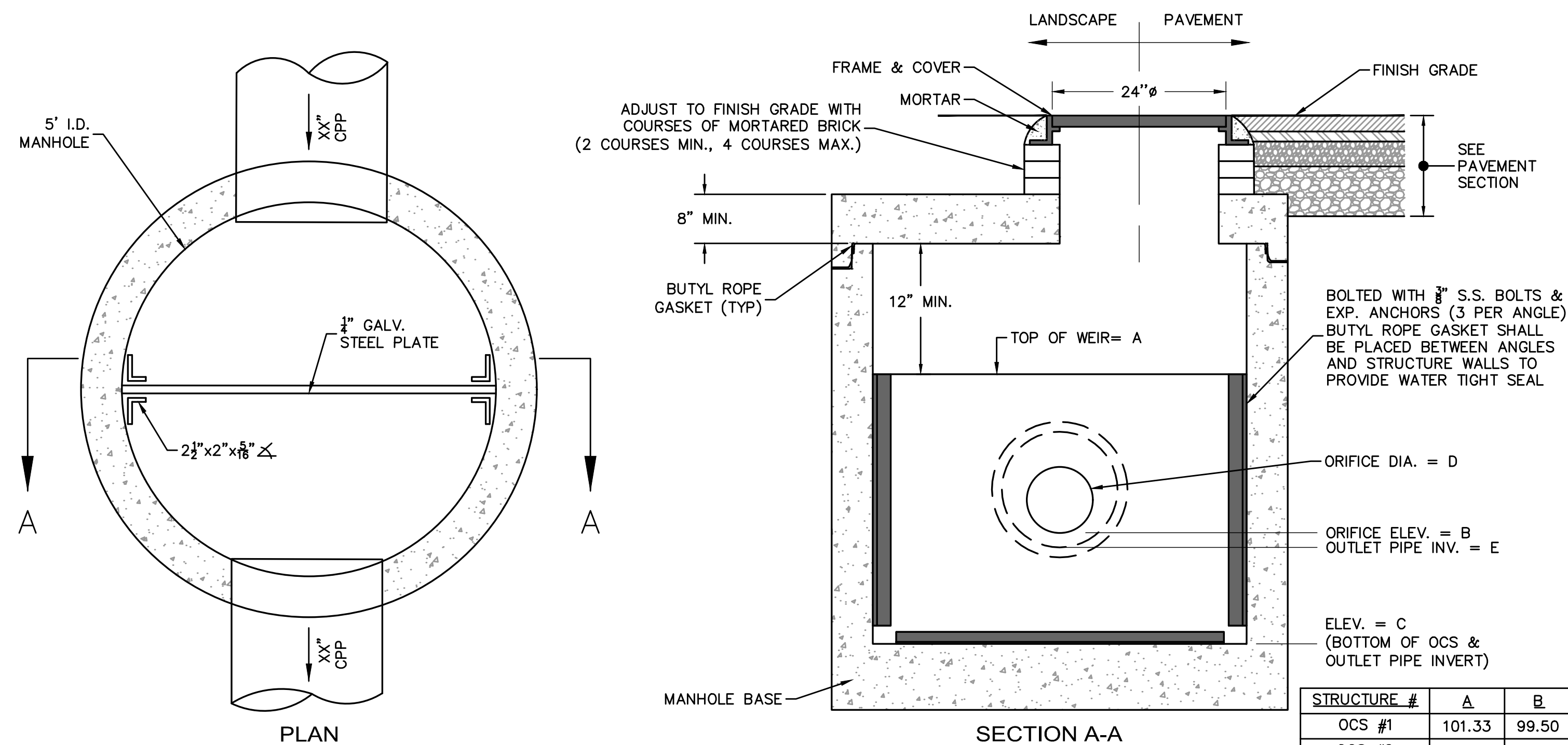
PIPE & STONE STORAGE DETAIL
NOT TO SCALE

No.	Description	Date

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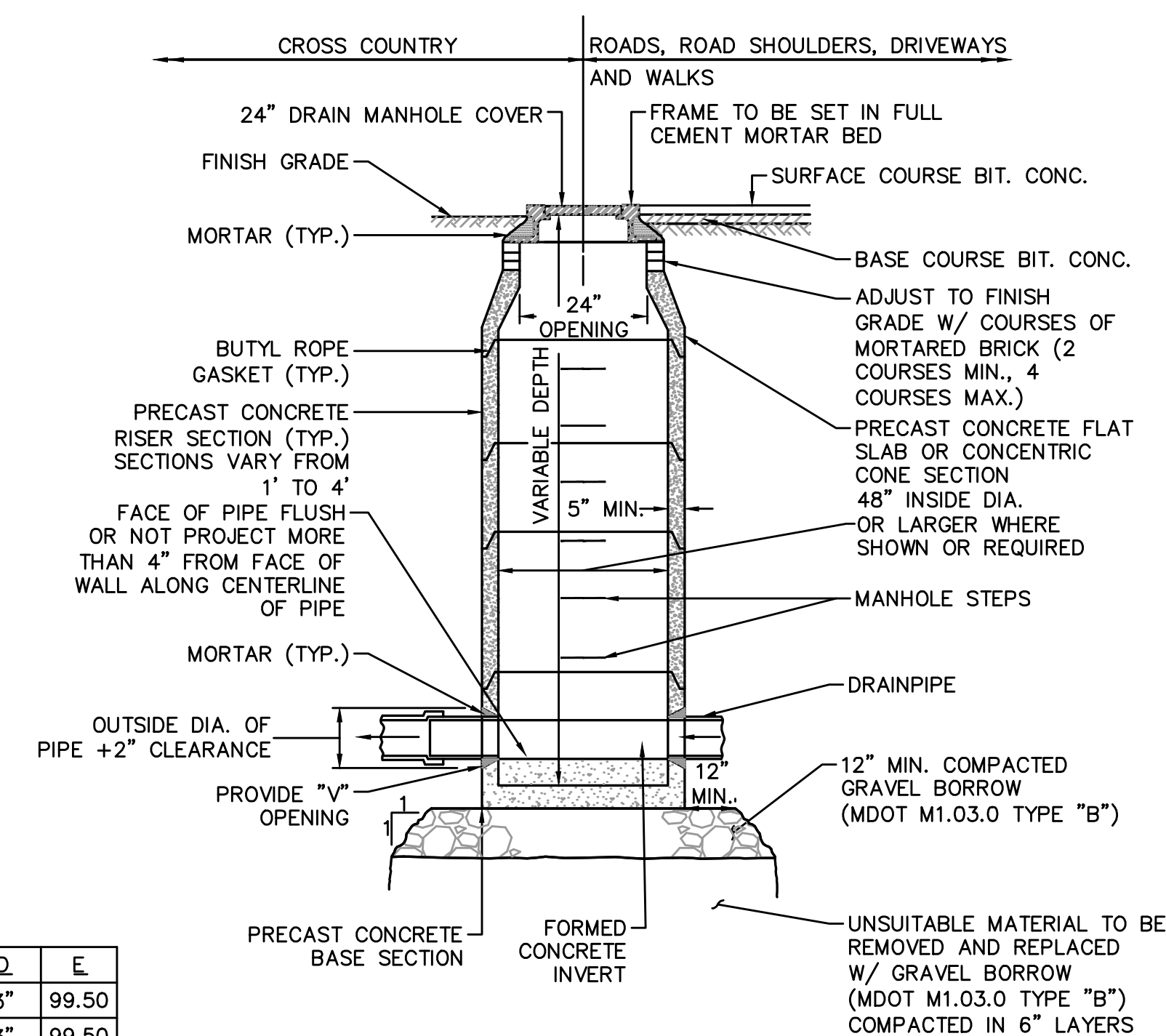
Date: 02/02/2021
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CIVIL DETAILS III



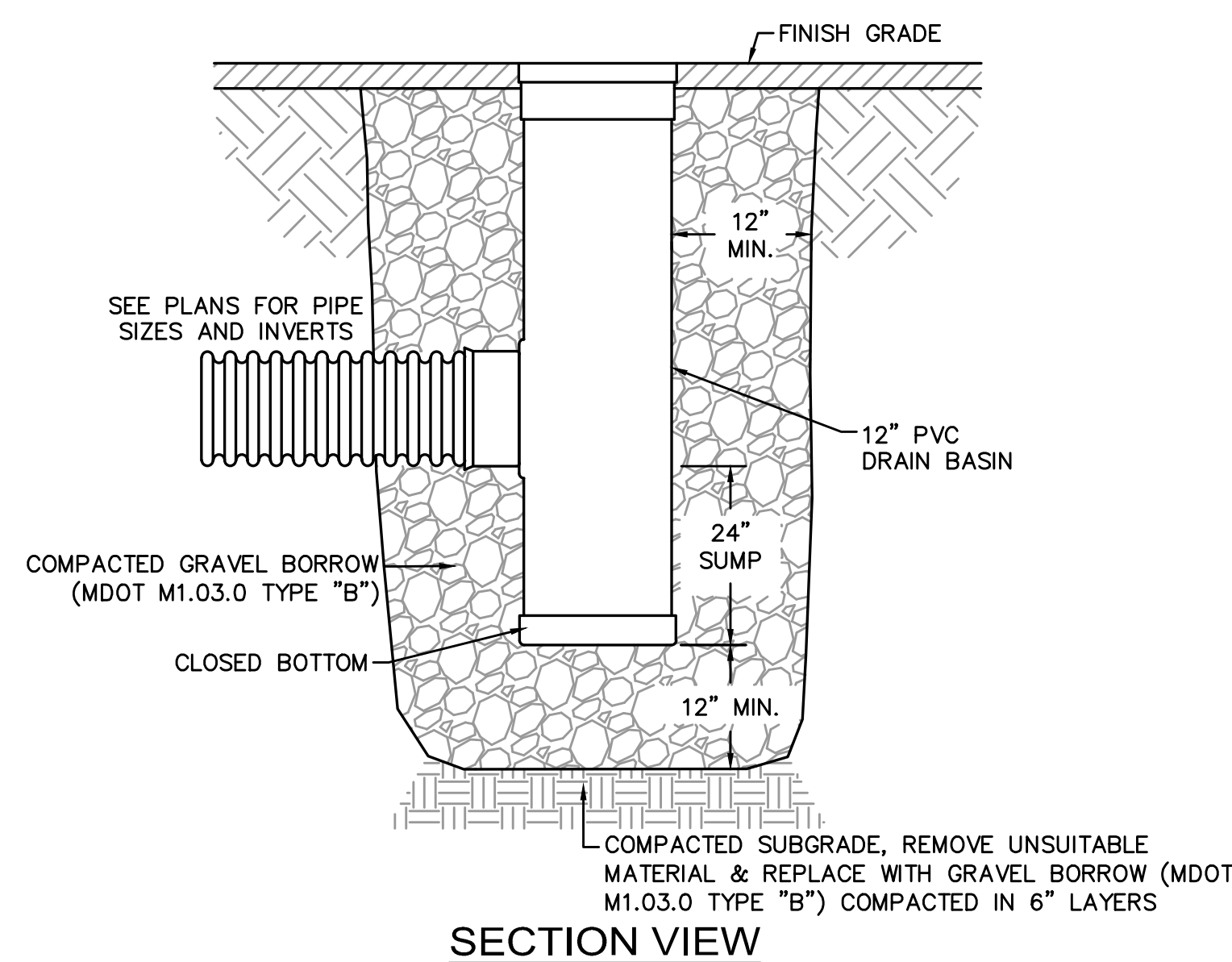
OUTLET CONTROL STRUCTURE

NOT TO SCALE



TYPICAL DRAIN MANHOLE DETAIL

NOT TO SCALE



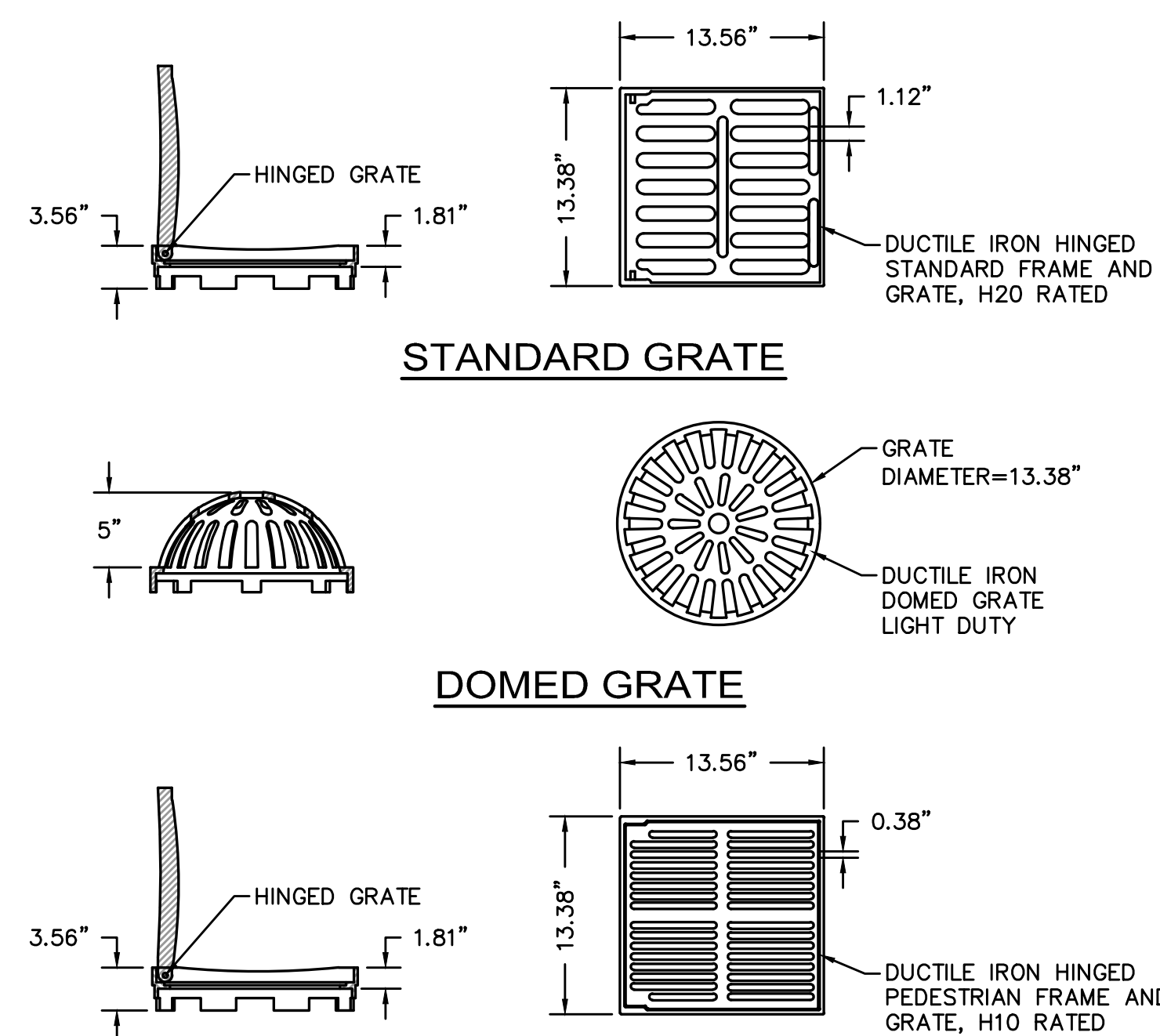
SECTION VIEW

NOTES:

1. FRAME AND GRATE SHALL BE DUCTILE IRON CONFORMING TO ASTM A536 GRADE 70-50-05.
2. 12" AREA DRAINS SHALL BE NYLOPLAST MODEL 2812 AS MANUFACTURED BY ADVANCED DRAINAGE SYSTEMS, INC., OR APPROVED EQUAL.
3. AREA DRAINS SHALL BE CUSTOM MANUFACTURED ACCORDING TO THE PLANS AND DETAIL.
4. CASTINGS SHALL BE FURNISHED WITH A BLACK PAINT.
5. SEE PLANS FOR LAYOUT AND ELEVATIONS OF DRAIN PIPES TO AREA DRAINS.

12" AREA DRAIN DETAIL

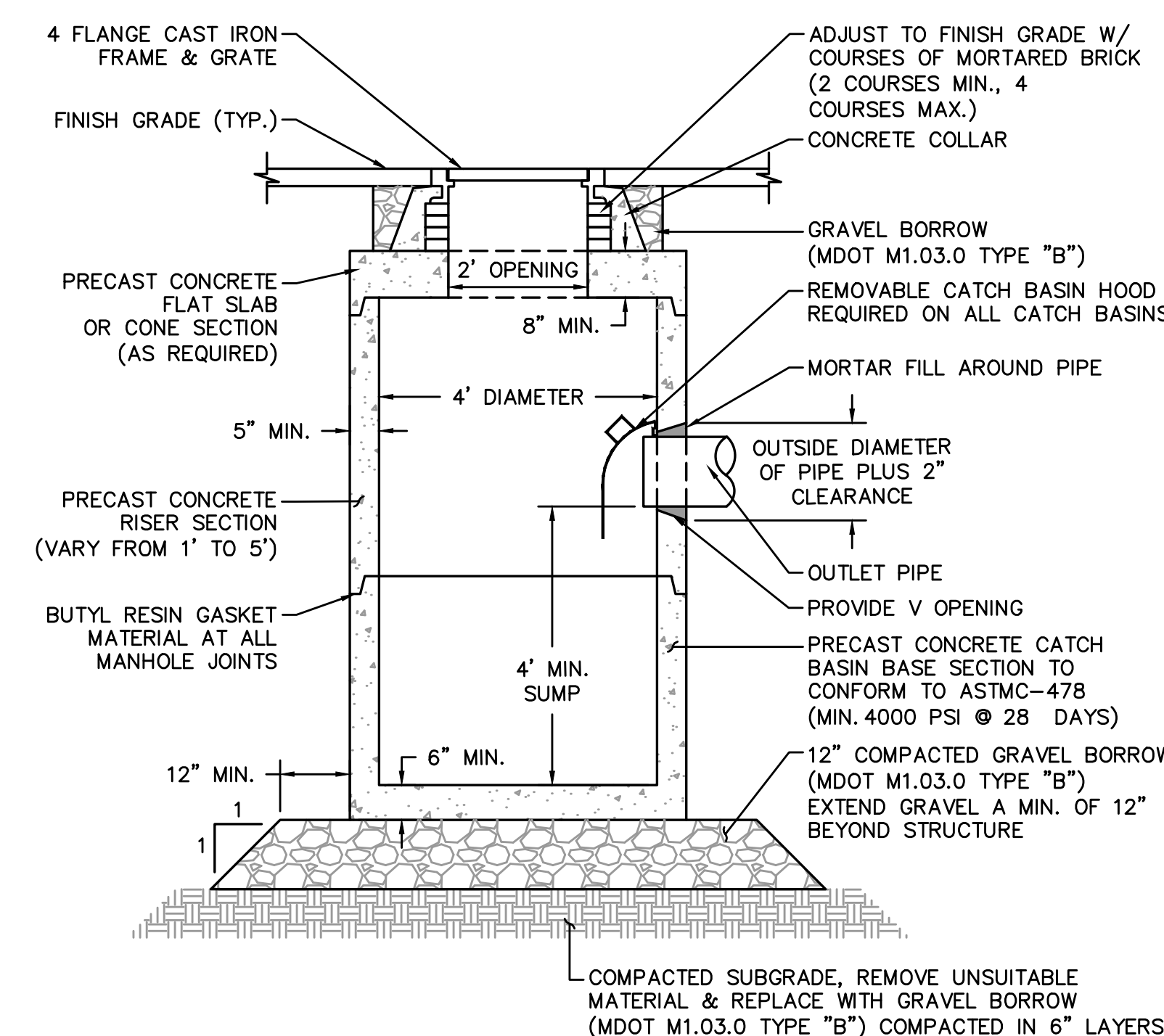
NOT TO SCALE



STANDARD GRATE

DOMED GRATE

PEDESTRIAN GRATE (ADA COMPLIANT)



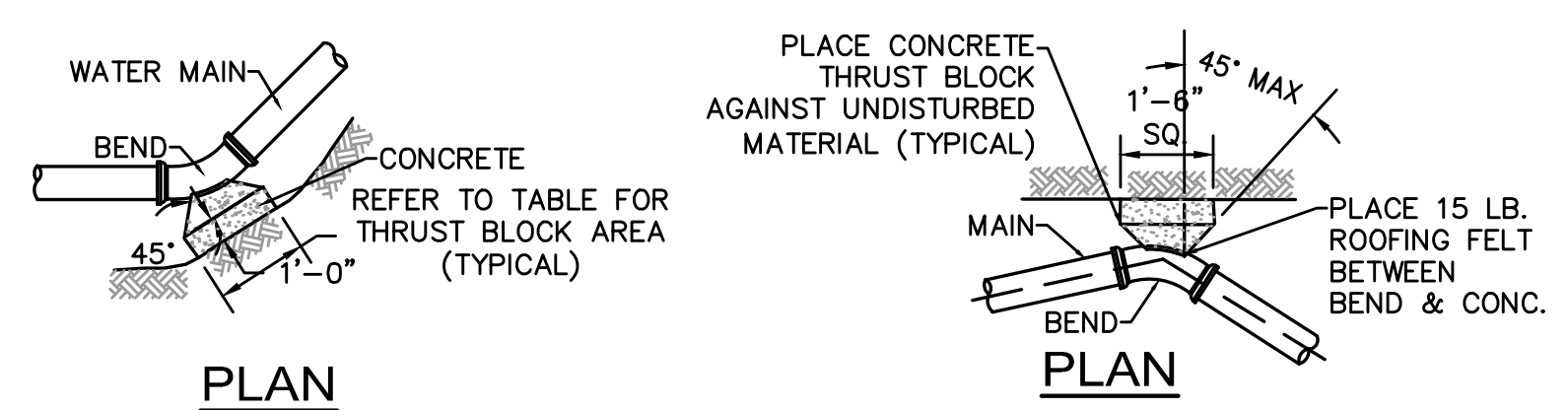
TYPICAL CATCH BASIN DETAIL

NOT TO SCALE

No.	Description	Date

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Scale:	AS NOTED
Drawn By:	BB
Checked By:	DC



- NOTES:**
- THRUST BLOCKS TO BE USED ON ALL PRESSURE PIPES AT HORIZONTAL AND VERTICAL BENDS GREATER OR EQUAL TO 45°, TEES AND DEAD ENDS.
 - FOR FITTINGS WITH LESS THAN 45° DEFLECTION USE BEARING AREAS FOR 45° BEND.
 - BEARING AREAS BASED ON HORIZONTAL PASSIVE SOIL PRESSURE OF 2000 PSF AND A MINIMUM INTERNAL WATER PRESSURE OF 175 PSIG. JOINTS SHALL NOT BE ENCASED IN CONCRETE. BEARING AREAS MAY BE DISREGARDED FOR TRENCHES IN ROCK WHERE THE TOP OF THE ROCK FACE IS AT OR ABOVE THE CROWN OF THE PIPE. HOWEVER, CONCRETE BACKING SHALL BE PLACED BETWEEN THE PIPE AND ROCK FACE.

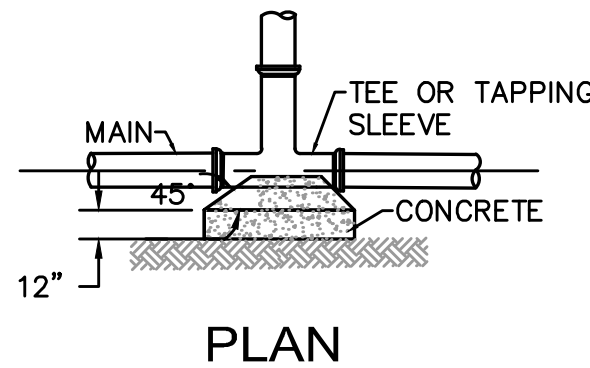
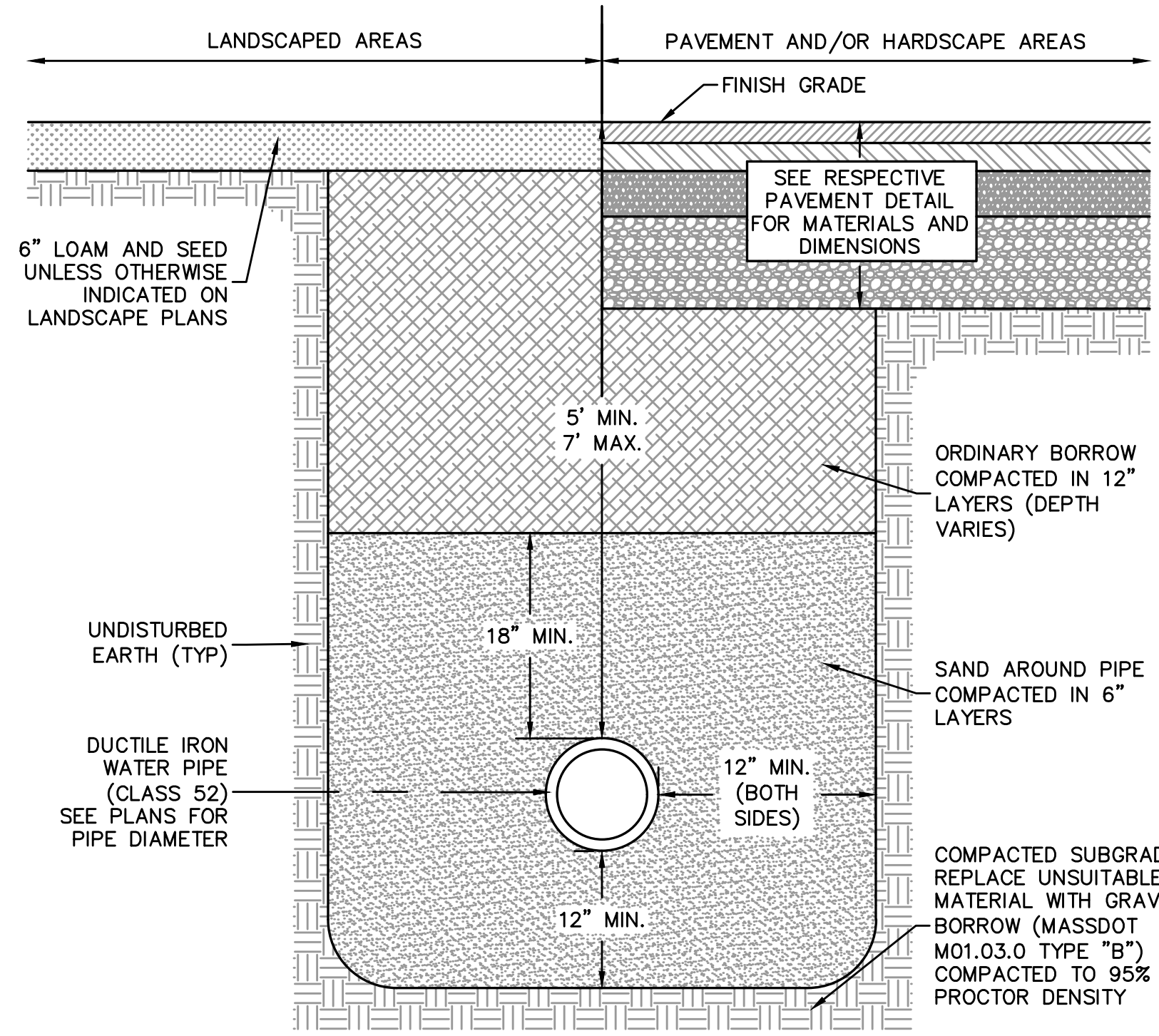


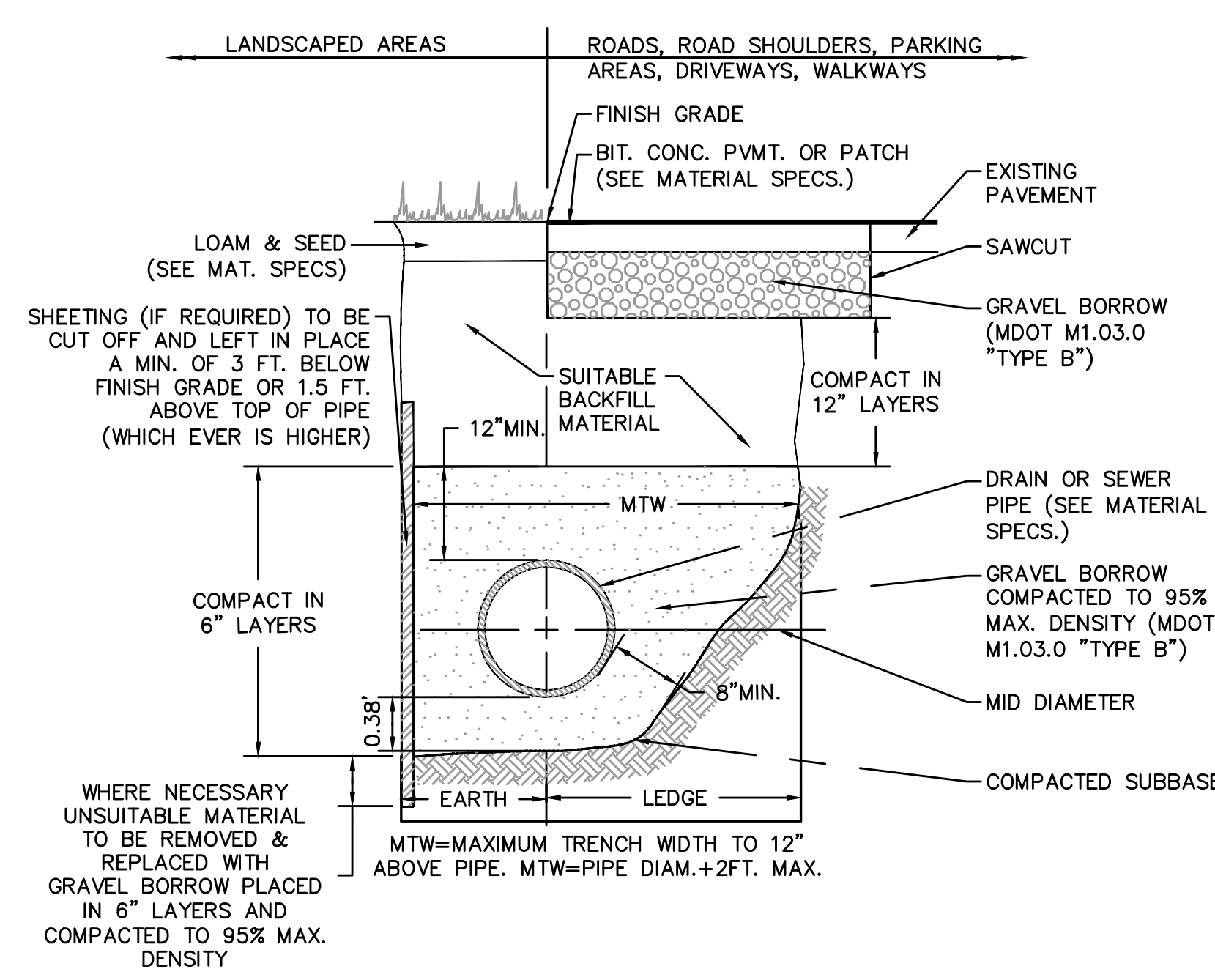
TABLE OF BEARING AREAS IN SQUARE FEET AGAINST UNDISTURBED MATERIAL FOR FITTING. *

SIZE OF MAIN (INCHES)	90° BEND (S.F.)	45° BEND (S.F.)	DEAD END (S.F.)
4	2.3	1.3	1.6
6	4.7	2.5	3.3
8	8.0	4.5	6.0
12	17.0	9.5	12.0

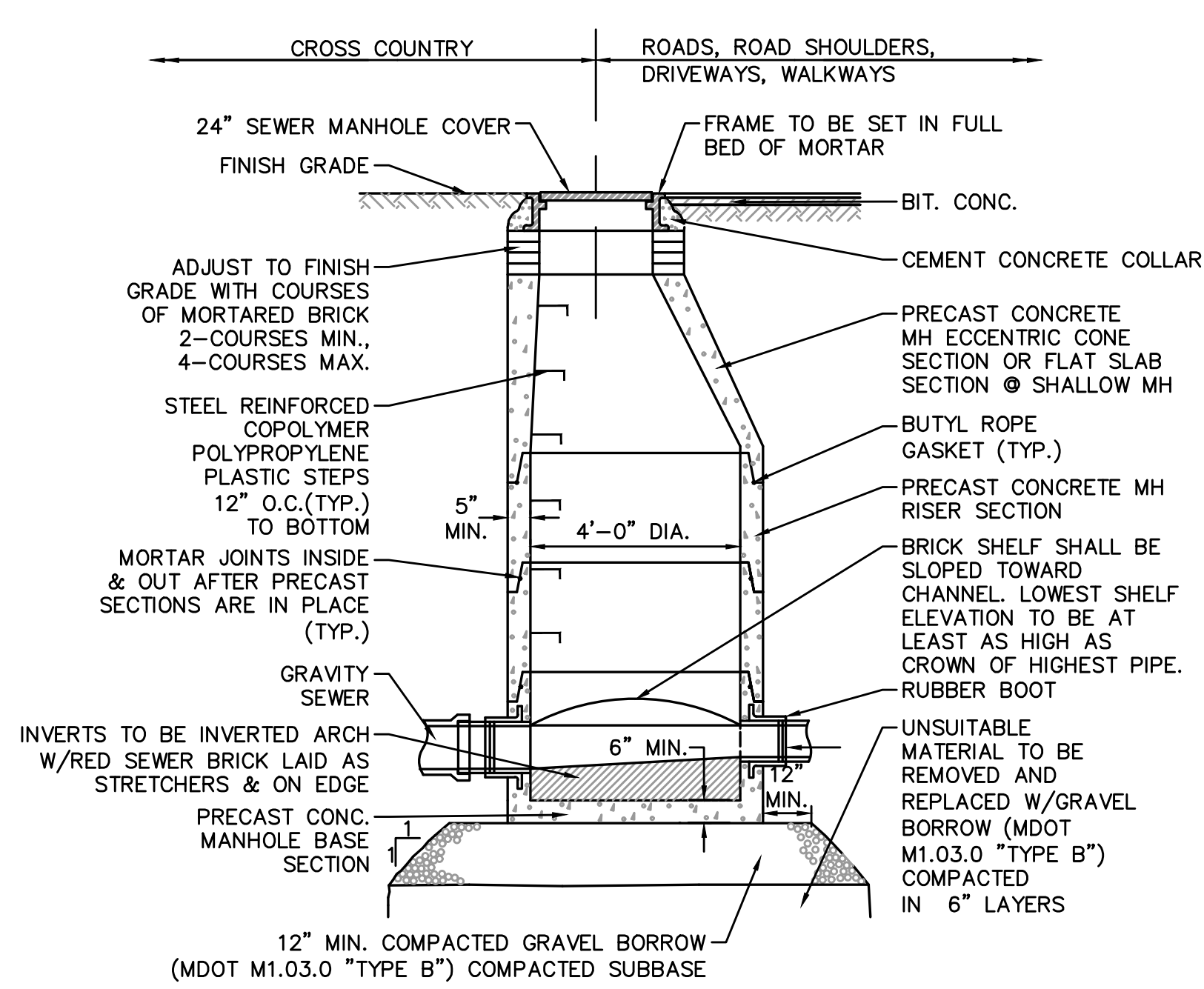
THRUST BLOCK DETAILS
NOT TO SCALE



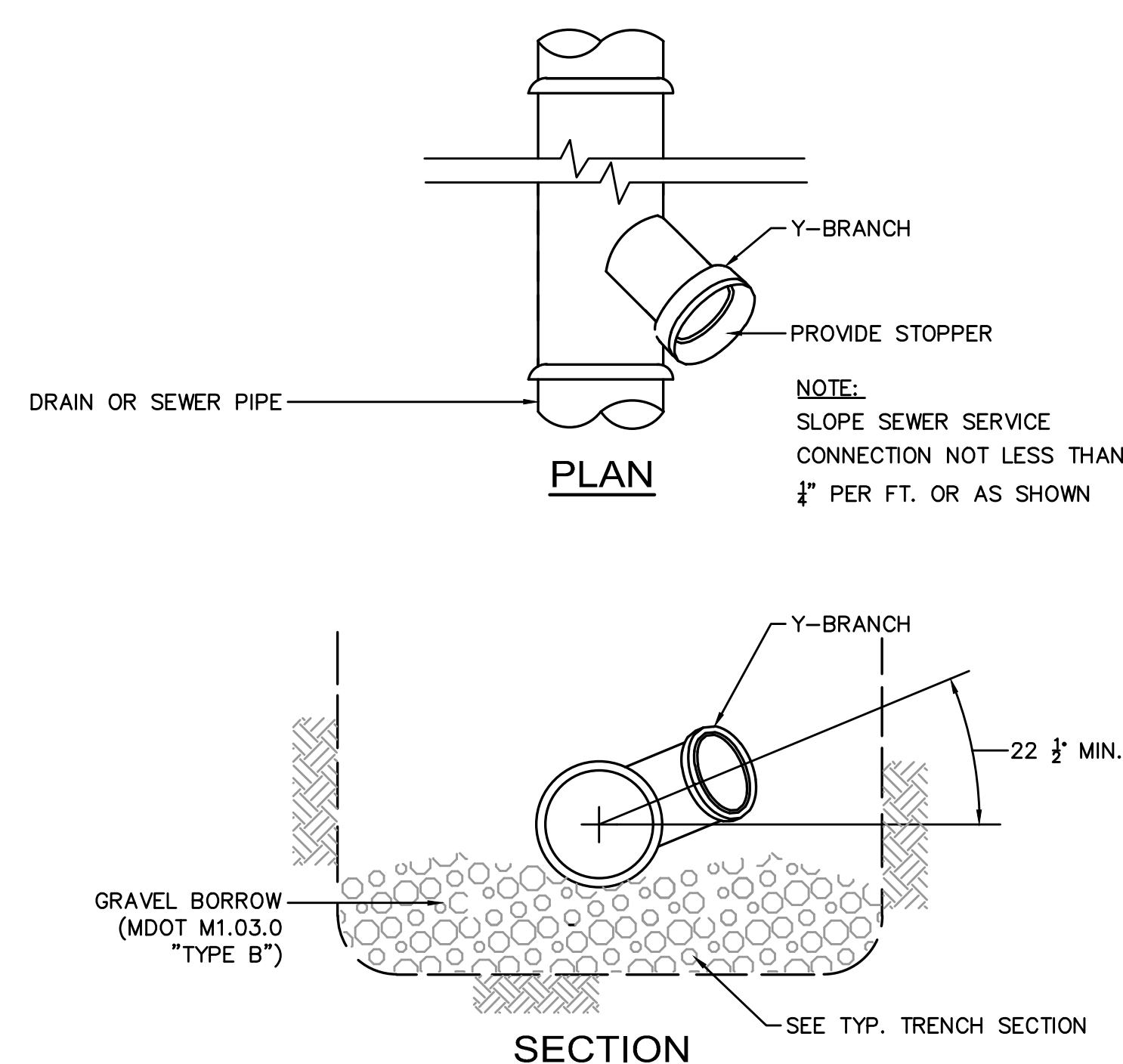
WATER TRENCH DETAIL
NOT TO SCALE



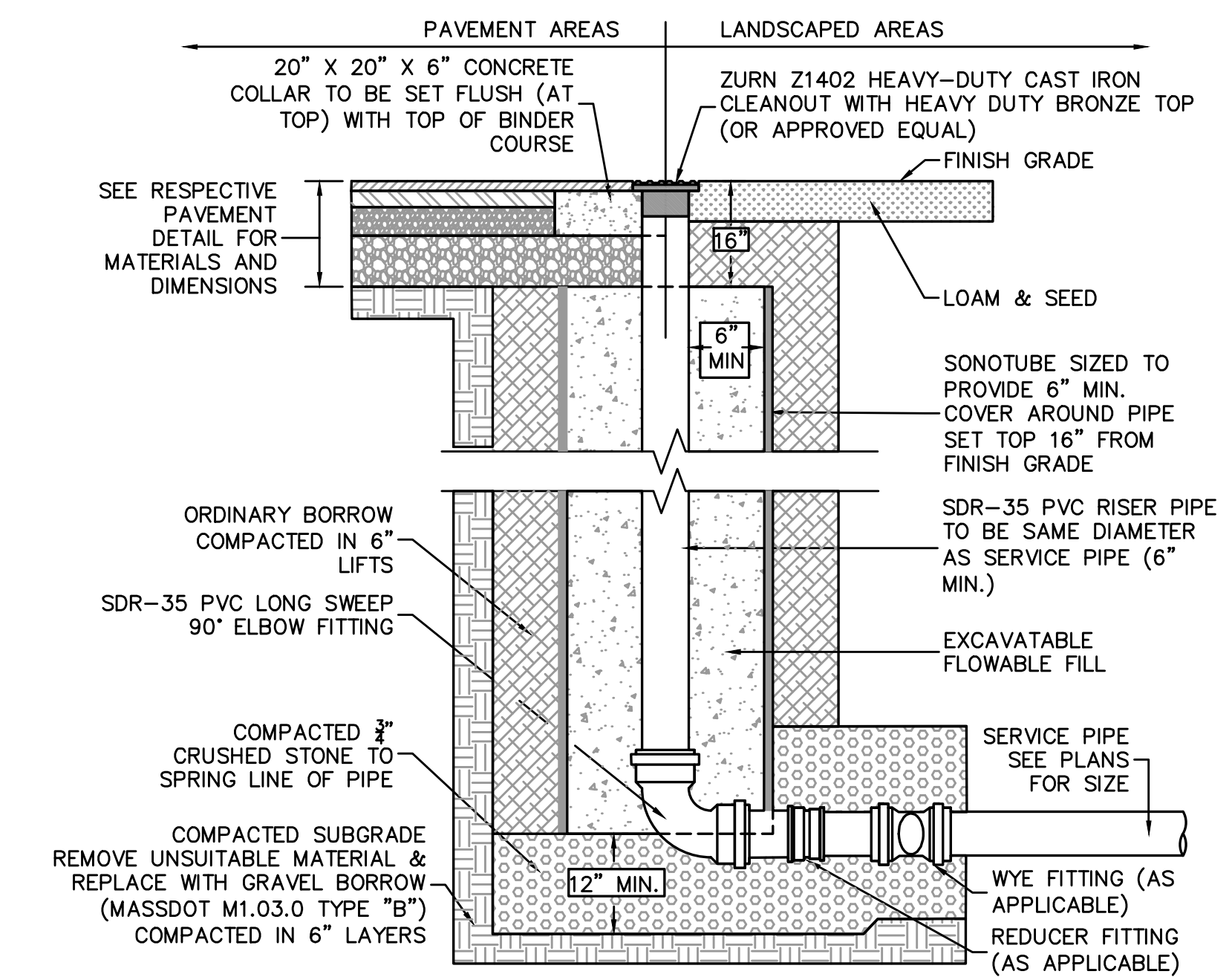
STANDARD TRENCH DETAIL FOR UTILITY PIPE
NOT TO SCALE



TYPICAL SEWER MANHOLE DETAIL
NOT TO SCALE



WYE BRANCH FOR PIPE SERVICE CONNECTION DETAIL
NOT TO SCALE



CLEANOUT DETAIL
NOT TO SCALE

REVISIONS

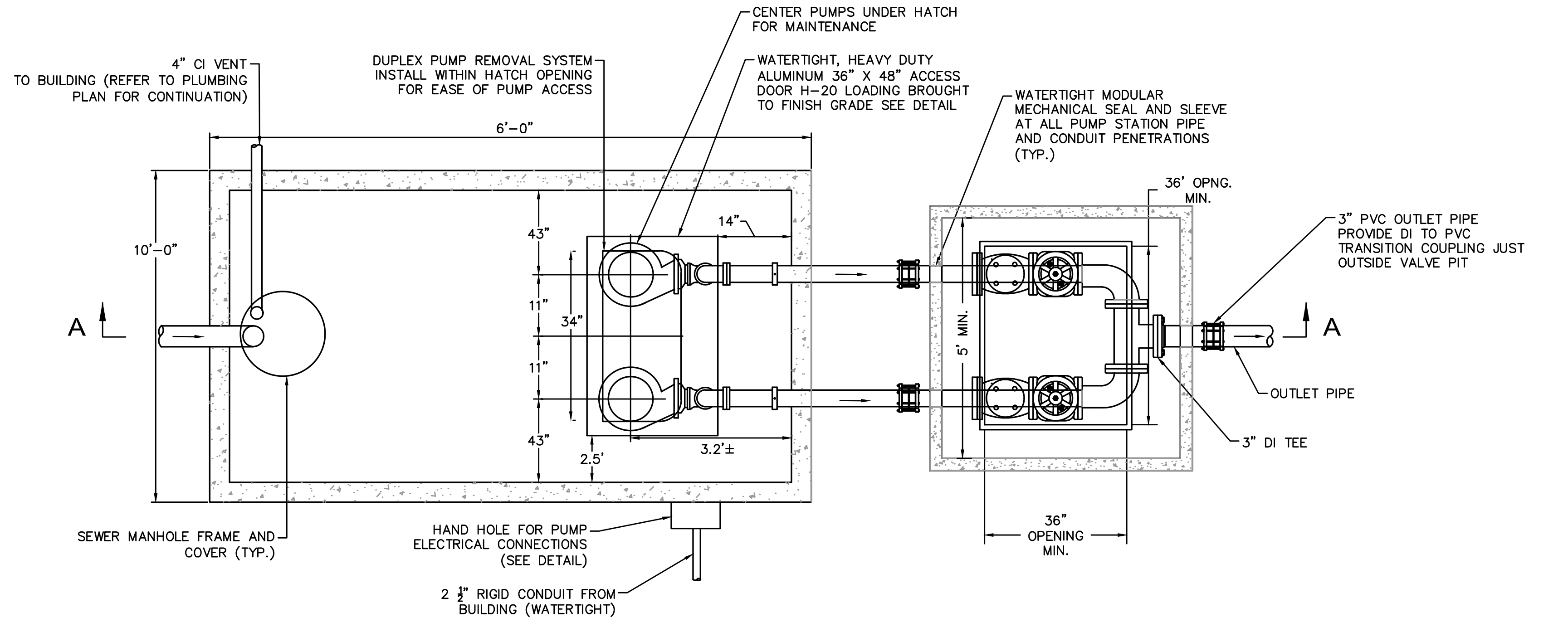
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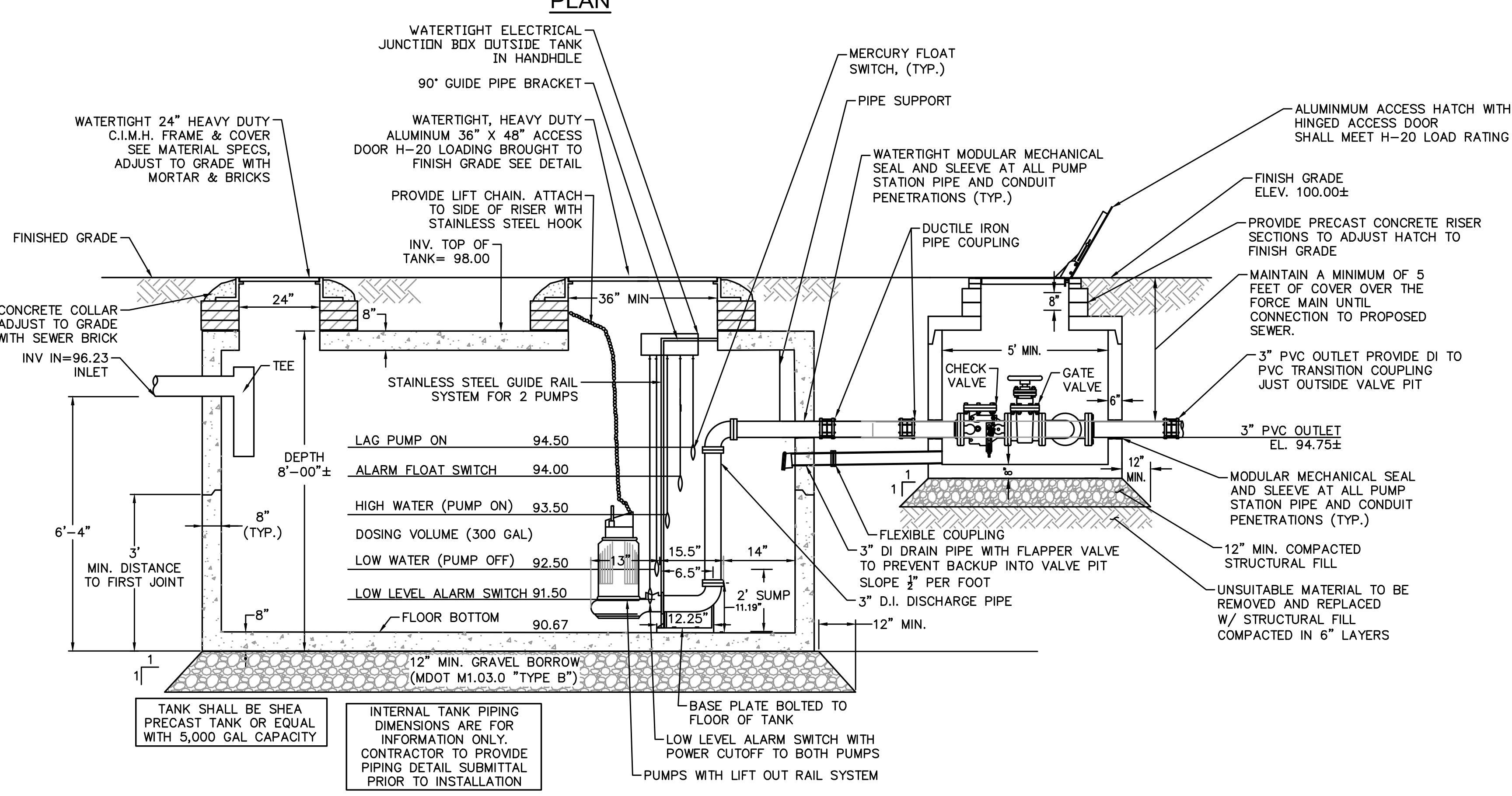
Date: 02/02/2021
Proj. No.: 2020120.01
Scale: AS NOTED
Drawn By: BB
Checked By: DC

CIVIL DETAILS V

C-604



PLAN



SECTION A-A

PUMP CHAMBER & VALVE VAULT DETAIL
NOT TO SCALE

NOTES:

- DESIGN LOADING - AASHTO HS-20-44 / CONCRETE: 5,000 PSI MINIMUM AFTER 28 DAYS.
- THE CONTRACTOR SHALL SUBMIT BUOYANCY CALCULATIONS FOR SEWER PUMP STATION STRUCTURES. IF BUOYANCY IS AN ISSUE, THE STRUCTURE(S) SHALL BE MODIFIED TO PREVENT UPLIFT. ALL BUOYANCY CALCULATIONS AND SEWER PUMP STATION STRUCTURE DESIGNS SHALL BE PREPARED AND STAMPED BY THE PROFESSIONAL CIVIL ENGINEER LICENSED IN THE STATE OF MASSACHUSETTS. THE BUOYANCY CALCULATIONS SHALL BE PREPARED FOR THE CONDITIONS INDICATED WITHIN SPECIFICATION SECTION 333100, WASTEWATER COLLECTION.
- CONSTRUCTION OF PUMP CHAMBER CONFORMS WITH DEP TITLE 5 REGS, 310 CMR, SECTION 15.226.
- ALL REINFORCEMENT PER ASTM C1227-93.
- JOINT SEALED WITH BUTYL RESIN.
- INLET AND OUTLET PIPE CONNECTIONS SHALL BE MADE USING STEEL WALL SLEEVES AND WATERTIGHT MODULAR, MECHANICAL SEALS CONSISTING OF RUBBER LINKS.
- PUMPS, FLOATS AND PIPE INSTALLED IN CHAMBER.
- PROVIDE RISER AND FRAME WITH COVERS SET TO FINISH GRADE (SEE PROFILE)
- ALL INTERNAL PIPING FOR THE PUMP SYSTEM TO BE SCHEDULE FLANGED DUCTILE IRON WITH MINIMUM CLASS 53 THICKNESS.
- CONTRACTOR SHALL SUPPLY ALL NECESSARY FITTINGS TO TRANSITION FROM DUCTILE IRON PIPING TO PVC PIPING. ALL PIPE CONNECTIONS SHALL BE MADE USING MODULAR MECHANICAL SEALS AND STEEL WALL SLEEVES.
- THE CONTRACTOR SHALL SUBMIT BUOYANCY CALCULATIONS FOR SEWER PUMP STATION STRUCTURES. IF BUOYANCY IS AN ISSUE, THE STRUCTURE(S) SHALL BE MODIFIED TO PREVENT UPLIFT. ALL BUOYANCY CALCULATIONS AND SEWER PUMP STATION STRUCTURE DESIGNS SHALL BE PREPARED AND STAMPED BY THE PROFESSIONAL CIVIL ENGINEER LICENSED IN THE STATE OF MASSACHUSETTS. THE BUOYANCY CALCULATIONS SHALL BE PREPARED FOR THE CONDITIONS INDICATED WITHIN SPECIFICATION SECTION 333100, WASTEWATER COLLECTION.
- THE WET WELL AND VALVE VAULT SHALL EACH RECEIVE TWO HEAVY COATS OF BITUMINOUS DAMPPROOFING ON BOTH THE INSIDE AND OUTSIDE SURFACES OF THE STRUCTURES.
- WET WELL SHALL BE SIZED TO PERMIT EASY REMOVAL OF CHECK VALVE SPINDLES WITH MINIMUM CLEARANCES AS SHOWN FOR 4" DIAMETER PIPE AND SMALLER. CLEARANCES SHALL INCREASE AS REQUIRED FOR LARGER PIPE SIZES.
- RESILIENT WEDGE GATE VALVES SHALL BE FLANGED, DUCTILE IRON BODY, RESILIENT SEALED TYPE.
- THRUST BLOCKS SHALL BE USED AT ALL EXTERNAL FORCE MAIN BENDS AND FITTINGS AS SHOWN ON THE THRUST BLOCK DETAILS AND AS INDICATED IN THE SPECIFICATIONS. IN THE EVENT THAT THE USE OF THRUST BLOCKS IS NOT PRACTICAL, THE CONTRACTOR SHALL PROVIDE AN ALTERNATE METHOD OF JOINT RESTRAINT, AT NO ADDITIONAL COST, AS APPROVED AND/OR AS DIRECTED BY THE ENGINEER.
- SEE SPECIFICATION SECTION 333100 FOR ALL PUMP STATION REQUIREMENTS.
- PUMPS SHALL BE:

MANUFACTURER/MODEL:	MYERS OR APPROVED EQUAL
IMPELLER:	5"
SPEED:	1750 RPM
DISCHARGE SIZE:	3"
VOLTAGE:	230
HZ:	60
PHASE:	3-PHASE
HORSEPOWER:	1.5 HP
MAX. SOLID SIZE:	2-1/2"

- OPERATING CONDITIONS SHALL BE 120 GPM AT 22.73 FEET TDH.
- ALL HARDWARE IN WET WELL TO BE STAINLESS STEEL WITH LIFTING CABLE.

SYSTEM SETBACKS

SEPTIC TANK TO FOUNDATION:	96.20 FT
SEPTIC TANK TO PROPERTY LINE:	203.63 FT
SEPTIC TANK TO WATER SUPPLY:	197.81 FT
SOIL ABSORPTION SYSTEM TO FOUNDATION:	92.74 FT
SOIL ABSORPTION SYSTEM TO PROPERTY LINE:	SEE PLAN
SOIL ABSORPTION SYSTEM TO WATER SUPPLY (10 ELM ST.):	315.56 FT

SYSTEM DESIGN CRITERIA

TYPE OF ESTABLISHMENT:	OFFICE	FUNCTION HALL
DESIGN FLOW:	3,000 SQ.FT./1,000SQ.FT. = 225 GPD	90 SEATS x 15 GPD PER SEAT = 1,350 GPD
TOTAL DESIGN FLOW: 225 GPD + 1,350 GPD = 1,575 GPD		
SEPTIC TANK SIZE (COMPARTMENT 1/COMPARTMENT 2):	3,150 GAL MIN/ 1,575 GAL MIN.	3,150 GAL MIN/ 1,575 GALL MIN.
PERC RATE USED:	2 MIN/IN	2 MIN/IN
LTAR (LONG-TERM ACCEPTANCE RATE):	0.74 GPD/SF (SAND)	0.74 GPD/SF (SAND)
GREASE TRAP SIZING:		90 SEATS x 15 GPD PER SEAT = 1,350 GPD

CALCULATIONS

REQUIRED SYSTEM AREA:	1,575 GPD / (0.74 GPD/SF)
PROVIDED SYSTEM DIMENSIONS:	= 2,128 SF
PROVIDED EFFECTIVE LEACHING AREA:	BED 80'L x 27'W
	80 FT X 27 FT
	= 2,160 SF

NOTES:

- ALL FILL TO BE IN CONFORMANCE WITH 310 C.M.R. 15.255 (3).
- ALL STONE TO BE DOUBLE WASHED AND FREE OF FINES & DUST.
- COVER MATERIAL OVER THE SYSTEM SHALL BE FREE OF LARGE STONES, MASONRY, STUMPS OR WASTE CONSTRUCTION MATERIAL. THE TOP 4" SHALL BE LOAMED AND SURFACE SEEDED. MACHINERY WHICH MAY CRUSH OR DISTURB THE ALIGNMENT OF THE PIPES IN THE DISPOSAL AREA SHALL NOT BE ALLOWED.
- FOUNDATION DRAINS ARE NOT TO BE INSTALLED WITHIN 10 FEET OF SEPTIC TANK NOR WITHIN 20 FEET OF LEACHING AREA.
- ALL PIPING TO BE SCHEDULE 40 P.V.C.
- REMOVE ALL TOPSOIL, ROOTS AND SUBSOIL AND REPLACE WITH SPECIFIED FILL WITHIN 5 FEET OF SYSTEM.
- THE CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER 48 HRS. IN ADVANCE OF SYSTEM BACKFILL SO THAT AN INSPECTION CAN BE PERFORMED PRIOR TO BACKFILL.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AN AS-BUILT PLAN STAMPED BY A REGISTERED MASS. SURVEYOR. SUCH PLAN SHALL BE INCLUDED AS PART OF THE CONSTRUCTION CONTRACT.
- CONTRACTOR MUST COMPLY WITH ALL OF BOXFORD'S HEALTH DEPARTMENT REGULATIONS.
- A VARIANCE IS BEING REQUESTED TO BOXFORD BOH REGULATION 201-10 REQUIREMENT THAT THE DESIGN MUST INCLUDE CONSIDERATION OF A GARBAGE GRINDER.
- MAGNETIC MARKING TAPE SHALL BE PLACED OVER ALL SYSTEM COMPONENTS.

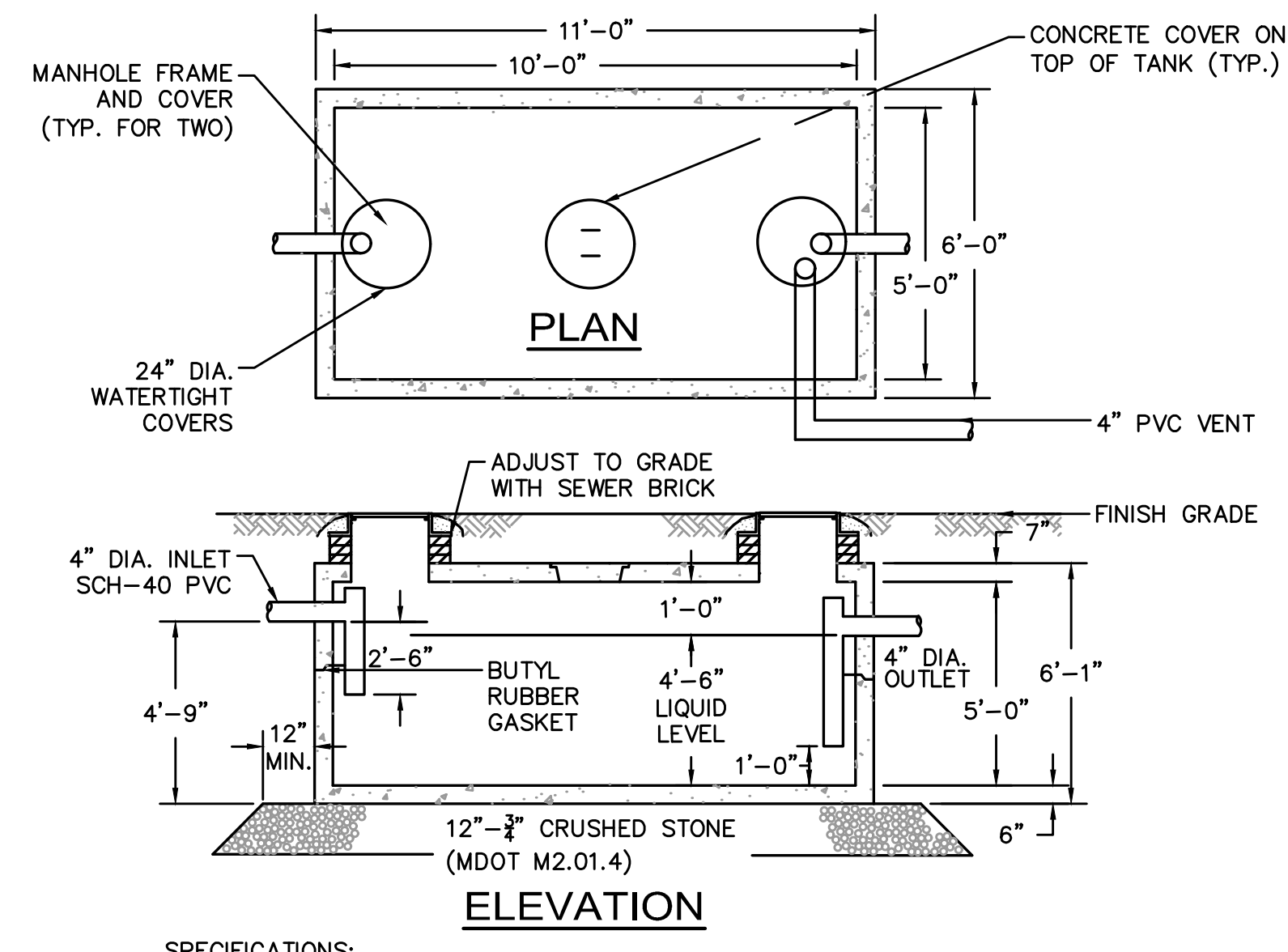
PROJECT CLIENT FRM REV PLAN REMARKS REVISIONS REVISIONS COPY RIGHT SEAL / ORIENTATION DATA TITLE SHEET

No.	Description	Date

DATE: 02/02/2021
 PROJ. NO.: 2020120.01
 SCALE: AS NOTED
 DRAWN BY: BB
 CHECKED BY: DC

CIVIL DETAILS VI

C-605



- SPECIFICATIONS:
1. CONCRETE MINIMUM STRENGTH - 5,000 PSI @ 28 DAYS
 2. STEEL REINFORCEMENT - ASTM A615 GR. 60, A185 OR A497 - 1" MIN. COVER
 3. DESIGN LOADING - AASHTO HS20-44 - EARTH COVER 0 TO 5 FEET
 4. WATER TABLE - 0 FEET
 5. CONSTRUCTION JOINT - SEALED WITH 1" DIA. BUTYL RUBBER OR EQUIVALENT
 6. TOTAL CAPACITY - 1,500 GALLONS

TEST PIT 1101

DATE: 4/26/11
ELEV. 101.0
E.S.H.W.T. 97.9'
OBS'D LEDGE N/A
OBS'D WATER 84"

0		0"	
A	10YR 3/2	SANDY LOAM	2"
B	10YR 5/6	LOAMY SAND 30% COBBLES, 10% GRAVEL	12"
C1	2.5YR 6/4	MED. COARSE SAND 30% COBBLES, 10% GRAVEL ESHWT @ 37" 2.5YR 5/8	22"
C2	10YR 6/4	MED. SAND LOOSE, SINGLE GRAIN 30% COBBLES, 20% GRAVEL	42"
			96"

TEST PIT 1103

DATE: 4/26/11
ELEV. 101.0
E.S.H.W.T. 97.7'
OBS'D LEDGE N/A
OBS'D WATER 82"

A	10YR 3/2	LOAM	12"
B	10YR 3/6	SANDY LOAM 30% COBBLES, 10% GRAVEL	33"
C1	5YR 4/6	MED. COARSE SAND 30% COBBLES, 10% GRAVEL ESHWT @ 40" 2.5YR 5/8	49"
C2	10YR 6/6	MED. COARSE SAND 30% COBBLES, 10% GRAVEL	84"

TEST PIT 1102

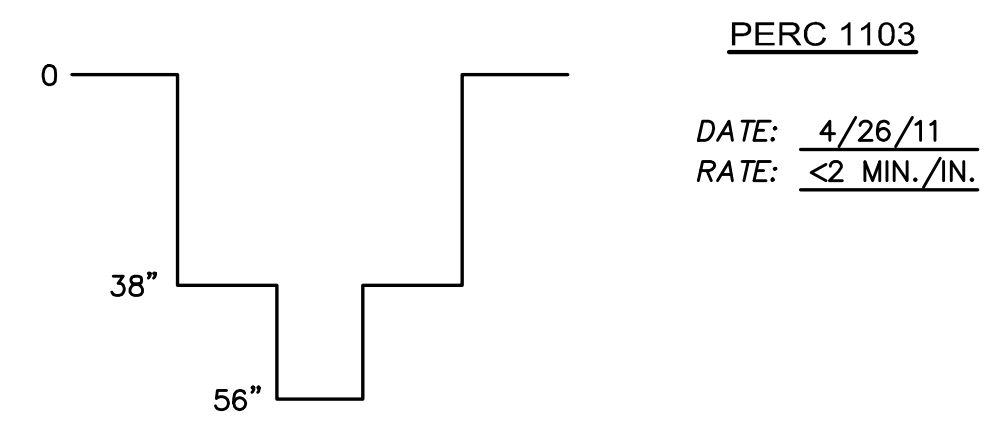
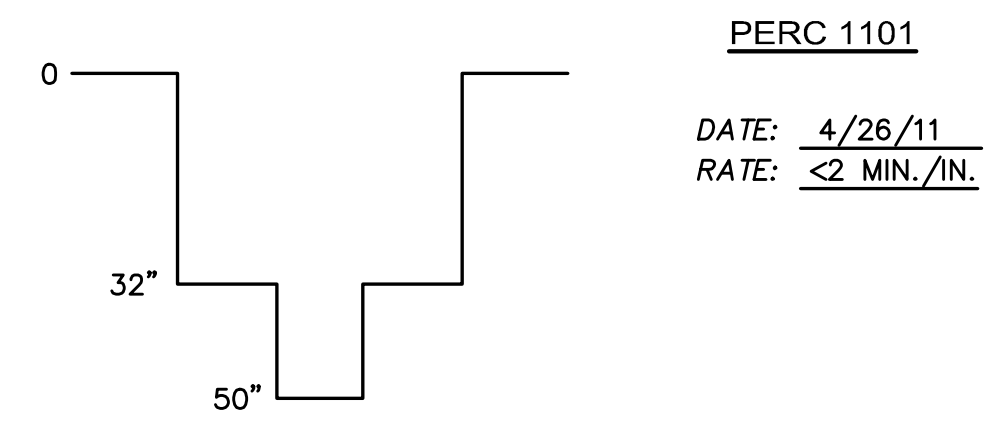
DATE: 4/26/11
ELEV. 101.0
E.S.H.W.T. 97.9'
OBS'D LEDGE N/A
OBS'D WATER 76"

A	10YR 3/2		0"
B	10YR 5/6	30% COBBLES, 10% GRAVEL	13"
C1	2.5YR 6/4	MED. COARSE SAND 30% COBBLES, 10% GRAVEL ESHWT @ 37" 2.5YR 5/8	25"
C2	10YR 6/4	MED. SAND 30% COBBLES, 20% GRAVEL	40"
			86"

TEST PIT 1104

DATE: 4/26/11
ELEV. 101.4
E.S.H.W.T. 98.0'
OBS'D LEDGE N/A
OBS'D WATER 84"

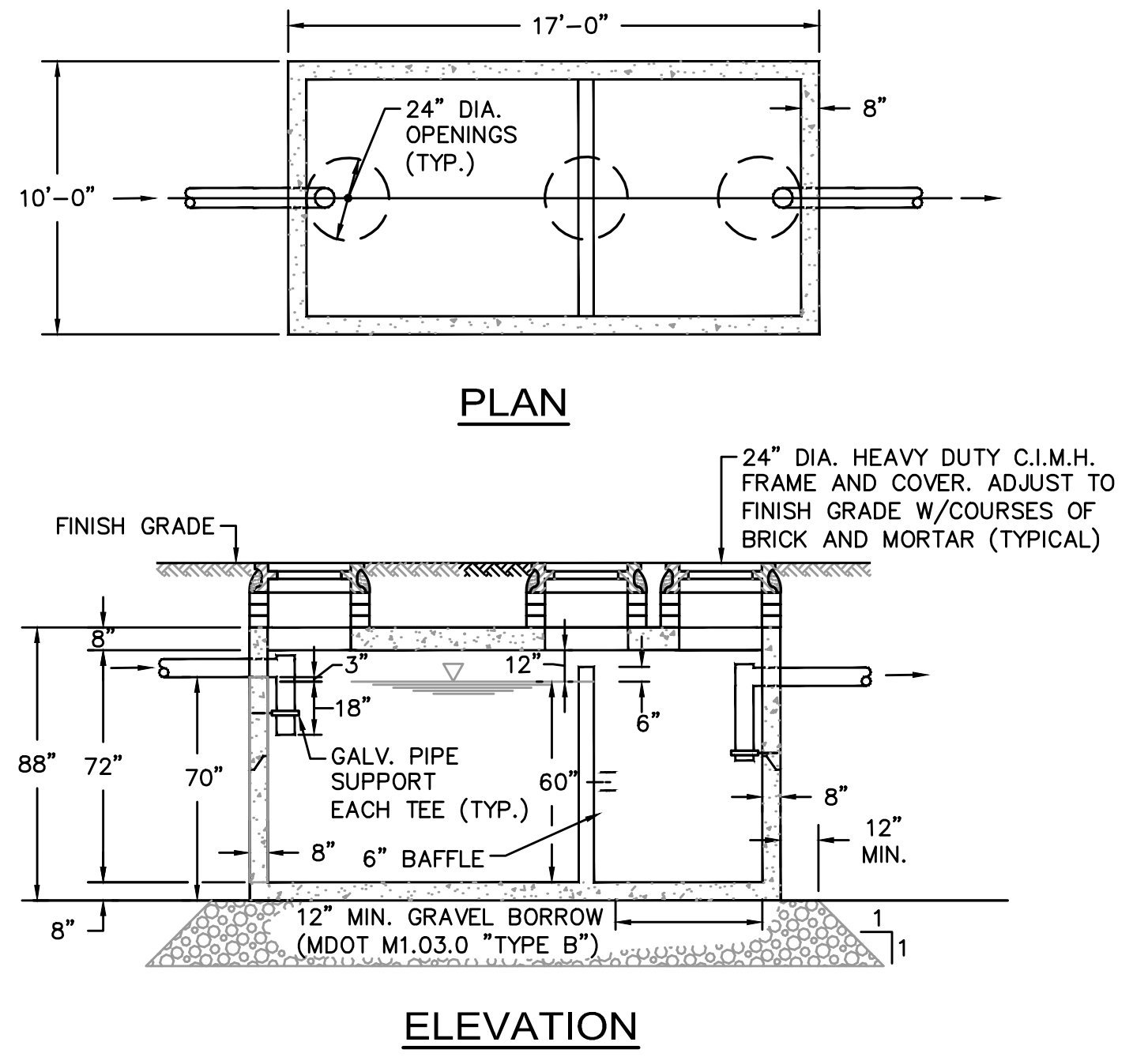
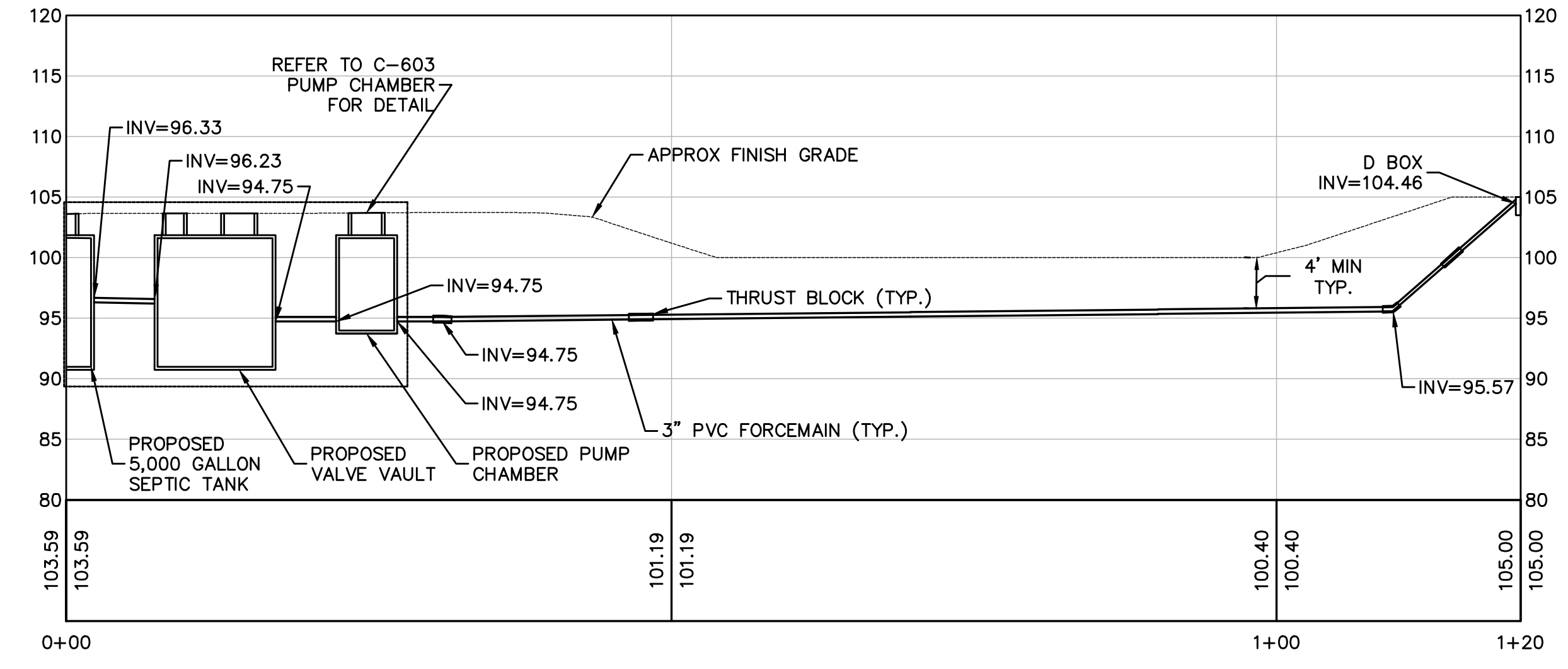
A	10YR 4/6	LOAM	11"
B	10YR 3/6	SANDY LOAM 30% COBBLES, 10% GRAVEL	18"
C1	5YR 4/6	MED. COARSE SAND 30% COBBLES, 10% GRAVEL ESHWT @ 41" 5YR 4/6	48"
C2	10YR 6/6	MED. COARSE SAND 30% COBBLES, 10% GRAVEL	92"



NOTE: TEST PITS AND PERCOLATION TESTS PERFORMED BY: ANTHONY DONATO TEST WITNESSED BY: KENDELL QUARLES (BOXFORD BOARD OF HEALTH) AND H. CRISS STEPHENS (DEP) ON 4/26/11 ANTHONY DONATO SOIL EVALUATOR SE598 - ISSUE DATE OF 6/23/99

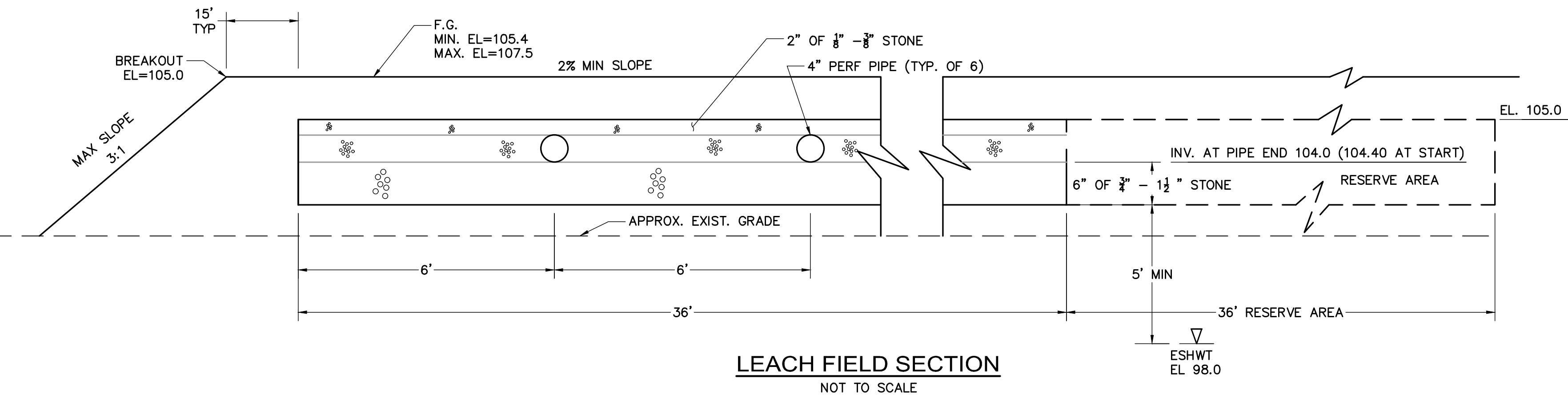
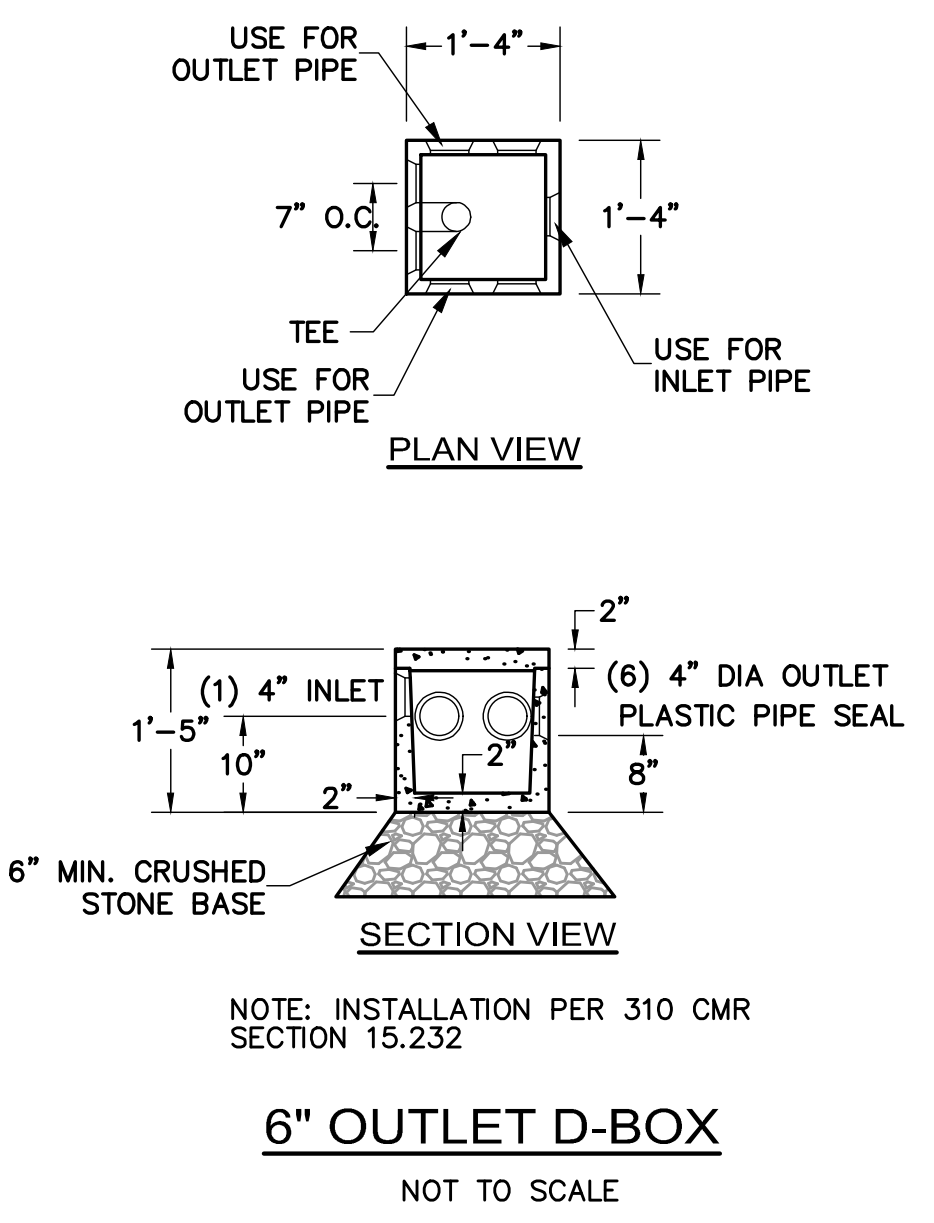
NOTE: TEST PITS AND PERCOLATION TESTS PERFORMED BY: ANTHONY DONATO TEST WITNESSED BY: KENDELL QUARLES (BOXFORD BOARD OF HEALTH) AND H. CRISS STEPHENS (DEP) ON 4/26/11 ANTHONY DONATO SOIL EVALUATOR SE598 - ISSUE DATE OF 6/23/99

SOIL TEST DATA
NOT TO SCALE



- SPECIFICATIONS:
1. CONCRETE MINIMUM STRENGTH - 5,000 PSI @ 28 DAYS
 2. STEEL REINFORCEMENT - ASTM A615 GR. 60, A185 OR A497 - 1" MIN. COVER
 3. DESIGN LOADING - AASHTO HS20-44 - EARTH COVER 1 TO 5 FEET
 4. CONSTRUCTION JOINT - SEALED WITH 1" DIA. BUTYL RUBBER OR EQUIVALENT AND 3/4" DIA. BOLTS
 5. CONTRACTOR SHALL PROVIDE BUOYANCY CALCULATIONS STAMPED BY A MASSACHUSETTS PROFESSIONAL ENGINEER FOR ALL CONCRETE TANKS.
 6. TANK SHALL BE VENTED IN ACCORDANCE WITH 310CMR 15.224
 7. APPROXIMATE TOTAL WEIGHT OF TANK IS 60,000 LBS
 8. USE TANK RISERS TO PROVIDE 9" MIN TO 3" MAX COVER OVER THE TOP OF THE TANKS
 9. CONTRACTOR TO PERFORM A VACUUM TEST OF THE TANK IN THE PRESENCE OF ACTON BOARD OF HEALTH AGENT. THERE SHALL BE NO DROP IN PRESSURE DURING THE VACUUM TEST. THE CONTRACTOR SHALL PERFORM A WATER TIGHT TEST FOR A MINIMUM OF 24-HOURS PRIOR TO OPERATION OF THE SYSTEM. THE ACTON BOARD OF HEALTH AGENT WILL APPROVE THE RESULTS OF THE WATER TIGHT TEST. THERE SHALL BE NO LEAKAGE DURING THE WATER TIGHT TEST.

5,000 GALLON SEPTIC TANK
NOT TO SCALE



No.	Description	Date

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Date: 02/02/2021
Proj. No.: 2020120.01
Scale: AS NOTED
Drawn By: BB
Checked By: DC

CIVIL DETAILS VII