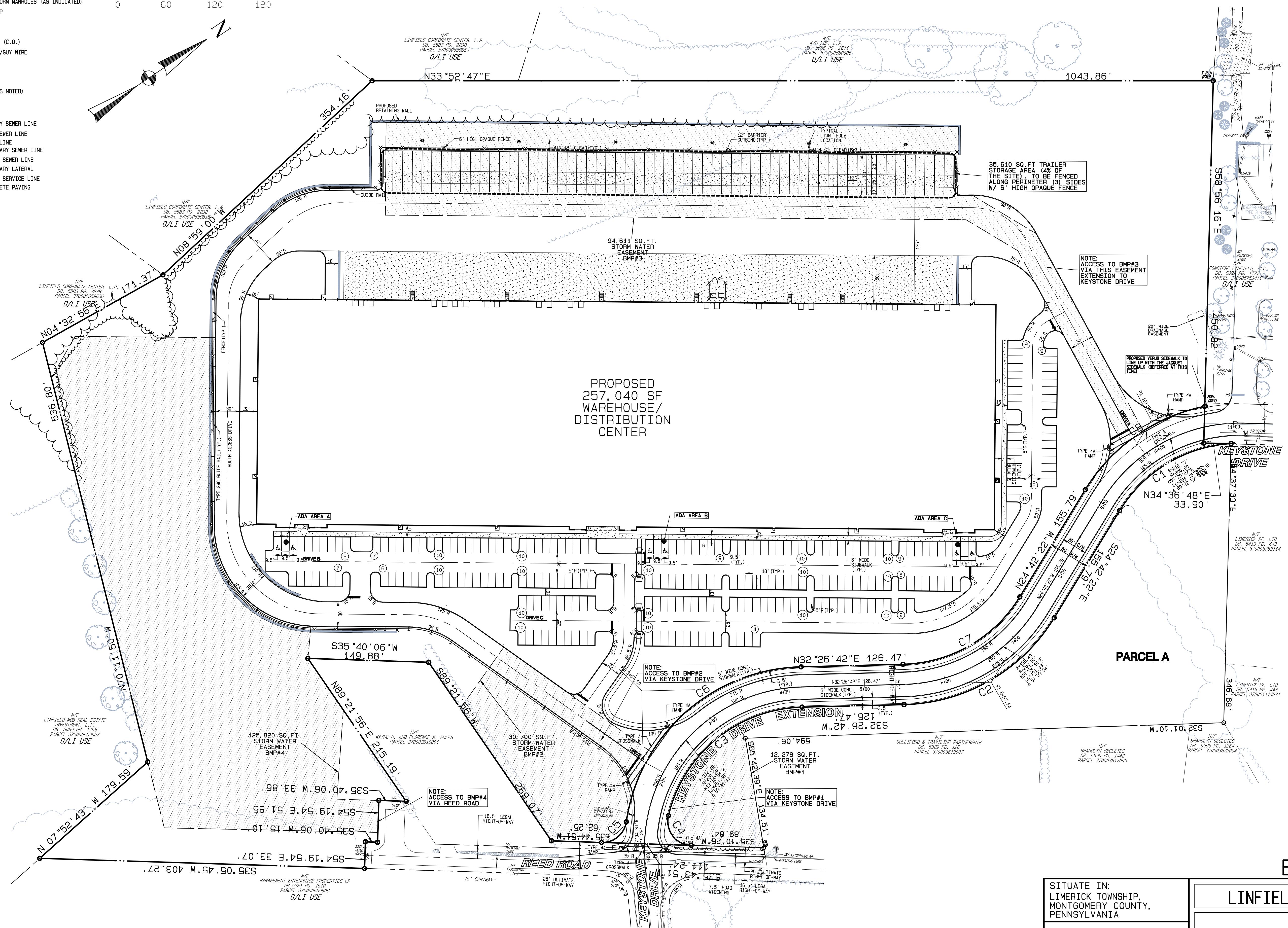


LEGEND

○	= EXIST. WELL
■	= CATCH BASIN (C.B.)
○	= SANITARY OR STORM MANHOLES (AS INDICATED)
●	= WATER VALVE CAP
✖	= LIGHT POLE
✖	= FIRE HYDRANT
○	= CLEAN OUT/VENT (C.O.)
□	= UTILITY POLE W/GUY WIRE
□	= ELECTRIC BOX
○	= GAS VALVE
□	= GAS METER
▲	= STREET SIGN (AS NOTED)
●	= EXISTING TREES
-S	= EXIST. SANITARY SEWER LINE
-W	= EXIST. STORM SEWER LINE
-S	= PROPOSED WATERLINE
-S	= PROPOSED SANITARY SEWER LINE
-S	= PROPOSED STORM SEWER LINE
-S	= PROPOSED SANITARY LATERAL
-S	= PROPOSED WATER SERVICE LINE
-S	= PROPOSED CONCRETE PAVING

GRAPHIC SCALE
1" = 60'



FINAL PLAN EASEMENT PLAN

LINFIELD CORPORATE CENTER: VERUS

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ENGINEERS SURVEYORS PLANNERS ENVIRONMENTAL SCIENTISTS
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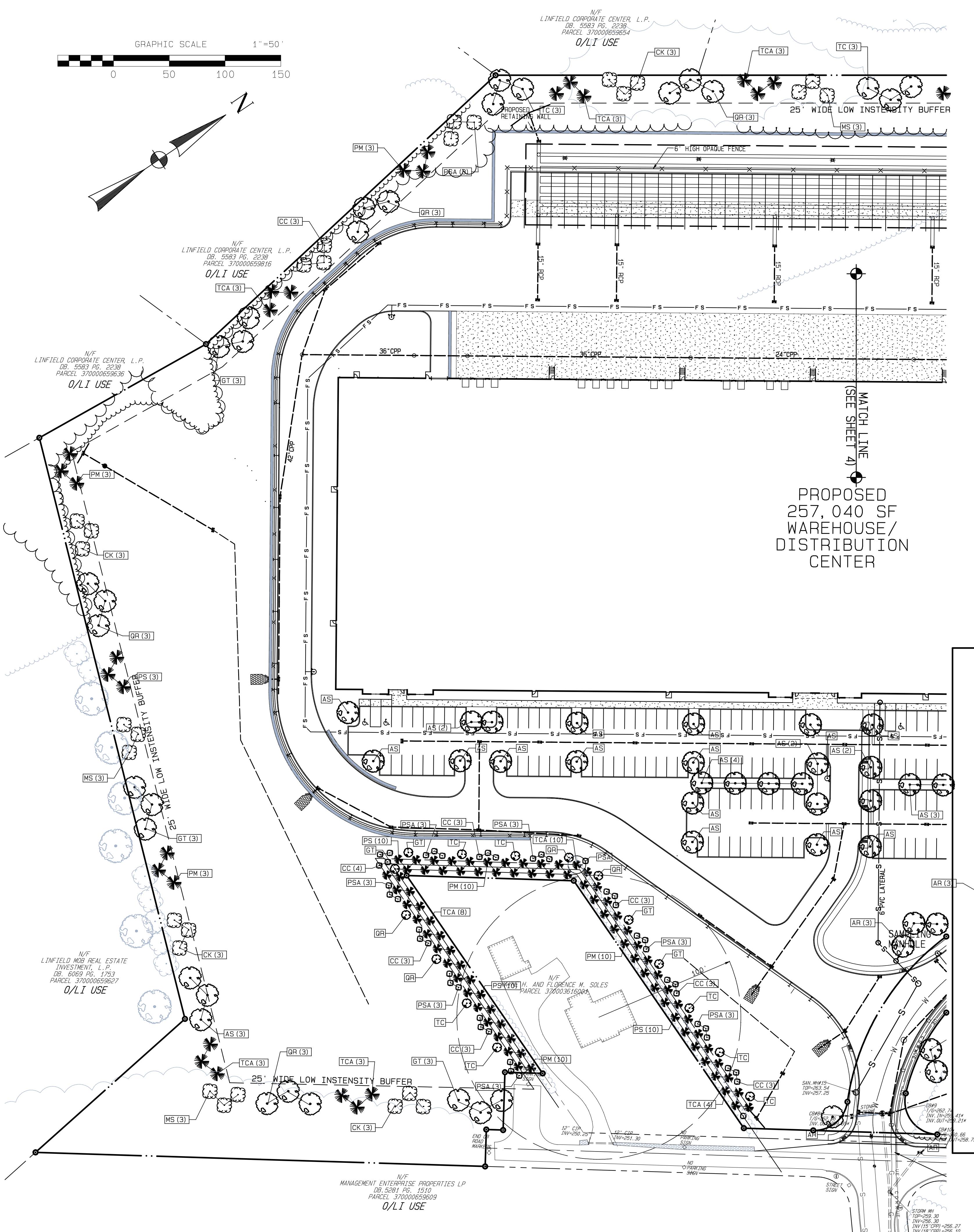
LINCOLN CORPORATE CENTER
10 VANGUARD DRIVE, SUITE 100
READING, PA 19606
PHONE 610/404-7330
FAX 610/404-7371

DRAWN	COMP (BNDY)	COMP (LOC)	PA ONE CALL NUMBER	COMPUTER FILE
TCD 12-21-21				C:\Users\ltdawson\Desktop\
SCALE	TAX MAP PARCEL		DRAWING NUMBER	
1" = 60'	D-7810321	SHEET 3		

SITUATE IN:
LIMERICK TOWNSHIP,
MONTGOMERY COUNTY,
PENNSYLVANIA

REVISION	DATE	DESCRIPTION
#4 TCD	9-7-22	
#3 TCD	6-22-22	
#2 TCD	6-3-22	
#1 TCD	5-3-22	

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LANDSCAPE NOTES

1. NO TREE MAY BE PLACED WITHIN 10 FEET OF ANY SANITARY SEWER LINE OR LATERAL.
2. PROPOSED LIMITS OF WOODLAND SHALL BE ESTABLISHED IN THE FIELD PRIOR TO CONSTRUCTION. THESE AREAS SHALL BE PROTECTED (VIA "SNOW FENCE") AS PER SUBDIVISION REGULATION SECTION 155-19.C(4).
3. THE REQUIRED PLANT MATERIAL AS SHOWN ON THE LANDSCAPE AND LIGHTING PLAN SHALL BE MAINTAINED FOR THE LIFE OF THE PROJECT TO ACHIEVE THE REQUIRED VISUAL EFFECT OF THE BUFFER OR SCREEN. IT SHALL BE THE ULTIMATE RESPONSIBILITY OF SUCCESSIVE PROPERTY OWNERS TO ENSURE THAT THE REQUIRED PLANTINGS ARE PROPERLY MAINTAINED. DEAD OR DISEASED PLANT MATERIAL SHALL BE REMOVED PROMPTLY BY THE PROPERTY OWNER AND REPLACED AT THE NEXT GROWING SEASON.
4. ALL SIGHT TRIANGLES SHALL REMAIN CLEAR AND ANY PLANT, WHICH WOULD ENDANGER SAFETY SUCH AS UNSTABLE LIMBS, SHALL BE REMOVED AND THE PLANT MATERIAL REPLACED. IT SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER AND SUCCESSIVE PROPERTY OWNERS TO ENSURE ALL PLANTING AND ARCHITECTURAL ELEMENTS ARE MAINTAINED TO PROVIDE A SAFE ENVIRONMENT. OBSTRUCTIONS WITHIN SIGHT TRIANGLES, NO BUILDING, TREE, HEDGE OR OTHER OBSTRUCTION TO VISIBILITY SHALL BE PERMITTED, FROM CURB TO HEIGHT TO A MIN. HEIGHT OF 12' WITH THE FOLLOWING EXCEPTIONS:
 - a.) ONE PRIVATE SIGN POST, PROVIDED THAT THE POST DOES NOT EXCEED ONE FOOT SQUARE OR DIA. AND THE SIGN ITSELF IS ABOVE THE MIN. HEIGHT LIMIT.
 - b.) ONE SHADE TREE, PROVIDED THAT AS THE TREE GROWS, THE LOWER BRANCHES ARE KEPT PRUNED UP TO THE MIN. HEIGHT LIMIT
 - c.) EXISTING SHADE TREES, PROVIDED THAT THE LOWER BRANCHES ARE KEPT PRUNED UP TO THE MIN. HEIGHT LIMIT AND THE ARRANGEMENT OF TREES DOES NOT IMPEDE ADEQUATE VISIBILITY.
5. STREET TREES SHALL BE PLANTED A MINIMUM DISTANCE OF 5-15 FEET FROM RIGHT-OF-WAY LINE, 15 FEET FROM OVERHEAD UTILITIES AND 10 FEET FROM UNDERGROUND UTILITIES.
6. EXISTING VEGETATION INTENDED TO REMAIN AS PART OF THE LANDSCAPING OF A SUBDIVISION OF LAND DEVELOPMENT SHALL BE IDENTIFIED IN THE FIELD PRIOR TO ANY CLEARING AND PHYSICALLY PROTECTED THROUGHOUT THE CONSTRUCTION PROCESS. A TEMPORARY PHYSICAL BARRIER SHALL BE ERECTED A MIN. OF ONE FOOT OUTSIDE THE DRIP LINE ON ALL SIDES OF INDIVIDUAL TREES, TREE MASSES OR WOODLANDS PRIOR TO MAJOR CLEARING OR CONSTRUCTION. THE BARRIER SHALL REMAIN UNTIL CONSTRUCTION IS COMPLETE.
7. THE LOCATION, DIMENSIONS AND SPACING OF REQUIRED PLANTINGS SHOULD BE ADEQUATE FOR THEIR PROPER GROWTH AND MAINTENANCE, TAKING INTO ACCOUNT THE SIZES OF SUCH PLANTINGS AT Maturity AND THEIR PRESENT AND FUTURE ENVIRONMENTAL REQUIREMENTS, SUCH AS WIND, SOIL, MOISTURE AND SUNLIGHT.
8. ALL PLANTS SHALL MEET THE MIN. STANDARDS FOR HEALTH, FORM AND ROOT CONDITION AS OUTLINED IN THE AMERICAN ASSOCIATION OF NURSERYMEN (AAN) STANDARDS.
9. ALL PLANT MATERIAL SHALL BE HARDY WITHIN THE UNITED STATES DEPT. OF AGRICULTURE (USDA) HARDINESS ZONE 6, APPLICABLE TO LIMERICK TOWNSHIP.
10. CANOPY TREES SHALL REACH A MIN. HEIGHT AND SPREAD OF 30' AT Maturity AS DETERMINED BY THE AAN STANDARDS AND SHALL BE DECIDUOUS. NEW TREES SHALL HAVE A MIN. CALIPER OF 2 1/2" AT PLANTING.
11. ORNAMENTAL TREES OR LARGE SHRUBS SHALL REACH A TYPICAL MIN. HEIGHT OF 10' AT Maturity BASED ON AAN STANDARDS. TREES AND SHRUBS MAY BE DECIDUOUS OR EVERGREEN AND SHALL HAVE A DISTINCTIVE ORNAMENTAL CHARACTER SUCH AS SHINY FLOWERS, FRUIT, HABIT, FOLIAGE OR BARK. NEW ORNAMENTAL TREES SHALL HAVE A MIN. HEIGHT OF 6' OR A 1-1/2" CALIPER. NEW LARGE SHRUBS SHALL HAVE A MIN. SIZE OF 2-1/2" TO 3" AT TIME OF PLANTING.
12. SMALL SHRUBS MAY BE EVERGREEN OR DECIDUOUS AND SHALL HAVE A MIN. HEIGHT AT Maturity OF 4' BASED ON AAN STANDARDS FOR THAT SPECIES. NEW SHRUBS SHALL HAVE A MIN. SIZE OF 18" AT TIME OF PLANTING.
13. EVERGREEN TREES SHALL REACH A TYP. MIN. HEIGHT OF 20' AT Maturity BASED ON AAN STANDARDS FOR THAT SPECIES AND SHALL REMAIN EVERGREEN THROUGHOUT THE YEAR. NEW EVERGREENS SHALL HAVE A MIN. HEIGHT AT PLANTING OF 6'.
14. MAINTENANCE GUIDELINES FOR THE PLANTINGS ARE ENCOURAGED TO BE PUBLISHED BY THE PLANTING PLAN DESIGNER, TO BE USED BY GROUNDS MAINTENANCE PERSONNEL TO ENSURE THE DESIGN'S VISUAL BUFFERING AND SCREENING CONCEPTS ARE CONTINUED.
15. ANY TREE OR SHRUB WHICH DIES WITHIN 18 MONTHS OF PLANTING SHALL BE REPLACED. ANY TREE OR SHRUB WHICH, WITHIN 18 MONTHS OF PLANTING OR REPLANTING, IS DEEMED, IN THE OPINION OF THE TOWNSHIP, NOT TO HAVE SURVIVED OR TO HAVE GROWN IN A MANNER UNCHARACTERISTIC OF ITS TYPE SHALL BE REPLACED. SUBSTITUTIONS FOR CERTAIN SPECIES OF PLANTS MAY BE MADE ONLY WHEN APPROVED BY THE TOWNSHIP.
16. STREET TREES: REQUIRED - ONE TREE PER 50' OF FRONTAGE
 - 1,926' OF FRONTAGE (BOTH SIDES OF KEYSTONE DRIVE)
 - 1,926/50=39 REQUIRED, 57 (ACER RUBRUM) PROVIDED
 - 114' OF FRONTAGE REED ROAD
 - 114/50= 3 REQUIRED, 3 (ACER RUBRUM) PROVIDED
17. BMP'S TO BE NATURALIZED WITH A WILD FLOWER MIX THAT DOES NOT REQUIRE MOVING.
18. 563,438 SQ.FT. OF NEW IMPERVIOUS ON SITE @ 1 TREE/10,000 SQ.FT.= 57 ADDITIONAL TREES REQUIRED, 4 TREES PROVIDED.
19. THE PROPOSED PLANT MATERIAL HAS BEEN SELECTED FROM THE LIMERICK TOWNSHIP LIST OF RECOMMENDED PLANT MATERIAL

LEGEND

- = EXIST. WELL
- = CATCH BASIN (C.B.)
- = SANITARY OR STORM MANHOLES (AS INDICATED)
- = WATER VALVE CAP
- ◆ = LIGHT POLE
- = FIRE HYDRANT
- = CLEAN OUT/VENT (C.O.)
-  = UTILITY POLE W/GUY WIRE
- = ELECTRIC BOX
- ⊗ = GAS VALVE
- = GAS METER
- = STREET SIGN (AS NOTED)
-  = EXISTING TREES

—S— = EXIST. SANITARY SEWER LINE

—=— = EXIST. STORM SEWER LINE

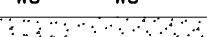
—W— = PROPOSED WATERLINE

—S— = PROPOSED SANITARY SEWER LINE

—=— = PROPOSED STORM SEWER LINE

—SL— = PROPOSED SANITARY LATERAL

—WS— = PROPOSED WATER SERVICE LINE

 = PROPOSED CONCRETE PAVING

LANDSCAPE PLANTING SCHEDULE

SYM	CODE	BOTANICAL NAME	COMMON NAME	SIZE	TYPE	QTY
	SHADE/CANOPY TREES					
	AR	ACER RUBRUM OCTOBER GLORY	OCTOBER GLORY RED MAPLE	2.5" CAL	B & B	66
	AS	ACER SACCHARINUM	SUGAR MAPLE	2.5" CAL	B & B	55
	GT	GLEDITSIA TRICANTHOS INERMIS	THORNLESS HONEYLOCUST	2.5" CAL	B & B	23
	QR	QUERCUS RUBRA	RED OAK	2.5" CAL	B & B	23
	TC	TILIA CORDATA	LITTLELEAF LINDEN	2.5" CAL.	B & B	17
	EVERGREEN TREES					
	PM	PSEUDOTSUGA MENZIESII	DOUGLAS FIR	6-7'	B & B	54
	PS	PINUS STROBUS	WHITE PINE	6-7'	B & B	52
	TCA	TSUGA CANADENSIS	CANADIAN HEMLOCK	6-7'	B & B	46
	ORNAMENTAL TREES					
	MS	MALUS SPECIES	CRAB APPLE SPECIES	6-7'	B & B	24
	PSA	PRUNUS SARGENTI	SARGENT CHERRY	6-7'	B & B	25
	CC	CERCIS CANADENSIS 'FOREST PANSY'	RED BUD, TREE FORM	6-7'	B & B	25
	CK	CORNUS KOUUSA	JAPANESE DOGWOOD	2.0" CAL.	B & B	26
	SHRUBS					
	TO	THUJA OCCIDENTALIS	AMERICAN ARBORVITAE	3' HIGH	B & B	38
	IG	ILEX GABRA	INKBERRY HOLLY	1 GAL.	C.G.	30
	IV	ILEX VERTICILLATA	WINTERBERRY HOLLY	1 GAL.	C.G.	25
	JV	JUNIPERUS VIRGINIANA	EASTERN RED CEDAR	1 GAL.	C.G.	25

THE LANDSCAPING ON-SITE MUST BE MAINTAINED SO THAT A MINIMUM SIGHT DISTANCE AT THE ACCESS DRIVES IS NOT INHIBITED.

LANDSCAPE CALCULATIONS

STREET TREES: KEYSTONE DRIVE - 4026' 8.4 TREE/50 L.F. - 20 REQUIRED, 57 PROVIDED

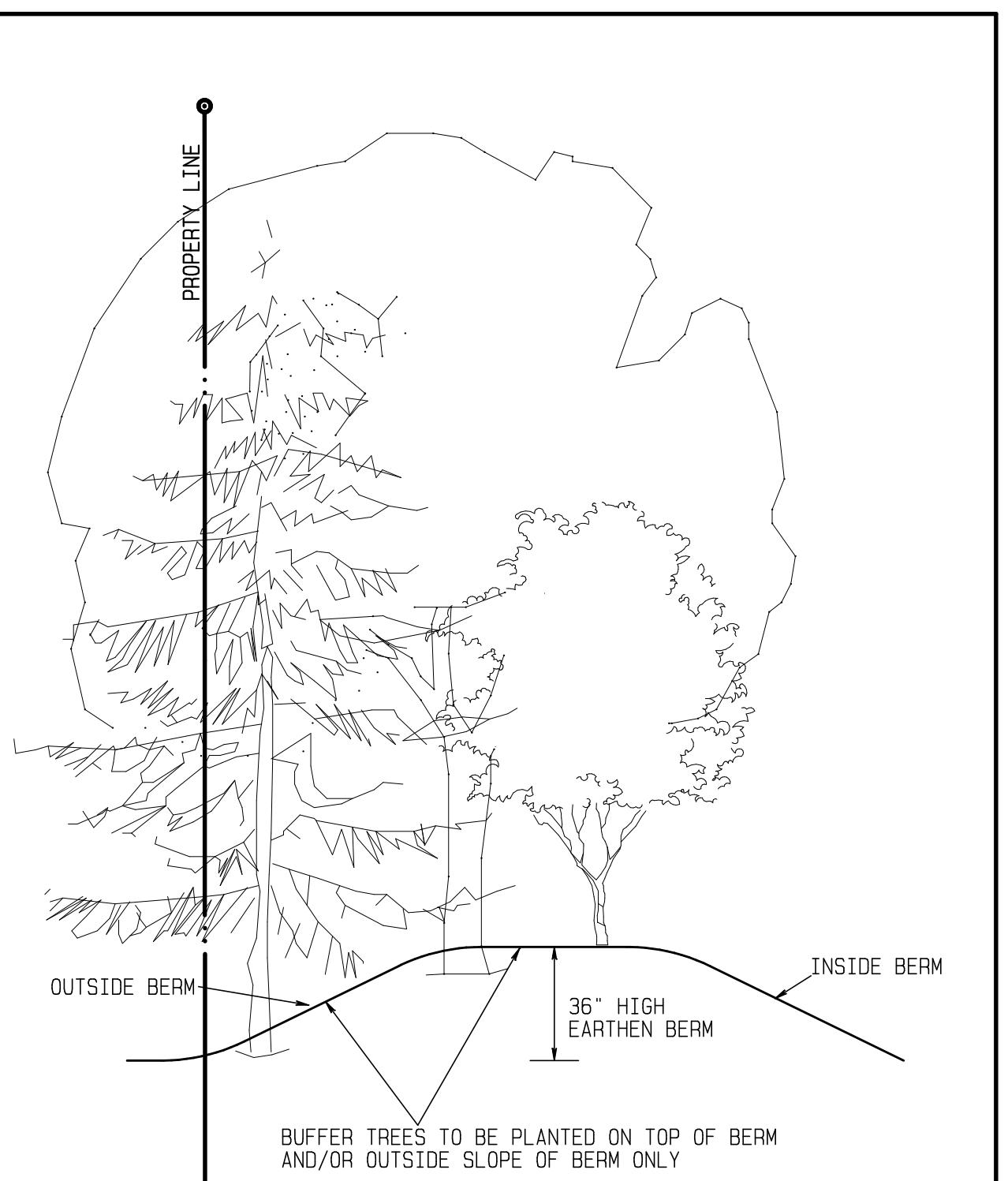
KEYSTONE DRIVE = 1926 @ 1 TREE/50 L.F. = 39 REQUIRED, 57 PROVIDED

BUFFER SPECIES CALCULATIONS

SHADE TREE TOTAL = 69	EVERGREEN SHRUB TOTAL=55
AS= 6 (9%)	JV=15 (27%)
GT=23 (33%)	IG=20 (36.5%)
TC=17 (25%)	IV=20 (36.5%)
QR=23 (33%)	
ORNAMENTAL TREE TOTAL = 101	EVERGREEN TREES TOTAL=152
MS= 24 (23%)	PM= 54 (36%)
PSA=25 (25%)	PS= 52 (34%)
CC= 26 (26%)	TCA=46 (30%)
SK= 26 (25%)	

PLANTING NOTES :

1. PARKING ISLANDS TO HAVE GRASS GROUNDCOVER, UNLESS OTHERWISE NOTED.
2. PLANTS TO BE MULCHED PER DIAGRAMS BELOW, UNLESS OTHERWISE NOTED.
3. THE DEVELOPER WILL BE RESPONSIBLE TO REPLACE ALL LANDSCAPING INSTALLED BY THE DEVELOPER WITHIN EIGHTEEN (18) MONTHS FROM ISSUANCE OF THE USE AND OCCUPANCY PERMIT IF DETERMINED TO BE DISEASED OR DEAD.
4. NO STRUCTURES OR PLANT MATERIAL ARE TO BE LOCATED WITHIN TEN (10) FEET OF THE SANITARY SEWER MAIN, SEWER LATERALS AND WITHIN THE UTILITY EASEMENTS.
5. THE EXISTING VEGETATION TO REMAIN AS NOTED.
6. ALL PROPOSED BASTNS WILL BE MAINTAINED IN ACCORDANCE WITH S155-27 2



TYRICAL BUFFER BERM PLANTING DETAILS

FINAL PLAN LANDSCAPING PLAN

SITUATE IN:
LIMERICK TOWNSHIP,
MONTGOMERY COUNTY,
PENNSYLVANIA

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LINCOLN CORPORATE CENTER
10 VANGUARD DRIVE, SUITE 100
READING, PA 19606
PHONE 610/404-7330

FAX 610/404-7371

TCD			CALL DATE	
12-21-21				C:\Users\tom dawson\Desktop

SCALE	TAX MAP PARCEL	DRAWING NUMBER
1 " =50'		D-7810321 SHEET 4

REVISION	DATE	DESCRIPTION
#4	TCD	9-7-22
#3	TCD	6-22-22
#2	TCD	6-3-22
#1	TCD	5-3-22

FAX 610/404-7371

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1"=50'			D-7810321	SHEET 4

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Plot Date/Time: Wed Sep 1, 2022 / 10:52:46
Project Desc.: ::

PROPOSED
257, 040 SF
WAREHOUSE/
DISTRIBUTION
CENTER

MATCH LINE
(SEE SHEET 3)

MATCH LINE
(SEE SHEET 3)

FINAL PLAN LANDSCAPING PLAN

SITUATE IN:
LIMERICK TOWNSHIP,
MONTGOMERY COUNTY,
PENNSYLVANIA

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TCD			CALL DATE	
12-21-21				C:\Users\tom daw

SCALE	TAX MAP PARCEL	DRAWING NUMBER
1 " =50 '		D-7810321 SHEET

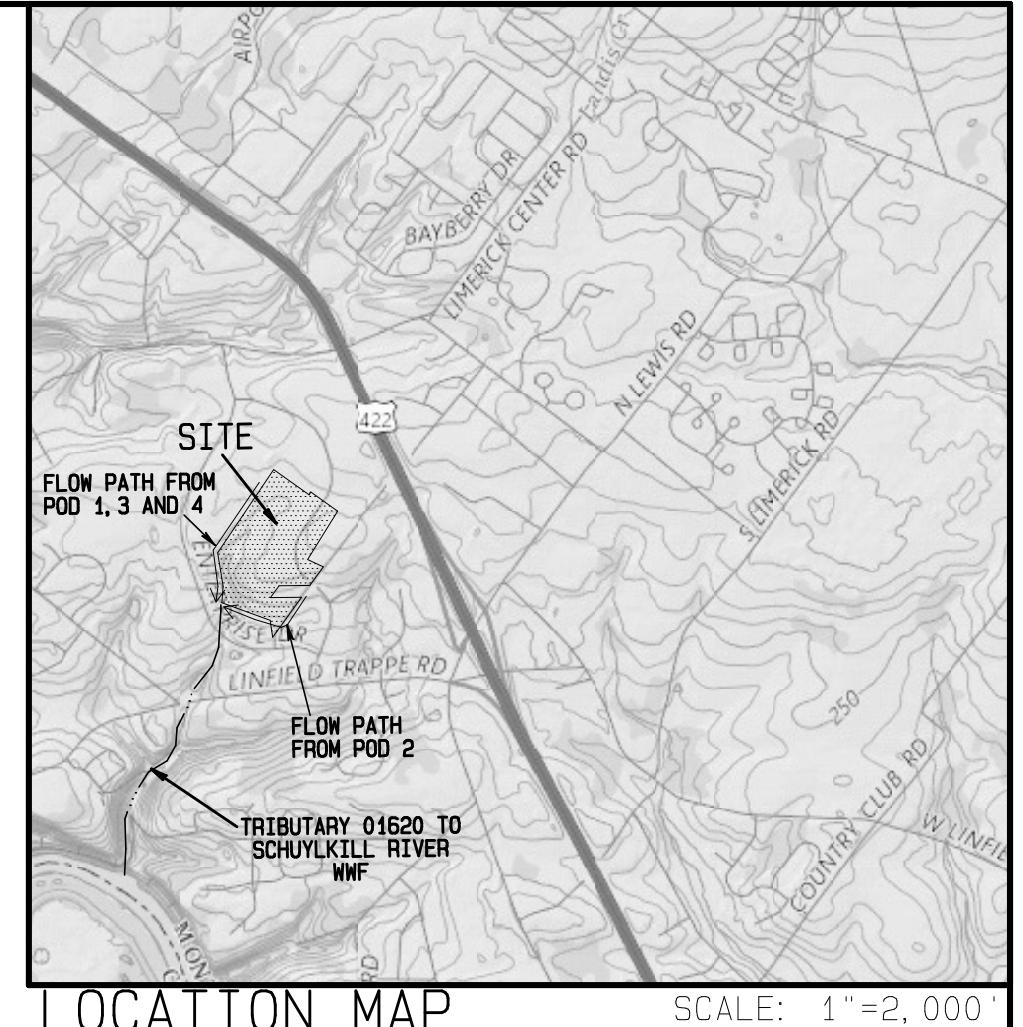
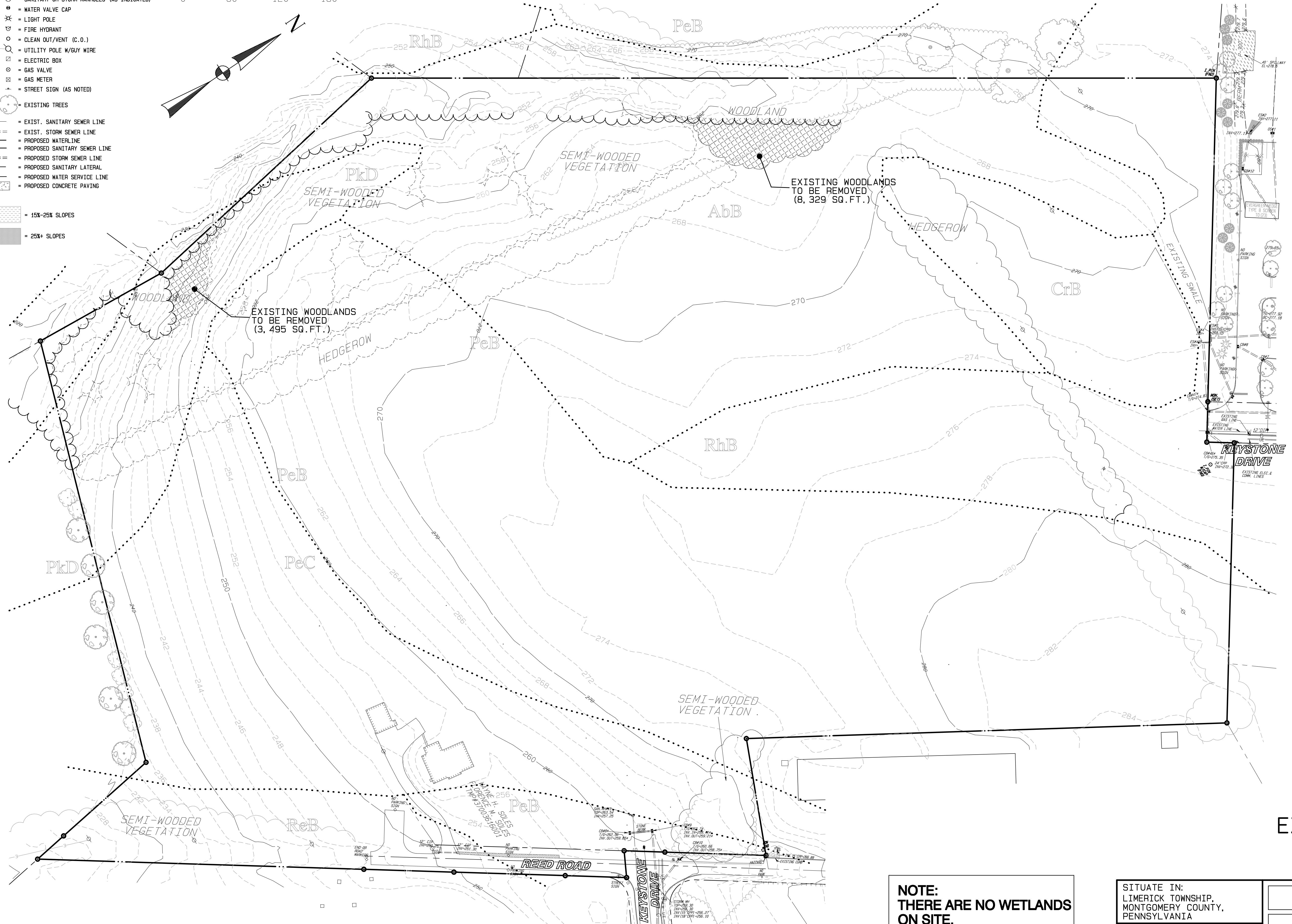
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#4 TCD	9-7-22	
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-S -S	= PROPOSED SANITARY LATERAL
-S -S	= PROPOSED WATER SERVICE LINE
-S -S	= PROPOSED CONCRETE PAVING

GRAPHIC SCALE 1"=60'

0 60 120 180



The soils on site are:

AbB - Abbottstown silt loam, 3 to 8 percent slopes

CrB - Croton silt loam, 3 to 8 percent slopes

PeB - Penn silt loam, 8 to 15 percent slopes

PeC - Penn silt loam, 15 to 25 percent slopes

RhB - Reville silt loam, 3 to 8 percent slopes

SOIL LIMITATIONS	SOIL RESOLUTIONS	AbB	CrB	PeB	PeC	PkD	RhB
Cutbanks/Cave	Layback slopes - follow OSHA rules for safety	x	x	x	x	x	x
Corrosive to Concrete/Steel	Corrosive resistant concrete - protective barrier between water and the steel - galvanized steel	C/S	C/S	C	C	C/S	C/S
Drought	Compost mix to hold in moisture		x	x	x	x	x
Easily Erodible	Maintain erosion control BMPs	x	x			x	x
Flooding	Avoid work in flood areas						
Hydro/Saturated Zone/Seasonal High Water Table	Pumped water filter, footer drains	x	x			x	x
Hydro/Hydraulics	Avoidance, pumped water filter	x	x	x	x	x	x
Low Strength/Landslide Prone	Layback slopes/design for conditions	x	x	x	x	x	x
Slow Percolation	Drainage ditch, pumped water	x	x			x	x
Piping	Trench bags	x	x	x	x	x	x
Poor Source of Topsoil	Avoid reuse as topsoil or amend as necessary	x	x	x	x	x	x
Frost Action	Construct below frost depth/positive subgrade	x	x	x	x	x	x
Shrink-Swell	Provide positive drainage					x	
Potential Sinkhole	Design for conditions - drainage trenches, pumped water filter bag, sump pumps, footer drains					x	
Ponding	Provide positive drainage						
Wetness	Trench plugs	x	x			x	x

Soil Limitations

Cutbanks/Cave - Layback slopes - follow OSHA rules for safety

Corrosive to Concrete/Steel - use Corrosive resistant concrete - protective barrier between water and the steel - galvanized steel

Drought - Maintain erosion control BMPs

Easily Erodible - Maintain erosion control BMPs

Flooding - Avoid work in flood areas

Hydro/Saturated Zone/Seasonal High Water Table - Pumped water filter, footer drains

Hydro/Hydraulics - Avoidance, pumped water filter

Low Strength/Landslide Inclusions - Layback slopes/design for conditions

Slow Percolation - Drainage ditch, pumped water filter bag

Piping - Trench bags

Poor Source of Topsoil - Avoid reuse as topsoil or amend as necessary

Frost Action - Construct below frost depth/positive subgrade

Shrink-Swell - Provide positive drainage

Ponding - Provide positive drainage

Wetness - Trench plugs

TOTAL EXISTING WOODLAND ON SITE = 29,472 SQ.FT.
EXISTING WOODLANDS TO BE REMOVED = 11,824 SQ.FT. (40%)
EXISTING WOODLANDS TO REMAIN = 17,648 SQ.FT. (60%)

FINAL PLAN EXISTING CONDITIONS PLAN/ EXISTING RESOURCE & SITE ANALYSIS MAP

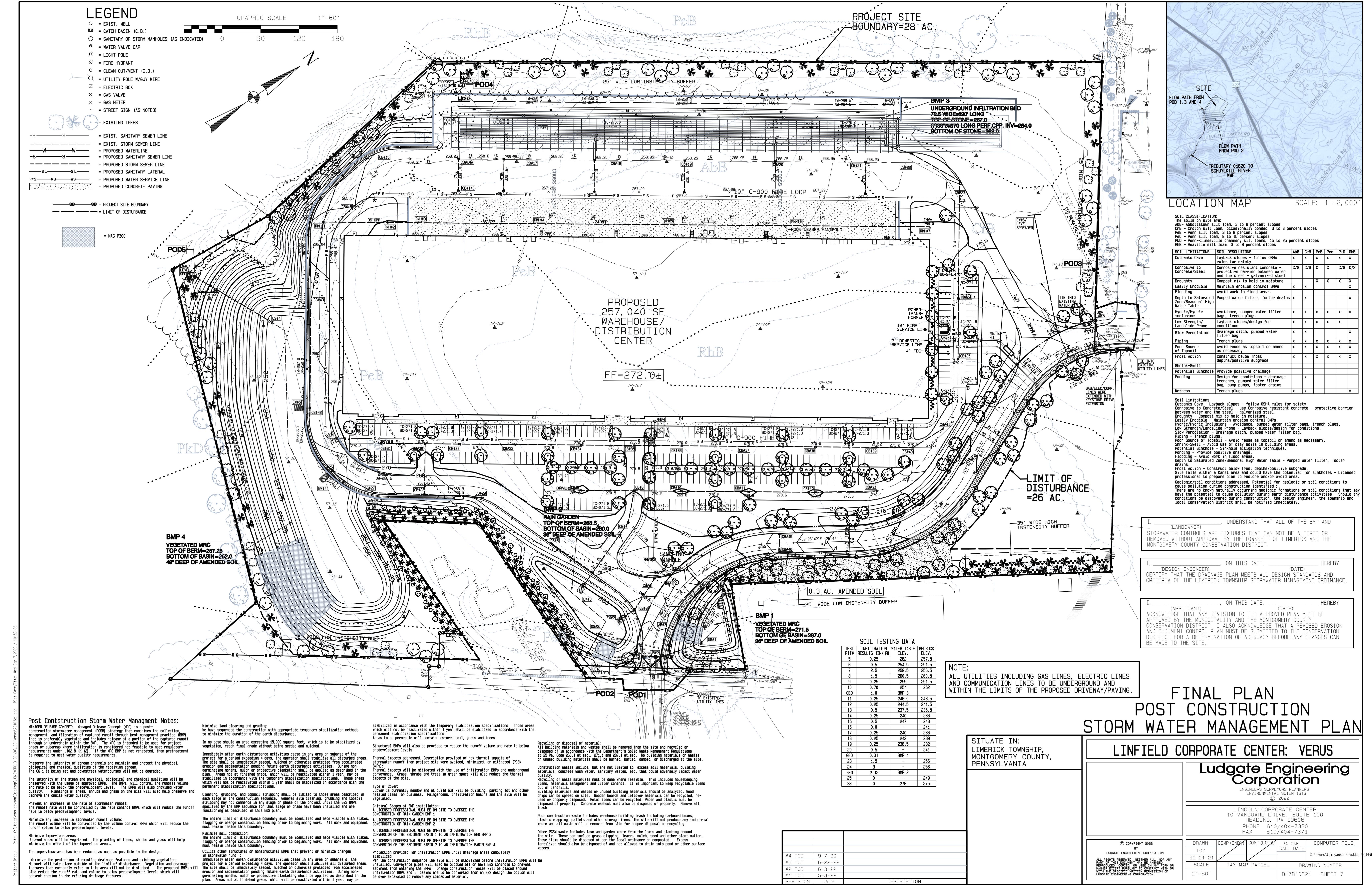
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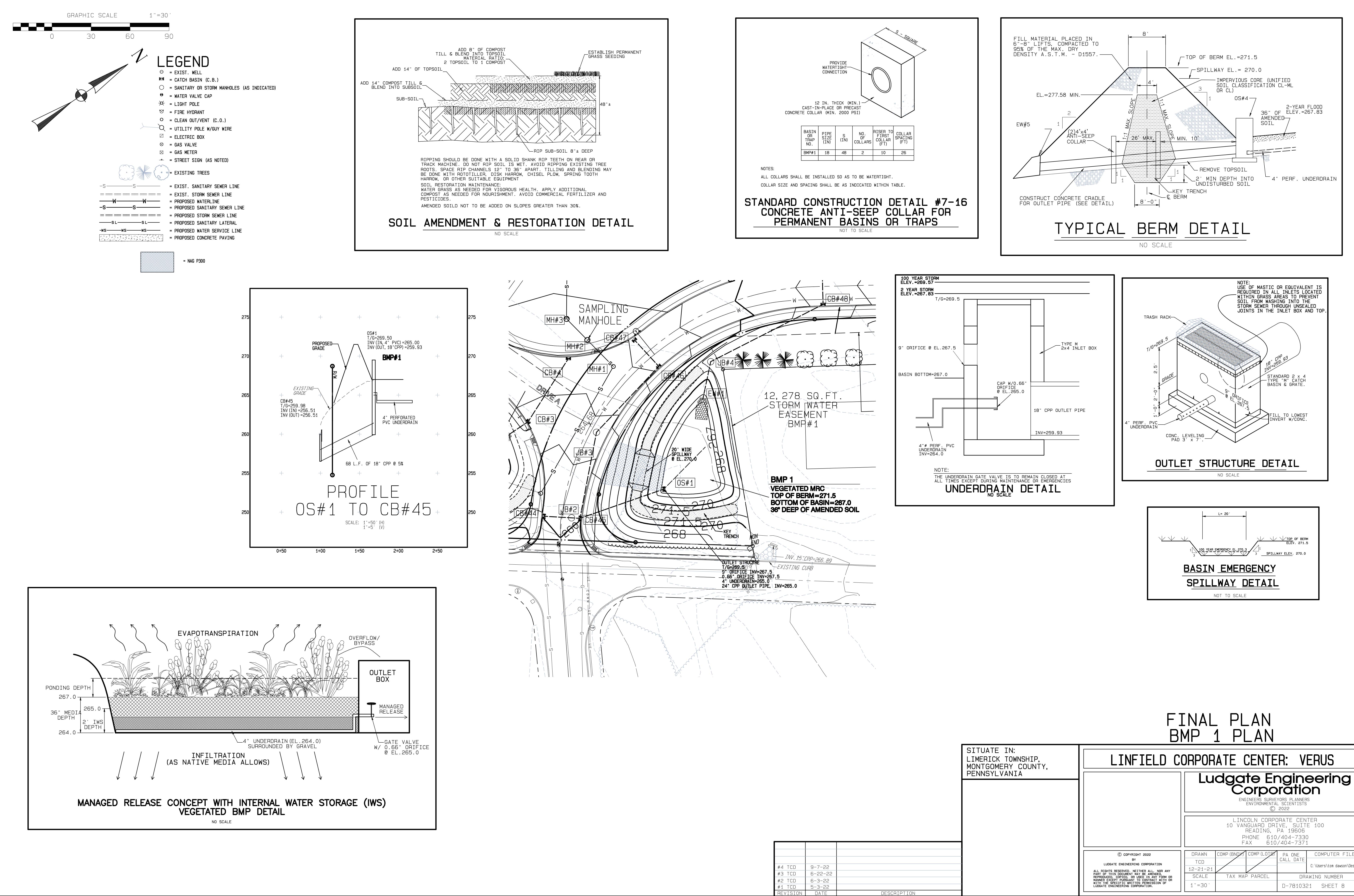
LINFIELD CORPORATE CENTER: VERUS

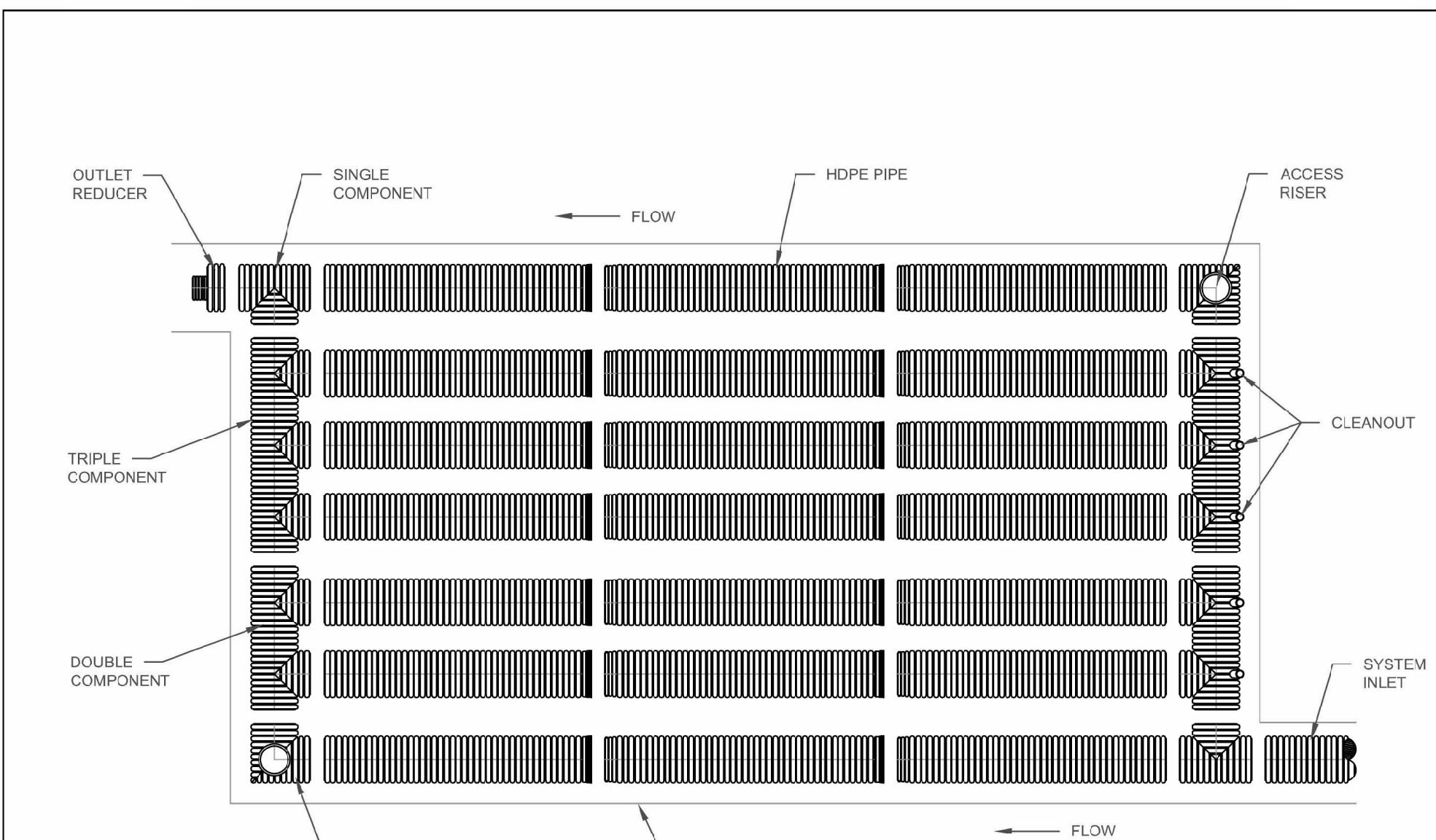
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Corporation
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10 VANGUARD DRIVE, SUITE 100
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REVISION DATE PA ONE COMPUTER FILE
1"=60' DRAWN COMP (BNDY) COMP (LOC) PA ONE CALL DATE COMPUTER FILE
12-21-21 TAX MAP PARCEL DRAWING NUMBER
1"=60' D-7810321 SHEET 6







NOTES:
1. FOR INSTALLATION RECOMMENDATIONS, SEE 702 RETENTION-DETENTION SYSTEM (CROSS-SECTION)
AND 703 RETENTION-DETENTION SYSTEM (RISER AND CLEANOUTS)

2	GENERAL UPDATES AND RENAMED	TJR	02/19/16	-
REV.	DESCRIPTION	BY	MM/DD/YY	CHKD

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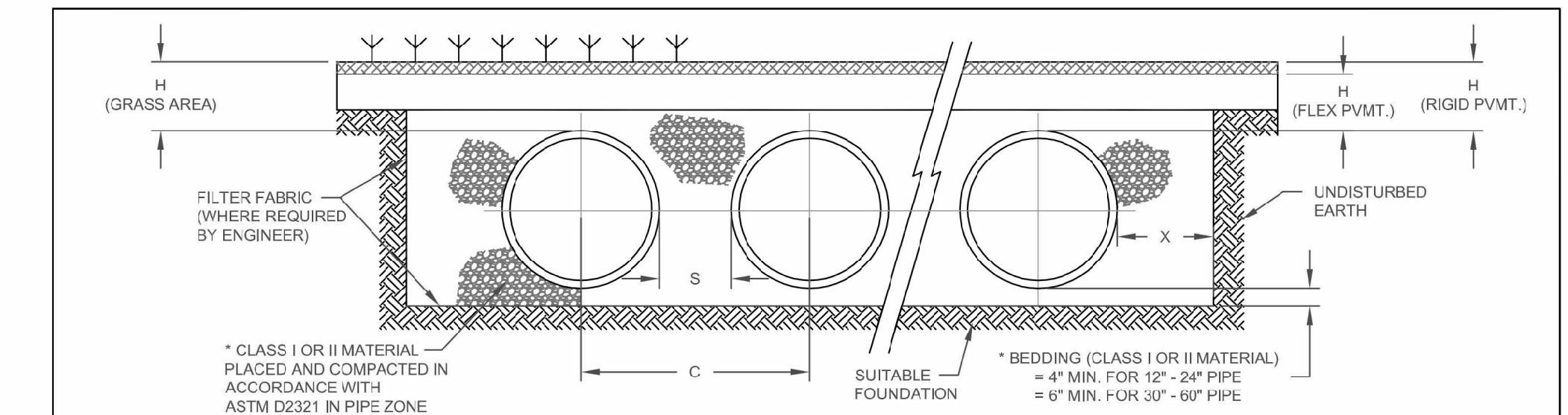
ADVANCED DRAINAGE SYSTEMS, INC. ("ADS") HAS PREPARED THIS DETAIL BASED ON INFORMATION PROVIDED TO ADS. THIS DRAWING IS INTENDED TO DEPICT THE COMPONENTS AS REQUESTED. ADS HAS NOT PERFORMED ANY ENGINEERING OR DESIGN SERVICES FOR THIS PROJECT, NOR HAS ADS INDEPENDENTLY VERIFIED THE INFORMATION SUPPLIED. THE INSTALLATION DETAILS PROVIDED REFER TO THE INFORMATION SUPPLIED. THE DESIGN ENGINEER SHALL PROVIDE THE DETAILS FOR THIS PROJECT. IT IS THE DESIGN ENGINEER'S RESPONSIBILITY TO ENSURE THAT THE DETAILS PROVIDED HEREIN MEETS OR EXCEEDS THE APPLICABLE NATIONAL, STATE, OR LOCAL REQUIREMENTS AND TO ENSURE THAT THE DETAILS PROVIDED HEREIN ARE ACCEPTABLE FOR THIS PROJECT.

RETENTION-DETENTION SYSTEM (PLAN VIEW)

4640 TRUEMAN BLVD
HILLIARD, OHIO 43026

DRAWING NUMBER: STD-701

ADS
ADVANCED DRAINAGE SYSTEMS, INC.



NOTES:
1. 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.
2. ALL RETENTION AND DETENTION SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, LATEST EDITION AND THE MANUFACTURER'S PUBLISHED INSTALLATION GUIDELINES.
3. MEASURES SHOULD BE TAKEN TO PREVENT THE MIGRATION OF NATIVE FINES INTO THE BACKFILL MATERIAL WHEN REQUIRED. SEE ASTM D2321.

4. 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.
5. 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 TO THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.
6. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I OR II. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER, UNLESS OTHERWISE NOTED BY THE DESIGN ENGINEER. THE BEDDING THICKNESS SHALL BE 4" (100mm) FOR 4"-24" (100mm-600mm); 6" (150mm) FOR 30"-60" (750mm-1500mm).
7. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I OR II IN THE PIPE ZONE EXTENDING NOT LESS THAN 6" 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
8. MINIMUM COVER: MINIMUM COVER OVER ALL RETENTION/DETENTION SYSTEMS IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" FROM TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOATATION FOR TRAFFIC APPLICATIONS. MINIMUM COVER IS 12" UP TO 42"-84" DIAMETER PIPE AND 24" FOR COVER OF 42"-84" DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT.

* CLASS I BACKFILL REQUIRED AROUND 60" DIAMETER FITTINGS.

4	GENERAL UPDATES AND RENAMED	TJR	02/19/16	-
REV.	DESCRIPTION	BY	MM/DD/YY	CHKD

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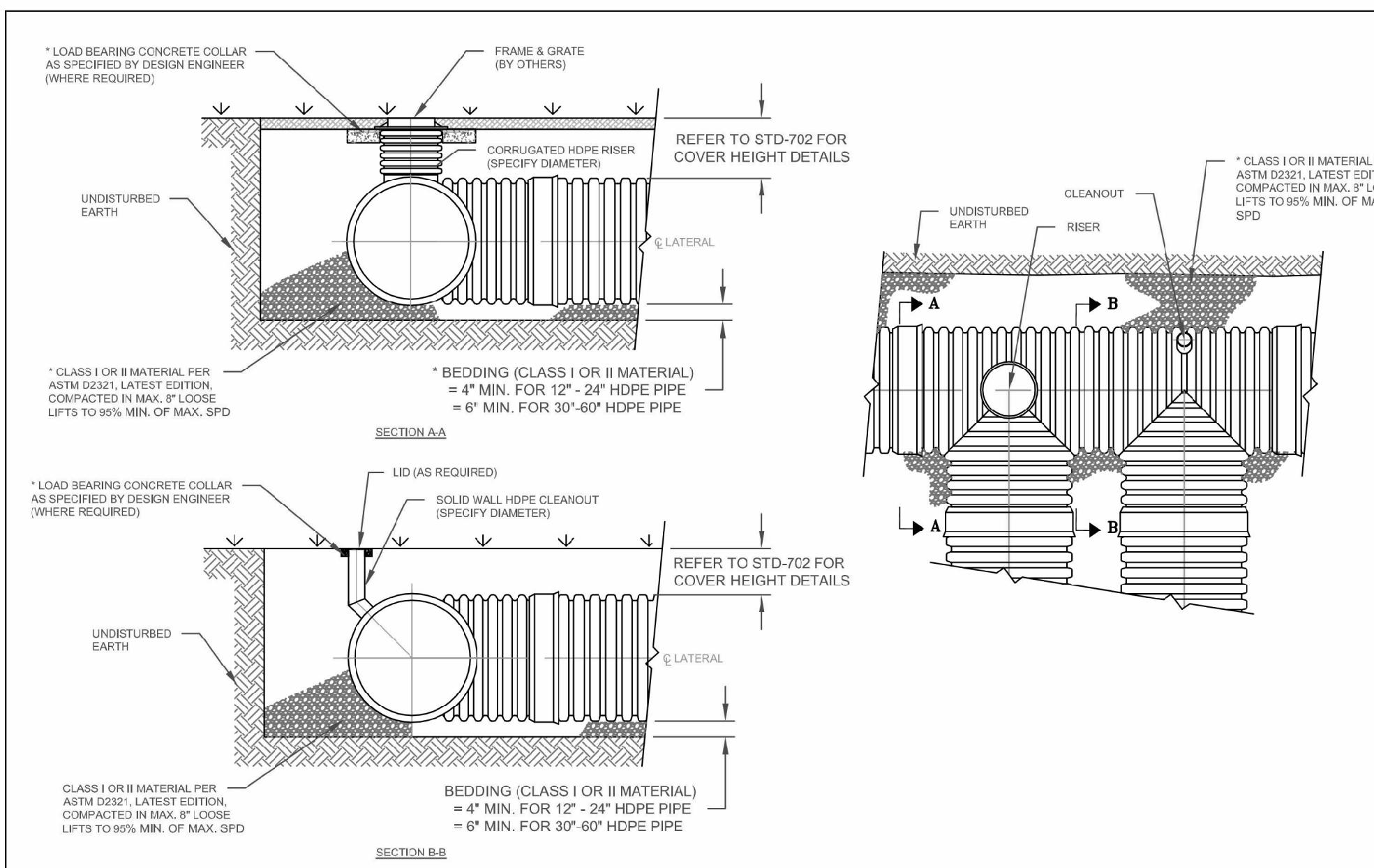
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RETENTION-DETENTION SYSTEM (CROSS-SECTION)

4640 TRUEMAN BLVD
HILLIARD, OHIO 43026

DRAWING NUMBER: STD-702

ADS
ADVANCED DRAINAGE SYSTEMS, INC.



4	GENERAL UPDATES AND RENAMED	TJR	02/19/16	-
REV.	DESCRIPTION	BY	MM/DD/YY	CHKD

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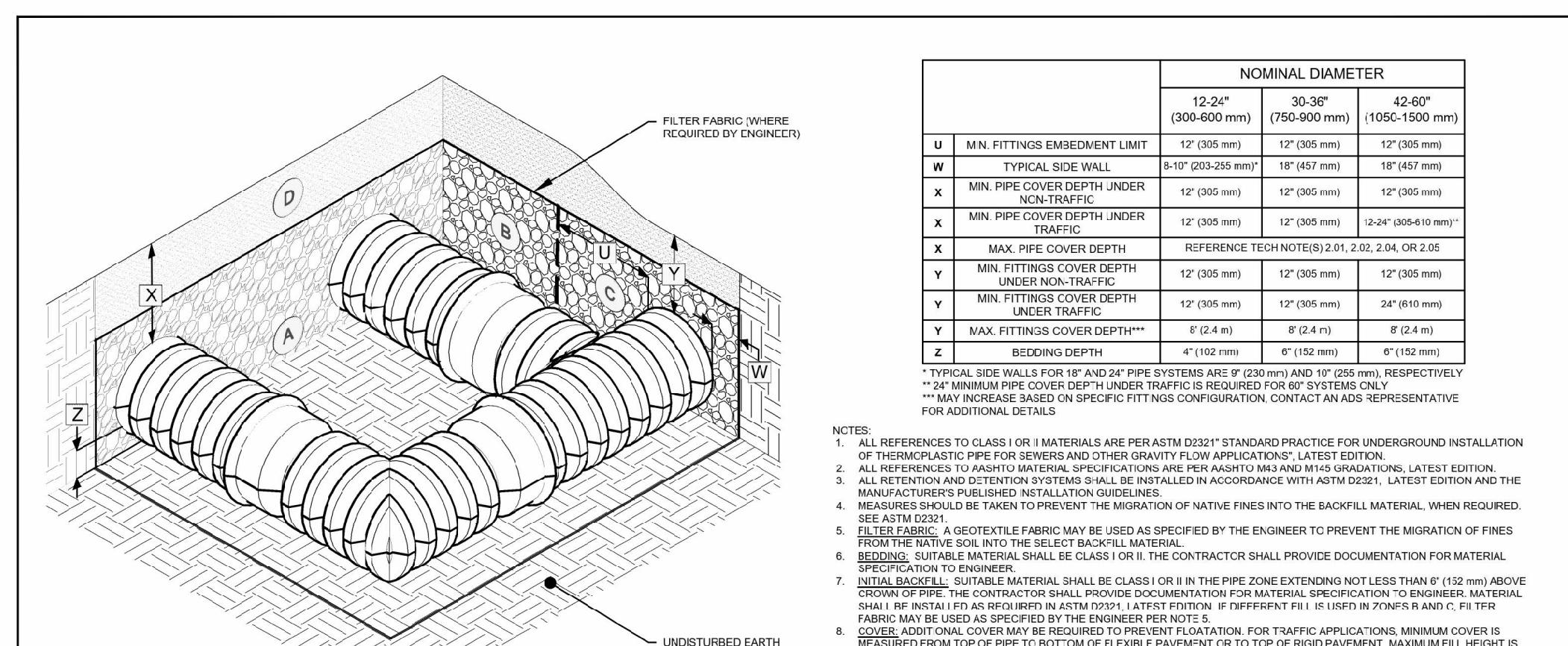
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RETENTION-DETENTION SYSTEM (RISER AND CLEANOUT)

4640 TRUEMAN BLVD
HILLIARD, OHIO 43026

DRAWING NUMBER: STD-703

ADS
ADVANCED DRAINAGE SYSTEMS, INC.



NOTES:
1. ALL REFERENCES TO CLASS I OR II MATERIALS ARE PER ASTM D2321 "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST EDITION.
2. ALL REFERENCES TO GEOTEXTILE MATERIALS SPECIFICATIONS ARE PER AASHTO M145 AND M146 OR AASHTO M147, LATEST EDITION.
3. ALL RETENTION AND DETENTION SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, LATEST EDITION AND THE MANUFACTURER'S PUBLISHED INSTALLATION GUIDELINES.
4. MEASURES SHOULD BE TAKEN TO PREVENT THE MIGRATION OF NATIVE FINES INTO THE BACKFILL MATERIAL, WHEN REQUIRED.
5. 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.
6. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I OR II. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER, UNLESS OTHERWISE NOTED BY THE DESIGN ENGINEER.
7. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I OR II IN THE PIPE ZONE EXTENDING NOT LESS THAN 6" (150mm) ABOVE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. THE INITIAL BACKFILL SHALL BE INSTALLED AS PROVIDED IN ASTM D2321, LATEST EDITION. IF DIFFERENT FROM A, B, OR C, THE TRAVERSE PIPE SHALL BE INSTALLED AS PROVIDED IN THE DESIGN ENGINEER'S PLANS.
8. COVER: ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOATATION FOR TRAFFIC APPLICATIONS. MINIMUM COVER IS LIMITED TO 12" (300mm) OVER THE FLEXIBLE PAVEMENT OR SYSTEM INSTALLATION. PLEASE NOTE THESE LIMITS APPLY TO ALL FITTINGS WITHIN SYSTEM LIMITS, AND NOT JUST MANIFOLD FITTINGS. CONTACT AN ADS REPRESENTATIVE WHEN MAXIMUM FILL HEIGHTS EXCEED 12" (300mm).

ACCEPTABLE FILL MATERIALS			
MATERIAL LOCATION	ASTM MATERIAL CLASSIFICATION	AASHTO MATERIAL CLASSIFICATION	COMPACTION / DENSITY REQUIRED
D FINAL/FINAL FILL LIMITS STARTING 12" (300mm) FROM THE TOP OF THE INITIAL BACKFILL LAYER AND END AT THE BOTTOM OF THE SYSTEM INVERT (TOP OF THE FITTING). PLEASE NOTE THAT PAVEMENT SURFACE MAY BE INCLUDED IN THE FINAL FILL.	N/A ²	N/A ²	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE SPECIFIC MATERIAL AND PREPARATION REQUIREMENTS.
C FITTING EMBODIMENT FILL SURROUNDING THE SYSTEM FITTINGS FROM THE INVERT (BOTTOM) UP TO THE TOP OF THE FITTING. PLEASE NOTE THAT PAVEMENT SURFACE MAY BE INCLUDED IN THE FINAL FILL.	CLASS I OR II ¹	AASHTO M145 A1, A3 OR AASHTO M45 A5, A6, A56, A57, A67	COMPACT IN MAXIMUM 6" (230mm) LOOSE LIFTS TO A MINIMUM OF 95% OF MAXIMUM STANDARD PROCTOR DENSITY
B PIPE EMBODIMENT FILL SURROUNDING THE SYSTEM PIPE FROM THE INVERT (BOTTOM) UP TO NO LESS THAN 6" ABOVE CROWN (TOP) OF THE PIPE.	CLASS I OR II	AASHTO M145 A1, A3 OR AASHTO M45 A6, A6, A56, A57, A67	COMPACT PER THE LATEST EDITION OF ASTM D2321 SPECIFICATIONS
A BEDDING: FILL BELOW THE PIPE FROM THE INVERT (TOP) OF THE PIPE TO THE INVERT (BOTTOM) OF THE PIPE.	CLASS I OR II ¹	AASHTO M145 A1, A3 OR AASHTO M45 A6, A6, A56, A57, A67	COMPACT TO 90% STANDARD PROCTOR DENSITY

RCV.	DESCRIPTION	BY	MM/DD/YY	CHKD
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RETENTION-DETENTION SYSTEM (SYSTEM INSTALLATION)

4640 TRUEMAN BLVD
HILLIARD, OHIO 43026

DRAWING NUMBER: STD-705

ADS
ADVANCED DRAINAGE SYSTEMS, INC.

* PLEASE NOTE: HDPE PIPE SYSTEMS ARE LIMITED TO ASTM D2321 CLASS I (AASHTO M45 OR A46) BACKFILL MATERIALS ONLY.

¹ 2. MATERIAL SPECIFICATIONS INCLUDE ANY SOLID ROCK, DUST, CLAY, NATIVE SOIL, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAYMENT SURFACE REQUIREMENTS.

² PLEASE NOTE: PAVED INSTALLATIONS MAY HAVE SPECIFIC MATERIAL AND PREPARATION REQUIREMENTS.

1 OF 1

FINAL PLAN BMP 3 PLAN

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DRAWN COMP(BNDL) COMP(LG) PA DATE COMPUTER FILE
TCD 12-21-21
SCALE TAX MAP PARCEL DRAWING NUMBER
1"=30' D-7810321 SHEET 10B

REVISION DATE DESCRIPTION

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#3 TCD 6-22-22

#2 TCD 6-3-22

#1 TCD 5-3-22

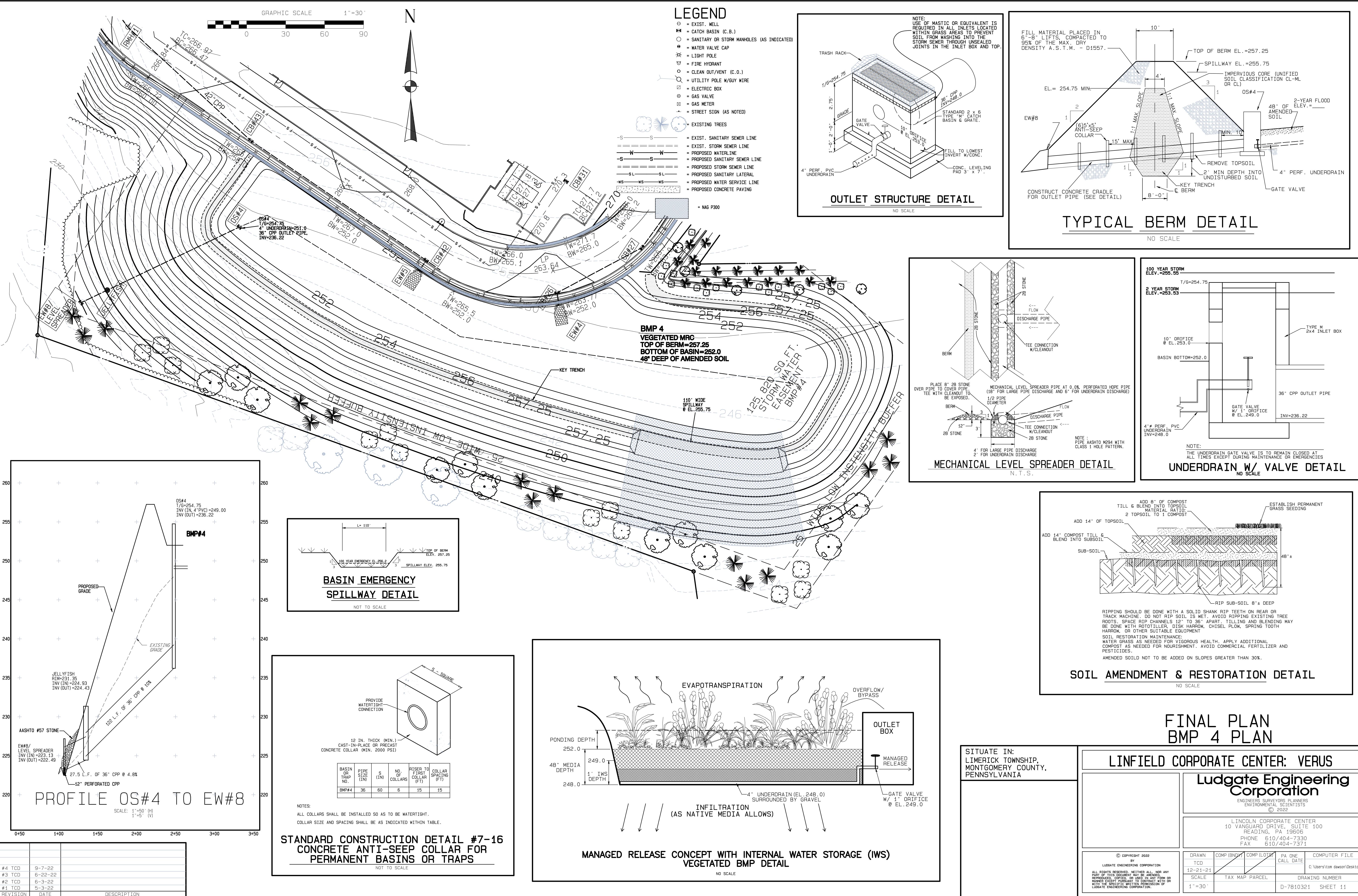
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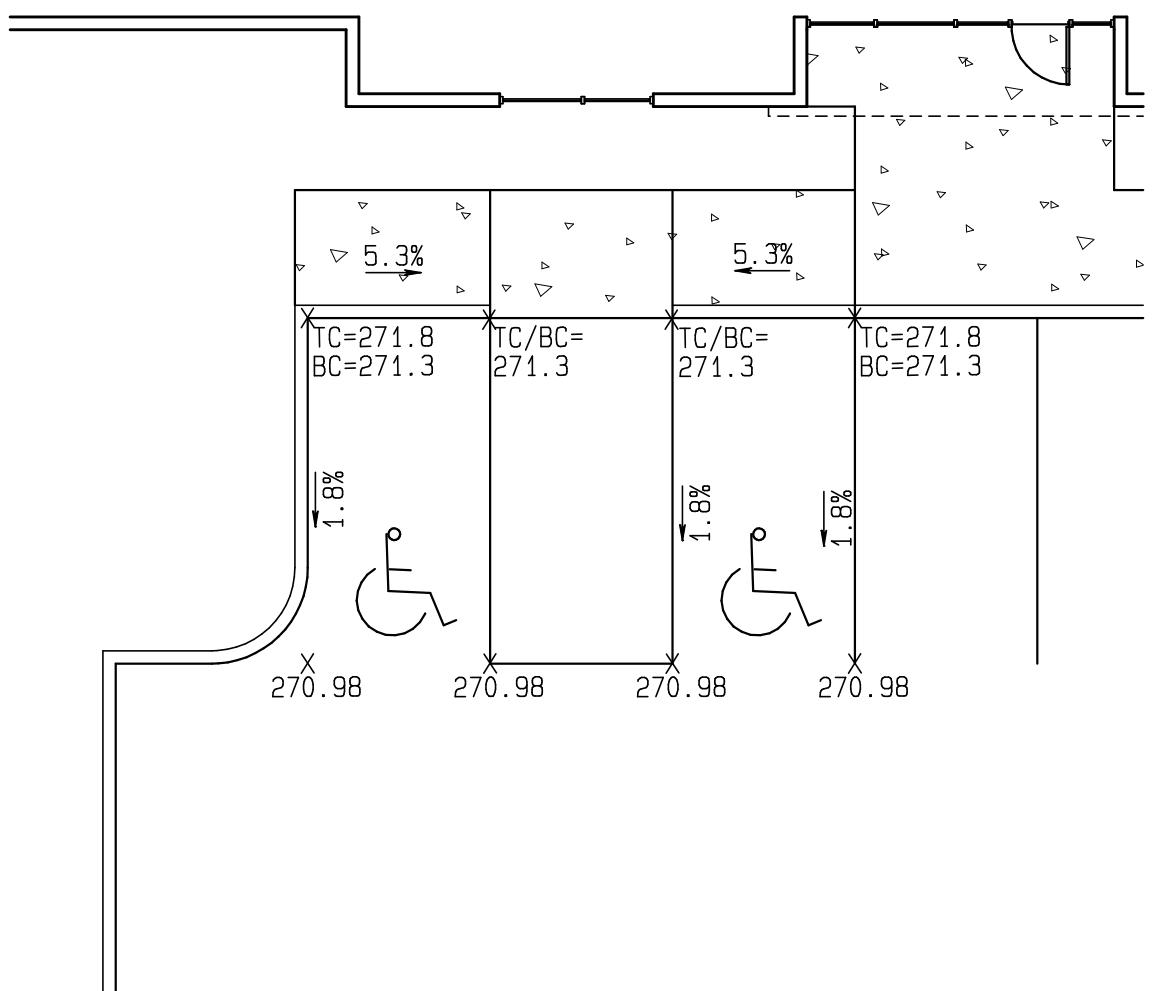
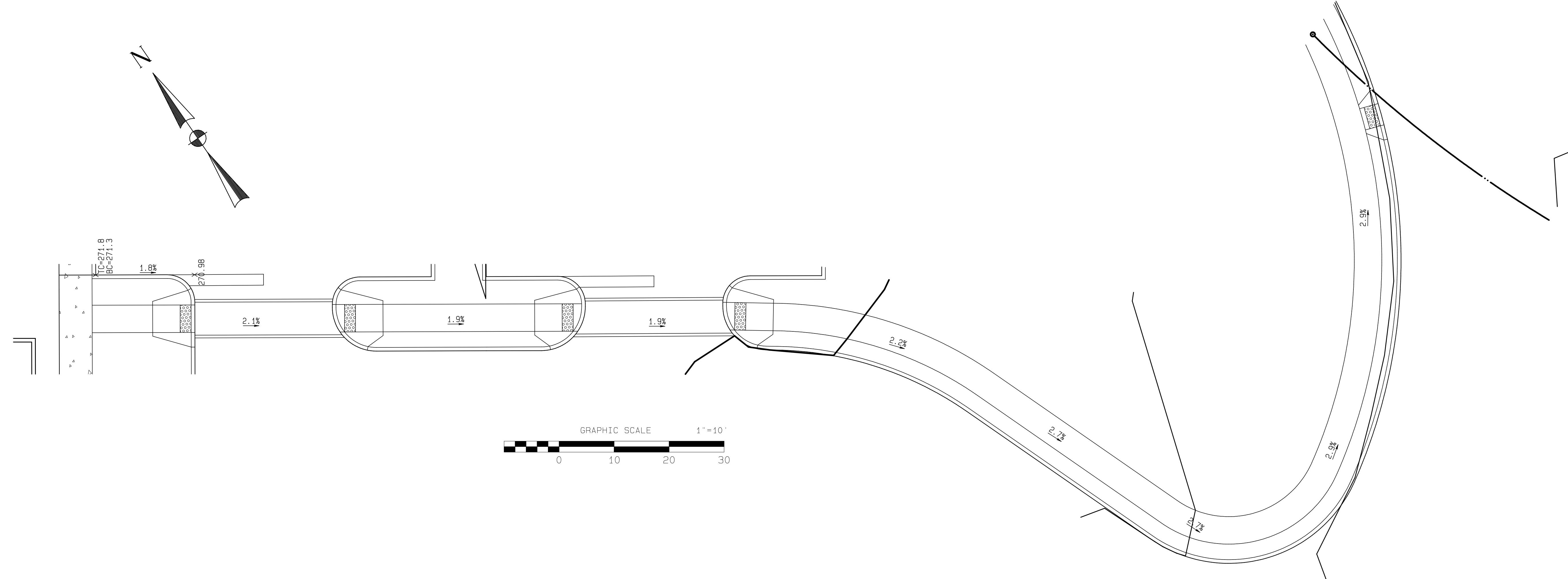
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1 OF 1

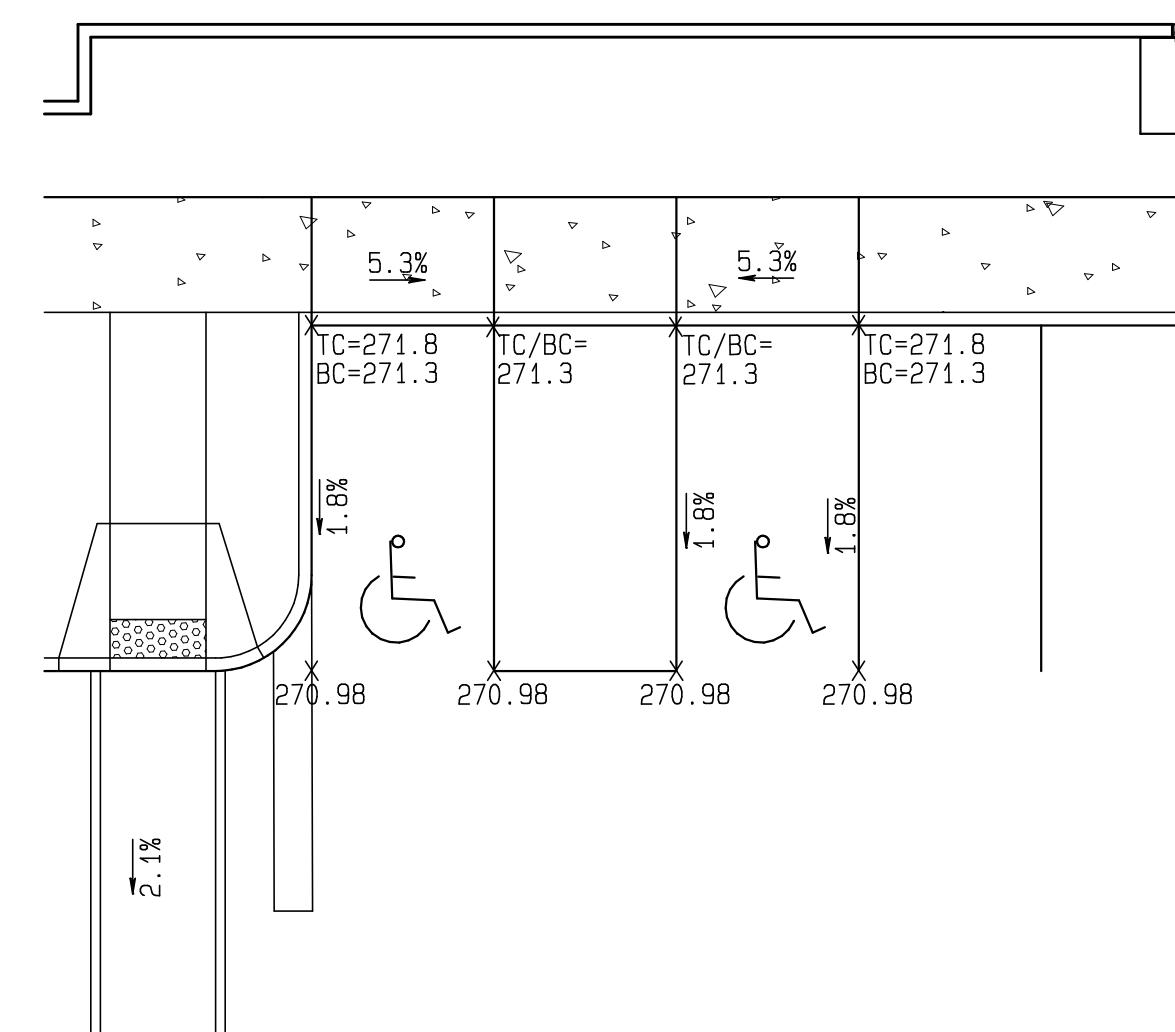


LEGEND

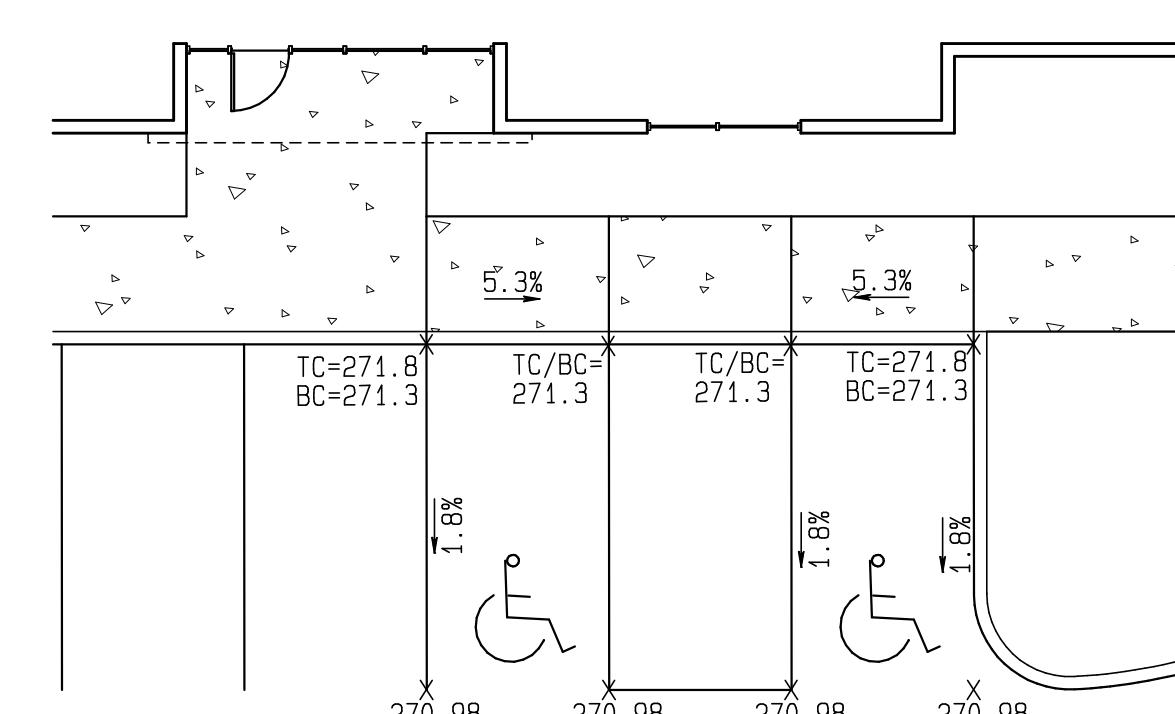
- = EXIST. WELL
- = CATCH BASIN (C.B.)
- = SANITARY OR STORM MANHOLES (AS INDICATED)
- = WATER VALVE CAP
- ✖ = LIGHT POLE
- ✖ = FIRE HYDRANT
- = CLEAN OUT/VENT (C.O.)
- = UTILITY POLE W/GUY WIRE
- = ELECTRIC BOX
- = GAS VALVE
- = GAS METER
- ↑ = STREET SIGN (AS NOTED)
- Existing Trees
- S-S = EXIST. SANITARY LINE
- = EXIST. STORM SEWER LINE
- S-W = PROPOSED WATERLINE
- = PROPOSED SANITARY SEWER LINE
- = PROPOSED STORM SEWER LINE
- = PROPOSED SANITARY LATERAL
- = PROPOSED WATER SERVICE LINE
- = PROPOSED CONCRETE PAVING



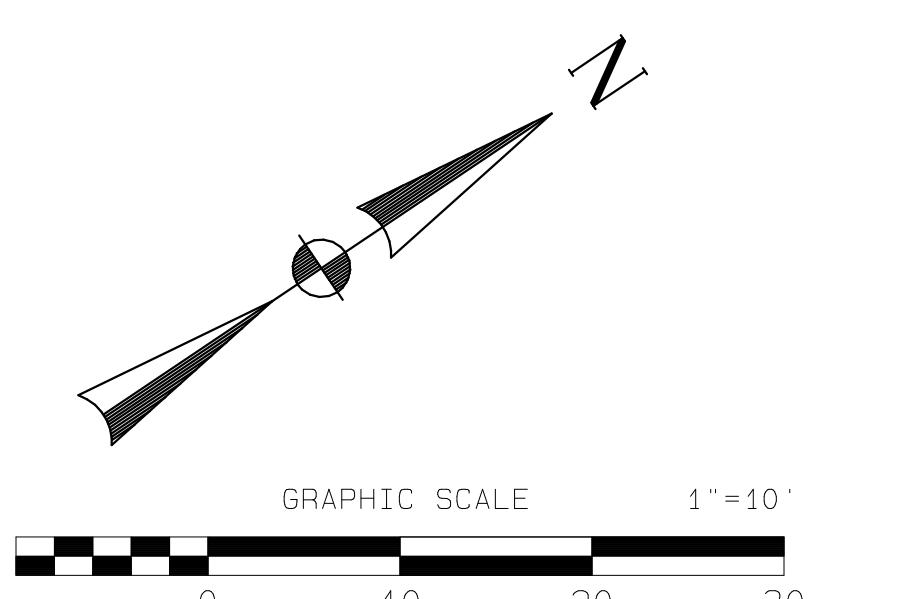
ADA PARKING AREA A



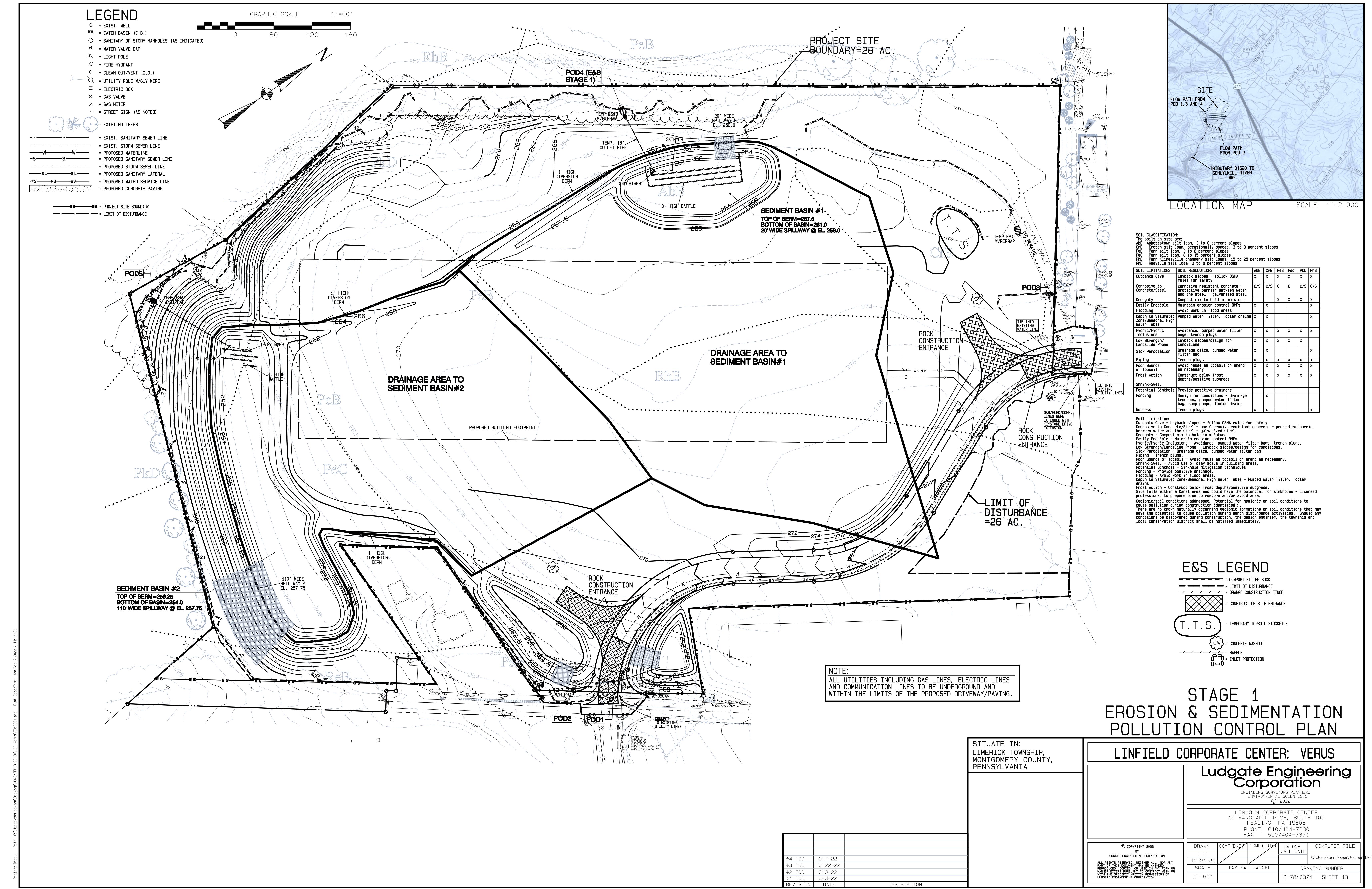
ADA PARKING AREA B



ADA PARKING AREA C



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SCALE 1''=10'	TAX MAP PARCEL DRAWING NUMBER D-7810321 SHEET 12
REVISION #4 TCD #3 TCD #2 TCD #1 TCD	DATE 9-7-22 6-22-22 6-3-22 5-3-22
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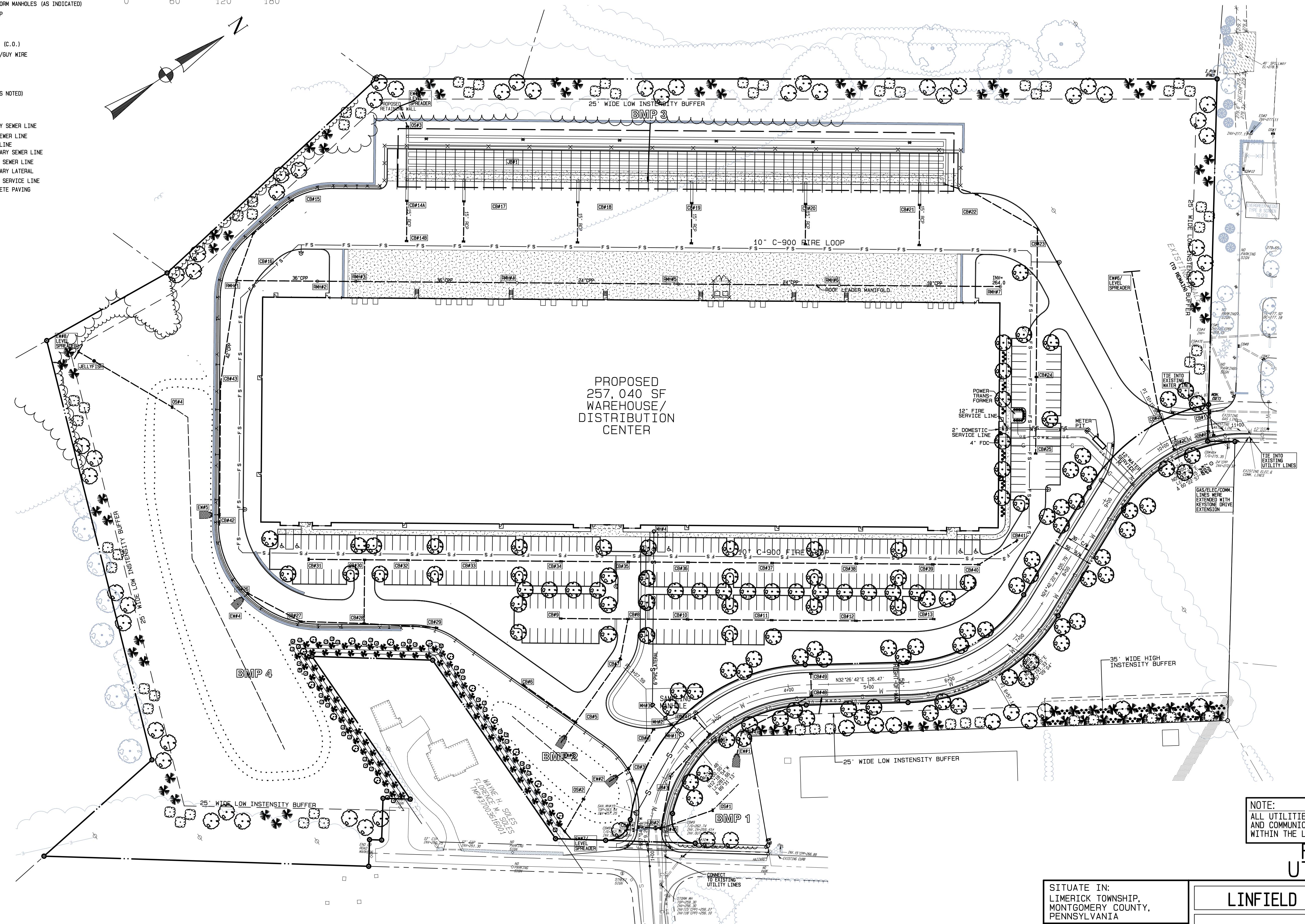


LEGEND

○	EXIST. WELL
■	CATCH BASIN (C.B.)
○	SANITARY OR STORM MANHOLES (AS INDICATED)
●	WATER VALVE CAP
✖	LIGHT POLE
✖	FIRE HYDRANT
○	CLEAN OUT/VENT (C.O.)
□	UTILITY POLE W/GUY WIRE
□	ELECTRIC BOX
○	GAS VALVE
□	GAS METER
▲	STREET SIGN (AS NOTED)
●	EXISTING TREES
-S -S	EXIST. SANITARY SEWER LINE
-W -W	EXIST. STORM SEWER LINE
—S—S—	PROPOSED WATERLINE
—S—S—	PROPOSED SANITARY SEWER LINE
—S—S—	PROPOSED STORM SEWER LINE
—S—S—	PROPOSED SANITARY LATERAL
—S—S—	PROPOSED WATER SERVICE LINE
—S—S—	PROPOSED CONCRETE PAVING

GRAPHIC SCALE 1"=60'

0 60 120 180



NOTE:
ALL UTILITIES INCLUDING GAS LINES, ELECTRIC LINES
AND COMMUNICATION LINES TO BE UNDERGROUND AND
WITHIN THE LIMITS OF THE PROPOSED DRIVEWAY/PAVING.

FINAL PLAN UTILITY PLAN

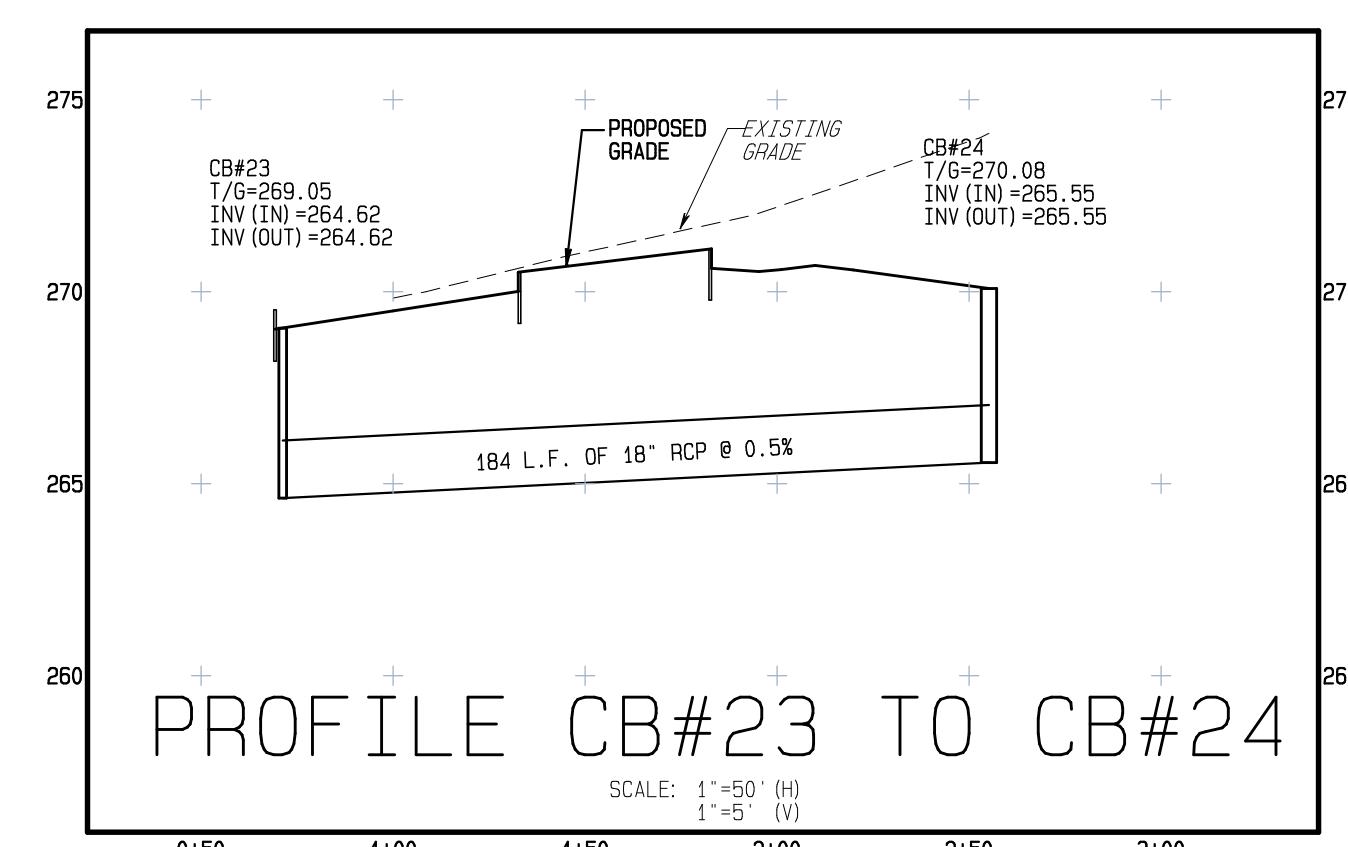
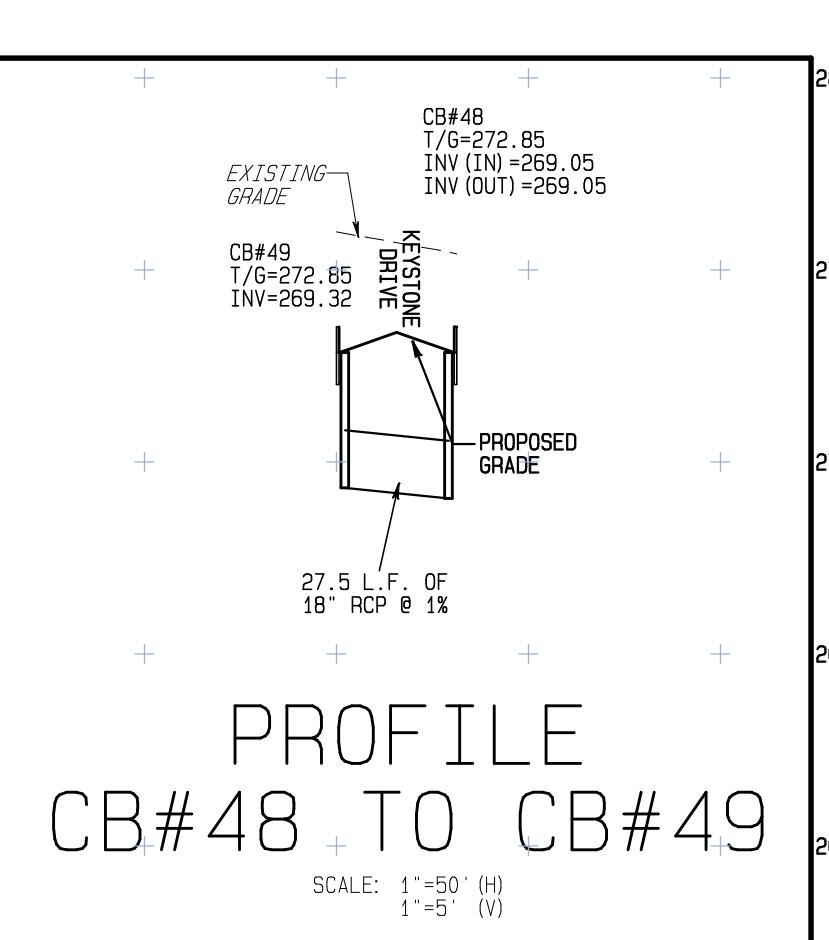
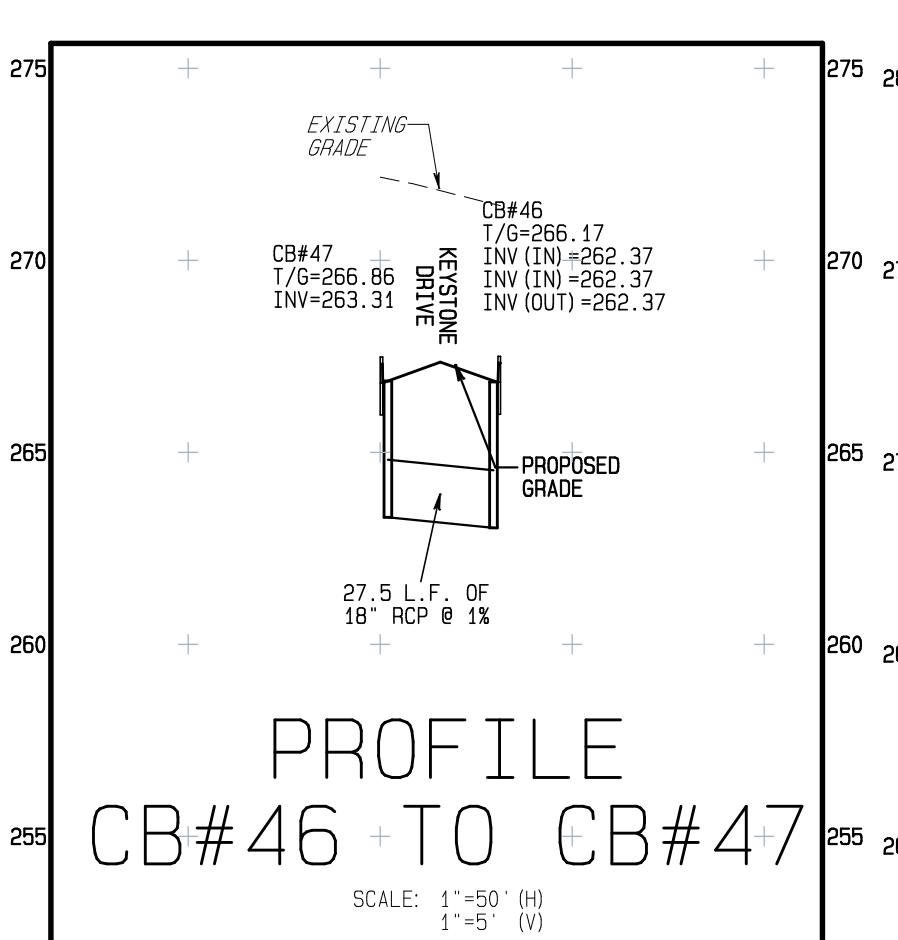
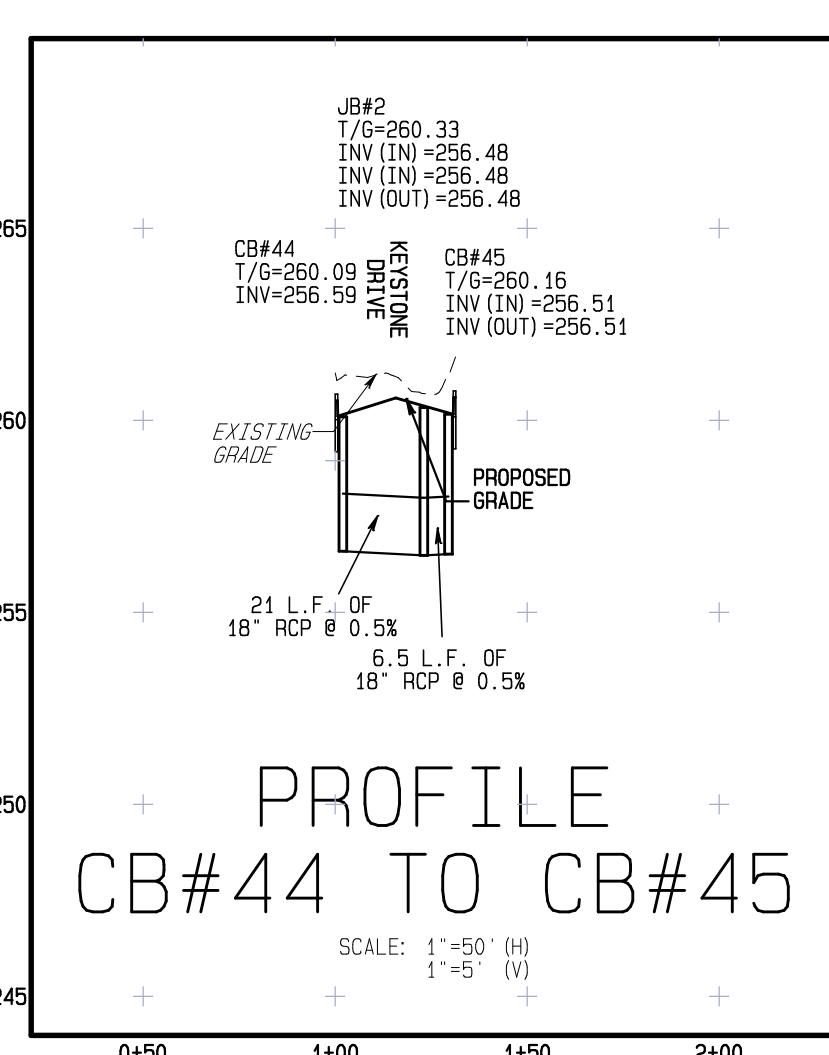
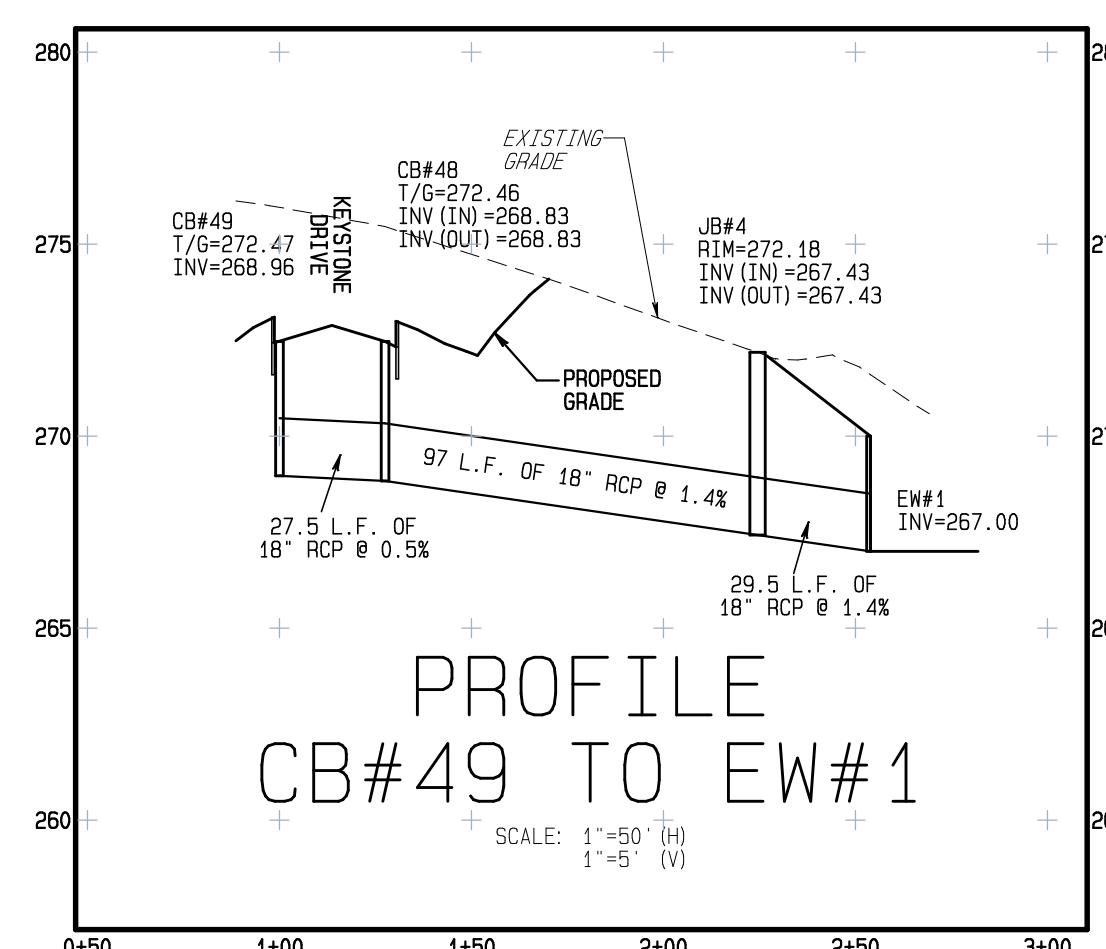
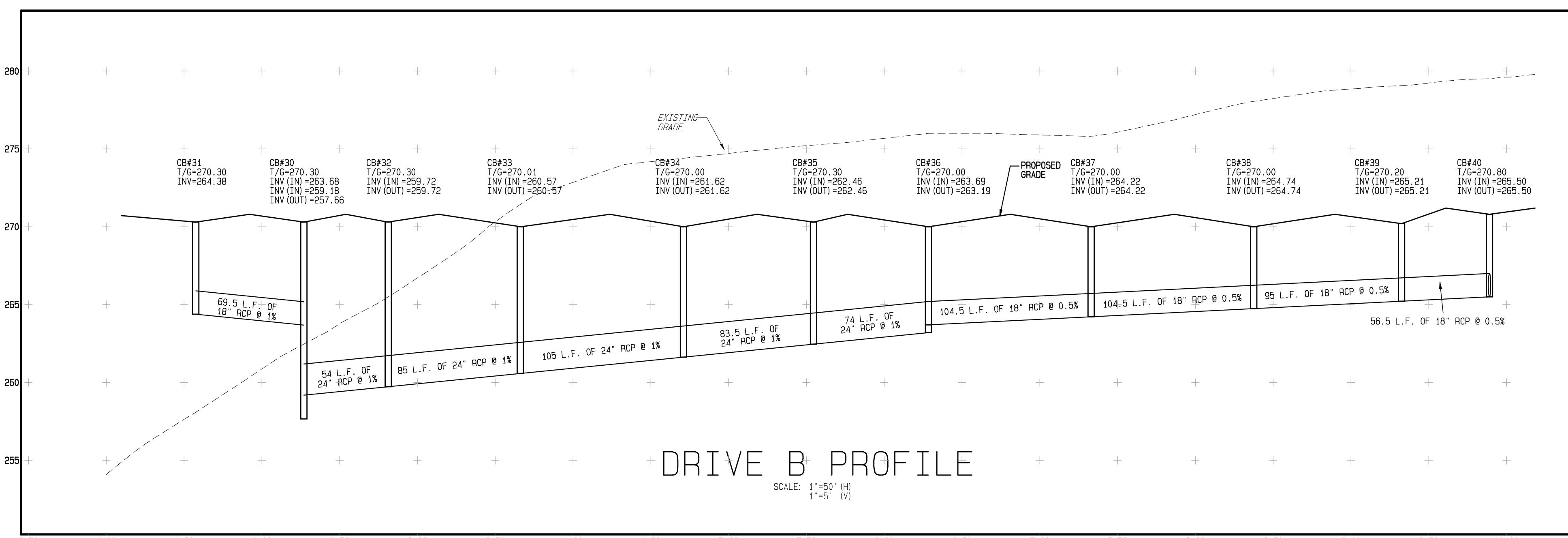
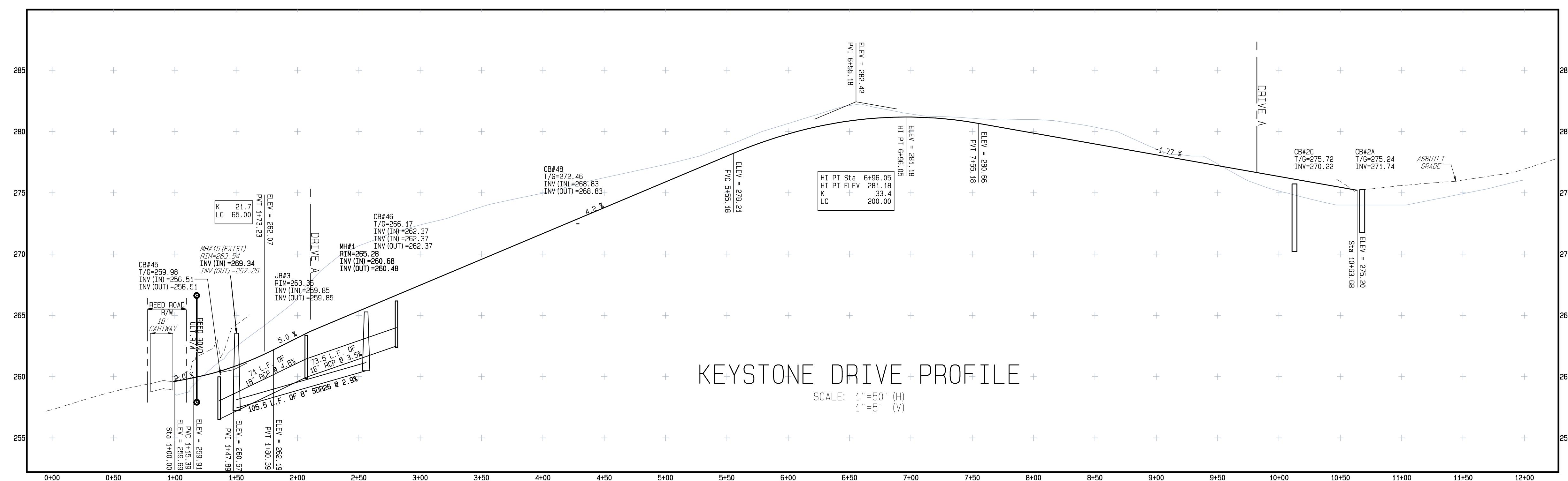
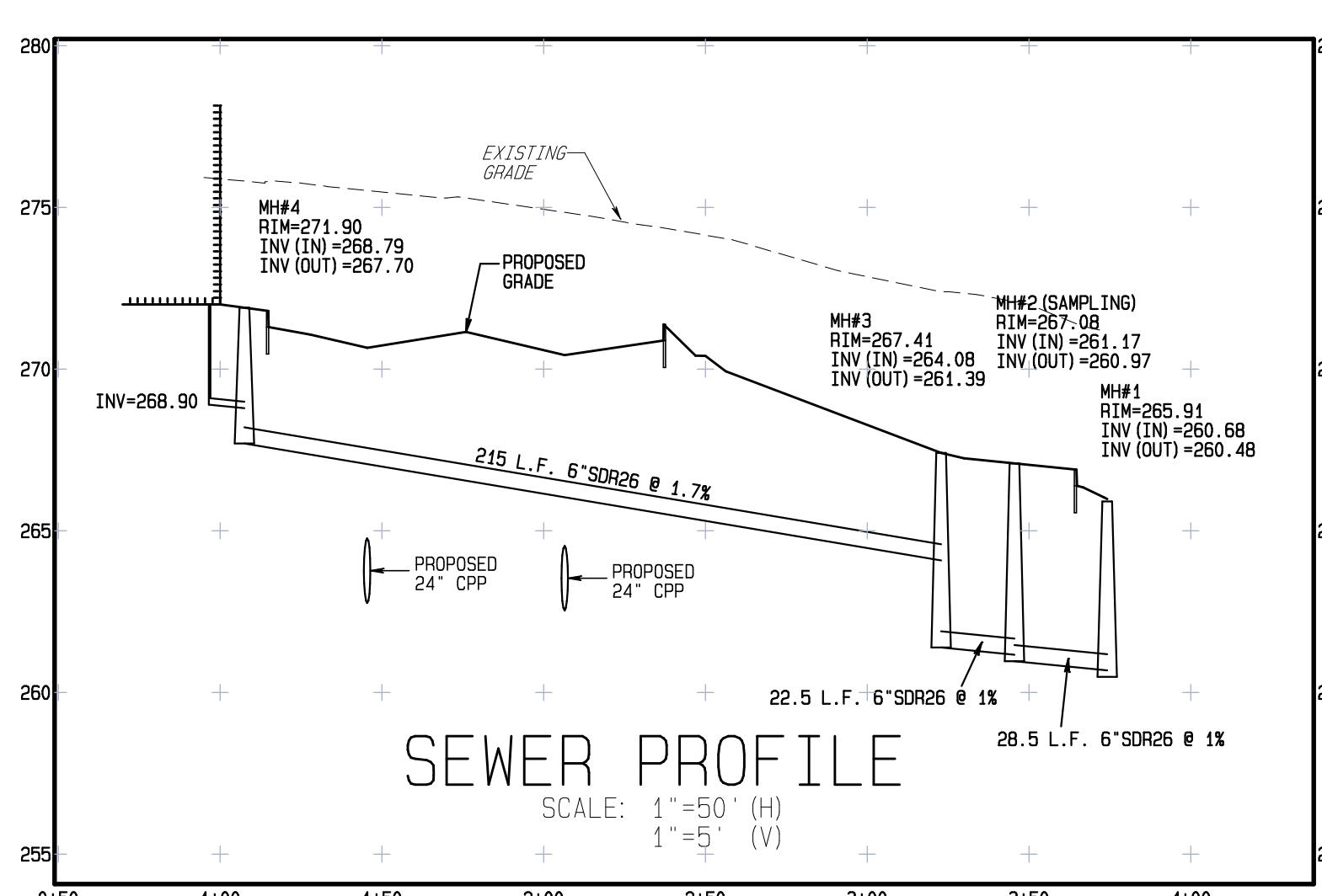
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REVISION #4 TCD #3 TCD #2 TCD #1 TCD 5-3-22	DESCRIPTION



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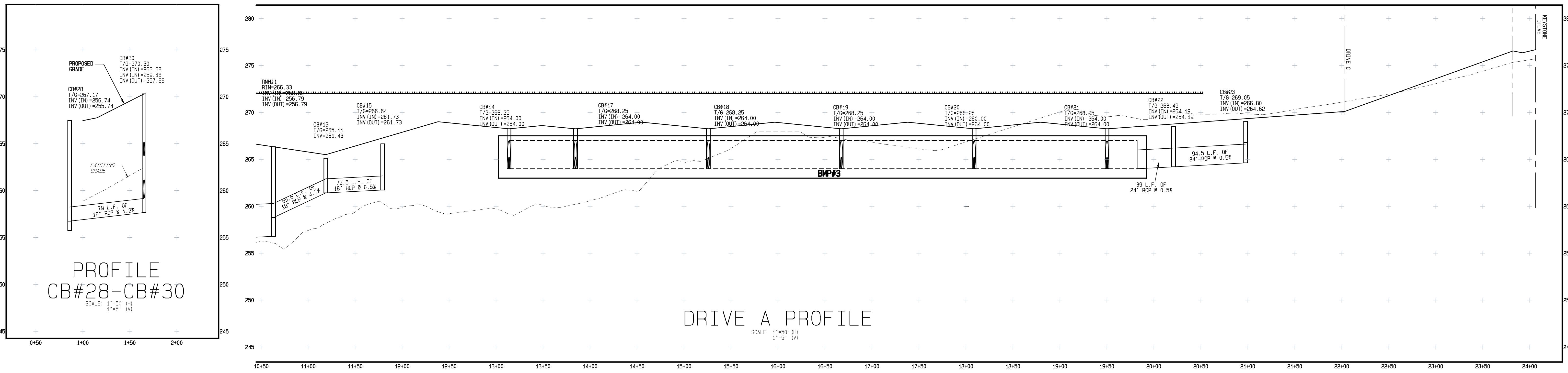
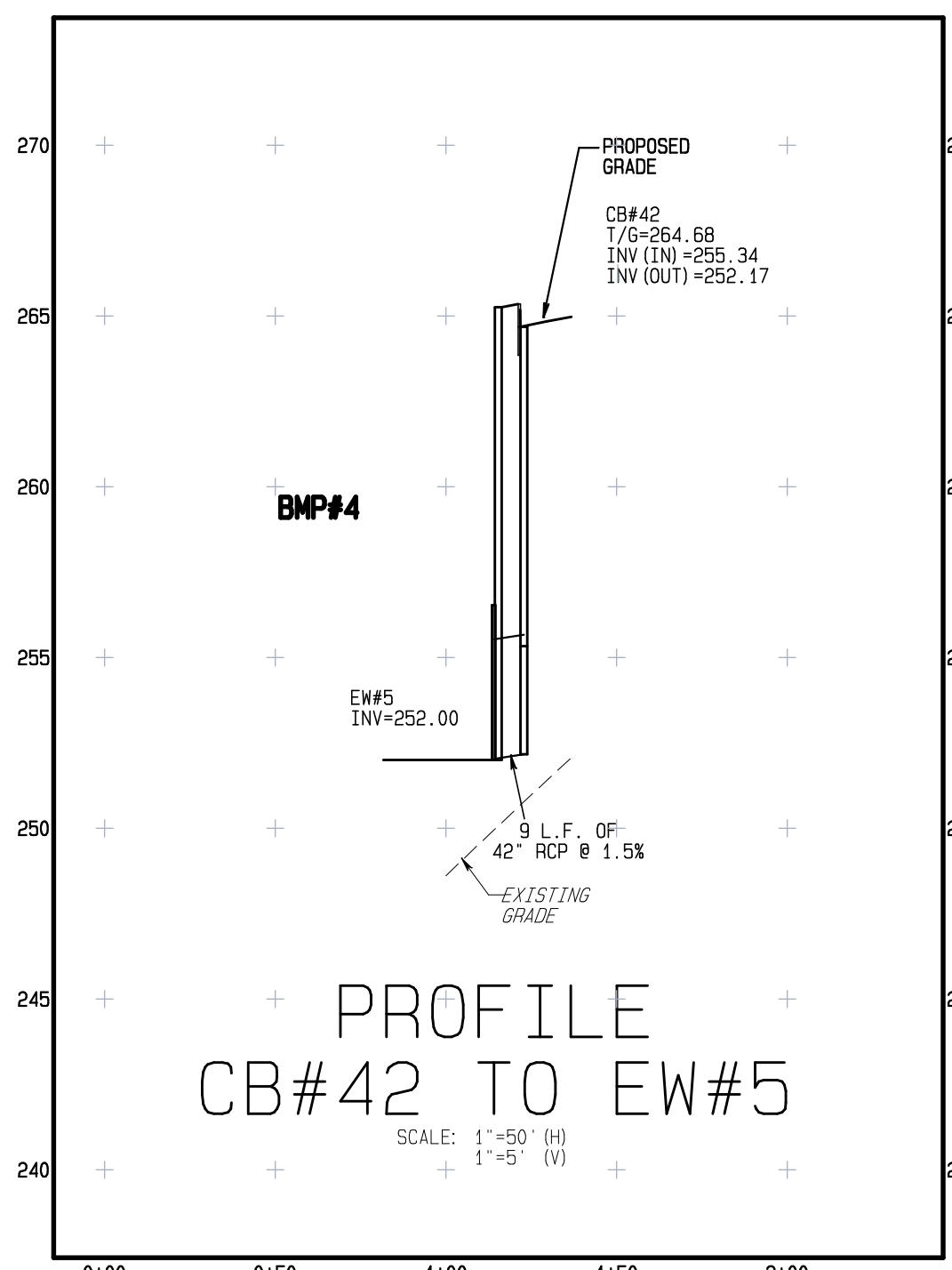
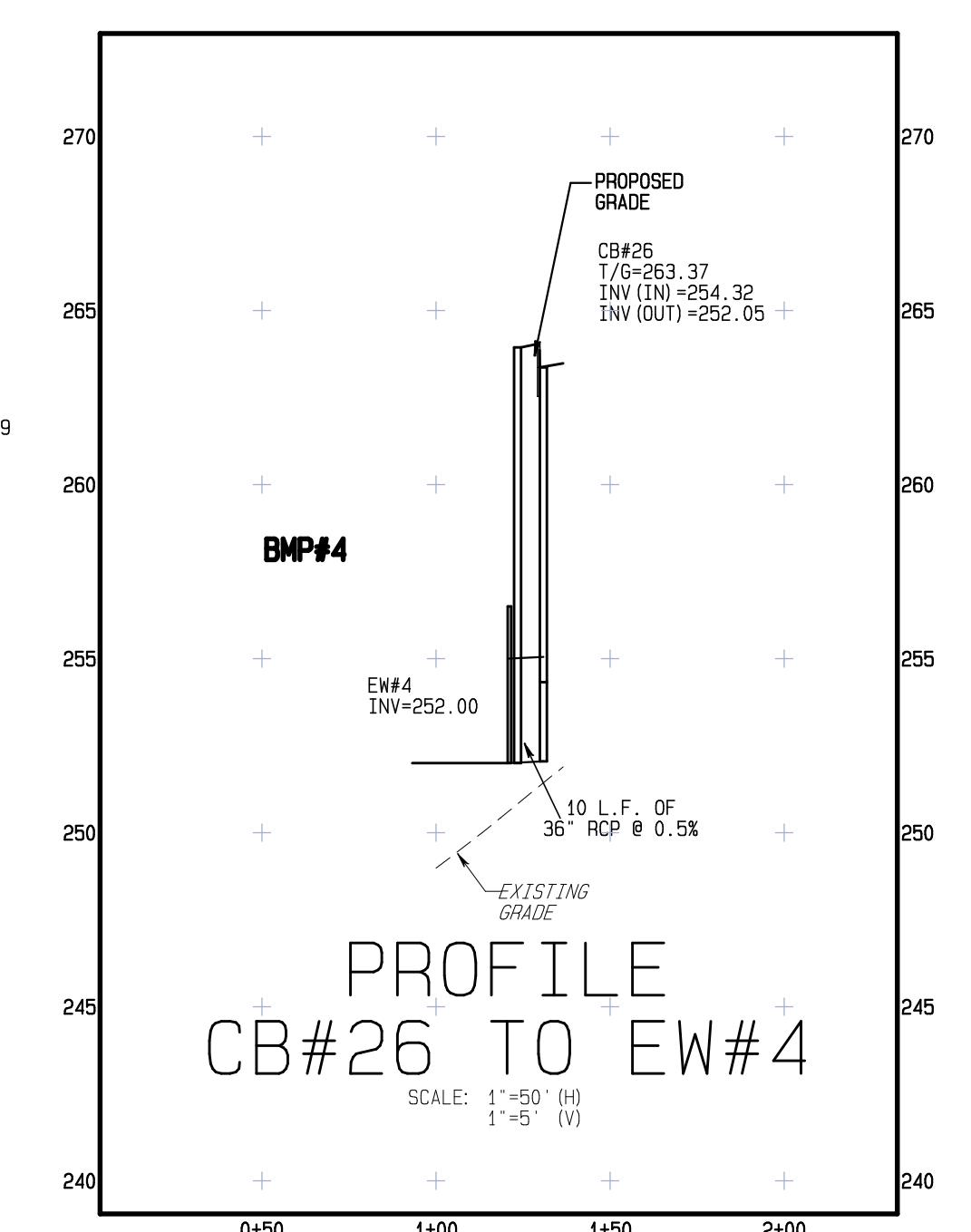
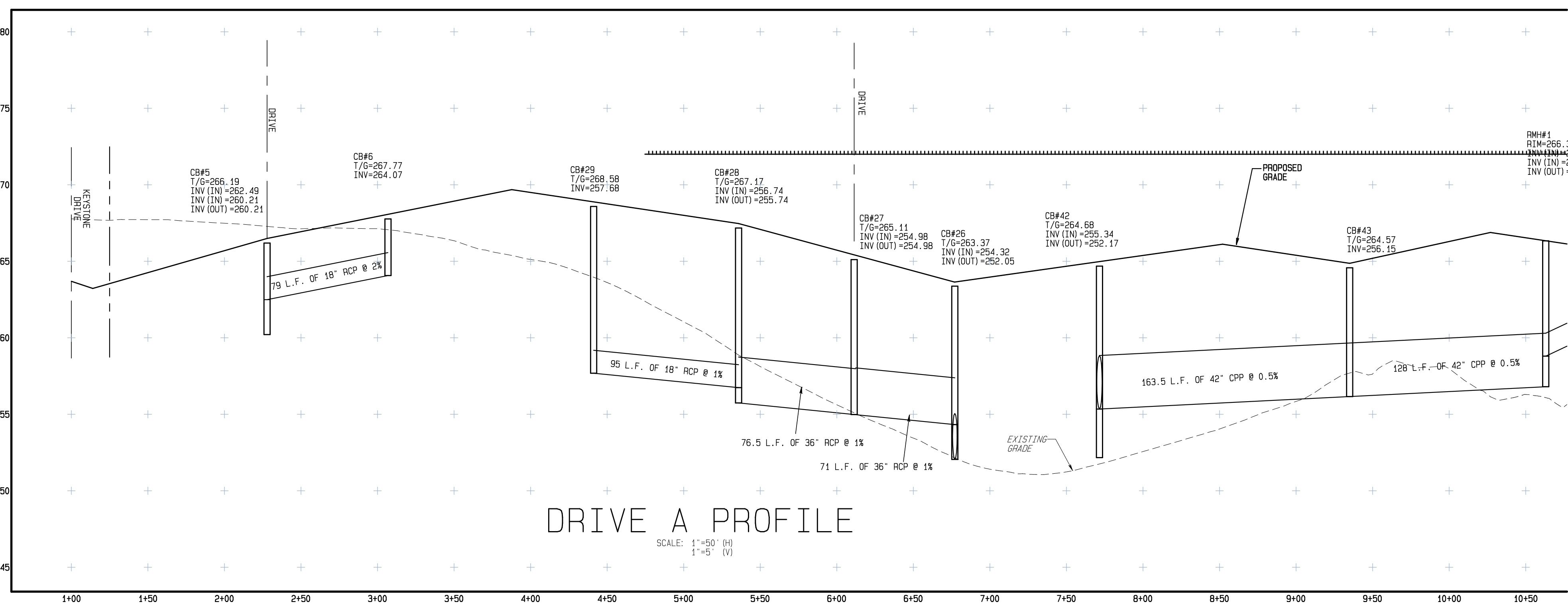
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SCALE	TAX MAP PARCEL	DRAWING NUMBER
1 " =50 '		D-7810321 SHEET 16

11. *What is the primary purpose of the following statement?*

DATE	DESCRIPTION
2-22	
2-22	
22	
22	
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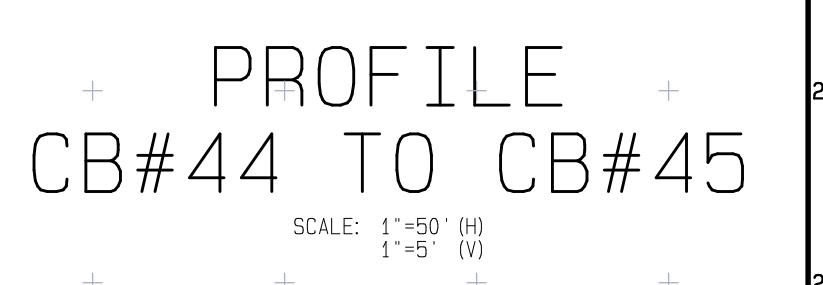
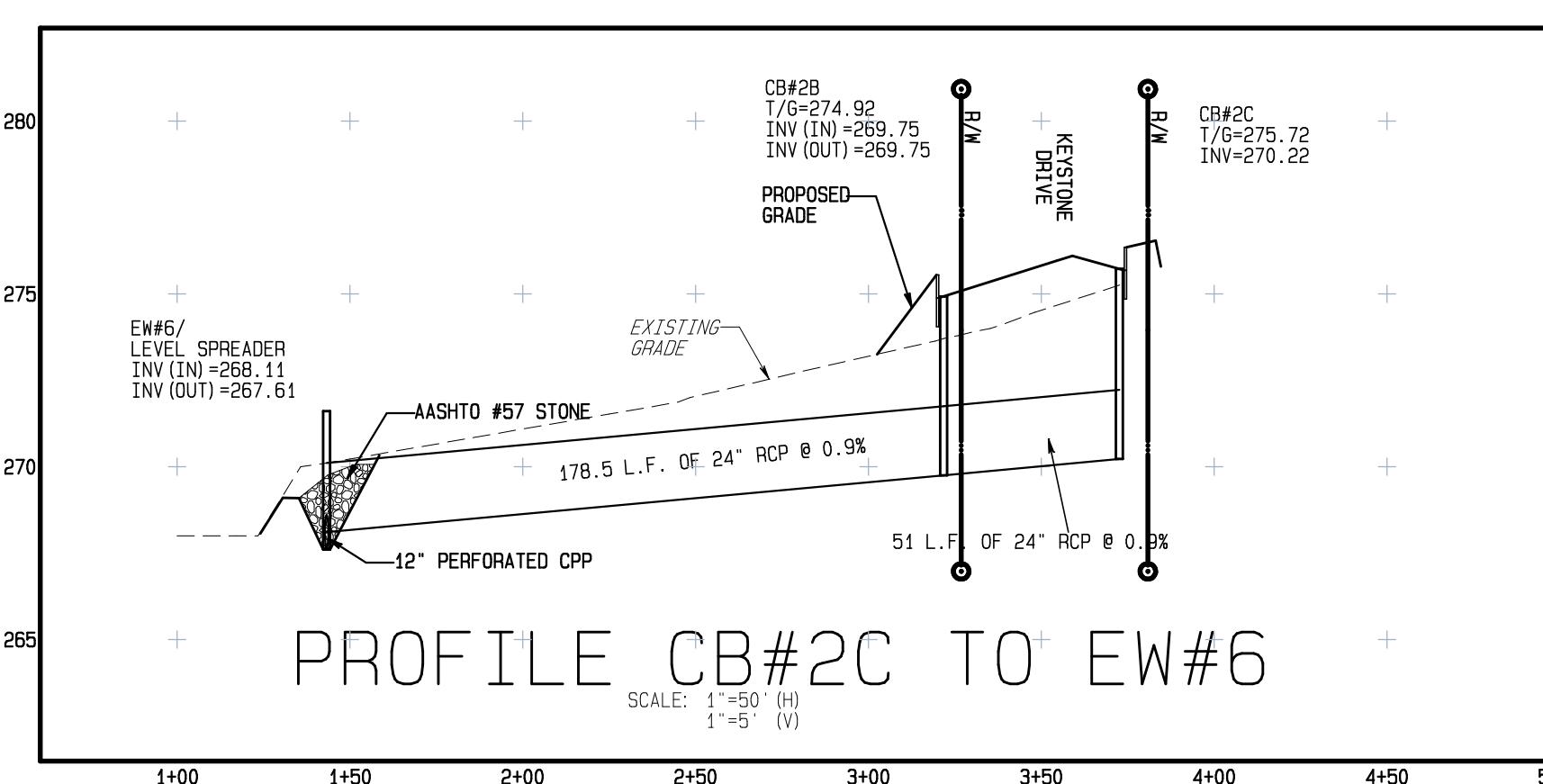
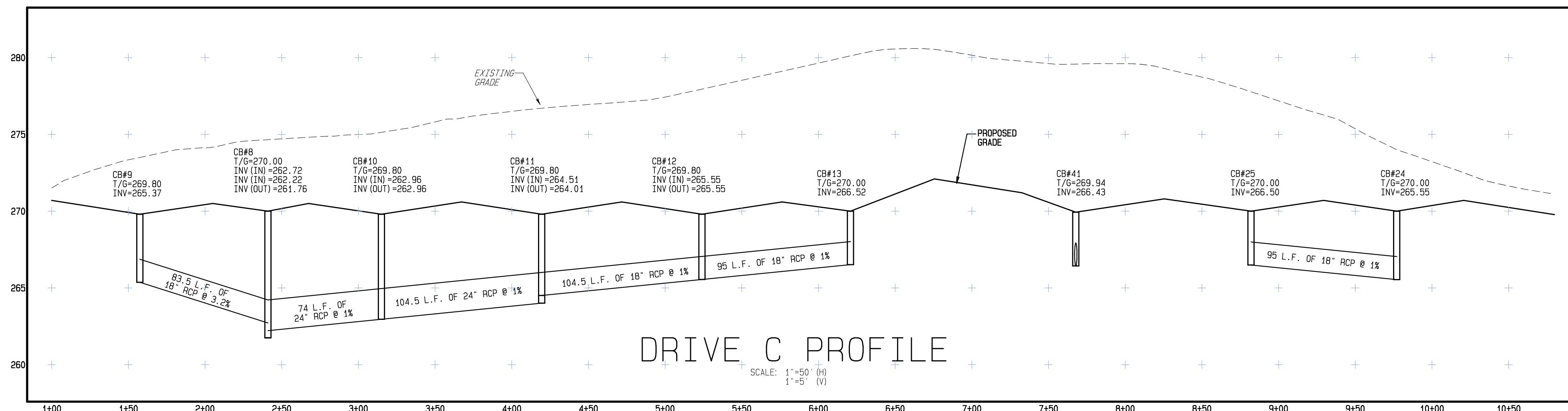
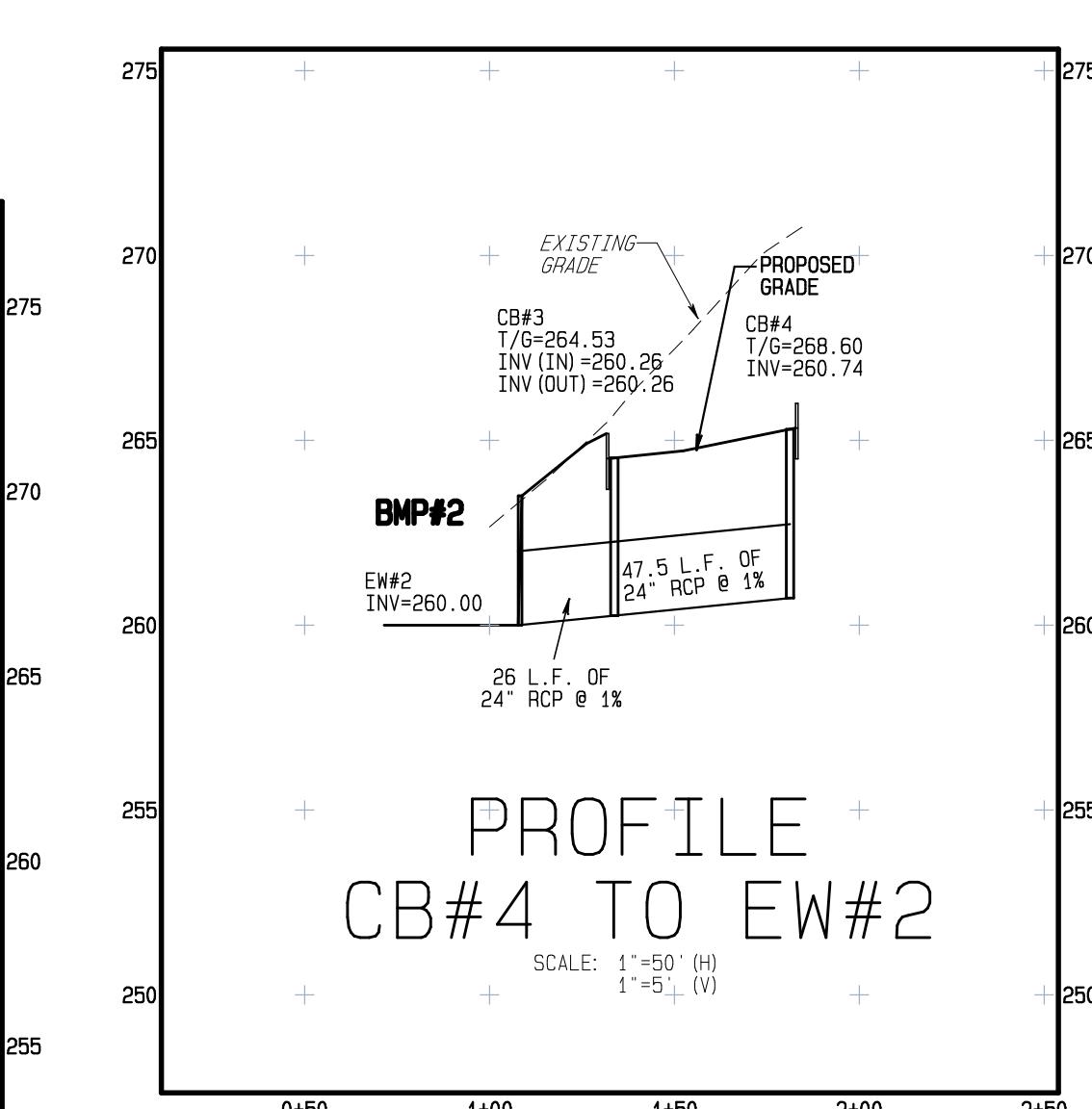
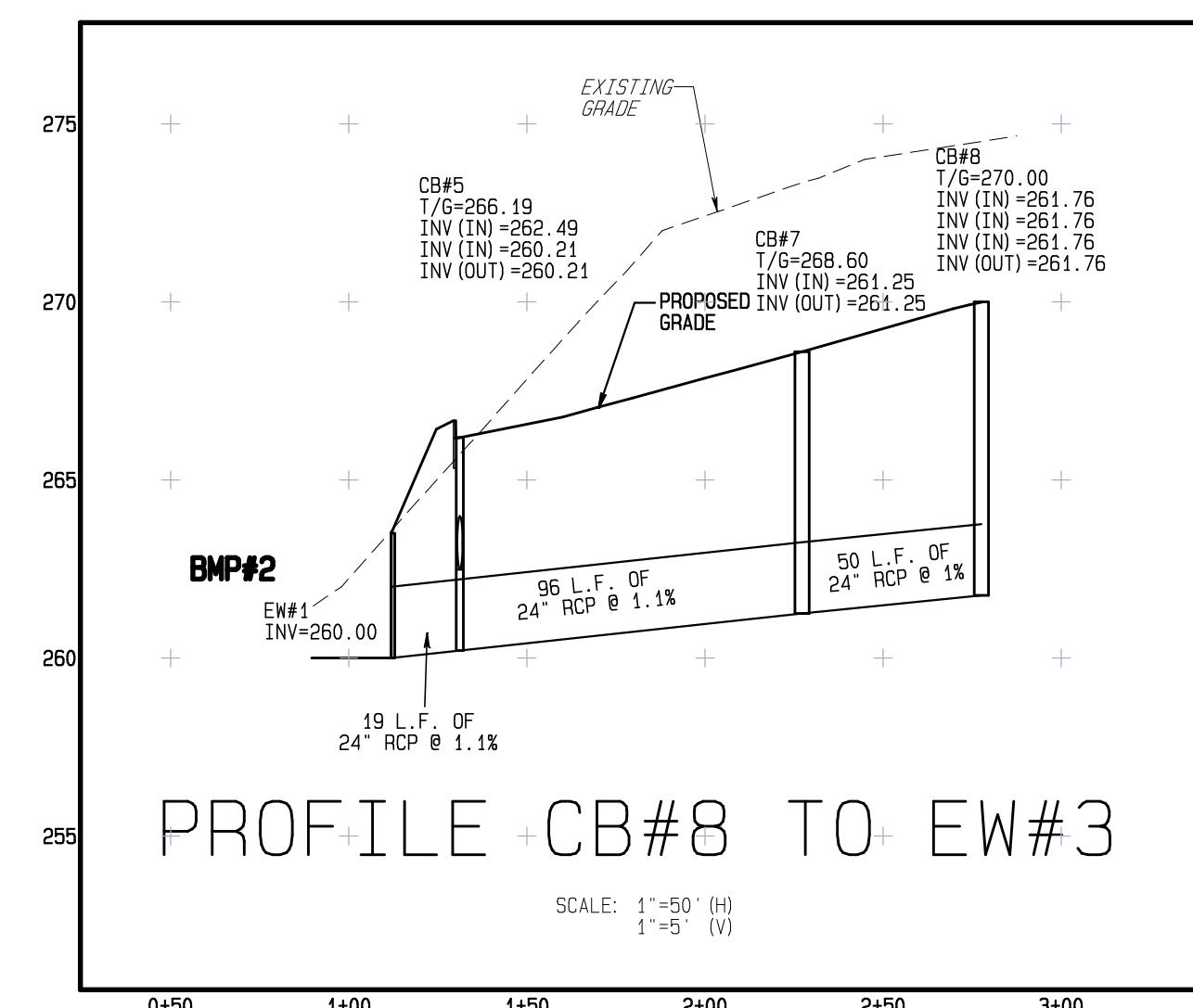
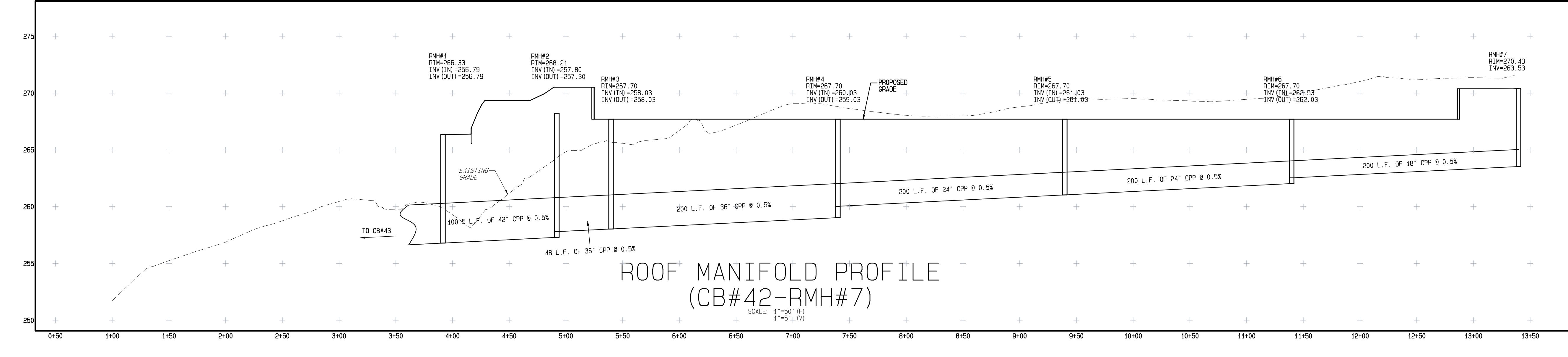
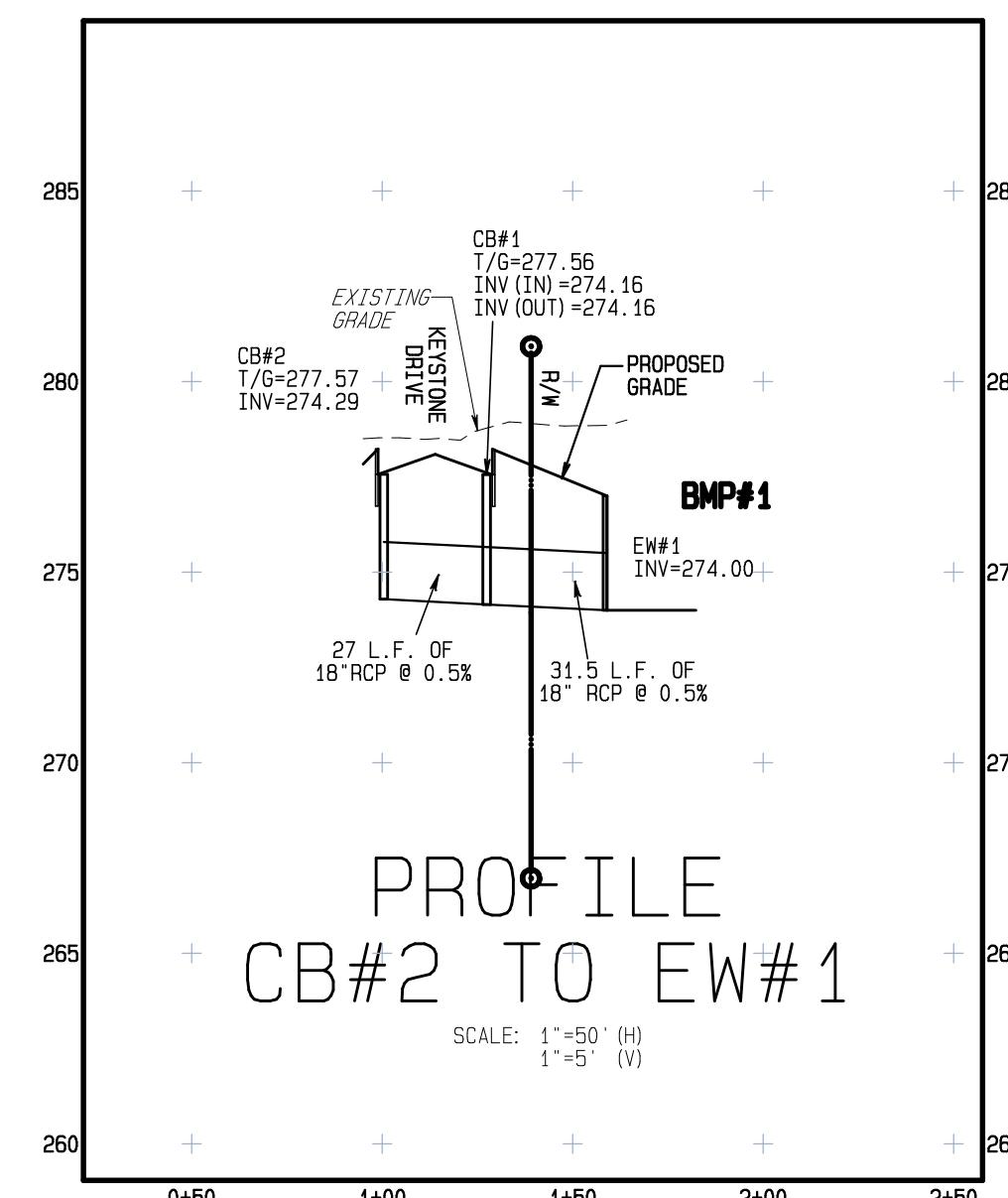
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#4 TCD	9-7-22	
#3 TCD	6-22-22	
#2 TCD	6-3-22	
#1 TCD	5-3-22	

DRAWN COMP (BNDY) COMP (LOC)
TCD 12-21-21 PA ONE CALL DATE COMPUTER FILE
SCALE TAX MAP PARCEL DRAWING NUMBER
1'=50' D-7810321 SHEET 17



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SCALE	TAX MAP	PARCEL	DRAWING NUMBER	
1"=50'	D-7810321	SHEET 18		

REVISION	DATE	DESCRIPTION
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#3 TCD	6-22-22	
#2 TCD	6-3-22	
#1 TCD	5-3-22	

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LUDGATE ENGINEERING CORPORATION		
12-21-21		

GARDCO
Site & Area
Gullwing LED
by @ignify



GL13 Gullwing LED area luminaire, small

Gardco Gullwing LED GL13 area luminaires combine LED performance and advanced Gardco LED thermal management technology with distinct Gullwing style to provide outdoor area lighting that is both energy efficient and aesthetically pleasing.

Ordering guide

Prof.	Controls	Mounting	Optical System	Wattage	LED Color	Voltage	Phase	Options
GL	120V Gullwing LED Standard Luminaire	2	Type 2	208	Natural White	120V	1	
DM	120V Gullwing LED Standard Luminaire with D-O Dimming	2	Type 2	208	Natural White	120V	1	
W	Wall Mount Required Mount order is Mount Required	3	Type 3	105LA-4433	NW	120V	1	
PC	Projector and Recycle Photocell and Recycle (Requires PC)	4	Type 4	105LA-4434	NW	120V	1	
PP	Projector and Recycle Photocell and Recycle (Requires PC)	5	Type 5	105LA-4435	NW	120V	1	

Example: GL13-DIM-4-105LA-6435-NW-120-BRP-LF

1. Not available w/ arm fixture. GL13 HK.
2. Voltage must be specified.
3. Not available with 480V.
4. Works with 3 pin or 5 pin NEMA photocell/dimming device.

LUMINAIRE PREFIX CONTROLS MOUNTING OPTICAL SYSTEM WATTAGE LED COLOR VOLTAGE FINISH OPTIONS

GL	-	-	TYPE 3	105LA-4433	NW	120V	WP	LF
GL13	-	-	TYPE 3	105LA-4433	NW	120V	WP	LF
D	-	-	TYPE 4	105LA-4434	NW	120V	WP	LF
W	-	-	TYPE 4	105LA-4434	NW	120V	WP	LF
PC	-	-	TYPE 3	105LA-4433	NW	120V	WP	LF
PP	-	-	TYPE 4	105LA-4435	NW	120V	WP	LF

105LA-4435 360 86 4000K 6602 98 B1-UO-01 4760 96 B1-UO-02

105LA-4435 80 86 4000K 8027 94 B1-UO-02 4005 93 B1-UO-02

105LA-4435 64 86 4000K 9670 97 B2-UO-02 9388 93 B2-UO-02

Approximate Weight Single Luminaire: 33 lbs / 14.89kg

Technical Data

Ordering Code	Total Watts	LED Current (mA)	Average Lumens (Watts)	Color Temp	Type 3	Type 4
105LA-4433	360	86	4000K	6602	98	B1-UO-01
105LA-4435	80	86	4000K	8027	94	B1-UO-02
105LA-4435	64	86	4000K	9670	97	B2-UO-02

Ordering guide

Prof.	Controls	Mounting	Optical System	Wattage	LED Color	Voltage	Phase	Options
GL	120V Gullwing LED Standard Luminaire	2	Type 2	208	Natural White	120V	1	
DM	120V Gullwing LED Standard Luminaire with D-O Dimming	2	Type 2	208	Natural White	120V	1	
W	Wall Mount Required Mount order is Mount Required	3	Type 3	105LA-4433	NW	120V	1	
PC	Projector and Recycle Photocell and Recycle (Requires PC)	4	Type 4	105LA-4434	NW	120V	1	
PP	Projector and Recycle Photocell and Recycle (Requires PC)	5	Type 5	105LA-4435	NW	120V	1	

LUMINAIRE PREFIX CONTROLS MOUNTING OPTICAL SYSTEM WATTAGE LED COLOR VOLTAGE FINISH OPTIONS

GL	-	-	TYPE 3	105LA-4433	NW	120V	WP	LF
GL13	-	-	TYPE 3	105LA-4433	NW	120V	WP	LF
D	-	-	TYPE 4	105LA-4434	NW	120V	WP	LF
W	-	-	TYPE 4	105LA-4434	NW	120V	WP	LF
PC	-	-	TYPE 3	105LA-4433	NW	120V	WP	LF
PP	-	-	TYPE 4	105LA-4435	NW	120V	WP	LF

1. Available 120-277V only.
2. Available 120-277V only.
3. Available 120-277V only.
4. Not available with 480V.
5. Works with 3 pin or 5 pin NEMA photocell/dimming device.

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PC	Projector and Recycle Photocell and Recycle (Requires PC)	4	Type 4	105LA-4434	NW	120V	1	
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LUMINAIRE PREFIX CONTROLS MOUNTING OPTICAL SYSTEM WATTAGE LED COLOR VOLTAGE FINISH OPTIONS

GL	-	-	TYPE 3	105LA-4433	NW	120V	WP	LF
GL18	-	-	TYPE 3	105LA-4433	NW	120V	WP	LF
D	-	-	TYPE 4	105LA-4434	NW	120V	WP	LF
W	-	-	TYPE 4	105LA-4434	NW	120V	WP	LF
PC	-	-	TYPE 3	105LA-4433	NW	120V	WP	LF
PP	-	-	TYPE 4	105LA-4435	NW	120V	WP	LF

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PC	-	-	TYPE 3	105LA-4433	NW	120V	WP	LF
PP	-	-	TYPE 4	105LA-4435	NW	120V	WP	LF

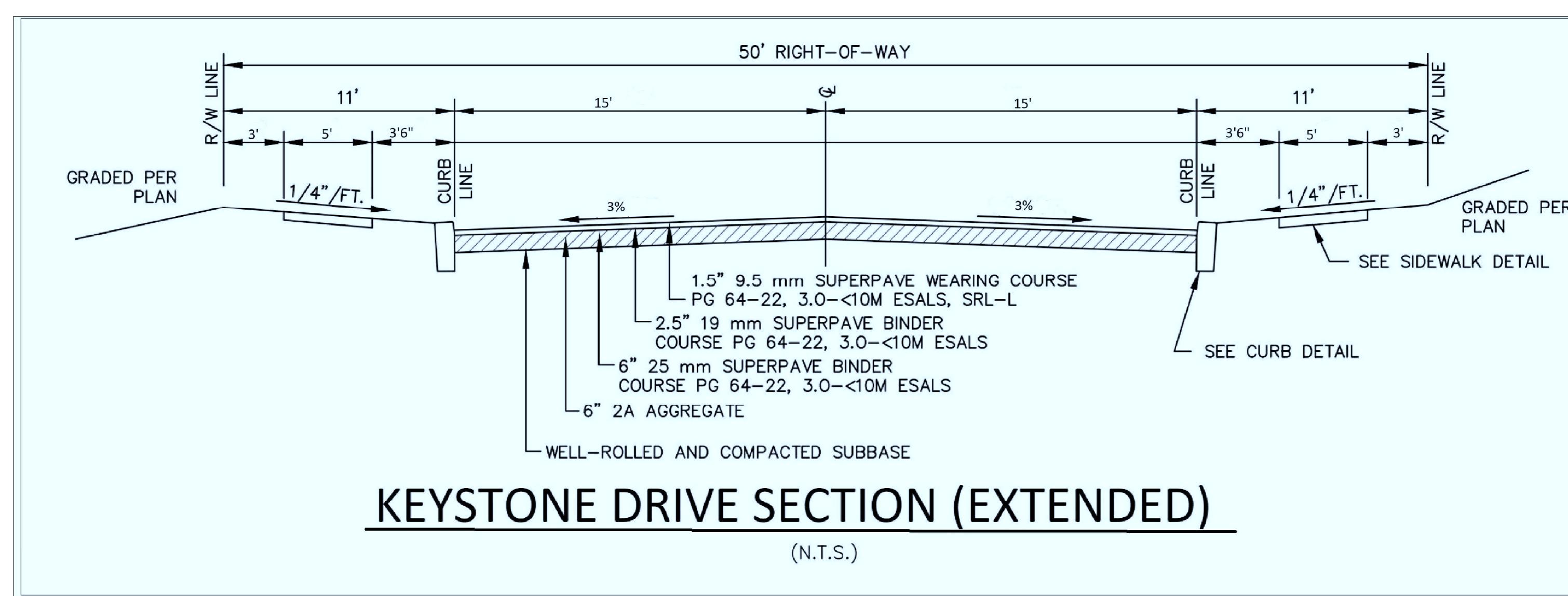
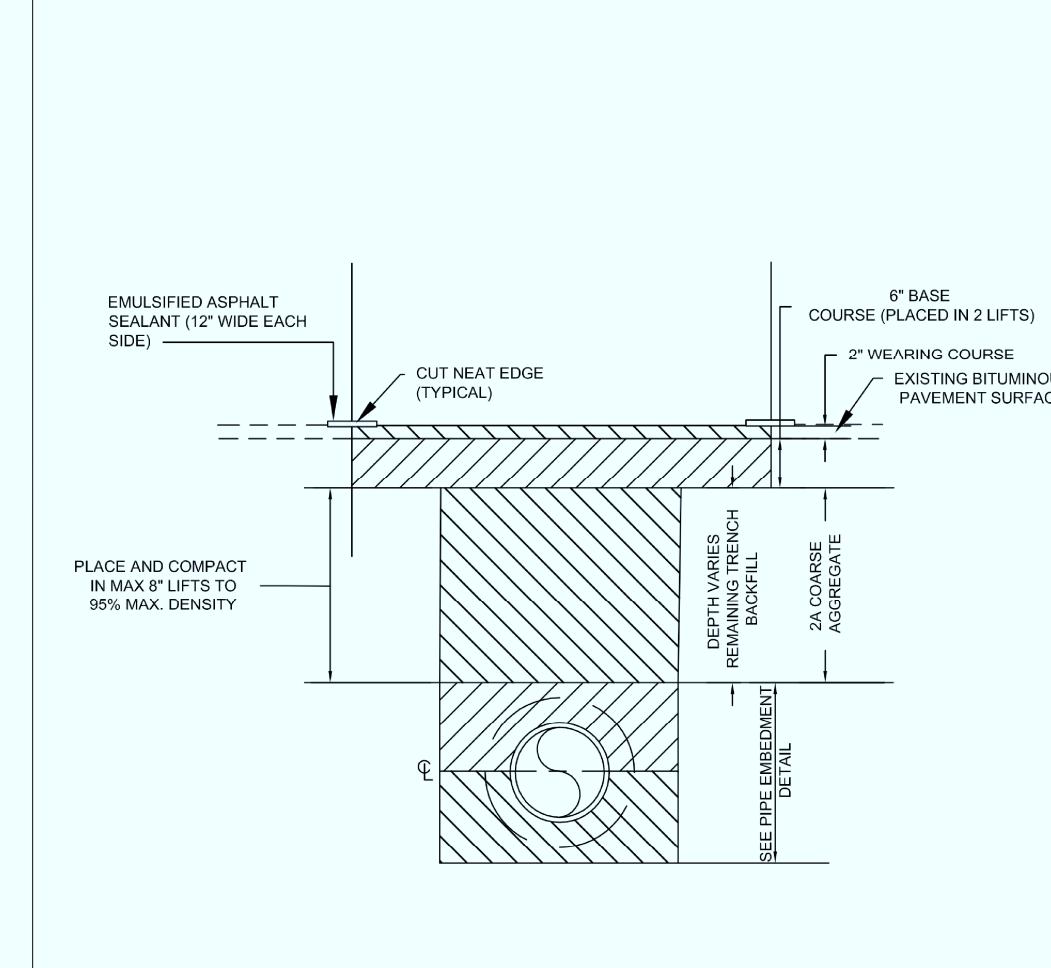
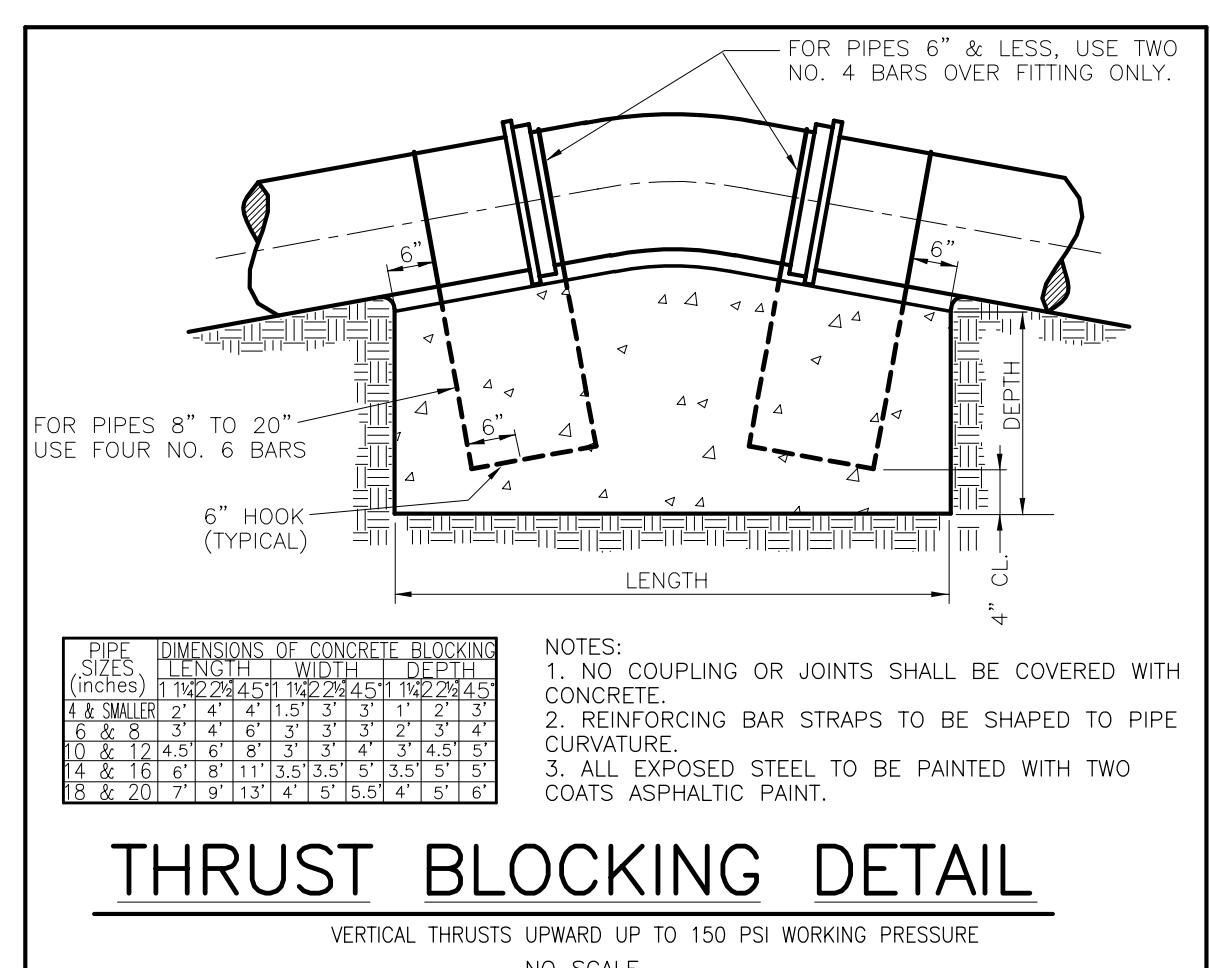
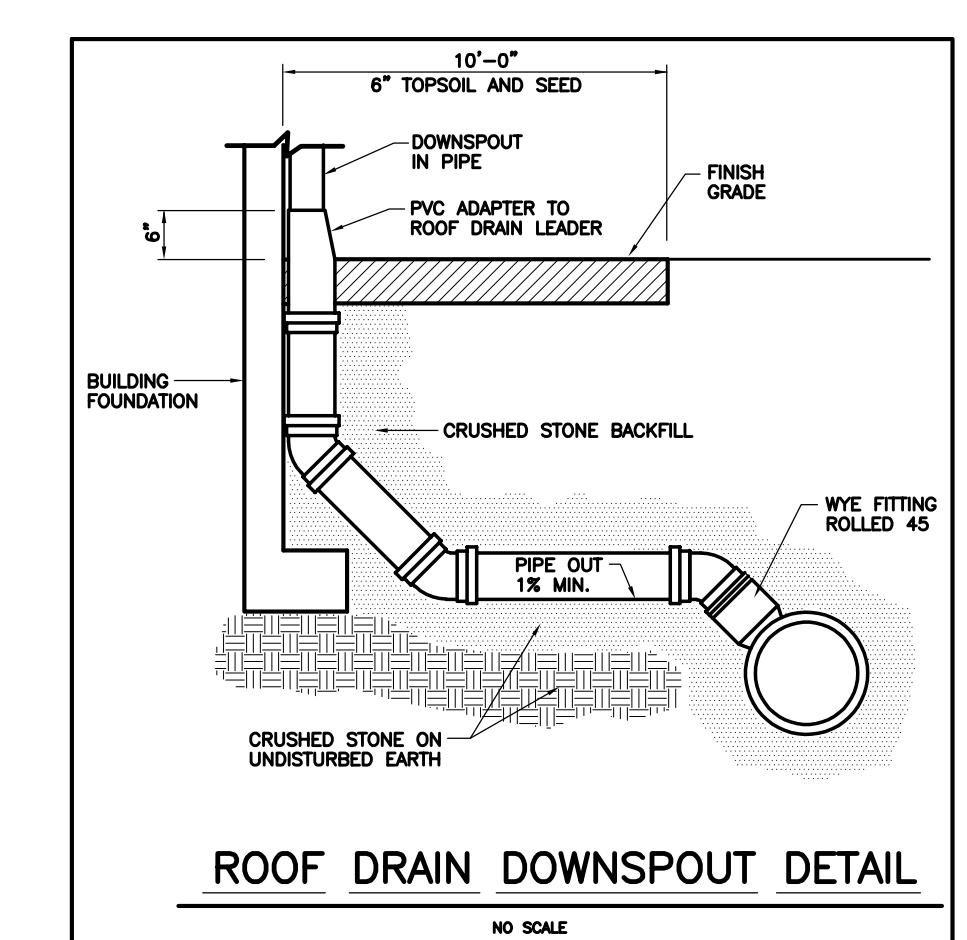
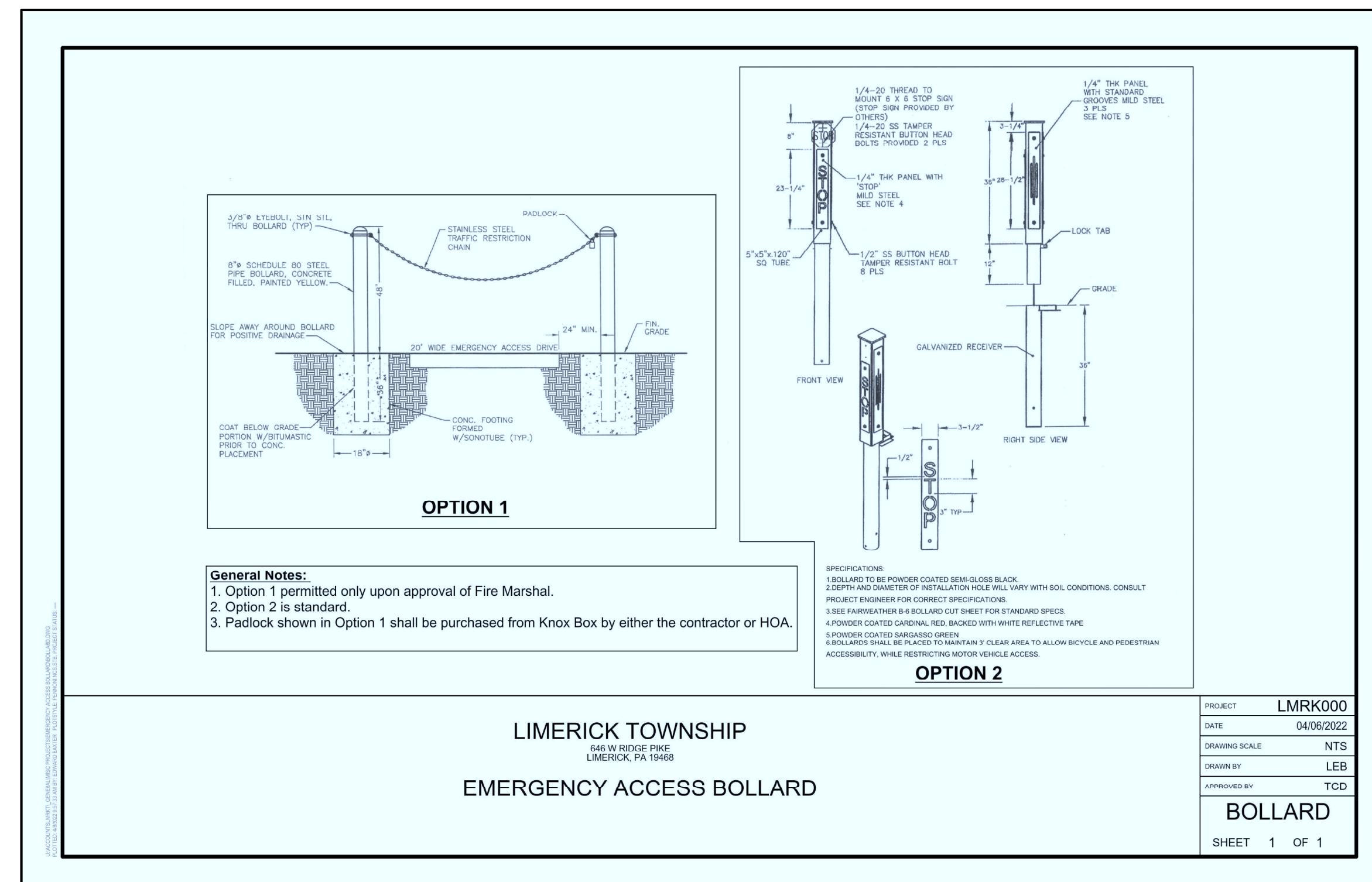
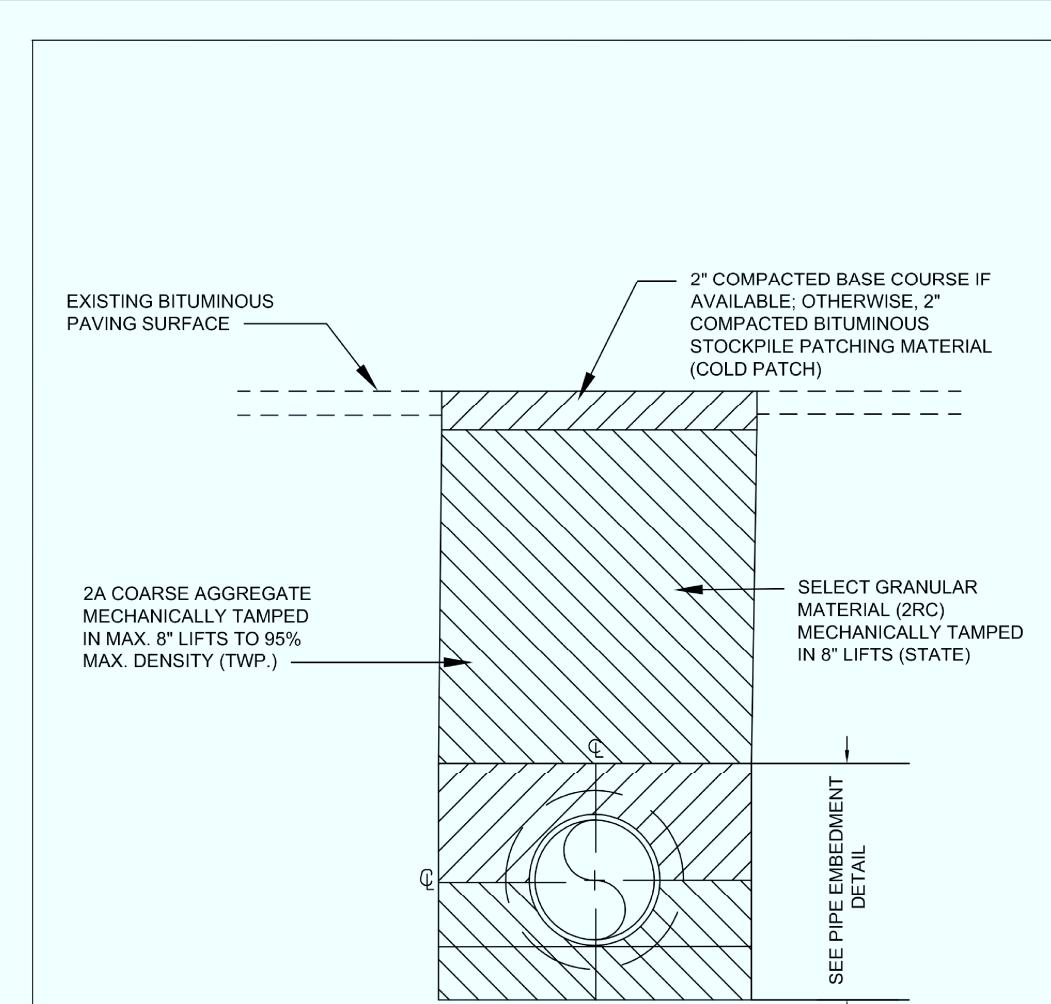
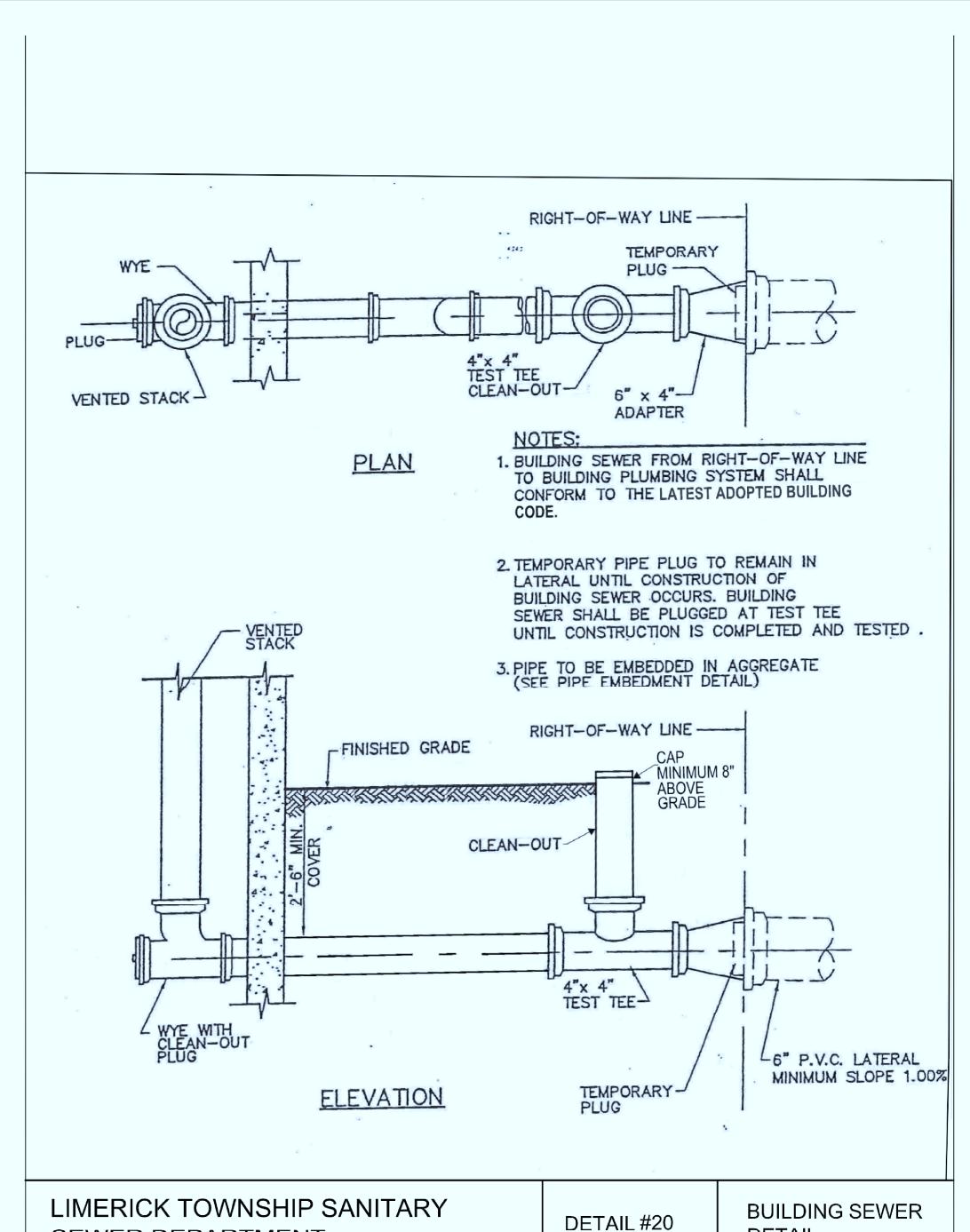
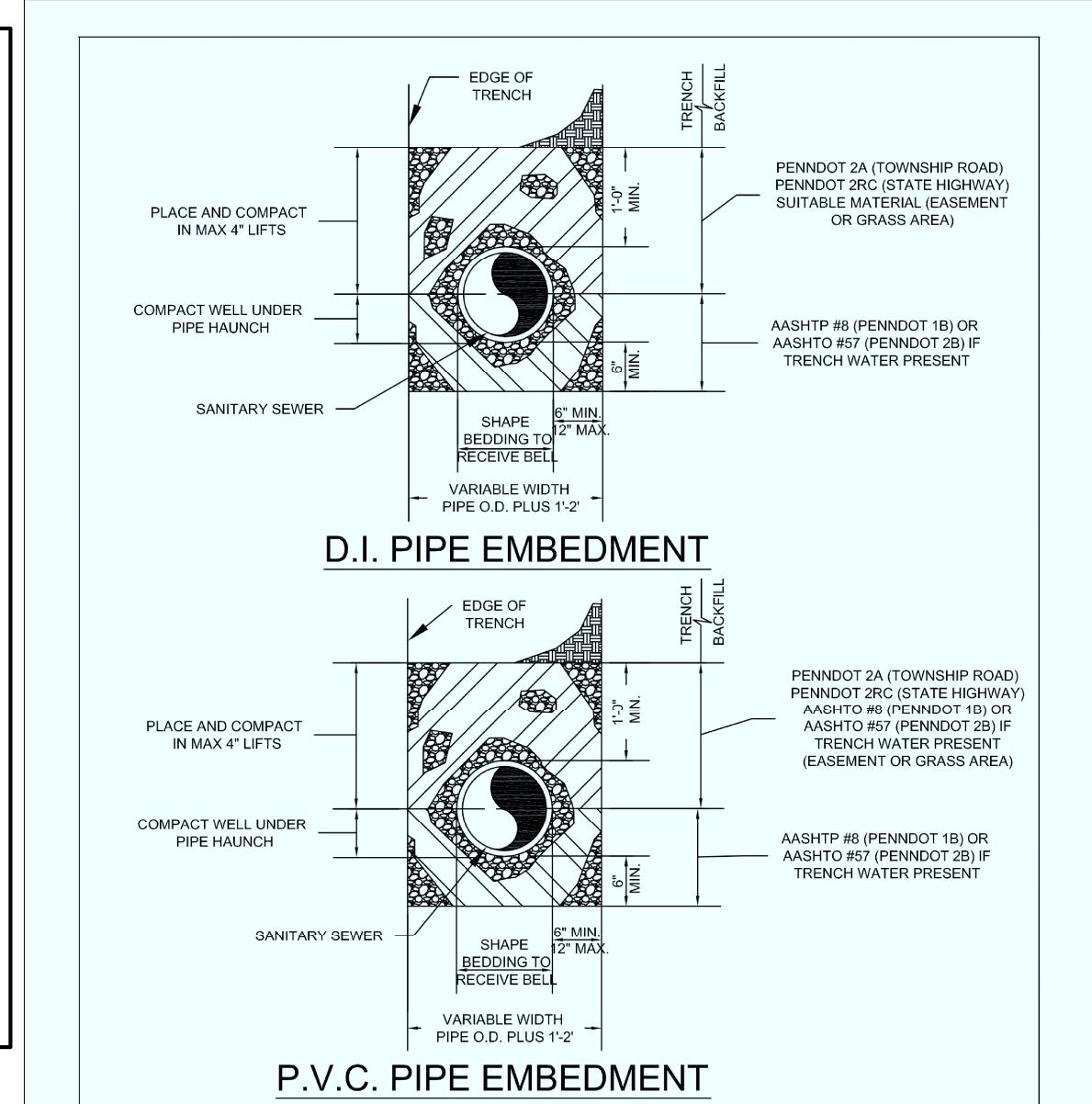
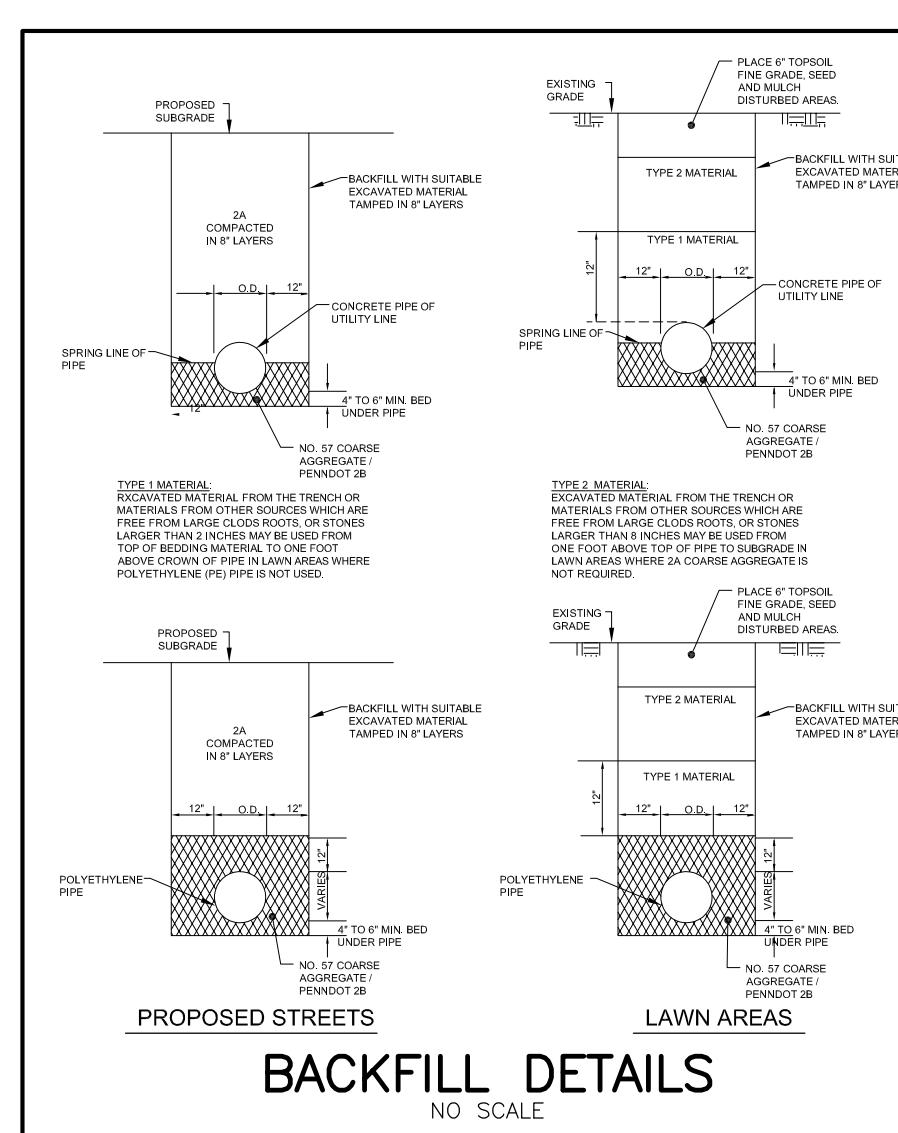
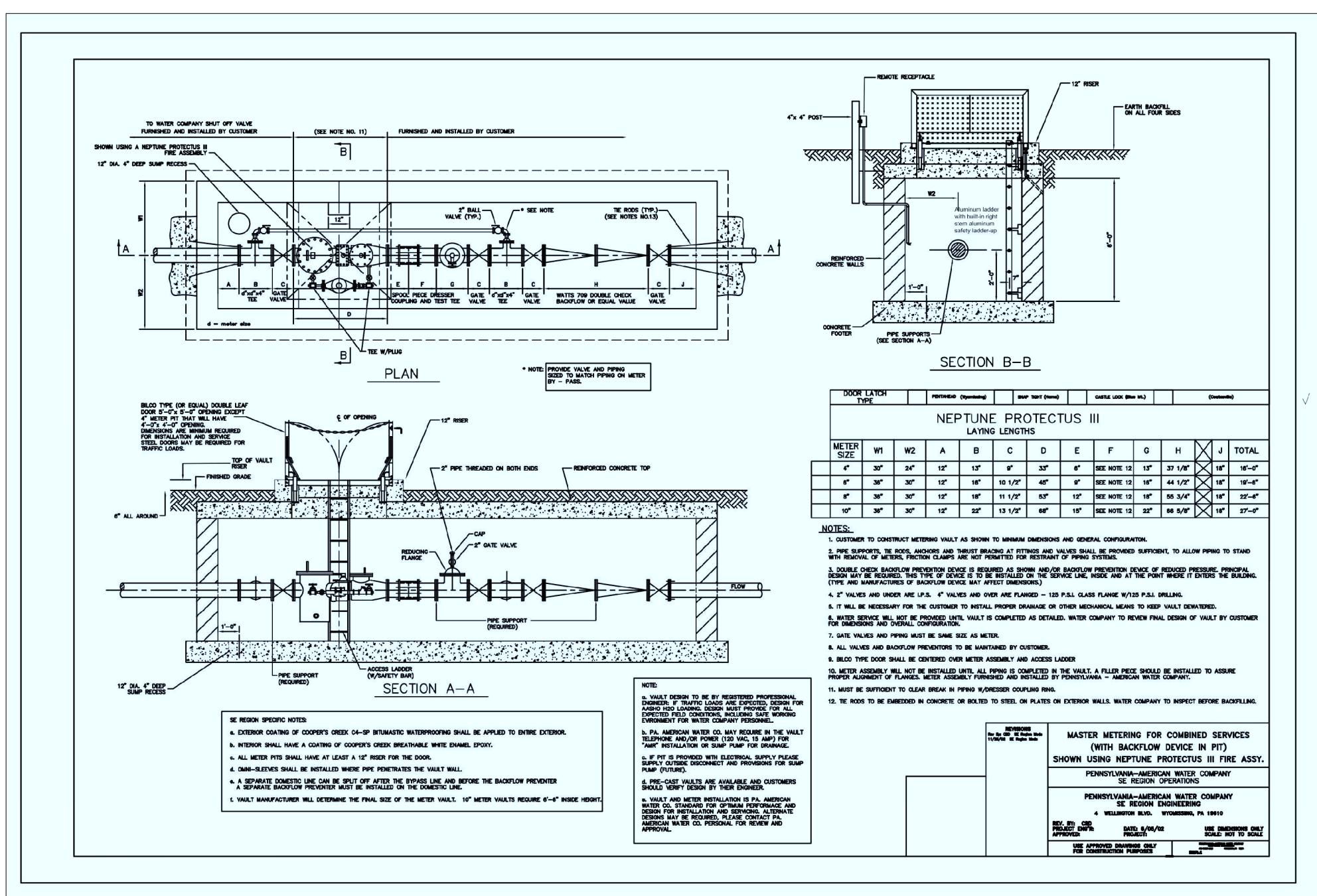
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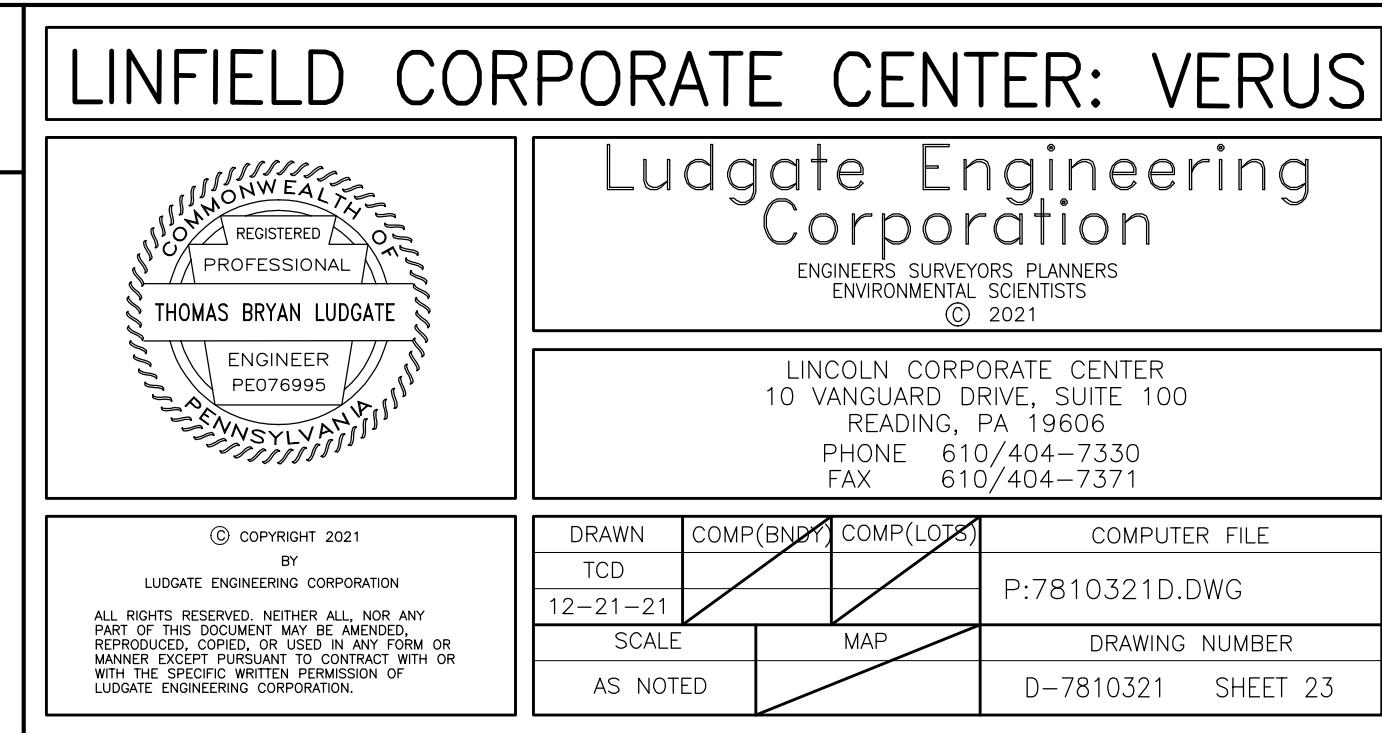
Ordering guide

Prof.	Controls	Mounting	Optical System	Wattage	LED Color	Voltage	Phase	Options
GL	120V Gullwing LED Standard Luminaire	2	Type 2	208	Natural White	12		

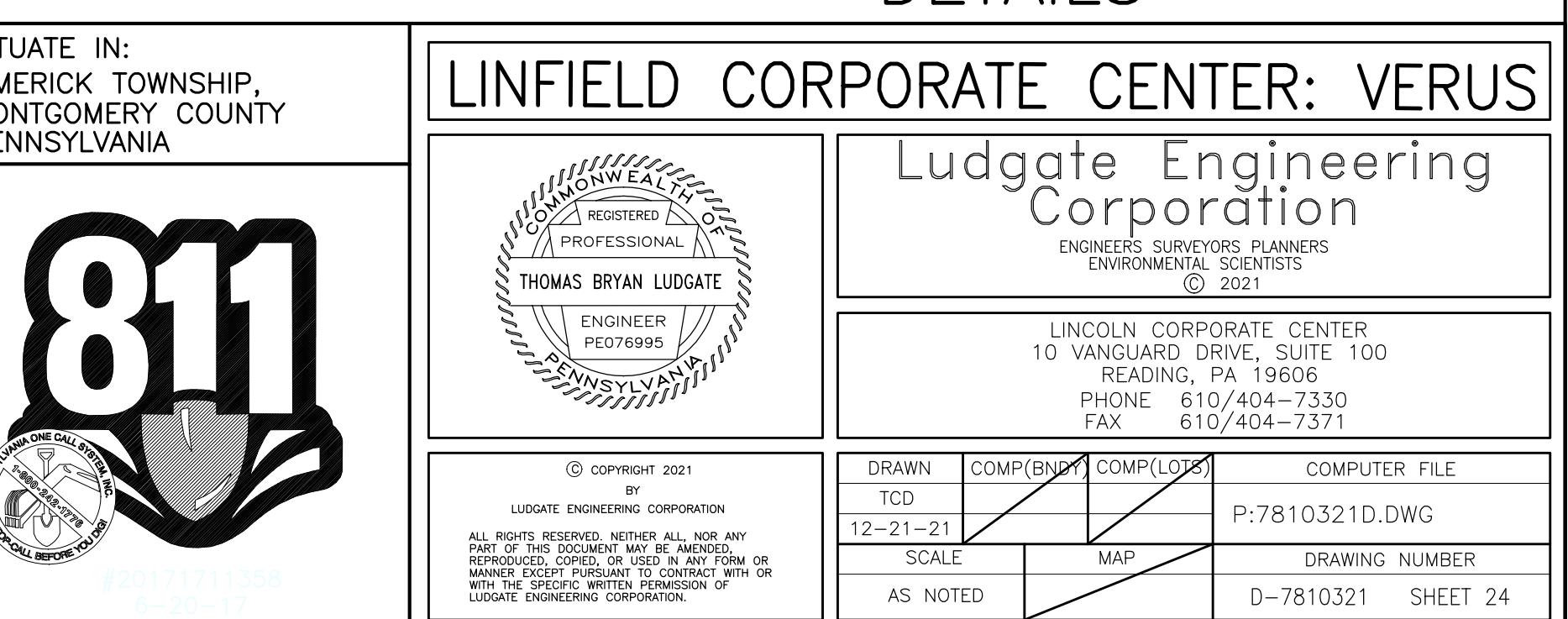
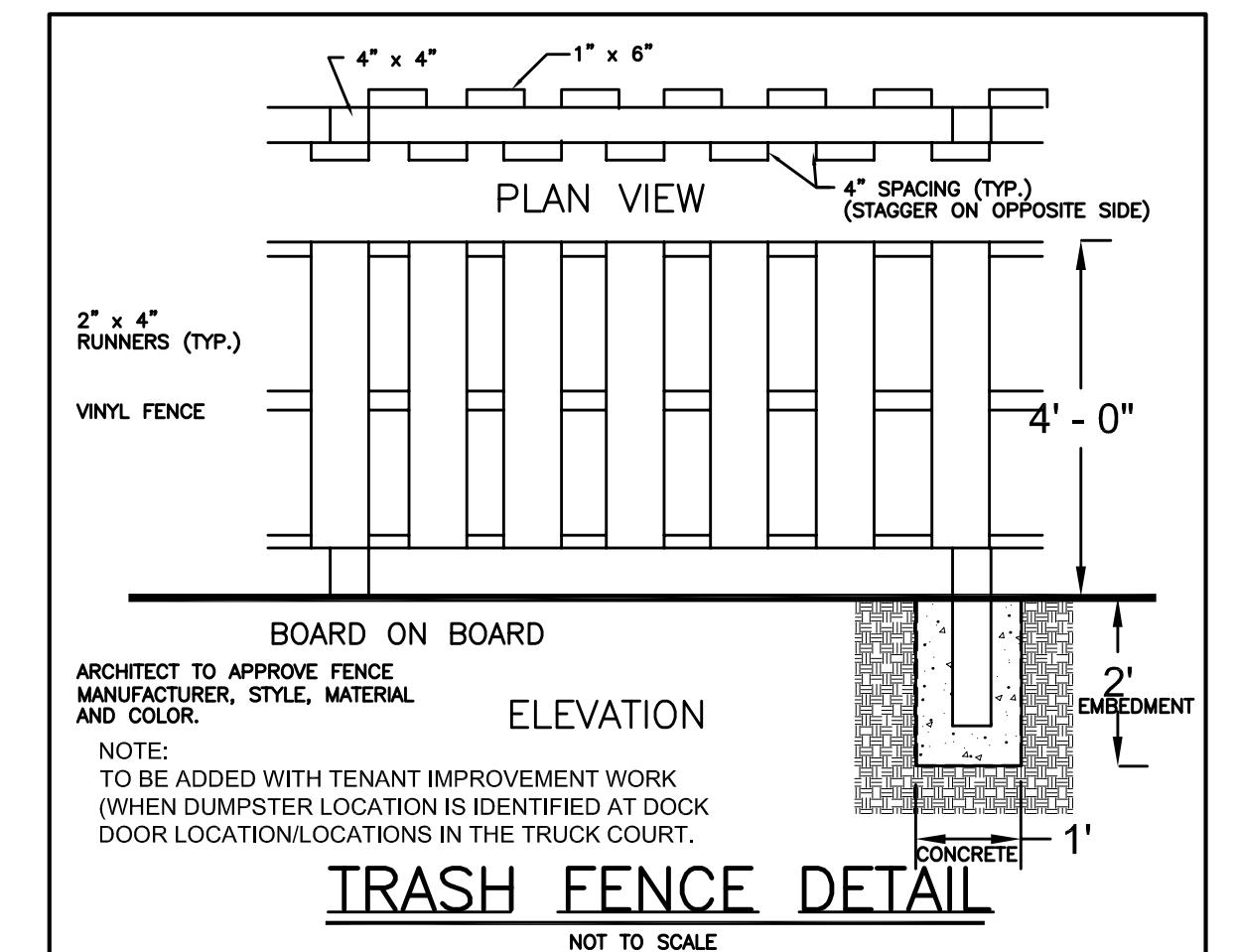
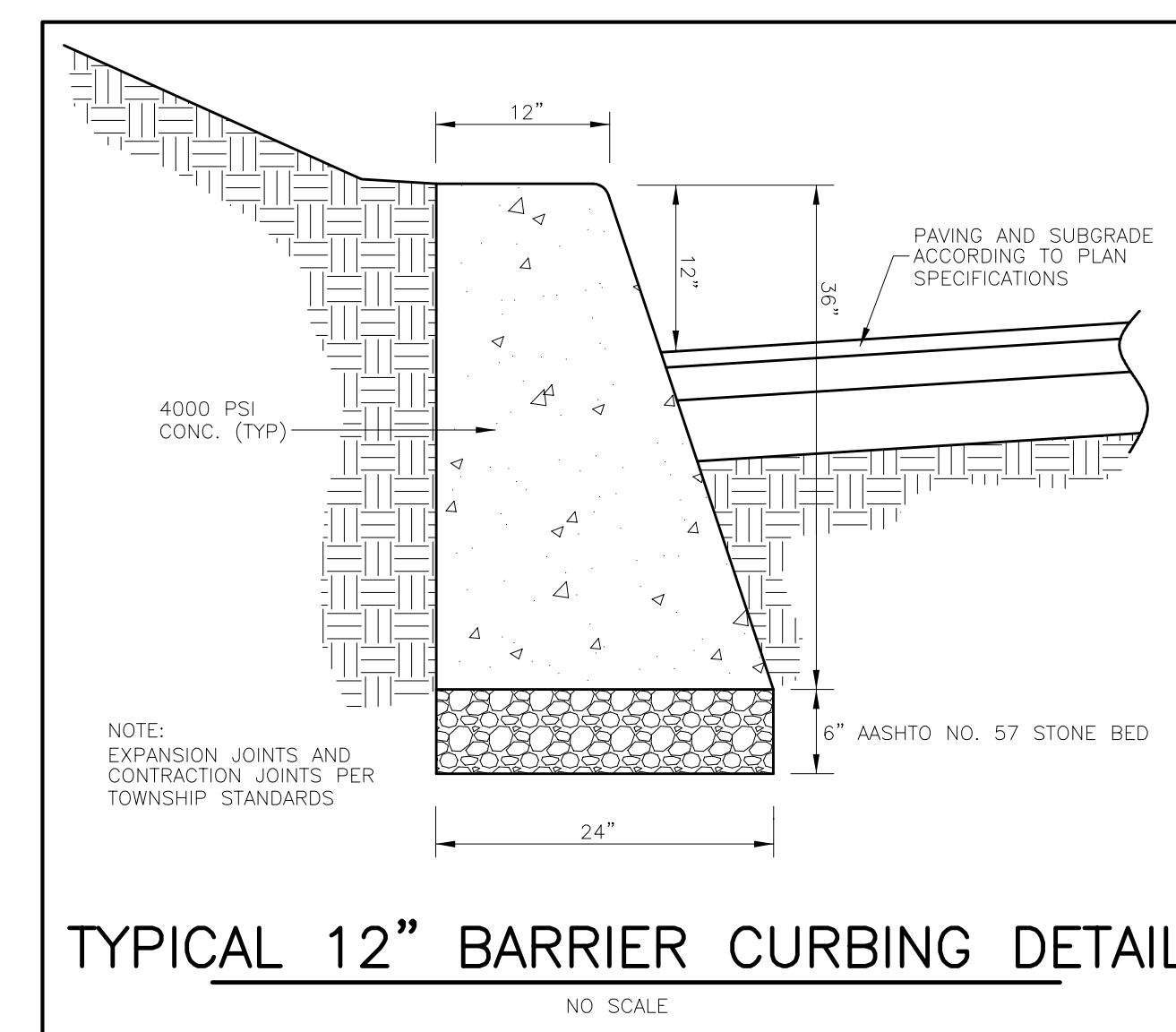
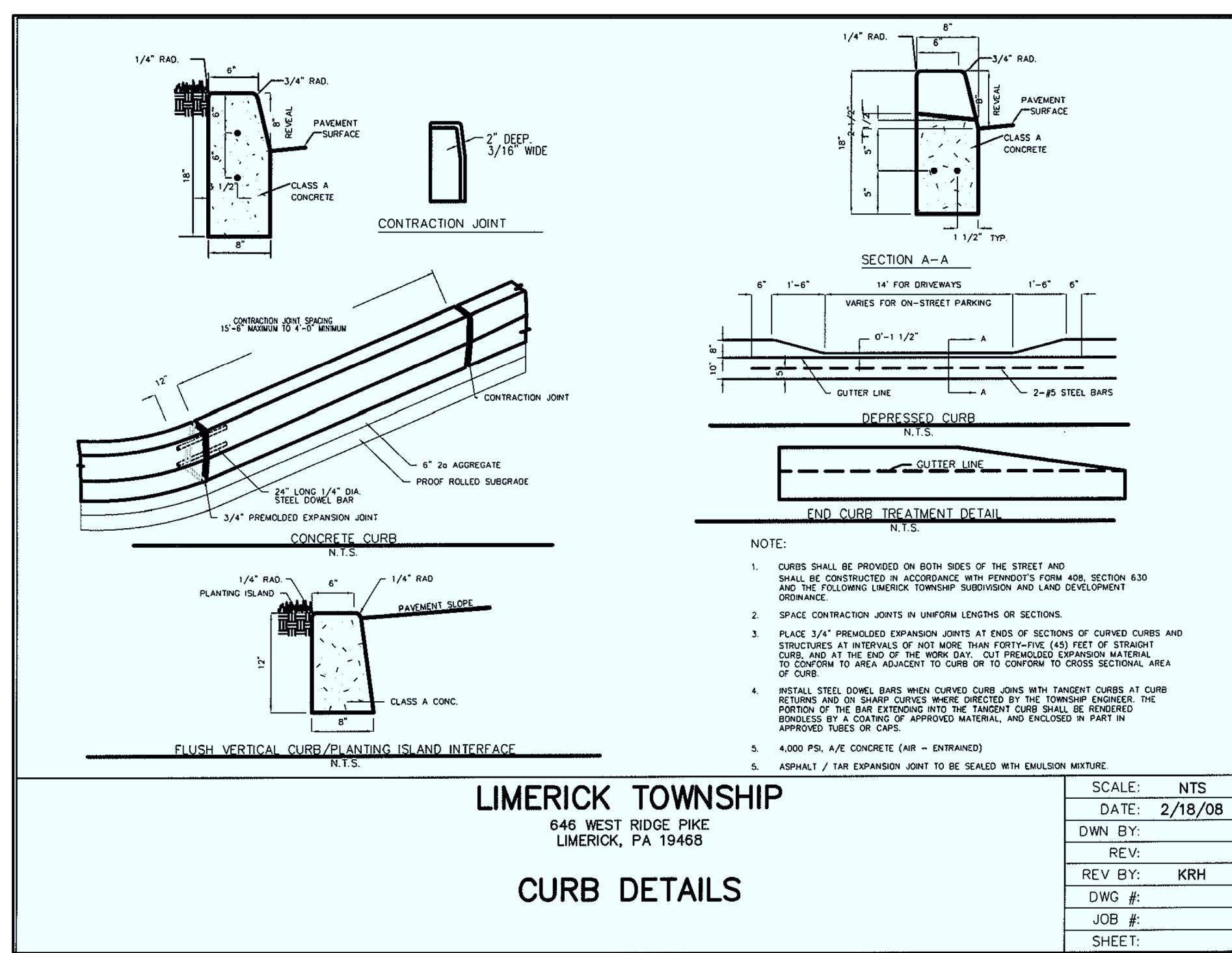
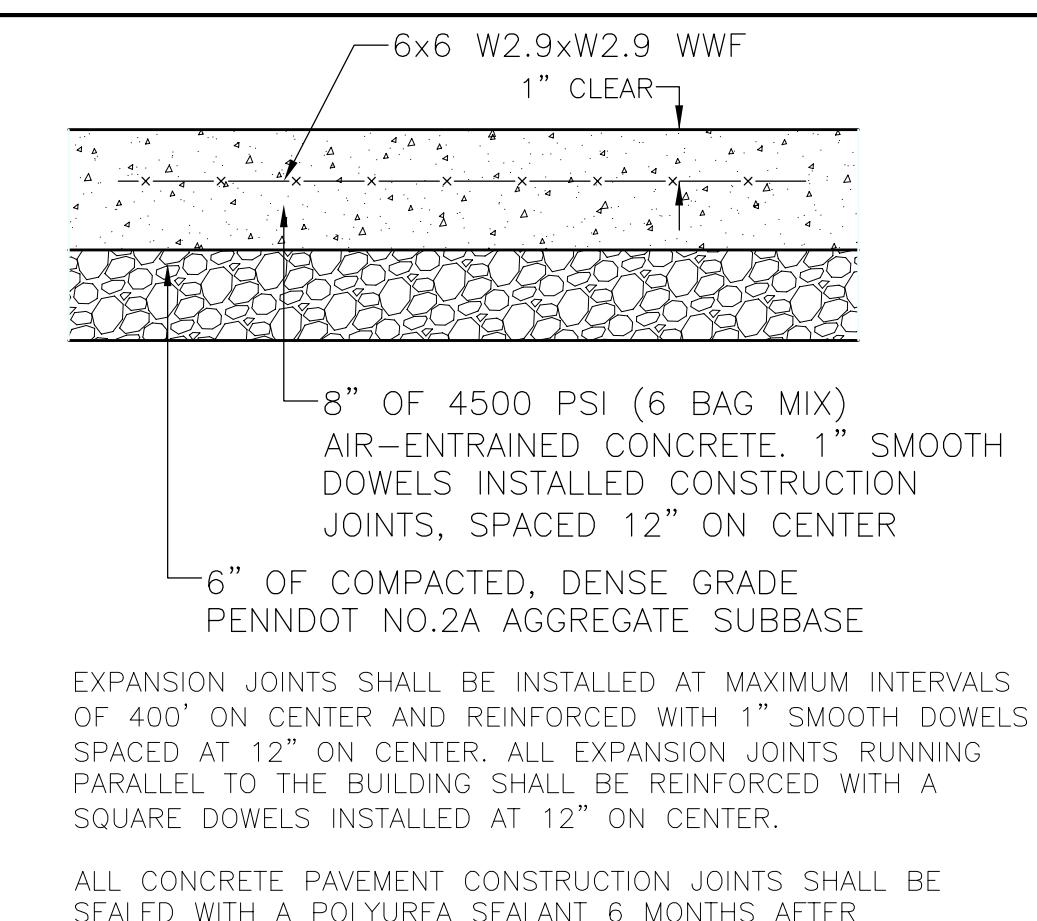
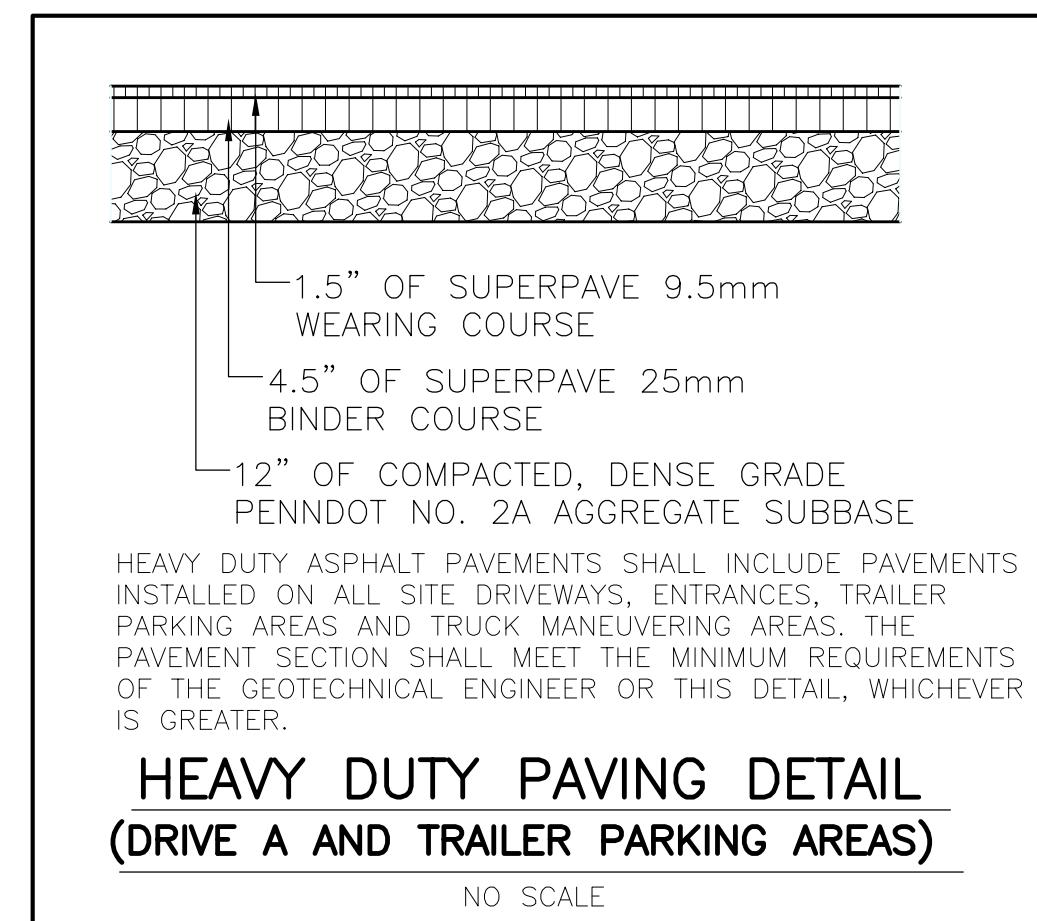
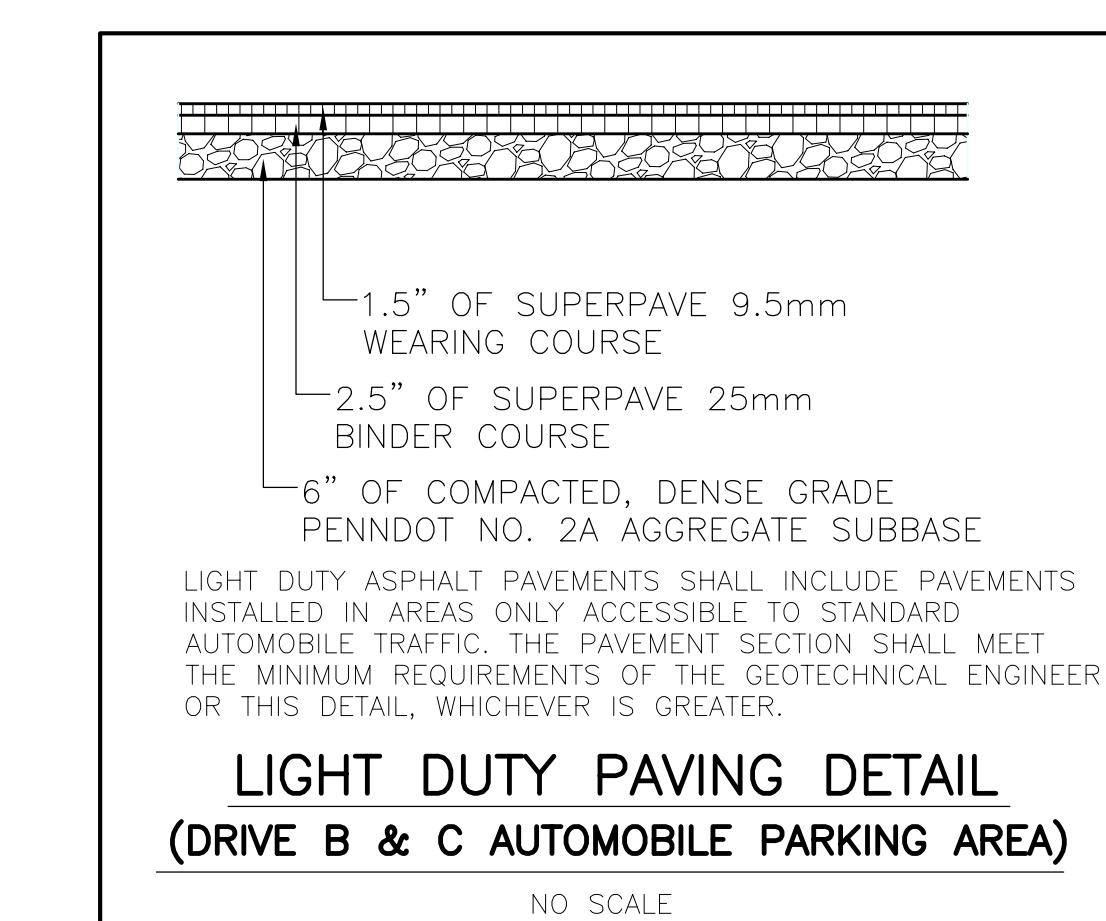
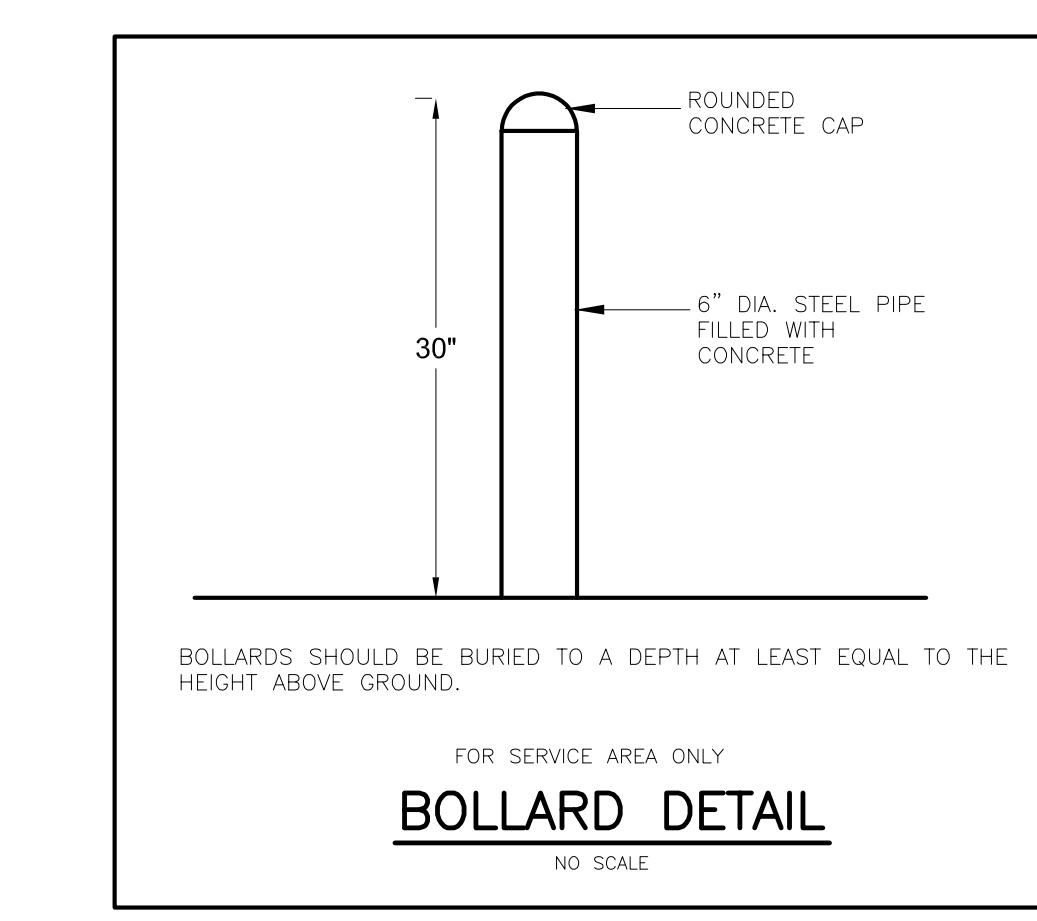
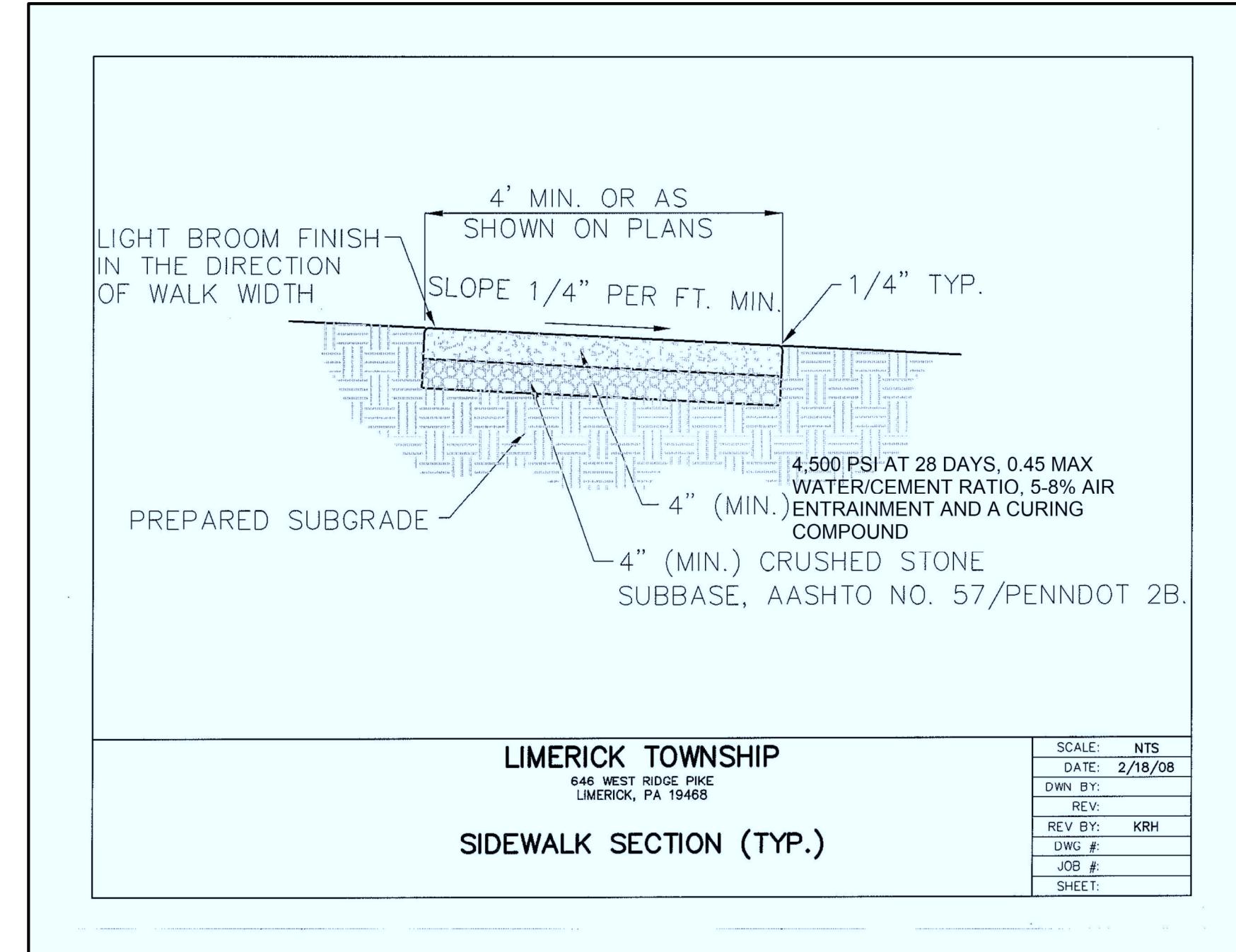
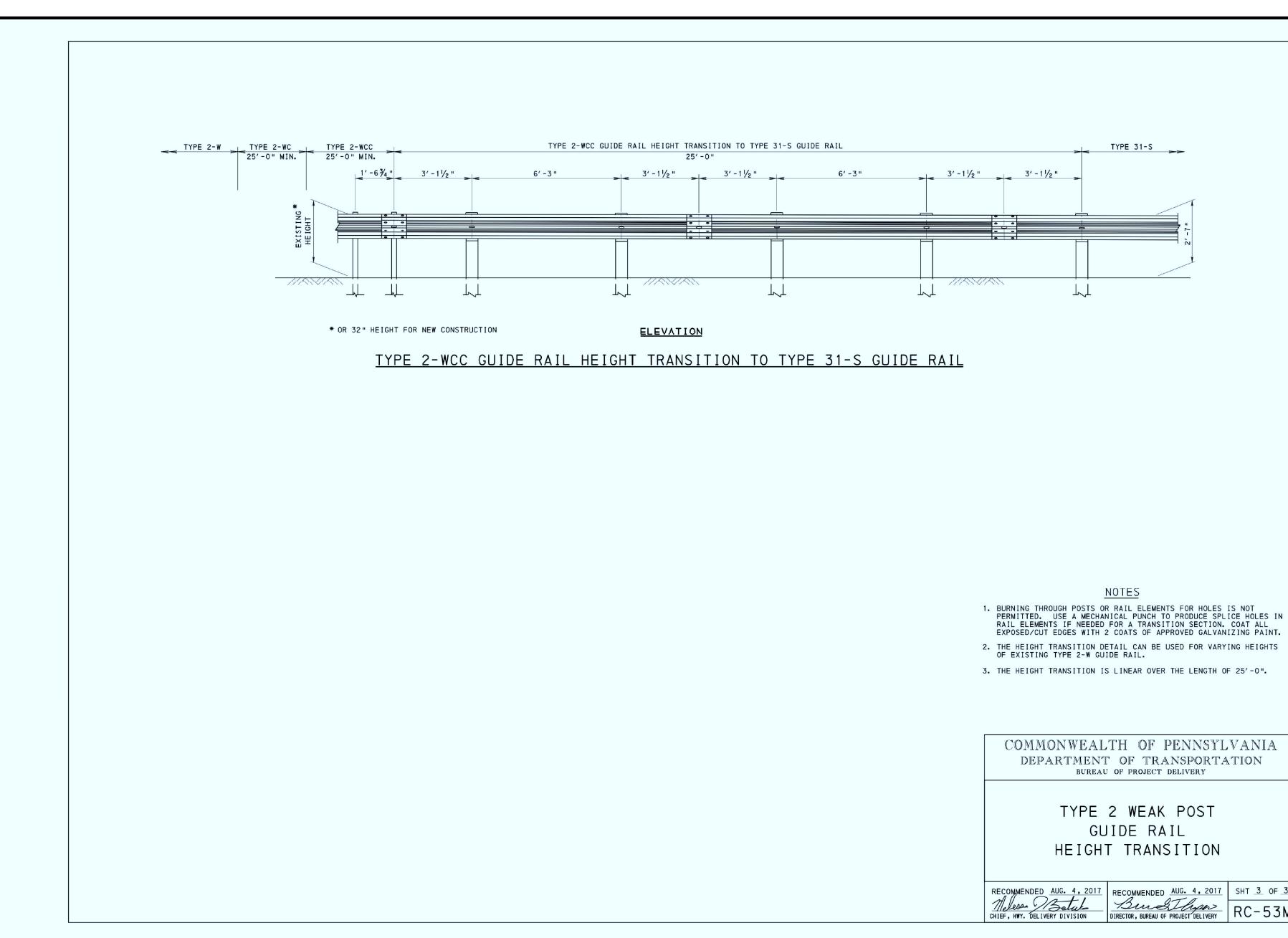
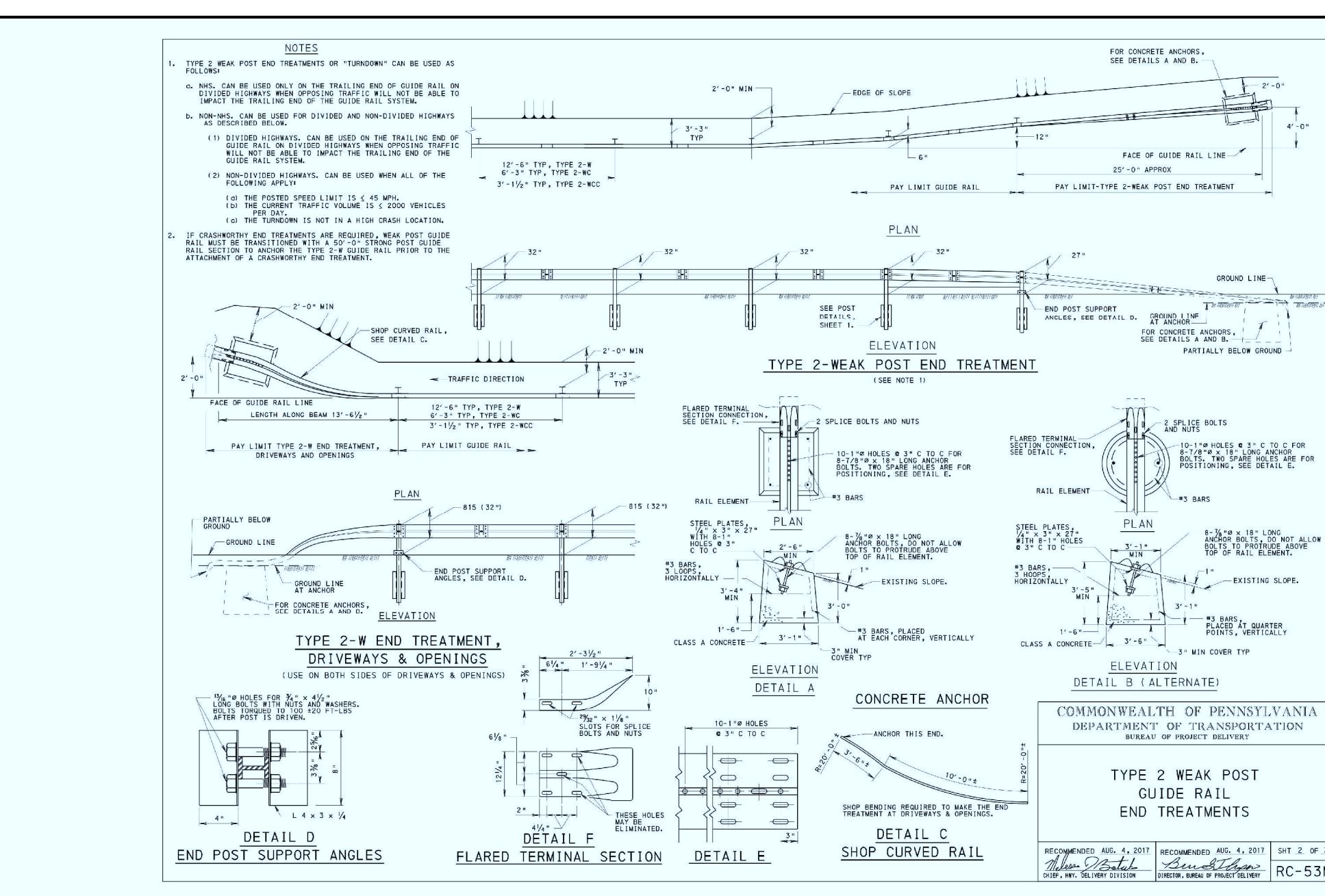
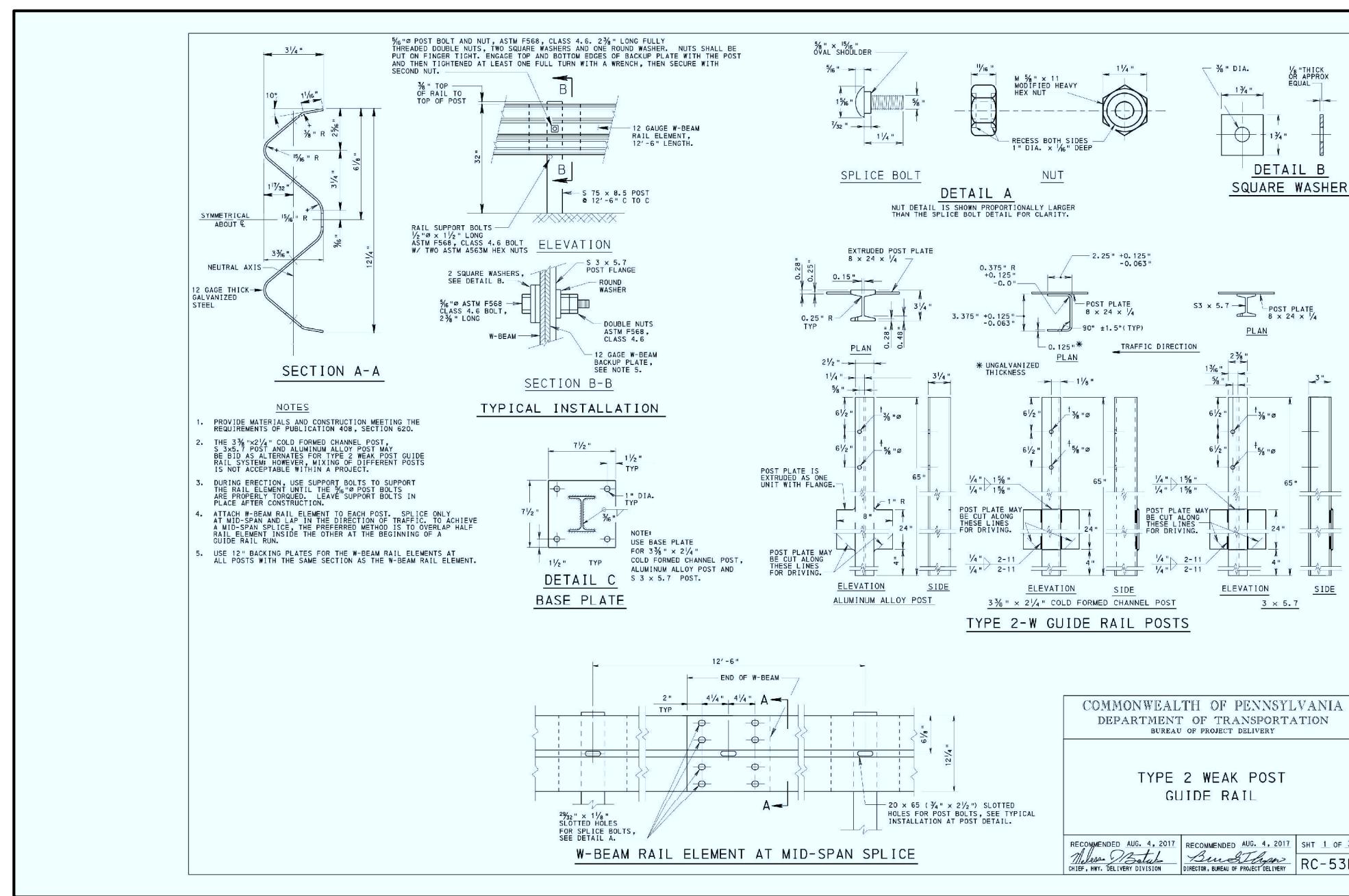


REVISION	DATE	DESCRIPTION
#4 TCD	9-7-22	
#3 TCD	6-22-22	
#2 TCD	6-3-22	
#1 TCD	5-3-22	

SITUATE IN:
LIMERICK TOWNSHIP,
MONTGOMERY COUNTY
PENNSYLVANIA



FINAL PLAN DETAILS



Ludgate Engineering Corporation
10 Vanguard Drive, Suite 100
Reading, PA 19606-3763
Phone: (610)404-7330

Plan prepared by: Ludgate Engineering Corporation
Julie Parish

Formal Education:
Technical Institute: Pennsylvania College of Technology
Dates of Attendance: 2007 to 2011
Degree received: Bachelor of science in Civil Engineering

Recent Erosion and Sedimentation Control Plans Prepared:
Name of Project: 467 Tulpehocken Street
County: Berks
Municipality: City of Reading

Under direct supervision of Thomas B. Ludgate, PE, PLS and LEED AP

PROJECT NARRATIVE:
The project is a 257,040 sqft warehouse/distribution center within the Linfield corporate center subdivision. Several smaller lots have been combined to create the warehouse lot. Surrounding the warehouse will be parking and PCSM BMPs. An extension to Keystone drive is also being added as part of this project.

The Site Boundary is 28.0 acres and the Limit of Disturbance is 26 acres.

Land Uses: Land uses post 50 years has been agricultural field. Land uses post 5 years has been agricultural as well as vacant meadow. Proposed land uses is the construction of a warehouse/distribution center.

PCSM BMPs to be used:
BMP 1 will be a Vegetated MRC.
BMP 2 will be a garden 6.45.
BMP 3 will be an underground infiltration bed.
BMP 4 will be a Vegetated MRC.

STREAM CLASSIFICATION:
The receiving stream is unnamed tributary to the Schuylkill river and is classified as WWF in the PA Code Chapter 93.

SOIL CLASSIFICATION:
There are site are:
ABB- Abbottstown silt loam 3 to 8 percent slopes
CrB- Croton silt loam, occasionally pebbled. 3 to 8 percent slopes
Pec- Penn silt loam, 8 to 15 percent slopes
Pkd- Penn-Killesney channery silt loams, 15 to 25 percent slopes
Rnb- Reaville silt loam, 3 to 8 percent slopes

SOIL LIMITATIONS	SOIL RESOLUTIONS	ABB	CrB	Pec	Pkd	Rnb
Cutbanks Cave	Layback slopes - follow OSHA rules for safety	x	x	x	x	x
Corrosive to Concrete/Steel	Corrosive resistant concrete - protective barrier between water and the steel - galvanized steel	C/S	C/S	C	C	C/S
Droughty	Compost mix to hold in moisture		x	x	x	x
Easily Erodible	Maintain erosion control BMPs	x	x		x	
Flooding	Avoid water in flood areas					
Depth to Saturated Zone/Seasonal High Water Table	Pumped water filter, footer drains	x	x		x	
Hydric/Hydric Inclusions	Avoidance, pumped water filter bags, trench plugs	x	x	x	x	x
Low Strength/Landslide Prone	Layback slopes/design for conditions	x	x	x	x	x
Slow Percolation	Drainage ditch, pumped water filter bag	x	x		x	
Piping	Trench plugs	x	x	x	x	x
Poor Source of Topsoil	Avoid reuse as topsoil or amend as necessary	x	x	x	x	x
Frost Action	Construct below frost depths/positive subgrade	x	x	x	x	x
Shrink-Swell						
Potential Sinkhole	Provide positive drainage					
Ponding	Design for conditions - drainage trenches, pumped water filter bag, sump pumps, footer drains	x				
Wetness	Trench plugs	x	x		x	

Soil Limitations:
Cutbanks Cave - Layback slopes - follow OSHA rules for safety
Corrosive to Concrete/Steel - use Corrosive resistant concrete - protective barrier between water and the steel - galvanized steel
Droughty - Compost mix to hold in moisture.
Easily Erodible - Maintain erosion control BMPs.
Hydric/Hydric Inclusions - Avoidance, pumped water filter bags, trench plugs.
Low Strength/Landslide Prone - Layback slopes/design for conditions.
Slow Percolation - Drainage ditch, pumped water filter bag.
Piping - Trench plugs.
Poor Source of Topsoil - Avoid reuse as topsoil or amend as necessary.
Shrink-Swell - Avoid use of clay soils in building areas.
Potential Sinkhole - Sinkhole mitigation techniques.
Ponding - Avoid water in flood areas.
Depth to Saturated Zone/Seasonal High Water Table - Pumped water filter, footer drains.
Frost Action - Construct below frost depths/positive subgrade.
Site falls within a Karst area and could have the potential for sinkholes - Licensed professional to prepare plan to restore and/or avoid area.

Geologic/soil conditions addressed, Potential for geologic or soil conditions to cause pollution during construction identified:
There are no known naturally occurring geologic or soil conditions that may have the potential to cause pollution during earth disturbance activities. Should any conditions be discovered during construction, the design engineer, the township and local Conservation District shall be notified immediately.

GENERAL EROSION AND SEDIMENT CONTROL PLAN NOTES
1. The contractor is advised to become thoroughly familiar with the provisions of the Appendix 64, Erosion Control Rules and Regulations, Title 25, Part 1, Department of Environmental Protection, Subpart C, Protection of Natural Resources, Article III, Water Resources, Chapter 102 Erosion Control.

2. The operator shall assure that the approved erosion and sediment control plan is properly and completely implemented.

3. All earth disturbances, including clearing and grubbing, as well as cuts and fills shall be done in accordance with the approved E&S plan. A copy of the approved E&S plan, including the site specific details, shall be made available at the project site at all times. The reviewing agency shall be notified of any changes to the approved plan prior to implementation of those changes. The reviewing agency may require a written submittal of those changes for review and approval of its discretion.

4. The operator shall assure that an erosion and sediment control plan has been prepared, approved by the reviewing agency, and is being implemented and maintained for all soil and/or rock spoil and borrow areas, regardless of their location.

5. Before initiating any revisions to the erosion and sediment control plan or revisions to other plans which may affect the effectiveness of the approved E&S control plan, the operator must receive approval of the revisions from the reviewing agency.

6. Only limited disturbance will be permitted to provide access to (construct sediment traps, diversion terraces, etc.) for grading and acquiring borrow to construct these controls.

7. The pumping of water from any work area shall be done according to the procedure described in this plan, over undisturbed vegetated areas. Discharge points should be established to provide for maximum distance to active waterways.

8. Seeps or springs encountered during construction shall be handled in accordance with the standard and specification for the subsurface drain or other approved method.

9. At stream crossings, 50-foot buffer areas should be maintained. On buffers, activities such as backfilling, dumping, burning, clearing brush, discharging rottwater from trenches, welding pipe sections, refilling and monitoring equipment should be accomplished outside of the buffers.

10. Concrete washout shall be handled in the manner described on the plan drawings. In no case shall it be allowed to enter any surface water or groundwater systems. Concrete washout must be a minimum of 50 feet from drains, ditches and waterways on a maximum slope of 2%. Material must be removed when it reaches 75% of total storage and liners must be replaced with each cleaning.

Sediment Basins and Traps

1. Approval of the use of skimmer(s) does not approve use of any skimmer(s) in violation of any patent, patent rights, and/or patent laws.
2. Baffles must be installed to allow basin maintenance and clean out.
3. Upon installation of the temporary sediment basin riser(s), an immediate inspection of the riser(s) shall be conducted by a qualified site representative and the Local County Conservation District shall be notified in writing that the riser is sealed.
4. Sediment basins must be structurally sound and protected from unauthorized acts of third parties.
5. All earthen fills shall be placed in compacted layers not to exceed 9 inches in thickness.
6. Areas to be filled are to be cleared, grubbed, and stripped of topsoil to remove trees, vegetation, rocks and other objectionable material.
7. Fill materials shall be free of frozen particles, brush, roots, sod, or other foreign or objectionable materials that would interfere with or prevent construction of satisfactory fills. Frozen materials or soft, mushy, or highly compressible materials shall not be incorporated into fills.
8. Fill shall not be placed on saturated or frozen surfaces.

9. Fill material for embankments shall be free of roots, or other woody vegetation, organic material, large stones and other objectionable materials. The embankments shall be compacted in maximum 8" layered lifts at 95% density.
10. Any damage that occurs in whole or in part as a result of basin or trap discharge shall be immediately repaired by the permittee in a permanent manner satisfactory to the municipality, Local County Conservation District, and the owner of the damaged property.
11. Upon request, the applicant or his contractor shall provide an as-built (record drawing) for any sediment basin or trap to the municipal inspector, Local County Conservation District or DEP.

Channels

1. All channels shall be kept free of obstructions including but not limited to fill, rocks, leaves, wood debris, accumulated sediment, excess vegetation, and construction material/wastes.
2. Underdrain utilities cutting through any active channel shall be immediately backfilled and the channel restored to its original cross-section and protective lining. Any base flow within the channel shall be conveyed past the work area in the manner described in this plan until such restoration is complete.

3. Channel having Riprap, Reno Mattress, or Gabion linings must be sufficiently over-excavated so that the design dimensions will be provided after placement of the protective lining.
4. Sediment basins and/or traps shall be kept free of all construction waste, wash water, and other debris having potential to clog the basin/trap outlet structures and/or pollute the surface waters.
5. Any damage that occurs in whole or in part as a result of basin or trap discharge shall be immediately repaired by the permittee in a permanent manner satisfactory to the municipality, Local County Conservation District, and the owner of the damaged property.

6. Areas which are to be treated shall be scoured to a minimum depth of 3 to 5 inches, 6 to 12 inches for compacted soils, prior to placement of erosion control measures.
7. Areas to be vegetated shall have a minimum of 4" inches of topsoil in place prior to seeding and mulching. Fill outspikes shall have a minimum of 2 inches of topsoil.

8. In no case should an area exceeding 15,000 square feet, which is to be stabilized by vegetation, reach final grade without seed and mulched.

9. Immediately after earth disturbance activities cease in any area or subarea of the project for a period exceeding 30 days, the open soil shall be protected from disturbed areas. The site shall be immediately mulched or otherwise protected from accelerated erosion and sedimentation pending future earth disturbance activities. During non-germinating months, mulch or protective blanketing shall be applied as described in the plan. Areas not finished grade, which will be restabilized within 1 year, may be stabilized in accordance with the temporary stabilization specifications. These areas which will not be restabilized within 1 year shall be stabilized in accordance with the permanent stabilization specifications.

10. Hay or straw mulch must be applied at 30 tons per acre. Straw mulch should be anchored immediately after application to prevent being windblown. Straw mulch shall be applied in long strands, not chopped or finely broken.

11. Permanent stabilization is defined as a minimum uniform, persistent 70% vegetative cover or other permanent non-vegetative cover with a density sufficient to resist accelerated erosion. Cut and fill slopes shall be capable of resisting failure due to slumping, sliding, or other movements.

12. Hay or straw mulch must be applied at 30 tons per acre. Straw mulch should be anchored immediately after application to prevent being windblown. Straw or hay into the soil - about 3 inches. This method should be limited to slopes no steeper than 33.1V. The machinery should be operated on the contour. Note: Crimping of hay or straw by running over it with tracked machinery is not recommended.

13. Hay or straw mulch mixed and applied according to manufacturer's recommendations may be used to tack mulch. Avoid application during rain and on windy days. A 24-hour curing period and a soil temperature higher than 45°F are typically required. Application of straw mulch be heaviest at the edges of seeded areas and of areas of rills and banks to prevent erosion. The remaining area should have binder applied uniformly. Binders may be applied after mulch is spread or sprayed into the mulch as it is being blown onto the soil. Applying straw and binder together is generally more effective.

14. Synthetic binders, or chemical binders, may be used as recommended by the manufacturer to anchor mulch provided sufficient documentation is provided to show they are non-toxic to native plant and animal species.

15. Mulch on slopes of 8% or steeper should be held in place with netting. Lightweight plastic, fiber, or paper nets may be stapled over the mulch according to manufacturer's recommendations.

16. Shredded paper mulch should not be used on slopes steeper than 5%. The application rate for any hydromulch should be 2,000 lb/acre at a minimum.

17. Where excessive soil erosion, tracking or flowing of sediment is evident or anticipated, a minimum of 4" of crushed stone shall be placed within the affected area and maintained until permanent stabilization is achieved. Crushed stone shall conform to AASTO designation M43, Size No. 2(1-1/2") to 1(1-2")

18. Maintenance - Mulched areas shall be checked periodically after each rainfall event for damage, until the mulching is no longer necessary for protection against erosion. Damaged portions of the mulch or tie down/material shall be repaired as soon as discovered.

19. Sprinkling/Irrigation - sprinkling the ground surface with water until it is moist.

20. Vegetative Cover - in areas not expected to handle vehicle traffic, vegetative stabilization of disturbed soil is desirable.

21. Mulch - a quick and effective means of dust control for a recently disturbed area.

22. Wind breaks - barriers (either natural or constructed) that reduce wind velocity through the site. Wind breaks can be trees or shrubs left in place during site clearing or construction barriers such as wind fence, snow fence, tarp curtain, hay bale, crate wall or sediment wall.

23. Tillage - Deep tillage in large open areas brings soil close to the surface where they rest top of dust, preventing it from becoming airborne.

24. Stone - stone may be an effective dust deterrent for construction roads and entrances, or as mulch in areas where vegetation cannot be established.

25. Soil restoration should not take place within the drip line of a tree to avoid damaging the root system.

26. On-site soils with an organic content of at least 5% percent can be properly stockpiled (to maintain organic content) and reused.

27. Spread 3" of approved compost on top of existing soil. Till added soil to existing soil with a rotary tiller set at a depth of 6 inches. Add on additional 4 inches of engineered soil to bring the area up to grade.

28. After permanent planting, 2-3 inches of compost blanket will be applied to all areas not protected by grass or other plants.

29. If additional information is required, refer to the Pennsylvania Stormwater Best Management Practices Manual at <http://www.elibrary.dep.state.pa.us>

INFILTRATION COMPOST MIX FOR BASIN BOTTON

1. Place a mix of 1/3 sand, 1/3 compost and 1/3 triple shredded mulch in basin bottom.

RECYCLING

1. All building materials and wastes shall be removed from the site and recycled or disposed of in accordance with the Department's Solid Waste Management Regulations at 25 Pa. Code 260.1 et seq., 271.1 and 287.1 et seq.. No building materials or wastes or unused building materials shall be buried, buried, dumped, or discarded at the site.

BORROW/WASTE AREAS/FILL

1. All off-site waste and borrow areas must have an E&S plan approved by the local conservation district or the Department fully implemented prior to being activated.

2. The contractor is responsible for ensuring that any material brought on site is Clean Fill. Form FP-001 must be retained by the property owner for any fill material affected by a spill or release of a regulated substance but qualifying as Clean Fill due to analytical testing.

3. If the site will need to import or export material from another site, the responsibility for performing environmental due diligence and determination of clean fill will rest with the permittee.

4. Clean fill is defined as: Uncontaminated, non-water soluble, non-decomposable, inert, solid material. The term includes soil, rock, stone, dredged material, used asphalt, and aggregate or sand, gravel, or crushed rock, and construction and demolition activities that are separate from other waste and is recognizable as such. The term does not include materials placed in or on the waters of the Commonwealth unless otherwise authorized. (The term "used asphalt" does not include milled asphalt or asphalt that has been processed for re-use).

5. Before initiating any revisions to the erosion and sediment control plan or revisions to other plans which may affect the effectiveness of the approved E&S control plan, the operator must receive approval of the revisions from the reviewing agency.

6. Only limited disturbance will be permitted to provide access to (construct sediment traps, diversion terraces, etc.) for grading and acquiring borrow to construct these controls.

7. The pumping of water from any work area shall be done according to the procedure described in this plan, over undisturbed vegetated areas. Discharge points should be established to provide for maximum distance to active waterways.

8. Seeps or springs encountered during construction shall be handled in accordance with the standard and specification for the subsurface drain or other approved method.

9. At stream crossings, 50-foot buffer areas should be maintained. On buffers, activities such as backfilling, dumping, burning, clearing brush, discharging rottwater from trenches, welding pipe sections, refilling and monitoring equipment should be accomplished outside of the buffers.

10. Concrete washout shall be handled in the manner described on the plan drawings. In no case shall it be allowed to enter any surface water or groundwater systems. Concrete washout must be a minimum of 50 feet from drains, ditches and waterways on a maximum slope of 2%. Material must be removed when it reaches 75% of total storage and liners must be replaced with each cleaning.

11. All fills shall be compacted as required to reduce erosion, settlement, subsidence or other related problems. Fill intended to support buildings, structures and conduits, etc. shall be compacted in accordance with local requirements or codes.

PERMANENT SEEDING

CONSTRUCTION SEQUENCE - NOTES:

All earth disturbances, including clearing and grubbing, as well as cuts and fills shall be done in accordance with the approved E&S plan. A copy of the approved drawings (stamped, signed and dated by the reviewing agency) must be available at the project site at all times. The reviewing agency shall be notified of any changes to the approved plan prior to implementation of any changes. The reviewing agency may require a written submittal of those changes for review and approval.

At least 1 day prior to starting any earth disturbance activities, including clearing and grubbing, the owner and/or operator shall have on-call contractors, the landowner, the appropriate municipal officials, the E&S plan preparer, the PSCM plan preparer, the licensed professional responsible for oversight of critical stages of implementation of the PSCM plan, and a representative from the Local County Conservation District to an on-site preconstruction meeting. The owner and/or operator must bring a copy of their NPDES permit and a copy of the stamped plan which must be available at the construction upon request.

At least 3 days prior to starting any earth disturbance activities, or expanding into an area previously unmarked, the Pennsylvania One Call System, Inc. shall be notified at 1-800-242-1776 for the location of existing underground utilities.

All earth disturbance activities shall proceed in accordance with the sequence provided on the plan drawings. Deviations from that sequence must be approved in writing from the Local County Conservation District or by the Department of Environmental Protection prior to implementation.

Upon installation or stabilization of all perimeter sediment control BMPs and at least 3 days prior to proceeding with the bulk earth disturbance activities, the Permittee or Co-Permittee shall provide notification to the department or authorized Local County Conservation District.

Erosion and sediment BMPs must be constructed, stabilized and functional before site disturbance begins within the tributary areas of those BMPs.

E&S BMPs shall remain functional as such until all areas tributary to them are permanently stabilized or until they are replaced by another BMP approved by the Local County Conservation District or the department.

Areas to be filled are to be cleared, grubbed, and stripped of topsoil to remove trees, vegetation, roots and other objectionable material.

Clearing, grubbing, and topsoil stripping shall be limited to those areas described in each stage of the construction sequence. General site clearing, grubbing and topsoil stripping may not commence in any stage or phase of the project until the E&S BMPs specified by the BMP sequence for that stage or phase have been installed and are functioning as described in this E&S plan.

At no time shall construction vehicles be allowed to enter areas outside the limit of disturbance boundaries as shown on the plan maps. These areas must be clearly marked and fenced off before clearing and grubbing operations begin.

The limits of disturbance (LOD), streams and wetlands should be marked prior to disturbance activities (i.e. stakes, posts & rope, construction fence, etc.).

Topsoil required for the establishment of vegetation shall be stockpiled at the location(s) shown on the plan maps in the amount necessary to complete the finish grading of all exposed areas that are to be stabilized by vegetation. Each stockpile shall be protected in the manner shown on the plan drawings. Stockpile heights shall not exceed 35 feet. Stockpile slopes shall be 2H:1V or flatter.

Erosion control blanketing shall be installed on all slopes 3H:1V or steeper within 50 feet of surface water and on all other disturbed areas specified on the plan maps and/or detail sheets.

After final stabilization has been achieved, temporary E&S BMPs must be removed or converted to permanent post construction stormwater management BMPs. Any disturbed areas or removal or conversion of the BMPs must be stabilized immediately. In order to ensure rapid revegetation of disturbed areas, such removal/conversions should be done only during the germinating season. The Local County Conservation District should be contacted prior to conversion or removal of primary BMPs and may require a site inspection.

Upon completion of all earth disturbance activities and permanent stabilization of all disturbed areas, the owner and/or operator shall contact the Local County Conservation District for an inspection prior to removal/conversion of the E&S BMPs.

Per E&S NPDES requirements, "Within 30 days after the completion of earth disturbance activities, the permittee must submit the permanent stabilization of the site and proper installation of the PSCM BMPs in accordance with the approved PSCM Plan, or upon submission of the NOT if sooner, the permittee shall file with the department or authorized conservation district a statement signed by a licensed professional and by the permittee certifying that the work has been performed in accordance with the terms and conditions of this permit and the approved E&S and PSCM Plans." Completion certificates are needed to ensure that all work is performed in accordance with the terms and conditions of this permit and the approved E&S and PSCM Plans.

Before disposing of soil or receiving soil for the site, the operator must assure that each spot or berm is an approved and permitted plan approved by the appropriate conservation district, and which is being implemented and monitored according to Chapter 102 regulations for all soil end-of-rock spoil and borrow areas, regardless of their locations. The operator shall also notify the Local County Conservation District in writing of all receiving spot and borrow areas when they have been identified.

Permittees and Co-Permittees are responsible for ensuring that a licensed professional has oversight responsibilities for the design and proper installation of BMPs identified in the PSCM Plan prior to the submission of the NOT for this permit. The licensed professional shall certify that the BMPs identified in the plan have been installed in accordance with the approved plan. The implementation schedule of BMPs and maintenance requirements contained within the approved PSCM Plan must be followed; and failure to comply with the installation schedule is a violation of this permit; the Clean Streams Law, and the Clean Water Act.

CONSTRUCTION SEQUENCE:

Note: Some Critical Stages of BMP installation will require oversight by a Licensed Professional. Licensed Professionals are Professional Engineers, Landscape Architects, Geologists and Land Surveyors licensed to practice in this Commonwealth.

1. The entire limit of disturbance (LOD) boundary must be identified and made visible with stakes, bunting or orange construction fencing prior to beginning work. All work and equipment must remain inside this boundary.

2. Install rock construction entrance.

3. Clear and grub only as needed to install compost socks as shown on the plans.

4. After compost socks are in place, begin clearing and grubbing.

5. All discharge should be to stable drainage courses or to well-vegetated areas.

6. Avoid steep slopes, rock outcrops and other potential hazards.

7. Inspect weekly and after each runoff event. Damages should be repaired immediately.

8. If any seeps are found on site, the design engineer should be contacted and the seep intercept detail shown on the PSCM plans should be used to direct the site to the nearest downstream surface waters of POC.

9. Begin grading site. Excavated topsoil is to be placed on a temporary topsoil stockpile. Topsoil required for the establishment of vegetation shall be stockpiled at the location(s) shown on the plan maps in the amount necessary to complete the final grading of all disturbed areas specified on the plan drawings. Stockpile heights shall not exceed 35 feet. Stockpile slopes shall be 2H:1V or flatter.

10. Grade Sediment Basin 1 and sediment Basin 2 first, followed by Diversion berms and then rest of site per plans.

11. Install sediment basin 1 and sediment basin 2's outlet structure, baffles and skimmers following plan details. Once the sediment basins are fully installed the rest of the site may be graded.

12. All graded areas shall be permanently stabilized immediately upon reaching finished grade. Cut slopes in competent bedrock and rock fills need not be vegetated. Seeded areas within 50 feet of a surface water, or as otherwise shown on the plan drawings, shall be blanketed according to the standards of this plan.

13. Place excavated topsoil on temporary topsoil pile. Place other soil or fragments of previous building pads, etc. on a temporary stockpile. Work is completed, stockpiles may be used for fill sites if approved by the county conservation district. All other material from the stockpile must be disposed of properly.

14. Immediately place NAG erosion control blanket where shown on plan when grading has been completed within 50' of the existing surface water.

15. Permanent stabilization is defined as a minimum uniform, perennial 70% vegetative cover or other permanent non-vegetative cover with a density sufficient to resist accelerated erosion. Cut and fill slopes shall be capable of resisting failure due to slumping, sliding, or other movements.

16. Place stone base on areas to be paved (driveways and parking areas) and on building pads.

17. Install concrete washouts.

18. Install underground utilities where shown on plan. Install fire hydrants and water stubs. Install sewer line where shown. Please refer to the Utility Line Trench Excavation Notes for proper trenching methods.

a. Existing water and sewer lines to be abandoned in-place (cap existing utility ends with grout/Concrete.)

b. All proposed waterlines to be DIP Class 52.

c. All manholes located in a flood area shall have flood-tight manhole covers installed.

19. Grade keystone dive roadway and cover with stone then begin grading for rain garden 1

A LICENSED PROFESSIONAL MUST BE ON-SITE TO OVERSEE THE CONSTRUCTION OF VEGETATED MRC BMP 1

20. Once uplope areas have been stabilized, install rain garden BMP 1.

21. Preparation of installation of Rain Garden BMPs 1. Begin with subgrade preparation.

a. Existing subgrade in Rain Garden/Biotraining areas shall NOT be compacted or subject to excessive equipment traffic.

b. Initial excavation can be performed during rough site grading but shall not be carried to within one foot of the final bottom elevation. Final excavation should not take place until all disturbed areas in the drainage area have been stabilized.

c. Where erosion of the subgrade has caused accumulation of fine materials and/or surface ponding in the graded bottom, this material shall be removed with light equipment and soil removed to a minimum depth of 6 inches with a York roller or equivalent light tractor.

d. Bring subgrade of biotreatment area to line, grade, and elevations indicated. Fill and lightly regrade any areas damaged by erosion, ponding, or traffic compaction. All biotreatment areas shall be level grade on bottom.

e. Bed bottom should be level after final grading.

f. Prior to placement of geotextile, upgradient areas shall be sufficiently stabilized to prevent the washing of sediment into storm. It is the contractor's responsibility to prevent the washing of sediment or sediment-laden waters into the BMP structure after final grading.

g. Upon approval of final subgrade preparation, geotextile and aggregate shall be placed immediately. Any accumulation of debris or sediment which has been taken to a site extra cost to the owner for removal has caused accumulation of fine materials and/or surface ponding.

h. Place geotextile in accordance with manufacturer's standards and recommendations. Unplug existing outlet to include it in the construction of BMP #2

i. Adjacent strips of geotextile shall overlap a minimum of 12". Secure fabric at least 4 inches of bed and take steps necessary to prevent any sediment from entering the outlet.

j. Aggregate shall be clean with a wash loss of no more than 0.5%.

Installation of the stone should be checked by the design or site engineer prior to installation into the infiltration BMP to ensure that it is clean washed stone. 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.

k. Following placement of bed aggregate, the geotextile shall be folded over the bed, with appropriate fabric overlap, to protect from sediment washout along bed edges.

l. The underground bed will ultimately be paved when the remainder of the site is paved.

22. Upon uplope areas are stabilized, install stormwater conveyance system to BMP 3. Install inlet protection on all inlets.

A LICENSED PROFESSIONAL MUST BE ON-SITE TO OVERSEE THE CONVERSION OF THE SEDIMENT BASIN 2 TO A VEGETATED MRC BMP 4

23. Preparation of installation of Vegetated MRC BMP 4. Begin with subgrade preparation.

a. Existing subgrade in basin areas shall NOT be compacted or subject to excessive equipment traffic.

b. Initial excavation can be performed during rough site grading but shall not be carried to within one foot of the final bottom elevation. Final excavation should not take place until all disturbed areas in the drainage area have been stabilized.

c. Where erosion of the subgrade has caused accumulation of fine materials and/or surface ponding in the graded bottom, this material shall be removed with light equipment and soil removed to a minimum depth of 6 inches with a York roller or equivalent light tractor.

d. Bring subgrade of biotreatment area to line, grade, and elevations indicated. Fill and lightly regrade any areas damaged by erosion, ponding, or traffic compaction. All biotreatment areas shall be level grade on bottom.

e. Protect Rain Gardens from sediment at all times during construction. Hay bales, diversion berms and/or other appropriate measures shall be used at the toe of slopes that are adjacent to Rain Gardens to prevent sediment from washing into these areas during site development.

f. When the site is fully vegetated and the soil mantle stabilized, the plan designer shall be notified and shall inspect the MRC Rain Garden drainage area at their discretion before the area is brought online and sediment control devices removed.

g. Water vegetation at the end of each day for two weeks after planting completed.

h. After proper maintenance, if rain garden does not drain within 72 hours, check inlets and orifices for possible blockages. If it still doesn't drain, contact the Design Engineer.

24. Install stormwater conveyance system to BMP 1 and existing manhole at southern end of site. Install inlet protection on all inlets.

25. Install curb along keystone drive

26. Move RCE to site entrances and being Verus site work. Move concrete washout to Verus site.

27. Place keystone drive

A LICENSED PROFESSIONAL MUST BE ON-SITE TO OVERSEE THE CONSTRUCTION OF RAIN GARDEN BMP 2

28. Preparation of installation of Rain Garden BMPs 2. Begin with subgrade preparation.

a. Existing subgrade in Rain Garden/Biotraining areas shall NOT be compacted or subject to excessive equipment traffic.

b. Initial excavation can be performed during rough site grading but shall not be carried to within one foot of the final bottom elevation. Final excavation should not take place until all disturbed areas in the drainage area have been stabilized.

c. Where erosion of the subgrade has caused accumulation of fine materials and/or surface ponding in the graded bottom, this material shall be removed with light equipment and the underlying soils scarified to a minimum depth of 6 inches with a York roller or equivalent light tractor.

d. Bring subgrade of biotreatment area to line, grade, and elevations indicated. Fill and lightly regrade any areas damaged by erosion, ponding, or traffic compaction. All biotreatment areas shall be level grade on bottom.

e. Protect Rain Gardens from sediment at all times during construction. Hay bales, diversion berms and/or other appropriate measures shall be used at the toe of slopes that are adjacent to Rain Gardens to prevent sediment from washing into these areas during site development.

f. When the site is fully vegetated and the soil mantle stabilized, the plan designer shall be notified and shall inspect the MRC Rain Garden drainage area at their discretion before the area is brought online and sediment control devices removed.

g. Water vegetation at the end of each day for two weeks after planting completed.

h. After proper maintenance, if rain garden does not drain within 72 hours, check inlets and orifices for possible blockages. If it still doesn't drain, contact the Design Engineer.

29. Preparation of installation of Rain Garden BMPs 2. Begin with subgrade preparation.

a. Existing subgrade in Rain Garden/Biotraining areas shall NOT be compacted or subject to excessive equipment traffic.

b. Initial excavation can be performed during rough site grading but shall not be carried to within one foot of the final bottom elevation. Final excavation should not take place until all disturbed areas in the drainage area have been stabilized.

c. Where erosion of the subgrade has caused accumulation of fine materials and/or surface ponding in the graded bottom, this material shall be removed with light equipment and the underlying soils scarified to a minimum depth of 6 inches with a York roller or equivalent light tractor.

d. Bring subgrade of biotreatment area to line, grade, and elevations indicated. Fill and lightly regrade any areas damaged by erosion, ponding, or traffic compaction. All biotreatment areas shall be level grade on bottom.

e. Protect Rain Gardens from sediment at all times during construction. Hay bales, diversion berms and/or other appropriate measures shall be used at the toe of slopes that are adjacent to Rain Gardens to prevent sediment from washing into these areas during site development.

f. When the site is fully vegetated and the soil mantle stabilized, the plan designer shall be notified and shall inspect the MRC Rain Garden drainage area at their discretion before the area is brought online and sediment control devices removed.

g. Water vegetation at the end of each day for two weeks after planting completed.

h. After proper maintenance, if rain garden does not drain within 72 hours, check inlets and orifices for possible blockages. If it still doesn't drain, contact the Design Engineer.

30. Preparation of installation of Rain Garden BMPs 2. Begin with subgrade preparation.

a. Existing subgrade in Rain Garden/Biotraining areas shall NOT be compacted or subject to excessive equipment traffic.

b. Initial excavation can be performed during rough site grading but shall not be carried to within one foot of the final bottom elevation. Final excavation should not take place until all disturbed areas in the drainage area have been stabilized.

c. Where erosion of the subgrade has caused accumulation of fine materials and/or surface ponding in the graded bottom, this material shall be removed with light equipment and the underlying soils scarified to a minimum depth of 6 inches with a York roller or equivalent light tractor.

d. Bring subgrade of biotreatment area to line, grade, and elevations indicated. Fill and lightly regrade any areas damaged by erosion, ponding, or traffic compaction. All biotreatment areas shall be level grade on bottom.

e. Protect Rain Gardens from sediment at all times during construction. Hay bales, diversion berms and/or other appropriate measures shall be used at the toe of slopes that are adjacent to Rain Gardens to prevent sediment from washing into these areas during site development.

f. When the site is fully vegetated and the soil mantle stabilized, the plan designer shall be notified and shall inspect the MRC Rain Garden drainage area at their discretion before the area is brought online and sediment control devices removed.

g. Water vegetation at the end of each day for two weeks after planting completed.

h. After proper maintenance, if rain garden does not drain within 72 hours, check inlets and orifices for possible blockages. If it still doesn't drain, contact the Design Engineer.

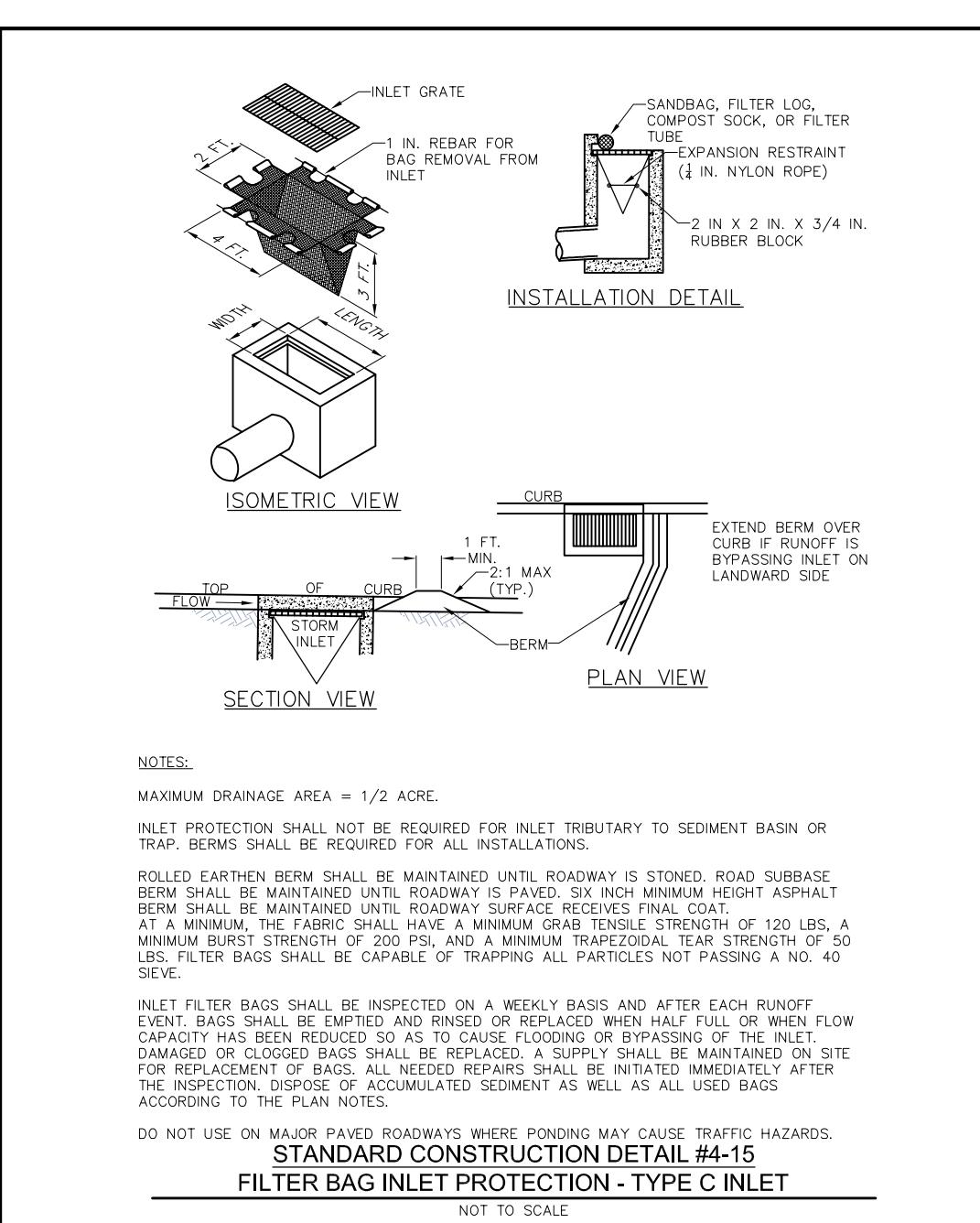
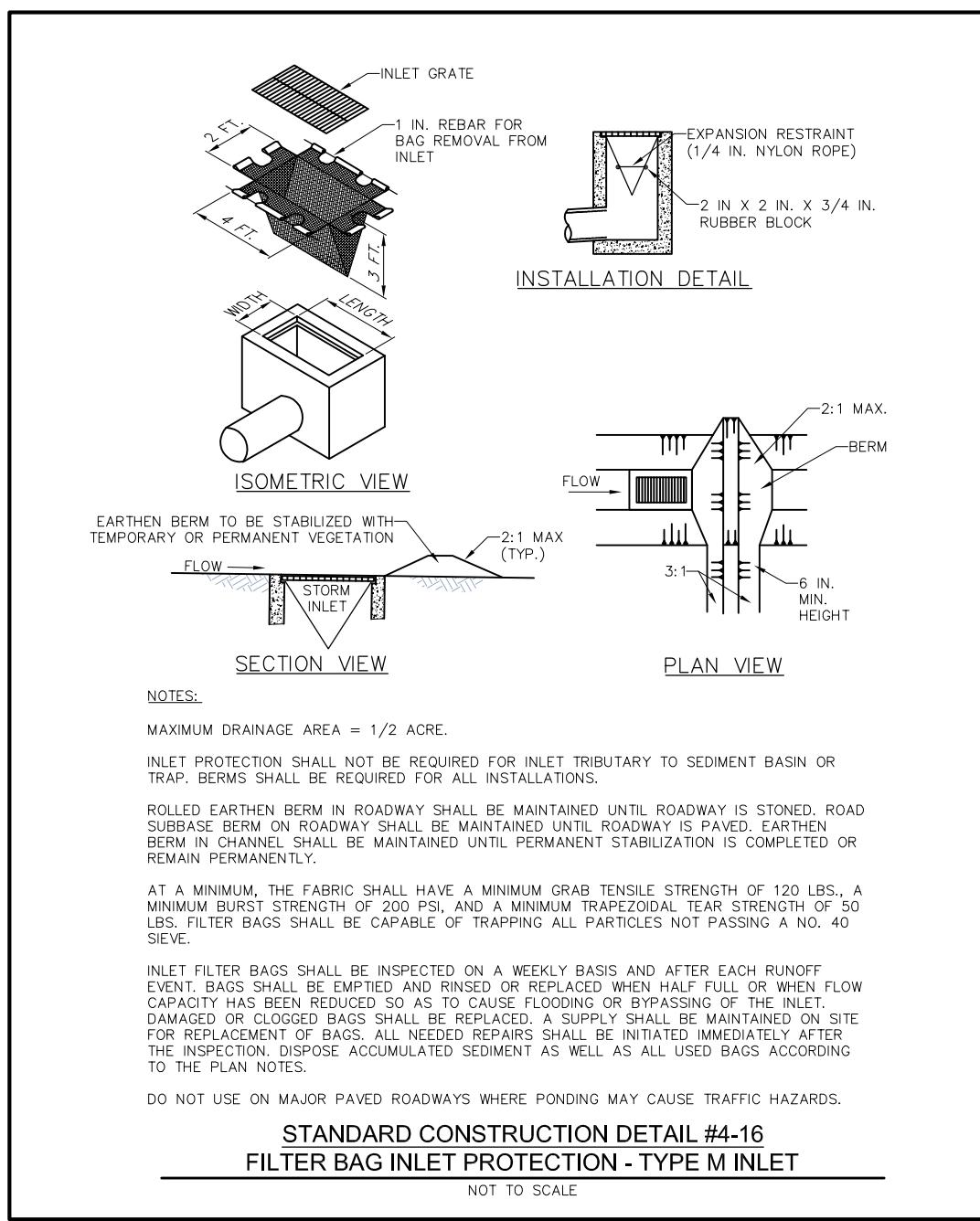
31. Preparation of installation of Rain Garden BMPs 2. Begin with subgrade preparation.

a. Existing subgrade in Rain Garden/Biotraining areas shall NOT be compacted or subject to excessive equipment traffic.

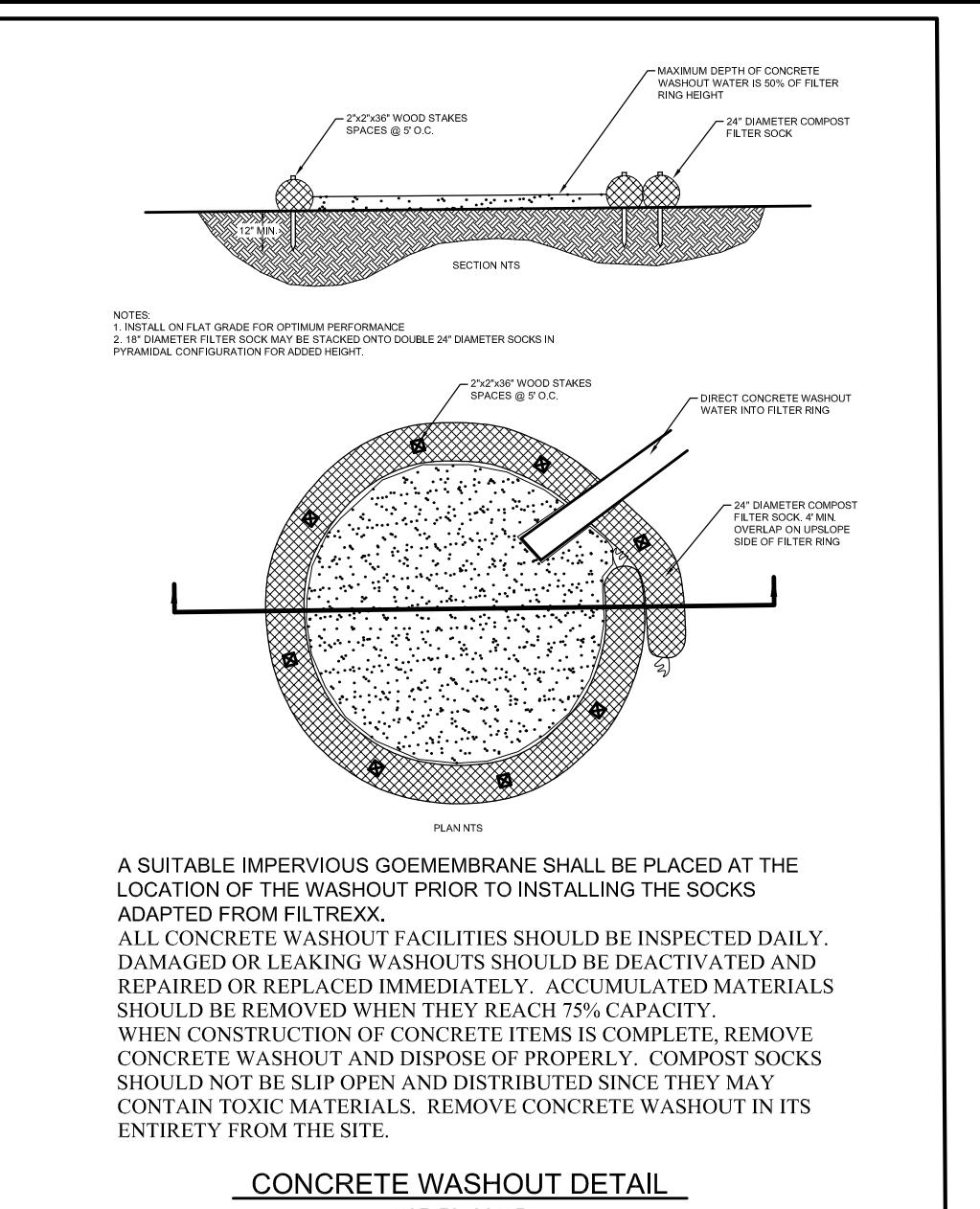
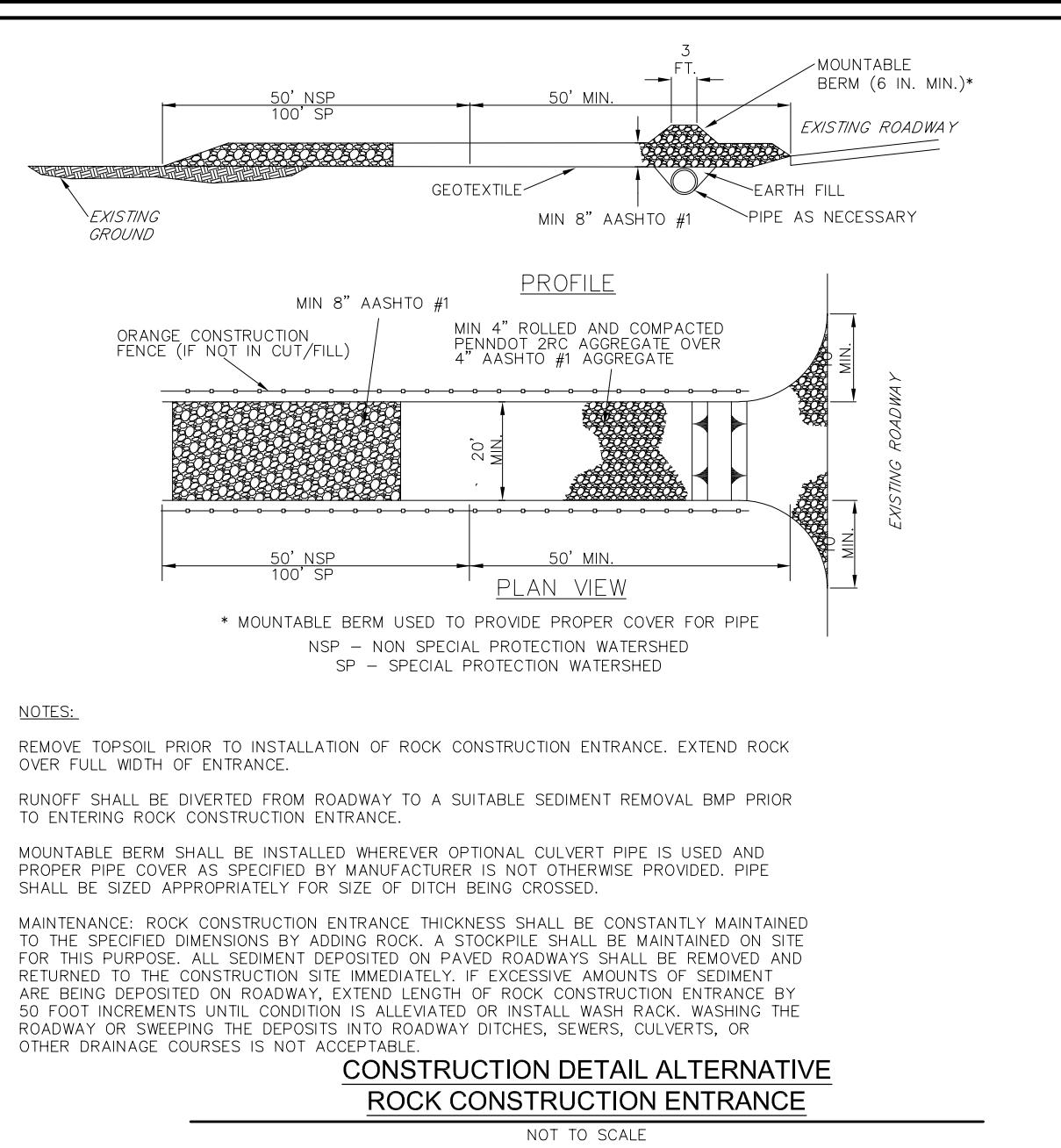
b. Initial excavation can be performed during rough site grading but shall not be carried to within one foot of the final bottom elevation. Final excavation should not take place until all disturbed areas in the drainage area have been stabilized.

c. Where erosion of the subgrade has caused accumulation of fine materials and/or surface ponding in the graded bottom, this material shall be removed with light equipment and the underlying soils scarified to a minimum depth of 6 inches with a York roller or equivalent light tractor.

d. Bring subgrade of biotreatment area to line, grade, and elevations indicated. Fill and lightly regrade any areas damaged by erosion, ponding, or traffic compaction. All biotreatment areas shall be level grade on bottom.</p



COMPOST SOCK FABRIC MINIMUM SPECIFICATIONS					
MATERIAL TYPE	3 mil HDPE	5 mil HDPE	5 mil HDPE	MULTI-FILAMENT POLYPROPYLENE (MFP)	HEAVY DUTY MULTI-FILAMENT POLYPROPYLENE (HDFPP)
MATERIAL CHARACTERISTICS	PHOTO-DEGRADABLE	PHOTO-DEGRADABLE	BIO-DEGRADABLE	PHOTO-DEGRADABLE	PHOTO-DEGRADABLE
SOCK DIAMETERS	12"	12" 24"	12" 24"	12" 24"	12" 24"
MESH OPENING	8"	8"	8"	8"	8"
TENSILE STRENGTH	26 psi	26 psi	44 psi	202 psi	
ULTRAVIOLET STABILITY % ORIGINAL STRENGTH (ASTM G-155)	23% at 1000 hr.	23% at 1000 hr.		100% at 1000 hr.	100% at 1000 hr.
MINIMUM FUNCTIONAL LONGEVITY	6 months	9 months	6 months	1 year	2 years
TWO-PLY SYSTEMS					
INNER CONTAINMENT NETTING					
HDPE BIAXIAL NET CONTINUOUSLY WOUND FUSION-WELDED JUNCTURES 1/2" X 1/2" MAX. APERTURE SIZE					
OUTER FILTRATION MESH					
COMPOSITE POLYPROPYLENE FABRIC (WOVEN LAYER AND NON-WOVEN FLEECE MECHANICALLY FUSED VIA NEEDLE PUNCH) 1/2" MAX. APERTURE SIZE					
SOCK FABRICS COMPOSED OF BURLAP MAY BE USED ON PROJECTS LASTING 6 MONTHS OR LESS					
COMPOST SHOULD BE A WELL DECOMPOSED, WEED-FREE ORGANIC MATTER DERIVED FROM AGRICULTURE, FOOD, STUMP GRINDINGS, AND YARD OR WOOD/BARK ORGANIC MATTER SOURCES. THE COMPOST SHOULD BE AEROBICALLY COMPOSTED. THE COMPOST SHOULD NOT POSSESS ANY OBJECTIONABLE ODORS AND SHOULD BE REASONABLY FREE (<1% BY DRY WEIGHT) OF MAN-MADE FOREIGN MATTER. THE COMPOST PRODUCT SHOULD NOT RESEMBLE THE RAW MATERIAL FROM WHICH IT WAS DERIVED. WOOD AND BARK CHIPS, GROUND CONSTRUCTION DEBRIS OR REPROCESSED WOOD PRODUCTS ARE NOT ACCEPTABLE AS THE ORGANIC COMPONENT OF THE MIX.					
THE PHYSICAL PARAMETERS OF THE COMPOST SHOULD COMPLY WITH THE FOLLOWING STANDARDS. THE STANDARDS CONTAINED IN THE PENNDOT PUB. 408 ARE AN ACCEPTABLE ALTERNATIVE					
COMPOST STANDARDS					
ORGANIC MATTER CONTENT	25% - 100% (DRY WEIGHT BASIS)				
ORGANIC PORTION	FIBROUS AND ELONGATED				
pH	5.5 - 8.5				
MOISTURE CONTENT	30% - 60%				
PARTICLE SIZE	30% - 50% PASS THROUGH 3/8" SIEVE				
SOLUBLE SALT CONCENTRATION	5.0 dS/m (mmhos/cm) MAXIMUM				



STANDARD E&S WORKSHEET #1 Compost Filter Socks				
PROJECT NAME: Linfield Corporate Center: verus				
LOCATION: Limerick Township				
PREPARED BY: Julie Parish				
DATE: 1/25/2022				
CHECKED BY:				
DATE:				
2" X 2" WOODEN STAKES PLACED 10' O.C.				
COMPOST FILTER SOCK				
BLOWPLACED FILTER MEDIA				
DISTURBED AREA				
12' MIN				
SOCK NO.	Dia. In	Location	Slope Percent	Slope Length Above Barrier (ft)
1	12	North side	3%	300
2	12	North side	3%	80
3	12	North side	2%	341
4	12	West side	4%	101
5	12	West side	10%	40
6	12	West side	25%	60
7	12	West side	33%	85
8	32	West side	33%	124
9	12	West side	13%	143
10	24	West side	20%	233
11	12	West side	5%	240
12	32	West side	18%	260
13	32	West side	29%	231
14	32	South side	22%	160
15	32	South side	30%	105
16	32	South side	30%	120
17	32	South side	30%	110
18	32	South side	30%	94
19	32	South side	30%	91
20	18	South side	10%	70
21	18	South side	10%	75
22	18	South side	10%	84
23	24	South side	8%	270
24	24	Along keystone	7%	310
25	24	Along keystone	7%	320
26	24	Along keystone	7%	360
27	24	Along keystone	7%	153

Erosion & Sedimentation Pollution Control Plan Notes:
E&S Plan minimizes the extent and duration of earth disturbance. We have sequenced the construction with appropriate temporary stabilization methods to minimize the duration of the earth disturbance.

In the case should on areas exceeding 15,000 square feet which is to be stabilized by vegetation, reach final grade without being seed mulched.

Immediately after earth disturbance activities cease in any area or subarea of the project for a period exceeding 4 days, the operator shall stabilize all disturbed areas. The site shall be immediately seeded, mulched or otherwise protected from accelerated erosion and sedimentation pending future earth disturbance activities. During non-germinating months, mulch or protective blanketing shall be applied as described in the plan. Areas not at finished grade, which will be re-vegetated within 1 year, may be stabilized in accordance with the temporary stabilization specifications. Those areas which will not be re-vegetated within 1 year shall be stabilized in accordance with the permanent stabilization specifications.

Clearing, grubbing, and topsoil stripping shall be limited to those areas described in each step of the construction sequence. General site clearing, grubbing and topsoil stripping may not commence in any stage or phase of the project until the E&S BMPs specified by the BMP sequence for that stage or phase have been installed and are functioning as described in this E&S plan.

The entire limit of disturbance boundary must be identified and made visible with stakes, flagging or orange construction fencing prior to beginning work. All work and equipment must remain inside this boundary.

E&S Plan maximizes protection of existing drainage features and vegetation. The CC-1 is being met and downstream watercourses will not be dredged. Compost socks are installed on undisturbed ground and stormwater will flow through to a vegetated area before entering wetland area.

E&S Plan minimizes protection of existing drainage features and vegetation. The entire limit of disturbance boundary must be identified and made visible with stakes, flagging or orange construction fencing prior to beginning work. All work and equipment must remain inside this boundary. Topsoil will be protected and respond on site after most of the earth disturbance. Care will be taken to minimize compaction through minimal machinery usage and post development amending of the soil.

E&S Plan utilizes other measures or controls that prevent or minimize generation of increased stormwater runoff.

Immediately after earth disturbance activities cease in any area or subarea of the project for a period exceeding 4 days, the operator shall stabilize all disturbed areas. The site shall be immediately seeded, mulched or otherwise protected from accelerated erosion and sedimentation pending future earth disturbance activities. During non-germinating months, mulch or protective blanketing shall be applied as described in the plan. Areas not at finished grade, which will be re-vegetated within 1 year, may be stabilized in accordance with the temporary stabilization specifications. Those areas which will not be re-vegetated within 1 year shall be stabilized in accordance with the permanent stabilization specifications.

Impervious coverage will only be added to the site after stormwater rate and volume BMPs have been installed and brought online. Before BMPs are installed proposed impervious areas will remain stabilized with stone or other pervious material.

Anticipated construction wastes and Recycling or disposal of materials: Anticipated construction wastes are existing asphalt/concrete materials as well as normal construction materials during building.

Anticipated construction wastes are normal construction materials during building. All building materials and wastes shall be removed from the site and recycled or disposed of in accordance with the Department's Solid Waste Management Regulations at 25 Pa. Code 260.1 et seq., 271.1 and 287.1 et seq.. No building materials or wastes or unused building materials shall be burned, buried, dumped, or discharged at the site.

Construction wastes include, but are not limited to, excess soil materials, building materials, concrete wash water, sanitary wastes, etc. that could adversely impact water quality. The concrete washout will be handled as required.

Wood used as concrete forms, etc. will need to be disposed of properly. Wood chips can be spread on site. Wooden boxes and other materials can be recycled, re-used or properly disposed. Metal items can be recycled. Paper and plastic must be disposed of properly. Concrete washout must also be disposed of properly. Also dispose of bricks, possibly of a clean fill site. Check with the conservation district first. Remove all trash.

Recycling of waste materials must be done where feasible. This includes housekeeping items, materials management and litter control. It is important to keep recyclable items out of landfills.

During clearing and grubbing, limbs, wood, etc. can be chipped & placed within the limit of disturbance for future use. If not required for an emergency E&S problem, the chips can be used later.

Topsoil should be placed on its own stockpile for later use.

Also dispose of bricks, possibly of a clean fill site. Check with the conservation district first.

All trash must be removed from the site and properly disposed.

Plastic/papers removed from stacks of materials, etc., must be disposed of properly. Steel banding must be separated and recycled.

A PPC (Permit, Preservation and Quelling) Plan should be prepared by contractor. Workers on site should be aware of the PPC plan and the items that should be followed for continual safety of workers and down-slope, especially waterways and the general public.

All BMPs should be checked on a regular basis as well as after 1" rain events. Equipment should be checked for oil leakage and/or other contaminants.

Where potential for pollution identified, measures provided to avoid/minimize/or mitigate:

No pollution has been identified on site. New pollution could come from diesel or gas engines, construction waste and human waste.

Engines should be kept in good order to prevent leakage and excessive gas pollution. Oil and other pollutant liquids should be kept in approved containers and disposed of properly if used on site. Any spills should be reported to the proper authority or township and cleaned up immediately.

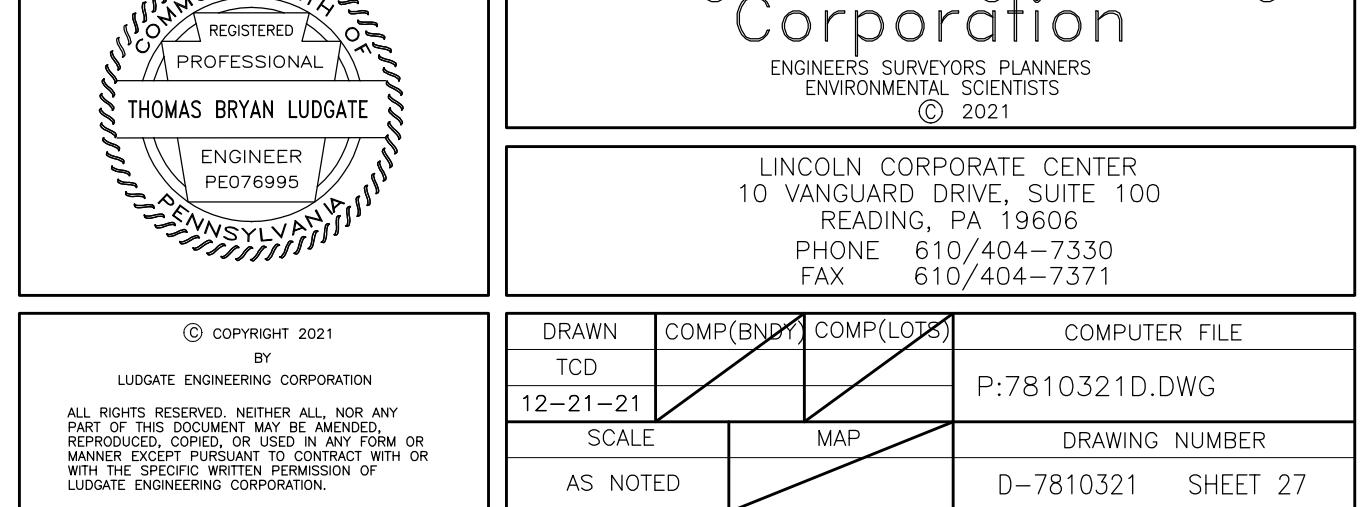
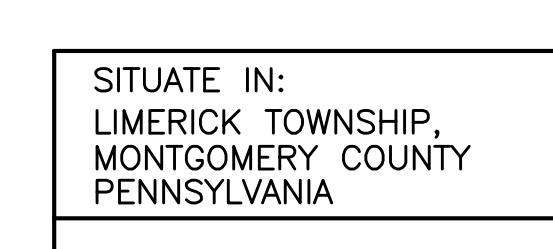
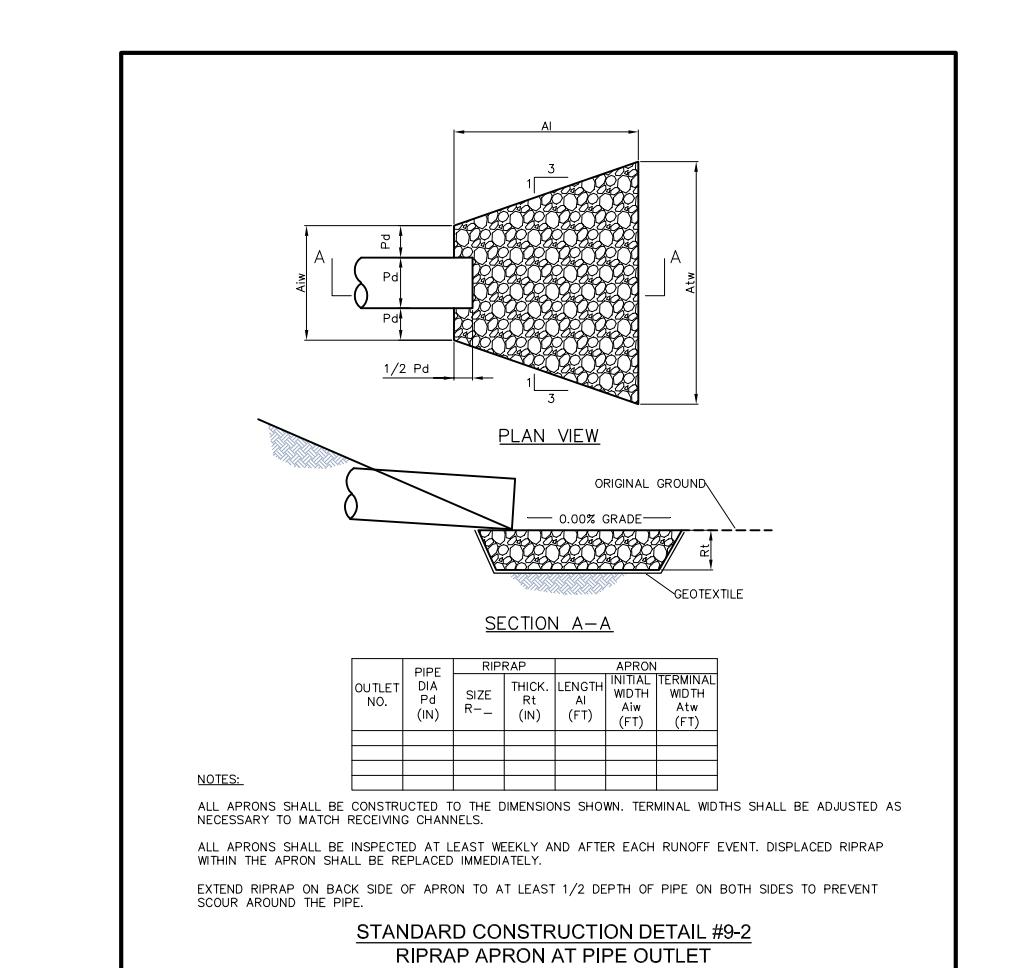
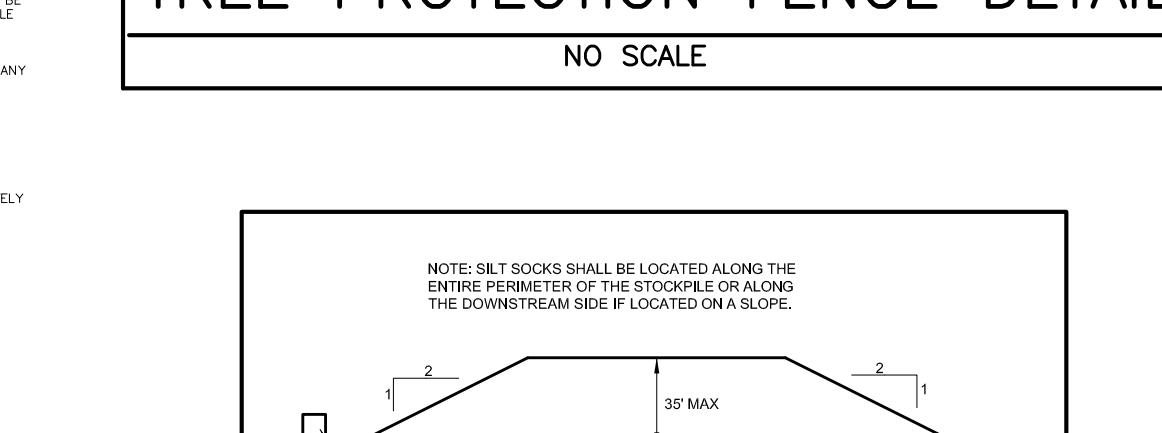
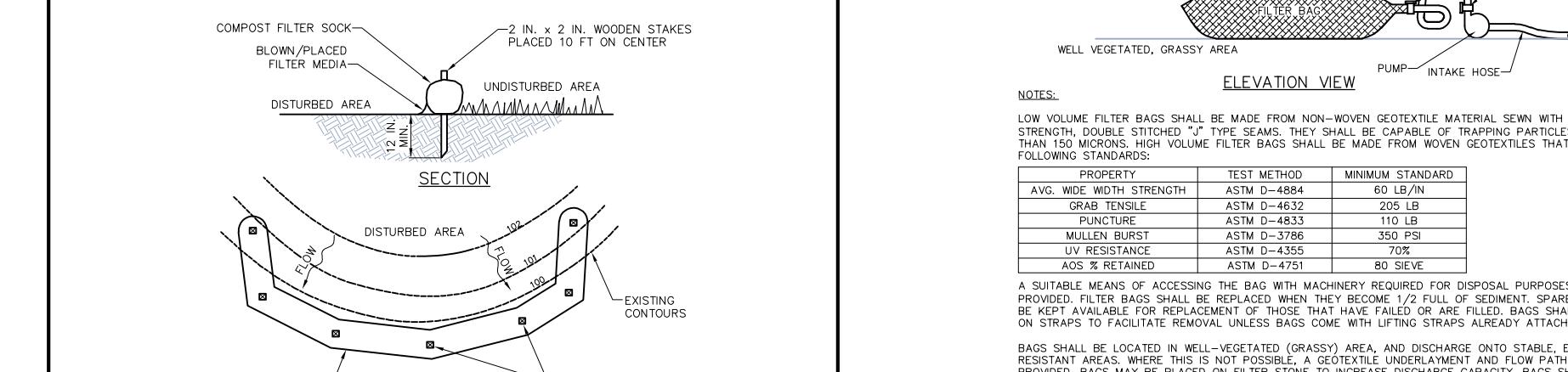
Construction waste should be disposed of per the above notes.

Human waste should be contained and disposed of per relevant regulations.

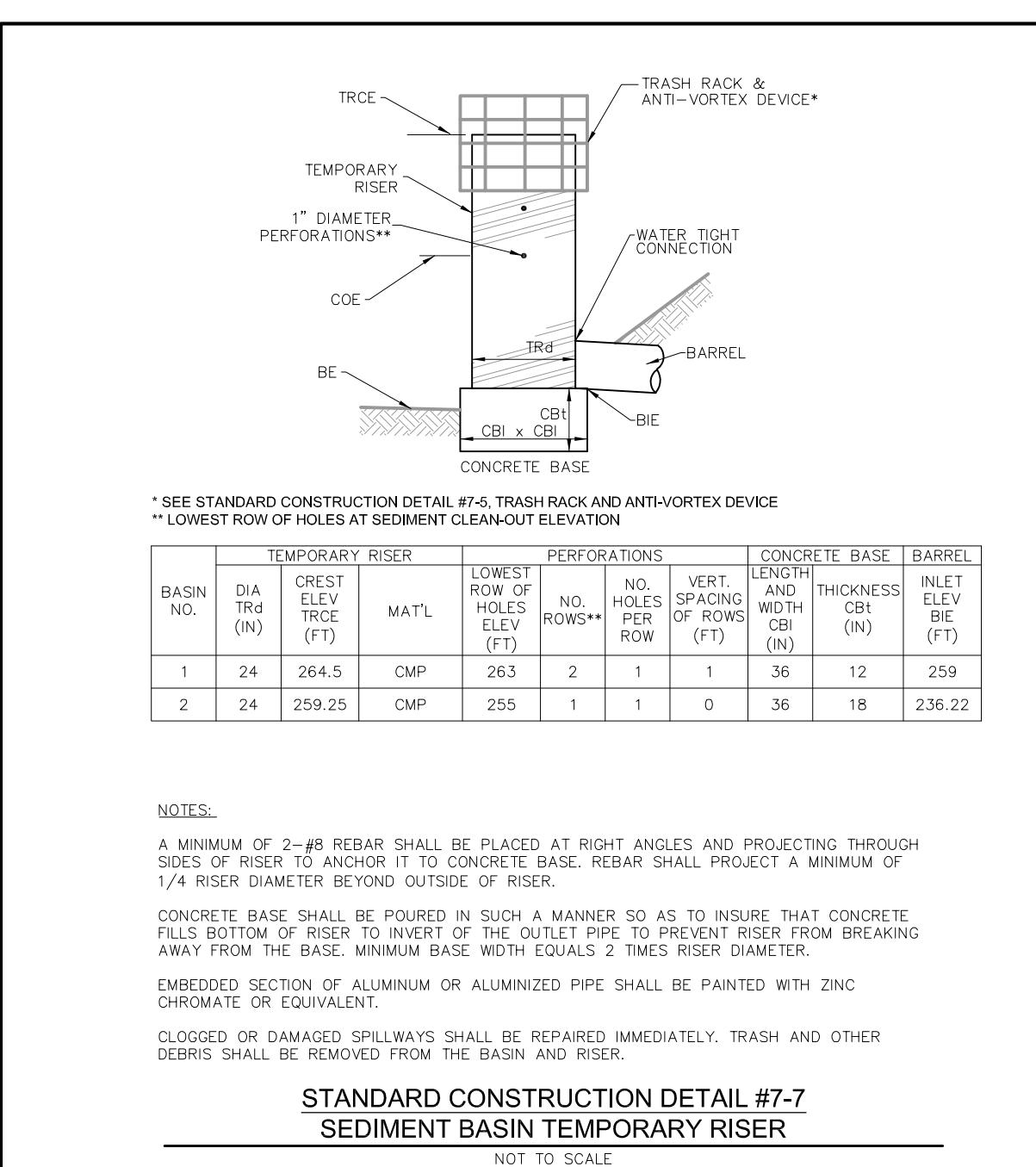
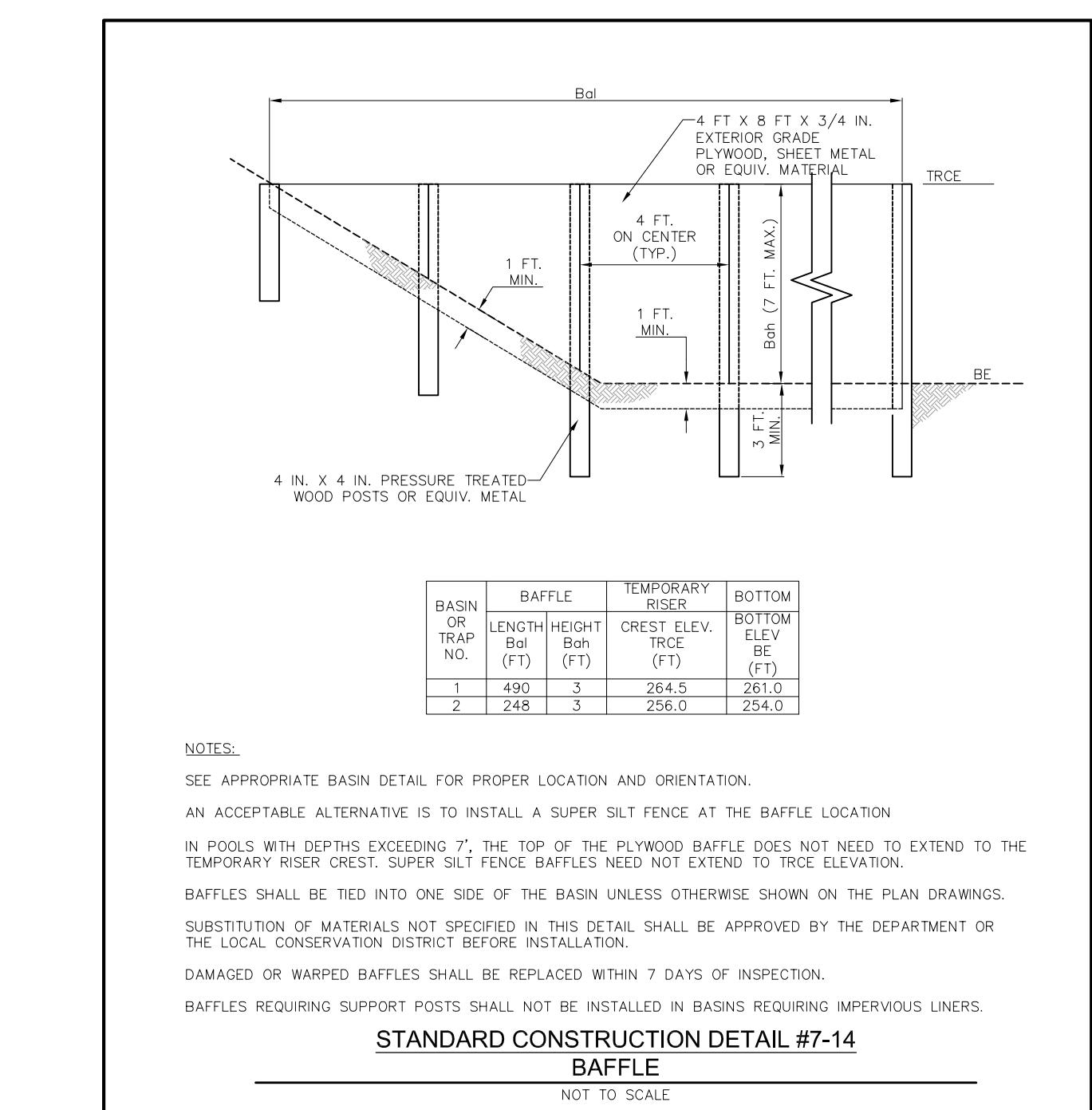
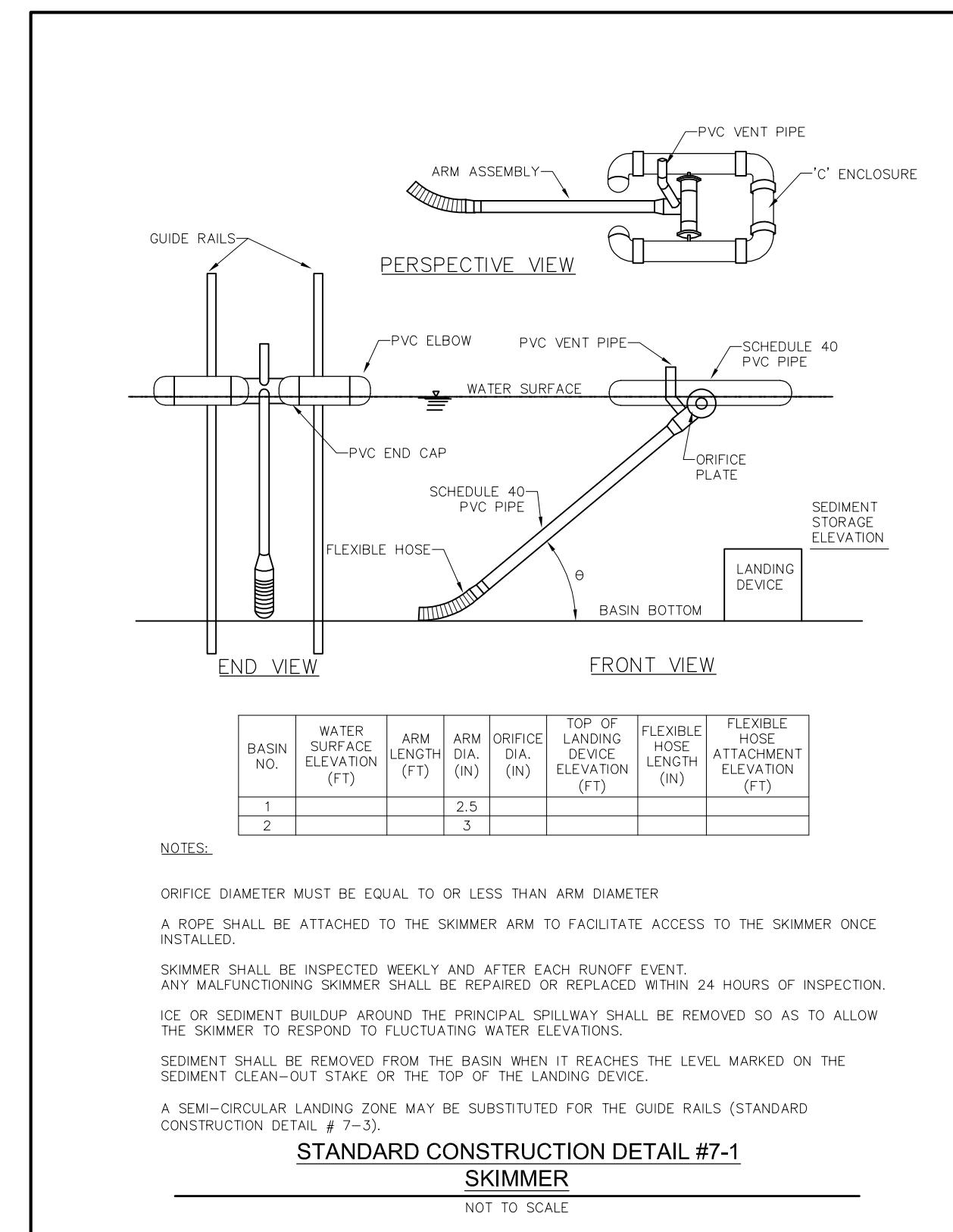
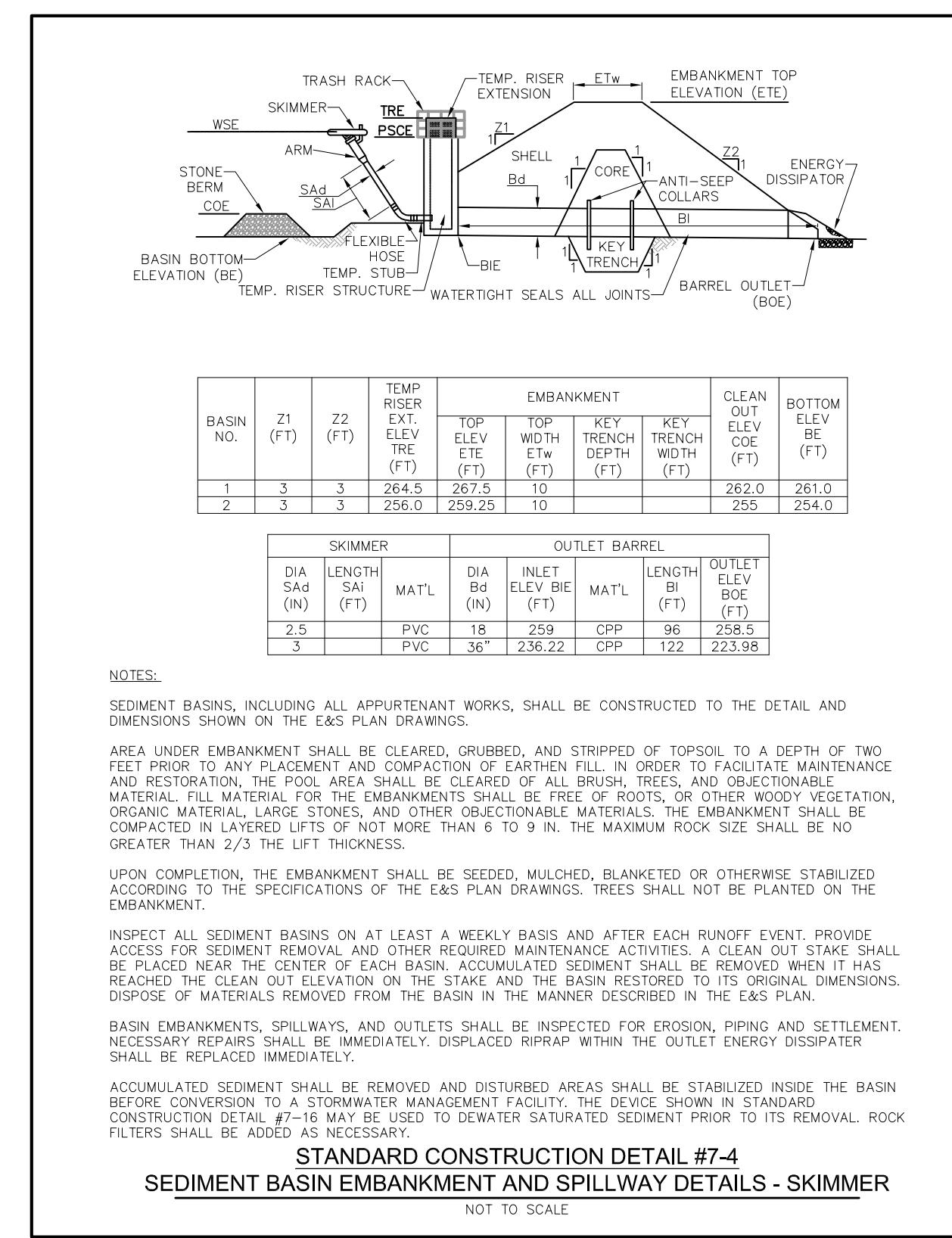
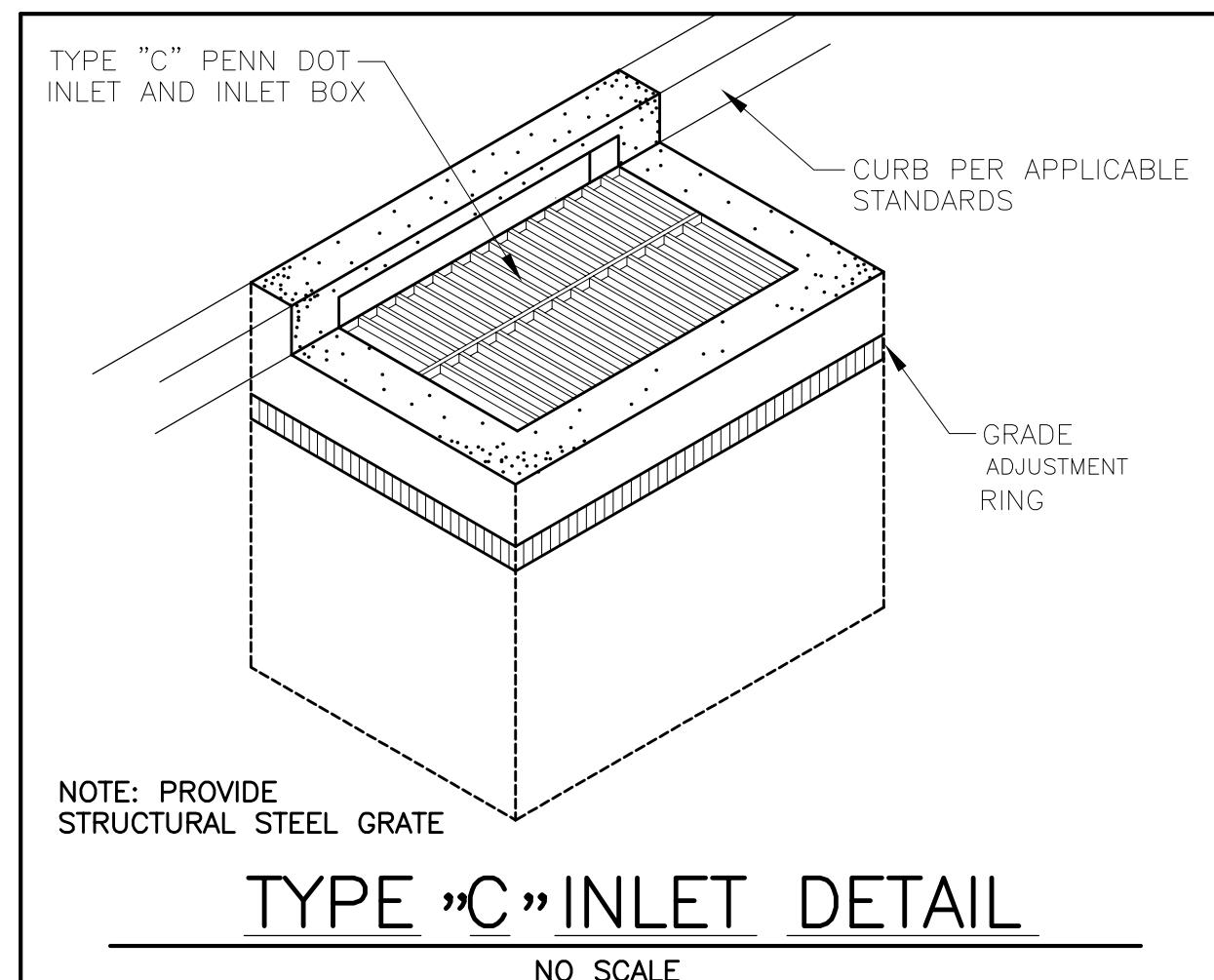
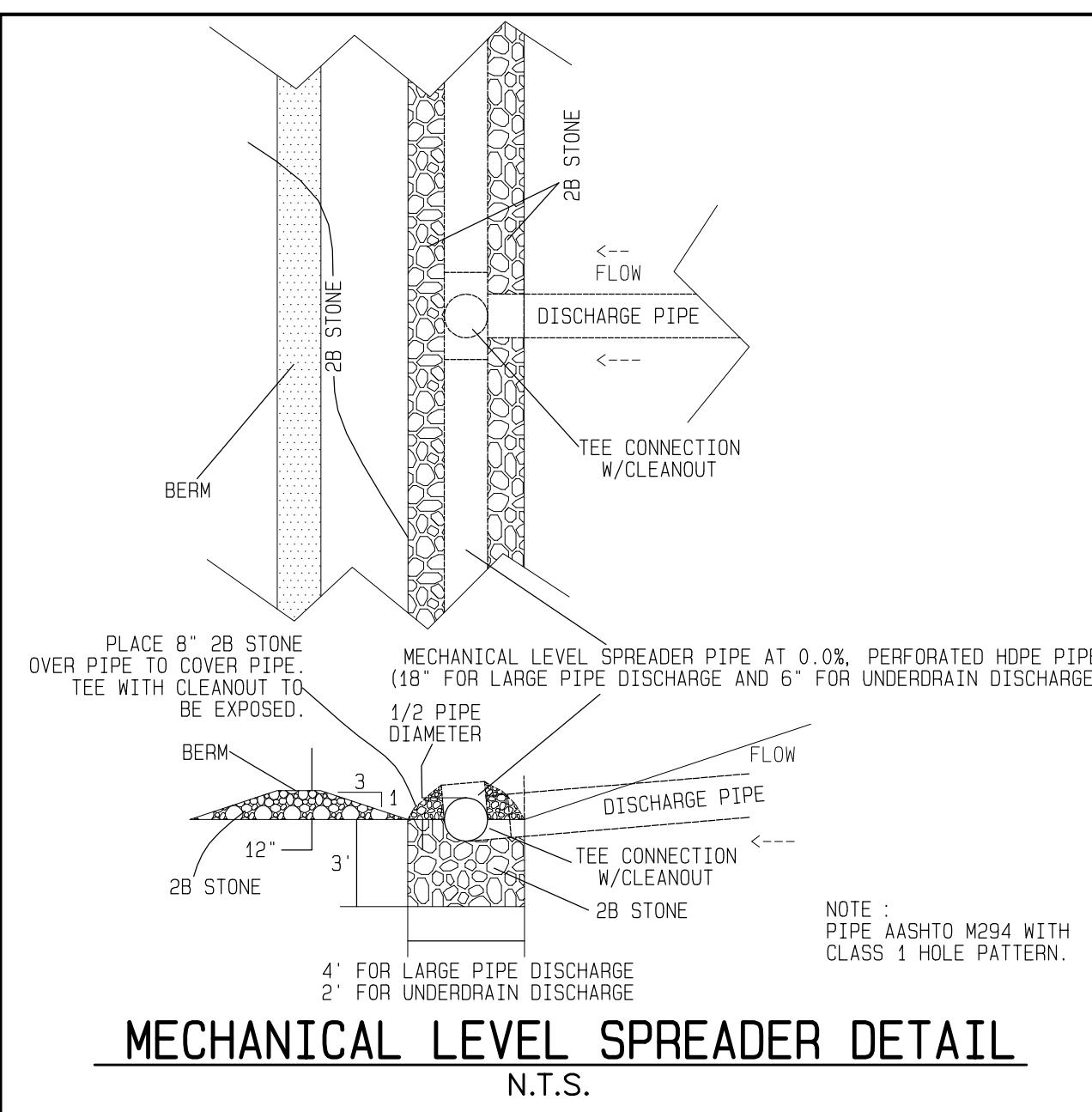
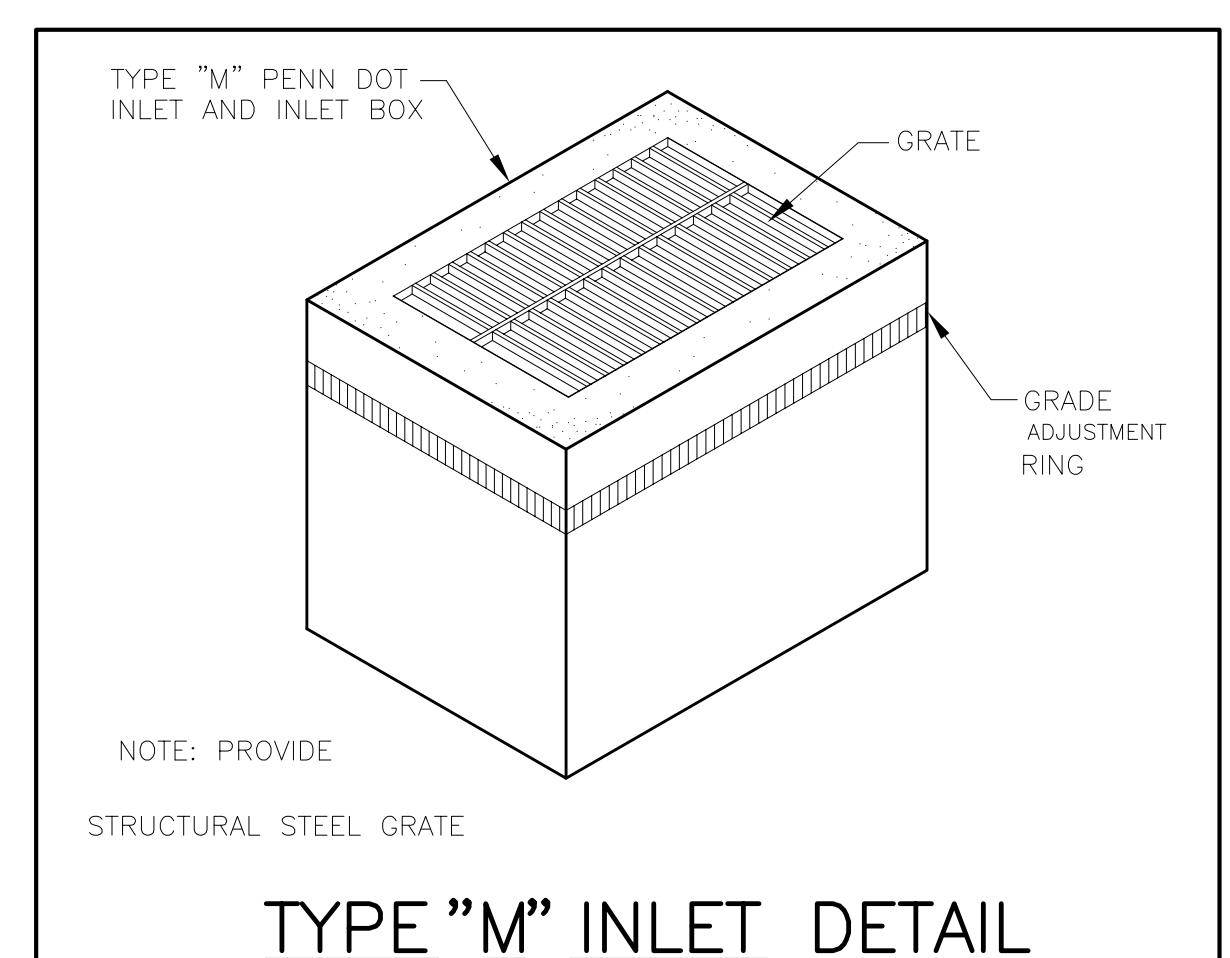
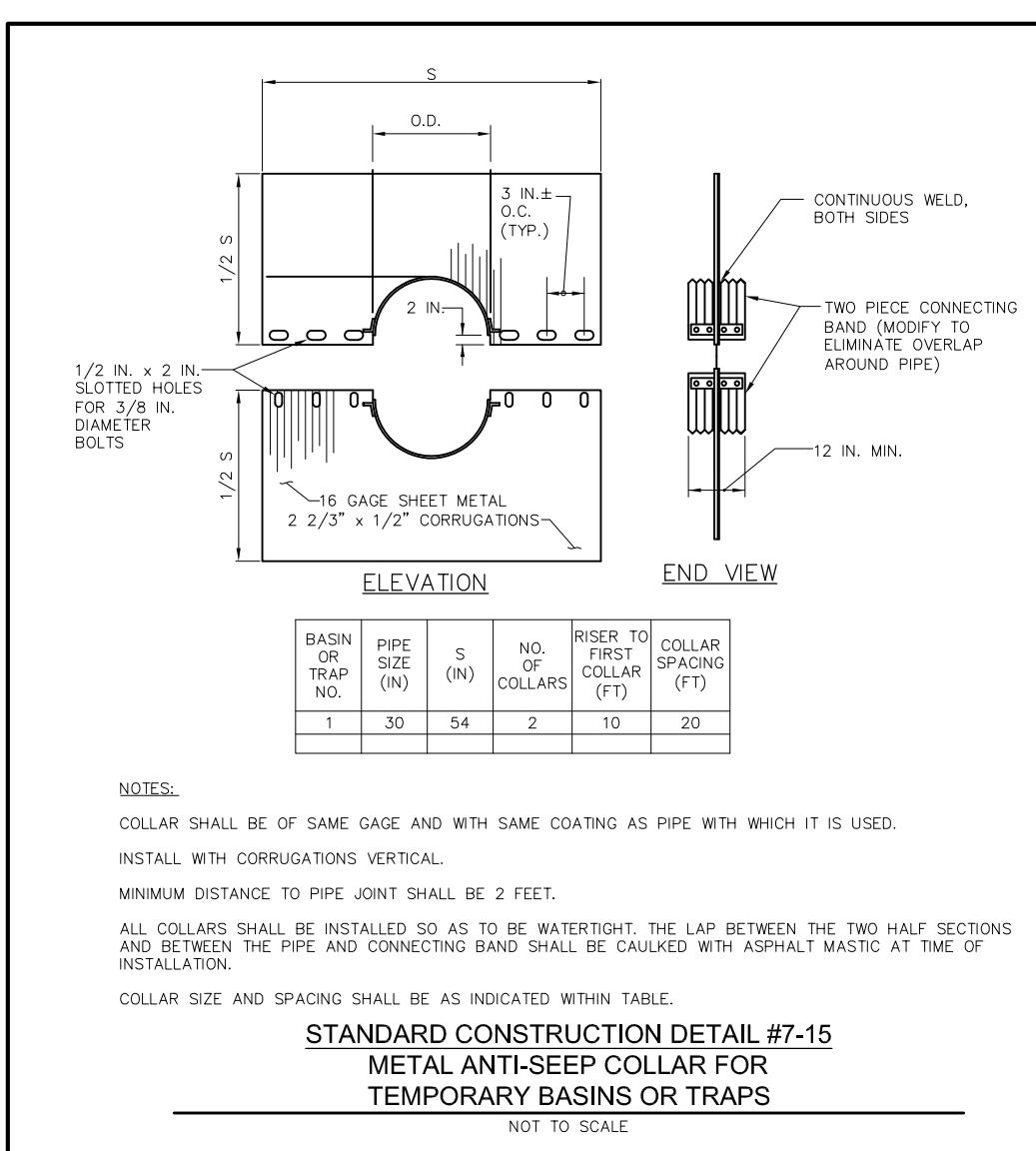
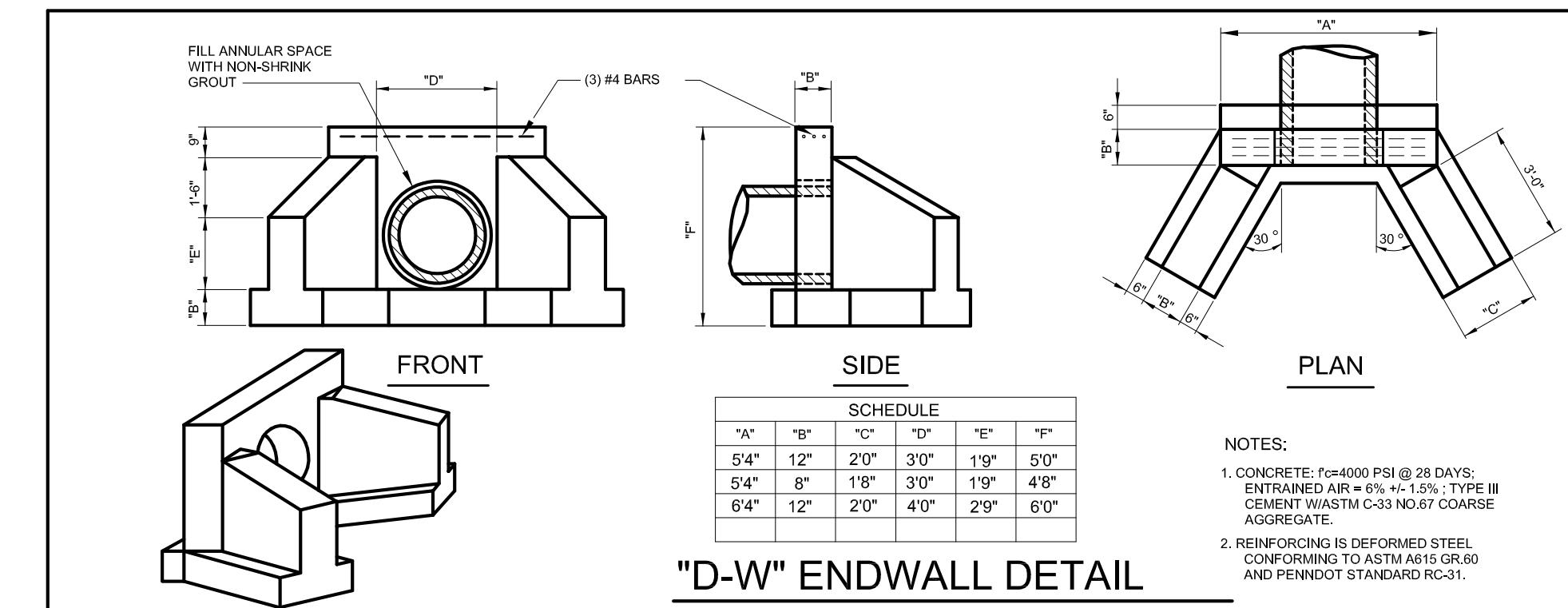
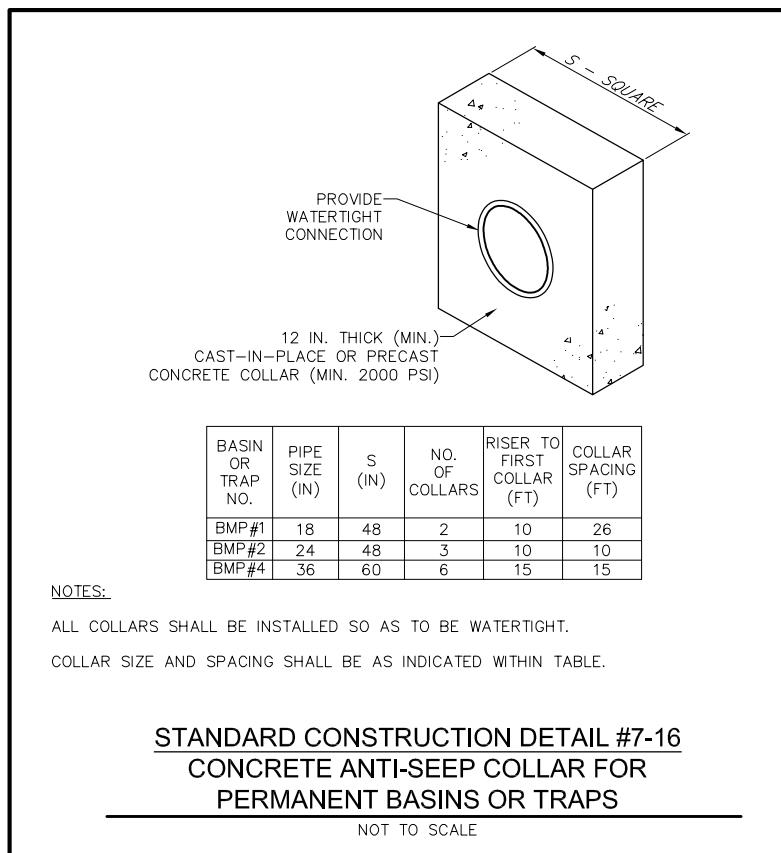
Thermal impacts addressed (E&S), where potential for thermal impacts exists, measures provided to avoid/minimize/or mitigate:

Thermal impacts will be reduced with the use of compost socks and other E&S BMPs as listed in the BMP list. The plantings of trees, shrubs and grass will also reduce thermal impacts.

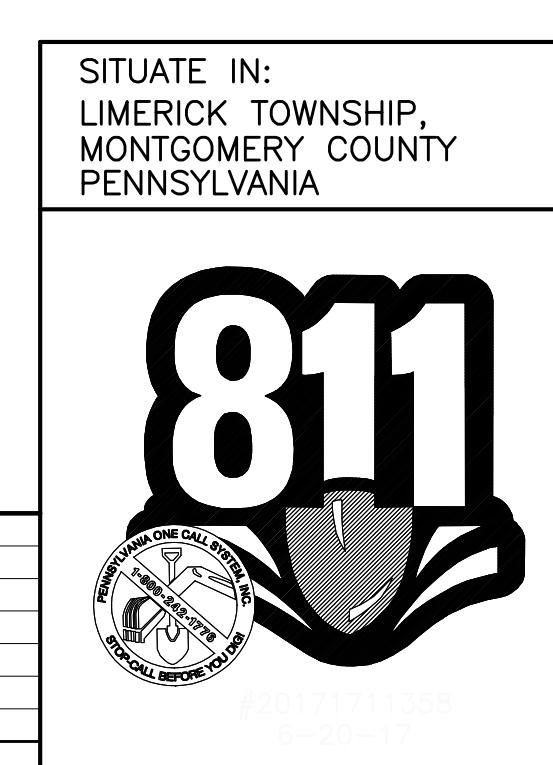
Impervious areas and other surfaces that can cause increased thermal impacts.



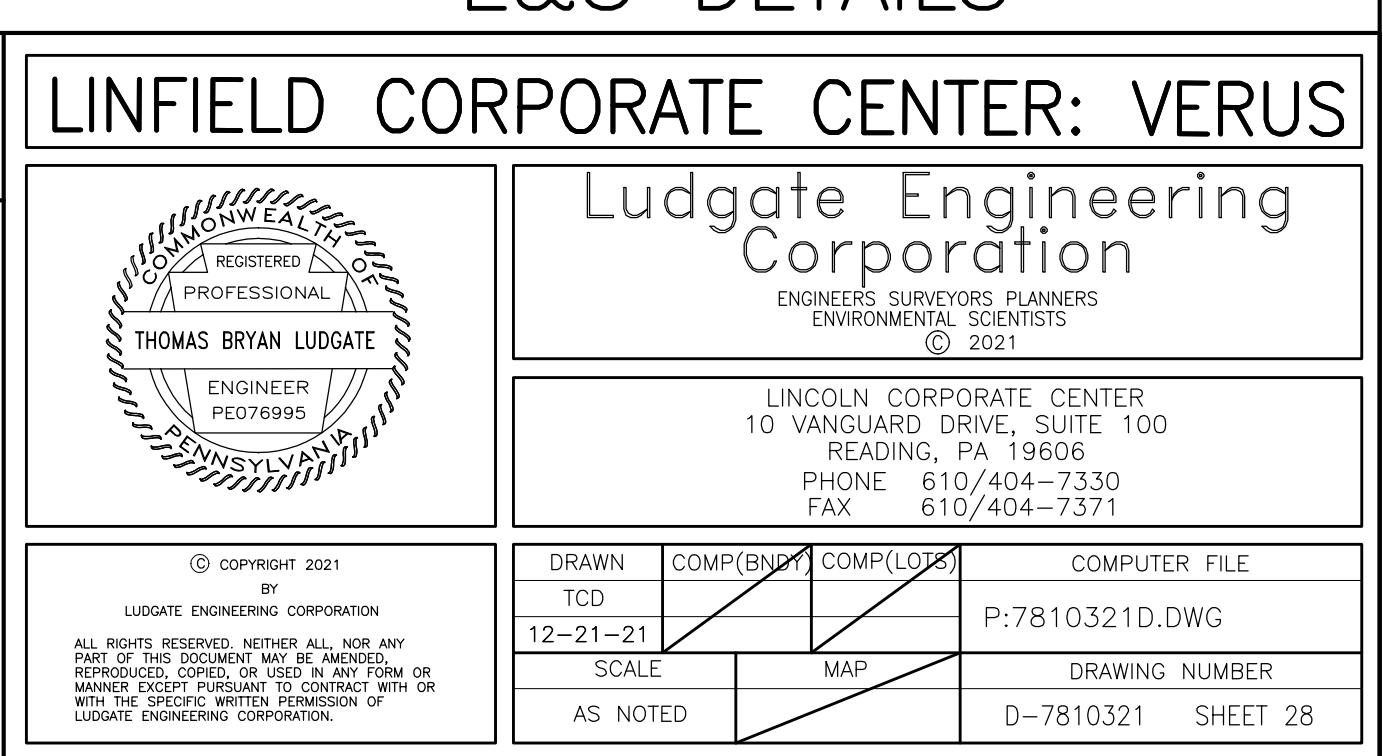
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#3 TCD	6-22-22	
#2 TCD	6-3-22	
#1 TCD	5-3-22	

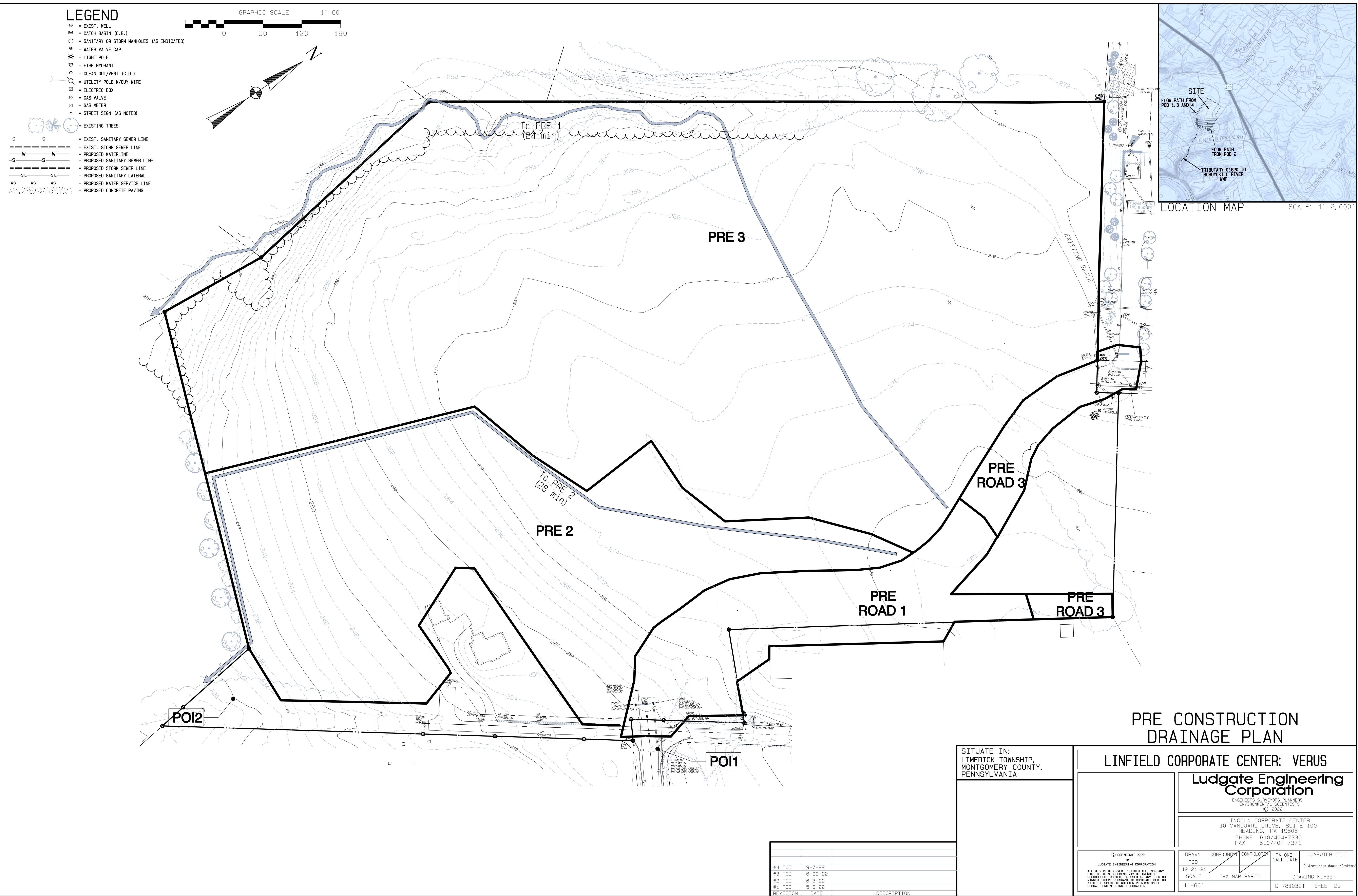


F&S DETAILS



SITUATE IN:
LIMERICK TOWNSHIP,
MONTGOMERY COUNTY
PENNSYLVANIA



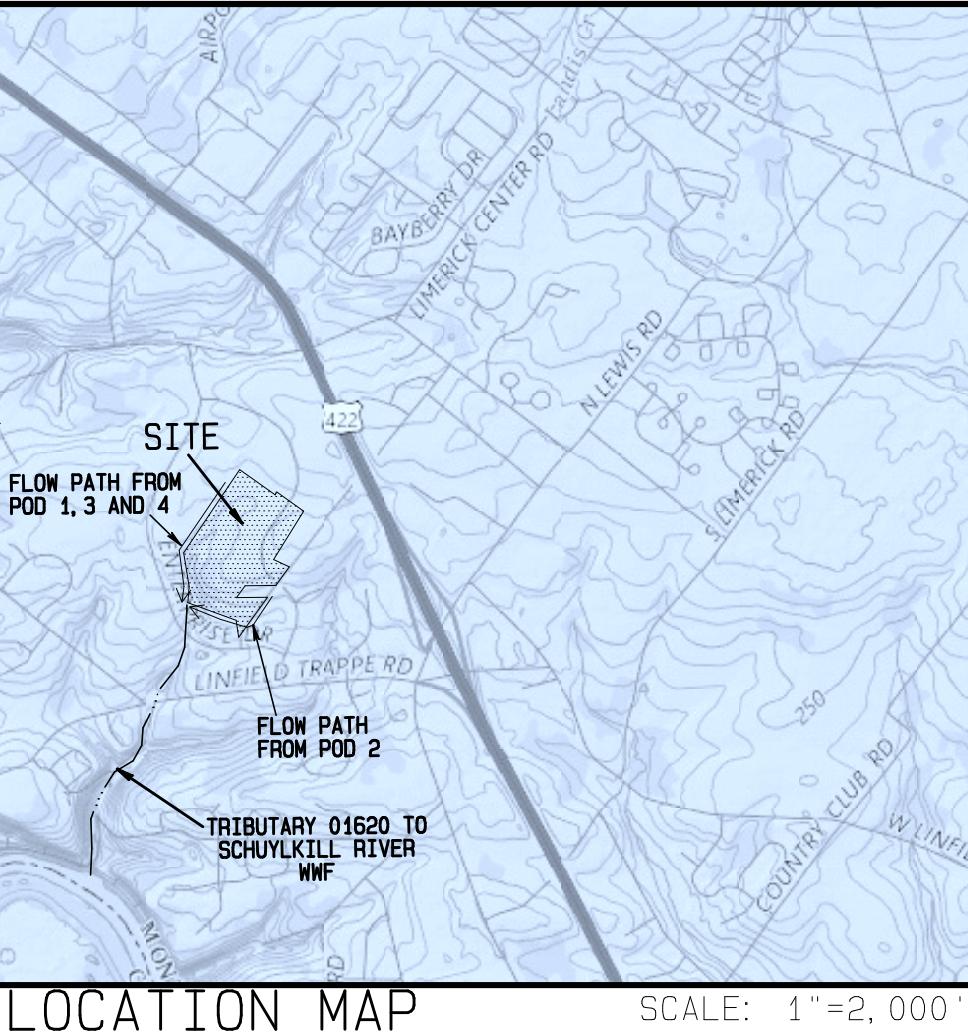
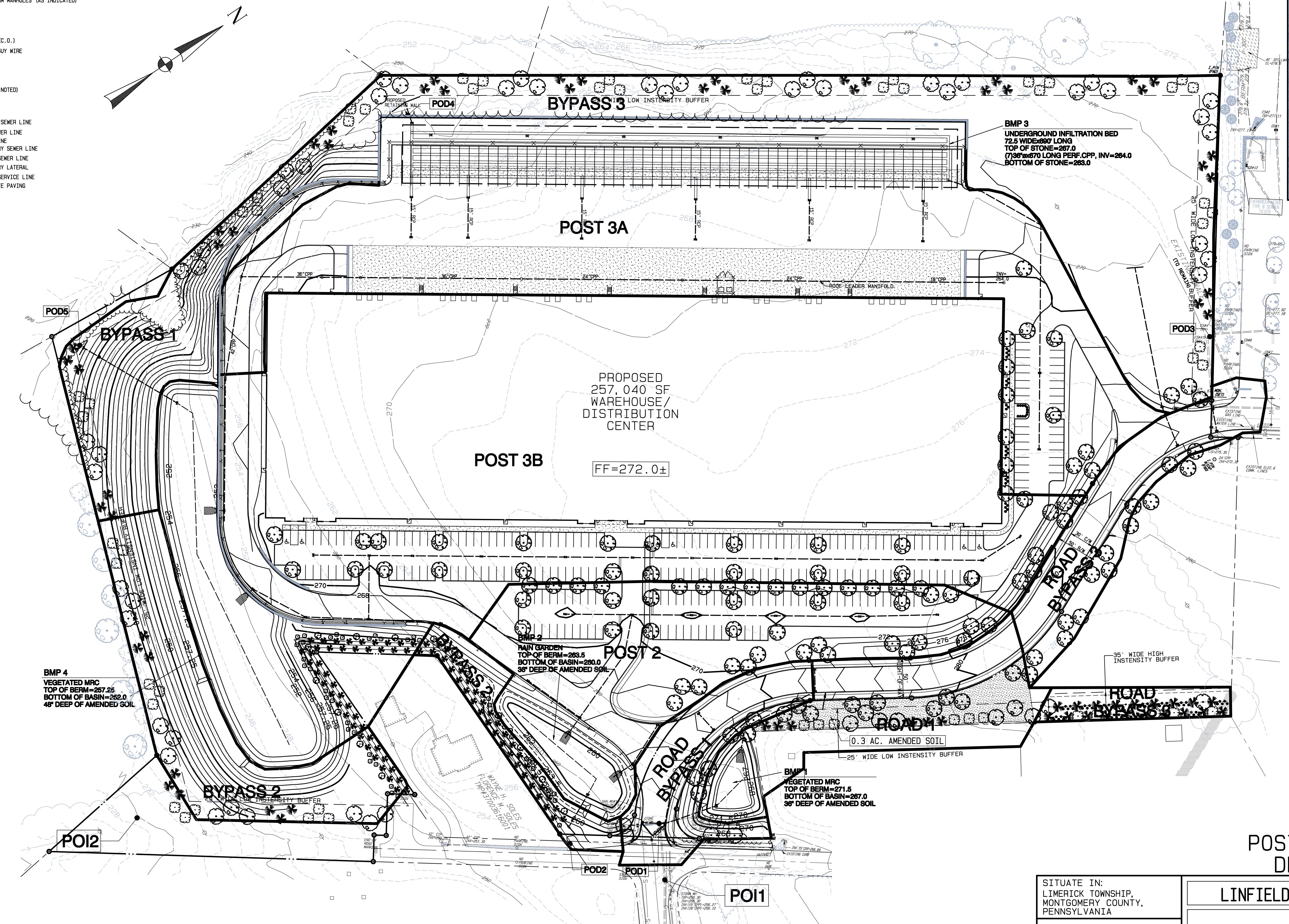


LEGEND

GRAPHIC SCALE	
0	60
120	180
1"	= 60'
0 60 120 180	

● = EXIST. WELL
 ■ = CATCH BASIN (C.B.)
 ○ = SANITARY OR STORM MANHOLES (AS INDICATED)
 • = WATER VALVE CAP
 ☀ = LIGHT POLE
 ☀ = FIRE HYDRANT
 ○ = CLEAN OUT/VENT (C.O.)
 ○ = UTILITY POLE W/GUY WIRE
 □ = ELECTRIC BOX
 ○ = GAS VALVE
 □ = GAS METER
 ▲ = STREET SIGN (AS NOTED)
 ■ = EXISTING TREES

 -S-S = EXIST. SANITARY SEWER LINE
 -W-W = EXIST. STORM SEWER LINE
 -S-L-S-L = PROPOSED WATERLINE
 -S-L-S-L = PROPOSED SANITARY SEWER LINE
 -S-L-S-L = PROPOSED STORM SEWER LINE
 -S-L-S-L = PROPOSED SANITARY LATERAL
 -S-L-S-L = PROPOSED WATER SERVICE LINE
 -S-L-S-L = PROPOSED CONCRETE PAVING



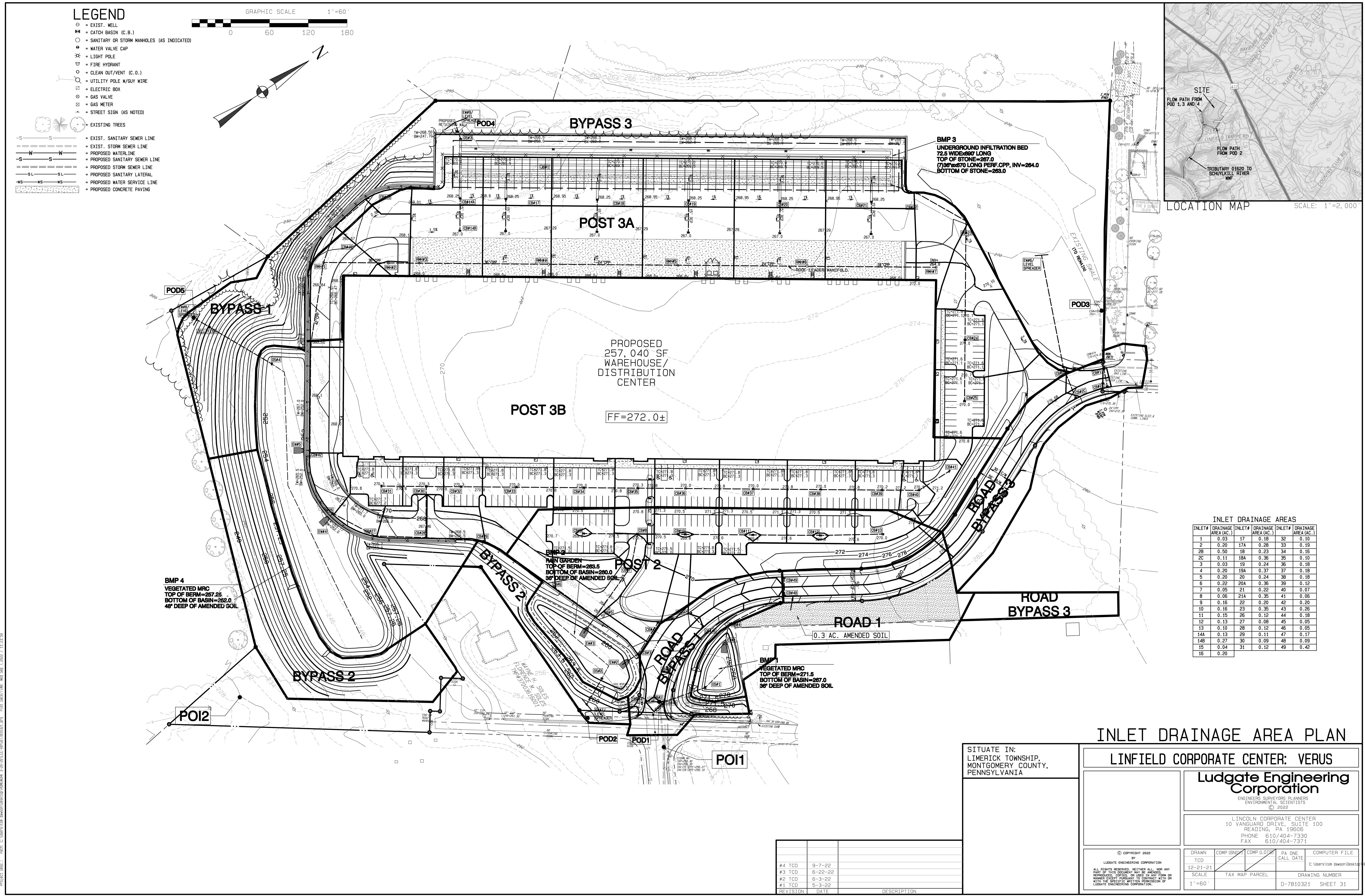
POST CONSTRUCTION DRAINAGE PLAN

LINFIELD CORPORATE CENTER: VERUS

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ENGINEERS SURVEYORS PLANNERS ENVIRONMENTAL SCIENTISTS
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LINCOLN CORPORATE CENTER
10 VANGUARD DRIVE, SUITE 100
READING, PA 19606
PHONE 610/404-7330
FAX 610/404-7371

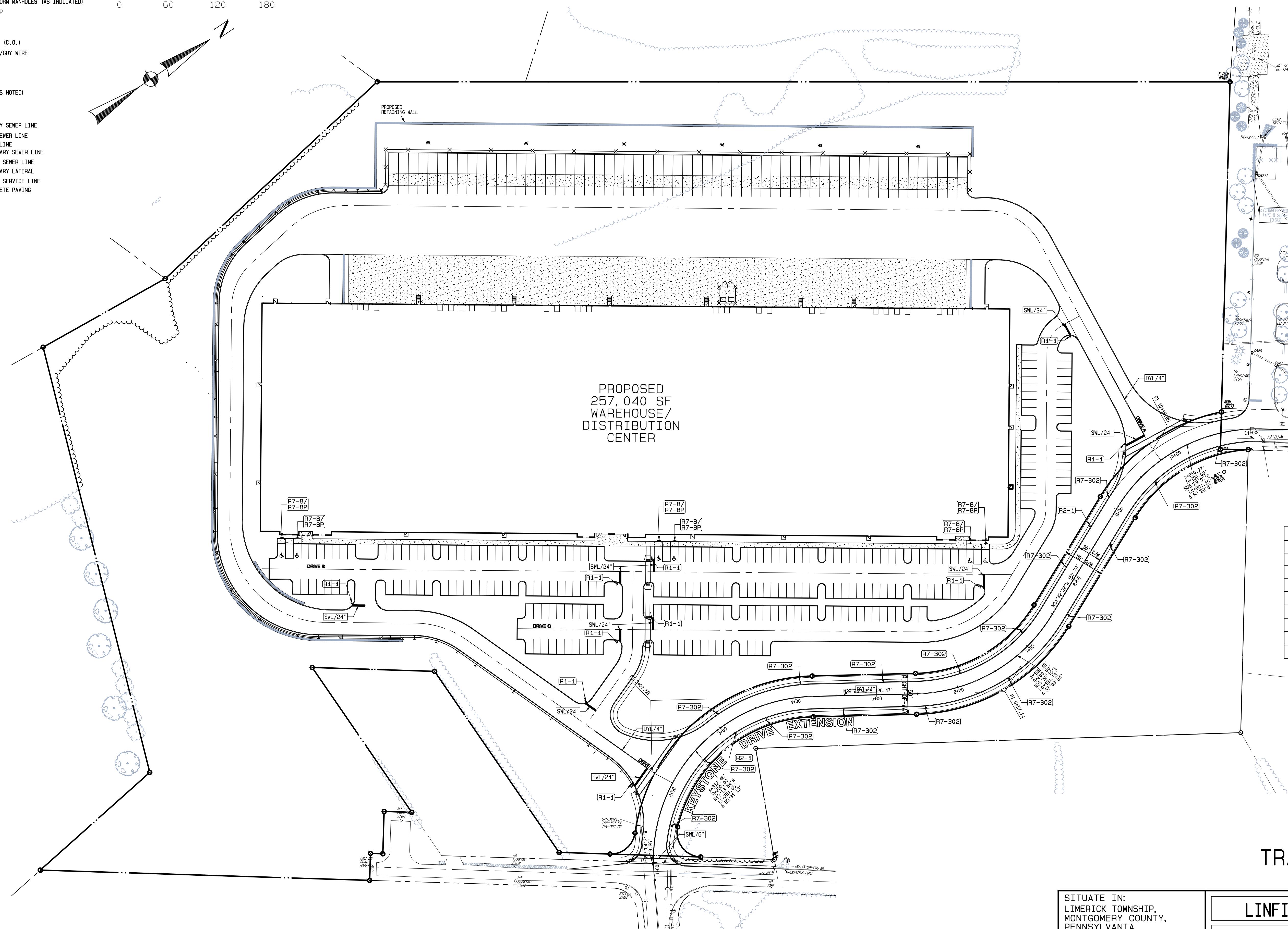
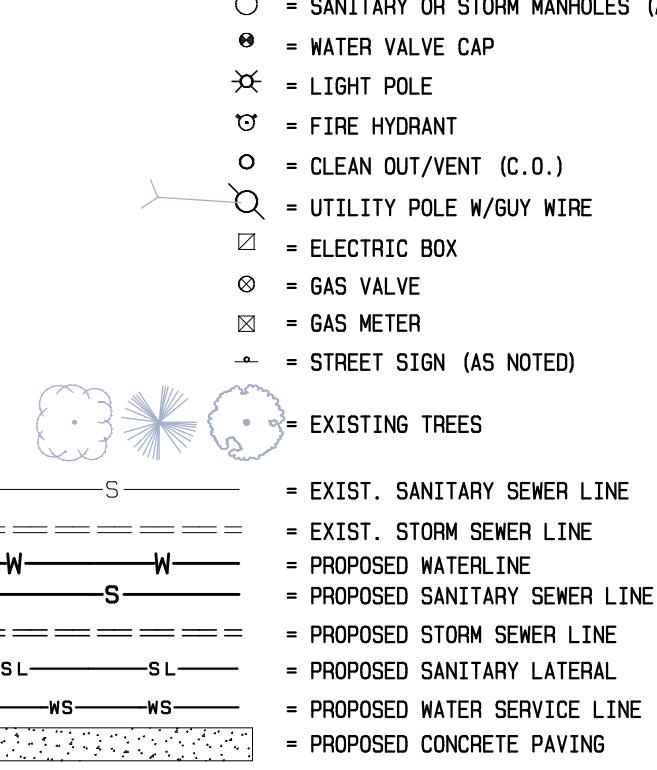
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DRAWN TCD 12-21-21	COMP (BNDL) COMP (LOT) PA ONE CALL DATE
SCALE 1" = 60'	TAX MAP PARCEL DRAWING NUMBER D-7810321 SHEET 30



LEGEND

GRAPHIC SCALE 1"=60'

60 120 180



SIGN CHART

	DESCRIPTION	QTY.	SIZE	R#	DATE
—o—	STOP	10	30"x30"	R1-1	2-29-12
—o—	RESERVED PARKING	6	12"x18"	R7-8	2-29-12
—o—	VAN ACCESSIBLE	6	12"x6"	R7-8P	2-29-12
—o—	SPEED LIMIT	2	24"x30"	R2-1	2-29-12
—o—	NO PARKING SYMBOL/ARROW SIGN	17	12"x18"	R7-302	2-29-12

FINAL PLAN TRAFFIC MARKING AND SIGNAGE PLAN

SITUATE IN:
LIMERICK TOWNSHIP,
MONTGOMERY COUNTY,
PENNSYLVANIA

LINFIELD CORPORATE CENTER: VERUS

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FAX 610/404-7371

DRAWN	COMP (BNDY)	COMP (LOTS)	PA	ONE	COMPU
TCD			CALL	DATE	

12-21-21 C:\Users\tc SCALE TAX MAP PARCEL DRAWING NUMBER

SCALE 1 " = 60 ' TAX MAP PARCEL D-7810321 DRAWING NO. SHE

11 of 11

REVISION	DATE	DESCRIPTION
#4	TCD	9-7-22
#3	TCD	6-22-22
#2	TCD	6-3-22
#1	TCD	5-3-22