

SOUTH DEVON AREA FLOOD REDUCTION PROJECT

AT THE WEST WAYNE PRESERVE AND FRIENDS OF RADNOR TRAIL PARK

RADNOR TOWNSHIP, DELAWARE COUNTY, PA

LITTLE DARBY CREEK WATERSHED

REVISIONS:

DATE:	ISSUE:
06/27/23	ADDENDUM 1

OWNER:

RADNOR TOWNSHIP
301 IVEN AVENUE
WAYNE, PA 19087-5297

CIVIL ENGINEER:

meliora 

MELIORA DESIGN
259 MORGAN STREET
PHOENIXVILLE, PA 19460
610.933.0123
WWW.MELIORADESIGN.COM

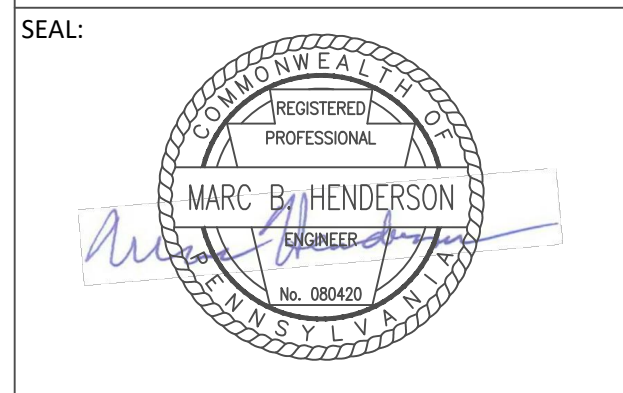
LANDSCAPE ARCHITECT:

VIRIDIAN LANDSCAPE STUDIO
3808 TERRACE STREET
PHILADELPHIA, PA 19128
215.482.7973
WWW.VIRIDIANLS.COM

SURVEYOR:

CONTROL POINT ASSOCIATES, INC.
1600 MANOR DRIVE, SUITE 210
CHALFONT, PA 18914
215.712.9800
WWW.CPASURVEY.COM

PROJECT TITLE:
SOUTH DEVON AREA FLOOD REDUCTION PROJECT
AT THE WEST WAYNE PRESERVE
AND FRIENDS OF RADNOR TRAIL PARK



SUBMISSION:

BID DOCUMENTS

DRAWING TITLE:

COVER SHEET

DATE:	06/14/23	DRAWING NO.:	CS
SCALE:	AS NOTED		
DRAWN BY:	MPB		
CHECKED BY:	MBH/MCA		

LOCATION MAP



MAP SCALE : 1:300



SHEET LIST

Sheet Number	Sheet Title
CS	COVER SHEET
C1.00	EXISTING CONDITIONS PLAN
C1.10	DEMOLITION PLAN
C1.11	DEMOLITION PLAN - ENLARGEMENT
C1.20	EROSION & SEDIMENT CONTROL NOTES
C1.21	EROSION & SEDIMENT CONTROL PLAN
C1.22	EROSION & SEDIMENT CONSTRUCTION SEQUENCE
C1.30	STORMWATER & GRADING PLAN
C1.31	STORMWATER & GRADING PLAN - ENLARGEMENT 1
C1.32	STORMWATER & GRADING PLAN - ENLARGEMENT 2
C1.33	STORMWATER PROFILES - SHEET 1
C1.34	STORMWATER PROFILES - SHEET 2
C1.35	PIPE AND STRUCTURE TABLES
C1.36	STORMWATER & GRADING NOTES
C1.40	SITE PLAN
C1.41	SITE PLAN - ENLARGMENT 1
C1.42	SITE PLAN - ENLARGMENT 2
C1.43	SITE DETAILS - SHEET 1
C1.44	SITE DETAILS - SHEET 2
C5.00	EROSION & SEDIMENT CONTROL DETAILS - SHEET 1
C5.01	EROSION & SEDIMENT CONTROL DETAILS - SHEET 2
C5.02	STORMWATER DETAILS - SHEET 1
C5.03	STORMWATER DETAILS - SHEET 2
C5.04	STORMWATER DETAILS - SHEET 3
L1.0	PLANTING PLAN
L1.1	PLANTING DETAILS & PLANT SCHEDULE



IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CONDUCT ACTIVITIES IN A CLEAN, NEAT MANNER THROUGHOUT THE CONTRACT PERIOD. ALL DEBRIS GENERATED BY THE CONTRACTOR'S ACTIVITIES SHALL BE CLEANED UP AND REMOVED FROM THE PREMISES AT THE END OF EACH WORKING DAY. IF THE CONTRACTOR FAILS TO COMPLY, THE TOWNSHIP OF RADNOR HAS THE RIGHT TO HAVE THE SITE CLEANED AT THE CONTRACTOR'S EXPENSE.

ALL LOCATIONS OF EXISTING UTILITIES SHOWN ON THIS PLAN HAVE BEEN DEVELOPED FROM EXISTING UTILITY RECORDS AND/OR ABOVE GROUND EXAMINATION OF THE SITE. COMPLETENESS OR ACCURACY OF LOCATION AND DEPTH OF UNDERGROUND UTILITIES OR STRUCTURES CANNOT BE GUARANTEED. CONTRACTOR MUST VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND FACILITIES BEFORE START OF WORK PER PENNSYLVANIA ACT 287 OF 1974 AS AMENDED BY ACT 199 OF 2004 OR LATER.

EXISTING CONDITIONS LEGEND	
104	EXISTING CONTOUR
125	OVERHEAD WIRES
OH	DEPRESSED CURB
	HYDRANT
	WATER METER
	DRAINAGE/STORM MANHOLE
	SANITARY/SEWER MANHOLE
	CLEAN OUT
	UTILITY POLE
	UTILITY POLE/LIGHT POLE
	SIGN
	BOLLARD
	U-BOLLARD
	RIGHT-OF-WAY LINE
	COMPOSITE SOIL SAMPLE LOCATION
	PIEZOMETER TEST LOCATION
	STORMWATER TEST PIT LOCATION
	GEOTECHNICAL BORING LOCATION
	DECIDUOUS TREE & TRUNK SIZE
	CONIFEROUS TREE & TRUNK SIZE
	PARKING SPACE COUNT
	EDGE OF WOODS
	EDGE OF DRIP LINE
	PROPERTY BOUNDARY
	GAS LINE
	WATER LINE
	AREA LIGHT
	CATCH BASIN OR INLET
	STORM SEWER
	SANITARY SEWER
	WETLAND/WATERWAY BOUNDARY
	WETLAND (W001)
	NON-WETLAND WATERCOURSE (R001)

SOIL SYMBOL	SOIL NAME	HSG
GnB2	GLENVILLE SILT LOAM, 3-8% SLOPES	D
Md	MADE LAND, GABBRO AND DIABASE MATERIALS	C



REVISIONS:	
DATE:	ISSUE:

OWNER:
 RADNOR TOWNSHIP
 301 IVEN AVENUE
 WAYNE, PA 19087-5297

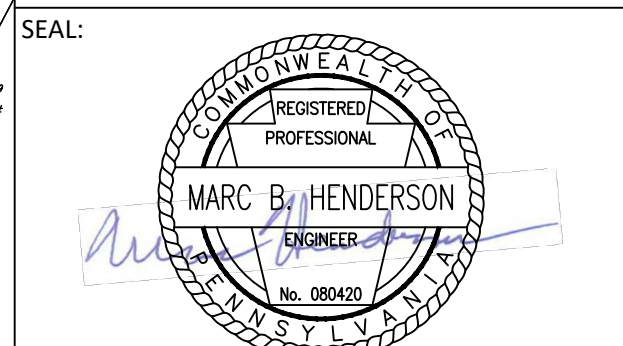
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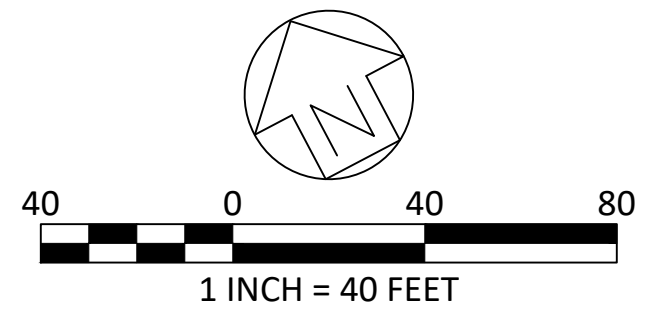
SUBMISSION:
BID DOCUMENTS

DRAWING TITLE:
EXISTING CONDITIONS PLAN

DATE:	06/14/23	DRAWING NO.:	C1.00
SCALE:	1" = 40'		
DRAWN BY:	MPB		
CHECKED BY:	MBH/MCA		

- NOTES:
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 - IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS BEFORE WORK COMMENCES. THE CONTRACTOR MUST BRING TO THE ATTENTION OF THE ENGINEER ANY DISCREPANCIES BETWEEN FIELD CONDITIONS AND DRAWINGS PRIOR TO BEGINNING WORK. FIELD CONDITION DISCREPANCIES SHALL NOT BE USED AS THE BASIS FOR CHANGE ORDER CLAIMS ONCE CONSTRUCTION ACTIVITIES AVE COMMENCED.

ALL LOCATIONS OF EXISTING UTILITIES SHOWN ON THIS PLAN HAVE BEEN DEVELOPED FROM EXISTING UTILITY RECORDS AND/OR ABOVE GROUND EXAMINATION OF THE SITE. COMPLETENESS OR ACCURACY OF LOCATION AND DEPTH OF UNDERGROUND UTILITIES OR STRUCTURES CANNOT BE GUARANTEED. CONTRACTOR MUST VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND FACILITIES BEFORE START OF WORK PER PENNSYLVANIA ACT 287 OF 1974 AS AMENDED BY ACT 199 OF 2004 OR LATER.



EXISTING CONDITIONS LEGEND	
---	EXISTING CONTOUR
---	OVERHEAD WIRES
---	DEPRESSED CURB
○	HYDRANT
○	WATER METER
○	DRAINAGE/STORM MANHOLE
○	SANITARY/SEWER MANHOLE
○	CLEAN OUT
○	UTILITY POLE
○	UTILITY POLE/LIGHT POLE
○	SIGN
○	BOLLARD
○	U-BOLLARD
---	RIGHT-OF-WAY LINE
○	COMPOSITE SOIL SAMPLE LOCATION
○	PIEZOMETER TEST LOCATION
○	STORMWATER TEST PIT LOCATION
○	GEOTECHNICAL BORING LOCATION
○	DECIDUOUS TREE & TRUNK SIZE
○	CONIFEROUS TREE & TRUNK SIZE
○	PARKING SPACE COUNT
---	EDGE OF WOODS
---	EDGE OF DRIP LINE
---	PROPERTY BOUNDARY
---	GAS LINE
---	WATER LINE
---	AREA LIGHT
---	CATCH BASIN OR INLET
---	STORM SEWER
---	SANITARY SEWER
---	WETLAND/WATERWAY BOUNDARY
---	WETLAND (W001)
---	NON-WETLAND WATERCOURSE (R001)

LEGEND	
---	LIMIT OF DISTURBANCE
---	PROJECT SITE BOUNDARY
○	STRUCTURE REMOVAL
---	UTILITY LINE REMOVAL
---	CONCRETE CURB REMOVAL
---	FENCE SALVAGE
---	ASPHALT/GRAVEL

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 - THE CONTRACTOR SHALL DEMARCATe THE LIMIT OF DISTURBANCE USING TEMP. CONSTRUCTION FENCE AND ORANGE SNOW FENCE. CONTRACTOR TO REMOVE, CLEAR, AND GRUB ALL VEGETATION INCLUDING TREES FROM INSIDE THIS BOUNDARY. NO WORK, DISTURBANCE, MATERIAL STORAGE, STAGING, OR VEHICLE PARKING IS TO TAKE PLACE OUTSIDE THE LIMIT OF DISTURBANCE.

- ALL SIGNS, SITE FURNITURE, TRASH CANS, BOLLARDS, AND OTHER PARK RELATED ITEMS WITHIN THE LIMITS OF DISTURBANCE ARE TO BE SALVAGED AND REINSTALLED BY THE CONTRACTOR.
- STANDS OF TREES OMITTED FOR CLARITY.
- ALL EXCAVATION AND REMOVAL VOLUMES ARE GIVEN AS NEAT QUANTITIES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CALCULATE NECESSARY BULKING FACTORS TO DETERMINE HOW TRANSPORT OR WORK WITH MATERIALS ARE QUANTIFIED TO ACHIEVE THE WORK AS DOCUMENTED.

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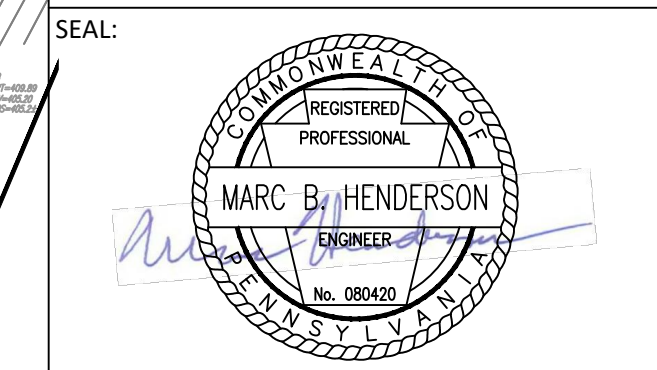
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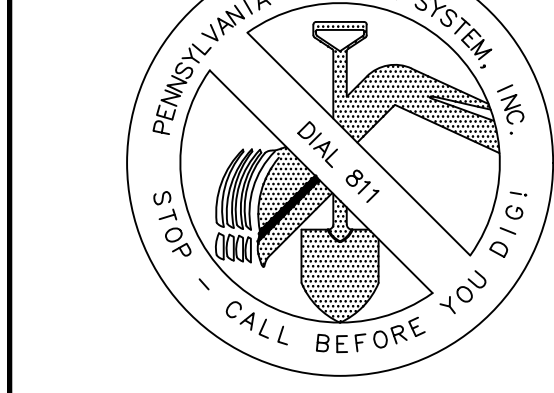
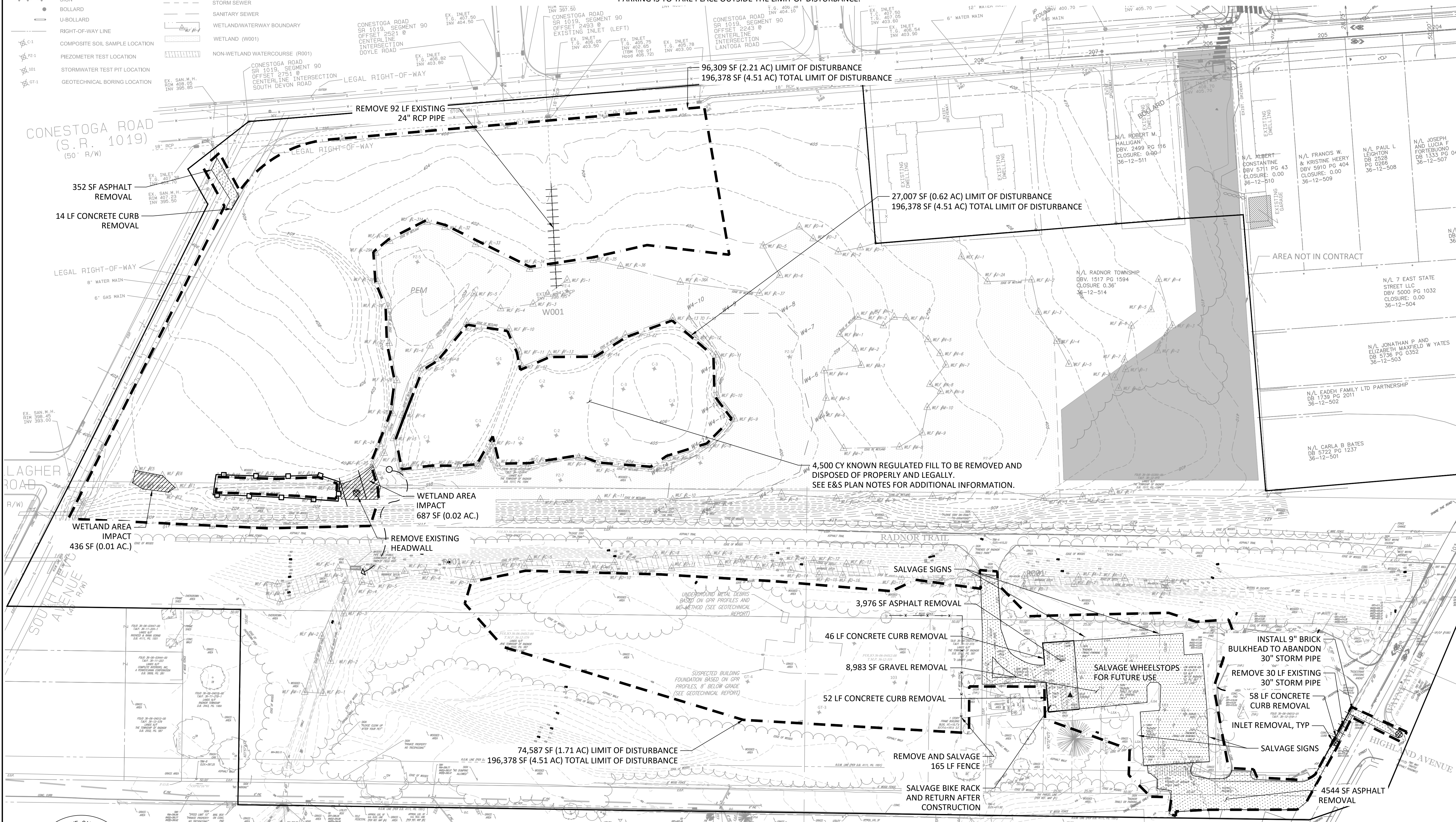
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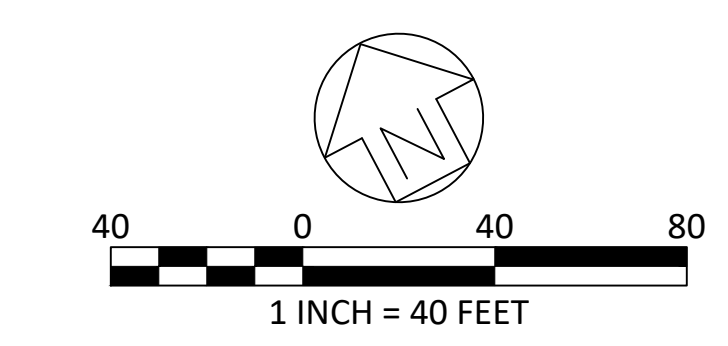
SUBMISSION:
BID DOCUMENTS

DRAWING TITLE:
DEMOLITION PLAN

DATE:	06/14/23	DRAWING NO.:	C1.10
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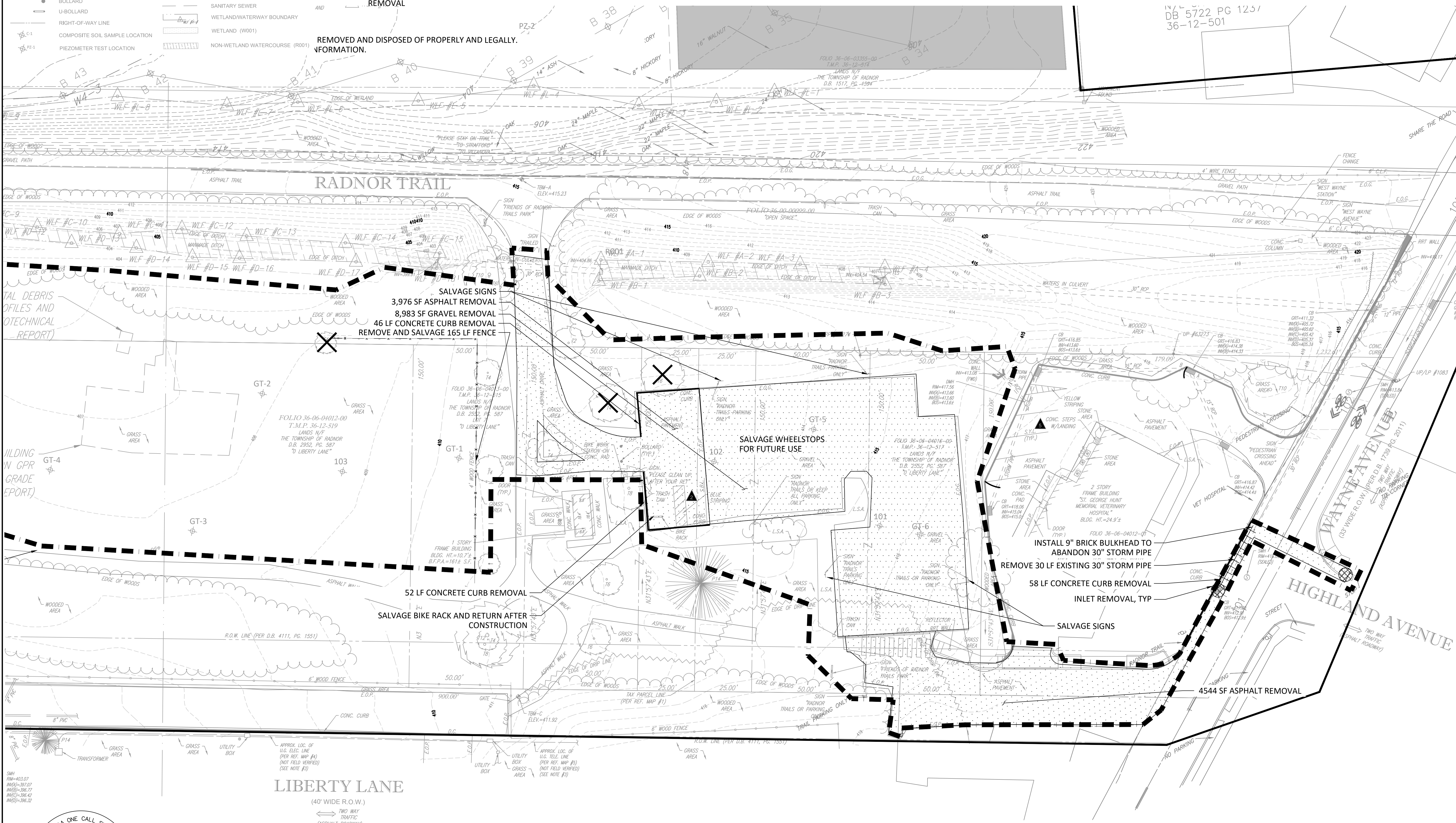
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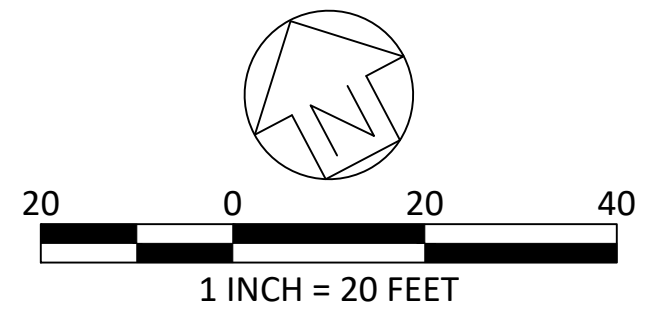
EXISTING CONDITIONS LEGEND	
124	EXISTING CONTOUR
125	OVERHEAD WIRES
OH	DEPRESSED CURB
HY	HYDRANT
WM	WATER METER
DMH	DRAINAGE/STORM MANHOLE
SMH	SANITARY/SEWER MANHOLE
C/O	CLEAN OUT
UP	UTILITY POLE
UPLP	UTILITY POLE/LIGHT POLE
S	SIGN
B	BOLLARD
U-B	U-BOLLARD
R.O.W.	RIGHT-OF-WAY LINE
C-1	COMPOSITE SOIL SAMPLE LOCATION
P-1	PIEZOMETER TEST LOCATION
T#	DECIDUOUS TREE & TRUNK SIZE
P#	CONIFEROUS TREE & TRUNK SIZE
PC	PARKING SPACE COUNT
EW	EDGE OF WOODS
EDL	EDGE OF DRIP LINE
PB	PROPERTY BOUNDARY
G	GAS LINE
W	WATER LINE
AL	AREA LIGHT
CB	CATCH BASIN OR INLET
SS	STORM SEWER
SS	SANITARY SEWER
WW	WETLAND/WATERWAY BOUNDARY
W	WETLAND (W001)
W001	NON-WETLAND WATERCOURSE (R001)

LEGEND	
LD	LIMIT OF DISTURBANCE
PSB	PROJECT SITE BOUNDARY
X	TREE REMOVAL
SR	STRUCTURE REMOVAL
ULR	UTILITY LINE REMOVAL
CCR	CONCRETE CURB REMOVAL
FS	FENCE SALVAGE
ASGR	ASPHALT/GRAVEL REMOVAL

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 - STANDS OF TREES OMITTED FOR CLARITY.
 - PRIVATE SUE LOCATED STORM SEWER IN VICINITY OF PARKING LOT. CONTRACTOR TO REMOVE LINE FROM STORMWATER FACILITY FOOTPRINT AND VERIFY ANY CONNECTIONS AT THE PARKING LOT EXTENTS



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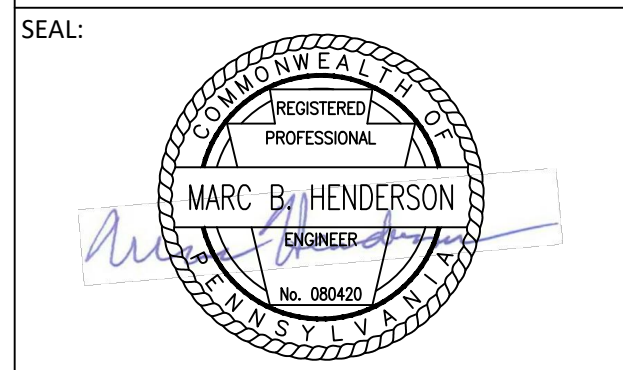
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SUBMISSION:
BID DOCUMENTS

DRAWING TITLE:
DEMOLITION PLAN - ENLARGEMENT

DATE:	06/14/23	DRAWING NO.:	C1.11
SCALE:	1" = 20'		
DRAWN BY:	MPB		
CHECKED BY:	MBH/MCA		

EXISTING CONDITIONS LEGEND	
124	EXISTING CONTOUR
125	OVERHEAD WIRES
OH	DEPRESSED CURB
HYDRANT	HYDRANT
WM	WATER METER
DMH	DRAINAGE/STORM MANHOLE
SMH	SANITARY/SEWER MANHOLE
CO	CLEAN OUT
UP	UTILITY POLE
UPLP	UTILITY POLE/LIGHT POLE
○	SIGN
○	BOLLARD
○	U-BOLLARD
---	RIGHT-OF-WAY LINE
☆-C-1	COMPOSITE SOIL SAMPLE LOCATION
☆-P-1	PIEZOMETER TEST LOCATION
☆-S-1	STORMWATER TEST PIT LOCATION
☆-G-1	GEOTECHNICAL BORING LOCATION
○	DECIDUOUS TREE & TRUNK SIZE
○	CONIFEROUS TREE & TRUNK SIZE
△	PARKING SPACE COUNT
---	EDGE OF WOODS
---	EDGE OF DRIP LINE
---	PROPERTY BOUNDARY
---	GAS LINE
---	WATER LINE
---	AREA LIGHT
---	CATCH BASIN OR INLET
---	STORM SEWER
---	SANITARY SEWER
---	WETLAND/WATERWAY BOUNDARY
---	WETLAND (W001)
---	NON-WETLAND WATERCOURSE (R001)

LEGEND	
---	LIMIT OF DISTURBANCE
---	PROJECT SITE BOUNDARY
---	TREE PROTECTION
---	COMPOST SOCK
---	CONSTRUCTION FENCE
---	ORANGE SAFETY FENCE
---	EROSION CONTROL BLANKET
---	ROCK CONSTRUCTION ENTRANCE
---	INLET BAG PROTECTION
---	OUTFALL PROTECTION
---	KNOWN REGULATED FILL REMOVAL

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 - THE CONTRACTOR SHALL LINE INSTALL ORANGE SAFETY FENCING TO DELINEATE THE WETLAND BOUNDARY AS MARKED ON PLANS. THERE SHALL BE NO ACTIVITY WITHIN ANY WETLAND ZONE. THE LONE EXCEPTION IS FOR TIMBER MATTING MARKED ON PLAN TO ENTER WETLANDS.
 - THE CONTRACTOR SHALL UTILIZE TEMPORARY COFFER DAMS TO PROVIDE A DRY WORK AREA AROUND OCS-3 AND OTHER PROJECT AREAS AS NEEDED. NO EARTH FILL IS ALLOW. SEE PA E&S MANUAL FOR ACCEPTABLE PRACTICES USING JERSEY BARRIERS OR SANDBAGS.
 - ALL EXCAVATION AND REMOVAL VOLUMES ARE GIVEN AS NEAT QUANTITIES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CALCULATE NECESSARY BULKING FACTORS TO DETERMINE HOW TRANSPORT OR WORK WITH MATERIALS ARE QUANTIFIED TO ACHIEVE THE WORK AS DOCUMENTED.

REVISIONS:	
DATE:	ISSUE:
9-10-21	COMMENT RESPONSE #1
11-16-21	COMMENT RESPONSE #2

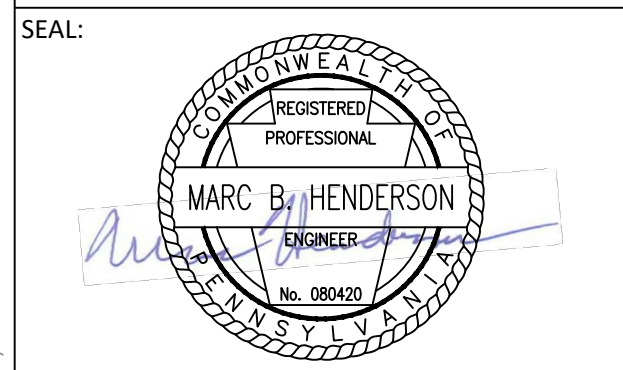
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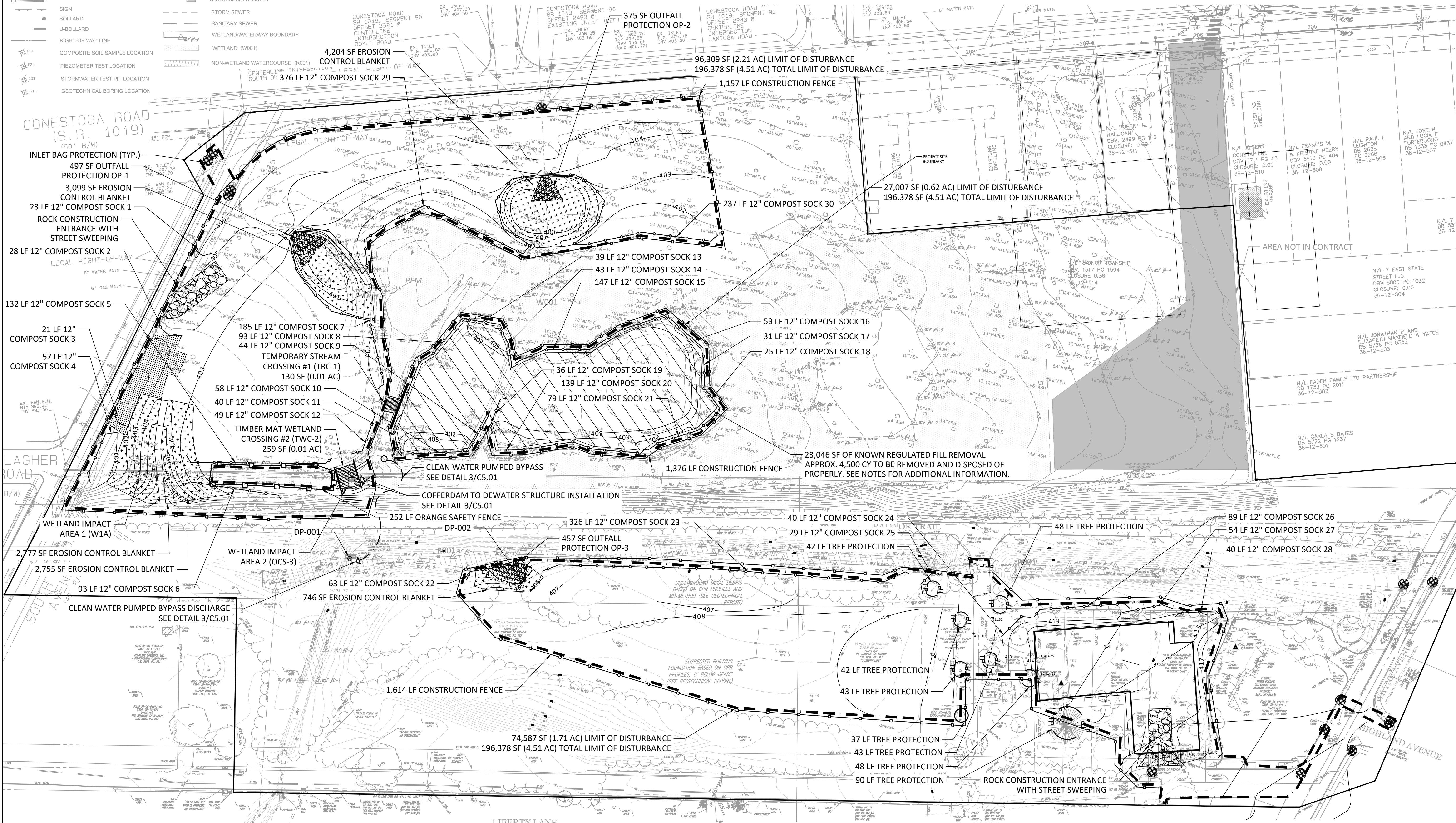
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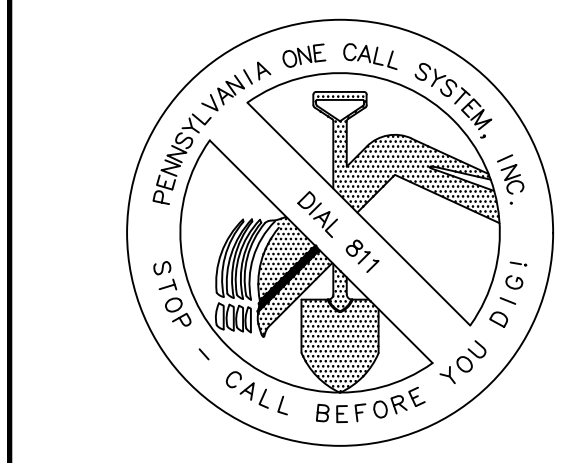
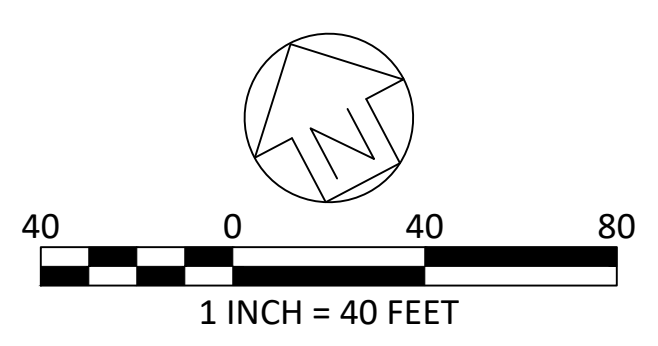
DRAWING TITLE:
EROSION & SEDIMENT CONTROL PLAN

DATE:	DRAWING NO.:
06/14/23	
SCALE: 1" = 40'	C1.21
DRAWN BY: MPB	
CHECKED BY: MBH/MCA	



- NOTES:
- ANY EQUIPMENT WITHIN WETLAND OR IMMEDIATELY ADJACENT TO WETLAND BOUNDARY MUST HAVE TIMBER MATTING INSTALLED UNDERNEATH THE EQUIPMENT TO AVOID WETLAND IMPACTS. NO WETLAND IMPACTS OUTSIDE LIMITS OF DISTURBANCE ARE ALLOWED.
 - TIMBER MATTING TO PROTECT WETLAND FOR ALL WORK OUTSIDE LIMITS OF DISTURBANCE
 - KNOWN REGULATED FILL MATERIAL OUTLINED FOR REMOVAL DOES NOT MEET PENNSYLVANIA CLEAN FILL STANDARDS BASED ON ELEVATED VANADIUM LEVELS OF 75-79.2 PPM AND BENO(A)PYRENE LEVEL OF 1.54 PPM, BUT IS SUITABLE FOR DISPOSAL AT REGULATED FILL SITES. THE CONTRACTOR IS RESPONSIBLE FOR THE DISPOSAL AND TESTING OF ALL MATERIAL IN ACCORDANCE WITH THE DEPARTMENT'S SOLID WASTE MANAGEMENT REGULATIONS

- 25 PA CODE 260.1 ET SEQ., 271.1 ET SEQ., AND 287.1 ET SEQ. TO PROPERLY REMOVE THE REGULATED FILL MATERIAL FROM THE SITE.
- THE SITE INCLUDES AREAS OF PREVIOUS DISTURBANCE AND FILL. THE CONTRACTOR IS RESPONSIBLE FOR NOTIFYING RADNOR TOWNSHIP OF ANY AREAS UNCOVERED DURING CONSTRUCTION THAT MAY NOT MEET PENNSYLVANIA STANDARDS FOR CLEAN FILL.
- REFER TO C1.36 STORMWATER & GRADING NOTES FOR CLEAN FILL AND SITE CONTAMINATION NOTES.
- EROSION CONTROL BLANKET TO BE BIONET SC1508N EXTENDED TERM BIODEGRADABLE EROSION CONTROL BLANKET BY NORTH AMERICAN GREEN OR APPROVED EQUAL.



ALL LOCATIONS OF EXISTING UTILITIES SHOWN ON THIS PLAN HAVE BEEN DEVELOPED FROM EXISTING UTILITY RECORDS AND/OR ABOVE GROUND EXAMINATION OF THE SITE. COMPLETENESS OR ACCURACY OF LOCATION AND DEPTH OF UNDERGROUND UTILITIES OR STRUCTURES CANNOT BE GUARANTEED. CONTRACTOR MUST VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND FACILITIES BEFORE START OF WORK PER PENNSYLVANIA ACT 287 OF 1974 AS AMENDED BY ACT 199 OF 2004 OR LATER.

CONSTRUCTION SEQUENCE FOR ENTIRE WORK AREA

THE CONSTRUCTION PLANS HAVE BEEN DEVELOPED BASED ON AVAILABLE INFORMATION PROVIDED BY THE OWNER. THE PROJECT AREA INCLUDES EXISTING UTILITIES OF UNKNOWN LOCATION AND DEPTH. ACTUAL CONDITIONS MAY DIFFER FROM THE PLANS. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL CONDITIONS PRIOR TO INITIATING WORK, AND FOR NOTIFYING OWNER IMMEDIATELY UPON BECOMING AWARE OF POTENTIAL CONFLICTS OR VARIATIONS IN CONDITIONS. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION OF ALL UTILITY AND STRUCTURE LOCATIONS AND ELEVATIONS AS REQUIRED FOR CONSTRUCTION.

ALL LOCATIONS OF EXISTING UTILITIES SHOWN ON THIS PLAN HAVE BEEN DEVELOPED FROM EXISTING UTILITY RECORDS AND/OR ABOVE GROUND EXAMINATION OF THE SITE. COMPLETENESS OR ACCURACY OF LOCATION AND DEPTH OF UNDERGROUND UTILITIES OR STRUCTURES CANNOT BE GUARANTEED. CONTRACTOR MUST VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND FACILITIES BEFORE START OF WORK PER PENNSYLVANIA ACT 287 OF 1974 AS AMENDED BY ACT 199 OF 2004 OR LATER.

CONTRACTOR SHALL VERIFY ALL UTILITY CONNECTIONS AND ELEVATIONS PRIOR TO PROCUREMENT AND INSTALLATION OF CONSTRUCTION MATERIALS. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR PRE-CAST STRUCTURES AND STORM MANAGEMENT FACILITY MATERIALS PRIOR TO CONSTRUCTION.

THE SITE WORK INCLUDES THE CONSTRUCTION OF MULTIPLE COMPONENTS INCLUDING BUT NOT LIMITED TO THE INSTALLATION OF:

1. EROSION AND SEDIMENTATION CONTROL MEASURES.
2. DEMOLITION OF ASSOCIATED SITE FEATURES AND REMOVAL OF PAVEMENT.
3. INSTALL NEW STORMWATER MANAGEMENT FACILITIES
4. STORMWATER INLETS, PIPES, AND STRUCTURES THAT CONVEY RUNOFF TO THE WEST WAYNE PRESERVE BASIN AND FRIENDS OF RADNOR TRAIL SUBSURFACE STORMWATER STORAGE OR OTHER STORMWATER COMPONENTS.
5. SUBSURFACE STORMWATER STORAGE BEDS WITH OVERFLOW CONNECTIONS TO THE EXISTING DISCHARGE POINTS.
6. INSTALL CURBING, POROUS PAVEMENT, AND ASSOCIATED SITE FEATURES.
7. INSTALLATION OF LANDSCAPE COMPONENTS.

DOCUMENTATION FOR THESE SITE COMPONENTS IS PROVIDED ON MULTIPLE PLAN SHEETS AND SPECIFICATIONS. THE CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTION OF ALL SITE IMPROVEMENTS IN A MANNER TO AVOID CONFLICTS AND DAMAGE TO EXISTING SYSTEMS OR SITE COMPONENTS THAT HAVE BEEN INSTALLED AS PART OF THIS PROJECT.

UPON COMPLETION OR TEMPORARY CESSATION OF EARTH DISTURBANCE ACTIVITIES OR ANY STAGE THEREOF, THE PROJECT SHALL BE IMMEDIATELY STABILIZED WITH THE APPROPRIATE TEMPORARY OR PERMANENT STABILIZATION.

ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE FOLLOWING SEQUENCE. EACH STAGE SHALL BE COMPLETED BEFORE ANY FOLLOWING STAGE IS INITIATED. CLEARING AND GRUBBING SHALL BE LIMITED ONLY TO THOSE AREAS DESCRIBED IN EACH STAGE.

CONSTRUCTION SEQUENCE FOR WEST WAYNE PRESERVE BASIN WORK (TO BE COMPLETED BEFORE NOVEMBER 22, 2023):

1. AT LEAST THREE DAYS PRIOR TO THE START OF EARTH DISTURBANCE ACTIVITIES, ORDER A UTILITY MARK OUT UTILIZING THE PENNSYLVANIA ONE CALL SYSTEM. SITE UTILITIES MUST BE FIELD LOCATED AND MARKED BEFORE THE START OF ANY SITE WORK, INCLUDING ALL PRIVATE UTILITIES. CONFIRM LOCATIONS AND INVERTS.
2. COORDINATE WITH THE RESPONSIBLE UTILITY CONTACT 30 DAYS PRIOR TO ANY WORK INVOLVING UTILITY RELOCATION IS TO BE INITIATED.
3. UPON COMPLETION OR TEMPORARY CESSATION OF THE EARTH DISTURBANCE ACTIVITY THAT WILL EXCEED 4 DAYS, OR ANY STAGE THEREOF, THE PROJECT SITE SHALL BE IMMEDIATELY STABILIZED WITH THE APPROPRIATE TEMPORARY OR PERMANENT STABILIZATION.
4. INSTALL TEMPORARY ROCK CONSTRUCTION ENTRANCES, AS SHOWN ON THE EROSION & SEDIMENTATION PLAN, PRIOR TO BEGINNING DEMOLITION.
5. INSTALL CONSTRUCTION FENCING ALONG LIMIT OF DISTURBANCE. INSTALL INLET PROTECTION, TREE PROTECTION AND COMPOST SOCKS AS SHOWN ON THE PLAN PRIOR TO ANY LAND-DISTURBING ACTIVITIES. NO DISTURBANCE CAN TAKE PLACE OUTSIDE OF THE LIMIT OF DISTURBANCE. NO WORK SHALL TAKE PLACE OUTSIDE OF THE PROJECT LIMIT. DELINEATE LOCATION OF WETLANDS TO BE PROTECTED USING ORANGE SAFETY FENCE.
6. INSTALL TEMPORARY WETLAND AND STREAM CROSSINGS PRIOR TO SITE WORK IN AND AROUND WETLANDS. NO DISTURBANCE SHALL TAKE PLACE IN WETLANDS UNLESS SHOWN ON PLANS.
7. REMOVE TOPSOIL ONLY IN AREAS TO BE GRADED AND STOCKPILE IN AREA DELINEATED ON PLAN. INSTALL COMPOST SOCK AROUND STOCKPILE AS SHOWN. TOPSOIL IS TO REMAIN SEPARATE FROM SUBSOIL MATERIAL. TOPSOIL IS NOT TO LEAVE THE SITE WITHOUT WRITTEN PERMISSION OF OWNER.
8. CLEAR, GRUB, AND REMOVAL ALL TREES WITHIN THE LIMIT OF DISTURBANCE. TREES SHALL BE CUT AND STUMPS REMOVED TO FACILITATE GRADING OPERATIONS. NO TREES ARE TO BE REMOVED OUTSIDE THE LIMIT OF DISTURBANCE
9. PERFORM SITE DEMOLITION OF MISCELLANEOUS STRUCTURES AS INDICATED ON PLAN. ONLY DEMOLISH EXISTING STORMWATER PIPES AND INLETS AS THEY ARE REPLACED OR AFTER NEW CONVEYANCE IS PROVIDED. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING CONVEYANCE OF STORMWATER DURING CONSTRUCTION.
10. PERFORM MAJOR EXCAVATIONS IN PHASE AND INSTALL STORMWATER STRUCTURES AND PIPES AS INDICATED ON POST-CONSTRUCTION STORMWATER MANAGEMENT PLAN. ****CRITICAL STAGE****
11. ADD EMERGENCY SPILLWAY AND ASSOCIATED GRADING AFTER STORMWATER STRUCTURES AND PIPING ARE INSTALLED, TO ENSURE SAFE CONVEYANCE.
12. PERFORM MAJOR EXCAVATIONS AND ROUGH GRADE AS INDICATED ON GRADING PLAN, REMOVING ANY DELETERIOUS MATERIAL 2-INCHES OR LARGER. REMOVE EXCESS CUT FROM SITE AND DISPOSE OF IN A LEGAL MANNER IN ACCORDANCE WITH THE SOLID WASTE MANAGEMENT REGULATIONS (SEE RECYCLING PROGRAM NOTE). WATER PUMPED FROM WORK AREAS SHOULD BE TREATED FOR SEDIMENT REMOVAL PRIOR TO DISCHARGING TO A "SURFACE WATER" (WHEN APPLICABLE). ****CRITICAL STAGE****
 - a. PROPOSED FILL EXCAVATION AND REMOVAL SHALL BE PERFORMED IN ACCORDANCE WITH THE MOST CURRENT MANAGEMENT OF FILL POLICY INCLUDING ALL NECESSARY PERMITS FOR REGULATED FILL, REFER TO RECYCLING NOTES.
 - b. FILL EXCAVATION SHALL BE CONTAINED TO THE LIMITS OF DISTURBANCE WITH ADDITIONAL CARE GIVEN TO EXCAVATION LIMITS NEAR WETLANDS. REFER TO PLANS FOR ADDITIONAL NOTES ON FILL DEPTH REMOVAL.
13. PERFORM FINE GRADING, SEEDING AND STABILIZE AS SHOWN ON PLANS AND DETAILS. INSTALL EROSION CONTROL BLANKET IN AREAS SHOWN ON PLANS FOLLOWING ESTABLISHMENT OF FINAL GRADE. COORDINATE INSTALLATION WITH LANDSCAPE RESTORATION (REFER TO LANDSCAPING PLAN). ****CRITICAL STAGE****
14. PLANT AND RESTORE SITE AREA AS DESCRIBED IN LANDSCAPE PLANS, DETAILS, AND SPECIFICATIONS. HAND GRADE TO FINAL ELEVATIONS. ****CRITICAL STAGE****
15. AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED (VEGETATED AREAS SHALL BE CONSIDERED PERMANENTLY STABILIZED WHEN A UNIFORM 70% VEGETATIVE COVER OF EROSION RESISTANT PERENNIAL SPECIES HAS BEEN ACHIEVED), REMOVE TEMPORARY INLET PROTECTION CONTROLS ONLY. AREAS DISTURBED DURING REMOVAL OF THE CONTROLS MUST ALSO BE STABILIZED IMMEDIATELY.
16. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REMOVE ANY DEBRIS AND FLUSH OUT ALL EXISTING AND NEW STORM DRAINAGE FACILITIES WITHIN THE PROJECT LIMITS AT THE COMPLETE OF THE CONSTRUCTION.

CONSTRUCTION SEQUENCE FOR FRIENDS OF RADNOR TRAIL PARK/SUBSURFACE STORAGE BEDS WORK:

1. AT LEAST THREE DAYS PRIOR TO THE START OF EARTH DISTURBANCE ACTIVITIES, ORDER A UTILITY MARK OUT UTILIZING THE PENNSYLVANIA ONE CALL SYSTEM. SITE UTILITIES MUST BE FIELD LOCATED AND MARKED BEFORE THE START OF ANY SITE WORK, INCLUDING ALL PRIVATE UTILITIES. CONFIRM LOCATIONS AND INVERTS.
2. COORDINATE WITH THE RESPONSIBLE UTILITY CONTACT 30 DAYS PRIOR TO ANY WORK INVOLVING UTILITY RELOCATION IS TO BE INITIATED.
3. UPON COMPLETION OR TEMPORARY CESSATION OF THE EARTH DISTURBANCE ACTIVITY THAT WILL EXCEED 4 DAYS, OR ANY STAGE THEREOF, THE PROJECT SITE SHALL BE IMMEDIATELY STABILIZED WITH THE APPROPRIATE TEMPORARY OR PERMANENT STABILIZATION.
4. INSTALL TEMPORARY ROCK CONSTRUCTION ENTRANCES, AS SHOWN ON THE EROSION & SEDIMENTATION PLAN, PRIOR TO BEGINNING DEMOLITION.
5. INSTALL CONSTRUCTION FENCING ALONG LIMIT OF DISTURBANCE. INSTALL INLET PROTECTION, TREE PROTECTION AND COMPOST SOCKS AS SHOWN ON THE PLAN PRIOR TO ANY LAND-DISTURBING ACTIVITIES. NO DISTURBANCE CAN TAKE PLACE OUTSIDE OF THE LIMIT OF DISTURBANCE. NO WORK SHALL TAKE PLACE OUTSIDE OF THE PROJECT LIMIT.
6. DEMOLISH PAVEMENT AND CURB WITHIN.
7. PERFORM SITE DEMOLITION OF MISCELLANEOUS STRUCTURES AS INDICATED ON PLAN. ONLY DEMOLISH EXISTING STORMWATER PIPES AND INLETS AS THEY ARE REPLACED OR AFTER NEW CONVEYANCE IS PROVIDED. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING CONVEYANCE OF STORMWATER DURING CONSTRUCTION.
8. THE OWNER SHALL PROVIDE ENGINEERING CONSTRUCTION OVERSIGHT FOR THE PROPOSED STORMWATER BMPS. ADDITIONAL SOIL TESTING MAY BE REQUIRED PRIOR TO THE INSTALLATION OF BMPS TO ENSURE PROPER LOCATION AND FUNCTION. A LICENSED PROFESSIONAL ENGINEER KNOWLEDGEABLE IN THE DESIGN AND CONSTRUCTION OF STORMWATER BMPS, PREFERABLY THE DESIGN ENGINEER, SHALL CONDUCT THE OVERSIGHT.
9. ALL CRITICAL STAGES OF IMPLEMENTATION OF THE PCSM PLAN REQUIRE THE ENGINEER TO BE PRESENT ON SITE.
10. AT LEAST THREE (3) DAYS PRIOR TO BMP INSTALLATION, THE OWNER/ENGINEER MUST BE NOTIFIED TO BE PRESENT DURING INSTALLATION OF EACH STORMWATER FACILITY.
11. THE FOLLOWING ITEMS ARE TO BE INSTALLED AS APPROPRIATE TO LOCATION AND ELEVATIONS:
 - a. PERFORM MAJOR EXCAVATIONS AND ROUGH GRADE THE SITE AS INDICATED ON GRADING AND STORMWATER PLAN, REMOVING ANY DELETERIOUS MATERIAL 2-INCHES OR LARGER. REMOVE EXCESS CUT FROM SITE AND DISPOSE OF IN A LEGAL MANNER IN ACCORDANCE WITH THE SOLID WASTE MANAGEMENT REGULATIONS (SEE RECYCLING NOTE). WATER PUMPED FROM WORK AREAS SHOULD BE TREATED FOR SEDIMENT REMOVAL PRIOR TO DISCHARGING TO A "SURFACE WATER" (WHEN APPLICABLE). ****CRITICAL STAGE****
 - b. IF ANY UNFAVORABLE CONDITIONS ARE ENCOUNTERED DURING THE INSTALLATION OF THE BMPS (I.E. GROUNDWATER AND/OR BEDROCK, ETC.), THE OWNER/ENGINEER SHOULD BE NOTIFIED IMMEDIATELY.
 - c. INSTALL INLETS AND OVERFLOW CONTROL STRUCTURES INCLUDING RELATED E&S INLET PROTECTION. INSTALL PIPES. DO NOT ALLOW SEDIMENT TO ENTER ANY PIPES OR STRUCTURES.
12. INSTALL STORMWATER SUBSURFACE STORAGE BMPS. SEE SHEET C1.36 FOR BMP SPECIFIC SEQUENCE OF INSTALLATION. ****CRITICAL STAGE****
13. PERFORM FINE SITE GRADING, SEED AND STABILIZE AS SHOWN ON THE EROSION & SEDIMENT CONTROL PLANS. COORDINATE WITH LANDSCAPE PLANS.
14. AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED (VEGETATED AREAS SHALL BE CONSIDERED PERMANENTLY STABILIZED WHEN A UNIFORM 70% VEGETATIVE COVER OF EROSION RESISTANT PERENNIAL SPECIES HAS BEEN ACHIEVED), REMOVE TEMPORARY EROSION AND SEDIMENT.
15. ENSURE AREAS DRAINING TO POROUS PAVEMENT AREAS ARE COMPLETELY STABILIZED PRIOR TO PAVEMENT INSTALLATION AND/OR PROTECT THESE AREAS FROM SEDIMENTATION USING COMPOST SOCK OR GEOTEXTILE FABRIC.
16. IF SOIL/SEDIMENT HAS ENTERED ANY OF THE STORMWATER BEDS, APPROPRIATE MEASURES (I.E. CLEANING SOIL/SEDIMENT FROM FABRIC, STONE, BED, ETC. AND/OR REPLACEMENT THEREOF) MUST BE PERFORMED PRIOR TO PAVING AT NO EXTRA COST TO OWNER.
17. INSTALL CURBING. AFTER CURBS ARE PLACED, IMMEDIATELY STABILIZE GRADED SOILS IN VICINITY OF CURBS (LEVEL SURFACE AND SLOPES).
18. INSTALL POROUS PAVEMENT AS SHOWN ON PLANS AND DETAILS. SEE SHEET C1.36 FOR BMP SPECIFIC SEQUENCE OF INSTALLATION. ****CRITICAL STAGE****
19. STRIPE PARKING LOT, REINSTALL SIGNS AND SITE FURNISHINGS.
20. INSTALL REMAINING STORMWATER STRUCTURES AND PIPES AS INDICATED ON POST-CONSTRUCTION STORMWATER MANAGEMENT PLAN.
21. LIMIT THE TOTAL LENGTH OF EXCAVATED TRENCH OPEN AT ANY ONE TIME TO THAT WHICH CAN BE EXCAVATED AND BACK-FILLED IN ONE WORKING DAY. NO MORE THAN 50 LINEAR FEET OF OPEN TRENCH SHOULD EXIST WHEN UTILITY LINE INSTALLATION CEASES AT THE END OF ANY WORK DAY. IMMEDIATELY STABILIZE DISTURBED AREAS.
22. INSTALL STANDARD PAVEMENT AS SHOWN ON PLANS AND DETAILS. GRADE AS SHOWN ON PLANS AND DETAILS. FINAL WEARING COURSE FOR ALL ASPHALT TO BE INSTALLED FOLLOWING COMPLETION OF ALL CONSTRUCTION.
23. AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED (VEGETATED AREAS SHALL BE CONSIDERED PERMANENTLY STABILIZED WHEN A UNIFORM 70% VEGETATIVE COVER OF EROSION RESISTANT PERENNIAL SPECIES HAS BEEN ACHIEVED), REMOVE TEMPORARY INLET PROTECTION CONTROLS ONLY. AREAS DISTURBED DURING REMOVAL OF THE CONTROLS MUST ALSO BE STABILIZED IMMEDIATELY.
24. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REMOVE ANY DEBRIS AND FLUSH OUT ALL EXISTING AND NEW STORM DRAINAGE FACILITIES WITHIN THE PROJECT LIMITS AT THE COMPLETE OF THE CONSTRUCTION.
25. UPON COMPLETION OF ALL EARTH DISTURBANCE ACTIVITIES AND PERMANENT STABILIZATION OF ALL DISTURBED AREAS, THE OWNER AND/OR OPERATOR SHALL CONTACT THE OWNER'S INSPECTOR FOR A FINAL INSPECTION PRIOR TO REMOVAL/CONVERSION OF THE E&S BMPS.
26. REMOVE TEMPORARY EROSION CONTROL MEASURES AS APPROPRIATE.
27. AS SOON AS SLOPES, CHANNELS, DITCHES, AND OTHER DISTURBED AREAS REACH FINAL GRADE, THEY MUST BE STABILIZED. CESSATION OF ACTIVITY FOR FOUR (4) DAYS OR LONGER REQUIRES TEMPORARY STABILIZATION.
28. THE NPDES NOTICE OF TERMINATION (N.O.T.) MUST BE SUBMITTED TO PA DEP UPON COMPLETION OF CONSTRUCTION (WHEN APPLICABLE)

ADDITIONAL NOTES:

1. PROTECT POROUS PAVEMENT FROM SEDIMENTATION AFTER INSTALLATION.
2. PROTECT ALL NEW INLETS AND TRENCH DRAINS FROM SEDIMENTATION FOLLOWING INSTALLATION.
3. PROTECT BASIN AND NEWLY SEEDED AREAS FROM SEDIMENTATION AND RUNOFF UNTIL FULLY STABILIZED.

THE FOLLOWING ARE CRITICAL STAGES OF IMPLEMENTATION OF THE PCSM PLAN FOR WHICH THE ENGINEER SHOULD BE PRESENT ON SITE:

1. SUBSURFACE STORAGE SYSTEM EXCAVATION
2. SUBSURFACE STORAGE SYSTEM INSTALLATION
3. POROUS PAVEMENT INSTALLATION
4. DETENTION BASIN GRADING
5. LANDSCAPE RESTORATION

CLEAN FILL AND SITE CONTAMINATION NOTES

1. WITH THE EXCEPTION OF SITES ENROLLED IN DEP'S LAND RECYCLING AND ENVIRONMENTAL REMEDIATION STANDARDS (ACT 2) PROGRAM AND SITES WITH DEP WASTE MANAGEMENT GENERAL PERMIT (WMGR096) APPROVAL TO USE REGULATED FILL, ALL FILL MATERIAL IMPORTED TO THE SITE MUST MEET THE DEFINITION OF CLEAN FILL, AS DEFINED IN THE NPDES STORMWATER CONSTRUCTION PERMIT. REGULATED FILL MAY ONLY BE USED ON ACT 2 SITES, IN ACCORDANCE WITH STANDARDS ESTABLISHED BY THAT PROGRAM, AND ON SITES WITH DEP GENERAL PERMIT WMGR096 APPROVAL.
2. THE PERMITTEE SHALL CONDUCT ENVIRONMENTAL DUE DILIGENCE TO VERIFY THAT SOILS EXCAVATED ON-SITE THAT IS USED TO ESTABLISH FINAL GRADE AND FILL IMPORTED TO THE PROJECT SITE IS CONSIDERED CLEAN FILL. IF DUE DILIGENCE RESULTS IN EVIDENCE OF A RELEASE, AS DEFINED IN DEP'S MANAGEMENT OF FILL POLICY (285-2182-773), THAT HAS AFFECTED THE FILL MATERIAL, THE PERMITTEE SHALL TEST THE MATERIAL TO DETERMINE WHETHER THE MATERIAL QUALIFIES AS CLEAN FILL, AND DEP'S ELECTRONIC FORM FP-001 (CERTIFICATION OF CLEAN FILL) MUST BE COMPLETED, RETAINED BY THE PERMITTEE OR THE PROPERTY OWNER ON-SITE, BE MADE AVAILABLE TO DEP/CCD UPON REQUEST.
3. IF THE PERMITTEE BECOMES AWARE DURING EARTH DISTURBANCE ACTIVITIES THAT SOILS IN THE AREA OF EARTH DISTURBANCE CONTAIN CONCENTRATIONS OF REGULATED SUBSTANCES EXCEEDING THE RESIDENTIAL MEDIUM-SPECIFIC CONCENTRATIONS FOR SOIL IN 25 PA CODE CHAPTER 250, THAT WERE NOT PREVIOUSLY DISCLOSED TO DEP/CCD, THE PERMITTEE SHALL NOTIFY DEP/CCD IN ACCORDANCE WITH THE STANDARD CONDITION PART A III.D OF THE NPDES STORMWATER CONSTRUCTION PERMIT AND CEASE EARTH DISTURBANCE ACTIVITIES IN THE AREAS OF KNOWN SOIL CONTAMINATION UNTIL AUTHORIZED TO RESUME BY DEP/CCD.
4. IF THE PERMITTEE ENCOUNTERS GROUNDWATER DURING EXCAVATION THAT THE PERMITTEE KNOWS OR HAS REASON TO BELIEVE IS CONTAMINATED BY ONE OR MORE POLLUTANTS AT CONCENTRATIONS EXCEEDING WATER QUALITY CRITERIA CONTAINED IN 25 PA. CODE CHAPTER 93, THAT WERE NOT PREVIOUSLY DISCLOSED TO DEP/CCD, THE PERMITTEE SHALL NOTIFY DEP/CCD IN ACCORDANCE WITH THE STANDARD CONDITIONAL PART A III.D OF THE NPDES STORMWATER CONSTRUCTION PERMIT. CONTAMINATED GROUNDWATER MAY NOT BE PUMPED OR OTHERWISE DIVERTED TO SURFACE WATERS UNLESS SPECIFICALLY AUTHORIZED BY DEP/CCD.
5. THE PERMITTEE IS RESPONSIBLE FOR ASSURING THAT ANY FILL MATERIAL USED AT THE SITE, WHETHER BROUGHT ONTO THE SITE OR GENERATED AT THE SITE, MEETS THE MANAGEMENT OF FILL POLICY. WASTE GENERATED FROM OR DISCOVERED DURING CONSTRUCTION AND/OR DEMOLITION ACTIVITIES, MUST BE MANAGED IN ACCORDANCE WITH THE SOLID WASTE MANAGEMENT ACT. THE PERMITTEE IS RESPONSIBLE FOR DETERMINING IF ANY WASTE SO GENERATED IS HAZARDOUS OR NONHAZARDOUS AND HAS THE BURDEN OF PROOF TO DEMONSTRATE THAT WASTE IS MANAGED IN ACCORDANCE WITH THE PERTINENT HAZARDOUS, MUNICIPAL, OR RESIDENTIAL WASTE REGULATIONS. QUESTIONS ABOUT THE PROPER MANAGEMENT OF WASTE FROM THE CONSTRUCTION OR DEMOLITION ACTIVITIES AUTHORIZED UNDER THIS PERMIT, OR THE USE OF FILL MATERIAL UNDER THE MANAGEMENT OF FILL POLICY, SHOULD BE DIRECTED TOT HE REGIONAL WASTE MANAGEMENT PROGRAM AT 484.250.5960.
6. IF ANY OF THE REQUIREMENTS OR APPROVALS UNDER THE ENVIRONMENT CLEANUP AND BROWNFIELDS PROGRAM AND/OR THE SOLID WASTE MANAGEMENT PROGRAM REQUIRE MODIFICATIONS, PLEASE CONTACT THOSE PROGRAMS DIRECTLY.

REVISIONS:	
DATE:	ISSUE:
9-10-21	COMMENT RESPONSE #1

OWNER:

RADNOR TOWNSHIP
301 IVEN AVENUE
WAYNE, PA 19087-5297

CIVIL ENGINEER:



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259 MORGAN STREET
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610.933.0123
WWW.MELIORADESIGN.COM

LANDSCAPE ARCHITECT:

VIRIDIAN LANDSCAPE STUDIO
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WWW.VIRIDIANLS.COM

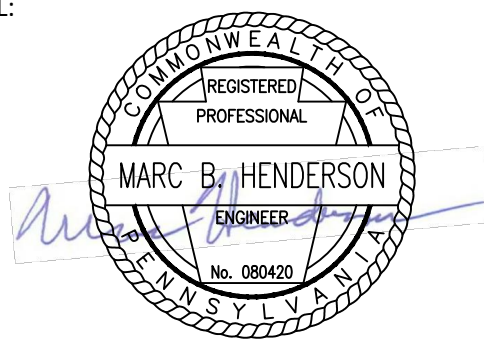
SURVEYOR:

CONTROL POINT ASSOCIATES, INC.
1600 MANOR DRIVE, SUITE 210
CHALFONT, PA 18914
215.712.9800
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PROJECT TITLE:
**SOUTH DEVON AREA FLOOD
REDUCTION PROJECT**

AT THE WEST WAYNE PRESERVE
AND FRIENDS OF RADNOR TRAIL PARK

SEAL:



SUBMISSION:

BID DOCUMENTS

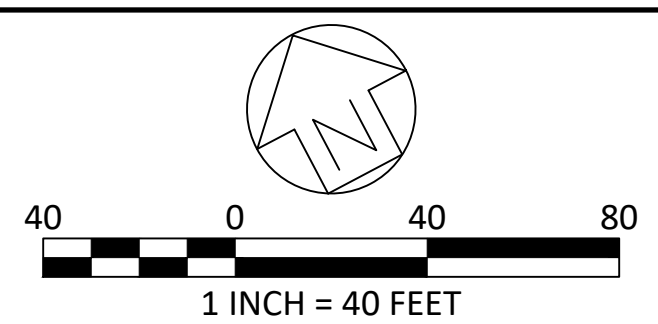
DRAWING TITLE:
**EROSION & SEDIMENT
CONSTRUCTION
SEQUENCE**

DATE:	06/14/23	DRAWING NO: C1.22
SCALE:	1" = 40'	
DRAWN BY:	MPB	
CHECKED BY:	MBH/MCA	

- EXISTING CONDITIONS LEGEND**
- 124 EXISTING CONTOUR
 - OH OVERHEAD WIRES
 - DEPRESSED CURB
 - HYDRANT
 - WATER METER
 - DMH DRAINAGE/STORM MANHOLE
 - SMH SANITARY/SEWER MANHOLE
 - CLEAN OUT
 - UTILITY POLE
 - UTILITY POLE/LIGHT POLE
 - SIGN
 - BOLLARD
 - U-BOLLARD
 - RIGHT-OF-WAY LINE
 - COMPOSITE SOIL SAMPLE LOCATION
 - PIEZOMETER TEST LOCATION
 - STORMWATER TEST PIT LOCATION
 - GEOTECHNICAL BORING LOCATION
 - DECIDUOUS TREE & TRUNK SIZE
 - CONIFEROUS TREE & TRUNK SIZE
 - PARKING SPACE COUNT
 - EDGE OF WOODS
 - EDGE OF DRIP LINE
 - PROPERTY BOUNDARY
 - GAS LINE
 - WATER LINE
 - AREA LIGHT
 - CATCH BASIN OR INLET
 - STORM SEWER
 - SANITARY SEWER
 - WETLAND/WATERWAY BOUNDARY
 - WETLAND (W001)
 - NON-WETLAND WATERCOURSE (R001)

- LEGEND**
- LIMIT OF DISTURBANCE
 - PROJECT SITE BOUNDARY
 - JUNCTION STRUCTURE
 - ENDWALL
 - OUTLET CONTROL STRUCTURE
 - INLET
 - PROPOSED CONTOUR
 - SOLID PIPE
 - OUTFALL PROTECTION
 - TRM PERMANENT STABILIZATION
 - ADS SUBSURFACE STORAGE SYSTEM
 - POROUS PAVEMENT
 - KNOWN REGULATED FILL REMOVAL

- NOTES:**
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CONDUCT ACTIVITIES IN A CLEAN, NEAT MANNER THROUGHOUT THE CONTRACT PERIOD. ALL DEBRIS GENERATED BY THE CONTRACTOR'S ACTIVITIES SHALL BE CLEANED UP AND REMOVED FROM THE PREMISES AT THE END OF EACH WORKING DAY. IF THE CONTRACTOR FAILS TO COMPLY, RADNOR TOWNSHIP HAS THE RIGHT TO HAVE THE SITE CLEANED AT THE CONTRACTOR'S EXPENSE.
 - IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS BEFORE WORK COMMENCES. THE CONTRACTOR MUST BRING TO THE ATTENTION OF THE ENGINEER ANY DISCREPANCIES BETWEEN FIELD CONDITIONS AND DRAWINGS PRIOR TO BEGINNING WORK. FIELD CONDITION DISCREPANCIES SHALL NOT BE USED AS THE BASIS FOR CHANGE ORDER CLAIMS ONCE CONSTRUCTION ACTIVITIES AVE COMMENCED.
 - THE SITE INCLUDES AREAS OF PREVIOUS DISTURBANCE AND HISTORIC FILL. THE CONTRACTOR IS RESPONSIBLE FOR NOTIFYING RADNOR TOWNSHIP OF ANY AREAS UNCOVERED DURING CONSTRUCTION THAT MAY NOT MEET PENNSYLVANIA STANDARDS FOR CLEAN FILL.



REVISIONS:

DATE:	ISSUE:

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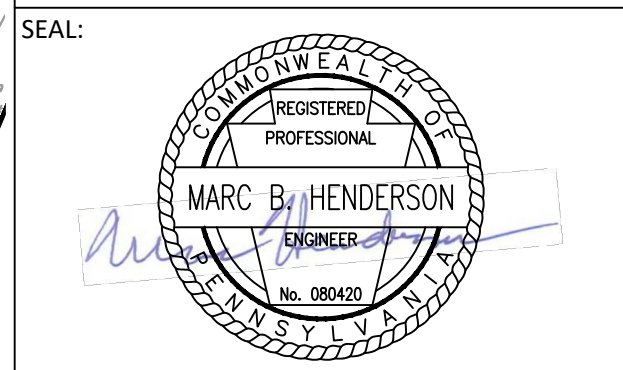
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SURVEYOR:

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PROJECT TITLE:

SOUTH DEVON AREA FLOOD REDUCTION PROJECT
AT THE WEST WAYNE PRESERVE AND FRIENDS OF RADNOR TRAIL PARK



SUBMISSION:

BID DOCUMENTS

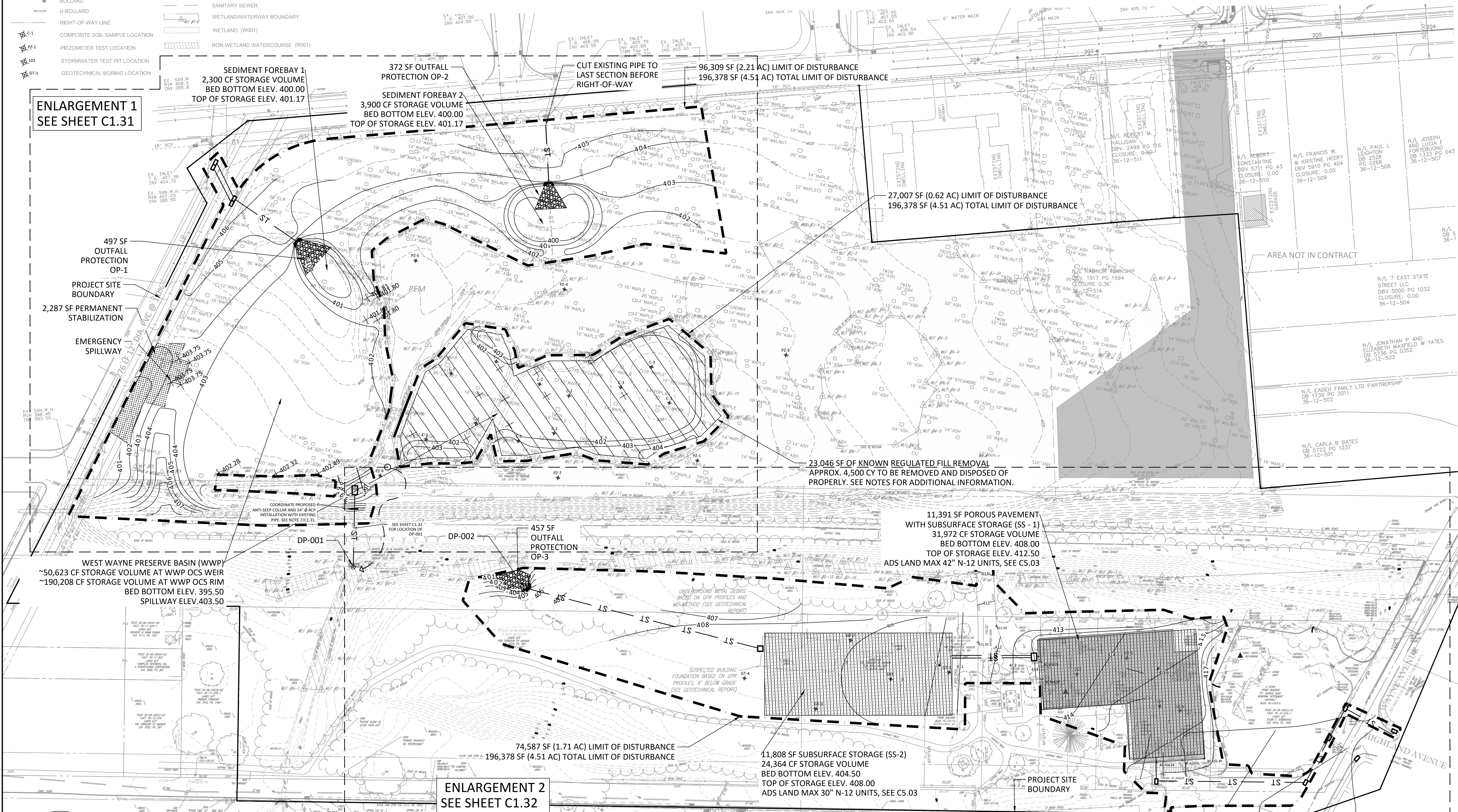
DRAWING TITLE:

STORMWATER & GRADING PLAN

DATE:	06/14/23	DRAWING NO.:	C1.30
SCALE:	1" = 40'		
DRAWN BY:	MPB		
CHECKED BY:	MBH/MCA		

ENLARGEMENT 1
SEE SHEET C1.31

ENLARGEMENT 2
SEE SHEET C1.32



ALL LOCATIONS OF EXISTING UTILITIES SHOWN ON THIS PLAN HAVE BEEN DEVELOPED FROM EXISTING UTILITY RECORDS AND/OR ABOVE GROUND EXAMINATION OF THE SITE. COMPLETENESS OR ACCURACY OF LOCATION AND DEPTH OF UNDERGROUND UTILITIES OR STRUCTURES CANNOT BE GUARANTEED. CONTRACTOR MUST VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND FACILITIES BEFORE START OF WORK PER PENNSYLVANIA ACT 287 OF 1974 AS AMENDED BY ACT 199 OF 2004 OR LATER.

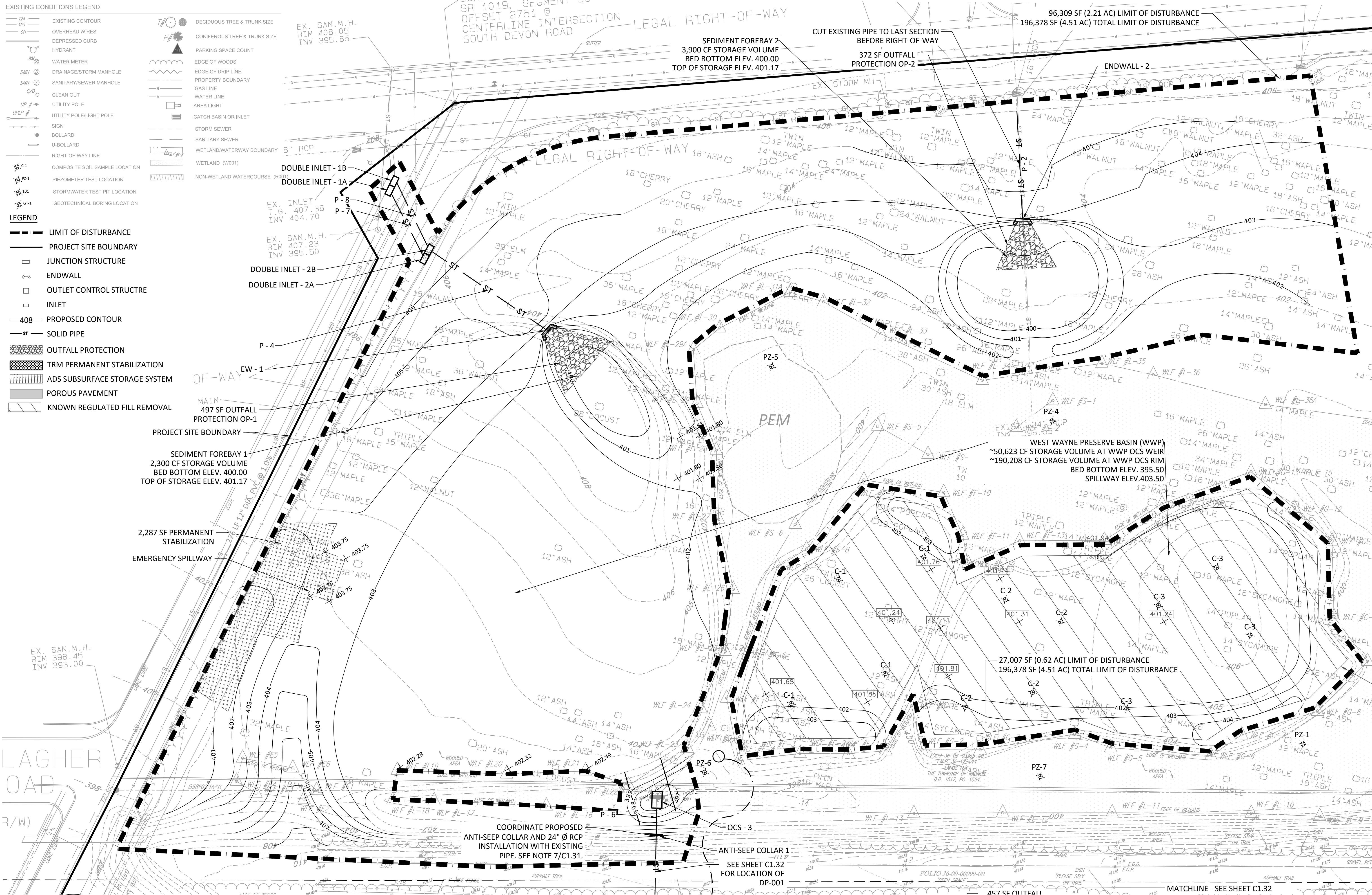
- NOTES CONTINUED:**
- KNOWN REGULATED FILL MATERIAL OUTLINED FOR REMOVAL DOES NOT MEET PENNSYLVANIA CLEAN FILL STANDARDS BASED ON ELEVATED VANADIUM LEVELS OF 75-79.2 PPM AND BENO(A)PYRENE LEVEL OF 1.54 PPM, BUT IS SUITABLE FOR DISPOSAL AT REGULATED FILL SITES. THE CONTRACTOR IS RESPONSIBLE FOR THE DISPOSAL AND TESTING OF ALL MATERIAL IN ACCORDANCE WITH THE DEPARTMENT'S SOLID WASTE MANAGEMENT REGULATIONS 25 PA CODE 260.1 ET SEQ., 271.1 ET SEQ., AND 287.1 ET SEQ TO PROPERLY REMOVE THE REGULATED FILL MATERIAL FROM THE SITE.
 - REFER TO THE L-SERIES SHEETS FOR THE PLANTING PLANS.
 - REFER TO C1.36 STORMWATER & GRADING NOTES FOR CLEAN FILL AND SITE CONTAMINATION NOTES.
 - ALL EXCAVATION AND REMOVAL VOLUMES ARE GIVEN AS NEAT QUANTITIES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CALCULATE NECESSARY BULKING FACTORS TO DETERMINE HOW TRANSPORT OR WORK WITH MATERIALS ARE QUANTIFIED TO ACHIEVE THE WORK AS DOCUMENTED.

STORMWATER TEST PIT ID	SURFACE	DEPTH TO REDOX FEATURES	ASSUMED WATER SURFACE ELEVATION	GEOTECHNICAL TEST PIT ID	SURFACE	WET SOIL DEPTH	ESTIMATED WATER SURFACE ELEVATION
101	416	79" - 110" (6.6')	409.4	1	410	5'	405'
102	+413.75	72" - 100" (6')	407.75	2	408	8.2' (TO REDOX)	398.81'
103	409	72" - 90" (6')	403'	3	408	6'	402'
				4	407.9	8'	399.9'
				5	414	6' (TO REDOX)	408'
				6	+416.3	8' (TO REDOX)	408.3'



EXISTING CONDITIONS LEGEND	
124	EXISTING CONTOUR
125	OVERHEAD WIRES
OH	DEPRESSED CURB
HYDRANT	HYDRANT
WM	WATER METER
DMH	DRAINAGE/STORM MANHOLE
SMH	SANITARY/SEWER MANHOLE
C/O	CLEAN OUT
UP	UTILITY POLE
UPLP	UTILITY POLE/LIGHT POLE
SIGN	SIGN
BOLLARD	BOLLARD
U-BOLLARD	U-BOLLARD
RIGHT-OF-WAY LINE	RIGHT-OF-WAY LINE
C-1	COMPOSITE SOIL SAMPLE LOCATION
PZ-1	PIEZOMETER TEST LOCATION
101	STORMWATER TEST PIT LOCATION
GT-1	GEOTECHNICAL BORING LOCATION

LEGEND	
---	LIMIT OF DISTURBANCE
---	PROJECT SITE BOUNDARY
□	JUNCTION STRUCTURE
▭	ENDWALL
□	OUTLET CONTROL STRUCTRE
□	INLET
-408	PROPOSED CONTOUR
—ST	SOLID PIPE
▨	OUTFALL PROTECTION
▨	TRM PERMANENT STABILIZATION
▨	ADS SUBSURFACE STORAGE SYSTEM
▨	POROUS PAVEMENT
▨	KNOWN REGULATED FILL REMOVAL



REVISIONS:	DATE:	ISSUE:
	06/27/23	ADDENDUM 1

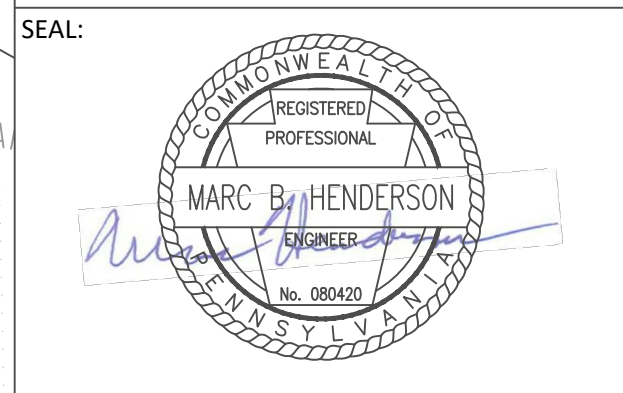
OWNER:
RADNOR TOWNSHIP
 301 IVEN AVENUE
 WAYNE, PA 19087-5297

CIVIL ENGINEER:
meliora
 MELIORA DESIGN
 259 MORGAN STREET
 PHOENIXVILLE, PA 19460
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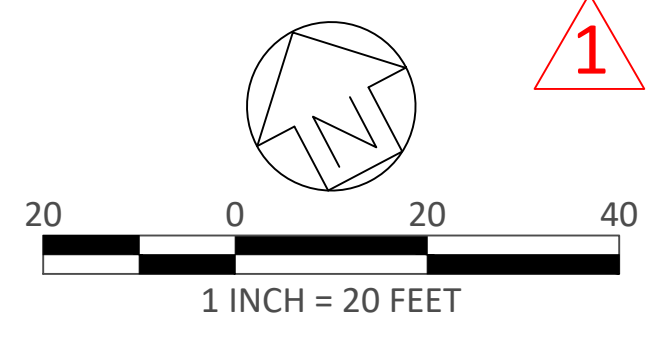
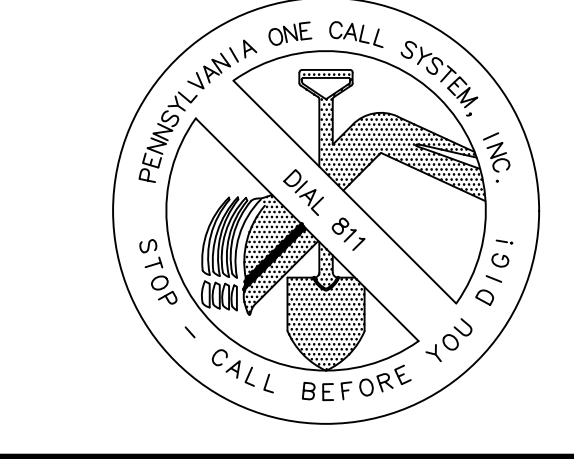


SUBMISSION:
BID DOCUMENTS

DRAWING TITLE:
STORMWATER & GRADING PLAN - ENLARGEMENT 1

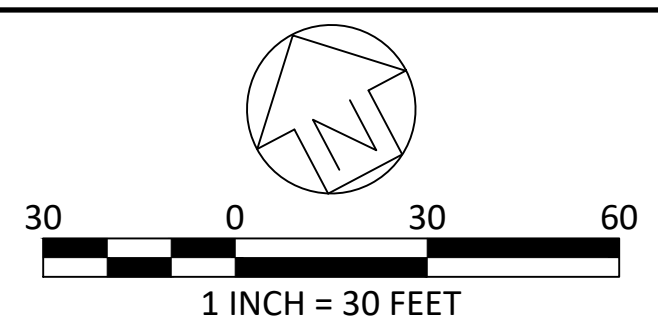
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SCALE:	1" = 20'		
DRAWN BY:	MPB		
CHECKED BY:	MBH/MCA		

- NOTES:
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CONDUCT ACTIVITIES IN A CLEAN, NEAT MANNER THROUGHOUT THE CONTRACT PERIOD. ALL DEBRIS GENERATED BY THE CONTRACTOR'S ACTIVITIES SHALL BE CLEANED UP AND REMOVED FROM THE PREMISES AT THE END OF EACH WORKING DAY. IF THE CONTRACTOR FAILS TO COMPLY, RADNOR TOWNSHIP HAS THE RIGHT TO HAVE THE SITE CLEANED AT THE CONTRACTOR'S EXPENSE.
 - IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS BEFORE WORK COMMENCES. THE CONTRACTOR MUST BRING TO THE ATTENTION OF THE ENGINEER ANY DISCREPANCIES BETWEEN FIELD CONDITIONS AND DRAWINGS PRIOR TO BEGINNING WORK. FIELD CONDITION DISCREPANCIES SHALL NOT BE USED AS THE BASIS FOR CHANGE ORDER CLAIMS ONCE CONSTRUCTION ACTIVITIES AVE COMMENCED.
 - THE SITE INCLUDES AREAS OF PREVIOUS DISTURBANCE AND HISTORIC FILL. THE CONTRACTOR IS RESPONSIBLE FOR NOTIFYING RADNOR TOWNSHIP OF ANY AREAS UNCOVERED DURING CONSTRUCTION THAT MAY NOT MEET PENNSYLVANIA STANDARDS FOR CLEAN FILL.
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 - REFER TO C1.36 STORMWATER & GRADING NOTES FOR CLEAN FILL AND SITE CONTAMINATION NOTES. CONTRACTOR TO REMOVE EXISTING HEADWALL, INSTALL NEW 24" RCP AND ANTI-SEEP COLLAR, AND ATTACH PERMANENTLY TO EXISTING PIPE. CONTRACTOR TO REVIEW PIPE CONDITION WITH OWNER PRIOR TO DEMOLITION.
 -



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●	SIGN
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●	COMPOSITE SOIL SAMPLE LOCATION
●	PIEZOMETER TEST LOCATION
●	STORMWATER TEST PIT LOCATION
●	GEOTECHNICAL BORING LOCATION
●	DECIDUOUS TREE & TRUNK SIZE
●	CONIFEROUS TREE & TRUNK SIZE
▲	PARKING SPACE COUNT
—	EDGE OF WOODS
—	EDGE OF DRIP LINE
—	PROPERTY BOUNDARY
—	GAS LINE
—	WATER LINE
—	AREA LIGHT
—	CATCH BASIN OR INLET
—	STORM SEWER
—	SANITARY SEWER
—	WETLAND/WATERWAY BOUNDARY
—	WETLAND (W001)
—	NON-WETLAND WATERCOURSE (R001)

LEGEND	
—	LIMIT OF DISTURBANCE
—	PROJECT SITE BOUNDARY
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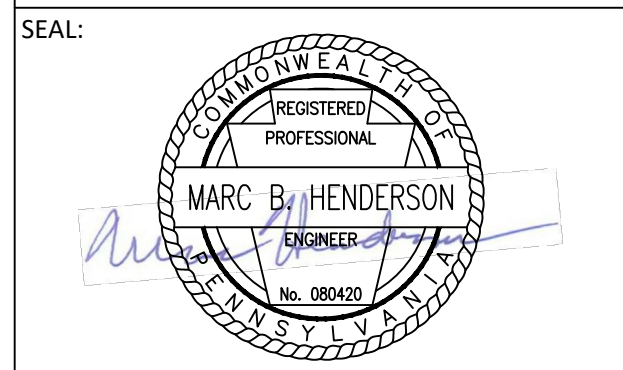
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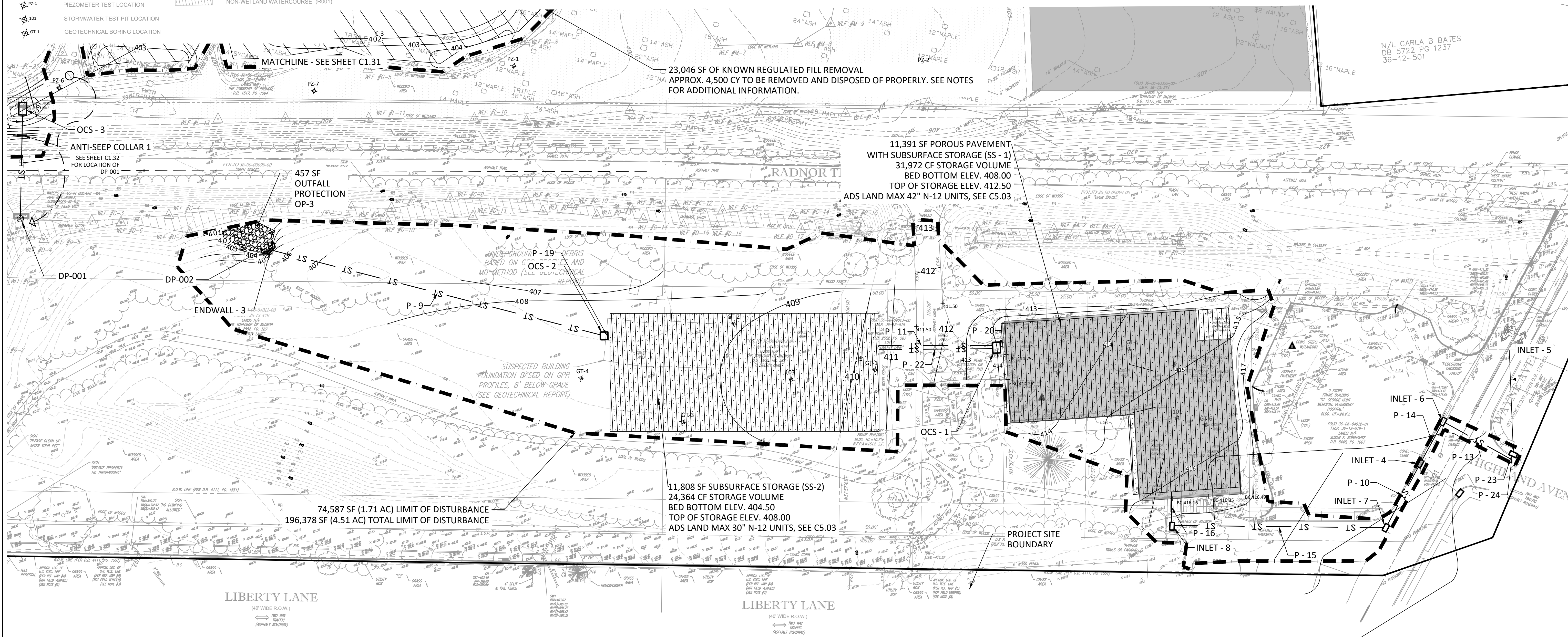
PROJECT TITLE:
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SUBMISSION:
BID DOCUMENTS

DRAWING TITLE:
**STORMWATER &
 GRADING PLAN -
 ENLARGEMENT 2**

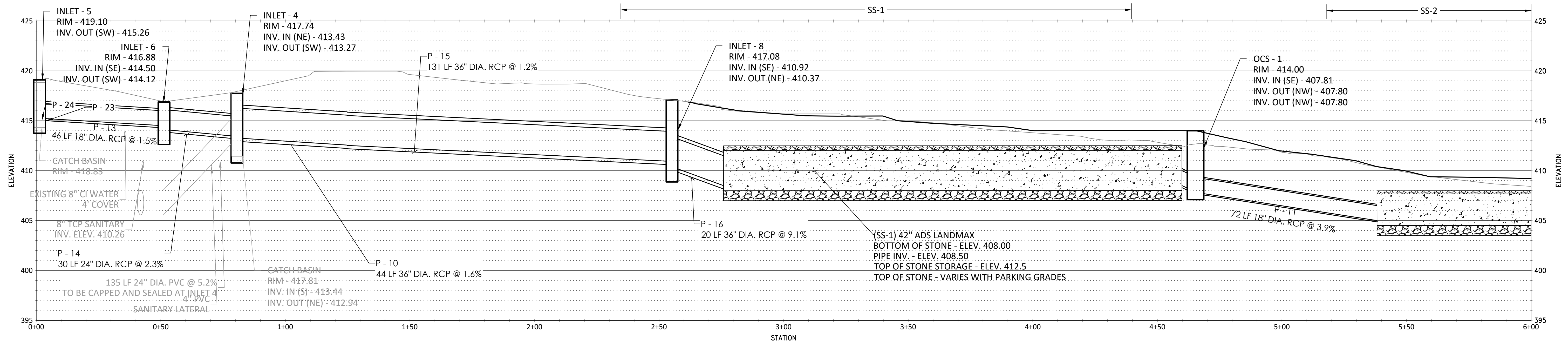
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SCALE:	1" = 30'		
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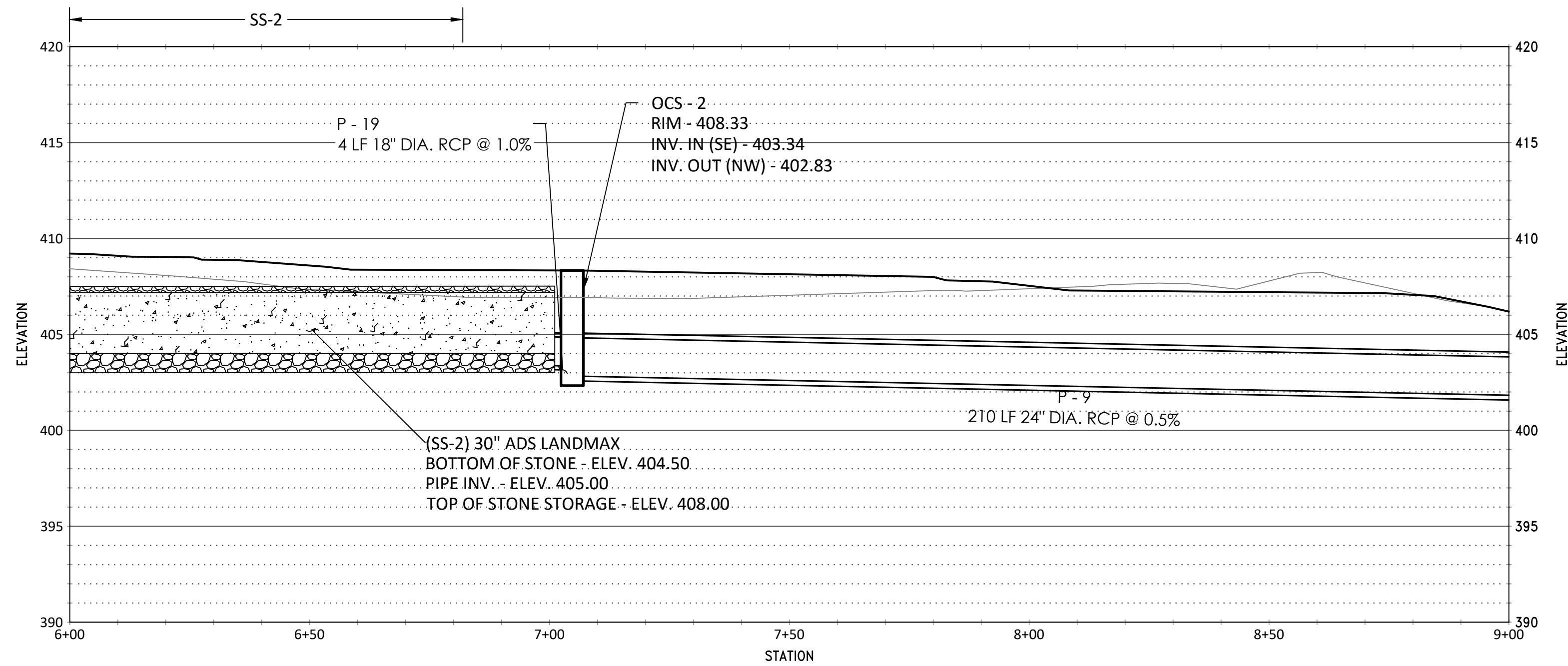
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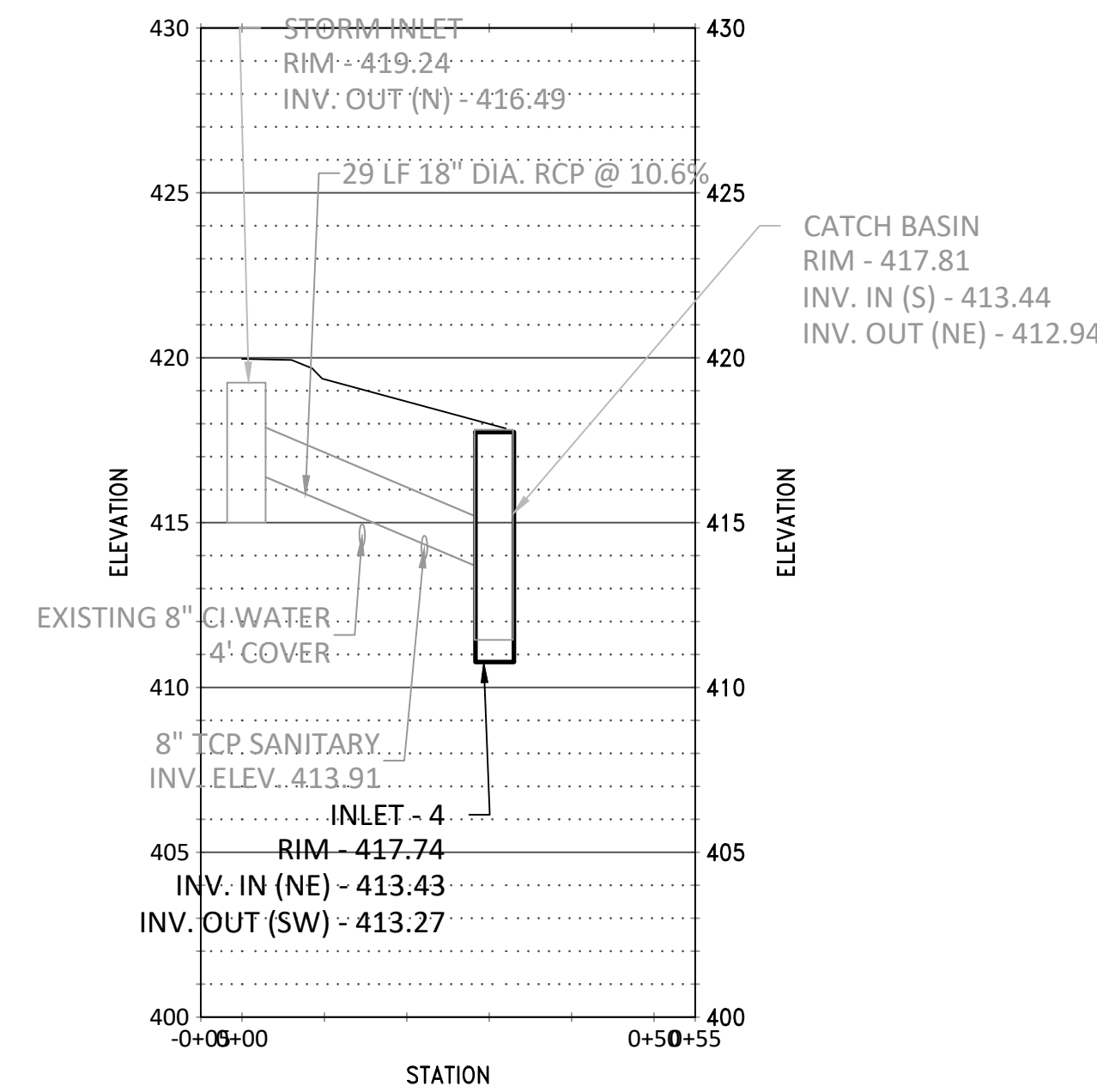
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INLET 6 TO ENDWALL 3
 VERTICAL SCALE: 1" = 8' - 0"
 HORIZONTAL SCALE: 1" = 30' - 0"



INLET 6 TO ENDWALL 3
 VERTICAL SCALE: 1" = 8' - 0"
 HORIZONTAL SCALE: 1" = 30' - 0"



INLET 3 TO INLET 4
 VERTICAL SCALE: 1" = 8' - 0"
 HORIZONTAL SCALE: 1" = 30' - 0"

REVISIONS:

DATE:	ISSUE:

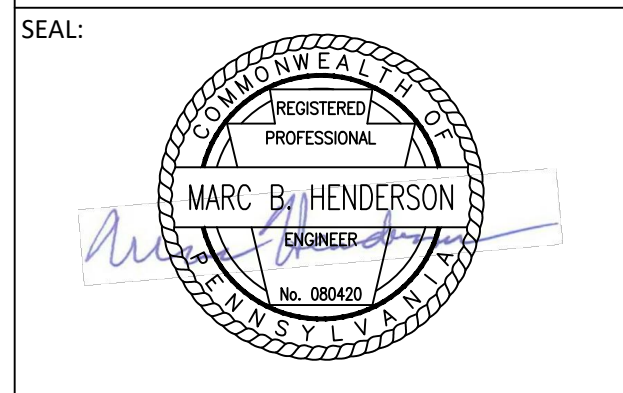
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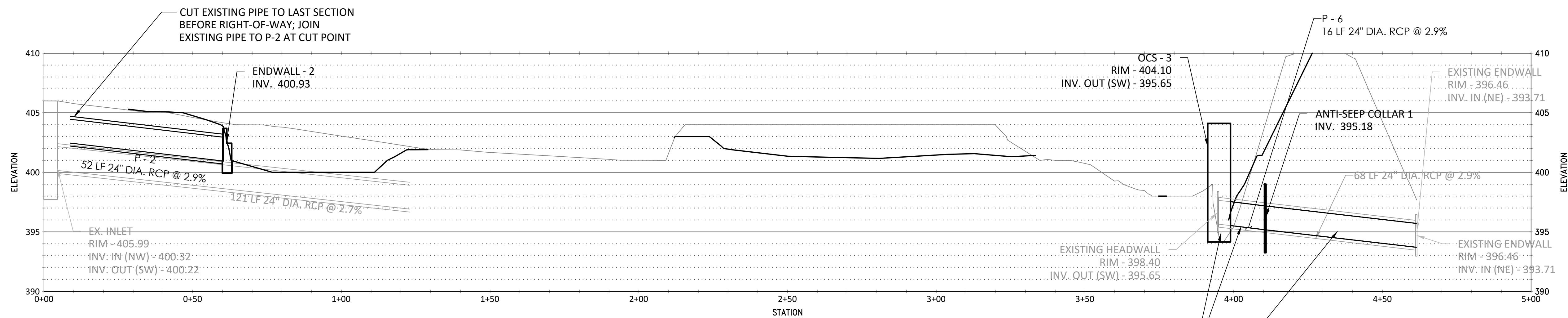
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DRAWING TITLE:
**STORMWATER
 PROFILES - SHEET 1**

DATE: 06/14/23	DRAWING NO:
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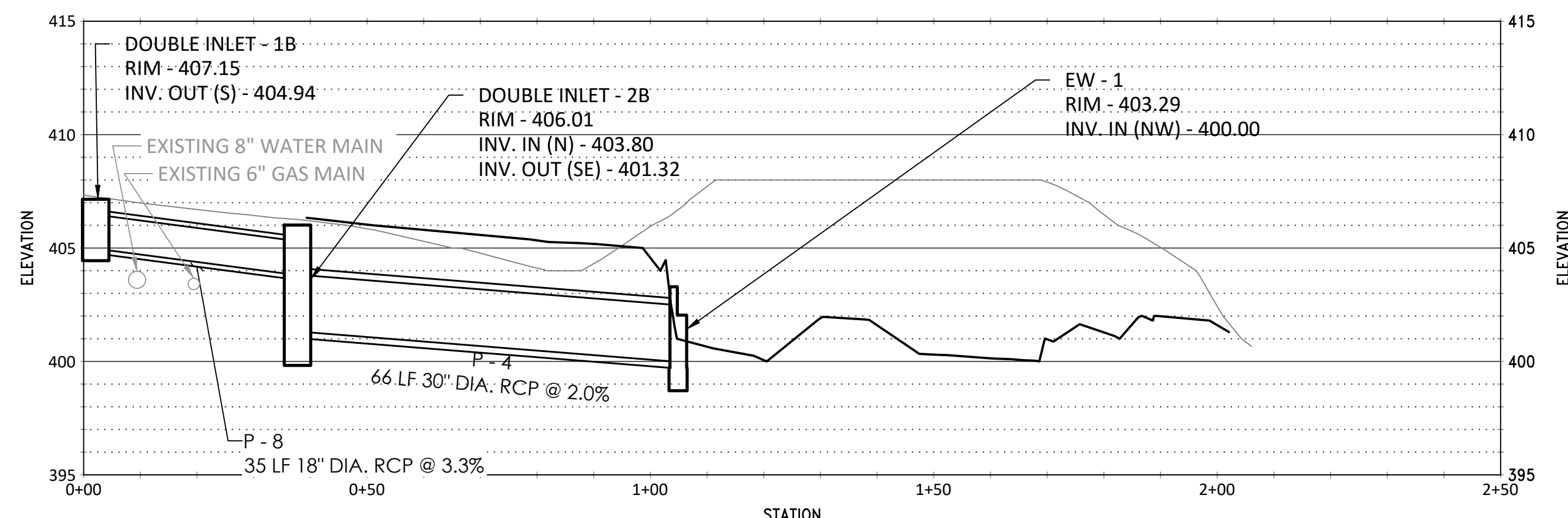
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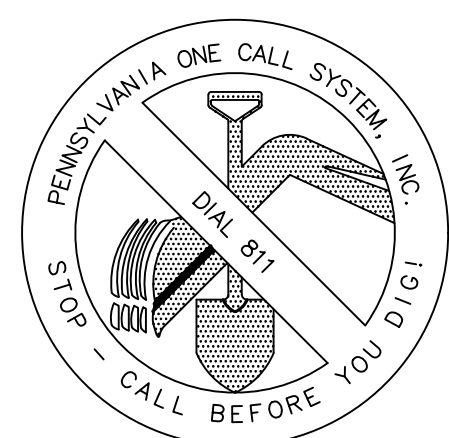
ENDWALL 2 TO EXISTING ENDWALL
 VERTICAL SCALE: 1" = 8' - 0"
 HORIZONTAL SCALE: 1" = 30' - 0"

CONTRACTOR TO REMOVE EXISTING HEADWALL, INSTALL NEW 24" Ø RCP AND ANTI-SEEP COLLAR, AND ATTACHED PERMANENTLY TO EXISTING PIPE. CONTRACTOR TO REVIEW CONDITION OF EXISTING PIPE WITH OWNER PRIOR TO DEMOLITION.

CONTRACTOR TO PROVIDE ALL WORK NECESSARY TO LINE NEW AND EXISTING PIPE SECTION WITH UV GRP CIPPL. SEE SPECIFICATIONS FOR DETAILS.



INLET 1 TO ENDWALL 1
 VERTICAL SCALE: 1" = 8' - 0"
 HORIZONTAL SCALE: 1" = 30' - 0"



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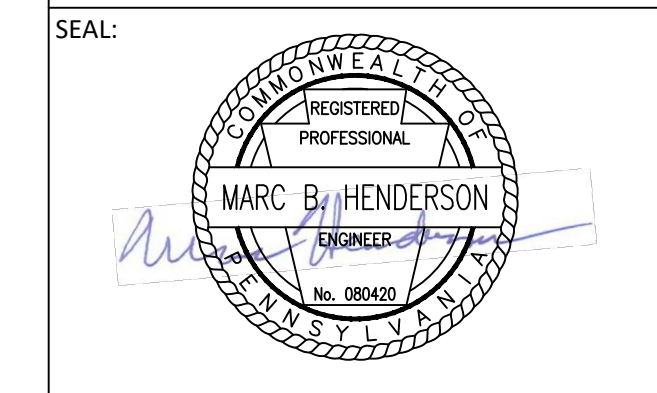
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SUBMISSION:
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DRAWING TITLE:
STORMWATER PROFILES - SHEET 2

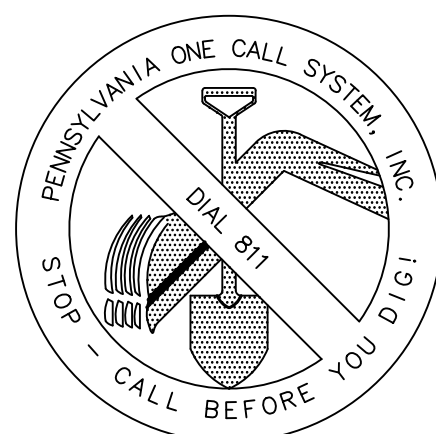
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SCALE: 1" = 40'	C1.34
DRAWN BY: MPB	
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INLET TABLE					
Structure Name	Structure Details	Direction	Pipe Size	Sump Depth (ft)	Rim to Sump Height (ft)
DOUBLE INLET - 1A	TYPE M DOUBLE INLET RIM = 407.07 SUMP = 406.44 P - 7 INV OUT = 404.94	S	18	1.00	2.71
DOUBLE INLET - 2B	TYPE C INLET RIM = 406.26 SUMP = 400.32 P - 8 INV IN = 403.80 P - 4 INV OUT = 401.32	N SE	18 30	1.00	5.69
INLET - 4	TYPE C INLET RIM = 417.97 SUMP = 411.27 P - 14 INV IN = 413.43 P - 10 INV OUT = 413.27	NE SW	36 24	2.00	6.47
INLET - 5	TYPE C INLET RIM = 419.10 SUMP = 414.26 P - 24 INV OUT = 415.26	SW	18	1.00	4.84
INLET - 6	TYPE M INLET RIM = 416.91 SUMP = 413.12 P - 13 INV IN = 414.50 P - 14 INV OUT = 414.12	SE SW	24 18	1.00	3.76
INLET - 7	TYPE C INLET RIM = 419.96 SUMP = -0.83 P - 10 INV IN = 412.56 P - 15 INV OUT = 412.53	NE NW	36 36	1.00	8.23
INLET - 8	TYPE C INLET RIM = 417.09 SUMP = 409.37 P - 15 INV IN = 410.92 P - 16 INV OUT = 410.37	SE NE	36 36	1.00	7.71

Inlet/Outlet Control Table							
Structure Name	Material	Interior Dims. (in)	Structure Details	Direction	Invert Size	Sump Depth (ft)	Rim to Sump Height (ft)
OCS - 1	Reinforced Concrete	72 x 48	RIM = 412.68 SUMP = 407.59 P - 20 INV IN = 407.81 P - 11 INV OUT = 407.80 P - 22 INV OUT = 407.80	SE NW NW	18 18 18	0.21	6.41
OCS - 2	Reinforced Concrete	48 x 48	RIM = 408.08 SUMP = 402.83 P - 19 INV IN = 403.34 P - 9 INV OUT = 402.83	SE NW	18 24	0.00	5.50
OCS - 3	Reinforced Concrete	84 x 48	RIM = 396.31 SUMP = 394.65 P - 6 INV OUT = 395.65	SW	24	1.00	9.45

End Wall Table				
Structure Name	Material	Structure Details	Direction	Pipe Size
ENDWALL - 2	REINFORCED CONCRETE	P - 2 INV IN = 400.93	NE	24
ENDWALL - 3	REINFORCED CONCRETE	P - 9 INV IN = 401.75	SE	24
EW - 1	REINFORCED CONCRETE	P - 4 INV IN = 400.00	NW	30

RCP Pipe Table								
Pipe Name	Size	Material	Length	Slope	Pipe Start	Pipe End	Invert Start	End Invert
P - 2	24	R.C.P.	51.8	2.93%	EX. RCP (1)	ENDWALL - 2	402.45	400.93
P - 4	30	R.C.P.	66.2	2.00%	DOUBLE INLET - 2B	EW - 1	401.32	400.00
P - 6	24	R.C.P.	16.4	2.89%	OCS - 3	ANTI-SEEP COLLAR 1	395.65	395.18
P - 6 (1)	24	R.C.P.	50.8	2.89%	ANTI-SEEP COLLAR 1	EX. HEADWALL (1)	395.18	393.71
P - 7	18	R.C.P.	35.5	3.21%	DOUBLE INLET - 1A	DOUBLE INLET - 2A	404.94	403.80
P - 8	18	R.C.P.	34.6	3.29%	DOUBLE INLET - 1B	DOUBLE INLET - 2B	404.94	403.80
P - 9	24	R.C.P.	209.8	0.51%	OCS - 2	ENDWALL - 3	402.83	401.75
P - 10	36	R.C.P.	44.3	1.60%	INLET - 4	INLET - 7	413.27	412.56
P - 11	18	R.C.P.	72.2	3.88%	OCS - 1	MANIFOLD - 6	407.80	405.00
P - 13	18	R.C.P.	46.3	1.51%		INLET - 6	415.20	414.50
P - 14	24	R.C.P.	30.2	2.29%	INLET - 6	INLET - 4	414.12	413.43
P - 15	36	R.C.P.	130.5	1.23%	INLET - 7	INLET - 8	412.53	410.92
P - 16	36	R.C.P.	20.5	9.12%	INLET - 8		410.37	408.50
P - 19	18	R.C.P.	3.6	1.00%	MANIFOLD - 8	OCS - 2	403.37	403.34
P - 20	18	R.C.P.	6.1	11.42%	MANIFOLD - 5	OCS - 1	408.50	407.81
P - 22	18	R.C.P.	70.4	3.98%	OCS - 1	MANIFOLD - 7	407.80	405.00
P - 23	18	R.C.P.	1.4	1.50%			415.22	415.20
P - 24	18	R.C.P.	2.3	1.50%	INLET - 5		415.26	415.22



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REVISIONS:
DATE: 9-10-21 ISSUE:
COMMENT RESPONSE #1

OWNER:
RADNOR TOWNSHIP
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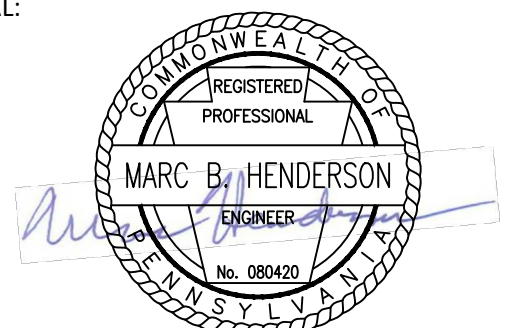
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SURVEYOR:

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PROJECT TITLE:
SOUTH DEVON AREA FLOOD REDUCTION PROJECT
AT THE WEST WAYNE PRESERVE AND FRIENDS OF RADNOR TRAIL PARK

SEAL:



SUBMISSION:

BID DOCUMENTS

DRAWING TITLE:

PIPE AND STRUCTURE TABLES

DATE: 06/14/23

SCALE: 1" = 40'

DRAWN BY: MPB

CHECKED BY: MBH/MCA

DRAWING NO:

C1.35

CONSTRUCTION SEQUENCE FOR WEST WAYNE PRESERVE BASIN WORK:

- A. PERFORM MAJOR EXCAVATIONS AND ROUGH GRADE AS INDICATED ON GRADING PLAN, REMOVING ANY DELETERIOUS MATERIAL 2-INCHES OR LARGER. REMOVE EXCESS CUT FROM SITE AND DISPOSE OF IN A LEGAL MANNER IN ACCORDANCE WITH THE SOLID WASTE MANAGEMENT REGULATIONS (SEE RECYCLING PROGRAM NOTE). WATER PUMPED FROM WORK AREAS SHOULD BE TREATED FOR SEDIMENT REMOVAL PRIOR TO DISCHARGING TO A "SURFACE WATER" (WHEN APPLICABLE). ****CRITICAL STAGE****
 - a. PROPOSED FILL EXCAVATION AND REMOVAL SHALL BE PERFORMED IN ACCORDANCE WITH THE MOST CURRENT MANAGEMENT OF FILL POLICY INCLUDING ALL NECESSARY PERMITS FOR REGULATED FILL, REFER TO RECYCLING NOTES.
 - b. FILL EXCAVATION SHALL BE CONTAINED TO THE LIMITS OF DISTURBANCE WITH ADDITIONAL CARE GIVEN TO EXCAVATION LIMITS NEAR WETLANDS. REFER TO PLANS FOR ADDITIONAL NOTES ON FILL DEPTH REMOVAL.
- B. PERFORM FINE GRADING, SEEDING AND STABILIZE AS SHOWN ON PLANS AND DETAILS. INSTALL EROSION CONTROL BLANKET IN AREAS SHOWN ON PLANS FOLLOWING ESTABLISHMENT OF FINAL GRADE. COORDINATE INSTALLATION WITH LANDSCAPE RESTORATION (REFER TO LANDSCAPING PLAN). ****CRITICAL STAGE****
- C. PLANT AND RESTORE SITE AREA AS DESCRIBED IN LANDSCAPE PLANS, DETAILS, AND SPECIFICATIONS. HAND GRADE TO FINAL ELEVATIONS. ****CRITICAL STAGE****
- D. AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED (VEGETATED AREAS SHALL BE CONSIDERED PERMANENTLY STABILIZED WHEN A UNIFORM 70% VEGETATIVE COVER OF EROSION RESISTANT PERENNIAL SPECIES HAS BEEN ACHIEVED), REMOVE TEMPORARY INLET PROTECTION CONTROLS ONLY. AREAS DISTURBED DURING REMOVAL OF THE CONTROLS MUST ALSO BE STABILIZED IMMEDIATELY.
- E. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REMOVE ANY DEBRIS AND FLUSH OUT ALL EXISTING AND NEW STORM DRAINAGE FACILITIES WITHIN THE PROJECT LIMITS AT THE COMPLETE OF THE CONSTRUCTION.

CONSTRUCTION SEQUENCE FOR INSTALLATION OF STORMWATER SUBSURFACE STORAGE BMPs. **CRITICAL STAGE******

- A. INSTALL ANY REMAINING INLETS AND OVERFLOW CONTROL STRUCTURES INCLUDING RELATED E&S INLET PROTECTION. INSTALL PIPES. DO NOT ALLOW SEDIMENT TO ENTER ANY PIPES OR STRUCTURES.
- B. BRING SUBGRADE OF STONE BED TO LINE, GRADE, AND ELEVATIONS INDICATED IN THE DRAWINGS. THE BOTTOM OF THE STONE BED MUST BE AT A LEVEL GRADE. THE OWNER AND ENGINEER SHALL BE NOTIFIED 24 HOURS PRIOR TO FINAL GRADING TO ALLOW INSPECTION.
- C. IF BEDROCK OR GROUNDWATER IS ENCOUNTERED AT ANY TIME DURING EXCAVATION OF BEDS, EXCAVATION IS TO BE DISCONTINUED IN THE AFFECTED AREA AND THE OWNER AND ENGINEER NOTIFIED AT ONCE.
- D. NOTIFY ENGINEER TO INSPECT BED BOTTOM.
- E. PRIOR TO FINAL BED GRADING AND PLACEMENT OF GEOTEXTILE, UPGRADIENT AREAS SHALL BE SUFFICIENTLY STABILIZED SO AS TO PREVENT THE WASHING OF SEDIMENT INTO THE SUBSURFACE STORMWATER STORAGE AREAS. ALTERNATIVELY, THE CONTRACTOR MAY INSTALL COMPOST SOCK IN ACCORDANCE WITH CONTRACT DOCUMENTS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PREVENT THE DEPOSITION OF SEDIMENT OR SEDIMENT LADEN WATERS INTO THE INFILTRATION BEDS AFTER FINAL GRADING.
- G. PLACE GEOTEXTILE IN ACCORDANCE WITH MANUFACTURER'S STANDARDS AND RECOMMENDATIONS. ADJACENT STRIPS OF GEOTEXTILE FABRIC MUST OVERLAP A MINIMUM OF SIXTEEN INCHES (16"). FABRIC MUST BE SECURED AT LEAST FOUR FEET OUTSIDE OF BED. THIS EDGE STRIP SHOULD REMAIN IN PLACE UNTIL ALL BARE SOILS CONTIGUOUS TO BEDS ARE STABILIZED AND VEGETATED. AS THE SITE IS FULLY STABILIZED, EXCESS GEOTEXTILE CAN BE CUT BACK TO THE EDGE OF THE BED.
- H. PLACE GEOTEXTILE AND STONE BED AGGREGATE IMMEDIATELY AFTER APPROVAL OF SUBGRADE PREPARATION TO PREVENT ACCUMULATION OF DEBRIS OR SEDIMENT. ANY ACCUMULATION OF DEBRIS OR SEDIMENT WHICH HAS TAKEN PLACE AFTER APPROVAL OF SUBGRADE SHALL BE REMOVED PRIOR TO INSTALLATION OF GEOTEXTILE AT NO EXTRA COST TO OWNER. AGGREGATE INSTALLATION SHOULD TAKE PLACE AFTER CONTRIBUTING UPSTREAM DISTURBED AREAS HAVE BEEN PERMANENTLY STABILIZED. INSTALL EROSION AND SEDIMENTATION CONTROL BMPs TO PREVENT RUNOFF AND SEDIMENT FROM ENTERING THE STORAGE BED DURING THE PLACEMENT OF GEOTEXTILE AND AGGREGATE/CHAMBER BED.
- I. INSTALL STORM PIPES AND ADS CHAMBER SYSTEM ACCORDING TO LOCATION, CONFIGURATION, AND ELEVATIONS AS SHOWN ON THE PLANS.
- J. INSTALL COARSE AGGREGATE IN EIGHT INCH (8") MAXIMUM LIFTS. LIGHTLY COMPACT EACH LAYER WITH EQUIPMENT, KEEPING EQUIPMENT MOVEMENT OVER STORAGE BEDS SUBGRADES TO A MINIMUM. INSTALL AGGREGATE TO GRADES SHOWN ON THE DRAWINGS.
- K. AGGREGATE SHALL BE CLEAN WITH A WASH LOSS OF NO MORE THAN 0.5%. AGGREGATE THAT DOES NOT MEET THIS CRITERIA WILL BE REMOVED AT NO EXTRA COST TO THE OWNER, AND THE BEDS RESTORED TO THE OWNER'S SATISFACTION.
- L. INSTALL CHOKER BASE COURSE EVENLY OVER STONE SURFACE SUFFICIENT TO ALLOW PLACEMENT OF PAVEMENT. NOTIFY OWNER AND ENGINEER PRIOR TO PLACEMENT OF PAVEMENT.
- M. FOLLOWING PLACEMENT OF BED AGGREGATE, THE GEOTEXTILE SHALL BE FOLDED BACK ALONG ALL BED EDGES TO PROTECT FROM SEDIMENT WASHOUT ALONG BED EDGES. AT LEAST A FIVE FOOT EDGE STRIP SHALL BE USED TO PROTECT THE BEDS FROM ADJACENT BARE SOIL. THIS EDGE STRIP SHALL REMAIN IN PLACE UNTIL ALL BARE SOILS CONTIGUOUS TO THE BEDS ARE STABILIZED AND VEGETATED. IN ADDITION, COMPOST SOCK SHALL BE PLACED AT THE TOE OF SLOPES THAT MAY BE ADJACENT TO BEDS TO PREVENT SEDIMENT FROM WASHING INTO BEDS DURING CONSTRUCTION. AS THE SITE IS FULLY STABILIZED, EXCESS GEOTEXTILE ALONG BED EDGES CAN BE CUT BACK TO CURB.

CONSTRUCTION SEQUENCE FOR INSTALLATION OF POROUS PAVEMENT **CRITICAL STAGE******

- A. INSTALL AND COMPACT CHOKER COURSE AGGREGATE OVER SURFACE OF STONE BED. CHOKER BASE COURSE MUST BE SUFFICIENT TO ALLOW FOR EVEN PLACEMENT OF ASPHALT, BUT NO THICKER THAN ONE INCH IN DEPTH.
- B. VEHICLES WITH SMOOTH, CLEAN DUMP BEDS MUST BE USED TO TRANSPORT THE ASPHALT MIX TO THE SITE. CONTROL COOLING OF ASPHALT BY COVERING MIX. POROUS ASPHALT MIX MUST NOT BE STORED FOR MORE THAN 90 MINUTES BEFORE PLACEMENT.
- C. THE PERVIOUS PAVEMENT SURFACE COURSE SHALL BE LAID IN ONE LIFT DIRECTLY OVER THE STORAGE BED TO A THICKNESS OF 2-1/2". COMPACTION MAY TAKE PLACE WHEN THE SURFACE IS COOL ENOUGH TO RESIST A 10-TON ROLLER. ONE OR TWO PASSES IS ALL THAT IS REQUIRED. EXCESSIVE ROLLING WILL CAUSE A REDUCTION IN POROSITY.
- D. AFTER ROLLING, NO VEHICULAR TRAFFIC OF ANY KIND SHALL BE PERMITTED ON THE SURFACE UNTIL COOLING AND HARDENING HAVE TAKEN PLACE, MINIMUM 48 HOURS.
- E. AFTER HARDENING, TEST HYDROLOGIC PERFORMANCE OF THE PAVEMENT BY APPLYING CLEAN WATER TO SINGLE LOCATION AT THE SURFACE AT A RATE OF AT LEAST FIVE GALLONS PER MINUTE. THE WATER APPLIED TO THE SURFACE SHOULD READILY INFILTRATION WITHOUT CREATING PUDDLES OR RUNOFF.
- F. DO NOT USE THE POROUS PAVEMENT AREA FOR EQUIPMENT OR MATERIAL STORAGE. NO SOIL IS TO BE DEPOSITED ON POROUS PAVEMENT SURFACES. ANY SEDIMENT DEPOSITION WHICH MAY OCCUR IS TO BE REMOVED BY VACUUMING (NOT WASHING) AT NOT EXTRA COST TO THE OWNER.
- G. ALL STONE THAT MAKES UP THE BMPs MUST REMAIN FREE OF SEDIMENT. IF SEDIMENT ENTERS THE STONE, THE CONTRACTOR MAY BE REQUIRED TO REMOVE THE SEDIMENT AND REPLACE IT WITH CLEAN-WASHED STONE.
- H. AT LEAST THREE (3) DAYS PRIOR TO BMP INSTALLATION, THE OWNER'S INSPECTOR MUST BE CALLED TO SCHEDULE AN INSPECTION FOR EACH BMP.

PCSM BMP MAINTENANCE SCHEDULE			
BMP TYPE	INSPECTION SCHEDULE	MAINTENANCE DIRECTIONS	REPAIRS
POROUS PAVEMENT	VACUUM/CLEAN TWICE A YEAR. IF USE DICTATES, INCREASE TO QUARTERLY CLEANINGS EACH YEAR AS NECESSARY.	VACUUM/CLEAN PAVEMENT SURFACE TO REMOVE SEDIMENT OR EXCESS AGGREGATES.	PATCH AND REPAIR WORN SURFACE AREAS AS NEEDED WITH POROUS PAVEMENT MATERIALS.
STORMWATER STRUCTURES AND PIPES	BEFORE AND AFTER MAJOR PRECIPITATION EVENTS	REMOVE DEBRIS FROM STRUCTURES REGULARLY AND FROM PIPES WHEN CLOGGED.	REPAIR DAMAGED PIPES AND STRUCTURES AS NEEDED.
SUBSURFACE STORAGE BEDS	DURING INSTALLATION AND IF SIGNS OF CLOGGING OCCUR	ENSURE PIPES AND STRUCTURES CONVEYING WATER TO BEDS ARE CLEAR TO PREVENT CLOGGING.	CLOGGED SUBSURFACE STORAGE BEDS MAY NEED TO BE REPLACED OR EQUIPPED WITH AN UNDERDRAIN IN THE CASE OF FAILURE.

NOTE: UNDER NO CIRCUMSTANCES SHALL SEDIMENT OR WASTE REMOVED FROM THE SYSTEMS BE DISPOSED OF ONSITE. ALL SEDIMENT AND/OR WASTE SHALL BE REMOVED OFF-SITE AND IN A LEGAL MANNER.

REVISIONS:	
DATE:	ISSUE:
9-10-21	COMMENT RESPONSE #1

OWNER:

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WAYNE, PA 19087-5297

CIVIL ENGINEER:


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PROJECT TITLE:
SOUTH DEVON AREA FLOOD REDUCTION PROJECT

AT THE WEST WAYNE PRESERVE AND FRIENDS OF RADNOR TRAIL PARK



SUBMISSION:

BID DOCUMENTS

DRAWING TITLE:

STORMWATER & GRADING NOTES

DATE: 06/14/23	DRAWING NO:
SCALE: 1" = 40'	C1.36
DRAWN BY: MPB	
CHECKED BY: MBH/MCA	

EXISTING CONDITIONS LEGEND

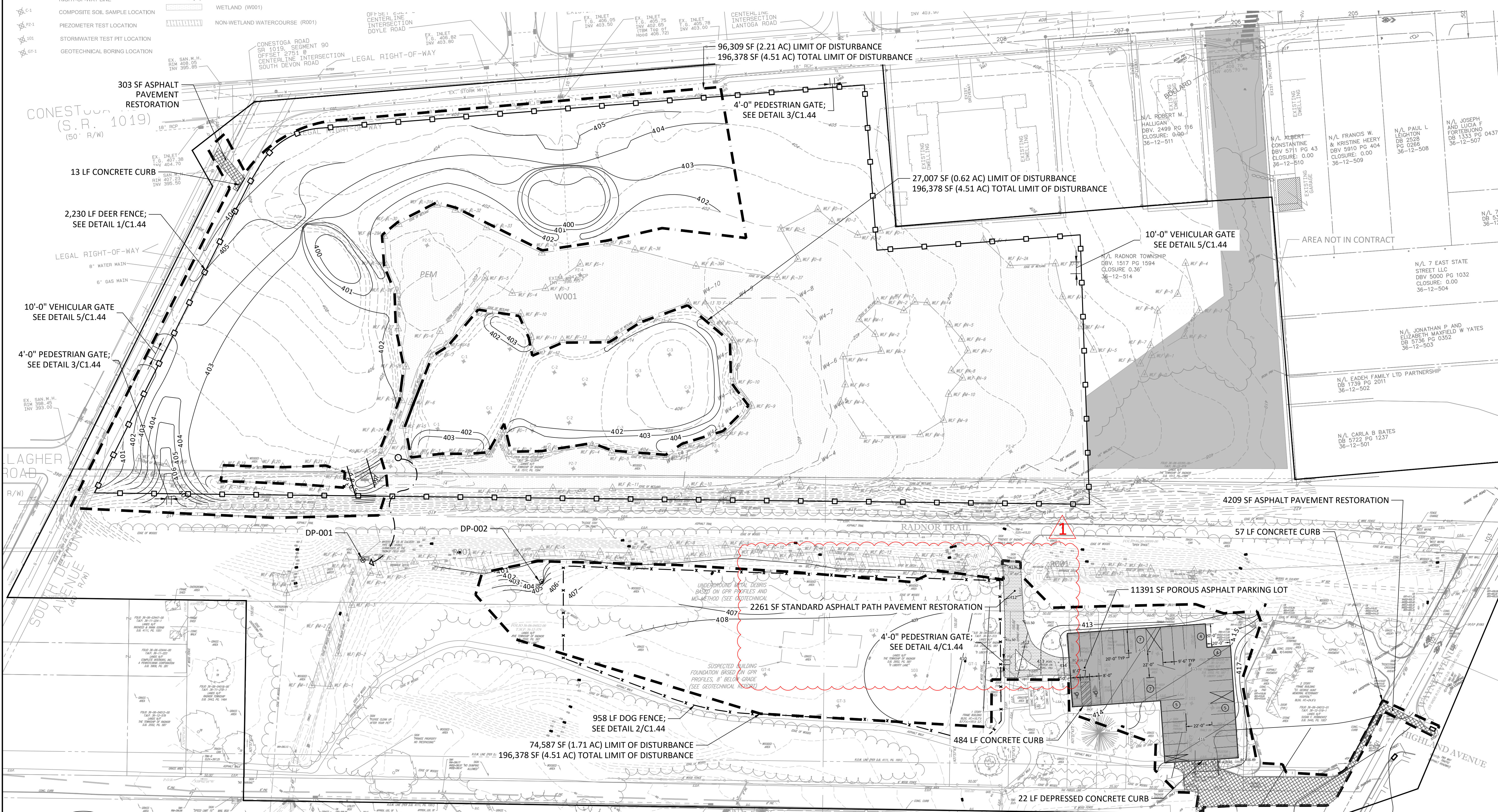
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	OVERHEAD WIRES		CONIFEROUS TREE & TRUNK SIZE
	DEPRESSED CURB		PARKING SPACE COUNT
	HYDRANT		EDGE OF WOODS
	WATER METER		EDGE OF DRIP LINE
	DRAINAGE/STORM MANHOLE		PROPERTY BOUNDARY
	SANITARY/SEWER MANHOLE		GAS LINE
	CLEAN OUT		WATER LINE
	UTILITY POLE		AREA LIGHT
	UTILITY POLE/LIGHT POLE		CATCH BASIN OR INLET
	SIGN		STORM SEWER
	BOLLARD		SANITARY SEWER
	U-BOLLARD		WETLAND/WATERWAY BOUNDARY
	RIGHT-OF-WAY LINE		WETLAND (W001)
	COMPOSITE SOIL SAMPLE LOCATION		NON-WETLAND WATERCOURSE (R001)
	PIEZOMETER TEST LOCATION		
	STORMWATER TEST PIT LOCATION		
	GEOTECHNICAL BORING LOCATION		

LEGEND

	LIMIT OF DISTURBANCE
	PROJECT SITE BOUNDARY
	STANDARD CONCRETE CURB
	POROUS ASPHALT PAVEMENT
	PAVEMENT RESTORATION
	ASPHALT PATH PAVEMENT RESTORATION
	DEER FENCE
	DOG FENCE

1

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REVISIONS:

DATE:	ISSUE:
06/27/23	ADDENDUM 1

OWNER:
 RADNOR TOWNSHIP
 301 IVEN AVENUE
 WAYNE, PA 19087-5297

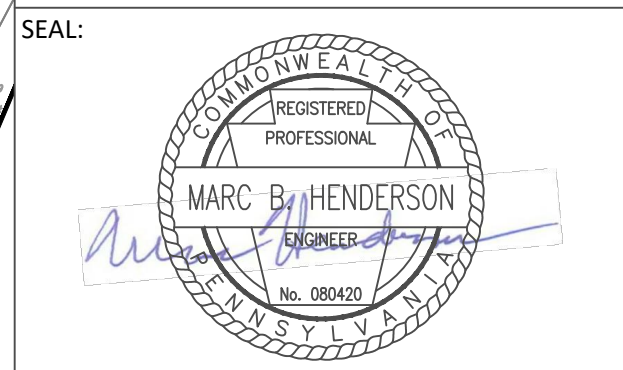
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PROJECT TITLE:
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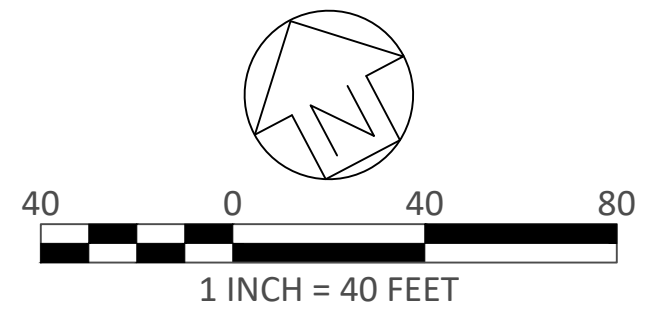


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 BID DOCUMENTS

DRAWING TITLE:
 SITE PLAN

DATE:	06/14/23	DRAWING NO:	
SCALE:	1" = 40'		C1.40
DRAWN BY:	MPB		
CHECKED BY:	MBH/MCA		

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	DEPRESSED CURB
	HYDRANT
	WATER METER
	DRAINAGE/SEWER MANHOLE
	SANITARY/SEWER MANHOLE
	CLEAN OUT
	UTILITY POLE
	UTILITY POLE/LIGHT POLE
	SIGN
	BOLLARD
	U-BOLLARD
	RIGHT-OF-WAY LINE
	DECIDUOUS TREE & TRUNK SIZE
	CONIFEROUS TREE & TRUNK SIZE
	PARKING SPACE COUNT
	EDGE OF WOODS
	EDGE OF DRIP LINE
	PROPERTY BOUNDARY
	GAS LINE
	WATER LINE
	AREA LIGHT
	CATCH BASIN OR INLET
	STORM SEWER
	SANITARY SEWER
	WETLAND/WATERWAY BOUNDARY
	WFT AND W001

LEGEND	
	LIMIT OF DISTURBANCE
	PROJECT SITE BOUNDARY
	STANDARD CONCRETE CURB
	POROUS ASPHALT PAVEMENT
	PAVEMENT RESTORATION

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OWNER:

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WAYNE, PA 19087-5297

CIVIL ENGINEER:

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LANDSCAPE ARCHITECT:

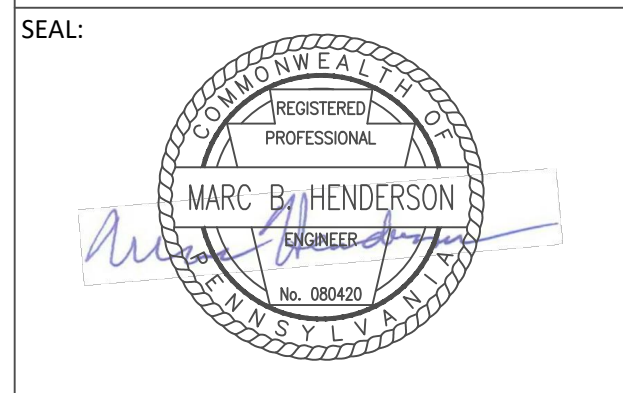
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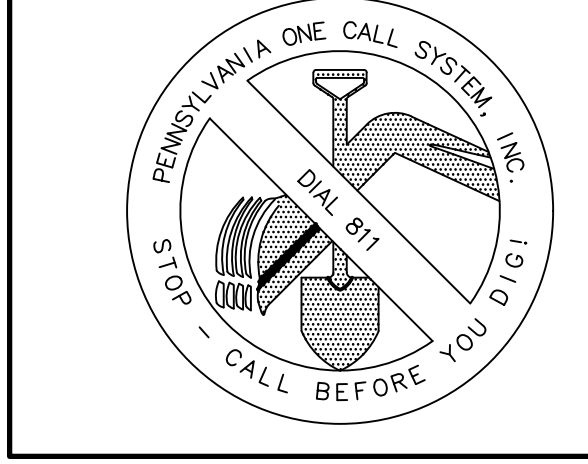
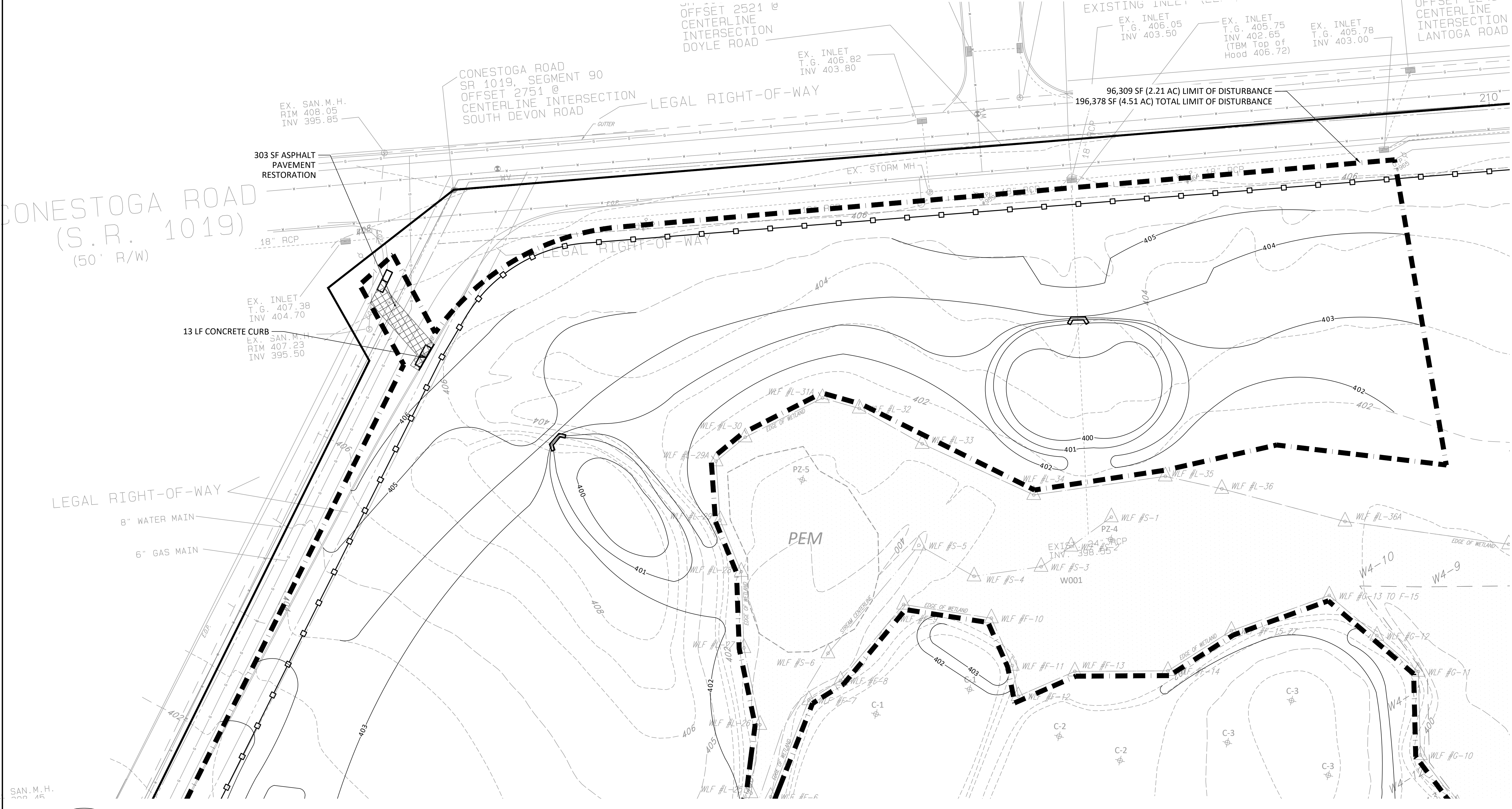
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BID DOCUMENTS

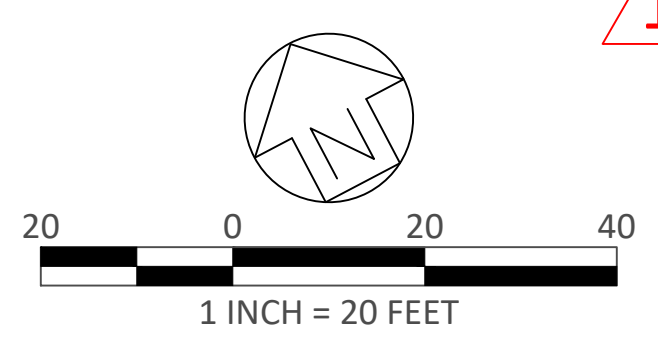
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SITE PLAN - ENLARGMENT 1

DATE:	06/14/23	DRAWING NO:	
SCALE:	1" = 20'	C1.41	
DRAWN BY:	MPB		
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	SANITARY SEWER
	WETLAND/WATERWAY BOUNDARY
	WETLAND (W001)

LEGEND	
	LIMIT OF DISTURBANCE
	PROJECT SITE BOUNDARY
	STANDARD CONCRETE CURB
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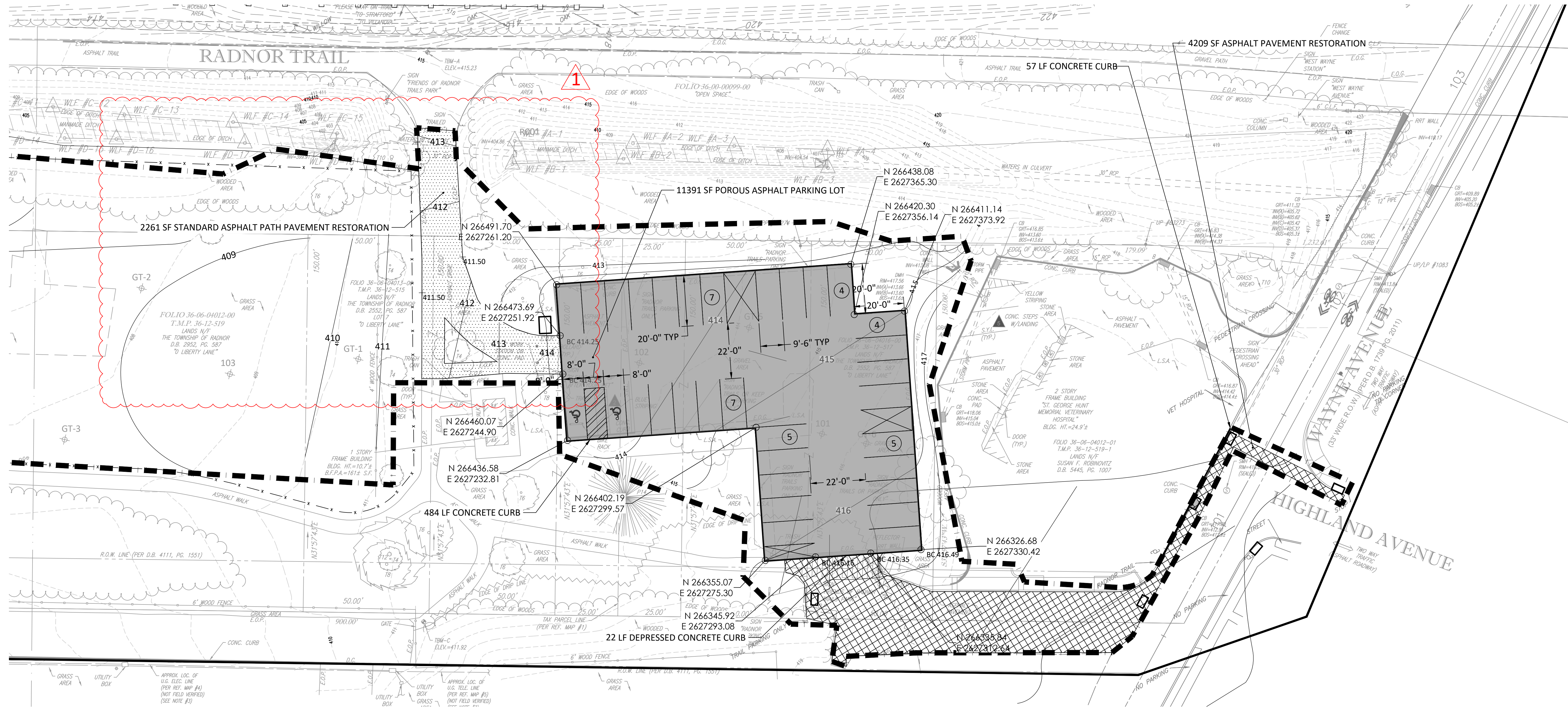
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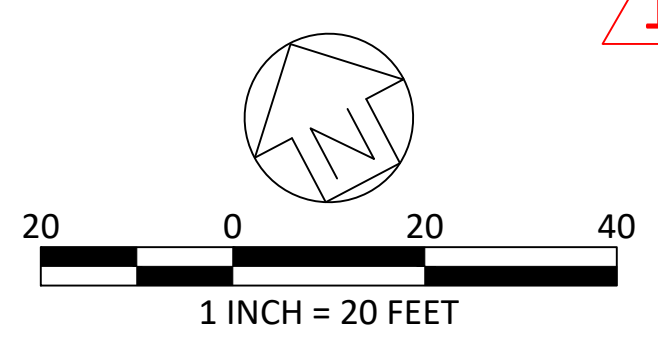
SUBMISSION:
 BID DOCUMENTS

DRAWING TITLE:
 SITE PLAN -
 ENLARGMENT 2

DATE:	06/14/23	DRAWING NO.:	
SCALE:	1" = 20'	C1.42	
DRAWN BY:	MPB		
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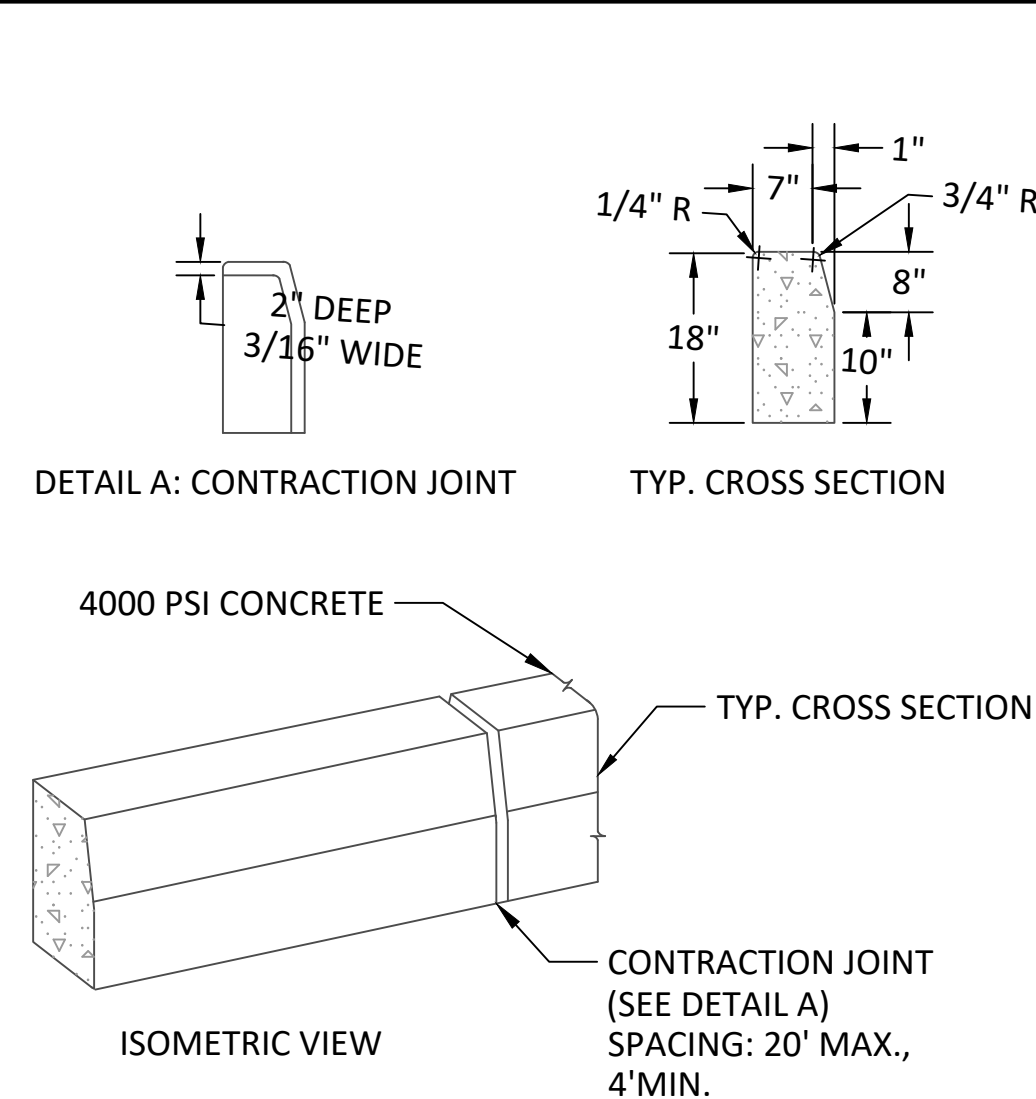
ALL LOCATIONS OF EXISTING UTILITIES SHOWN ON THIS PLAN HAVE BEEN DEVELOPED FROM EXISTING UTILITY RECORDS AND/OR ABOVE GROUND EXAMINATION OF THE SITE. COMPLETENESS OR ACCURACY OF LOCATION AND DEPTH OF UNDERGROUND UTILITIES OR STRUCTURES CANNOT BE GUARANTEED. CONTRACTOR MUST VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND FACILITIES BEFORE START OF WORK PER PENNSYLVANIA ACT 287 OF 1974 AS AMENDED BY ACT 199 OF 2004 OR LATER.





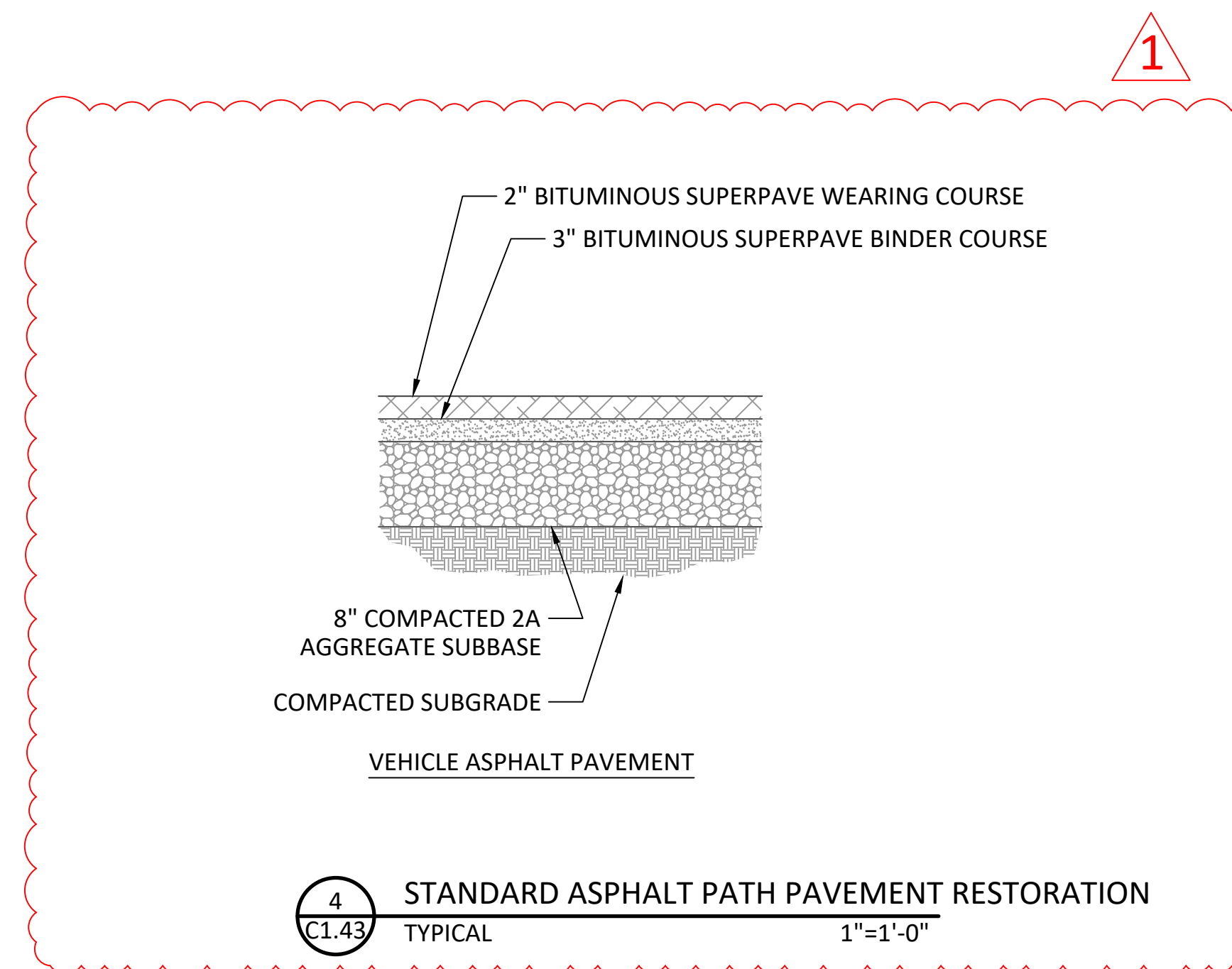
1 RESERVED PARKING FOR HANDICAP SIGN
C1.43 R7-8 N.T.S.

2 VAN ACCESSIBLE SIGN
C1.43 R7-8A N.T.S.

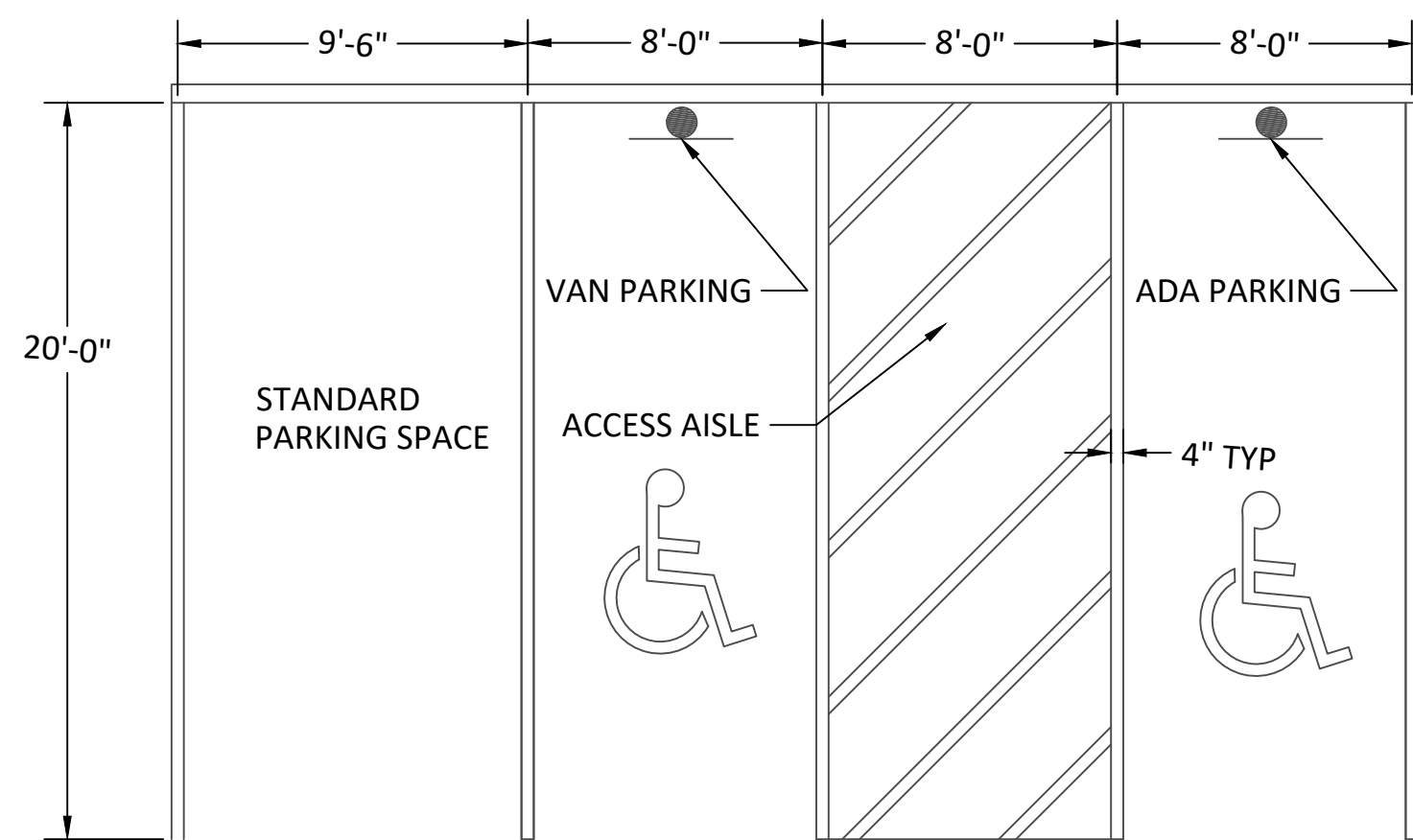


3 CONCRETE CURB
C1.43 TYPICAL 1"=1'-0"

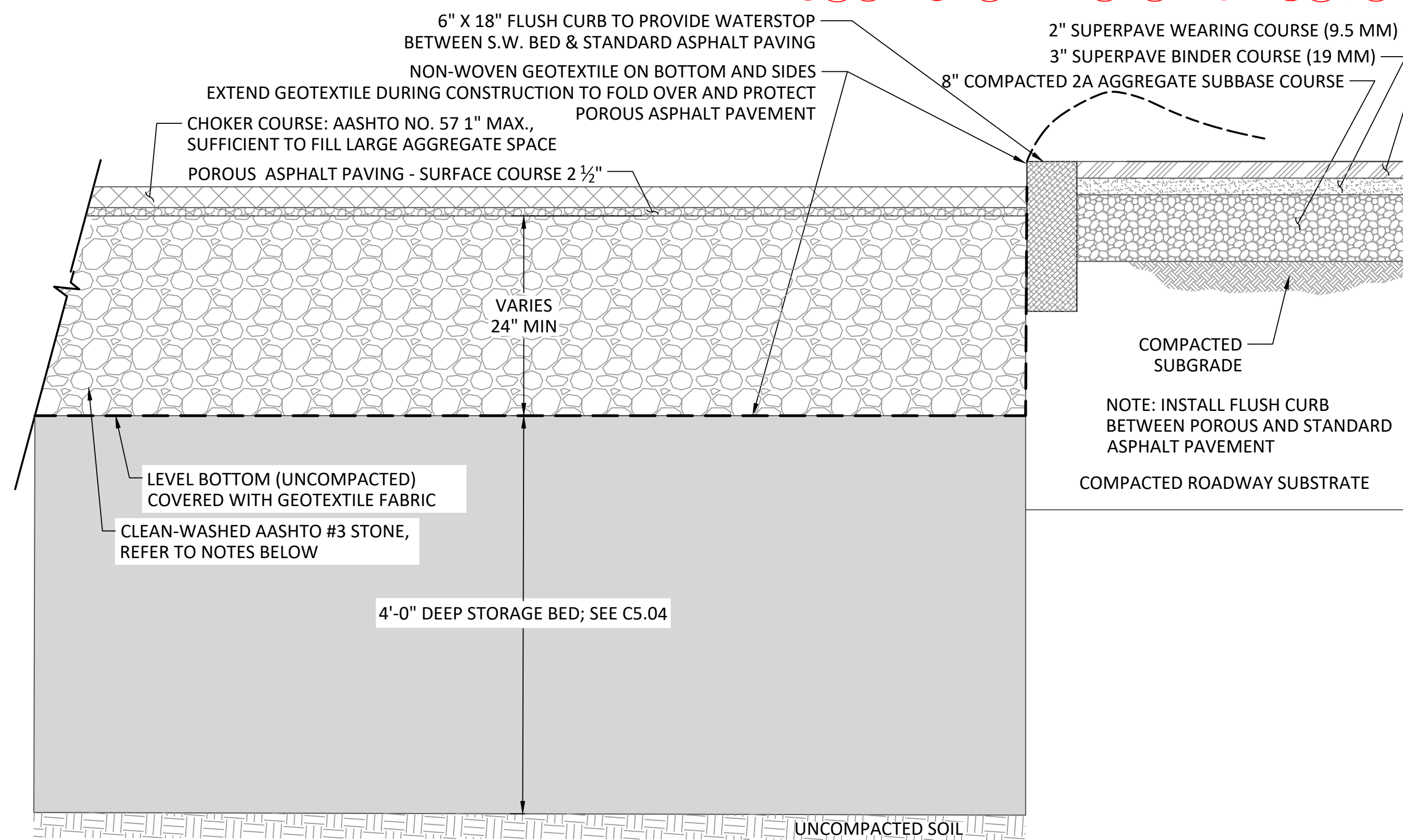
- NOTE:
- CURBING TO BE 6"x18" UNLESS OTHERWISE NOTED ON PLAN
 - CURB MATERIAL & INSTALLATION SHALL BE IN ACCORDANCE WITH PENNDOT
 - PROVIDE MATERIALS AND CONSTRUCTION MEETING THE REQUIREMENTS OF PUBLICATION 408/2011, SECTION 630 FOR PLAIN CEMENT CONCRETE CURB AND DEPRESSED CURB, SECTION 640 FOR PLAIN CEMENT CONCRETE GUTTER AND SECTION 641 FOR PLAIN CEMENT CONCRETE CURB GUTTER.
 - SPACE CONTRACTION JOINTS IN UNIFORM LENGTHS OR SECTIONS.
 - PLACE 3/4" THICK PREMOLDED EXPANSION JOINT FILLER MATERIAL AT STRUCTURES AND AT THE END OF THE WORK DAY. CUT MATERIAL TO CONFORM TO AREA ADJACENT TO CURB TO CONFORM TO CROSS SECTIONAL AREA OF CURB.
 - SEE RC-50M FOR PLAIN CEMENT CONCRETE CURB SLOPED TOP TREATMENT AT END OF STRUCTURES.
 - WHERE CURBS ARE INSTALLED ADJACENT TO PARING LANES A 6" HIGH CURB CAN BE UTILIZED WITH APPROVAL FROM THE LOCAL MUNICIPALITY.
 - ALL CONCRETE IS TO BE 4,000 PSI
 - DEPRESSED CURB SHALL BE SLOPED 1/4" PER FOOT TOWARDS THE STREET.
 - CURB REPLACEMENT SHALL EXTEND TO THE NEAREST JOINT. SHOULD THE NEAREST JOINT EXTEND ACROSS A PROPERTY THE CURB MAY BE SAWCUT AT A LOCATION TO BE MARKED OUT BY THE BOROUGH.
 - CONTRACTOR SHALL PROVIDE EROSION CONTROLS TO CONTAIN OPEN EXCAVATIONS AND PROTECT THE NEAREST DOWNSTREAM INLET.



4 STANDARD ASPHALT PATH PAVEMENT RESTORATION
C1.43 TYPICAL 1"=1'-0"



5 ADA AND STANDARD PARKING
C1.43 TYPICAL 1"=5'



NOTES:

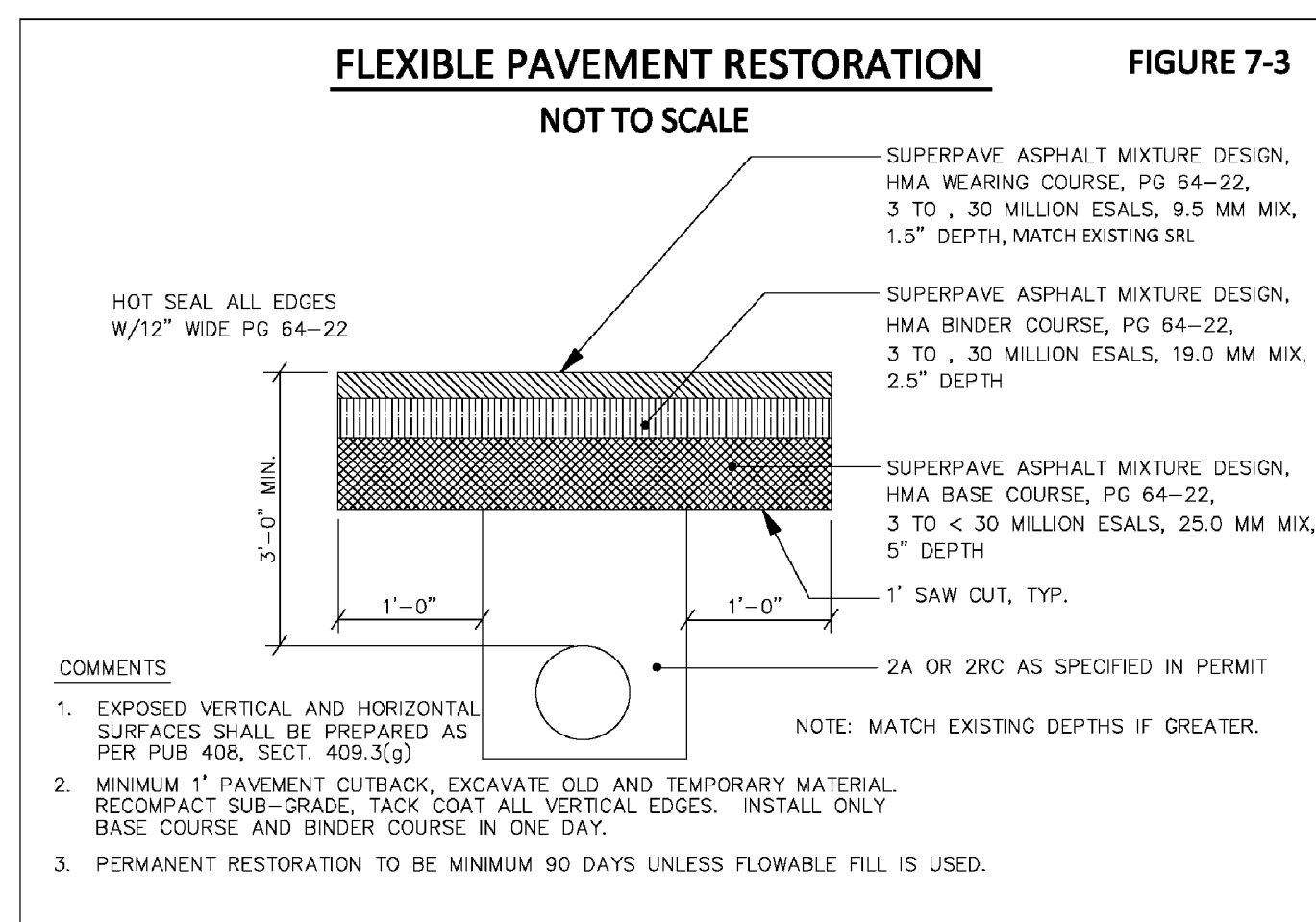
- ALL AGGREGATES WITHIN POROUS PAVER BED SHALL BE CLEAN-WASHED, DEFINED AS HAVING LESS THAN 0.5% WASH LOSS, BY MASS, WHEN TESTED PER THE AASHTO T-11 WASH LOSS TEST.
- CHOKER COURSE AGGREGATE SHALL MEET THE FOLLOWING SPECIFICATIONS:

REQUIRED CHOKER COURSE GRADATION	
U.S. STANDARD SIEVE SIZE	PERCENT PASSING
1-1/2" (37.5 mm)	100
1" (25 mm)	95 - 100
1/2" (19 mm)	25 - 60
#4 (4.75 mm)	0 - 10
#8 (2.36 mm)	0 - 5
- GEOTEXTILE SHALL CONSIST OF POLYPROPYLENE FIBERS AND MEET THE FOLLOWING SPECIFICATIONS:
 - GRAB TENSILE STRENGTH (ASTM-D4632) > OR = 150 LBS.
 - MULLEN BURST STRENGTH (ASTM-D3786) > OR = 300 LBS.
 - FLOW RATE (ASTM-D4491) > OR = 110 GAL./MIN./FT²
 - UV RESISTANCE AFTER 500 HRS. (ASTM-D4355) > OR = 70% HEAT-SET OR HEAT CALENDARED FABRICS ARE NOT PERMITTED
- POROUS ASPHALT PAVEMENT:
 - BITUMINOUS SURFACE SHALL BE LAID WITH A BITUMINOUS MIX OF 5.75% TO 6% BY WEIGHT DRY AGGREGATE. IN ACCORDANCE WITH ASTM D6390, DRAIN DOWN OF THE BINDER SHALL BE NO GREATER THAN 0.3%. AGGREGATE MATERIAL IN THE ASPHALT SHALL BE CLEAN, OPEN-GRADED, AND A MINIMUM OF 75% FRACTURED WITH AT LEAST ONE FRACTURED FACE BY MECHANICAL MEANS OF EACH INDIVIDUAL PARTICLE LARGER THAN 3/4", AND IT SHALL HAVE THE FOLLOWING GRADATIONS:

POROUS ASPHALT WEARING COURSE AGGREGATE GRADATION

U.S. STANDARD SIEVE SIZE	PERCENT PASSING BY WEIGHT
3/8"	100%
1/2"	95-100%
3/4"	70-95%
#4	20-40%
#8	10-20%
#40	0-8%
#200	0-3%

- NEAT ASPHALT BINDER MODIFIED WITH AN ELASTOMERIC POLYMER TO PRODUCE A BINDER MEETING THE REQUIREMENTS OF PG 76-22 AS SPECIFIED IN AASHTO MP-1. THE ELASTOMER POLYMER SHALL BE STYRENE-BUTADIENE-STYRENE (SBS), OR APPROVED EQUAL, APPLIED AT A RATE OF 3% BY WEIGHT OF THE TOTAL BINDER.
- HYDRATED LIME SHOULD BE ADDED AT A DOSAGE RATE OF 1% BY WEIGHT OF THE TOTAL DRY AGGREGATE TO MIXES CONTAINING GRANITE. HYDRATED LIME SHALL MEET THE REQUIREMENTS OF ASTM C 977. THE ADDITIVE MUST BE ABLE TO PREVENT THE SEPARATION OF THE ASPHALT BINDER FROM THE AGGREGATE AND ACHIEVE A REQUIRED TENSILE STRENGTH RATIO (TSR) OF AT LEAST 80% ON THE ASPHALT MIX WHEN TESTED IN ACCORDANCE WITH AASHTO T 283. THE ASPHALTIC MIX SHALL BE TESTED FOR ITS RESISTANCE TO STRIPPING BY WATER IN ACCORDANCE WITH ASTM D-1664. IF THE ESTIMATED COATING AREA IS NOT ABOVE 95 PERCENT, ANTI-STRIPPING AGENTS SHALL BE ADDED TO THE ASPHALT.
- THE ASPHALTIC MIX SHALL BE TESTED FOR ITS RESISTANCE TO STRIPPING BY WATER IN ACCORDANCE WITH ASTM D-3625. IF THE ESTIMATED COATING AREA IS NOT ABOVE 95 PERCENT, ANTI-STRIPPING AGENTS SHALL BE ADDED TO THE ASPHALT.



6 PAVEMENT RESTORATION
C1.43 TYPICAL N.T.S.

7 POROUS ASPHALT PAVEMENT
C1.43 TYPICAL 1"=1'-0"

REVISIONS:
DATE: 06/27/23 ISSUE: ADDENDUM 1

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PROJECT TITLE:
SOUTH DEVON AREA FLOOD
REDUCTION PROJECT
AT THE WEST WAYNE PRESERVE
AND FRIENDS OF RADNOR TRAIL PARK

SEAL:
MARC B. HENDERSON
REGISTERED PROFESSIONAL ENGINEER
No. 098400
PA. E.C. 000000

SUBMISSION:
BID DOCUMENTS

DRAWING TITLE:
SITE DETAILS - SHEET 1

DATE: 06/14/23

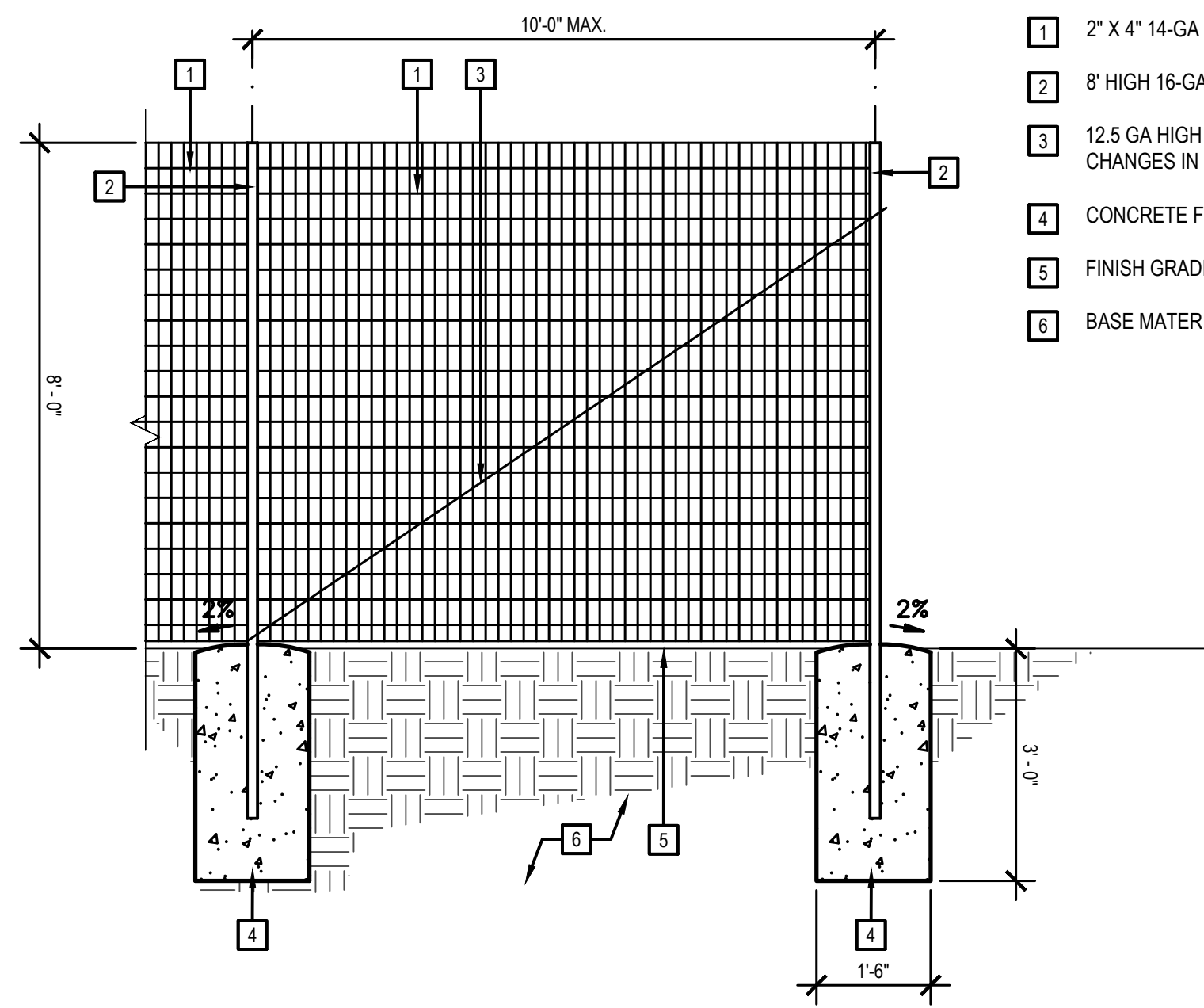
SCALE: 1" = 40'

DRAWN BY: MPB

CHECKED BY: MBH/MCA

DRAWING NO:

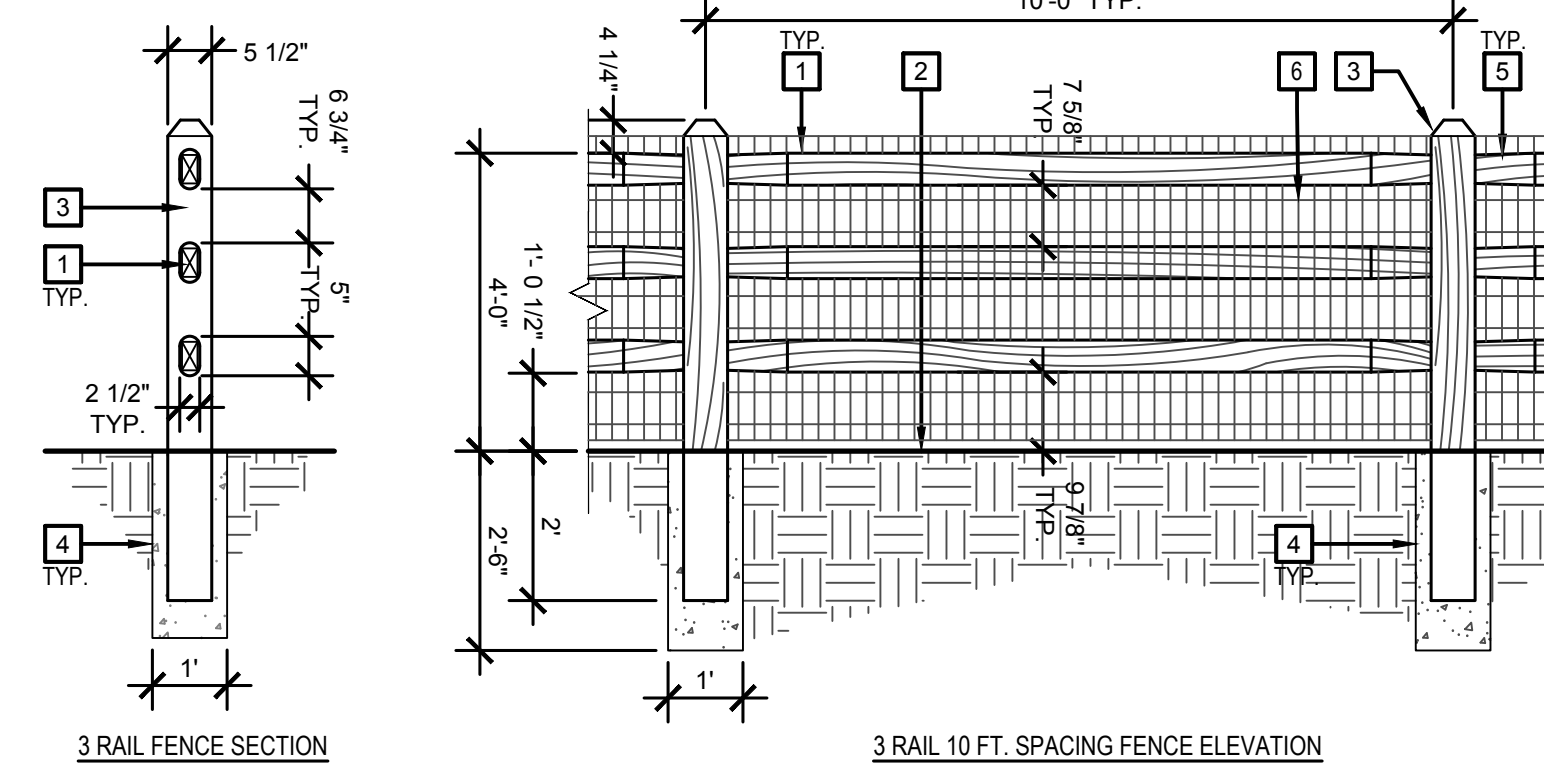
C1.43



- 1 2" X 4" 14-GA WELDED WIRE MESH W/ BLACK PVC COATING
- 2 8" HIGH 16-GA, 1-5/8" DIA. GALVANIZED STEEL POST
- 3 12.5 GA HIGH TENSILE BRACE WIRE @ CORNERS, ENDS AND CHANGES IN DIRECTION.
- 4 CONCRETE FOOTING
- 5 FINISH GRADE
- 6 BASE MATERIAL AND COMPACTED SUBGRADE

1 DEER FENCE
C1.44 TYPICAL N.T.S.

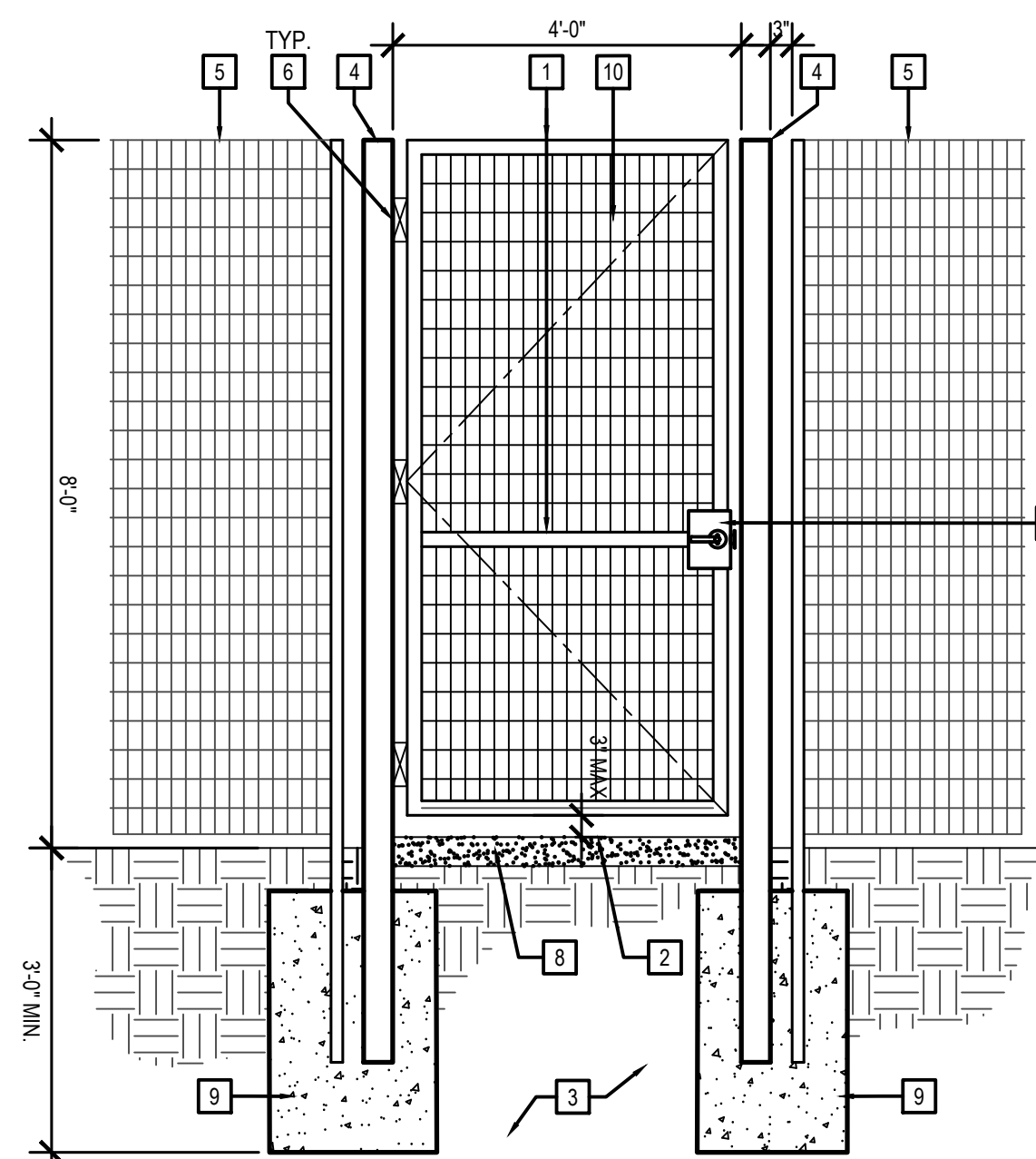
NOTE: BLACK WELDED WIRE MESH NOT SHOWN FOR CLARITY.



- 1 3" X 4" NOMINAL PRESSURE-TREATED WOODEN FENCE RAIL.
- 2 FINISH GRADE
- 3 6" X 6" NOMINAL PRESSURE-TREATED WOODEN FENCE POST.
- 4 CONCRETE FOOTING.
- 5 TAPER AT ENDS OF FENCE RAIL
- 6 2" X 4" 14-GA WELDED WIRE MESH W/ BLACK PVC COATING

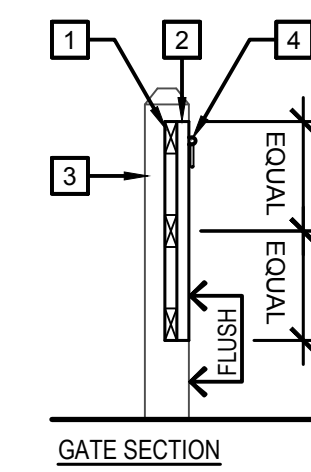
NOTES:
A. MATCH EXISTING FENCING MATERIAL AND DIMENSIONS.
B. DIMENSIONS AS SHOWN ARE APPROXIMATE AND ARE PROVIDED FOR DESIGN INTENT ONLY. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING MATERIAL AND LAYOUT DIMENSIONS.

2 DOG FENCE
C1.44 TYPICAL N.T.S.

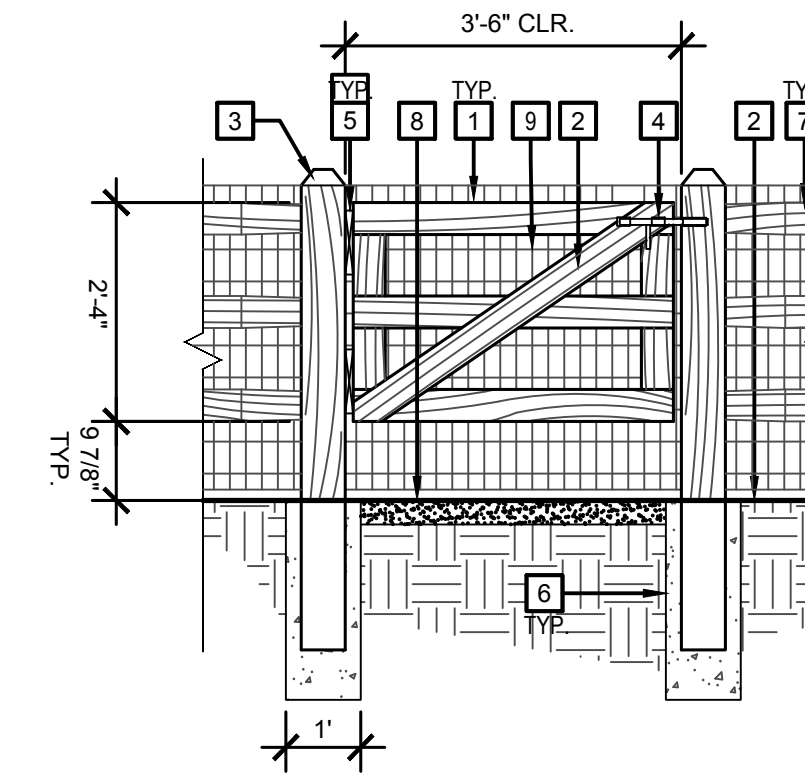


- 1 2" X 2" X 3/16" TUBULAR STEEL FRAME
- 2 FINISH SURFACE.
- 3 BASE MATERIAL AND COMPACTED SUBGRADE PER GEOTECH REPORT
- 4 4" X 4" X 3/16" TUBULAR STEEL POST
- 5 ADJACENT FENCING
- 6 WELDED EXTRA HEAVY DUTY SELF CLOSING HINGES, FINISH, COATING AND COLOR TO MATCH GATE.
- 7 MORTISE LOCK
- 8 DECOMPOSED GRANITE PAVING
- 9 COMBINED CONCRETE FOOTING PER STRUCTURAL
- 10 2" X 4" 14 GA WELDED WIRE MESH W/ BLACK PVC COATING

3 PEDESTRIAN GATE AT DEER FENCE
C1.44 TYPICAL N.T.S.



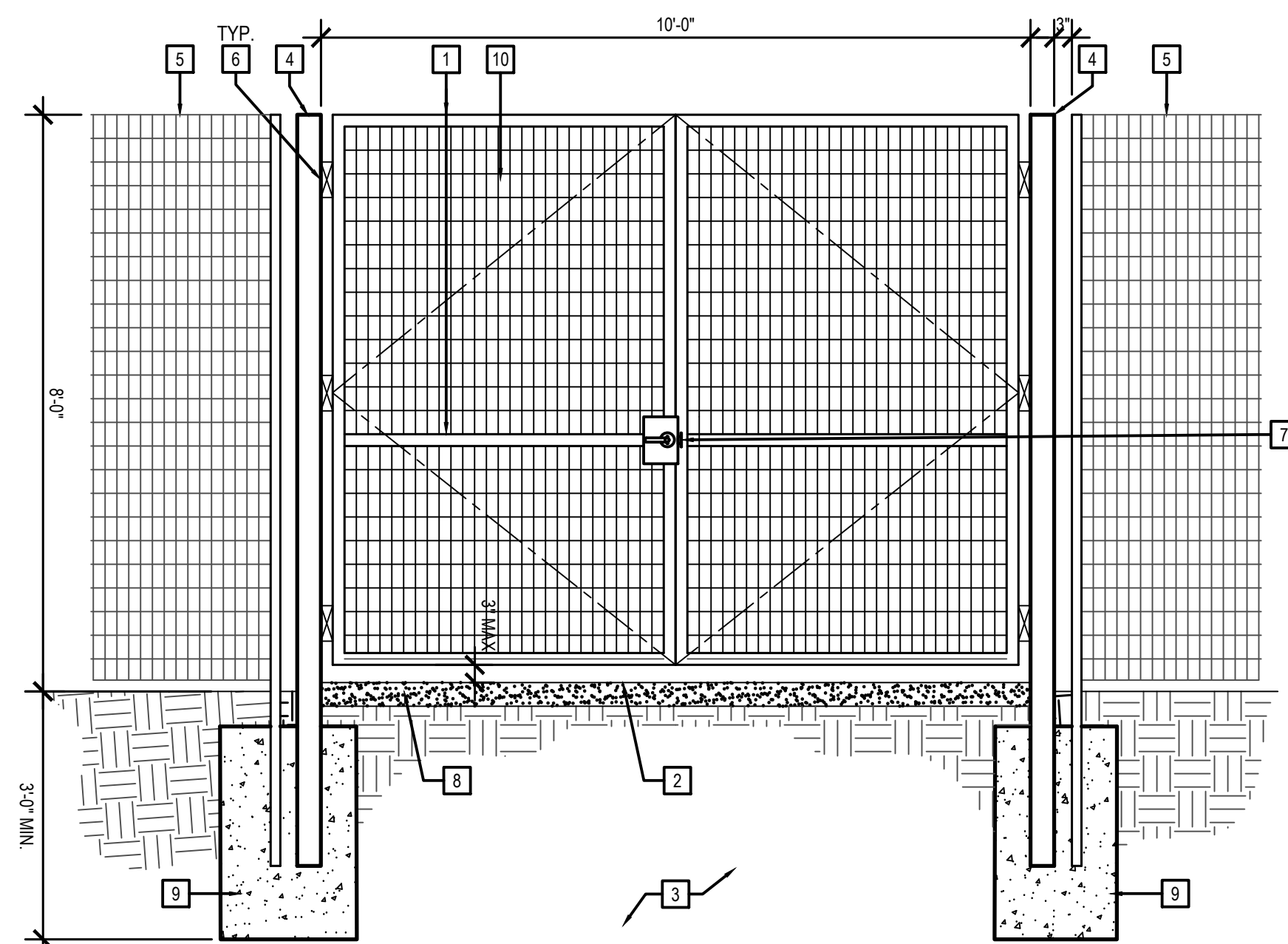
NOTE: BLACK WELDED WIRE MESH NOT SHOWN FOR CLARITY.



- 1 2" X 4" NOMINAL PRESSURE-TREATED WOODEN GATE FRAME.
- 2 2" X 4" NOMINAL PRESSURE-TREATED WOODEN CROSS-BRACE.
- 3 6" X 6" NOMINAL PRESSURE-TREATED FENCE POST
- 4 BLACK GATE LATCH
- 5 BLACK SELF-CLOSING GATE HINGE
- 6 CONCRETE FOOTING.
- 7 SPLIT RAIL FENCE.
- 8 STABILIZED FINES PATH.
- 9 2" X 4" 14-GA WELDED WIRE MESH W/ BLACK PVC COATING

NOTES:
A. MATCH EXISTING FENCING MATERIAL AND DIMENSIONS.
B. DIMENSIONS AS SHOWN ARE APPROXIMATE AND ARE PROVIDED FOR DESIGN INTENT ONLY. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING MATERIAL AND LAYOUT DIMENSIONS.
C. ALL METAL GATE COMPONENTS ARE TO BE COLOR BLACK.

4 PEDESTRIAN GATE AT DOG FENCE
C1.44 TYPICAL N.T.S.



- 1 2" X 2" X 3/16" TUBULAR STEEL FRAME
- 2 FINISH SURFACE.
- 3 BASE MATERIAL AND COMPACTED SUBGRADE PER GEOTECH REPORT
- 4 4" X 4" X 3/16" TUBULAR STEEL POST
- 5 ADJACENT FENCING
- 6 WELDED EXTRA HEAVY DUTY SELF CLOSING HINGES, FINISH, COATING AND COLOR TO MATCH GATE.
- 7 MORTISE LOCK
- 8 DECOMPOSED GRANITE PAVING
- 9 COMBINED CONCRETE FOOTING PER STRUCTURAL
- 10 2" X 4" 14 GA WELDED WIRE MESH W/ BLACK PVC COATING

5 VEHICULAR GATE AT DEER FENCE
C1.44 TYPICAL N.T.S.

REVISIONS:
DATE: ISSUE:

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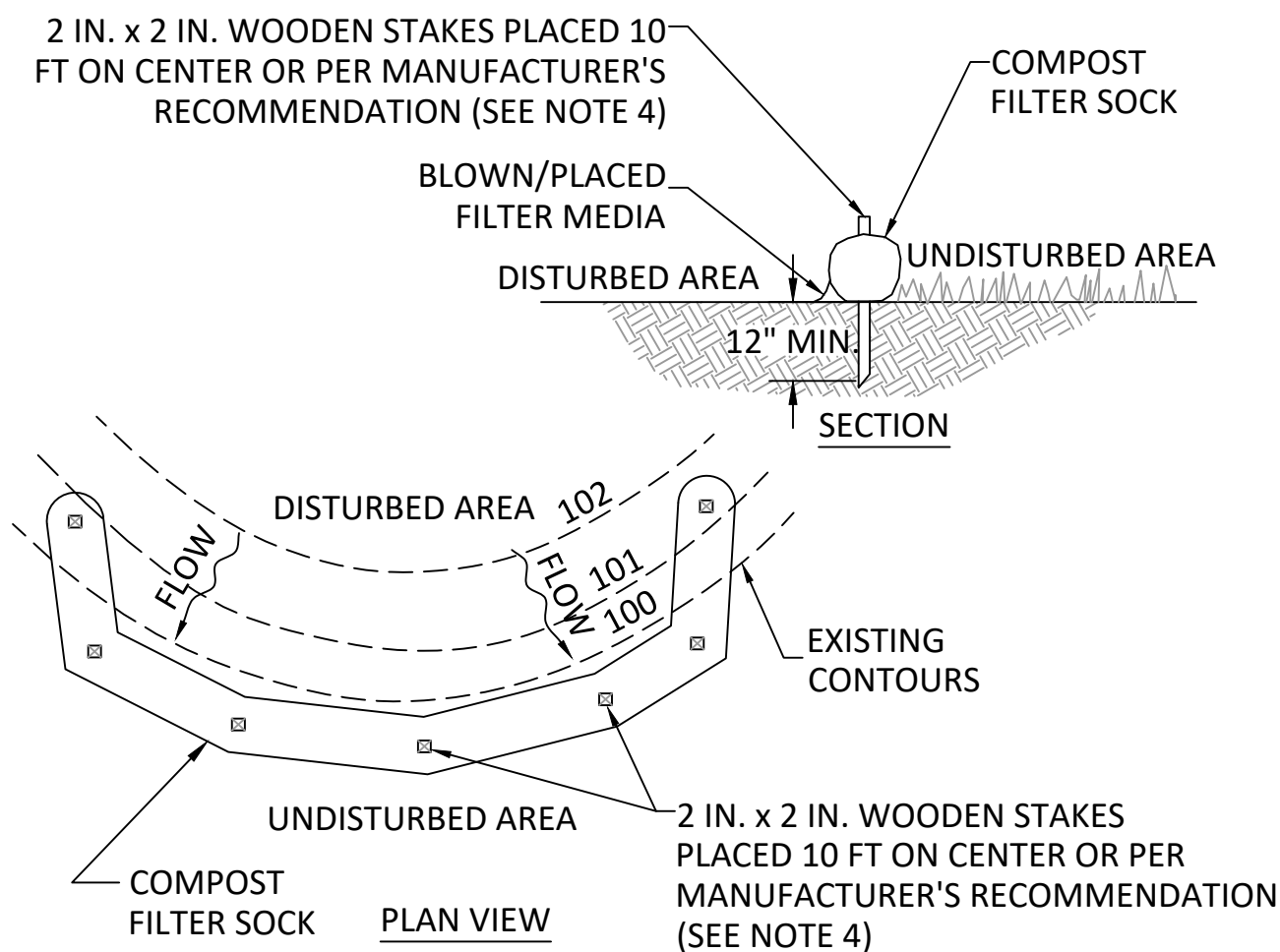
PROJECT TITLE:
SOUTH DEVON AREA FLOOD
REDUCTION PROJECT
AT THE WEST WAYNE PRESERVE
AND FRIENDS OF RADNOR TRAIL PARK

SEAL:
MARC B. HENDERSON
REGISTERED PROFESSIONAL ENGINEER
No. 098400
PA

SUBMISSION:
BID DOCUMENTS

DRAWING TITLE:
SITE DETAILS - SHEET 2

DATE: 06/14/23
SCALE: 1" = 40'
DRAWN BY: MPB
CHECKED BY: MBH/MCA
DRAWING NO: C1.44



- NOTES:**
- SOCK FABRIC SHALL MEET STANDARDS OF TABLE 4.1 OF THE PA DEP EROSION CONTROL MANUAL. COMPOST SHALL MEET THE STANDARDS OF TABLE 4.2 OF THE PA DEP EROSION CONTROL MANUAL.
 - COMPOST FILTER SOCK SHALL BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE BARRIER SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN BARRIER ALIGNMENT. MAXIMUM SLOPE LENGTH ABOVE ANY BARRIER SHALL NOT EXCEED THAT SPECIFIED FOR THE SIZE OF THE SOCK AND THE SLOPE OF ITS TRIBUTARY AREA.
 - TRAFFIC SHALL NOT BE PERMITTED TO CROSS COMPOST FILTER SOCKS.
 - FOR PAVED SURFACE APPLICATIONS, OBJECTS OF CONSIDERABLE MASS (I.E. CONCRETE BLOCKS, SAND BAGS, ETC.) SHALL BE USED IMMEDIATELY DOWNSLOPE OF COMPOST FILTER SOCKS IN LIEU OF STAKES. MAXIMUM SPACING OF STABILIZING OBJECTS SHALL BE EQUAL TO THE MANUFACTURER'S RECOMMENDATION FOR STAKE SPACING.
 - ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES 1/2 THE ABOVE GROUND HEIGHT OF THE BARRIER AND DISPOSED IN THE MANNER DESCRIBED ELSEWHERE IN THE PLAN.
 - COMPOST FILTER SOCKS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED SOCKS SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S SPECIFICATIONS OR REPLACED WITHIN 24 HOURS OF INSPECTION.
 - BIODEGRADABLE COMPOST FILTER SOCKS SHALL BE REPLACED AFTER 6 MONTHS; PHOTODEGRADABLE SOCKS AFTER 1 YEAR.
 - UPON STABILIZATION OF THE AREA TRIBUTARY TO THE SOCK, STAKES SHALL BE REMOVED. THE SOCK MAY BE LEFT IN PLACE AND VEGETATED OR REMOVED. IN THE LATTER CASE, THE MESH SHALL BE CUT OPEN AND THE MULCH SPREAD AS A SOIL SUPPLEMENT.

TABLE 4.1
Compost Sock Fabric Minimum Specifications

Material Type	5 mil HDPE
Material Characteristics	Photo-degradable
Sock Diameters	12" 18" 24" 32"
Mesh Opening	3/8"
Tensile Strength	26 psi
Ultraviolet Stability % Original Strength (ASTM G-155)	23% at 1000 hr.
Minimum Functional Longevity	9 months

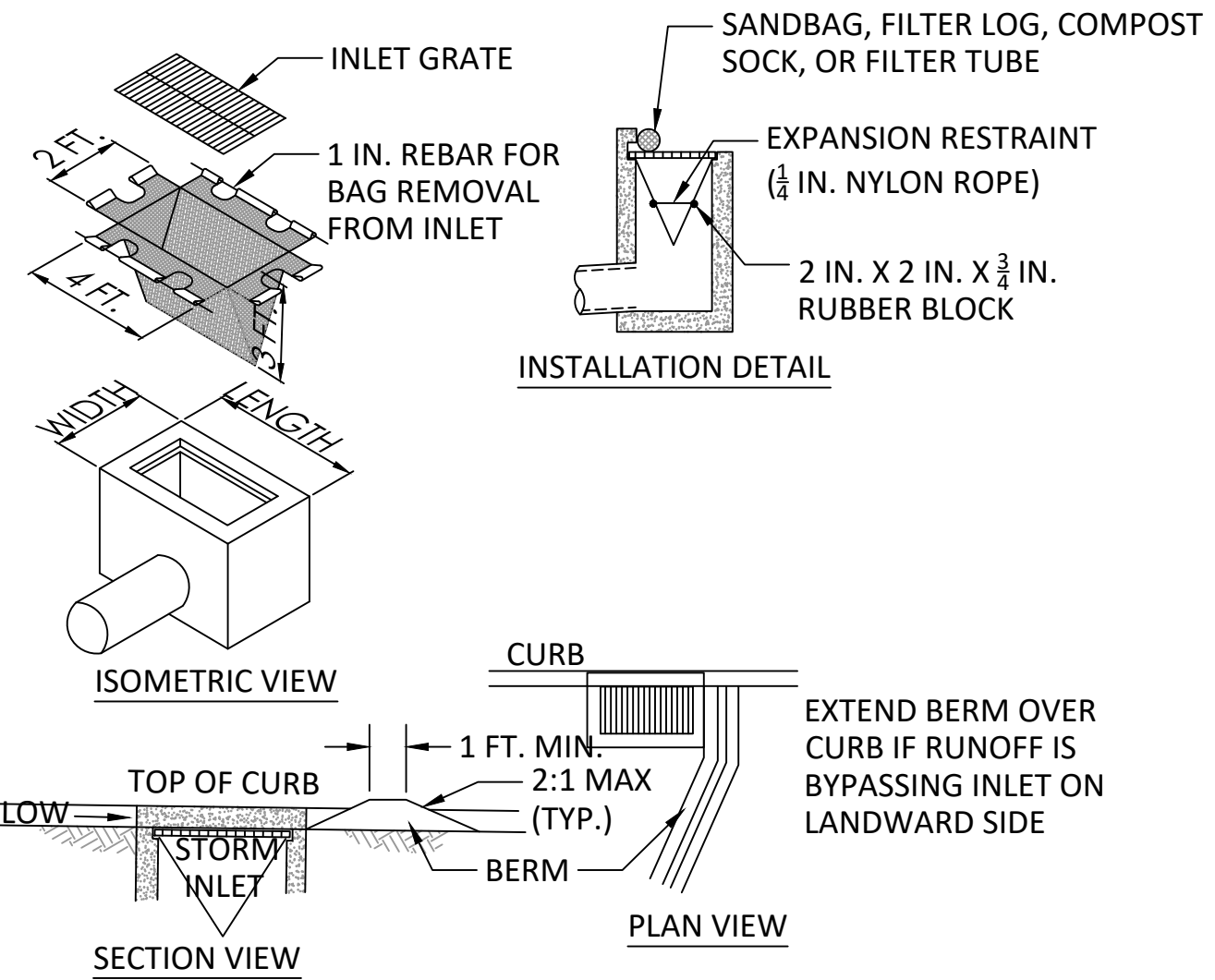
Two-ply systems

Inner Containment Netting	HDPE biaxial net
	Continuously wound
	Fusion-welded junctures
Outer Filtration Mesh	3/4" X 3/4" Max. aperture size Composite Polypropylene Fabric (Woven layer and non-woven fleece mechanically fused via needle punch)
	3/16" Max. aperture size

Sock fabrics composed of burlap may be used on projects lasting 6 months or less.

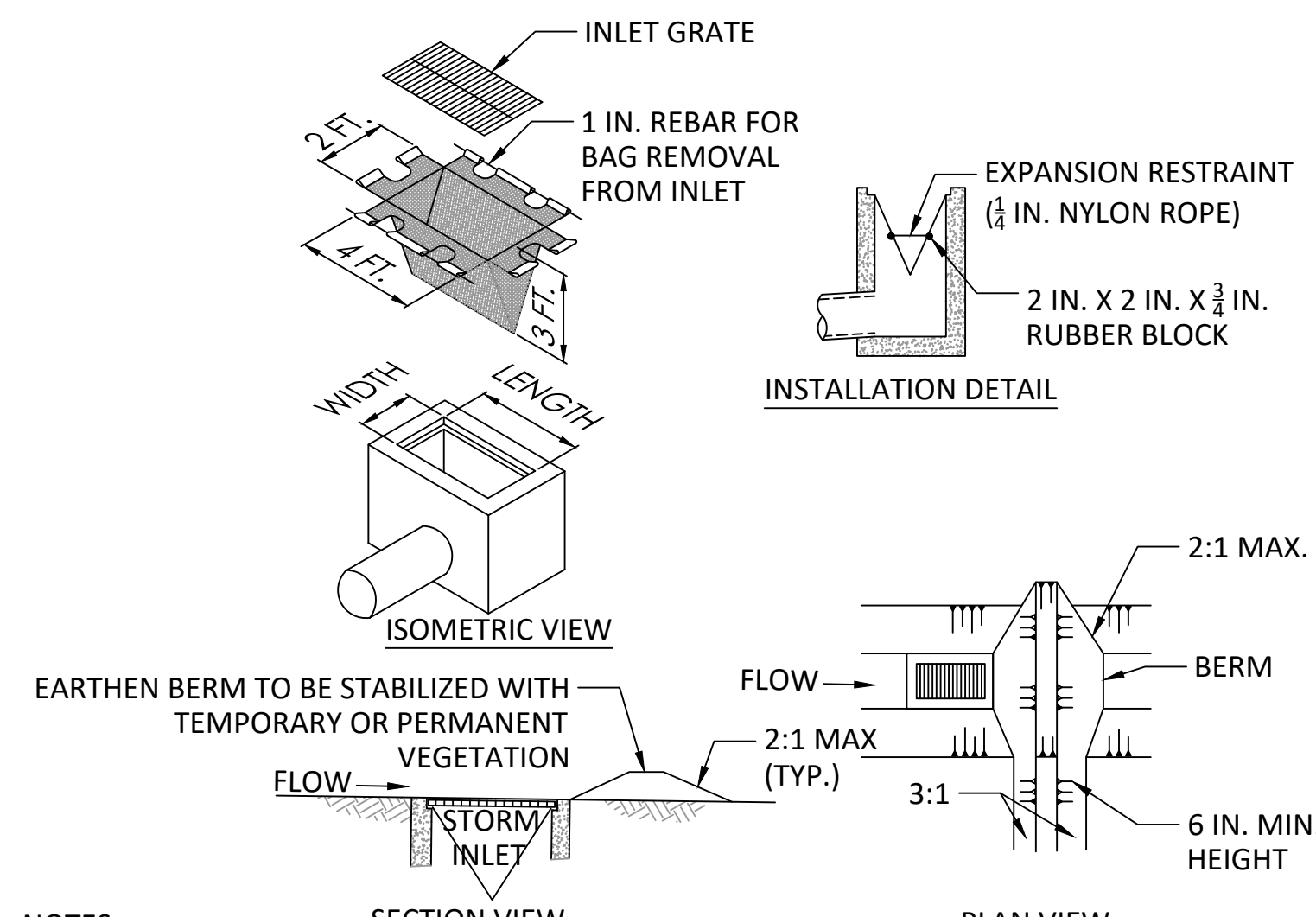
TABLE 4.2
Compost Standards

Organic Matter Content	80% - 100% (dry weight basis)
Organic Portion	Fibrous and elongated
pH	5.5 - 8.0
Moisture Content	35% - 55%
Particle Size	98% pass through 1" screen
Soluble Salt Concentration	5.0 dSm (mmhos/cm) Maximum
Fitrex	



- NOTES:**
- MAXIMUM DRAINAGE AREA = 1/2 ACRE.
 - INLET PROTECTION SHALL NOT BE REQUIRED FOR INLET TRIBUTARY TO SEDIMENT BASIN OR TRAP. BERMS SHALL BE REQUIRED FOR ALL INSTALLATIONS.
 - ROLLED EARTHEN BERM SHALL BE MAINTAINED UNTIL ROADWAY IS STONED. ROAD SUBBASE BERM SHALL BE MAINTAINED UNTIL ROADWAY IS PAVED. SIX INCH MINIMUM HEIGHT ASPHALT BERM SHALL BE MAINTAINED UNTIL ROADWAY SURFACE RECEIVES FINAL COAT.
 - AT A MINIMUM, THE FABRIC SHALL HAVE A MINIMUM GRAB TENSILE STRENGTH OF 120 LBS, A MINIMUM BURST STRENGTH OF 200 PSI, AND A MINIMUM TRAPEZOIDAL TEAR STRENGTH OF 50 LBS. FILTER BAGS SHALL BE CAPABLE OF TRAPPING ALL PARTICLES NOT PASSING A NO. 40 SIEVE.
 - INLET FILTER BAGS SHALL BE INSPECTED ON A WEEKLY BASIS AND AFTER EACH RUNOFF EVENT. BAGS SHALL BE EMPTIED AND RINSED OR REPLACED WHEN HALF FULL OR WHEN FLOW CAPACITY HAS BEEN REDUCED SO AS TO CAUSE FLOODING OR BYPASSING OF THE INLET. DAMAGED OR CLOGGED BAGS SHALL BE REPLACED. A SUPPLY SHALL BE MAINTAINED ON SITE FOR REPLACEMENT OF BAGS. ALL NEEDED REPAIRS SHALL BE INITIATED IMMEDIATELY AFTER THE INSPECTION. DISPOSE OF ACCUMULATED SEDIMENT AS WELL AS ALL USED BAGS ACCORDING TO THE PLAN NOTES.
 - DO NOT USE ON MAJOR PAVED ROADWAYS WHERE PONDING MAY CAUSE TRAFFIC HAZARDS.

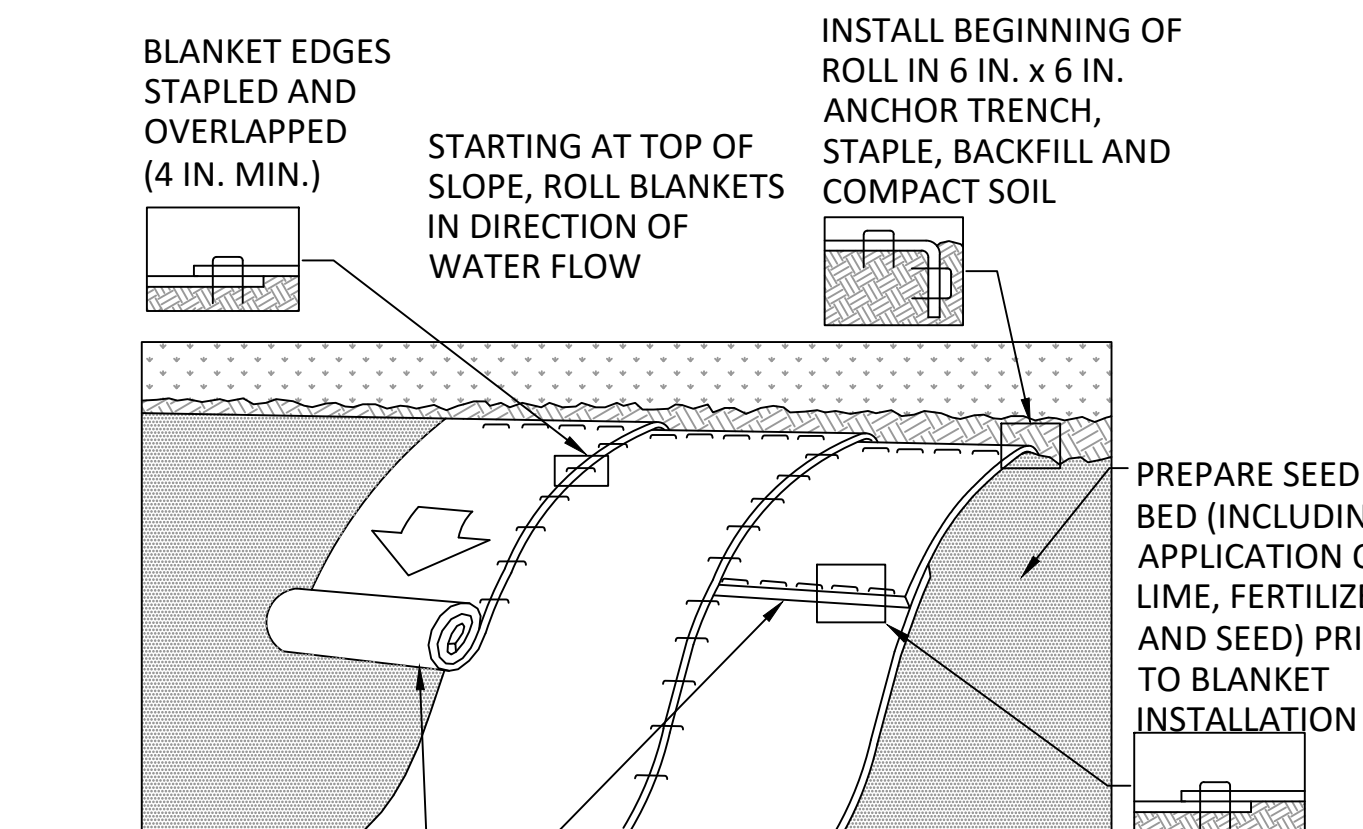
2 TYPE C INLET FILTER BAG PROTECTION
TYPICAL N.T.S.



- NOTES:**
- MAXIMUM DRAINAGE AREA = 1/2 ACRE.
 - INLET PROTECTION SHALL NOT BE REQUIRED FOR INLET TRIBUTARY TO SEDIMENT BASIN OR TRAP. BERMS SHALL BE REQUIRED FOR ALL INSTALLATIONS.
 - ROLLED EARTHEN BERM SHALL BE MAINTAINED UNTIL ROADWAY IS STONED. ROAD SUBBASE BERM SHALL BE MAINTAINED UNTIL ROADWAY IS PAVED. SIX INCH MINIMUM HEIGHT ASPHALT BERM SHALL BE MAINTAINED UNTIL ROADWAY SURFACE RECEIVES FINAL COAT.
 - AT A MINIMUM, THE FABRIC SHALL HAVE A MINIMUM GRAB TENSILE STRENGTH OF 120 LBS, A MINIMUM BURST STRENGTH OF 200 PSI, AND A MINIMUM TRAPEZOIDAL TEAR STRENGTH OF 50 LBS. FILTER BAGS SHALL BE CAPABLE OF TRAPPING ALL PARTICLES NOT PASSING A NO. 40 SIEVE.
 - INLET FILTER BAGS SHALL BE INSPECTED ON A WEEKLY BASIS AND AFTER EACH RUNOFF EVENT. BAGS SHALL BE EMPTIED AND RINSED OR REPLACED WHEN HALF FULL OR WHEN FLOW CAPACITY HAS BEEN REDUCED SO AS TO CAUSE FLOODING OR BYPASSING OF THE INLET. DAMAGED OR CLOGGED BAGS SHALL BE REPLACED. A SUPPLY SHALL BE MAINTAINED ON SITE FOR REPLACEMENT OF BAGS. ALL NEEDED REPAIRS SHALL BE INITIATED IMMEDIATELY AFTER THE INSPECTION. DISPOSE OF ACCUMULATED SEDIMENT AS WELL AS ALL USED BAGS ACCORDING TO THE PLAN NOTES.
 - DO NOT USE ON MAJOR PAVED ROADWAYS WHERE PONDING MAY CAUSE TRAFFIC HAZARDS.

3 TYPE M INLET FILTER BAG PROTECTION
TYPICAL N.T.S.

1 COMPOST SOCK
TYPICAL N.T.S.

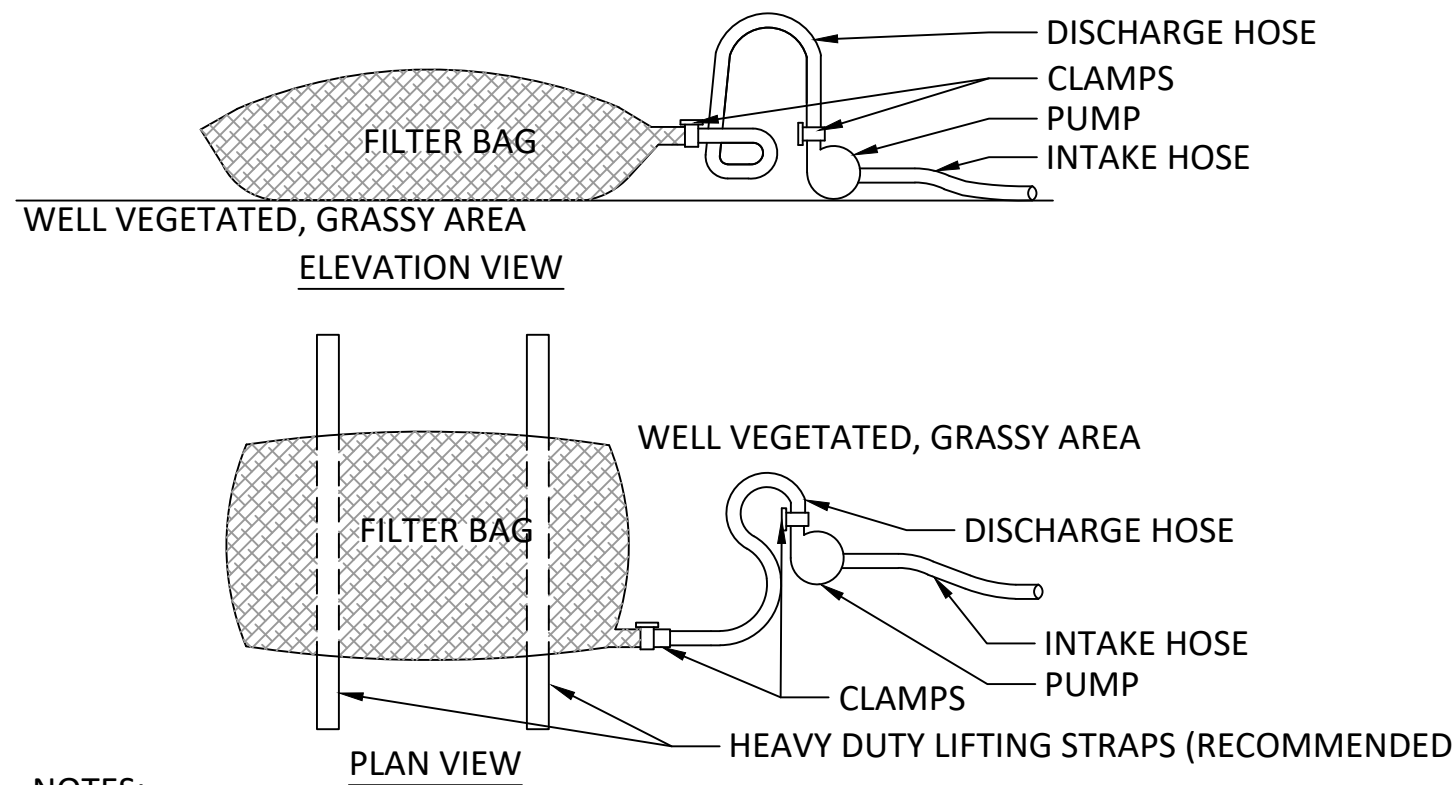


THE BLANKET SHOULD NOT BE STRETCHED; IT MUST MAINTAIN GOOD SOIL CONTACT

REFER TO MANUFACTURER'S RECOMMENDED STAPLING PATTERN FOR STEEPNESS AND LENGTH OF SLOPE BEING BLANKETED

- NOTES:**
- EROSION CONTROL BLANKET SHALL BE SC150BN EXTENDED TERM BIODEGRADABLE EROSION CONTROL BLANKET BY NORTH AMERICAN GREEN OR APPROVED EQUAL.
 - SEED AND SOIL AMENDMENTS SHALL BE APPLIED ACCORDING TO THE RATES IN THE PLAN DRAWINGS PRIOR TO INSTALLING THE BLANKET.
 - PROVIDE ANCHOR TRENCH AT TOE OF SLOPE IN SIMILAR FASHION AS AT TOP OF SLOPE.
 - SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS, AND GRASS.
 - BLANKET SHALL HAVE GOOD CONTINUOUS CONTACT WITH UNDERLYING SOIL THROUGHOUT ENTIRE LENGTH. LAY BLANKET LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH SOIL. DO NOT STRETCH BLANKET.
 - THE BLANKET SHALL BE STAPLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
 - BLANKETED AREAS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT UNTIL PERENNIAL VEGETATION IS ESTABLISHED TO A MINIMUM UNIFORM 70% COVERAGE THROUGHOUT THE BLANKETED AREA. DAMAGED OR DISPLACED BLANKETS SHALL BE RESTORED OR REPLACED WITHIN 4 CALENDAR DAYS.

4 EROSION CONTROL BLANKET INSTALLATION
TYPICAL N.T.S.

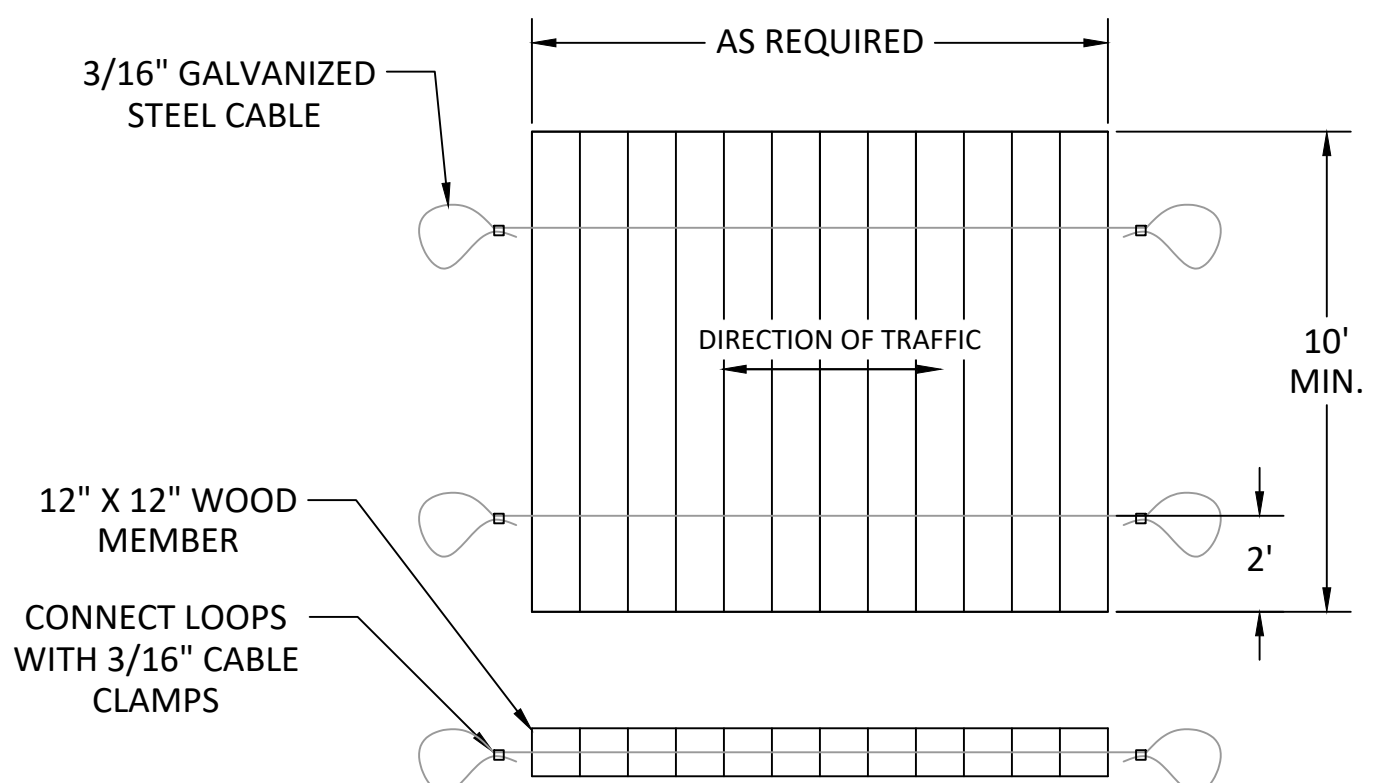


- NOTES:**
- LOW VOLUME FILTER BAGS SHALL BE MADE FROM NON-WOVEN GEOTEXTILE MATERIAL SEWN WITH HIGH STRENGTH, DOUBLE STITCHED "J" TYPE SEAMS. THEY SHALL BE CAPABLE OF TRAPPING PARTICLES LARGER THAN 150 MICRONS. HIGH VOLUME FILTER BAGS SHALL BE MADE FROM WOVEN GEOTEXTILES THAT MEET THE FOLLOWING STANDARDS:

PROPERTY	TEST METHOD	MINIMUM STANDARD
M	ASTM D-4884	60 LB/IN
GRAB TENSILE	ASTM D-4632	205 LB
PUNCTURE	ASTM D-4833	110 LB
MULLEN BURST	ASTM D-3786	350 PSI
UV RESISTANCE	ASTM D-4355	70%
AOS % RETAINED	ASTM D-4751	80 SIEVE

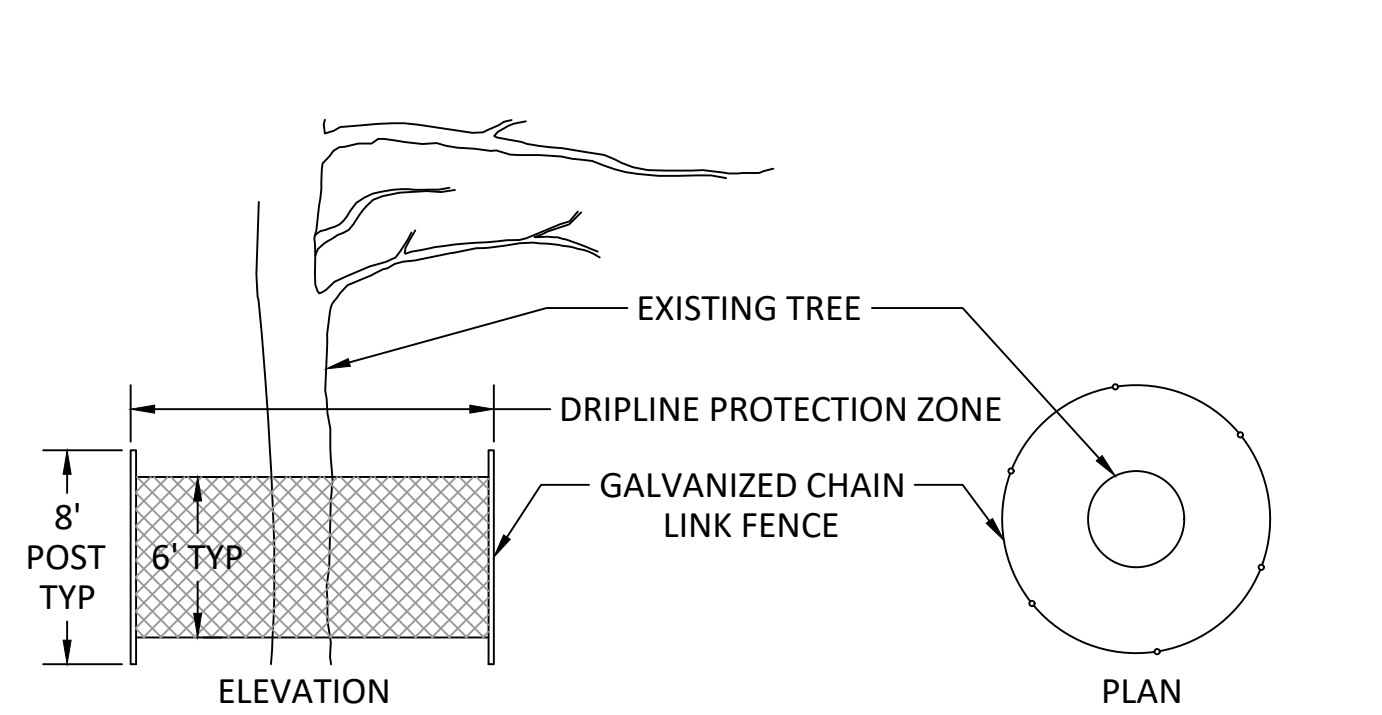
- A SUITABLE MEANS OF ACCESSING THE BAG WITH MACHINERY REQUIRED FOR DISPOSAL PURPOSES SHALL BE PROVIDED. FILTER BAGS SHALL BE REPLACED WHEN THEY BECOME 1/2 FULL OF SEDIMENT. SPARE BAGS SHALL BE KEPT AVAILABLE FOR REPLACEMENT OF THOSE THAT HAVE FAILED OR ARE FILLED. BAGS SHALL BE PLACED ON STRAPS TO FACILITATE REMOVAL UNLESS BAGS COME WITH LIFTING STRAPS ALREADY ATTACHED.
- BAGS SHALL BE LOCATED IN WELL-VEGETATED (GRASSY) AREA, AND DISCHARGE ONTO STABLE, EROSION RESISTANT AREAS. WHERE THIS IS NOT POSSIBLE, A GEOTEXTILE UNDERLAYMENT AND FLOW PATH SHALL BE PROVIDED. BAGS MAY BE PLACED ON FILTER STONE TO INCREASE DISCHARGE CAPACITY. BAGS SHALL NOT BE PLACED ON SLOPES GREATER THAN 5%. FOR SLOPES EXCEEDING 5%, CLEAN ROCK OR OTHER NON-ERODIBLE AND NON-POLLUTING MATERIAL MAY BE PLACED UNDER THE BAG TO REDUCE SLOPE STEEPNESS.
- DOWNSLOPE SEDIMENT BARRIER IS REQUIRED. COMPOST FILTER SOCK SHALL BE INSTALLED BELOW BAGS.**
- THE PUMP DISCHARGE HOSE SHALL BE INSERTED INTO THE BAGS IN THE MANNER SPECIFIED BY THE MANUFACTURER AND SECURELY CLAMPED. A PIECE OF PVC PIPE IS RECOMMENDED FOR THIS PURPOSE.
- THE PUMPING RATE SHALL BE NO GREATER THAN 750 GPM OR 1/2 THE MAXIMUM SPECIFIED BY THE MANUFACTURER, WHICHEVER IS LESS. PUMP INTAKES SHALL BE FLOATING AND SCREENED. FILTER BAGS SHALL BE INSPECTED DAILY. IF ANY PROBLEM IS DETECTED, PUMPING SHALL CEASE IMMEDIATELY AND NOT RESUME UNTIL THE PROBLEM IS CORRECTED.

5 PUMPED WATER FILTER BAG
TYPICAL N.T.S.

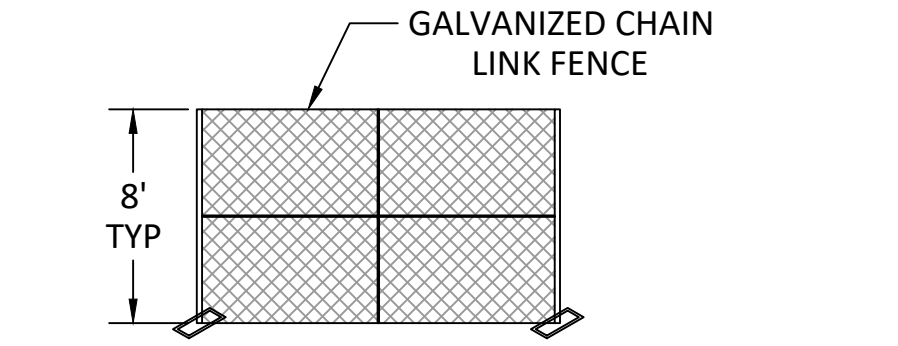


- NOTES:**
- ANY EQUIPMENT WITHIN WETLAND OR IMMEDIATELY ADJACENT TO WETLAND BOUNDARY MUST HAVE TIMBER MATTING INSTALLED UNDERNEATH THE EQUIPMENT TO AVOID WETLAND IMPACTS. NO WETLAND IMPACTS OUTSIDE LIMITS OF DISTURBANCE ARE ALLOWED.
 - TIMBER MATTING TO PROTECT WETLAND FOR ALL WORK OUTSIDE LIMITS OF DISTURBANCE

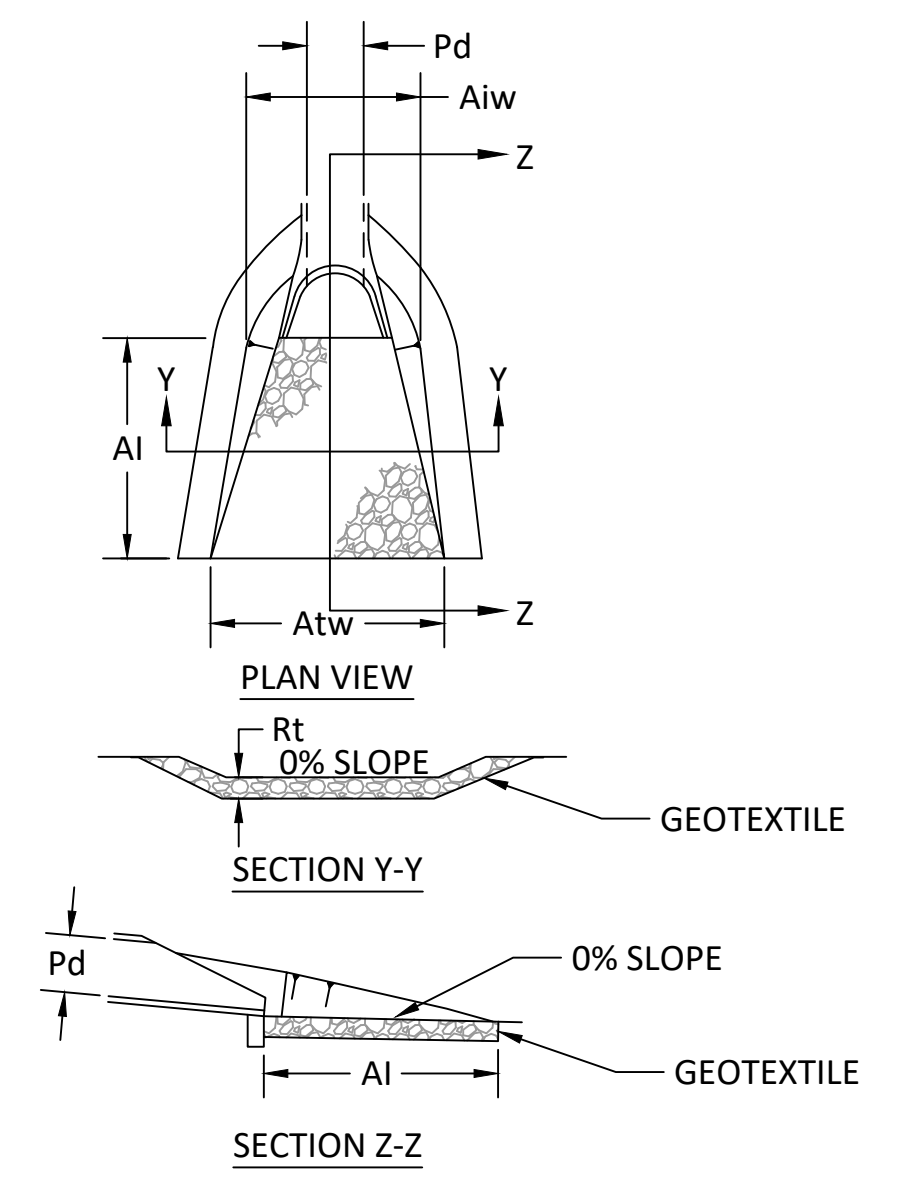
6 TIMBER MAT WETLAND CROSSING
TYPICAL N.T.S.



7 TREE PROTECTION FENCE
TYPICAL N.T.S.



8 CONSTRUCTION FENCE
TYPICAL N.T.S.



OUTLET NO.	PIPE DIA Pd (IN)	RIPRAP		APRON		
		SIZE R- (IN)	THICK RT (IN)	LENGTH AI (FT)	INITIAL WIDTH Aiw (FT)	TERMINAL WIDTH Atw (FT)
OP-1	30	R-6	36	25	7.5	32.5
OP-2	24	R-6	36	22	6	28
OP-3	24	R-5	27	18	6	18

- NOTES:**
- ALL APRONS SHALL BE CONSTRUCTED TO THE DIMENSIONS SHOWN. TERMINAL WIDTHS SHALL BE ADJUSTED AS NECESSARY TO MATCH RECEIVING CHANNELS.
 - ALL APRONS SHALL BE INSPECTED AT LEAST WEEKLY AND AFTER EACH RUNOFF EVENT. DISPLACED RIPRAP WITHIN THE APRON SHALL BE REPLACED IMMEDIATELY.

9 RIPRAP APRON AT PIPE OUTLET
TYPICAL N.T.S.

REVISIONS:

DATE:	ISSUE:
9-10-21	COMMENT RESPONSE #1
11-16-21	COMMENT RESPONSE #2

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PROJECT TITLE:

SOUTH DEVON AREA FLOOD REDUCTION PROJECT
AT THE WEST WAYNE PRESERVE AND FRIENDS OF RADNOR TRAIL PARK

SEAL:

MARC B. HENDERSON
REGISTERED PROFESSIONAL ENGINEER
No. 09840
PA. REG. 03/2007

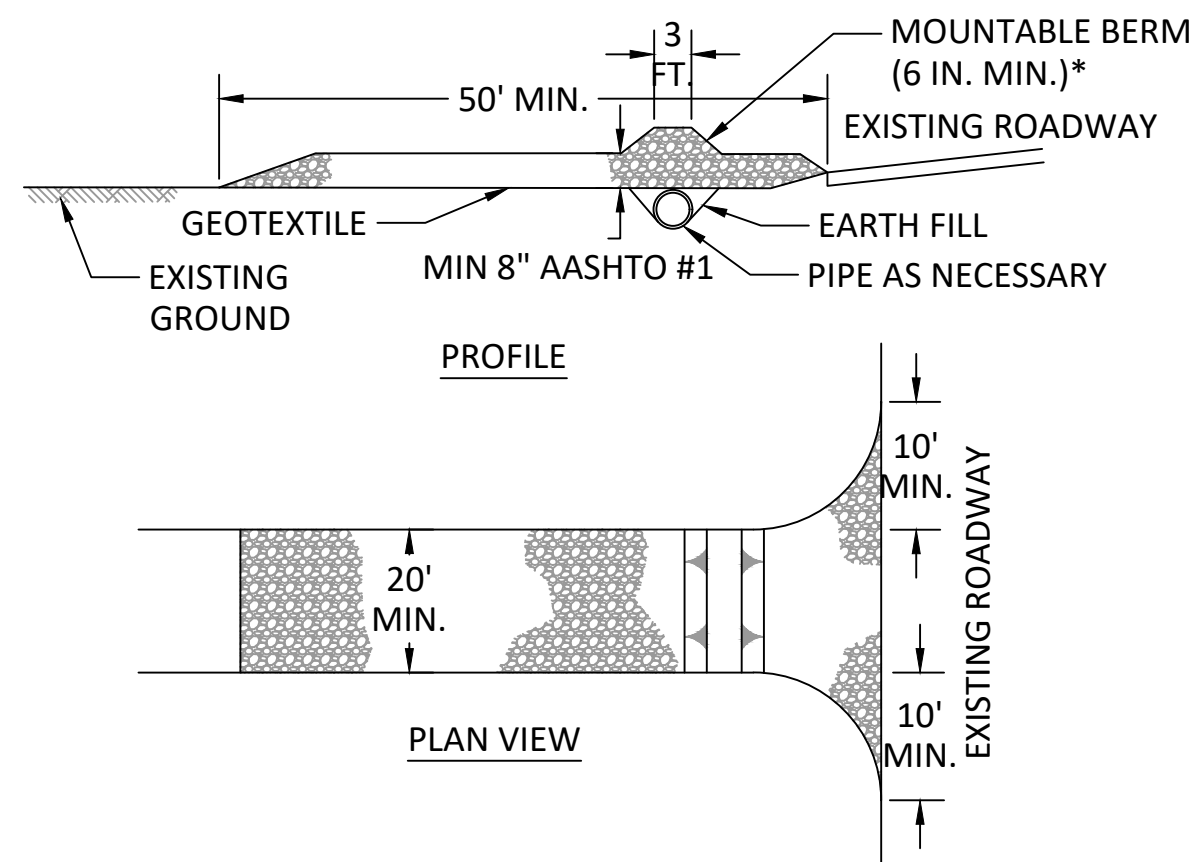
SUBMISSION:

BID DOCUMENTS

DRAWING TITLE:

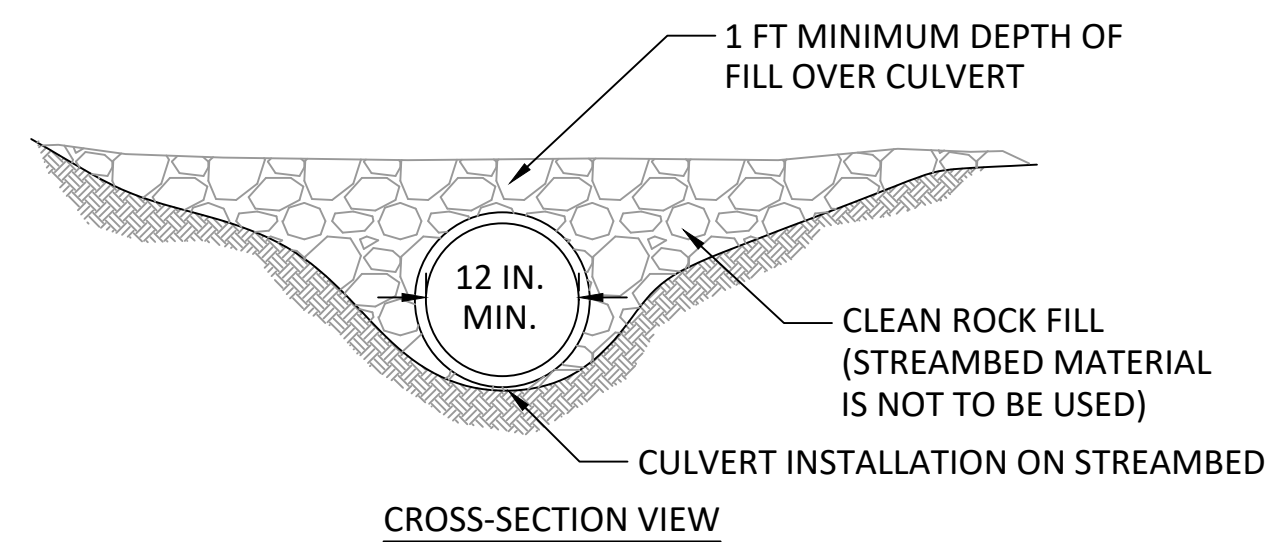
EROSION & SEDIMENT CONTROL DETAILS - SHEET 1

DATE:	06/14/23	DRAWING NO.:	C5.00
SCALE:			
DRAWN BY:	MPB		
CHECKED BY:	MBH/MCA		



- NOTES:** * MOUNTABLE BERM USED TO PROVIDE PROPER COVER FOR PIPE
- REMOVE TOPSOIL PRIOR TO INSTALLATION OF ROCK CONSTRUCTION ENTRANCE. EXTEND ROCK OVER FULL WIDTH OF ENTRANCE.
 - RUNOFF SHALL BE DIVERTED FROM ROADWAY TO A SUITABLE SEDIMENT REMOVAL BMP PRIOR TO ENTERING ROCK CONSTRUCTION ENTRANCE.
 - MOUNTABLE BERM SHALL BE INSTALLED WHEREVER OPTIONAL CULVERT PIPE IS USED AND PROPER PIPE COVER AS SPECIFIED BY MANUFACTURER IS NOT OTHERWISE PROVIDED. PIPE SHALL BE SIZED APPROPRIATELY FOR SIZE OF DITCH BEING CROSSED.
 - MAINTENANCE: ROCK CONSTRUCTION ENTRANCE THICKNESS SHALL BE CONSTANTLY MAINTAINED TO THE SPECIFIED DIMENSIONS BY ADDING ROCK. A STOCKPILE SHALL BE MAINTAINED ON SITE FOR THIS PURPOSE. ALL SEDIMENT DEPOSITED ON PAVED ROADWAYS SHALL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE IMMEDIATELY. IF EXCESSIVE AMOUNTS OF SEDIMENT ARE BEING DEPOSITED ON ROADWAY, EXTEND LENGTH OF ROCK CONSTRUCTION ENTRANCE BY 50 FOOT INCREMENTS UNTIL CONDITION IS ALLEVIATED OR INSTALL WASH RACK. WASHING THE ROADWAY OR SWEEPING THE DEPOSITS INTO ROADWAY DITCHES, SEWERS, CULVERTS, OR OTHER DRAINAGE COURSES IS NOT ACCEPTABLE.
 - PUBLIC STREET SWEEPING WITH A VACUUM SWEEPER AND ROLLING OF DIRT AND GRAVEL ROADS SHALL OCCUR AT THE END OF EACH WORK DAY (OR MORE FREQUENTLY AS NEEDED); MANUAL CLEANING OF TIRES PRIOR TO SITE EGRESS.

1 ROCK CONSTRUCTION ENTRANCE WITH STREET SWEEPING
C5.01 TYPICAL N.T.S.



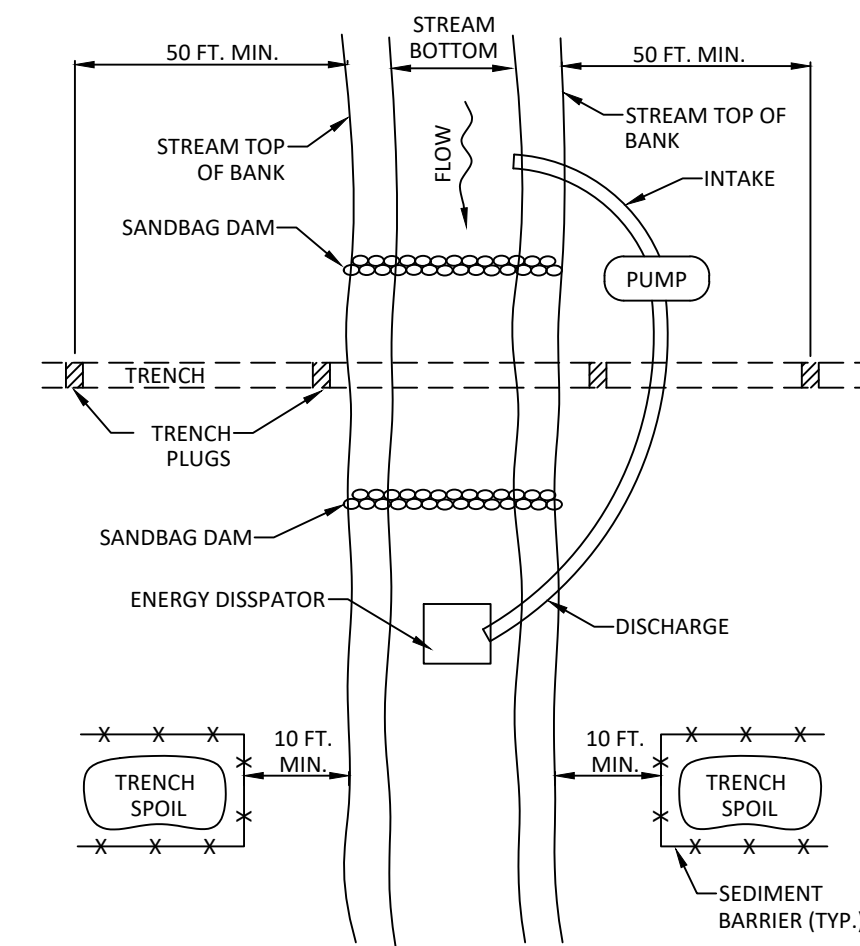
- NOTES:**
- PROVIDE 50' STABILIZED ACCESS TO CROSSING ON BOTH SIDES OF STREAM CHANNEL (SEE STANDARD CONSTRUCTION DETAIL #3-12).
- PIPES SHALL EXTEND BEYOND THE TOE OF THE ROADWAY.
- RUNOFF FROM THE ROADWAY SHALL BE DIVERTED OFF THE ROADWAY AND INTO A SEDIMENT REMOVAL BMP BEFORE IT REACHES THE ROCK APPROACH TO THE CROSSING.

MAINTENANCE

- TEMPORARY STREAM CROSSINGS SHALL BE INSPECTED ON A DAILY BASIS.
- DAMAGED CROSSINGS SHALL BE REPAIRED WITHIN 24 HOURS OF THE INSPECTION AND BEFORE ANY SUBSEQUENT USE.
- SEDIMENT DEPOSITS ON THE CROSSING OR ITS APPROACHES SHALL BE REMOVED WITHIN 24 HOURS OF THE INSPECTION.

AS SOON AS THE TEMPORARY CROSSING IS NO LONGER NEEDED, IT SHALL BE REMOVED. ALL MATERIALS SHALL BE DISPOSED OF PROPERLY AND DISTURBED AREAS STABILIZED.

2 TEMPORARY STREAM CROSSING
C5.01 TYPICAL N.T.S.



- NOTES:**
- GRUBBING SHALL NOT TAKE PLACE WITHIN 50 FEET OF TOP-OF-BANK UNTIL ALL MATERIALS REQUIRED TO COMPLETE CROSSING ARE ON SITE AND PIPE IS READY FOR INSTALLATION.
- BYPASS PUMP INTAKE SHALL BE MAINTAINED A SUFFICIENT DISTANCE FROM THE BOTTOM TO PREVENT PUMPING OF CHANNEL BOTTOM MATERIALS.
- TRENCH PLUGS SHALL BE INSTALLED WITHIN THE TRENCH ON BOTH SIDES OF THE STREAM CHANNEL (STANDARD CONSTRUCTION DETAIL #13-4).
- WATER ACCUMULATING WITHIN THE WORK AREA SHALL BE PUMPED TO A PUMPED WATER FILTER BAG OR SEDIMENT TRAP PRIOR TO DISCHARGING INTO ANY SURFACE WATER.
- HAZARDOUS OR POLLUTANT MATERIAL STORAGE AREAS SHALL BE LOCATED AT LEAST 100 FEET BACK FROM THE TOP OF STREAMBANK.
- ALL EXCESS EXCAVATED MATERIAL SHALL BE IMMEDIATELY REMOVED FROM THE STREAM CROSSING AREA.
- ALL DISTURBED AREAS WITHIN 50 FEET OF TOP-OF-BANK SHALL BE BLANKETED OR MATTED WITHIN 24 HOURS OF INITIAL DISTURBANCE FOR MINOR STREAMS OR 48 HOURS OF INITIAL DISTURBANCE FOR MAJOR STREAMS UNLESS OTHERWISE AUTHORIZED.
- APPROPRIATE STREAMBANK PROTECTION SHALL BE PROVIDED WITHIN THE CHANNEL.

3 TYPICAL UTILITY LINE STREAM CROSSING
C5.01 WITH BYPASS PUMP NTS

REVISIONS:	
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11-16-21	COMMENT RESPONSE #2

OWNER:

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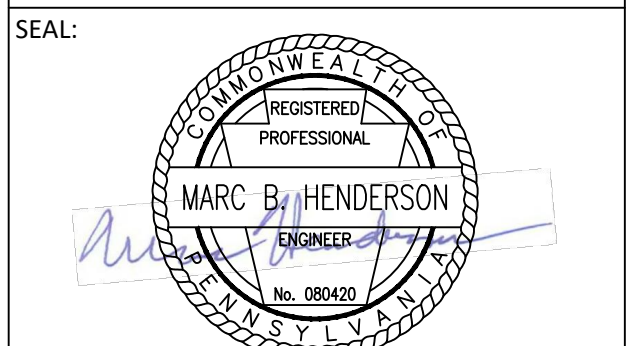
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PROJECT TITLE:

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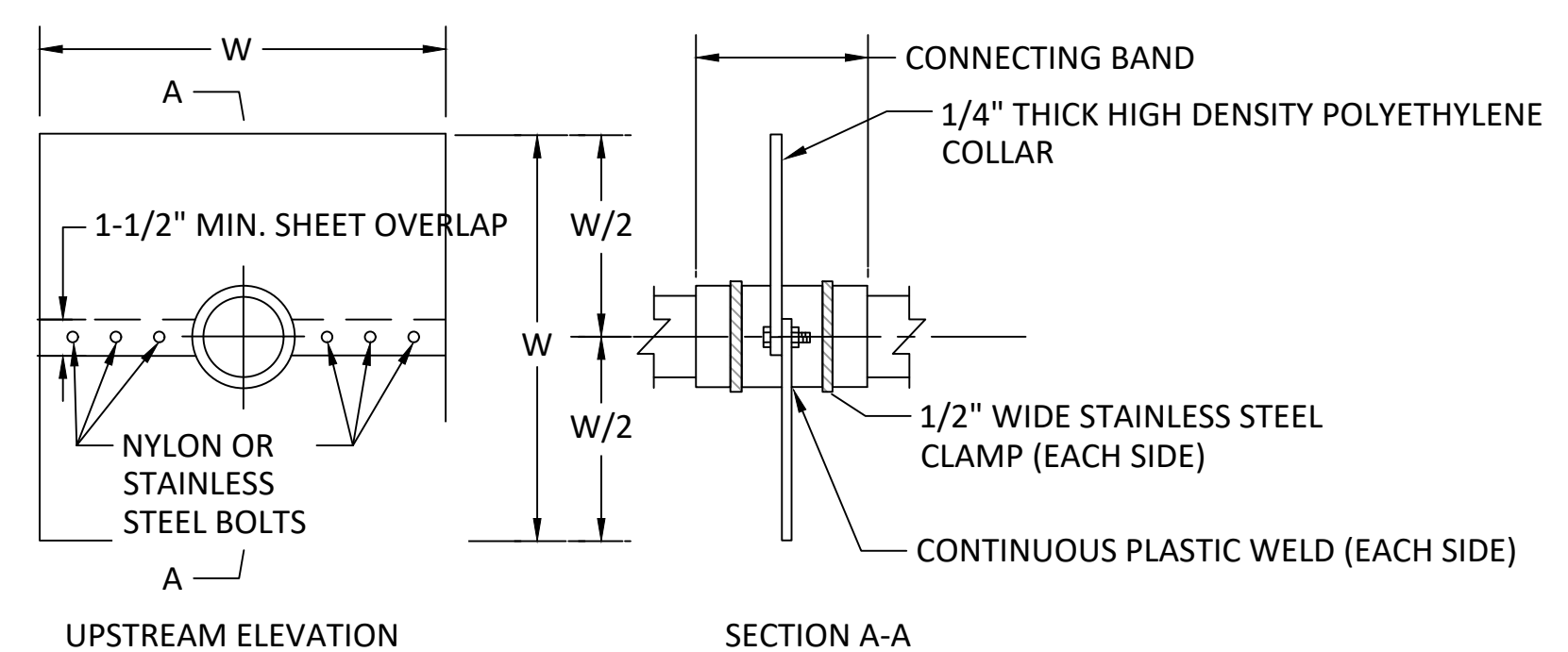
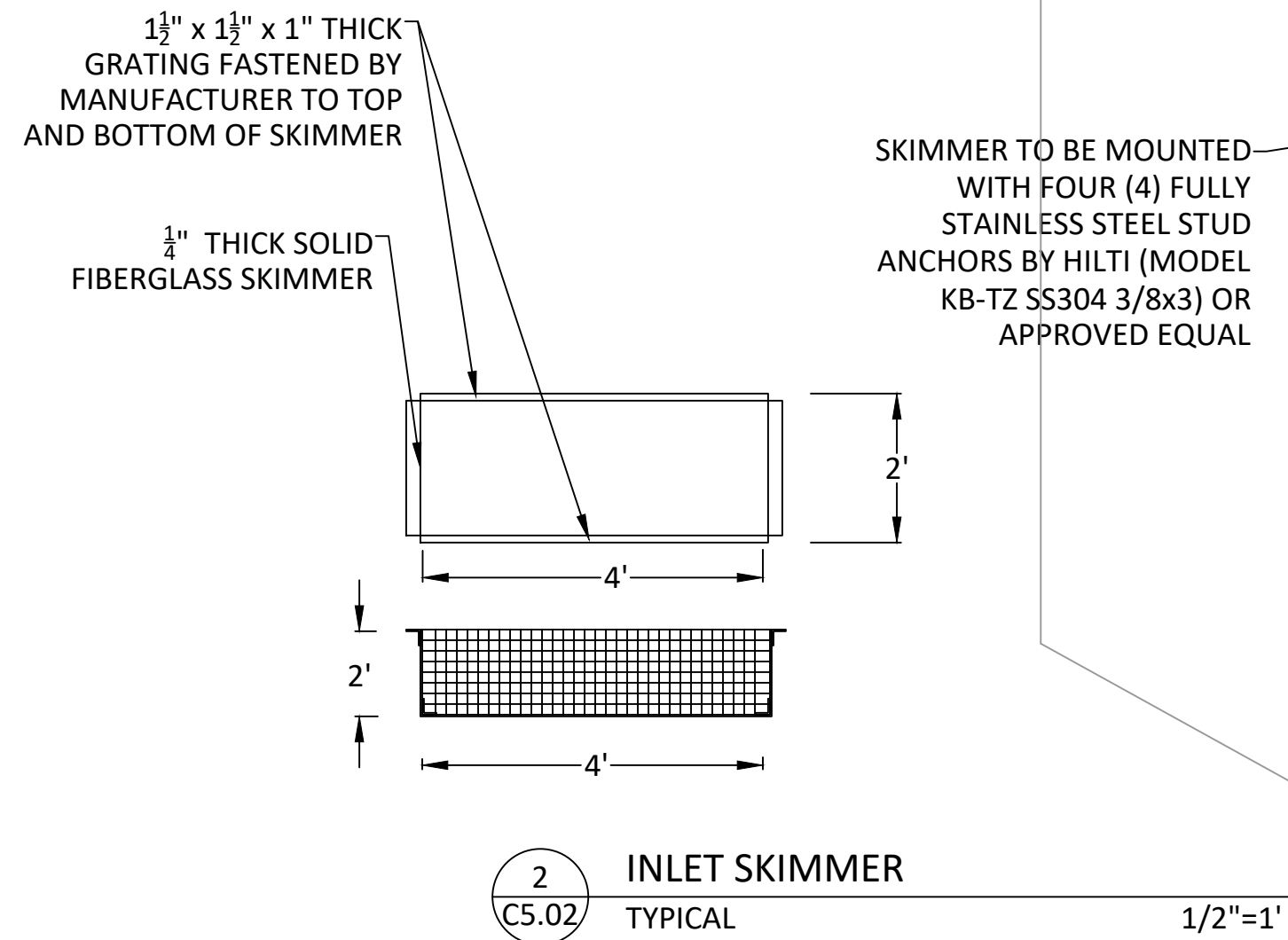
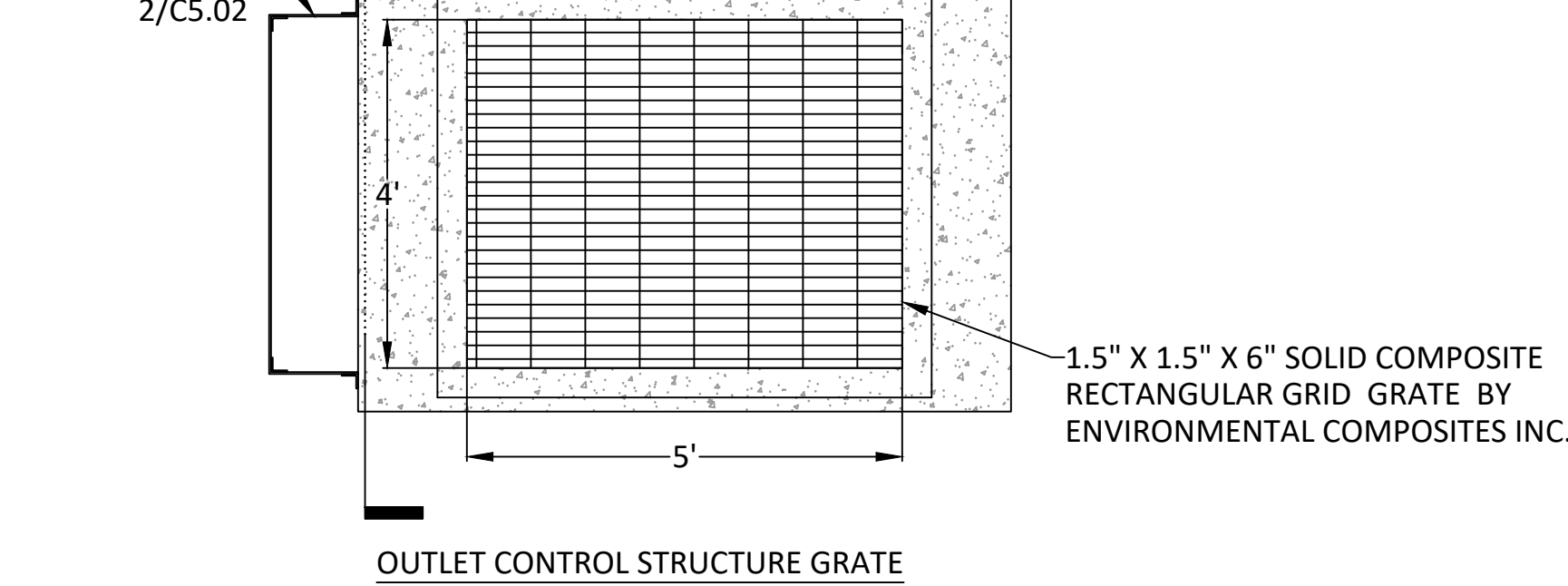
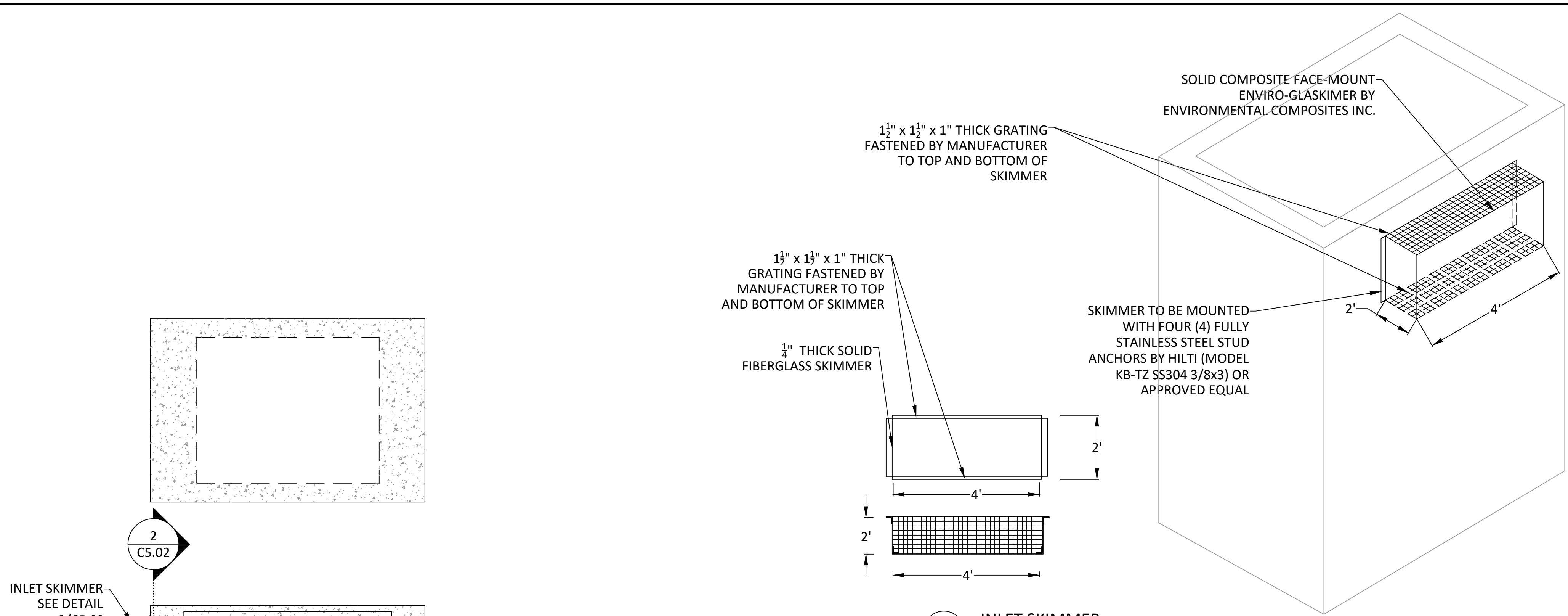
SUBMISSION:

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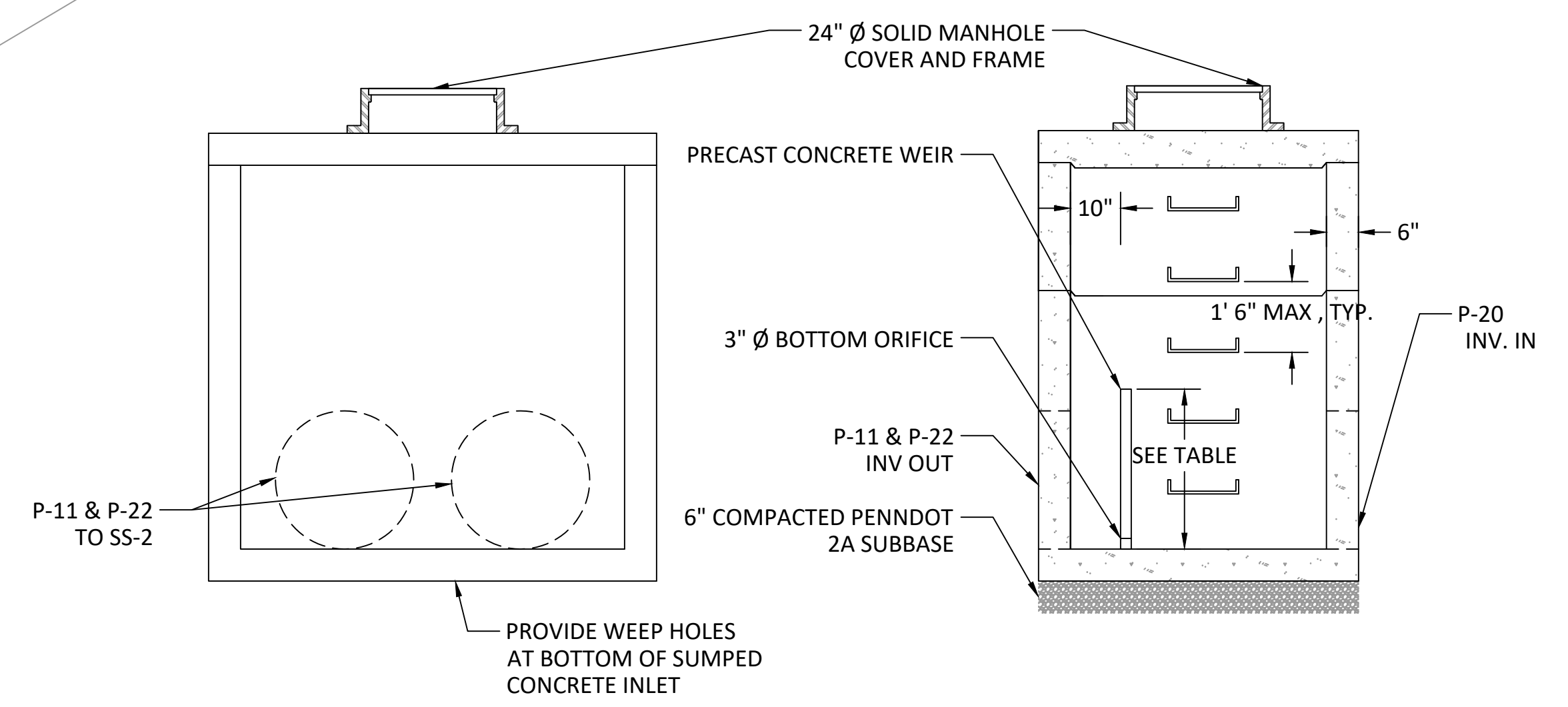
EROSION & SEDIMENT CONTROL DETAILS - SHEET 2

DATE: 06/14/23	DRAWING NO:
SCALE:	C5.01
DRAWN BY: MPB	
CHECKED BY: MBH/MCA	

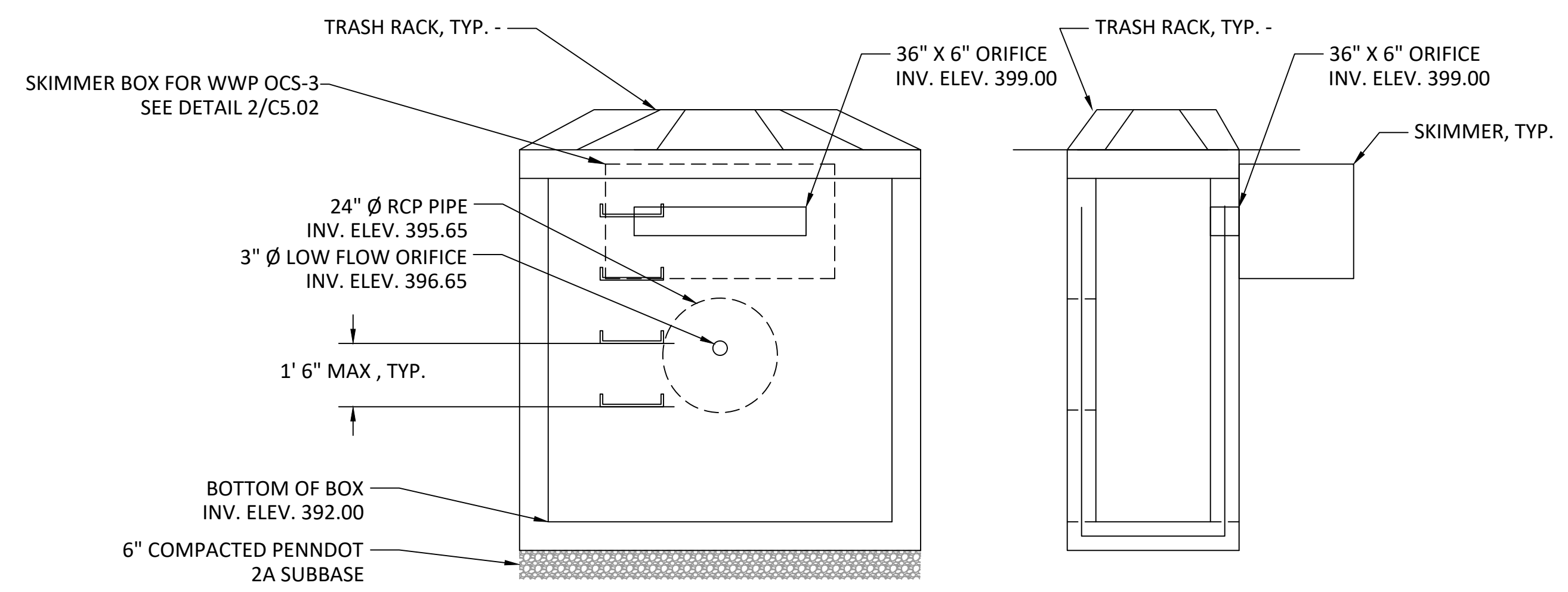


- NOTES:
- CONNECTING BAND SHALL BE SEALED AT BOTH ENDS WITH NON-SHRINK GROUT
 - COLLAR MATERIAL SHALL BE RIGID POLYETHYLENE SHEET
 - STAINLESS STEEL SHALL BE GRADE 304 OR BETTER
 - DIMENSION "W" SHALL BE 3 TIMES THE DIAMETER OF THE INTERSECTING PIPE
 - WHERE FINISHED GRADE PROHIBITS FULL DEPTH ON ANTI-SEEP COLLAR, TRIM TOP TO TOP OF BEDDING.

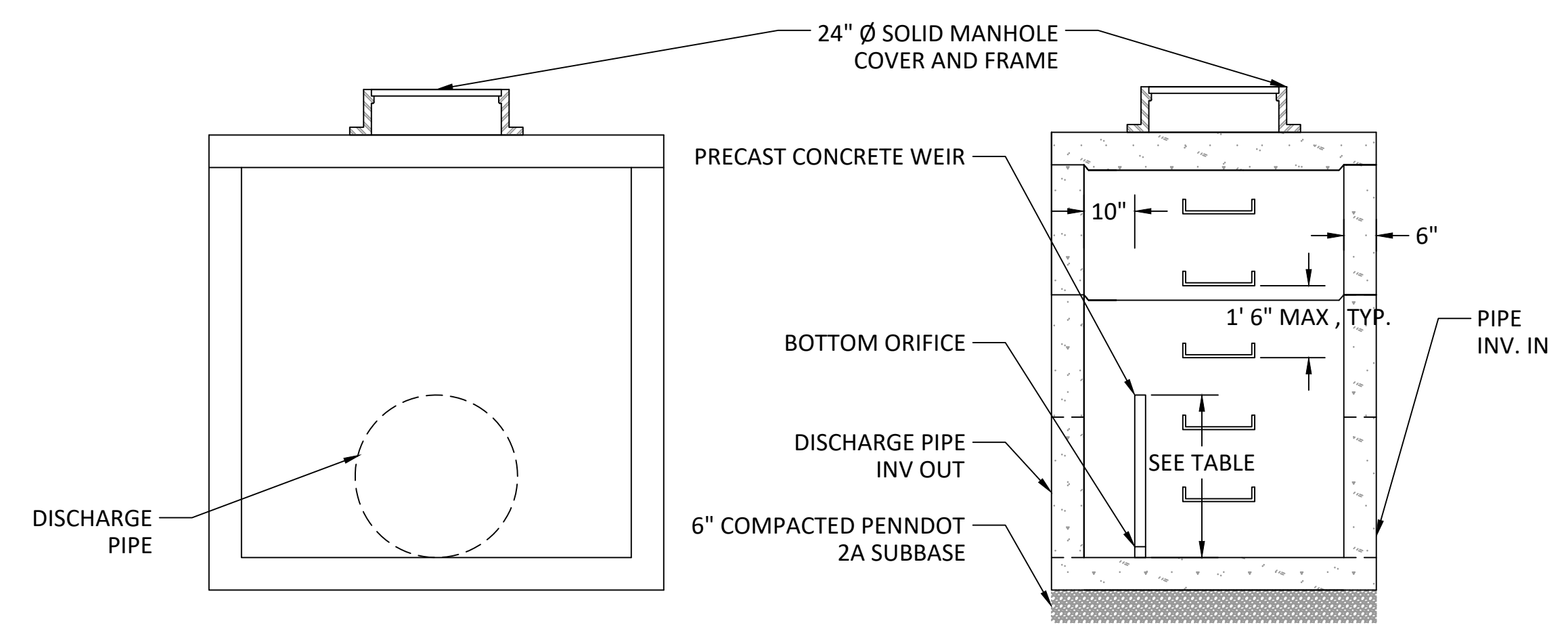
3 C5.02 TYPICAL N.T.S.



4 C5.02 TYPICAL N.T.S.



1 C5.02 WEST WAYNE PRESERVE OUTLET CONTROL STRUCTURE (OCS-3) N.T.S.



5 C5.02 TYPICAL N.T.S.

	TOP OF BOX ELEV. (FT)	INV. OF WEIR ELEV. (FT)	ORIFICE SIZE (IN)	ORIFICE INV. ELEV. (FT)	DISCHARGE PIPE SIZE (IN)	DISCHARGE PIPE INV. ELEV. (FT)	EX. GRADE ELEV. (FT)	BOTTOM OF BOX ELEV. (FT)
OCS 1	414.00	410.50	3.00	408.00	18	407.80	412.67	407.80
OCS 2	408.32	406.50	3.00	404.00	24	402.81	406.95	402.81

PRECAST STRUCTURAL DESIGN REQUIREMENTS

- THE CONTRACTOR AND FABRICATOR SHALL ADDRESS ALL ANTICIPATED LOADING CONDITIONS AS INDICATED ON THE DRAWINGS, AS SPECIFIED HEREIN, AND AS REQUIRED BY LOCAL AND STATE BUILDING CODES. ALL LOAD CASES SHALL BE CONSIDERED AND THE DESIGN SHALL BE BASED ON THE GOVERNING CASES WHICH PRODUCE THE GREATEST STRESSES ON THE STRUCTURE. LOAD CASES TO BE ADDRESSED INCLUDE:
 - TANKS EMPTY WITH SATURATED SOIL OUTSIDE.
 - TANKS FULL WITH SATURATED SOIL OUTSIDE.
 - TANKS FULL WITH DRY SOIL OUTSIDE.
 - TANKS FULL WITH NO SOIL PRESSURE OUTSIDE.
- MAXIMUM GROUND WATER ELEVATION SHALL BE ASSUMED TO BE AT FINISHED GRADE LEVEL. SATURATED SOIL SHALL BE ASSUMED TO EXERT A MINIMUM EQUIVALENT FLUID PRESSURE OF 90 P.C.F ONTO THE STRUCTURE.
- ALL STRUCTURES SHALL BE DESIGNED TO RESIST BUOYANCY WHEN EMPTY. THE MINIMUM SAFETY FACTOR AGAINST BUOYANCY SHALL BE 2.00. ONLY THE WEIGHT OF THE EMPTY CONCRETE STRUCTURE AND THE WEIGHT OF THE SATURATED SOIL DIRECTLY ABOVE THE ANTI-FLOTATION COLLAR SHALL BE CONSIDERED IN CALCULATING THE FORCES TO RESIST BUOYANCY. THE DENSITY OF THE SATURATED SOIL SHALL BE ASSUMED TO BE 37.6 LBS./CU.FT. THE DENSITY OF CONCRETE SHALL BE ASSUMED TO BE 150 LBS./CU.FT.
- EFFECTS OF ALL VERTICAL, HORIZONTAL AND LIFTING LOADS ANTICIPATED ON THE FINISHED STRUCTURE SHALL BE INCLUDED IN THE ANALYSIS AND DESIGN. LOADING FROM PIPING AND EQUIPMENT, SNOW, AND ADJACENT H-20 LIVE LOAD SHALL BE INCLUDED.
- ALL STRUCTURES SHALL BE WATERTIGHT.
- WHERE CONDITIONS ARISE WHICH ARE NOT SPECIFICALLY COVERED BY THESE NOTES AND SPECIFICATIONS, THE CURRENT STANDARDS OF ACI 301, 304, 306, 311, 315, 318, ASTM C-94, C890 AND C913 SHALL GOVERN.
- DESIGN CALCULATIONS FOR THE ABOVE CONDITIONS SHALL BE PREPARED, SIGNED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER, REGISTERED IN THE STATE OF PENNSYLVANIA AND SUBMITTED TO THE ENGINEER FOR REVIEW.

REVISIONS:

DATE:	ISSUE:

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PROJECT TITLE:
SOUTH DEVON AREA FLOOD REDUCTION PROJECT
 AT THE WEST WAYNE PRESERVE AND FRIENDS OF RADNOR TRAIL PARK

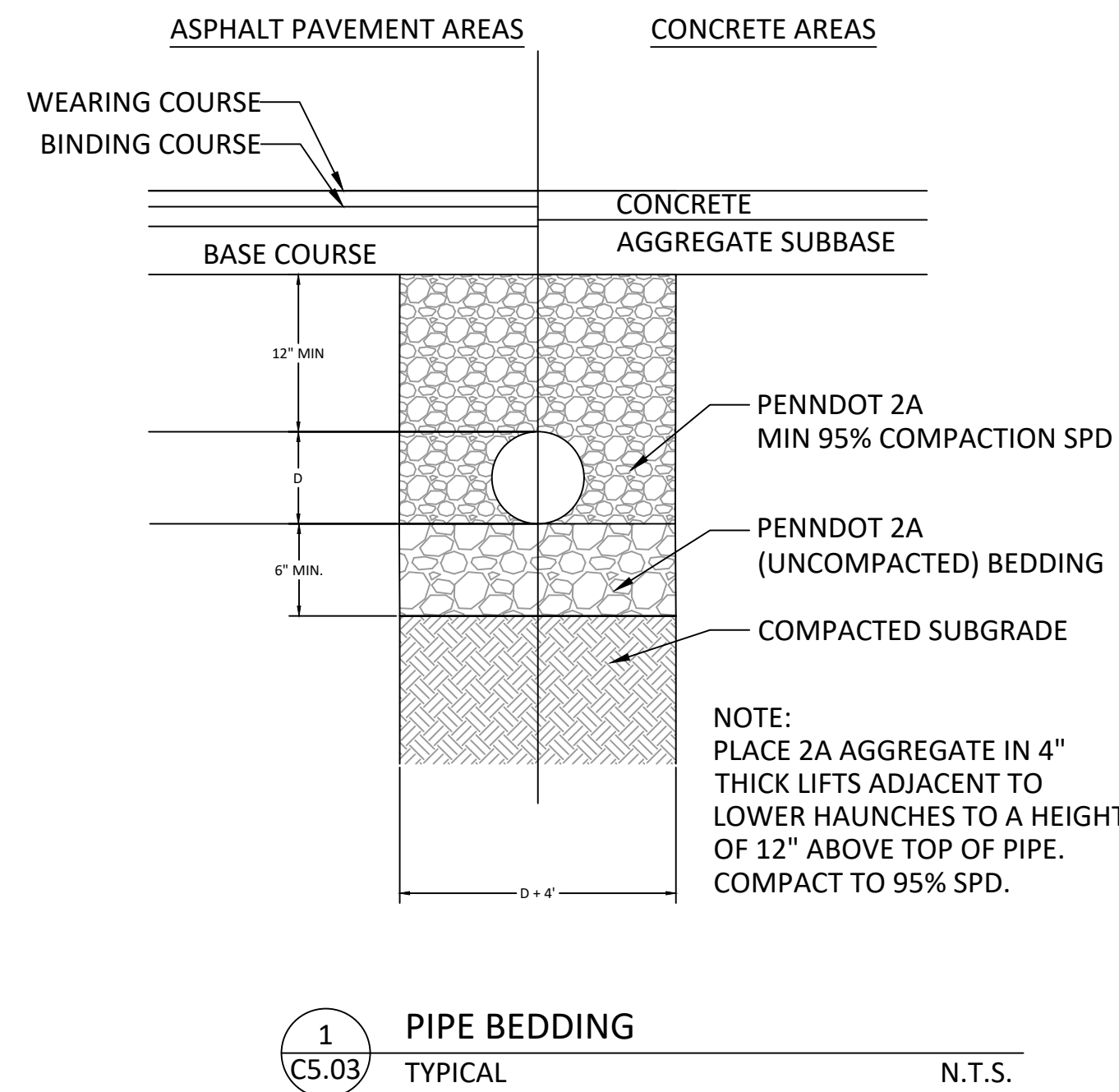
SEAL:

 MARC B. HENDERSON
 REGISTERED PROFESSIONAL ENGINEER
 No. 089420
 STATE OF PENNSYLVANIA

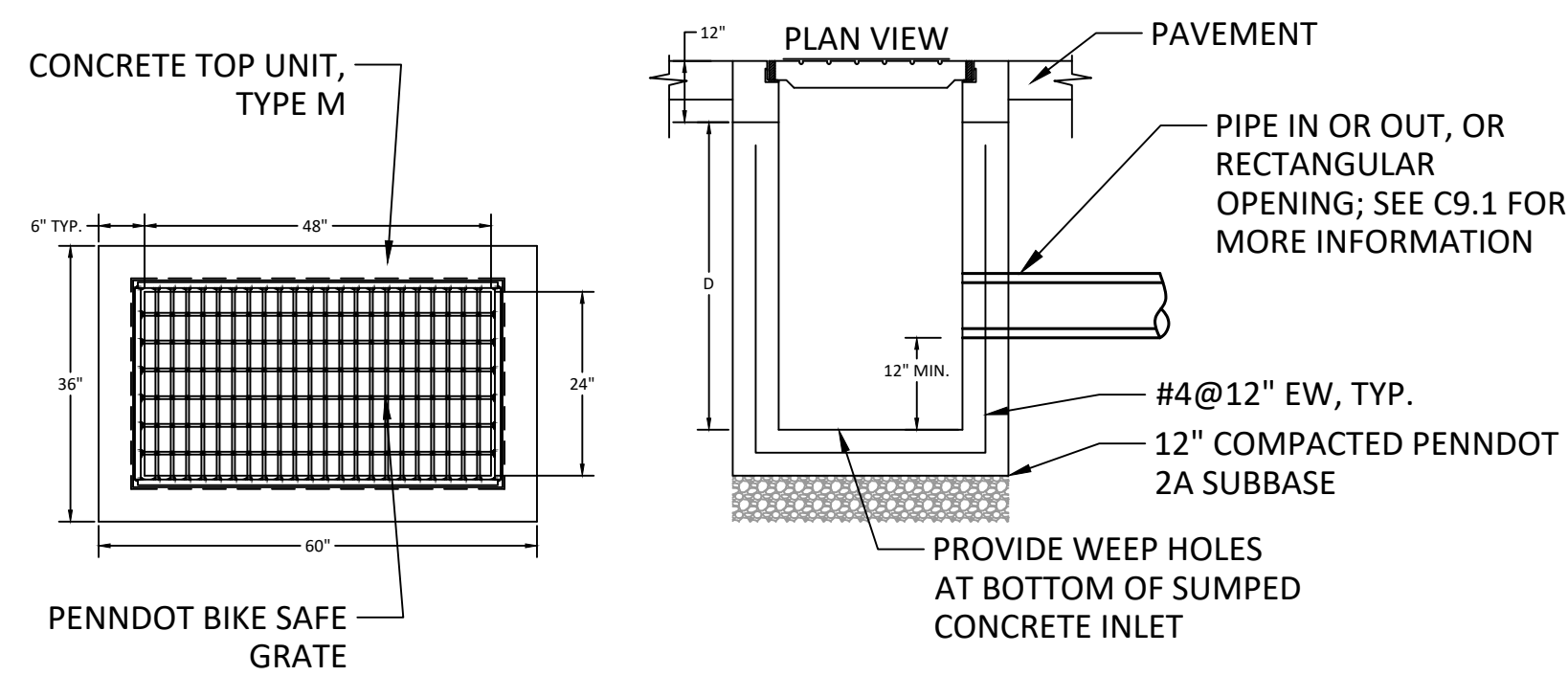
SUBMISSION:
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DRAWING TITLE:
STORMWATER DETAILS - SHEET 1

DATE: 06/14/23
 SCALE: AS NOTED
 DRAWN BY: MPB
 CHECKED BY: MBH/MCA
 DRAWING NO: **C5.02**

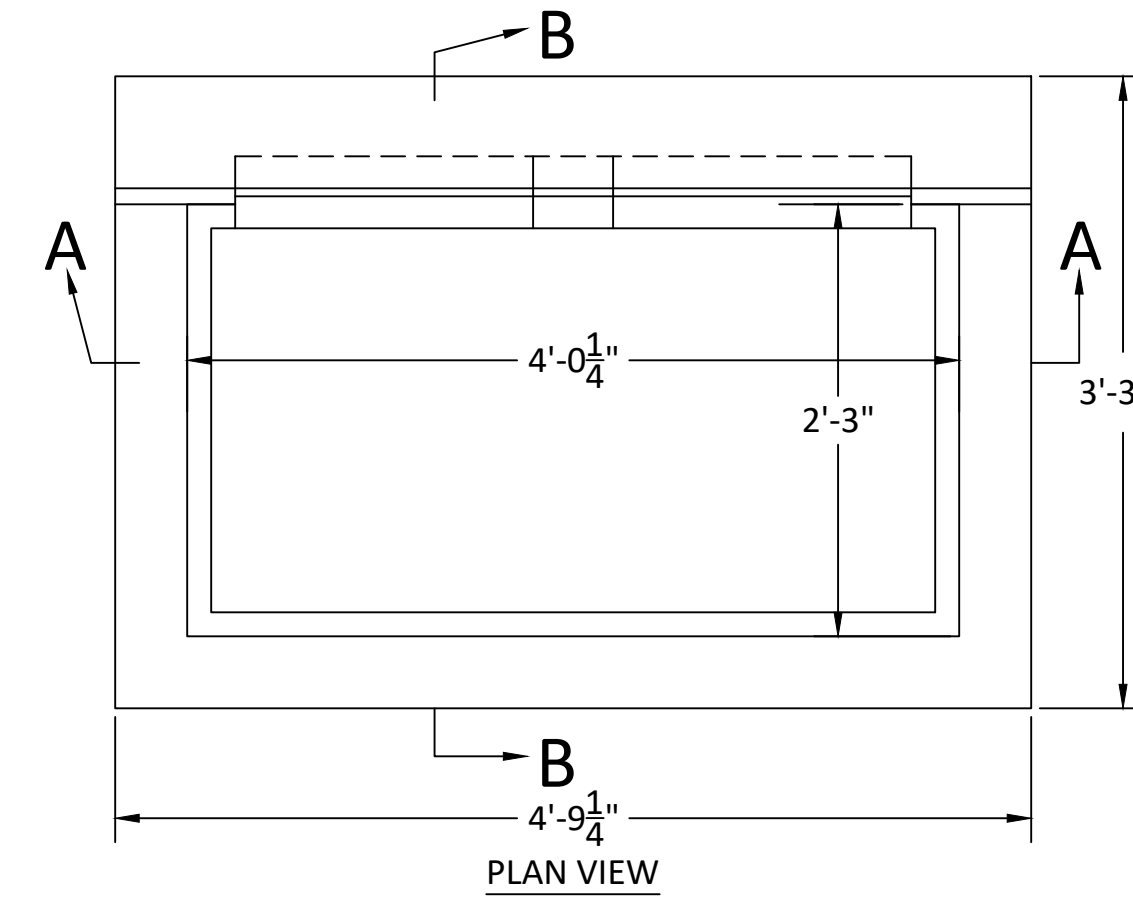


1 PIPE BEDDING TYPICAL N.T.S.

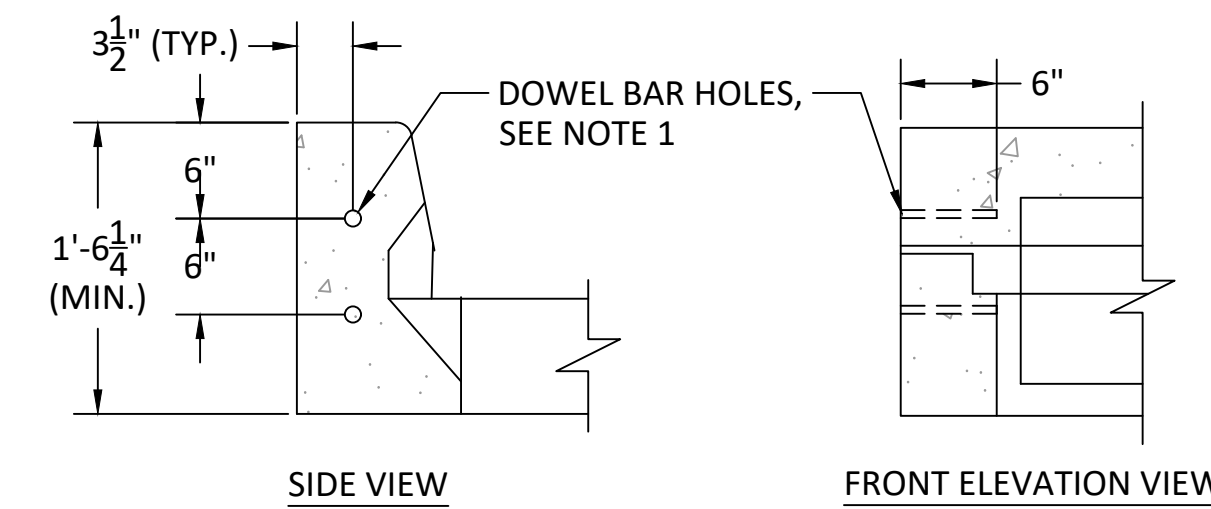
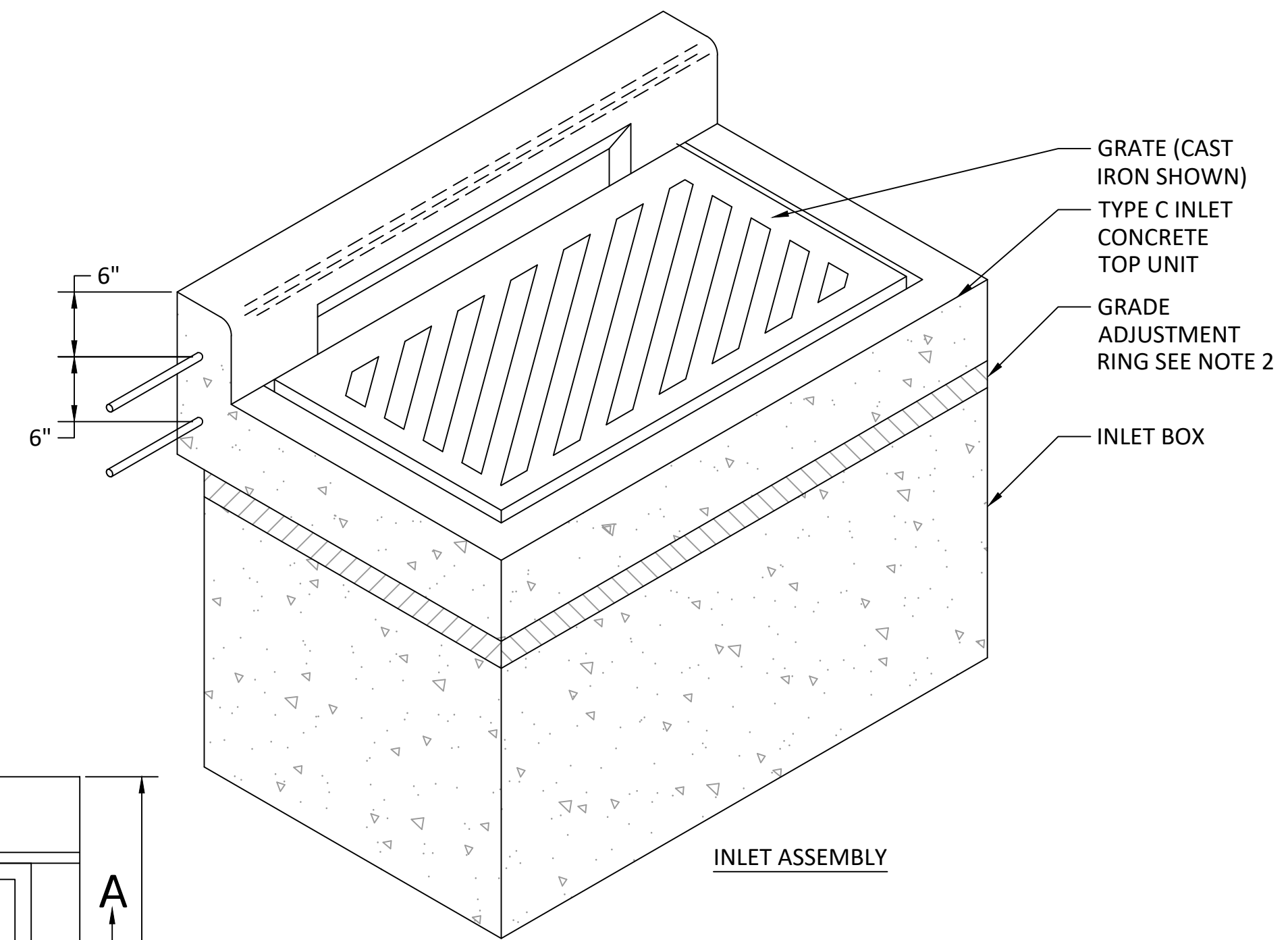


2 PRECAST CONCRETE INLET PENNDOT STANDARD BOX WITH TYPE M TOP UNIT N.T.S.

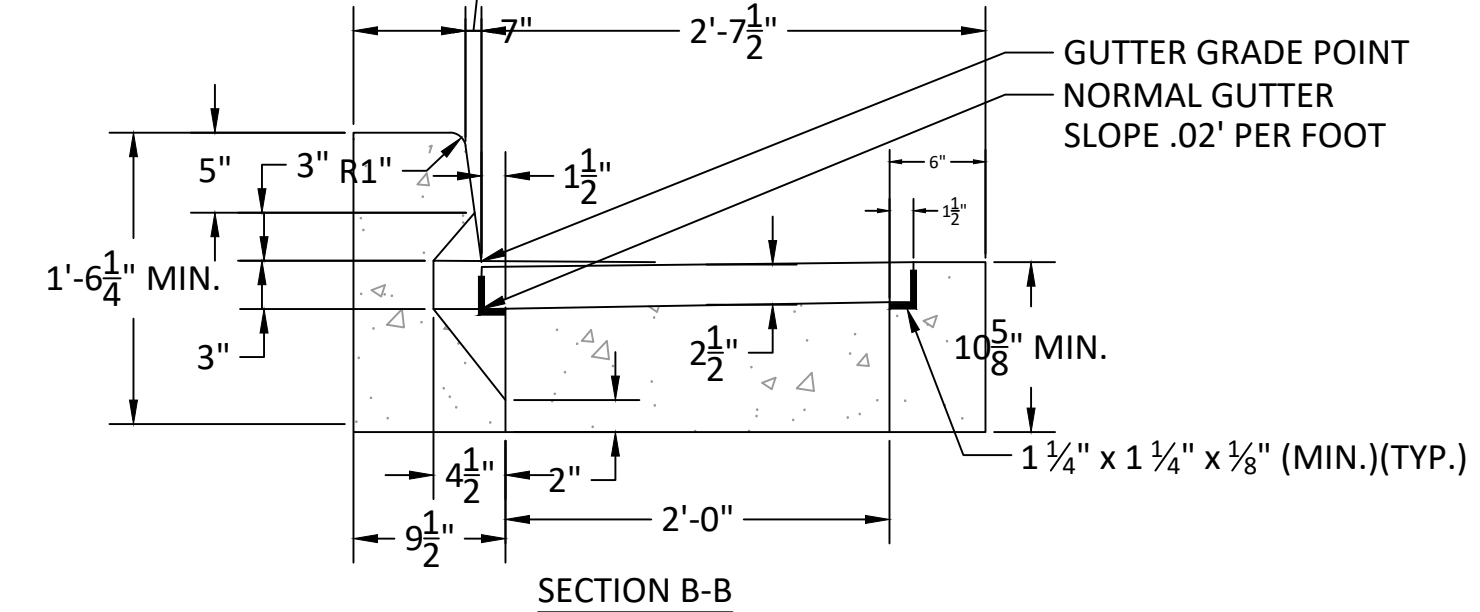
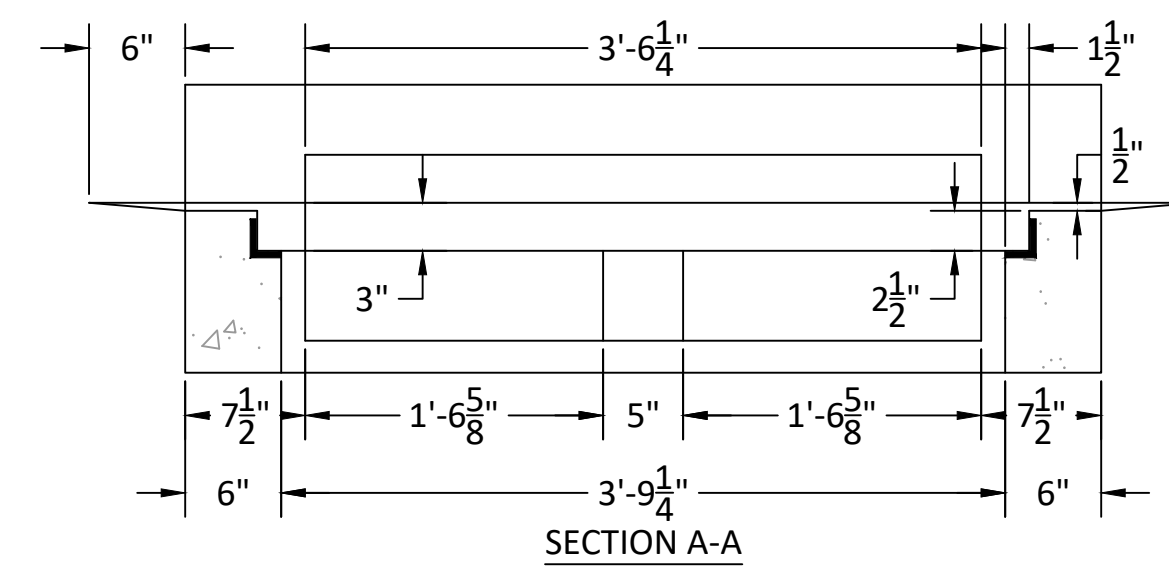
- NOTES:
1. DOWEL INLET TOP UNIT WITH (2) #8 x 1'-0" DOWEL BARS AND PLACE 1/4" PREMOLDED EXPANSION JOINT FILLER WHEN CONNECTING TO ADJACENT CURB SECTIONS. USE PRECAST CONCRETE OR MASONRY ADJUSTMENT RINGS.
 2. USE PRECAST CONCRETE OR MASONRY ADJUSTMENT RINGS.



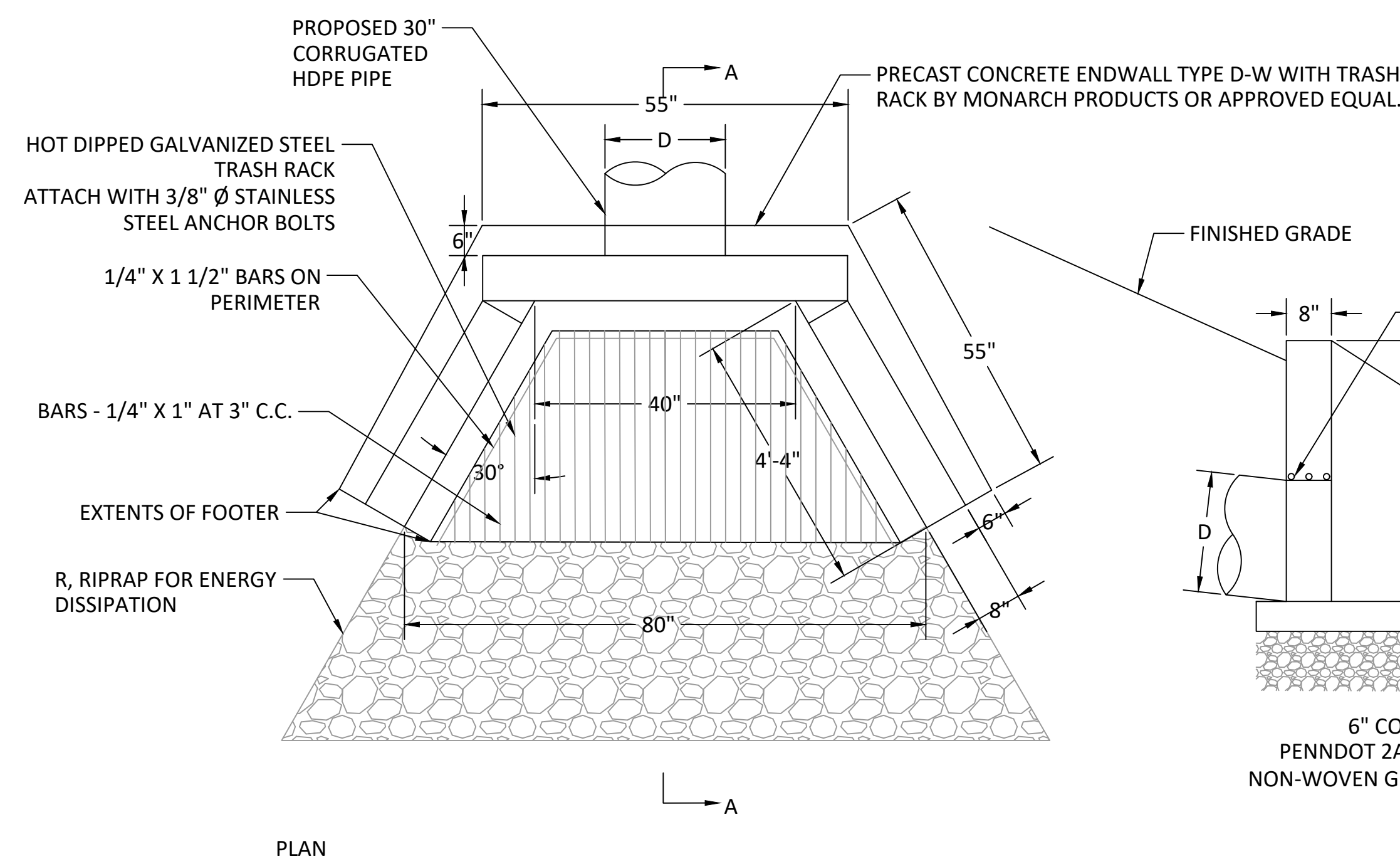
3 TYPE C INLET TYPICAL N.T.S.



DOWEL HOLE LOCATIONS



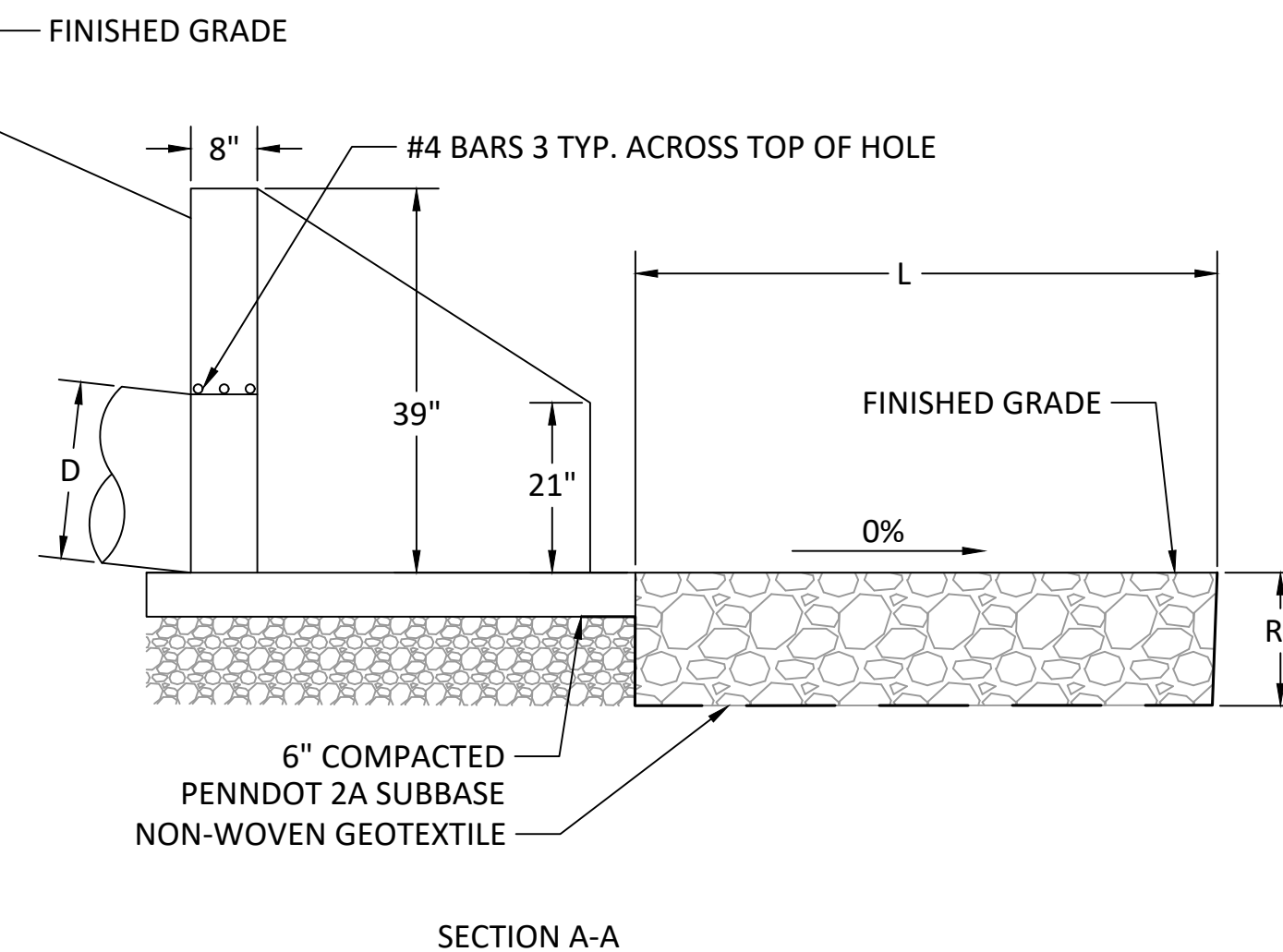
SECTION B-B



4 ENDWALL WITH OUTFALL PROTECTION TYPICAL N.T.S.

ENDWALL TABLE					
ENDWALL	PIPE DIAMETER (IN), D	RIPRAP SIZE, R	RIPRAP THICKNESS (IN), Rt	OUTFALL WIDTH (FT), W	OUTFALL LENGTH (FT), L
EW-1	30	R-6	36	32.5	25
EW-2	24	R-6	36	28	22
EW-3	24	R-5	27	18*	12*

*Minimum dimensions required. See plan layout for actual layout due to site conditions



SECTION A-A

REVISIONS:

DATE:	ISSUE:
9-10-21	COMMENT RESPONSE #1
11-16-21	COMMENT RESPONSE #2

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SEAL:

MARC B. HENDERSON
REGISTERED PROFESSIONAL ENGINEER
No. 089420
STATE OF PENNSYLVANIA

SUBMISSION:
BID DOCUMENTS

DRAWING TITLE:
STORMWATER DETAILS - SHEET 2

DATE: 06/14/23

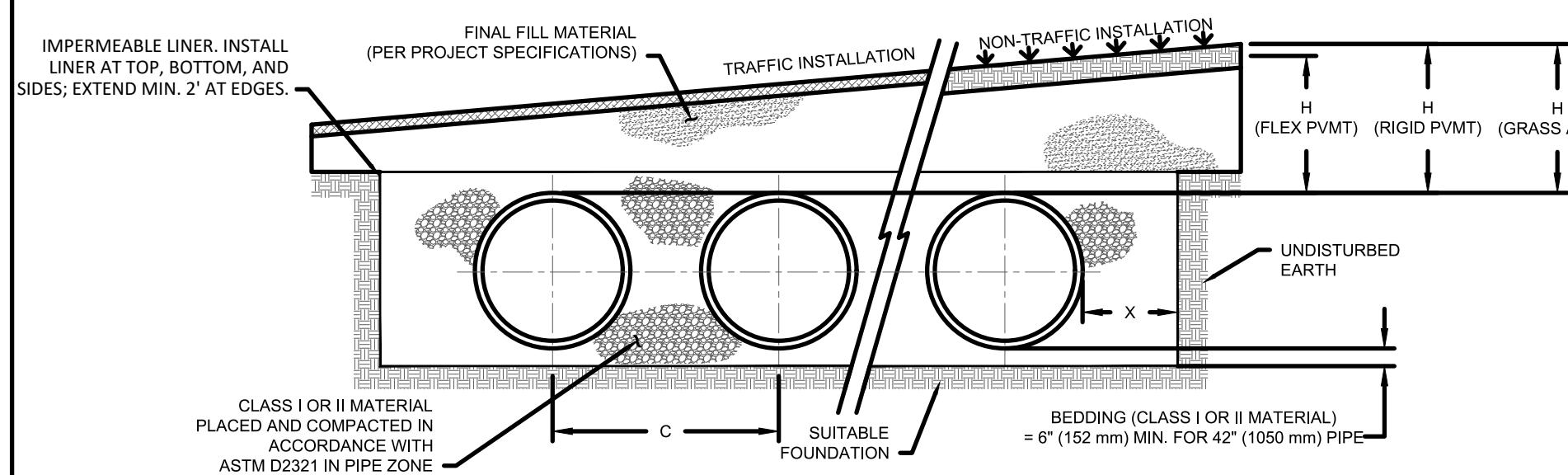
SCALE: AS NOTED

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CHECKED BY: MBH/MCA

DRAWING NO:

C5.03

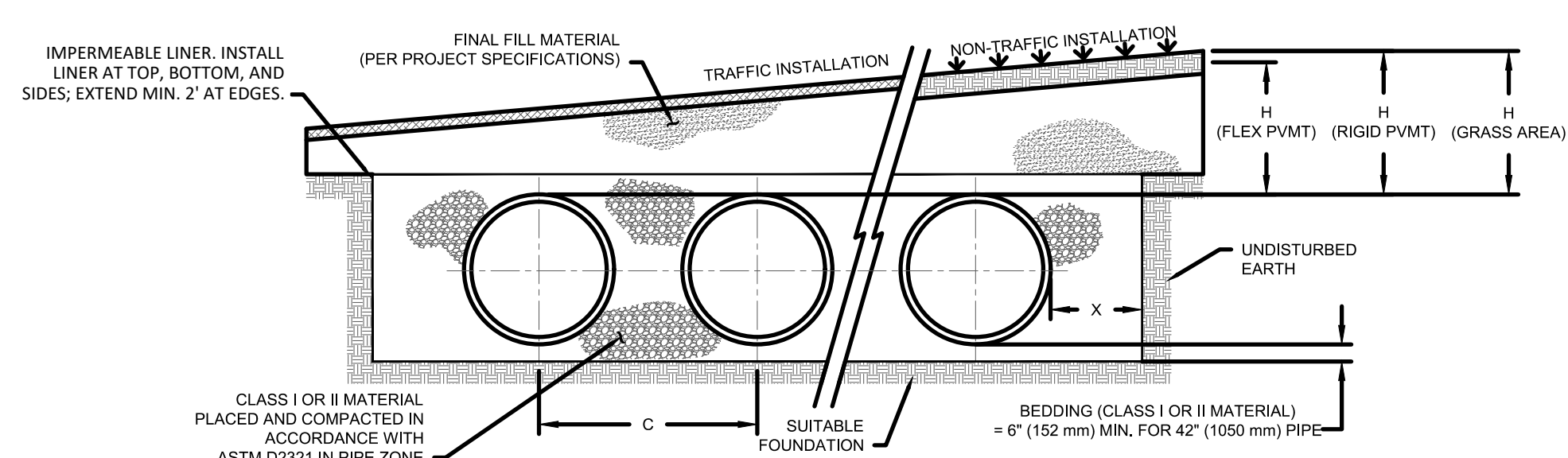


NOMINAL DIAMETER	NOMINAL O.D.	TYPICAL SPACING "C"	TYPICAL SIDE WALL "X"	MIN. H (NON-TRAFFIC)	MIN. H (TRAFFIC)	MAX. H*
42"	48"	72"	18"	12"	24"	8'
(1050 mm)	(1219 mm)	(1829 mm)	(457 mm)	(305 mm)	(610 mm)	(2.4 m)

* MAXIMUM FILL HEIGHTS OVER MANIFOLD FITTINGS, CONTACT MANUFACTURER'S REPRESENTATIVE FOR INSTALLATION CONSIDERATIONS WHEN COVER EXCEEDS 8 FT (2.4 m).

NOTES:

- ALL REFERENCES TO CLASS I OR II MATERIAL ARE PER ASTM D2321 "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST EDITION.
- ALL RETENTION AND DETENTION SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S PUBLISHED INSTALLATION GUIDELINES.
- MEASURES SHOULD BE TAKEN TO PREVENT THE MIGRATION OF NATIVE FINES INTO THE BACKFILL MATERIAL, WHEN REQUIRED. SEE ASTM D2321.
- FILTER FABRIC:** A GEOTEXTILE FABRIC MAY BE USED AS SPECIFIED BY THE ENGINEER TO PREVENT THE MIGRATION OF FINES FROM THE NATIVE SOIL INTO THE SELECT BACKFILL MATERIAL.
- FOUNDATION:** WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER, AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.
- BEDDING:** SUITABLE MATERIAL SHALL BE CLASS I OR II, THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER, UNLESS OTHERWISE NOTED BY THE ENGINEER. MINIMUM BEDDING THICKNESS SHALL BE 4" (102 mm) FOR 4"-24" (100-600 mm); 6" (152 mm) FOR 30"-60" (750-900 mm).
- INITIAL BACKFILL:** SUITABLE MATERIAL SHALL BE CLASS I OR II IN THE PIPE ZONE EXTENDING NOT LESS THAN 6" (152 mm) ABOVE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.
- COVER:** MINIMUM COVER OVER ALL RETENTION/DETENTION SYSTEMS IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" (305 mm) FROM TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOATATION. FOR TRAFFIC APPLICATIONS, MINIMUM COVER IS 12" (305 mm) UP TO 36" (900 mm) DIAMETER PIPE AND 24" (610 mm) OF COVER FOR 42"-60" (1050-1500 mm) DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT. MAXIMUM FILL HEIGHT LIMITED TO 8 FT (2.4 m) OVER FITTINGS FOR STANDARD INSTALLATIONS. CONTACT A SALES REPRESENTATIVE WHEN MAXIMUM FILL HEIGHTS EXCEED 8 FT (2.4 m) FOR INSTALLATION CONSIDERATIONS.

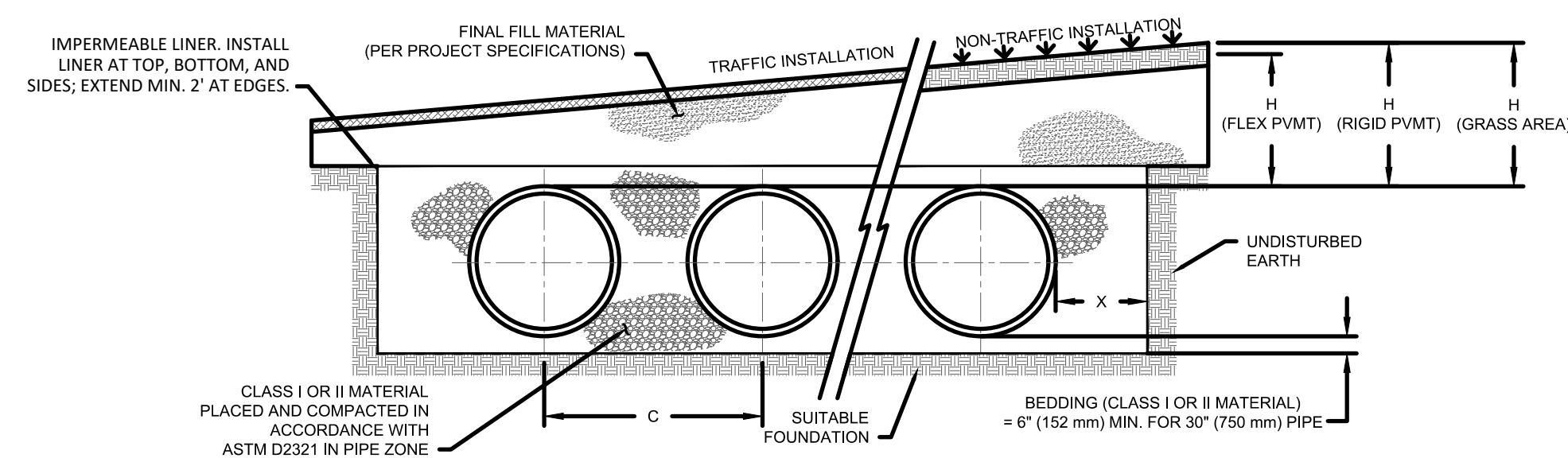


NOMINAL DIAMETER	NOMINAL O.D.	TYPICAL SPACING "C"	TYPICAL SIDE WALL "X"	MIN. H (NON-TRAFFIC)	MIN. H (TRAFFIC)	MAX. H*
42"	48"	72"	18"	12"	24"	8'
(1050 mm)	(1219 mm)	(1829 mm)	(457 mm)	(305 mm)	(610 mm)	(2.4 m)

* MAXIMUM FILL HEIGHTS OVER MANIFOLD FITTINGS, CONTACT MANUFACTURER'S REPRESENTATIVE FOR INSTALLATION CONSIDERATIONS WHEN COVER EXCEEDS 8 FT (2.4 m).

NOTES:

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- ALL RETENTION AND DETENTION SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S PUBLISHED INSTALLATION GUIDELINES.
- MEASURES SHOULD BE TAKEN TO PREVENT THE MIGRATION OF NATIVE FINES INTO THE BACKFILL MATERIAL, WHEN REQUIRED. SEE ASTM D2321.
- FILTER FABRIC:** A GEOTEXTILE FABRIC MAY BE USED AS SPECIFIED BY THE ENGINEER TO PREVENT THE MIGRATION OF FINES FROM THE NATIVE SOIL INTO THE SELECT BACKFILL MATERIAL.
- FOUNDATION:** WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER, AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.
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NOMINAL DIAMETER	NOMINAL O.D.	TYPICAL SPACING "C"	TYPICAL SIDE WALL "X"	MIN. H (NON-TRAFFIC)	MIN. H (TRAFFIC)	MAX. H*
30"	36"	53.1"	18"	12"	12"	8'
(750 mm)	(914 mm)	(1349 mm)	(457 mm)	(305 mm)	(305 mm)	(2.4 m)

* MAXIMUM FILL HEIGHTS OVER MANIFOLD FITTINGS, CONTACT MANUFACTURER'S REPRESENTATIVE FOR INSTALLATION CONSIDERATIONS WHEN COVER EXCEEDS 8 FT (2.4 m).

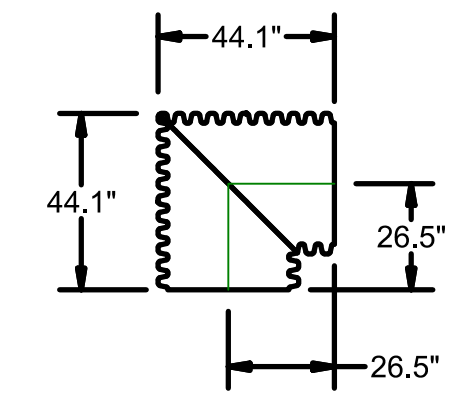
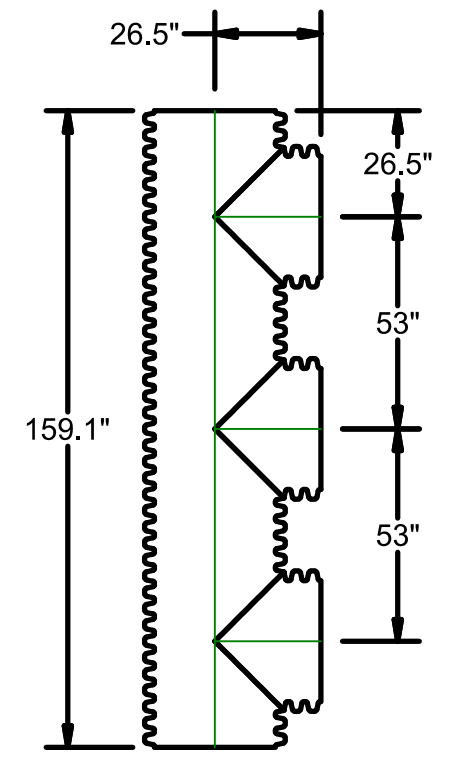
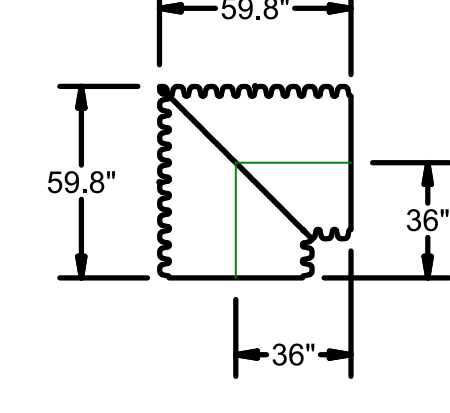
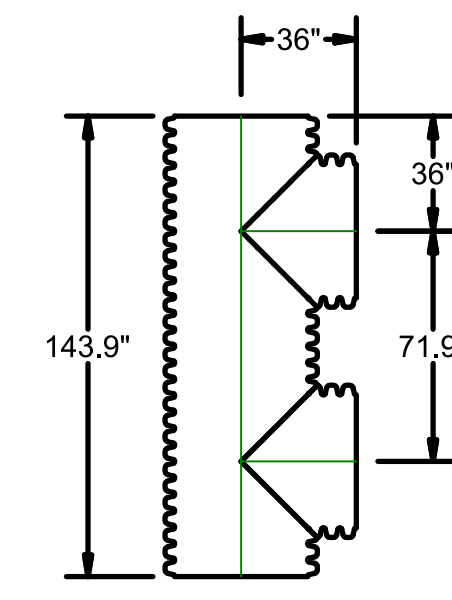
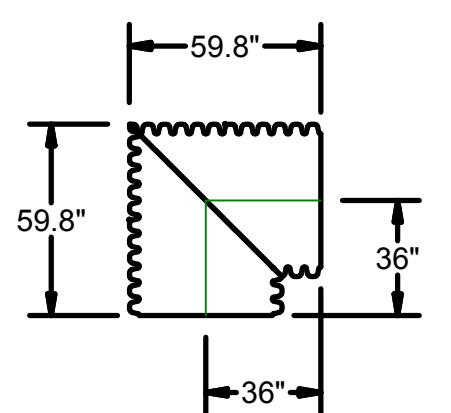
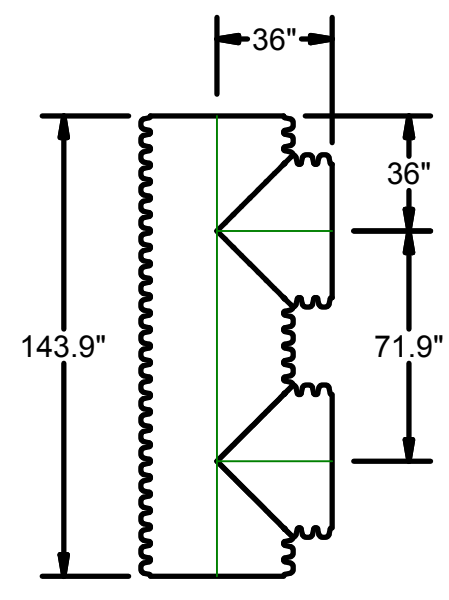
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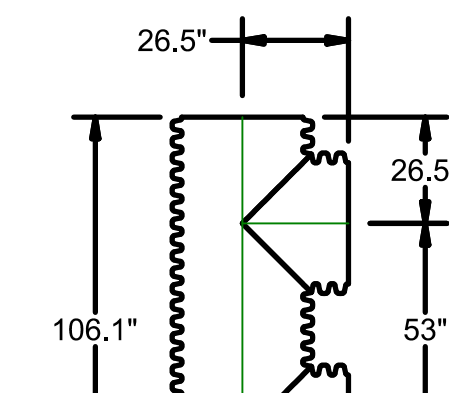
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C5.04 DETENTION SYSTEM CROSS SECTION
SS-1 UPPER PARKING LOT N.T.S.

2
C5.04 DETENTION SYSTEM CROSS SECTION
SS-1 LOWER PARKING LOT N.T.S.

3
C5.04 DETENTION SYSTEM CROSS SECTION
SS-2 N.T.S.



9
C5.04 30" X 90° MANIFOLD BEND
SS-2 N.T.S.



10
C5.04 30" DOUBLE MANIFOLD TEE
SS-2 N.T.S.

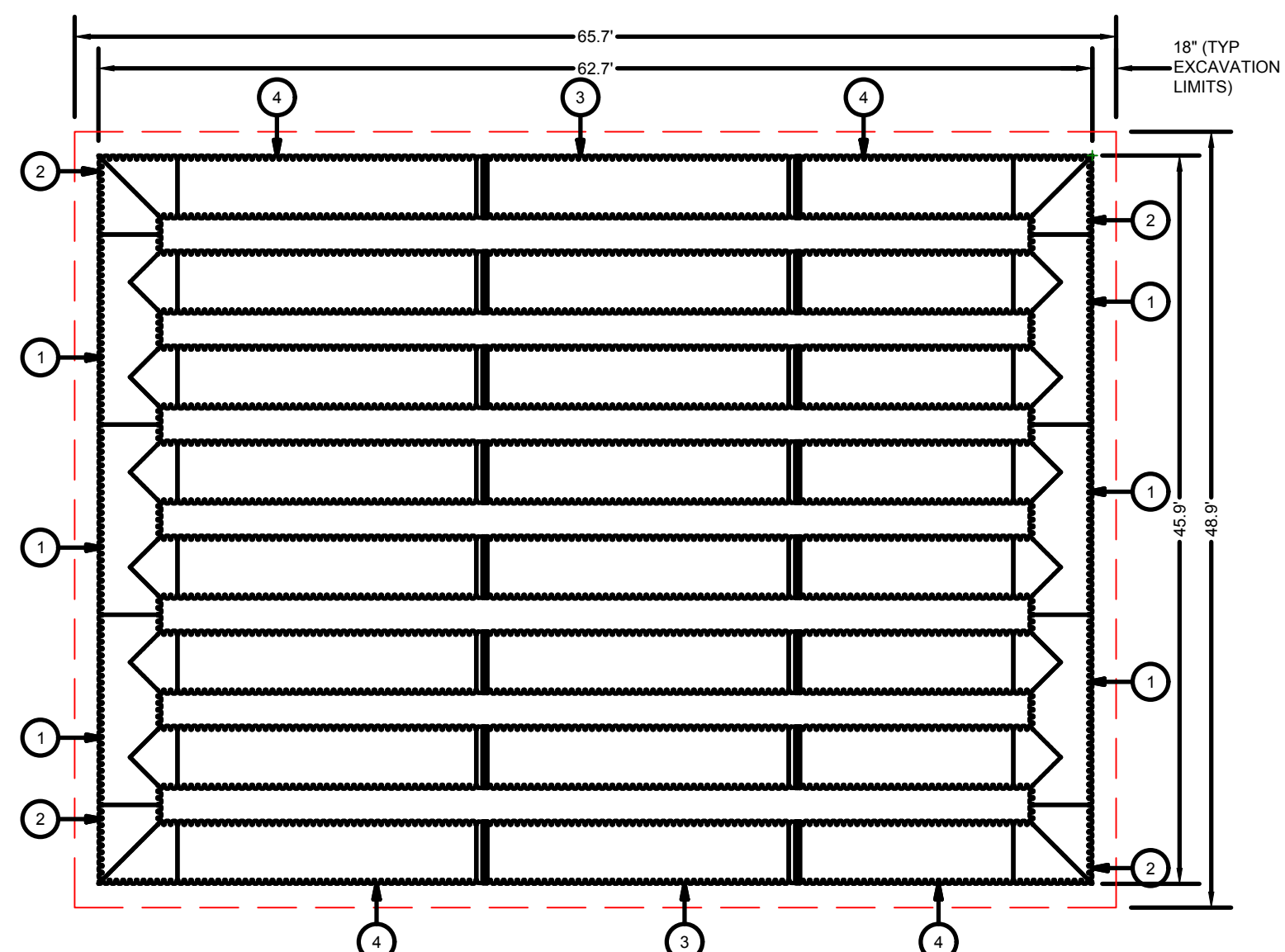
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SS-1 UPPER PARKING LOT N.T.S.

5
C5.04 42" X 90° MANIFOLD BEND
SS-1 UPPER PARKING LOT N.T.S.

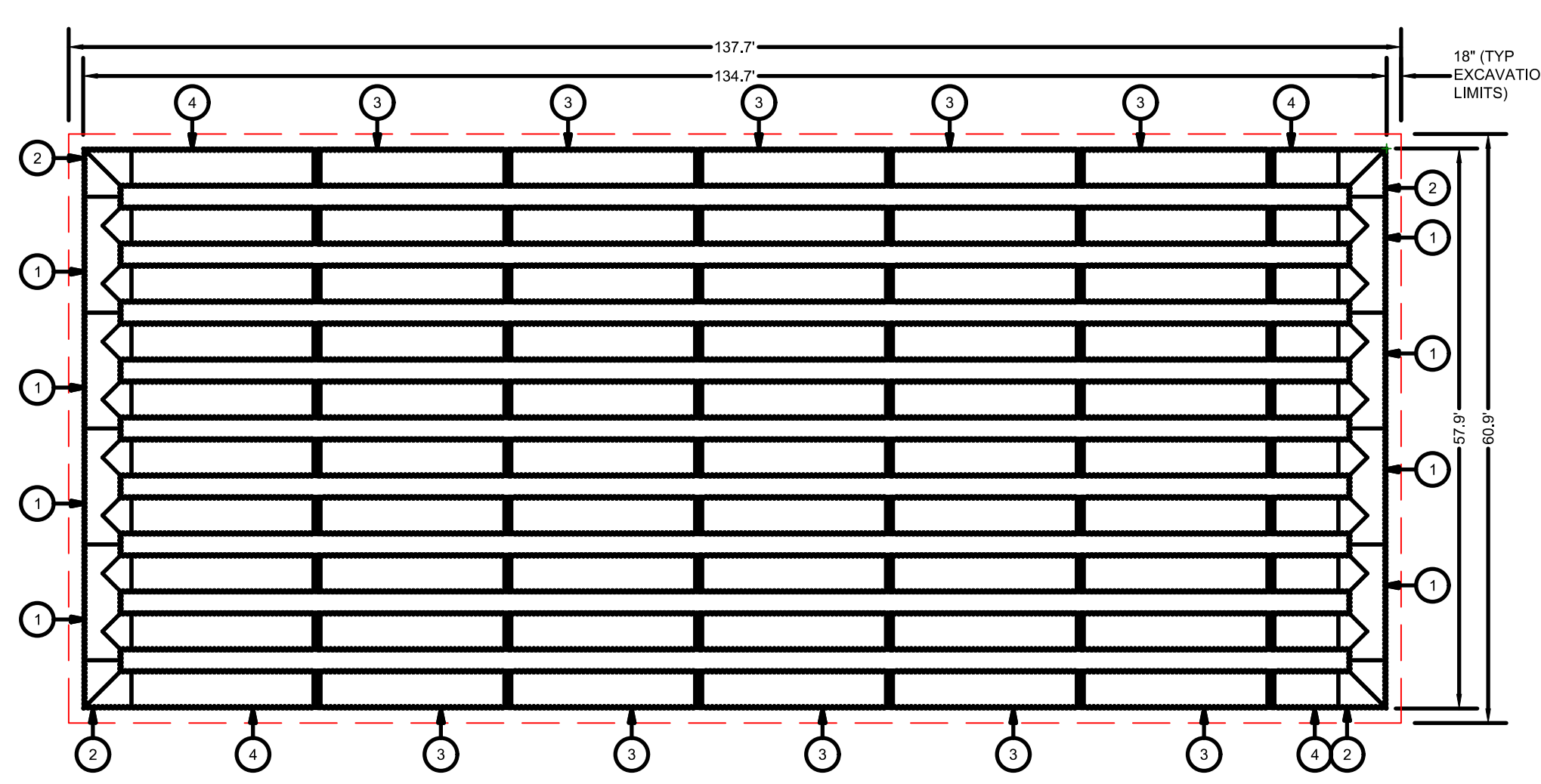
6
C5.04 42" DOUBLE MANIFOLD TEE
SS-1 LOWER PARKING LOT N.T.S.

7
C5.04 42" X 90° MANIFOLD BEND
SS-1 LOWER PARKING LOT N.T.S.

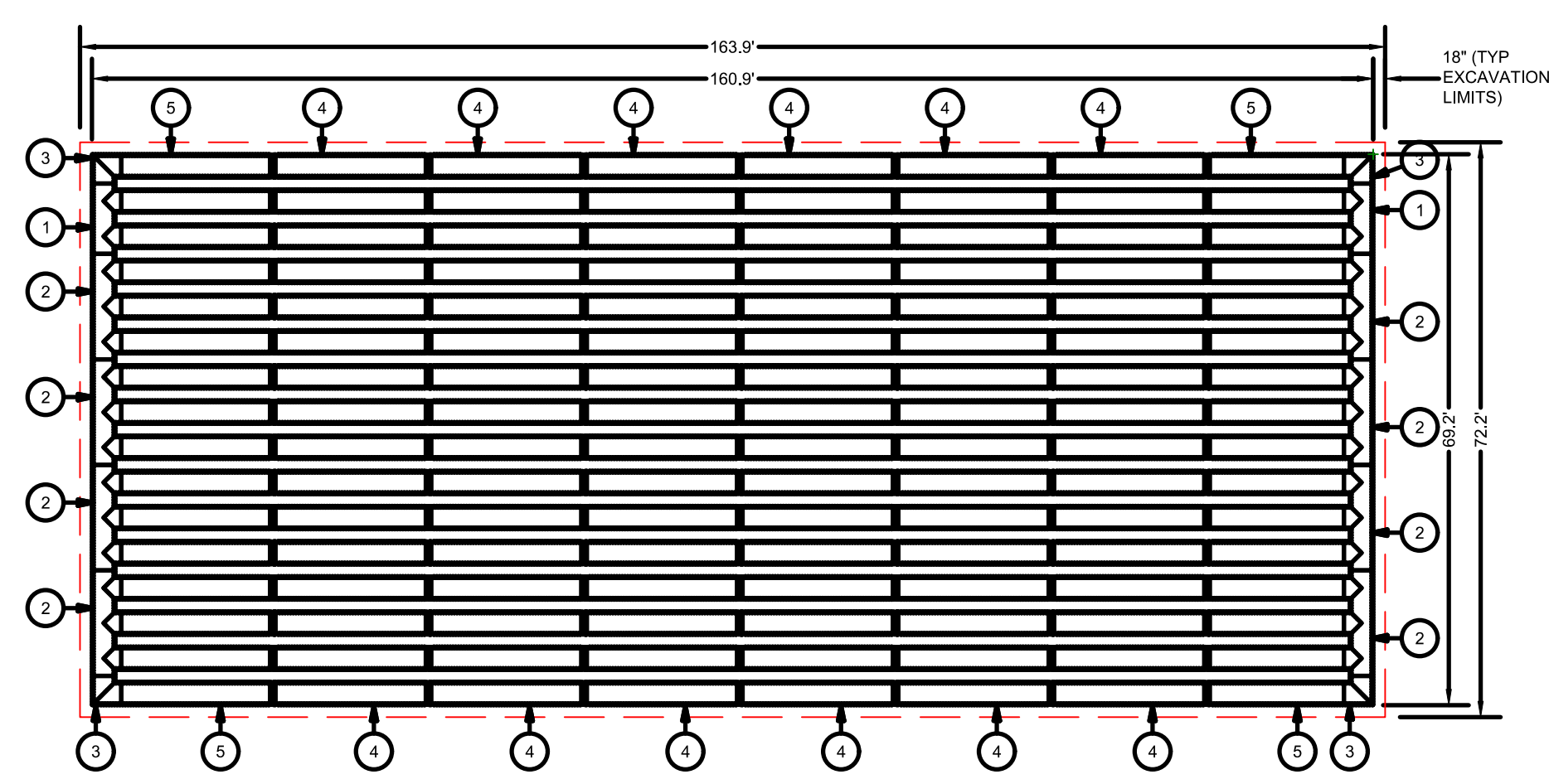
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C5.04 30" TRIPLE MANIFOLD TEE
SS-2 N.T.S.



11
C5.04 DETENTION SYSTEM PIPE LAYOUT
SS-1 UPPER PARKING LOT N.T.S.



12
C5.04 DETENTION SYSTEM PIPE LAYOUT
SS-1 LOWER PARKING LOT N.T.S.



13
C5.04 DETENTION SYSTEM PIPE LAYOUT
SS-2 N.T.S.

- NOTES:**
- THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE PIPE COVER REQUIREMENTS ARE MET.
 - STUB SIZES AND INVERTS TO BE VERIFIED BY THE SITE DESIGN ENGINEER PRIOR TO FABRICATION.
 - ADS RISERS ARE FABRICATED 36" (900 mm) FROM TOP OF PIPE TO TOP OF RISER DUE TO SHIPPING LIMITATIONS. ADDITIONAL PIPE AND COUPLERS CAN BE USED TO EXTEND THE RISERS TO GRADE.
 - LAYOUT SHOWN DOES NOT INCLUDE ADDITIONAL PIPE & MANIFOLD NEEDED FOR PROPER PIPE INSERTION INTO STRUCTURES.
 - NOT FOR CONSTRUCTION

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REVISIONS:

DATE:	ISSUE:

OWNER:
RADNOR TOWNSHIP
301 IVEN AVENUE
WAYNE, PA 19087-5297

CIVIL ENGINEER:
meliora
MELIORA DESIGN
259 MORGAN STREET
PHOENIXVILLE, PA 19460
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WWW.MELIORADESIGN.COM

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VIRIDIAN LANDSCAPE STUDIO
3868 TERRACE STREET
PHILADELPHIA, PA 19128
215.482.7973
WWW.VIRIDIANLS.COM

SURVEYOR:
CONTROL POINT ASSOCIATES, INC.
1600 MANOR DRIVE, SUITE 210
CHALFONT, PA 18914
215.712.9800
WWW.CPASURVEY.COM

PROJECT TITLE:
SOUTH DEVON AREA FLOOD REDUCTION PROJECT
AT THE WEST WAYNE PRESERVE AND FRIENDS OF RADNOR TRAIL PARK

SEAL:

MARC B. HENDERSON
REGISTERED PROFESSIONAL ENGINEER
No. 089402
STATE OF PENNSYLVANIA

SUBMISSION:
BID DOCUMENTS

DRAWING TITLE:
STORMWATER DETAILS - SHEET 3

DATE:	06/14/23	DRAWING NO:	C5.04
SCALE:	AS NOTED		
DRAWN BY:	MPB		
CHECKED BY:	MBH/MCA		

PLANTING NOTES

- REFER TO CIVIL DRAWINGS FOR EROSION AND SEDIMENT CONTROL REQUIREMENTS AND ALL SITE PREPARATION INFORMATION.
- IF DISCREPANCIES EXIST BETWEEN THE NUMBER OF PLANTS DRAWN ON THE PLANTING PLAN AND THE NUMBER OF PLANTS IN THE PLANT LIST, THE PLANTING PLAN SHALL GOVERN.
- ALL NEW PLANT MATERIAL SHALL CONFORM TO THE MINIMUM GUIDELINES ESTABLISHED FOR NURSERY STOCK PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN, INC.
- ALL PLANT MATERIAL SHALL BE NURSERY GROWN, WITH THE EXCEPTION OF LIVESTAKES, WHICH MAY BE FIELD COLLECTED AS DIRECTED AND APPROVED BY THE LANDSCAPE ARCHITECT.

- ALL NEW PLANTS SHALL BE BARE ROOT OR CONTAINER-GROWN, UNLESS OTHERWISE NOTED ON THE PLANT LIST.
- THE CONTRACTOR SHALL SUPPLY ALL NEW PLANT MATERIAL IN QUANTITIES SUFFICIENT TO COMPLETE THE PLANTING SHOWN ON THE DRAWINGS.
- ANY PROPOSED SUBSTITUTIONS OF PLANT SPECIES SHALL BE MADE WITH PLANTS OF EQUIVALENT OVERALL FORM, HEIGHT, BRANCHING HABIT, FLOWER, LEAF, COLOR, FRUIT AND CULTURE, AND ONLY AFTER WRITTEN APPROVAL OF THE LANDSCAPE ARCHITECT.
- CONTRACTOR SHALL LOCATE AND VERIFY ALL EXISTING UTILITY LINES PRIOR TO PLANTING AND SHALL REPORT ANY CONFLICTS TO THE LANDSCAPE ARCHITECT.

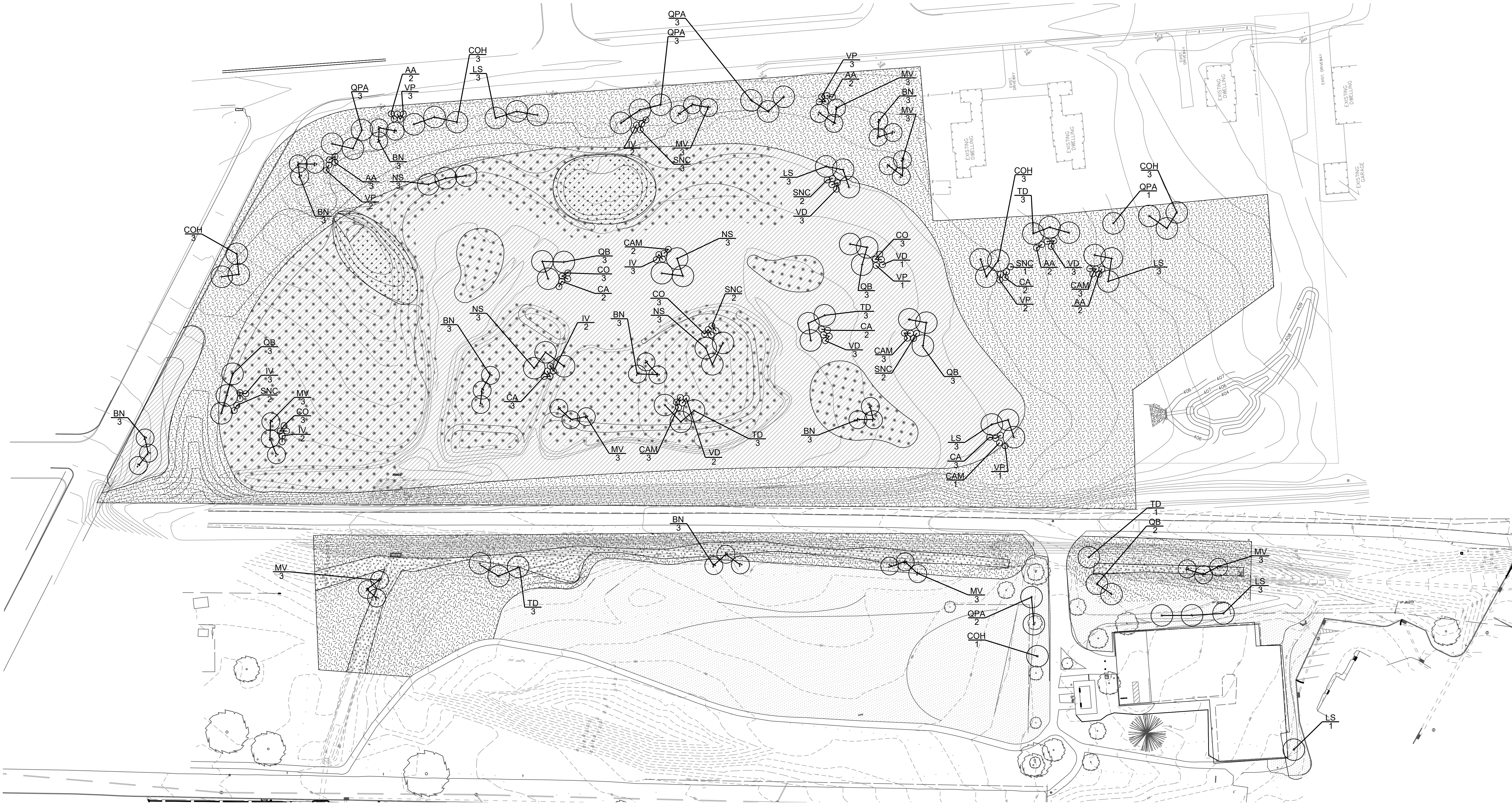
- STAKE LOCATION OF ALL PROPOSED PLANTING FOR APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO THE COMMENCEMENT OF PLANTING.
- NO TREES OR SHRUBS SHALL BE PLANTED BEFORE ACCEPTANCE OF ROUGH GRADING BY LANDSCAPE ARCHITECT AND CIVIL ENGINEER.

- SHRUBS SHALL BEAR THE SAME RELATIONSHIP TO GRADE AS THEY BORE TO PREVIOUS GRADE IN NURSERY. TREES SHALL BEAR SAME RELATIONSHIP TO GRADE AS THEY BORE TO PREVIOUS GRADE IN NURSERY OR HIGHER TO PREVENT COVERING ROOT FLARE.

- ALL TREES AND SHRUBS SHALL RECEIVE THREE INCHES (3") OF BARK OR LEAF LITTER MULCH FOLLOWING INSTALLATION.

- CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING ALL DAMAGED, STOLEN, DEAD, DECLINING OR LOST MATERIAL UNTIL COMPLETION OF MAINTENANCE AND GUARANTEE PERIODS.

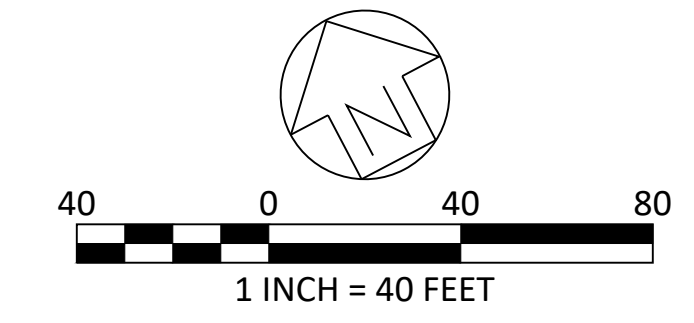
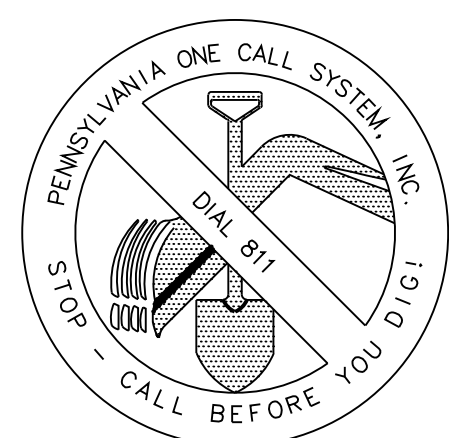
- MAINTENANCE AND GUARANTEE PERIODS SHALL BEGIN AT ACCEPTANCE OF SUBSTANTIAL COMPLETION AND LAST ONE YEAR.



LEGEND

	DECIDUOUS TREE	82 TREES		FORESTED WETLAND SEEDING	3.6 ACRES		UPLAND SEEDING	3.0 ACRES
	MULTI-STEMMED TREE	48 TREES		FORESTED WETLAND CONTAINER/BAREROOT WOODY TREES AND SHRUBS 8' ON CENTER	78,200 SF 1,411 PLANTS		BIOSWALE SEEDING & PLUGGING 12" ON CENTER	6,990 SF 7,725 PLANTS
	SHRUB	95 SHRUBS		LIVE STAKES 3' ON CENTER	6,642 SF 852 PLANTS		SEEDED LAWN	66,000 SF

ALL LOCATIONS OF EXISTING UTILITIES SHOWN ON THIS PLAN HAVE BEEN DEVELOPED FROM EXISTING UTILITY RECORDS AND/OR ABOVE GROUND EXAMINATION OF THE SITE. COMPLETENESS OR ACCURACY OF LOCATION AND DEPTH OF UNDERGROUND UTILITIES OR STRUCTURES CANNOT BE GUARANTEED. CONTRACTOR MUST VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND FACILITIES BEFORE START OF WORK PER PENNSYLVANIA ACT 287 OF 1974 AS AMENDED BY ACT 199 OF 2004 OR LATER.



REVISIONS:	
DATE:	ISSUE:

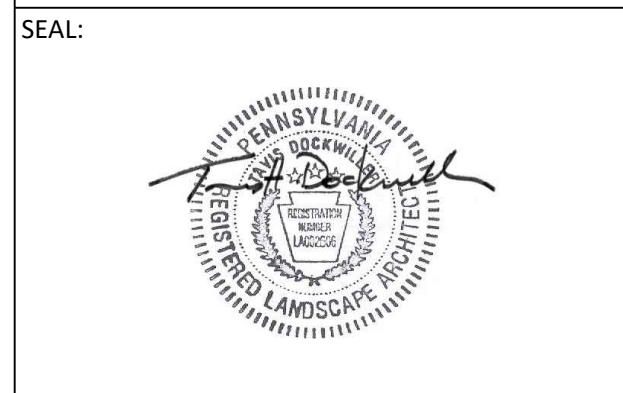
OWNER:
RADNOR TOWNSHIP
301 IVEN AVENUE
WAYNE, PA 19087-5297

CIVIL ENGINEER:
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SURVEYOR:
CONTROL POINT ASSOCIATES, INC.
1600 MANOR DRIVE, SUITE 210
CHALFONT, PA 18914
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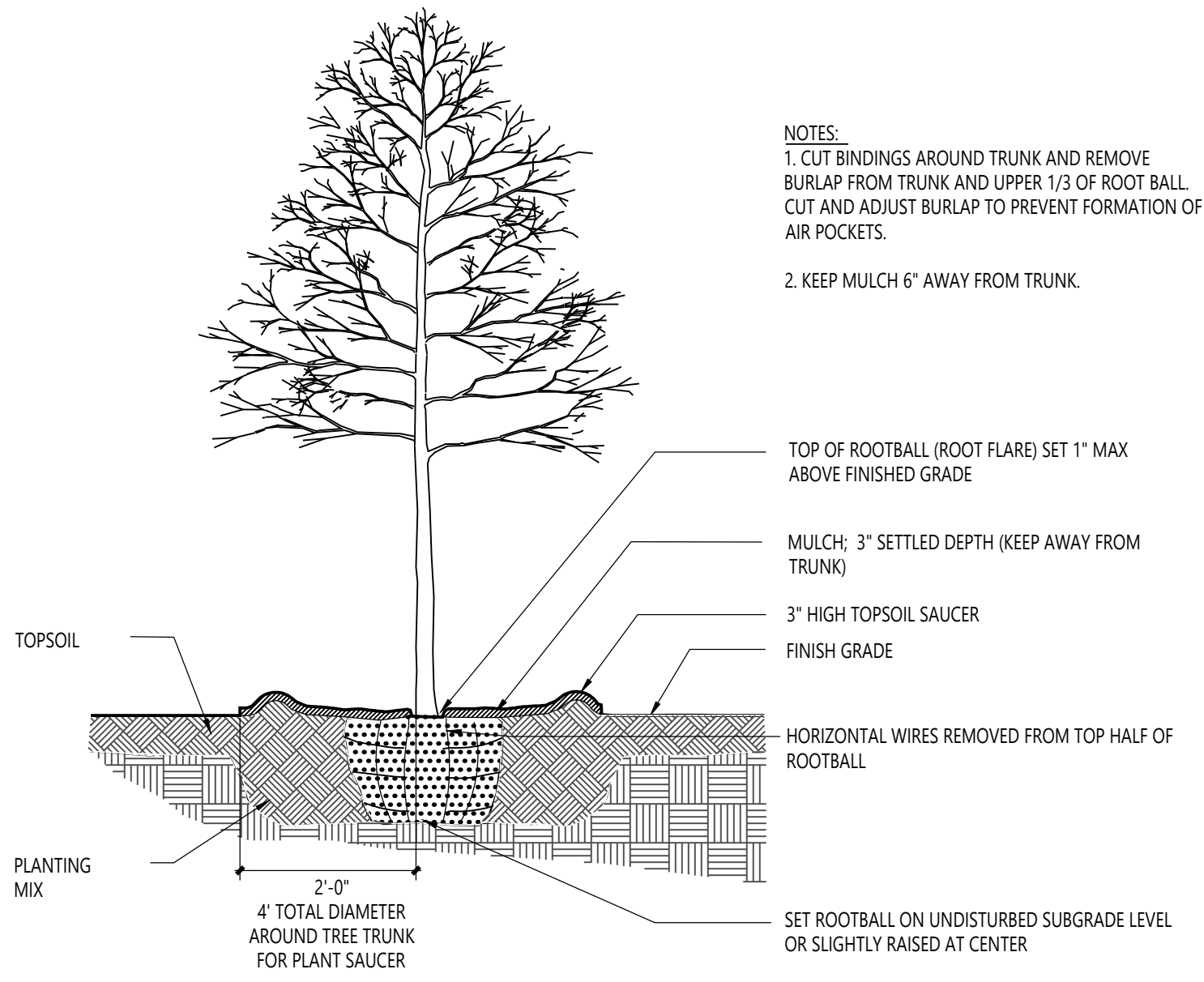
PROJECT TITLE:
SOUTH DEVON AREA FLOOD REDUCTION PROJECT
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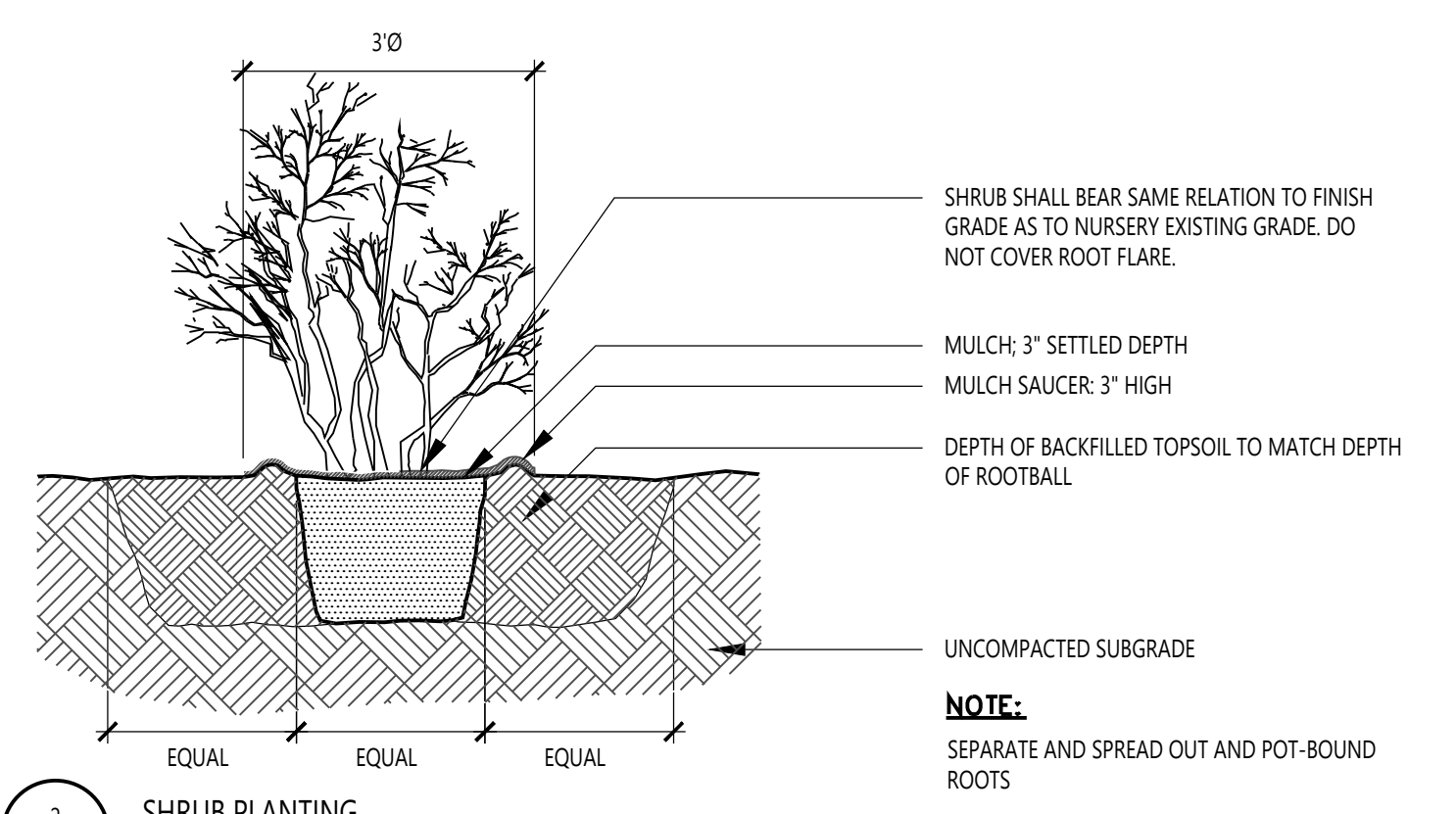
Submission:
BID DOCUMENTS

Drawing Title:
PLANTING PLAN

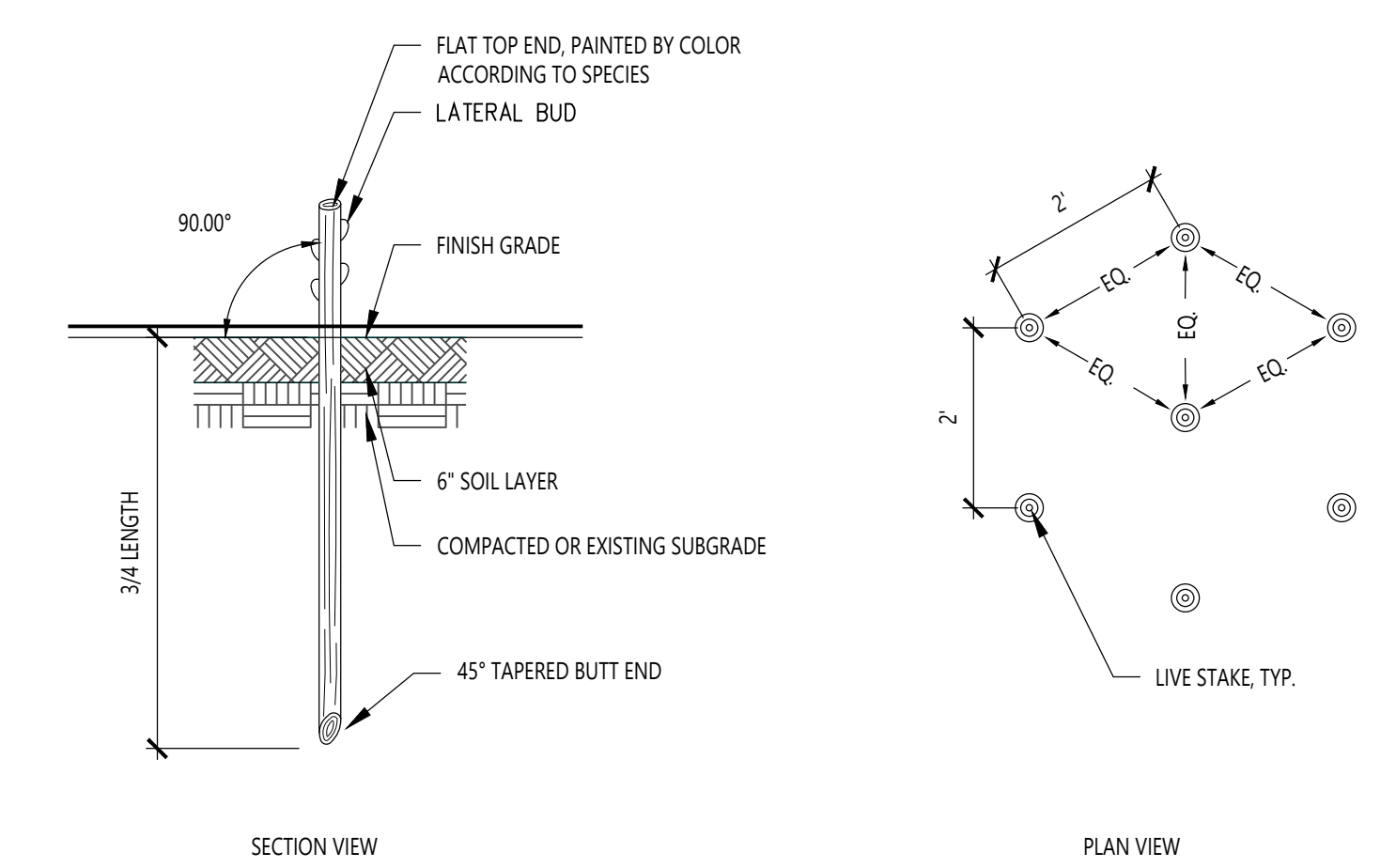
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CHECKED BY:	TD		



1 B&B TREE PLANTING
L1.1 1/2" = 1'-0"



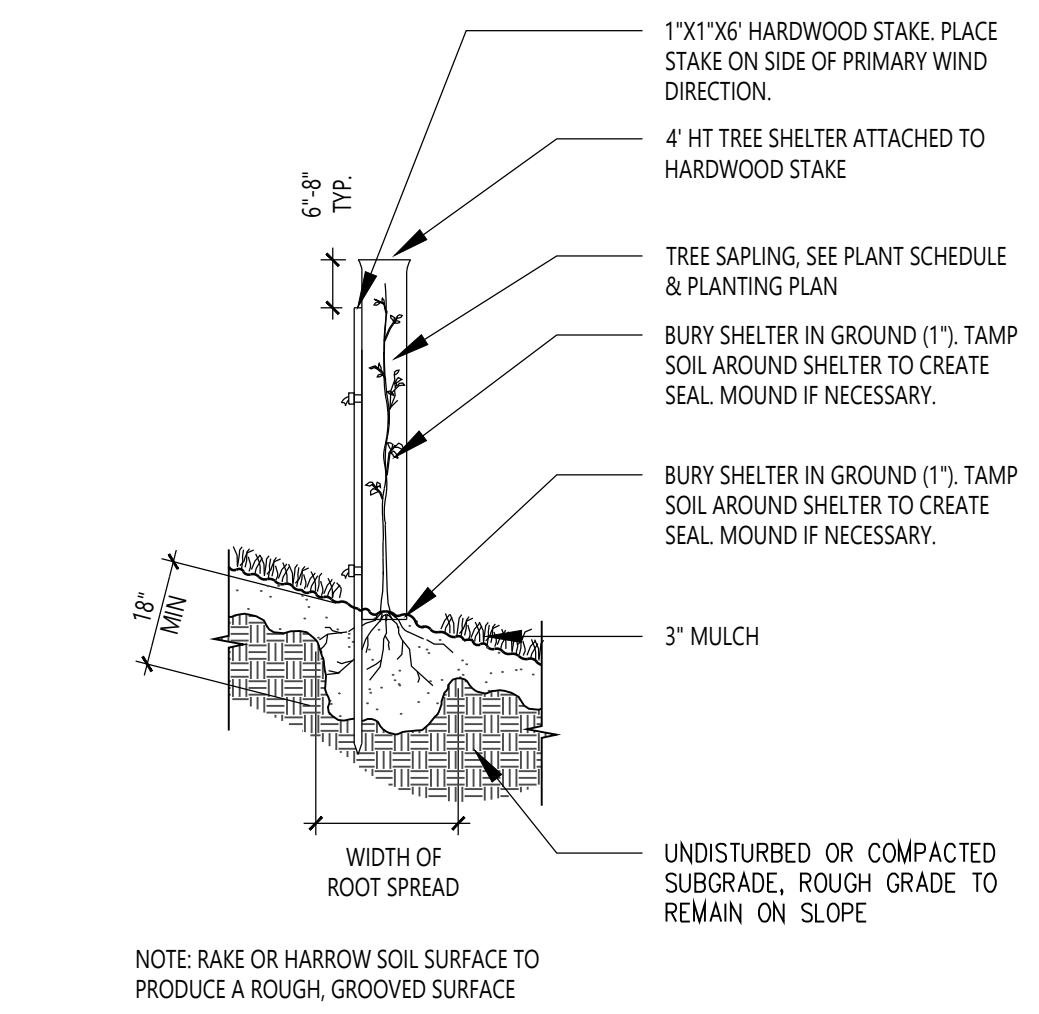
2 SHRUB PLANTING
L1.1 NOT TO SCALE



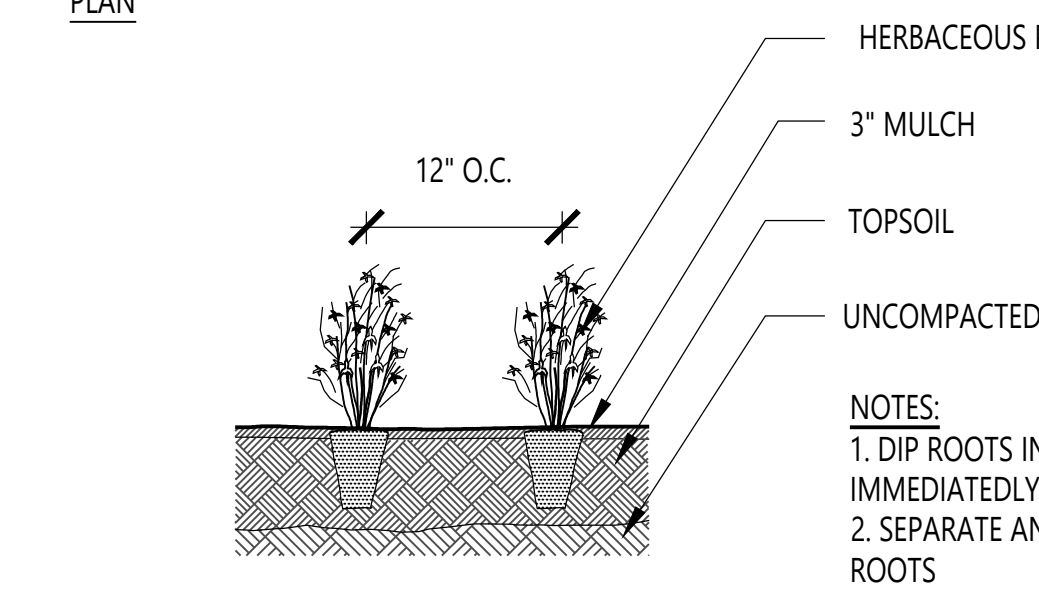
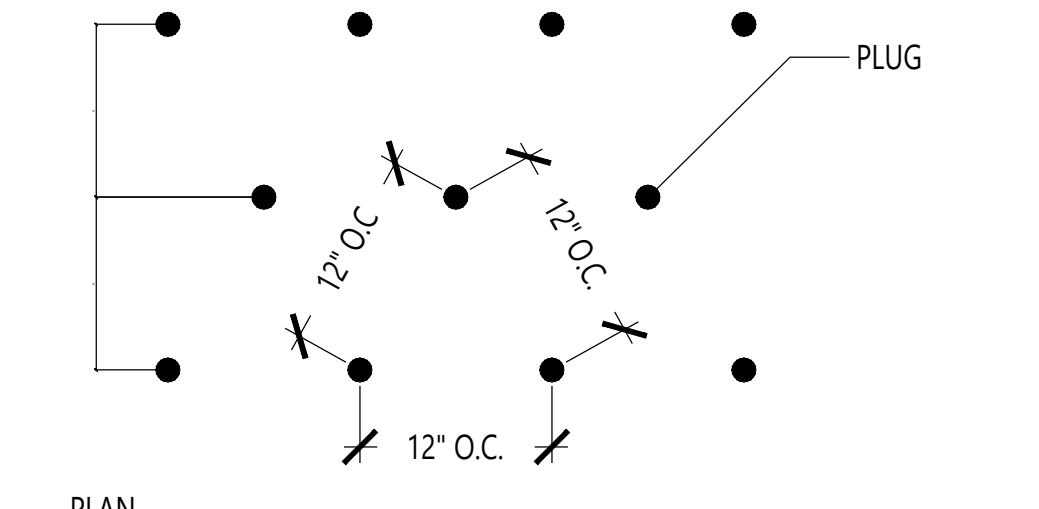
NOTES:

- LIVE STAKES ARE TO BE DORMANT LIVE BRANCHES MEASURING 24 TO 36 INCHES, WITH BASAL END DIAMETERS OF 1/2" TO 2 INCHES, WITH NO SIDE BRANCHES.
- BUTT ENDS OF STAKE SHALL BE ANGLED AT 45 DEGREES.
- OBTAIN LIVE STAKES FROM A NURSERY OR CUT FROM APPROVED SOURCES USING A SHARP TOOL. AVOID DAMAGE TO THE COLLECTION SITE. BRANCHES SHALL BE FLEXIBLE, FREE FROM DISEASE OR EXCESS DEAD TWIGS, AND MUST BE DORMANT.
- ALL SIDE BRANCHES SHALL BE CLEANLY CUT FROM LIVE STAKES.

3 LIVE STAKE PLANTING
L1.1 NOT TO SCALE



4 TREE PLANTING WITH SHELTER
L1.1 NOT TO SCALE



5 PLUG PLANTING
L1.1 NOT TO SCALE

QUAN.	SYM.	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	TYPE	INDICATOR/STATUS	NOTES
B&B Trees								
24	BN	Betula nigra	River Birch	8' tall	As shown	B&B	FACW	multi-stem
13	COH	Celtis occidentalis	Hackberry	2 1/2"-3" caliper	As shown	B&B	FACU	
14	LS	Liquidambar styraciflua	Sweetgum	2 1/2"-3" caliper	As shown	B&B	FAC	
24	MV	Magnolia virginiana	Sweetbay Magnolia	8' tall	As shown	B&B	FACW	multi-stem
14	NS	Nyssa sylvatica	Black Tupelo	2 1/2"-3" caliper	As shown	B&B	FAC	
14	QB	Quercus bicolor	Swamp White Oak	2 1/2"-3" caliper	As shown	B&B	FACW+	
13	OPA	Quercus palustris	Pin Oak	2 1/2"-3" caliper	As shown	B&B	FACW	
14	TD	Taxodium distichum	Bald Cypress	8' tall	As shown	B&B	OBL	conifer
B&B Shrubs								
11	AA	Aronia arbutifolia	Red Chokecherry	24-36"	As shown	Container/Bareroot	FACW	
12	CO	Cephalanthus occidentalis	Common Buttonbush	24-36"	As shown	Container/Bareroot	OBL	
12	CA	Clethra alnifolia	Sweet Pepper Bush	24-36"	As shown	Container/Bareroot	FACW	
12	CAM	Cornus amomum	Silky Dogwood	24-36"	As shown	Container/Bareroot	FACW	
12	IV	Ilex verticillata	Winterberry Holly	24-36"	As shown	Container/Bareroot	FACW	
12	SNC	Sambucus nigra canadensis	American Black Elderberry	24-36"	As shown	Container/Bareroot	FACW	
12	VD	Viburnum dentatum	Arrow-wood	24-36"	As shown	Container/Bareroot	FAC	
12	VP	Viburnum prunifolium	Blackhaw	24-36"	As shown	Container/Bareroot	FACU	
Forested Wetland Container/Bareroot Trees & Shrubs								
83		Acer saccharinum	Silver Maple	24-36"	8' OC	Container/Bareroot	FAC	
83		Betula nigra	River Birch	24-36"	8' OC	Container/Bareroot	FACW	
83		Celtis occidentalis	Hackberry	24-36"	8' OC	Container/Bareroot	FACU	
83		Liquidambar styraciflua	Sweetgum	24-36"	8' OC	Container/Bareroot	FAC	
83		Platanus occidentalis	American Sycamore	24-36"	8' OC	Container/Bareroot	FACW-	
83		Quercus bicolor	Swamp White Oak	24-36"	8' OC	Container/Bareroot	FACW+	
83		Quercus palustris	Pin Oak	24-36"	8' OC	Container/Bareroot	FACW	
83		Salix nigra	Black Willow	24-36"	8' OC	Container/Bareroot	OBL	
83		Acer negundo	Box Elder	24-36"	8' OC	Container/Bareroot	FAC	
83		Alnus serrulata	Smooth Alder	24-36"	8' OC	Container/Bareroot	OBL	
83		Aronia arbutifolia	Red Chokecherry	24-36"	8' OC	Container/Bareroot	FACW	
83		Cephalanthus occidentalis	Common Buttonbush	24-36"	8' OC	Container/Bareroot	OBL	
83		Clethra alnifolia	Sweet Pepper Bush	24-36"	8' OC	Container/Bareroot	FACW	
83		Cornus amomum	Silky Dogwood	24-36"	8' OC	Container/Bareroot	FACW	
83		Ilex verticillata	Winterberry Holly	24-36"	8' OC	Container/Bareroot	FACW	
83		Sambucus nigra canadensis	American Black Elderberry	24-36"	8' OC	Container/Bareroot	FACW	
83		Viburnum dentatum	Arrow-wood	24-36"	8' OC	Container/Bareroot	FAC	
83		Viburnum prunifolium	Blackhaw	24-36"	8' OC	Container/Bareroot	FACU	
Live Stakes								
170		Cornus amomum	Silky Dogwood	3-4'	3' OC	Live Stake	FACW	
171		Cephalanthus occidentalis	Common Buttonbush	3-4'	3' OC	Live Stake	OBL	
171		Salix nigra	Black Willow	3-4'	3' OC	Live Stake	OBL	
170		Sambucus nigra canadensis	American Black Elderberry	3-4'	3' OC	Live Stake	FACW	
170		Viburnum dentatum	Arrow-wood	3-4'	3' OC	Live Stake	FAC	
Bioswale Plugging								
1287		Asclepias incarnata	Swamp Milkweed	LP50 Plug	12" OC	PLUG		
1287		Aster novae-angliae	New England Aster	LP50 Plug	12" OC	PLUG		
1287		Eupatorium fistulosum	Joe-Pye Weed	LP50 Plug	12" OC	PLUG		
1288		Helenium autumnale	Sneezeweed	LP50 Plug	12" OC	PLUG		
1288		Heliopsis helianthoides	Smooth Oxeye	LP50 Plug	12" OC	PLUG		
1288		Lobelia siphilitica	Blue Lobelia	LP50 Plug	12" OC	PLUG		

BOTANICAL NAME	COMMON NAME	% of MX
Bioswale Seeding 12 lbs. per acre		
Elymus virginicus	Virginia Wild Rye	16%
Schizachyrium scoparium	Little Bluestem	10%
Vernonia noveboracensis	New York Ironweed	10%
Helenium autumnale	Common Sneezeweed	7%
Liatris spicata	Dense Blazing Star	6%
Panicum virgatum	Switchgrass	6%
Verbena hastata	Blue Vervain	6%
Eupatorium purpureum	Purple Joe-Pye	5%
Scirpus atrovirens	Green Bulrush	5%
Penstemon digitalis	Foxglove Beardtongue	4%
Pycnanthemum virginianum	Mountain Mint	4%
Rudbeckia hirta	Black-Eyed Susan	4%
Sorghastrum nutans	Indian Grass	4%
Symphotrichum novae-angliae	New England Aster	4%
Lobelia siphilitica	Blue Lobelia	3%
Monarda fistulosa	Wild Bergamot	3%
Heliopsis helianthoides	False Sunflower	2%
Iris versicolor	Blueflag Iris	1%
Forested Wetland Seeding 9lbs per acre		
Carex lurida	Shallow Sedge	20%
Andropogon gerardii	Big Bluestem	14%
Panicum virgatum	Switchgrass	12%
Heliopsis helianthoides	False Sunflower	10%
Mimulus ringens	Monkey Flower	9%
Juncus effusus	Soft Rush	8%
Symphotrichum novae-angliae	New England Aster	7%
Vernonia noveboracensis	New York Ironweed	6%
Monarda fistulosa	Wild Bergamot	5%
Asclepias incarnata	Swamp Milkweed	4%
Verbena hastata	Blue Vervain	3%
Pycnanthemum virginianum	Mountain Mint	2%
Upland Seeding 21 lbs per acre		
Elymus virginicus	Virginia Wild Rye	25%
Panicum virgatum	Switchgrass	20%
Andropogon gerardii	Big Bluestem	16%
Heliopsis helianthoides	False Sunflower	12%
Tridens flavus	Purpletop	8%
Rudbeckia hirta	Black-Eyed Susan	7%
Chamaecrista fasciculata	Partridge Pea	6%
Sorghastrum nutans	Indian Grass	6%

REVISIONS:

DATE:	ISSUE:

OWNER:

RADNOR TOWNSHIP
301 IVEN AVENUE
WAYNE, PA 19087-5297

CIVIL ENGINEER:

meliora

MELIORA DESIGN
259 MORGAN STREET
PHOENIXVILLE, PA 19460
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LANDSCAPE ARCHITECT:

VIRIDIAN LANDSCAPE STUDIO
3868 TERRACE STREET
PHILADELPHIA, PA 19128
215.482.7973
WWW.VIRIDIANLS.COM

SURVEYOR:

CONTROL POINT ASSOCIATES, INC.
1600 MANOR DRIVE, SUITE 210
CHALFONT, PA 18914
215.712.9800
WWW.CPASURVEY.COM

PROJECT TITLE:

SOUTH DEVON AREA FLOOD REDUCTION PROJECT
AT THE WEST WAYNE PRESERVE AND FRIENDS OF RADNOR TRAIL PARK

SEAL:

SUBMISSION:

BID DOCUMENTS

DRAWING TITLE:

PLANTING DETAILS & PLANT SCHEDULE

DATE:	06/14/23	DRAWING NO:	L1.1
SCALE:	NA		
DRAWN BY:	ES		
CHECKED BY:	TD		