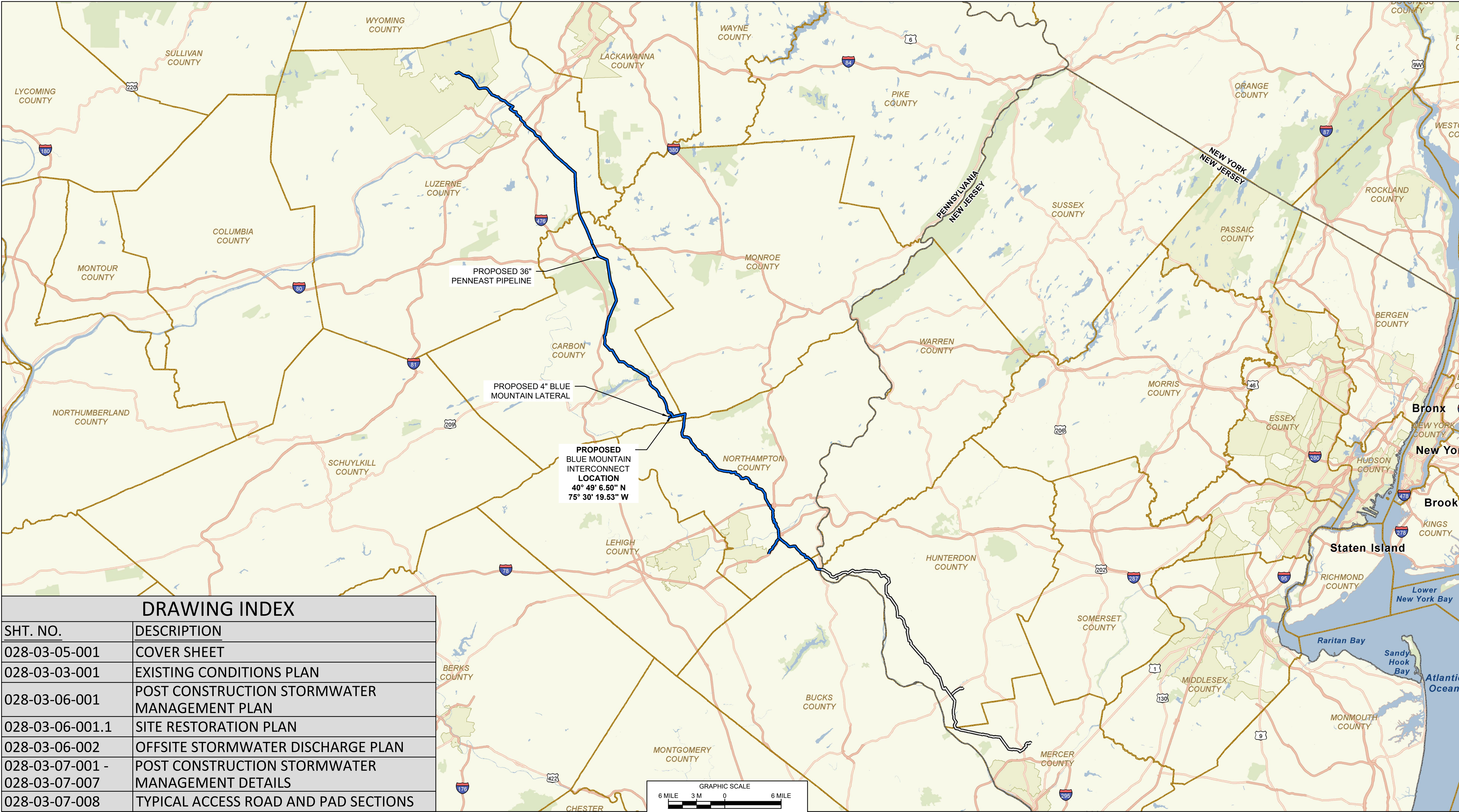


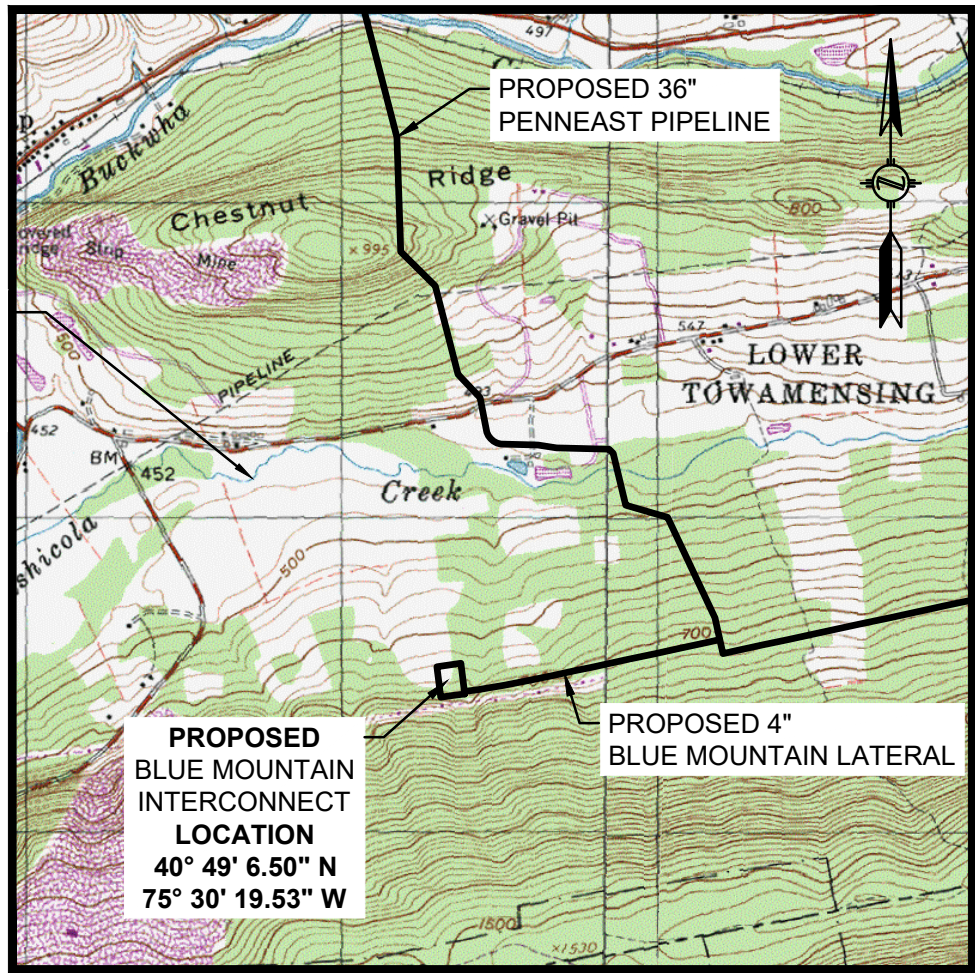
PENNEAST PIPELINE COMPANY, LLC

BLUE MOUNTAIN INTERCONNECT LOWER TOWAMENSING TOWNSHIP CARBON COUNTY, PENNSYLVANIA

PADEP - POST CONSTRUCTION STORMWATER MANAGEMENT PLAN



DRAWING INDEX	
SHT. NO.	DESCRIPTION
028-03-05-001	COVER SHEET
028-03-03-001	EXISTING CONDITIONS PLAN
028-03-06-001	POST CONSTRUCTION STORMWATER MANAGEMENT PLAN
028-03-06-001.1	SITE RESTORATION PLAN
028-03-06-002	OFFSITE STORMWATER DISCHARGE PLAN
028-03-07-001 - 028-03-07-007	POST CONSTRUCTION STORMWATER MANAGEMENT DETAILS
028-03-07-008	TYPICAL ACCESS ROAD AND PAD SECTIONS



LOCATION MAP

SCALE: 1" = 2000'
USGS QUAD: PALMERTON, PA
KUNKLETON, PA

- GENERAL NOTES:**
- THIS PLAN SET CONTAINS INFORMATION FOR THE POST CONSTRUCTION STORMWATER MANAGEMENT PLAN (PCSM PLAN) REQUIRED FOR THE PADEP ESCGP. THIS IS A PERMIT DOCUMENT ONLY. ADDITIONAL PLANS AND DOCUMENTATION ARE REQUIRED FOR CONSTRUCTION OF THE PROPOSED DEVELOPMENT.
 - FULL SIZE SHEETS OF THIS PLAN SET MAY BE PRINTED OUT ON 24"x36" SHEETS. REPRODUCTION AT DIFFERENT SIZES SHALL RESULT IN DIFFERENT SCALES.
- REFERENCE (ALL SHEETS):**
- EXISTING CONTOURS SHOWN WERE SURVEYED BY MOTT MACDONALD DURING 2015 THRU 2018. ADDITIONAL EXISTING CONTOURS WERE PROVIDED BY PICTOMETRY, 2015 AND SUPPLEMENTED FROM PASDA.
 - SITE TOPOGRAPHIC AND FEATURE SURVEY PERFORMED BY MOTT MACDONALD 2015 THRU 2018.
 - PROPERTY INFORMATION ON THIS PLAN BASED ON GIS TAX MAP DATA AND RECTIFIED PROPERTY LINES AND ARE NOT THE RESULT OF A BOUNDARY SURVEY.
 - WATERBODY INFORMATION PROVIDED BY AECOM 2015 THRU 2018.
 - HORIZONTAL DATUM IS UTM83-18F. VERTICAL DATUM IS NAVD1988

PENNSYLVANIA ONE-CALL SERIAL NUMBERS

20181421158-000

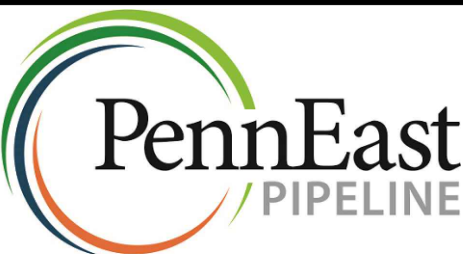


CALL BEFORE YOU DIG!
PENNSYLVANIA LAW REQUIRES
3 WORKING DAYS NOTICE FOR
CONSTRUCTION PHASE AND 10 WORKING DAYS IN
DESIGN STAGE - STOP CALL
PENNSYLVANIA ONE CALL SYSTEM INC.
1-800-242-1776



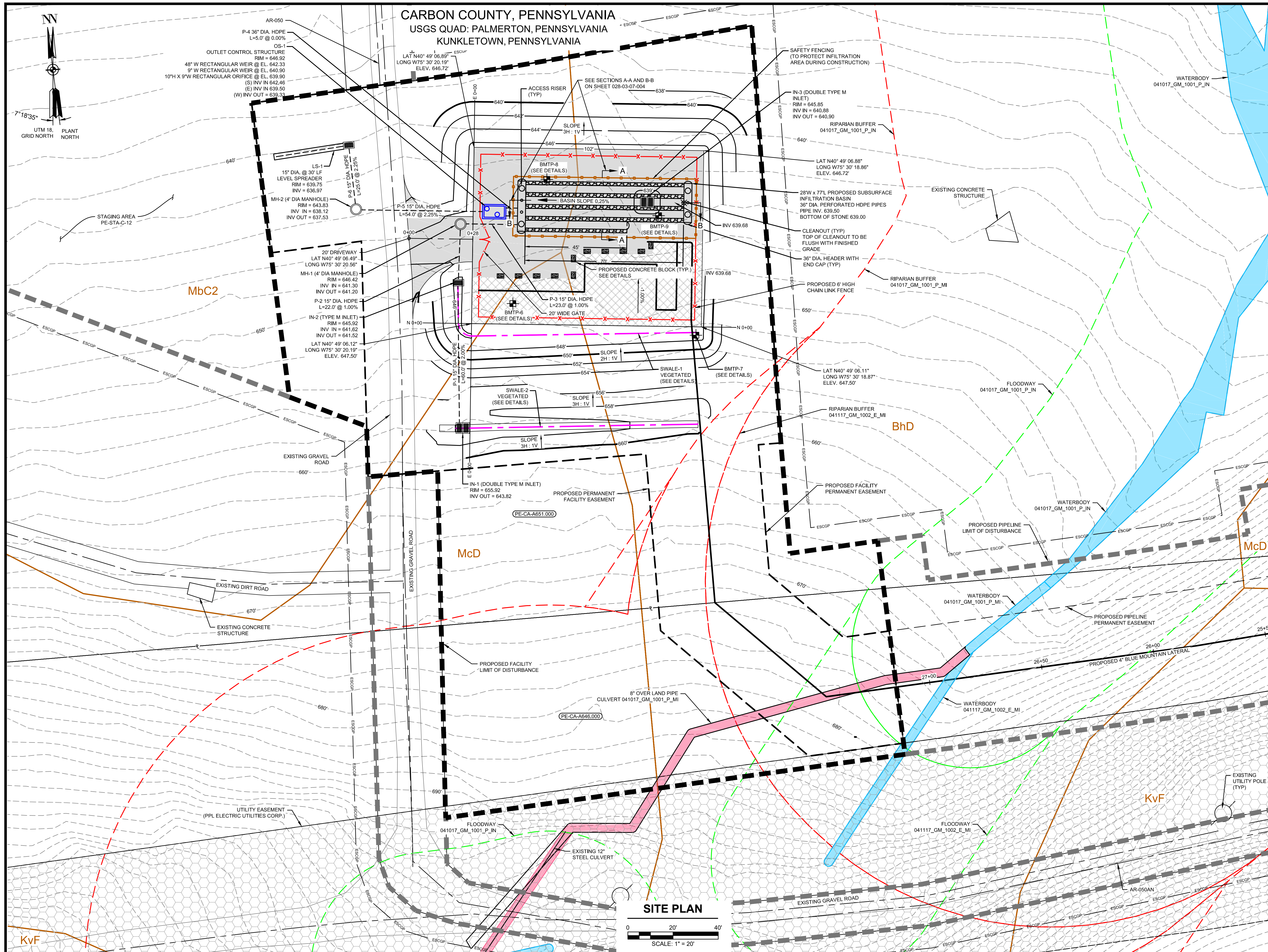
111 WOOD AVENUE
SOUTH SELIN NJ 08830
UNITED STATES
973-379-3400
INFO@MOTTMAC.COM

REFERENCE DRAWINGS		REVISIONS					
DWG. NO.	TITLE	NO.	DESCRIPTION	DATE	DRAWN	CK	APPR
		A	ISSUED FOR PADEP	10/15/2018	CAF(MM)	WMC(MM)	JRD(MM)
		B	RE-ISSUED FOR PADEP	10/2019	MWF(MM)	DOW(MM)	WMC(MM)



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PENNEAST PIPELINE PROJECT BLUE MOUNTAIN INTERCONNECT COVER SHEET			
CARBON COUNTY, PENNSYLVANIA			
DRAWN BY	CAF	DATE ISSUED	10/15/2018
CHECKED BY	WMC	SCALE	AS SHOWN
APPROVED BY	JRD	APPROVED BY	
DWG. NO.	028-03-05-001	REV.	B














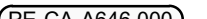


LOCATION MAP
SCALE: 1" = 15 MILES

LEGENDS

PROPOSED

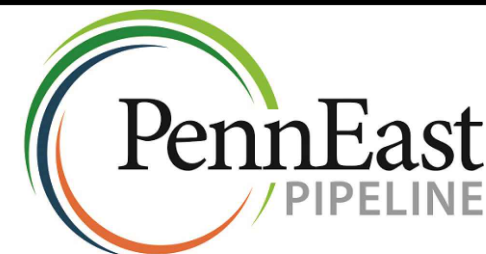
-
-

EXISTING

- | | |
|---|--------------------------------------|
|  | PROPERTY LINE |
|  | EXISTING MAJOR CONTOUR |
|  | EXISTING MINOR CONTOUR |
|  | SOIL BOUNDARY |
|  | SOIL TYPE ABBREVIATION |
|  | EXISTING UTILITY POLE |
|  | LINE LIST NUMBER |
|  | EXISTING UTILITY EASEMENT |
|  | APPROXIMATE 100 YEAR FLOODWAY |
|  | APPROXIMATE 150' RIPARIAN BUFFER |
|  | EXISTING ROAD CENTERLINE |
|  | WATERCOURSE THROUGH EXISTING CULVERT |
|  | WATERBODY (DELINEATED) |
|  | TEST PITS |

REFERENCE:

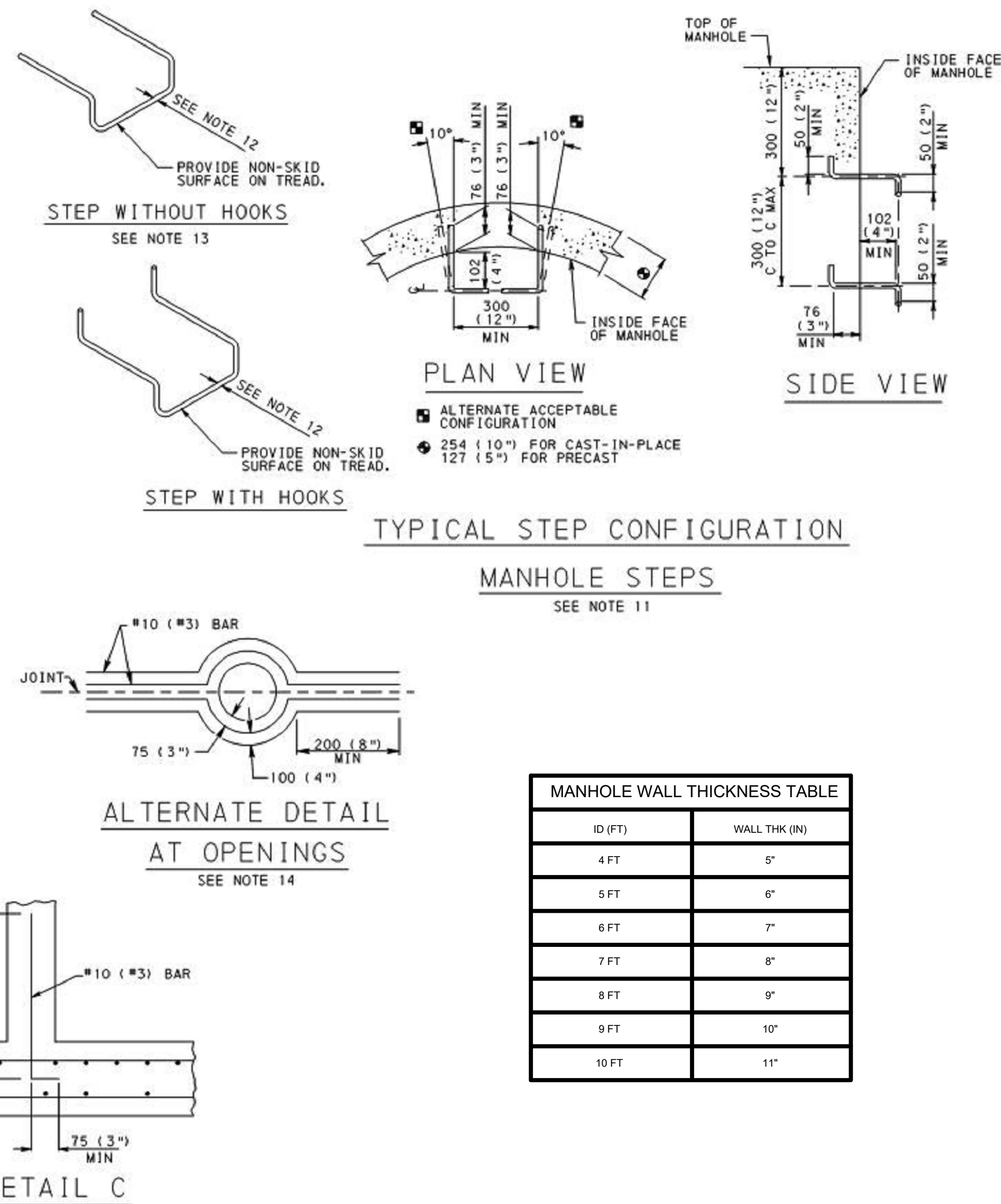
1. EXISTING CONTOURS SHOWN WERE SURVEYED BY MOTT MACDONALD DURING 2015 THRU 2019. ADDITIONAL EXISTING CONTOURS WERE PROVIDED BY PICTOMETRY, 2015 AND SUPPLEMENTED FROM USGS.
2. SITE TOPOGRAPHIC AND FEATURE SURVEY PERFORMED BY MOTT MACDONALD 2015 THRU 2019.
3. PROPERTY INFORMATION ON THIS PLAN BASED ON GIS TAX MAP DATA AND RECTIFIED PROPERTY LINES AND ARE NOT THE RESULT OF A BOUNDARY SURVEY.
4. WATERBODY INFORMATION PROVIDED BY AECOM 2015 THRU 2019.
5. HORIZONTAL DATUM IS UTM83-18F. VERTICAL DATUM IS NAVD1988.

[illegible]

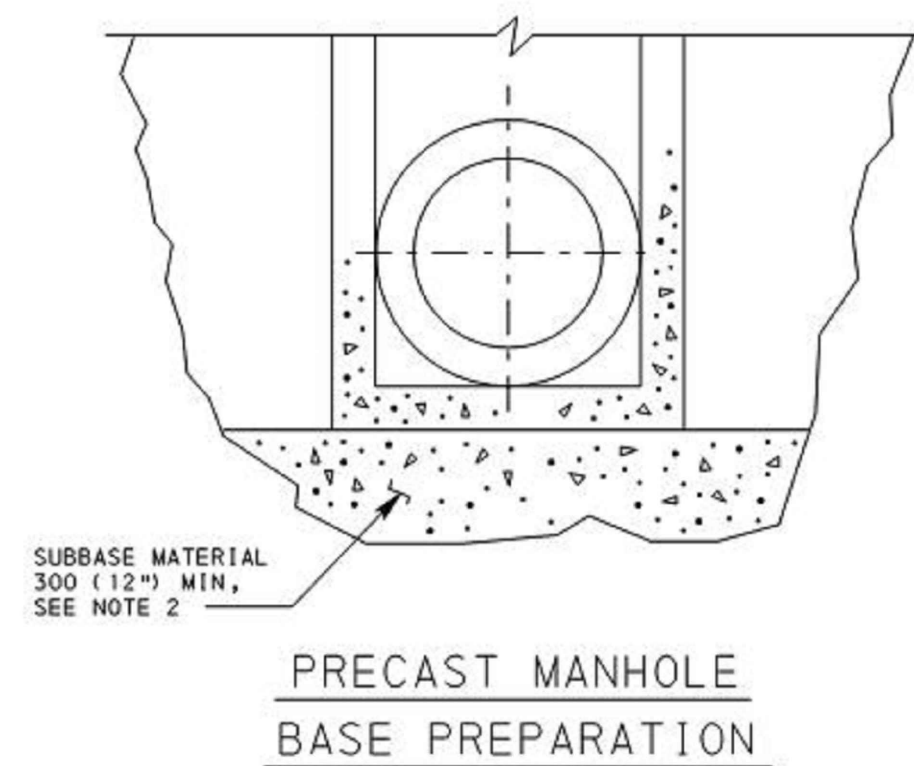
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PENNEAST PIPELINE PROJECT BLUE MOUNTAIN INTERCONNECT POST CONSTRUCTION STORMWATER MANAGEMENT PLAN CARBON COUNTY, PENNSYLVANIA			
DRAWN BY	CAF	DATE ISSUED	10/15/2018
CHECKED BY	WMC	SCALE	AS SHOWN
APPROVED BY	JRD	APPROVED BY	
DWG. NO.	028-03-06-001	REV. NO.	B

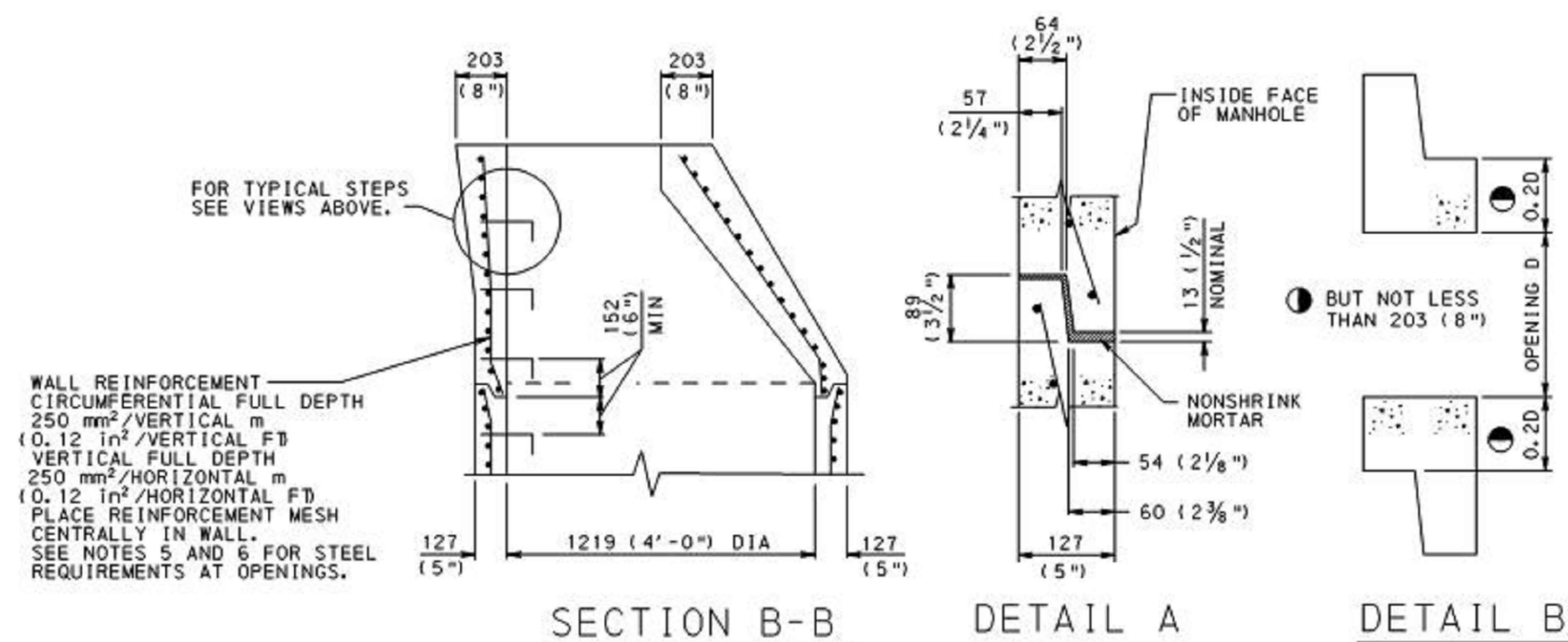




ID (FT)	WALL THK (IN)
4 FT	5"
5 FT	6"
6 FT	7"
7 FT	8"
8 FT	9"
9 FT	10"
10 FT	11"



PRECAST MANHOLE HEIGHT	TOP STEEL REQUIREMENTS	BOTTOM STEEL REQUIREMENTS
0.0 m to 9.0 m (0'-0" to 30'-0")	#13 BARS AT 150 C TO C OR 700 mm/2m WWF 152 MAXIMUM SPACING #4 BARS AT 6" C TO C OR 0.33 m/1' WWF 6" MAXIMUM SPACING	#13 BARS AT 300 C TO C OR 340 mm/1m WWF 152 MAXIMUM SPACING #4 BARS AT 12" C TO C OR 0.16 m/1/2' WWF 6" MAXIMUM SPACING
> 9.0 m to 18.0 m (30'-0" to 60'-0")	#16 BARS AT 150 C TO C OR 1150 mm/7m WWF 152 MAXIMUM SPACING #5 BARS AT 6" C TO C OR 0.56 m/1' WWF 6" MAXIMUM SPACING	#13 BARS AT 300 C TO C OR 375 mm/1m WWF 152 MAXIMUM SPACING #4 BARS AT 6" C TO C OR 0.27 m/1' WWF 6" MAXIMUM SPACING



THESE DETAILS HAVE BEEN ADAPTED FROM PENNDOT JUNE 2010 STANDARD DRAWINGS.
ADDITIONAL INFORMATION FROM STANDARD PENNDOT DRAWINGS AND SPECIFICATIONS ARE
INCORPORATED AS REFERENCED.

PRECAST DRAINAGE MANHOLES

NO SCALE

SHEET 1 NOTES:

- CONSTRUCTION REQUIREMENTS:
- A. CONSTRUCT IN ACCORDANCE WITH PUBLICATION 408, SECTIONS 605, 606 AND 714; AND ASTM C-478M-90, STANDARD SPECIFICATION FOR PRECAST REINFORCED CONCRETE MANHOLE SECTIONS, AS MODIFIED HEREIN.
 - B. MINIMUM CONCRETE CLASS:
CAST-IN-PLACE CLASS A
PRECAST CLASS AA
 - C. PROVIDE STEEL REINFORCEMENT IN ACCORDANCE WITH ASTM A195, STEEL WELDED WIRE FABRIC ASTM A663/A663M & A675/A675M, PLAIN BILLET STEEL BARS OR ASTM A615/A615M, DEFORMED BILLET STEEL BARS. PROVIDE MINIMUM YIELD STRENGTH OF 400 MPa (60,000 PSI).
 - D. CLEAR COVER FOR STEEL:
WALLS: CAST-IN-PLACE 50 (2")
PRECAST 40 (1 1/2")

FOOTINGS: CAST-IN-PLACE 60 (2 1/4") TOP BARS
80 (3") BOTTOM BARS
50 (2") SIDE COVER
40 (1 1/2") TOP BARS
40 (1 1/2") BOTTOM BARS
40 (1 1/2") SIDE COVER

SLABS: CAST-IN-PLACE 50 (2") TOP & BOTTOM BARS
2. FOR PIPES WITH INSIDE DIAMETERS GREATER THAN 750 (30") SEE MODIFIED CAST-IN-PLACE MANHOLES, SHEET 2.
 3. PROVIDE 300 (12") MINIMUM HORIZONTAL CLEARANCE BETWEEN OPENINGS LOCATED AT THE SAME DEPTH. LOCATE PIPES NOT AT THE SAME DEPTH VERTICALLY AT LEAST ONE HALF THE MAXIMUM OPENING DIAMETER APART.
 4. FORM A CONCRETE CHANNEL AT THE BOTTOM OF THE MANHOLE CONCRETE. THE SHAPE OF THE LOWER HALF OF THE INCOMING AND/OR OUTGOING PIPES. PROVIDE A FULL DEPTH U-SHAPED CHANNEL WHEN NECESSARY TO REDUCE ENERGY LOSSES.
 5. USE 127 (5") THICK WALLS WITH ONE (1) ROW OF REINFORCING, OR USE 254 (10") THICK OR GREATER WALLS WITH TWO (2) ROWS OF REINFORCING.
 6. CONSTRUCTION JOINTS AND KEYS MAY BE CONSTRUCTED UPWARDS OR DOWNWARDS. CLEAN JOINTS AND KEYS THOROUGHLY BEFORE PLACING NEXT CONCRETE SEGMENT.
 7. A SAFE BEARING CAPACITY OF 0.15 MPa (1.5 TONS/SF) UNDER THE ENTIRE BASE SLAB IS ASSUMED TO DETERMINE THE BASE SIZE. WHEN THE SUBSOIL IS EXTREMELY POOR, PROCEED WITH CONSTRUCTION ONLY AFTER THE ENGINEER SPECIFIES AN ADEQUATE BASE SIZE.
 8. FOR FOOTING TOP REINFORCEMENT, BOTH DIRECTIONS, USE #19 (1 1/4") BARS AT 300 (12") FOR DEPTHS TO 18.0 m (60') OR 635 mm /m (0.30 in/1/ft) WWF FOR DEPTHS TO 9.0 m (30') AND 680 mm /m (0.32 in/1/ft) WWF FOR DEPTHS GREATER THAN 9.0 m (30'), 152 (6") MAXIMUM SPACING FOR WWF.
 9. FOR FOOTING BOTTOM REINFORCEMENT, BOTH DIRECTIONS, USE #13 (#4) BARS AT 480 (18") FOR DEPTHS TO 18.0 m (60') OR 320 mm /m (0.15 in/1/ft) WWF FOR DEPTHS TO 9.0 m (30') AND 340 mm /m (0.16 in/1/ft) WWF FOR DEPTHS GREATER THAN 9.0 m (30'), 152 (6") MAXIMUM SPACING FOR WWF.
 10. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED. U.S. CUSTOMARY UNITS IN () PARENTHESES.

SHEET 5 NOTES:

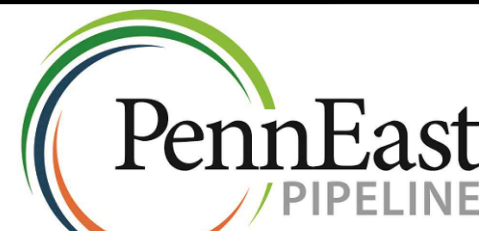
1. PROVIDE MANHOLE FRAMES AND COVERS MEETING THE REQUIREMENTS OF PUBLICATION 408, SECTION 605.2(b). DESIGN MANHOLE FRAME, COVER AND RING TO WITHSTAND RING FOR PHL 93 (H252) LIVE LOAD. IF MANHOLES ARE NOT IN OR ADJACENT TO ROADWAY, DESIGN FOR ALL POSSIBLE LIVE LOADS AS APPROVED BY THE DEPARTMENT.
2. PROVIDE MANHOLE FRAMES, COVERS AND GRADE ADJUSTMENT RISERS SUPPLIED BY A MANUFACTURER AS LISTED IN BULLETIN 15. FOR MODIFICATION OR MODIFICATION TO THE STANDARDS, SUBMIT SHOP DRAWINGS FOR APPROVAL.
3. PROVIDE A GASKET SEALING SYSTEM, DOVETAIL GROOVE AND CONTINUOUS GASKET, AS INDICATED IN DETAIL A, TO PREVENT INFLOW THROUGH THE BEARING SURFACES, OF SURFACE RUNOFF INTO THE MANHOLE. PROVIDE TWO (2) SPECIFIC PROVIDE 6 (1/4") DIA ONE PIECE SELF-SEAL POLYISOPRENE ROUND GASKET, 40 DIAMETER GLUED IN PLACE. PROVIDE TWO (2) LIFT HOLES AT 180° TO FACILITATE COVER REMOVAL FOR SELF-SEALING MANHOLE COVER.



**Know what's below.
Call before you**

CLIENT APPROVAL _____

DATE _____

[illegible]

PENNEAST PIPELINE PROJECT
BLUE MOUNTAIN INTERCONNECT
POST CONSTRUCTION STORMWATER
MANAGEMENT DETAILS
CARBON COUNTY, PENNSYLVANIA

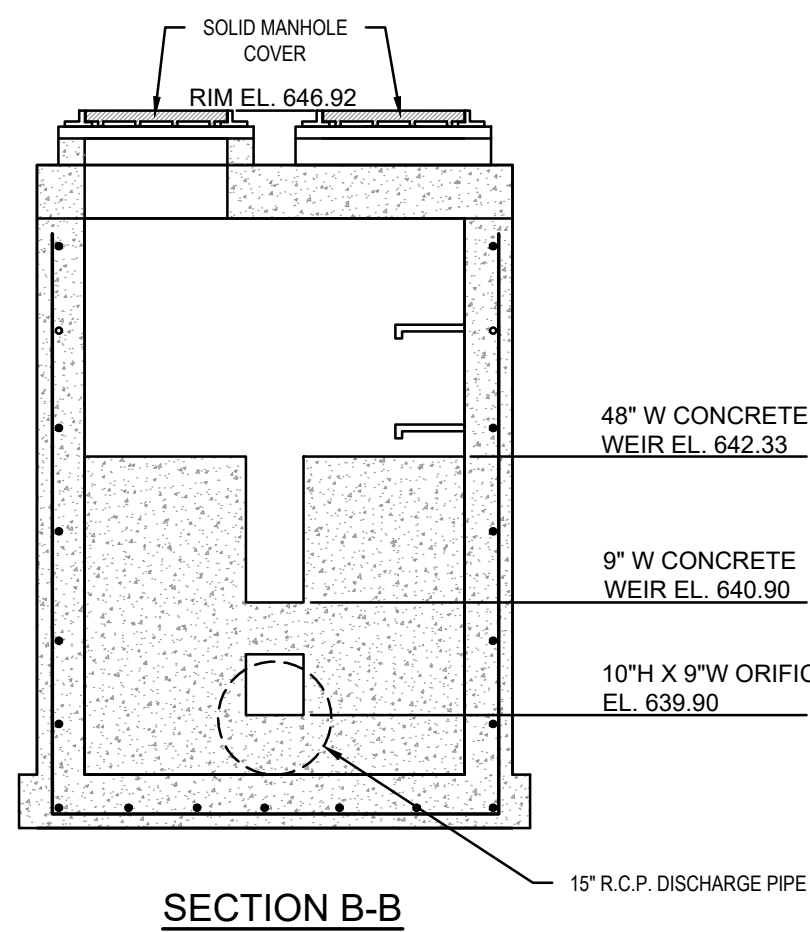
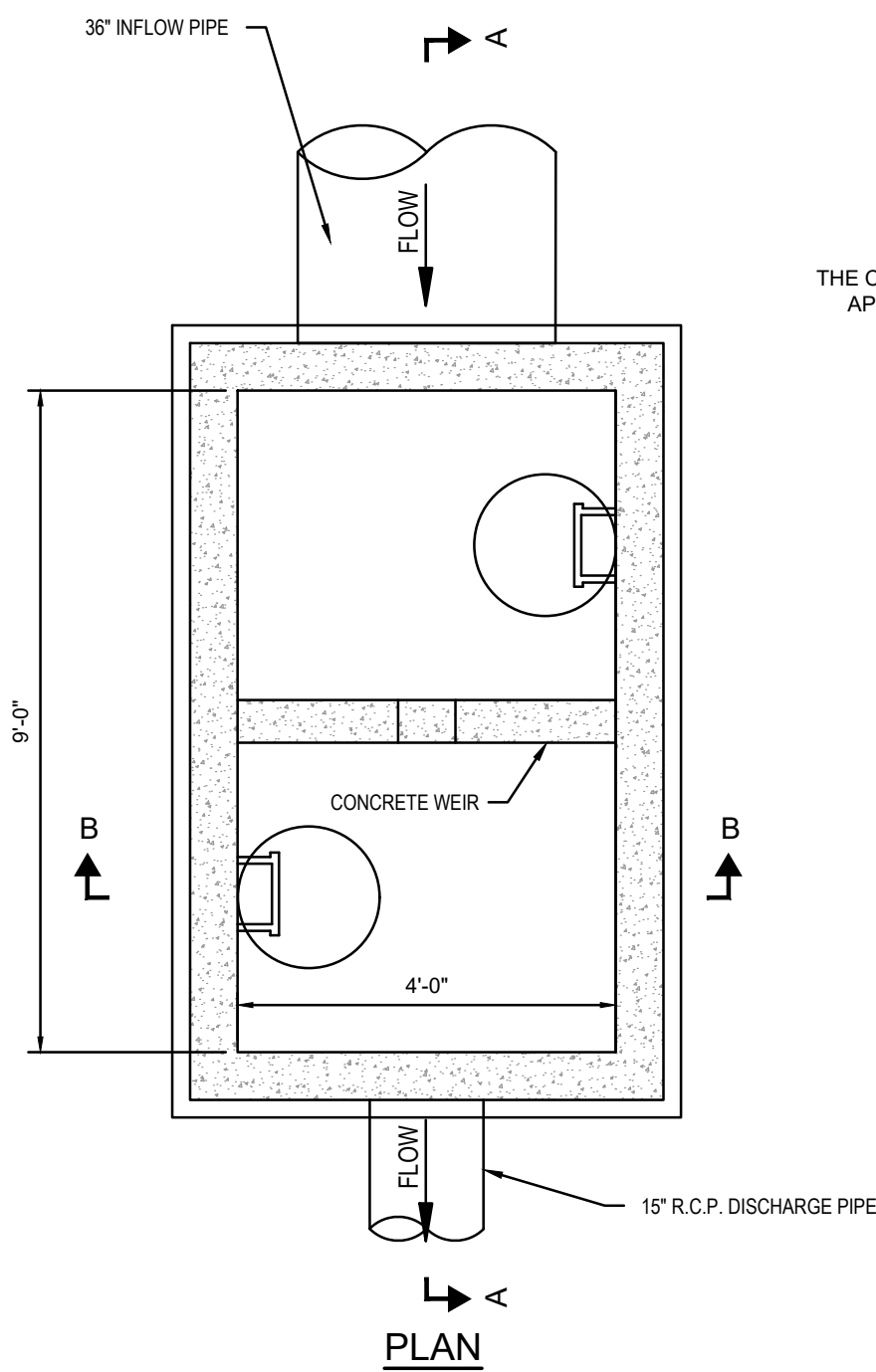
DRAWN BY	CAF	DATE ISSUED	10/15/2
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CHECKED BY	WMC	SCALE	AS SHC
APPROVED BY	IBD	APPROVED BY	

APPROVED BY	JRD	APPROVED BY	
DWG NO.	028-03-07-001	REV.	

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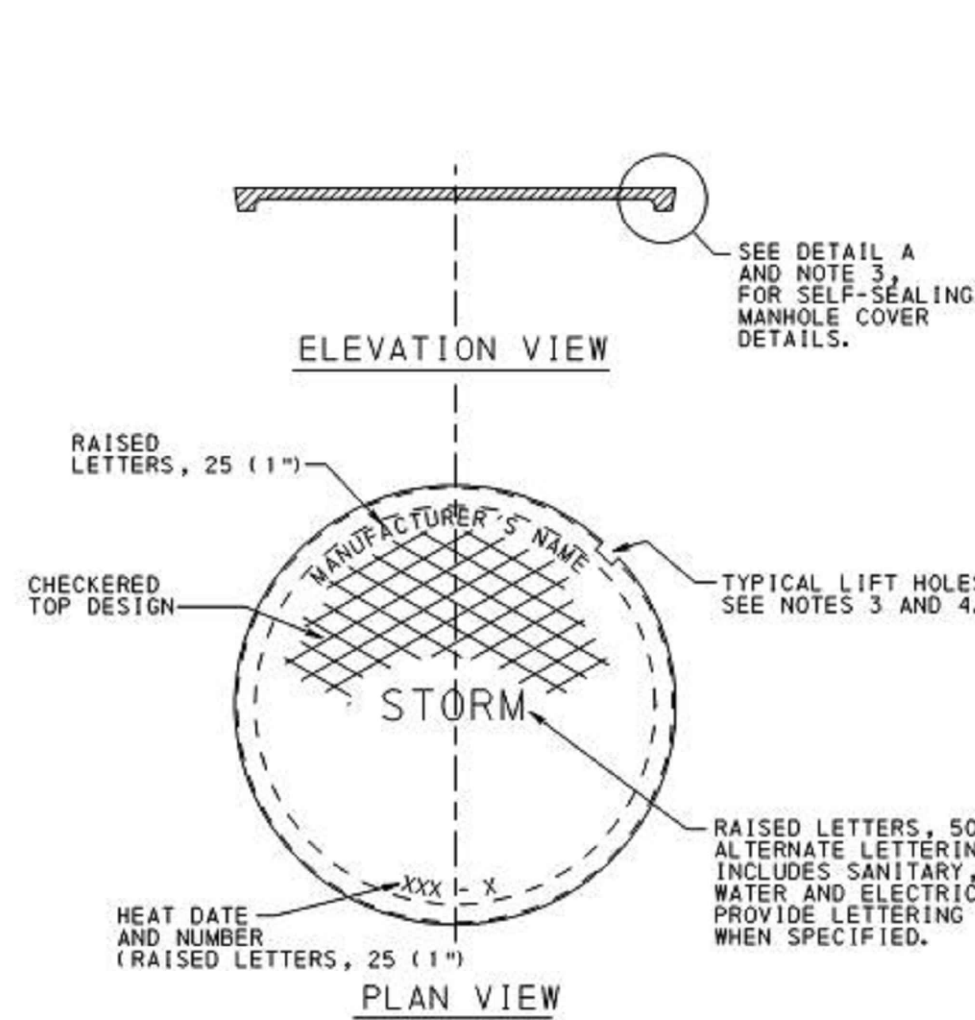
DWG. NO.	020-00-01-001	NO.
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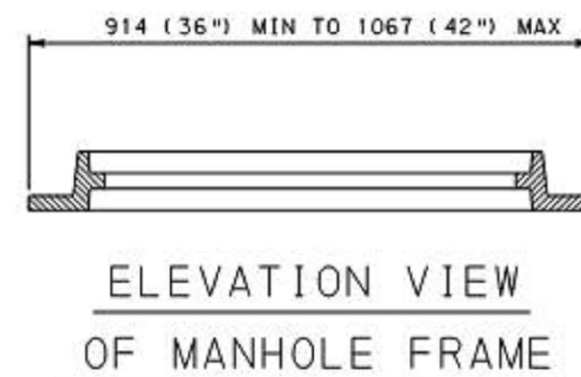
**SUB-SURFACE DETENTION OUTLET
CONTROL STRUCTURE**
NO SCALE

GENERAL NOTES

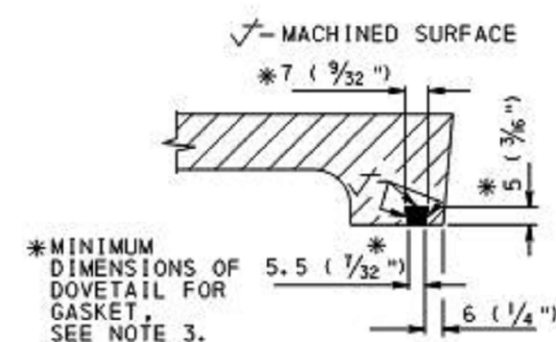
- THE CONTRACTOR IS RESPONSIBLE FOR AND SHALL VERIFY AND COORDINATE ALL DIMENSIONS AND DETAILS CONCERNING HIS WORK BEFORE PROCEEDING WITH SAID WORK. ANY DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ENGINEER.
- THE CONTRACTOR SHALL VERIFY THE ELEVATIONS OF EXISTING STRUCTURES AND CLEARANCES TO THE NEW CONSTRUCTION.
- ALL REINFORCED CAST-IN-PLACE CONCRETE CONSTRUCTION SHALL CONFORM TO "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE" (ACI STANDARD 318-99), AND "ACI DETAILING MANUAL- (ACI 66 (94)), EXCEPT AS SPECIFICALLY MODIFIED BY THE CONTRACT DRAWINGS AND THE SPECIFICATIONS.
- ALL CONCRETE USED ON THE PROJECT SHALL HAVE A SPECIFIED 28-DAY COMPRESSIVE STRENGTH (FC) AS NOTED BELOW. SUCH STRENGTHS SHALL BE DETERMINED BY A TESTING LABORATORY.
A) FC = 5,000 PSI FOR ALL PRECAST STRUCTURES ALL REINFORCING STEEL SHALL HAVE A MINIMUM YIELD STRENGTH, FY = 60 KSI AND SHALL BE NEW DEFORMED BILLET-STEEL CONFORMING TO ASTM A615-96a, GRADE 60.
- ALL COLUMN TIES AND BEAM STIRRUPS SHALL BE REINFORCING BARS CONFORMING TO ASTM A615-96a, GRADE 40.
- ALL WELDED WIRE REINFORCING (WWR) SHALL CONFORM TO ASTM A185-01.
- THE STRUCTURE IS DESIGNED TO MEET THE REQUIREMENTS OF ASTM C-478, "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS." THE REINFORCED CONCRETE STRUCTURES ARE TO BE DESIGNED TO WITHSTAND AASHTO HS-20 LIVE LOAD CONDITIONS (DESIGN OF FRAME AND COVER BY OTHERS).
- CONTRACTOR TO SUBMIT SHOP DRAWINGS SIGNED AND SEALED BY A LICENSED PROFESSIONAL ENGINEER PRIOR TO CONSTRUCTION SHOWING FABRICATION DETAILS AND DIMENSIONS.



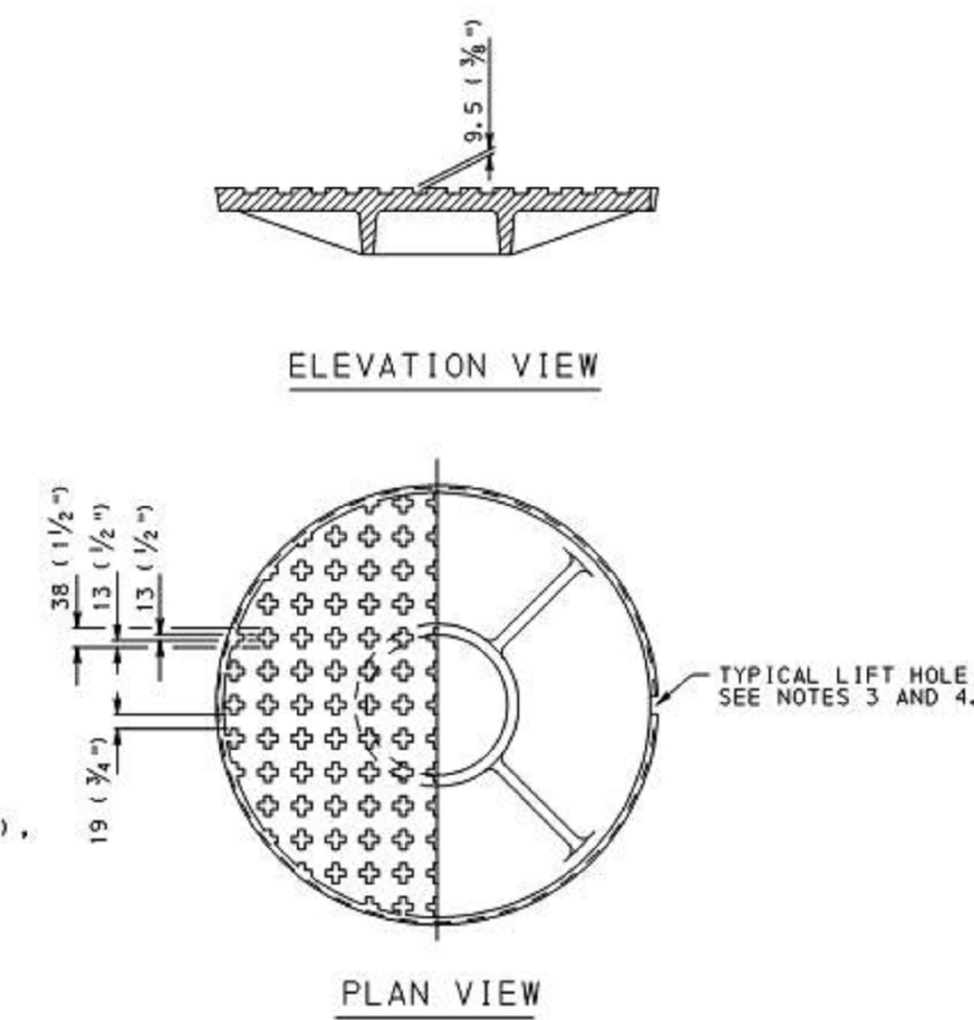
**CAST IRON MANHOLE COVER
(PLATEN COVER)**



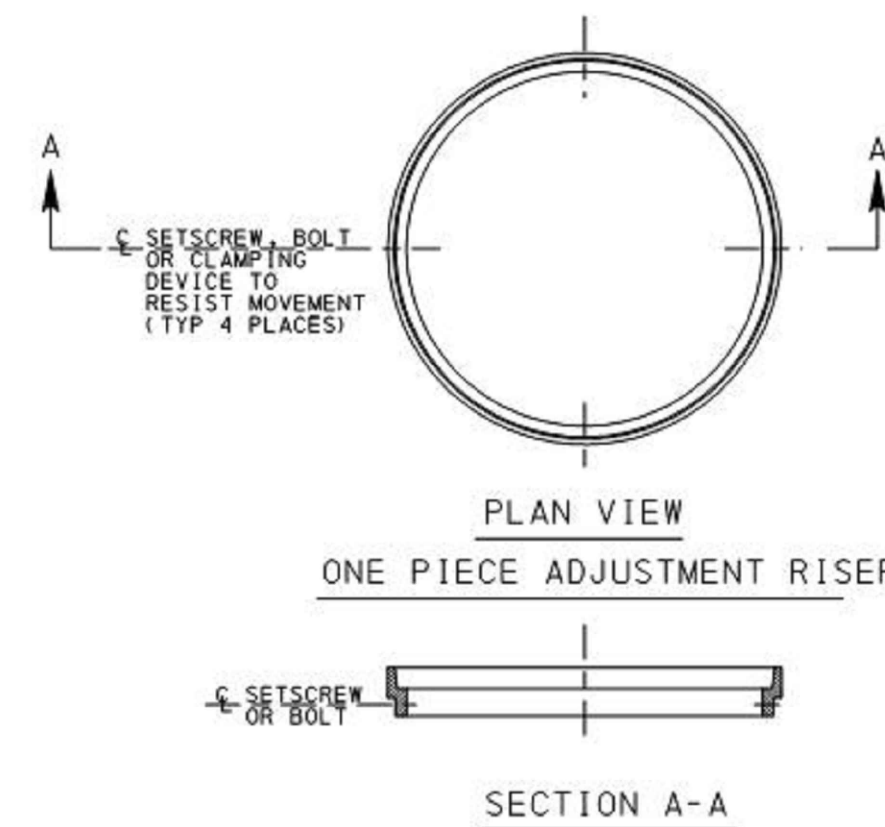
**ELEVATION VIEW
OF MANHOLE FRAME**



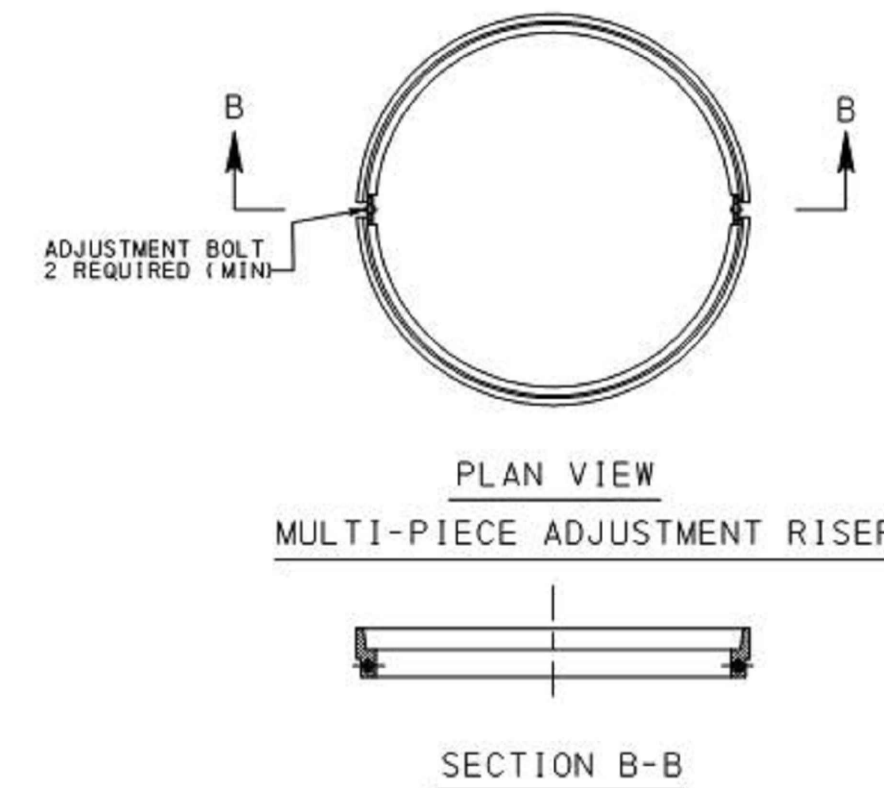
**DETAIL A
GASKET SEALING SYSTEM**



**CAST IRON MANHOLE COVER
(STANDARD COVER)**



SECTION A-A



SECTION B-B

ADJUSTMENT RISERS

PRECAST DRAINAGE MANHOLES FRAMES AND COVERS
NO SCALE

NOTES

- PROVIDE MANHOLE FRAMES AND COVERS MEETING THE REQUIREMENTS OF PUBLICATION 408, SECTION 605.2(b). DESIGN MANHOLE FRAME, COVER AND GRADE ADJUSTMENT RINGS FOR PHL 93 (HS25) LIVE LOAD. IF MANHOLES ARE NOT IN OR ADJACENT TO ROADWAY, DESIGN FOR ALL POSSIBLE LIVE LOADS AS APPROVED BY THE DEPARTMENT.
- PROVIDE MANHOLE FRAMES, COVERS AND GRADE ADJUSTMENT RISERS SUPPLIED BY A MANUFACTURER AS LISTED IN BULLETIN 15. FOR DEVIATION OR MODIFICATION TO THE STANDARDS, SUBMIT SHOP DRAWINGS FOR APPROVAL.
- PROVIDE A GASKET SEALING SYSTEM, DOVETAIL GROOVE AND CONTINUOUS GASKET, AS INDICATED IN DETAIL A, TO PREVENT INFLOW THROUGH THE BEARING SURFACES, OF SURFACE RUNOFF WATER INTO THE MANHOLE SYSTEM. WHEN SPECIFIED, PROVIDE 6 (1/4 inch) DIA ONE PIECE SELF-SEAL POLYISOPRENE ROUND GASKET, 40 DUROMETER GLUED IN PLACE. PROVIDE TWO (2) LIFT HOLES AT 180° TO FACILITATE COVER REMOVAL FOR SELF-SEALING MANHOLE COVER.
- PROVIDE ONE LIFT HOLE TO FACILITATE COVER REMOVAL FOR NON-SEALING MANHOLE COVER.
- FRAME AND GRADE ADJUSTMENT RISER TO HAVE A MINIMUM BEARING SEAT OF 25 (1 inch) FOR COVER.
- LOCATE TOP OF FRAME OR ADJUSTMENT RISER 3 (1/4 inch) BELOW THE TOP OF ROADWAY SURFACE.
- PROVIDE GRADE ADJUSTMENT RISERS MEETING THE REQUIREMENTS OF PUBLICATION 408, SECTION 606, AND AS MODIFIED HEREIN:
 - CUSTOM FABRICATE EACH ADJUSTMENT RISER FROM MEASUREMENTS PROVIDED WITH EACH ORDER.
 - MANUFACTURE BAR STOCK AND RETAINER CLIP FROM U.S. MADE CARBON STEEL MEETING OR EXCEEDING THE MINIMUM REQUIREMENTS OF ASTM A-36M.
 - REQUIRE FULL CIRCUMFERENTIAL WELDS ON BOTH TOP AND BOTTOM RINGS. MAKE THE INNER WELD A BEVEL GROOVE WELD (FLUSH FINISH) FOR PROPER SEATING OF MANHOLE LID AND MAKE THE OUTER WELD A FILLET WELD.
 - MAKE THE MINIMUM WIDTH OF BOTTOM AND TOP BAR STOCK 25 (1 inch) AND 10 (1/2 inch), RESPECTIVELY.
 - TAP THE BOTTOM BAR STOCK FOR MULTI-PIECE ADJUSTMENT RISER FOR M14 ADJUSTMENT BOLT.
 - REINFORCE THE ADJUSTMENT RISER ADEQUATELY TO PREVENT BENDING.
 - PROVIDE AN ADJUSTMENT RISER WHICH IS FLUSH WITH COVER AND DOES NOT ALLOW EXCESSIVE MOVEMENT. PROVIDE AN ADJUSTMENT RISER WHICH CONFORMS TO THE SHAPE OF THE ORIGINAL FRAME.
- ATTACH FRAME AND/OR PRECAST CONCRETE GRADE RINGS RIGIDLY TO TOP OF MANHOLE. USE 3-M14 (1/2 inch) THREADED STUDS WITH HEX HEAD NUTS AND WASHERS, INSERTED THROUGH AT 16 (5/8 inch) DIA HOLES THROUGH FRAME AND/OR RINGS. SPACE HOLES AT 120° AND 50 (2 inch) FROM OUTSIDE EDGE OF FRAME, EMBED STUDS 102 (4 inch) MINIMUM INTO MANHOLE. GROUT STUDS INTO MANHOLE.
- SET THE BASE OF THE FRAME AND/OR PRECAST CONCRETE GRADE RINGS IN A BED OF CEMENT MORTAR.

NOTE:

THESE DETAILS HAVE BEEN ADAPTED FROM PENNDOT JUNE 2010 STANDARD DRAWINGS. ADDITIONAL INFORMATION FROM STANDARD PENNDOT DRAWINGS AND SPECIFICATIONS ARE INCORPORATED AS REFERENCED.



		CLIENT APPROVAL			
		DATE			
REVISIONS					
NO.	DESCRIPTION	DATE	DRAWN	CK	APPR
A	ISSUED FOR PADEP	10/15/2018	CAF(MM)	WMC(MM)	JRD(MM)
B	RE-ISSUED FOR PADEP	10/2019	MWF(MM)	DOW(MM)	WMC(MM)
		PENNEAST PIPELINE PROJECT BLUE MOUNTAIN INTERCONNECT POST CONSTRUCTION STORMWATER MANAGEMENT DETAILS CARBON COUNTY, PENNSYLVANIA			
DRAWN BY CAF DATE ISSUED 10/15/2018 CHECKED BY WMC SCALE AS SHOWN APPROVED BY JRD APPROVED BY		DWG. NO. 028-03-07-002 REV. NO. B			

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PENNDOT STANDARDS FOR
ROADWAY CONSTRUCTION PUB 72M

RC-46M SHEET 1 NOTES:

GENERAL NOTES:

- DESIGN SPECIFICATIONS AND REQUIREMENTS:
 - AASHTO BRIDGE DESIGN SPECIFICATIONS AND AS SUPPLEMENTED BY THE DESIGN MANUAL, PART 4, STRUCTURES
 - DESIGN IS IN ACCORDANCE WITH THE LOAD AND RESISTANCE FACTOR DESIGN METHOD (LRFD)
 - INLET BOXES ARE DESIGNED FOR AN ALLOWABLE FOUNDATION PRESSURE EQUAL TO 2.0 TONS/SQ. FT. AT THE SERVICE LIMIT STATE.
- CONSTRUCTION SPECIFICATIONS:
 - PROVIDE MATERIALS AND PERFORM WORK IN ACCORDANCE WITH THE CURRENT VERSION OF THE PENNSYLVANIA DEPARTMENT OF TRANSPORTATION PUBLICATION 408 AND THE CONTRACT SPECIAL PROVISIONS.
- SHOP DRAWINGS FOR INLET BOXES, TOP SLABS, AND TRANSITION SLABS ARE NOT REQUIRED IF THE ITEM IS CONSTRUCTED/FABRICATED IN ACCORDANCE WITH THIS STANDARD.
- THIS STANDARD DEPICTS THE DIMENSIONS REQUIRED FOR UNIFORMITY AND INTERCHANGEABILITY. IT DOES NOT INCLUDE DETAILS REQUIRED FOR FABRICATION OR MANUFACTURING. FOR DEVIATIONS OR MODIFICATIONS OF THE STANDARDS, SUBMIT SHOP DRAWINGS TO THE BUREAU OF PROJECT DELIVERY, HIGHWAY DELIVERY DIVISION CHIEF FOR REVIEW AND ACCEPTANCE.
- THE DESIGNER IS RESPONSIBLE FOR DETERMINING THE TYPE OF INLET BOX REQUIRED BASED ON THE REQUIRED PIPE SIZE(S) AND PIPE OPENING(S). REFER TO TABLES A AND B ON SHEET 34 FOR ADDITIONAL INFORMATION. THE DESIGNER IS ALSO RESPONSIBLE TO DETERMINE THE REQUIRED PAY ITEM FOR AN INSTALLATION BASED ON THE OVERALL INSTALLATION HEIGHT.
- THE SELECTION OF COMPONENTS TO ACHIEVE A SPECIFIED INLET ASSEMBLY IS THE CONTRACTOR'S RESPONSIBILITY, UNLESS OTHERWISE INDICATED ON THE CONTRACT DOCUMENTS.
- THE SIZE OF THE INLET TOP UNITS, PER RC-45M, ARE BASED ON THE MINIMUM DIMENSIONS INDICATED FOR THE STANDARD INLET BOX.
- MINIMUM PIPE DIAMETERS (INSIDE):
 - FILL HEIGHT LESS THAN OR EQUAL TO 25'-18" FOR CIRCULAR PIPE (OR EQUIVALENT SIZE PIPE ARCH)
 - FILL HEIGHTS GREATER THAN 25'-18"
- INSIDE INLET BOX DIMENSIONS ARE BASED ON PROVIDING A PIPE OPENING TO ACCOMMODATE A MINIMUM 18" PIPE TO A MAXIMUM 36" PIPE. IF A LARGER PIPE SIZE IS REQUIRED, THE DESIGNER IS RESPONSIBLE FOR PROVIDING DESIGN AND DETAILS IN ACCORDANCE WITH PENNDOT REQUIREMENTS.
- INLETS THAT EXCEED THE MAXIMUM HEIGHT INDICATED REQUIRE SPECIAL DESIGN AND DETAILS. DESIGNER IS RESPONSIBLE FOR PROVIDING DESIGN AND DETAILS IN ACCORDANCE WITH PENNDOT REQUIREMENTS.
- SHOW ORIENTATION OF INLET BOXES ON THE CONTRACT DRAWINGS.
- THE TOP SLAB IS NOT PERMITTED TO BE POURED MONOLITHICALLY WITH THE ADJACENT BOX SECTION.
- PROVIDE 2" DIAMETER WEEPHOLES IN THE WALLS WHEN THE DEPTH BETWEEN THE FINISHED GRADE ELEVATION AND THE TOP OF BOTTOM SLAB ELEVATION IS GREATER THAN 1'-0".
 - HORIZONTAL PLACEMENT: 5'-0" MAXIMUM SPACING
 - VERTICAL PLACEMENT: PLACE WEEPHOLES IN THE SIDE WALLS THAT ARE PERPENDICULAR TO TRAFFIC
 - LOCATE WEEPHOLES A MINIMUM OF 6" FROM PIPE OPENINGS OR JOINTS
 - LOCATE WEEPHOLES A MINIMUM OF 1'-0" ABOVE OUTLET PIPE INVERT.
- PROVIDE MANHOLE STEPS WHEN THE DEPTH BETWEEN THE FINISHED GRADE ELEVATION AND THE TOP OF BOTTOM SLAB ELEVATION IS GREATER THAN 5'-0". LOCATE THE TOP STEP 6" MINIMUM BELOW THE TOP OF THE INLET BOX. SHALLOW WEEPHOLES A MINIMUM OF 1'-0" ABOVE OUTLET PIPE INVERT.
- IF A REQUIRED DETAIL IS NOT FOUND IN THIS STANDARD OR ON THE CONTRACT DRAWINGS A SPECIAL SUBMISSION REQUESTING ACCEPTANCE FOR SPECIFIC DETAILS MUST BE MADE TO THE BUREAU OF PROJECT DELIVERY, HIGHWAY DELIVERY DIVISION CHIEF.
- FOR INLET TOPS, GRATES, GRADE ADJUSTMENT RINGS AND FRAMES, REFER TO RC-45M.

RC-46M SHEET 2 NOTES:

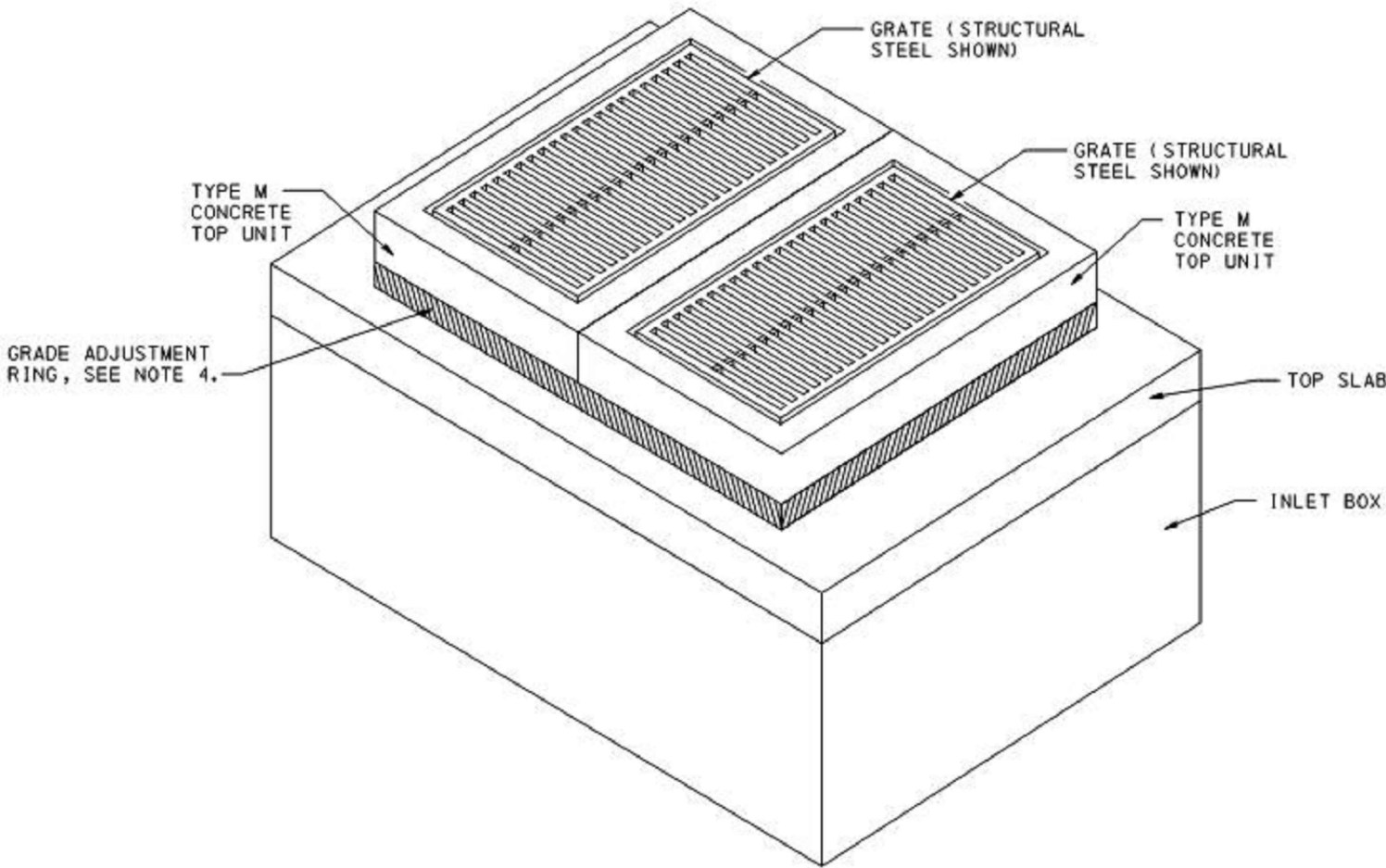
- CONSTRUCT INLET BOXES IN ACCORDANCE WITH THE REQUIREMENTS OF PUBLICATION 408, SECTION 714.
- PROVIDE PRECAST CONCRETE INLET BOXES SUPPLIED BY A MANUFACTURER LISTED IN BULLETIN 15.
- PROVIDE A TOP SLAB TO SUPPORT THE INLET TOP UNITS W, S, C AND C ALTERNATE WHEN A STANDARD INLET BOX IS NOT SPECIFIED. PROVIDE OPENING TO ACCOMMODATE THE STANDARD TOP COMPONENTS. PROVIDE A TOP SLAB WITH A ROUND OPENING FOR MANHOLE COVER WHEN SPECIFIED ON THE CONTRACT DRAWINGS.
- PROVIDE A TRANSITION SLAB BETWEEN TWO SEPARATE INLET BOX SIZES, WHEN TWO SEPARATE INLET BOX SIZES ARE USED. (SEE TRANSITION SLAB NOTES.)
- CLEAR COVER FOR STEEL:
 - WALLS: 1 1/2"
 - FOOTINGS (BOTTOM SLAB):
 - TOP COVER: 2"
 - BOTTOM COVER: 1 1/2"
 - SIDE COVER: 1 1/2"
 - TOP AND TRANSITION SLABS (TOP AND BOTTOM): 1 1/2"
- MINIMUM SLAB AND WALL THICKNESS:
 - MINIMUM TOP SLAB THICKNESS: 8"
 - MINIMUM WALL THICKNESS: 6"
 - MINIMUM BOTTOM SLAB THICKNESS: 7"
- THICKNESS OF WALL IS PERMITTED TO VARY FROM SECTION TO SECTION. INSIDE FACE OF WALLS MUST ALIGN BETWEEN SECTIONS.
- FABRICATOR IS RESPONSIBLE FOR LIFTING, HANDLING AND TRANSPORTATION STRESSES.
- LIFTING DEVICES:
 - PROVIDE GALVANIZED STEEL OR PLASTIC LIFTING DEVICES FOR HANDLING AND INSTALLATION
 - FILL LIFTING DEVICES WITH NON-SHRINK GROUT AFTER INSTALLATION.
 - PROVIDE LIFTING DEVICES WITH A MINIMUM CAPACITY OF AT LEAST FOUR TIMES THE CALCULATED LOAD ON THE DEVICE.
- TAPERS MAY BE PROVIDED ON THE INSIDE AND/OR OUTSIDE VERTICAL FACES OF THE INLET BOXES TO FACILITATE FORM STRIPPING. TAPERS MAY RESULT IN INTERNAL BOTTOM DIMENSIONS THAT VARY 1/4" PER SIDE TO A MAXIMUM OF 1" PER SIDE.
- KEYED JOINTS MAY BE CONSTRUCTED UPWARDS OR DOWNWARDS. CLEAN JOINTS AND KEYS THOROUGHLY BEFORE PLACING NEXT SEGMENT. PLACE MORTAR OR CAULKING COMPOUND BETWEEN JOINTS IN ACCORDANCE WITH THIS STANDARD.
- PROVIDE EITHER A SHIPLAP OR KEYED JOINT BETWEEN THE BOTTOM OF THE TOP SLAB AND THE TOP OF THE BOX.
- PROVIDE EITHER A SHIPLAP OR KEYED JOINT BETWEEN THE TRANSITION SLAB AND THE ADJACENT TOP AND BOTTOM SECTIONS.
- PROVIDE EITHER A SHIPLAP OR KEYED JOINT BETWEEN PRECAST SECTIONS.
- SEGMENT HEIGHTS:
 - MINIMUM HEIGHTS:
 - RISE SECTIONS = 1'-0"
 - BASE SECTIONS = 2'-0"
 - MAXIMUM HEIGHT = 8'-0"

RC-45M SHEET 9 NOTES:

CAST IRON GRATE NOTES:

- SHEETS 9 AND 10 DEPICTS THE DIMENSIONS REQUIRED FOR UNIFORMITY AND INTERCHANGEABILITY. IT DOES NOT INCLUDE DETAILS REQUIRED FOR FABRICATION OR MANUFACTURING. FOR DEVIATIONS OR MODIFICATIONS OF THE STANDARDS, SUBMIT SHOP DRAWINGS TO THE BUREAU OF PROJECT DELIVERY, HIGHWAY DELIVERY DIVISION CHIEF FOR REVIEW AND ACCEPTANCE.
- PROVIDE CAST IRON GRATES SUPPLIED BY A MANUFACTURER LISTED IN PENNDOT BULLETIN 15.
- PROVIDE MATERIALS AND WORKMANSHIP IN ACCORDANCE WITH THE PUBLICATION 408 AND THE CONTRACT SPECIAL PROVISIONS.
- PROVIDE GRAY CAST IRON CONFORMING TO AASHTO M105 (ASTM A84/A84M), CLASS 225B (150B) AND AASHTO M306.
- PROVIDE BICYCLE SAFE GRATES WHERE BICYCLE TRAFFIC IS ANTICIPATED, SUCH AS CURBED ROADWAYS IN URBAN AREAS OR ROADWAYS SPECIFICALLY ESTABLISHED AND SIGNED AS BIKWAYS OR HAVING BIKE LANES. ALTERNATE BICYCLE SAFE GRATE DESIGNS REQUIRE A SHOP DRAWING, AS SPECIFIED IN NOTE 1, AND MUST CONFORM TO THE DIMENSIONAL REQUIREMENTS FOR PROPER INSTALLATION WITH THE CURRENT TOP UNITS.
- PROVIDE ADA COMPLIANT GRATES WHERE PEDESTRIAN TRAFFIC IS ANTICIPATED, SUCH AS CURBED ROADWAYS IN URBAN AREAS ADJACENT TO SIDEWALKS. ALTERNATE ADA COMPLIANT GRATE DESIGNS REQUIRE A SHOP DRAWING, AS SPECIFIED IN NOTE 1 AND MUST CONFORM TO THE DIMENSIONAL REQUIREMENTS FOR PROPER INSTALLATION WITH THE CURRENT TOP UNITS.
- CAST IRON GRATES ARE PERMITTED TO BE USED AS AN ALTERNATE TO THE STRUCTURAL STEEL GRATES PROVIDED THEY ARE SUPPLIED BY A MANUFACTURER LISTED IN BULLETIN 15 AND ARE APPROVED FOR FH-30 OR HS-20 LOADING. CAST IRON GRATES NOT APPROVED FOR FH-30 OR HS-20 LOADING MAY BE USED OUTSIDE OF THE TRAVEL LANES AT THE EDGE OF OUTSIDE SHOULDERS, SWALES, WIDE MEDIAN SWALES AND INFIELD AREAS.
- REFER TO SHEET 10 FOR TWO PIECE CAST IRON GRATES.

CONCRETE TOP UNIT - DOUBLE TYPE M

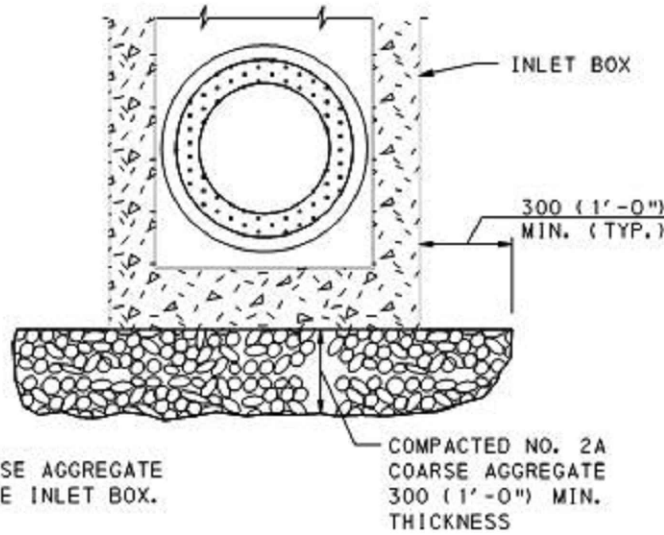


CONCRETE TOP UNIT - TYPE M

INLET BOX WITH TYPE M FRAME

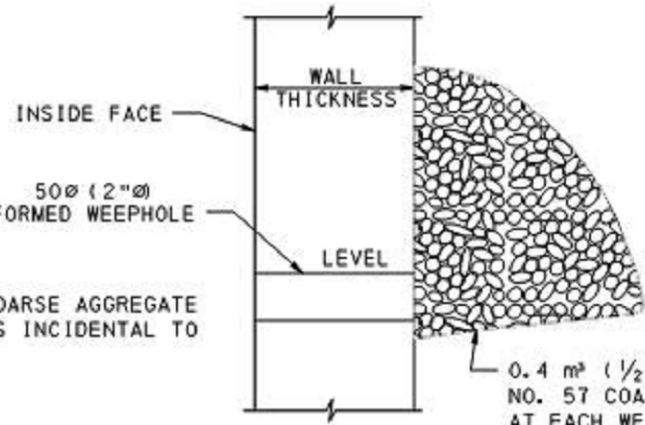
NOTES:

- FOR ADDITIONAL INFORMATION, SEE SHEET 2 NOTES.
- STANDARD INLET BOXES SHOWN, PROVIDE TOP SLABS FOR OTHER INLET BOX TYPES.
- SEE RC-45M FOR DETAILS FOR THE CONCRETE TOP UNITS, FRAMES, AND GRATES.
- PROVIDE GRADE ADJUSTMENT RINGS WHEN REQUIRED. SEE RC-45M FOR DETAILS.



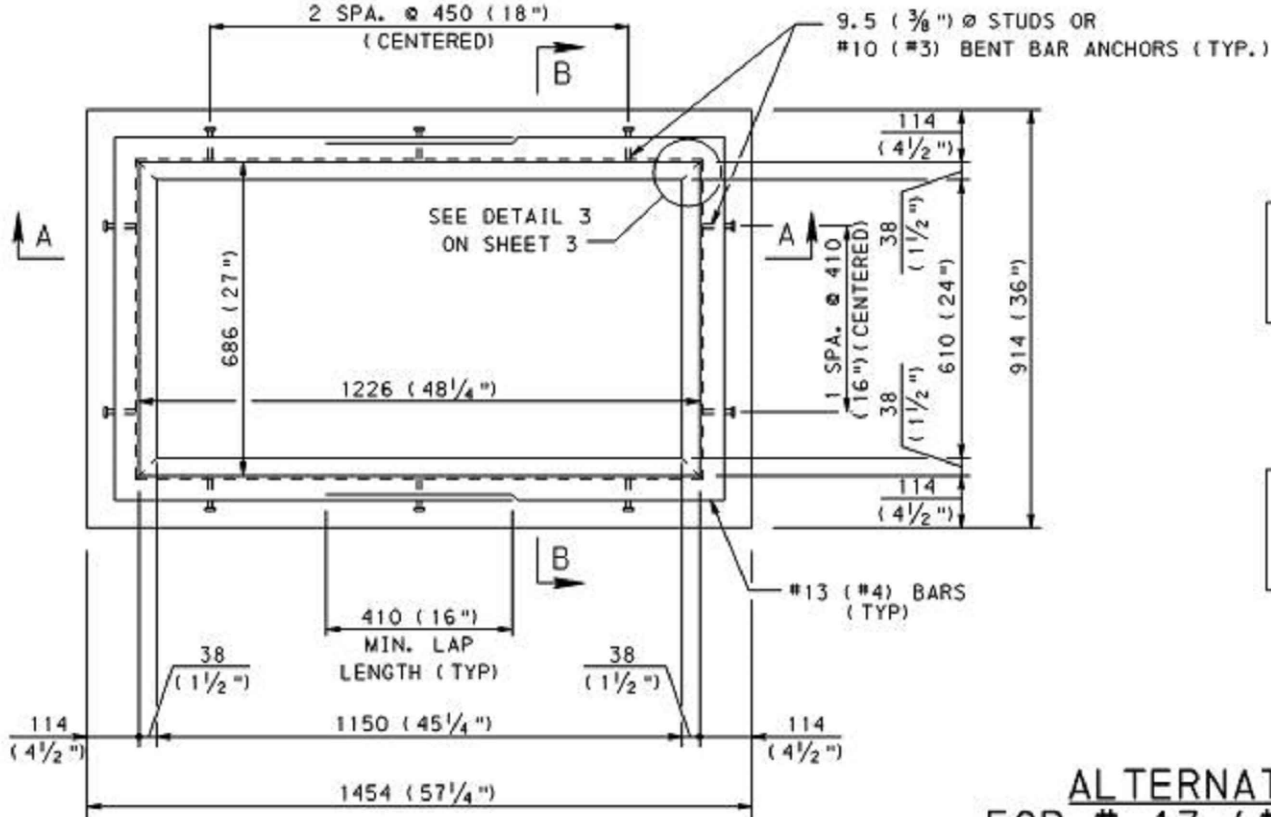
INLET BOX SUBBASE PREPARATION DETAIL

(SEE FIELD CONSTRUCTION NOTES ON SHEET 1)

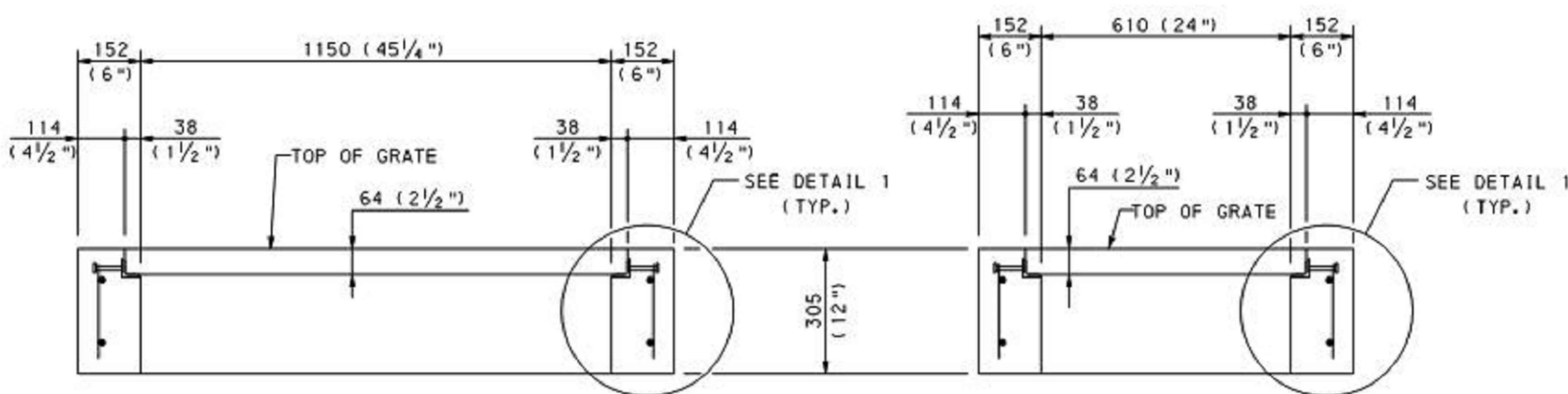


WEEPHOLE DETAIL

(SEE GENERAL NOTE 15 ON SHEET 1)



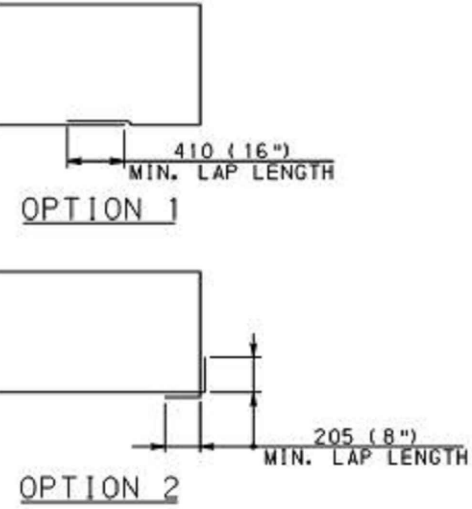
PLAN VIEW - TYPE M



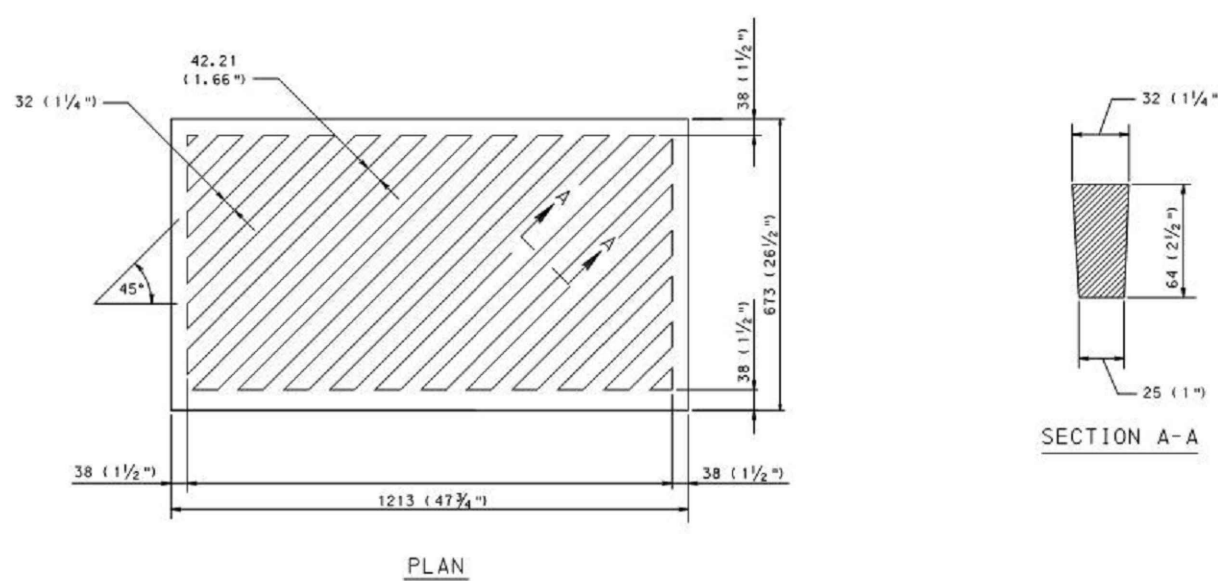
SECTION A-A

SECTION B-B

ALTERNATE ONE BAR OPTIONS
FOR #13 (#4) HORIZONTAL U-BARS



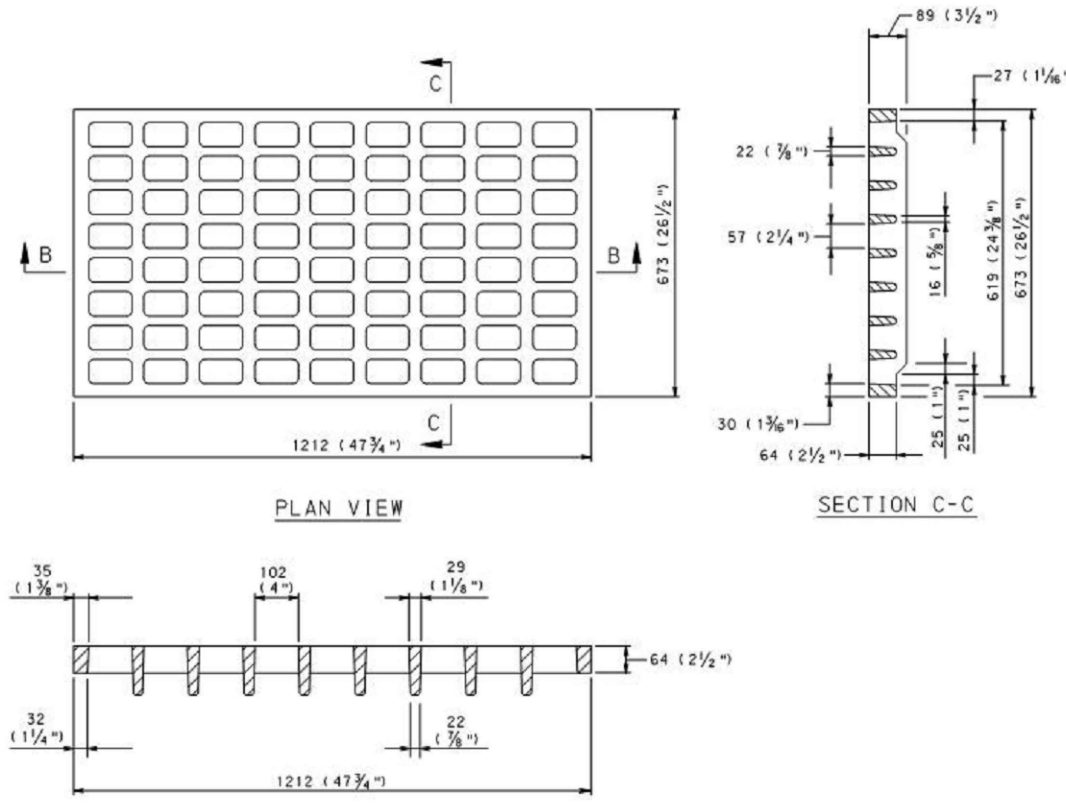
ONE PIECE CAST IRON GRATE



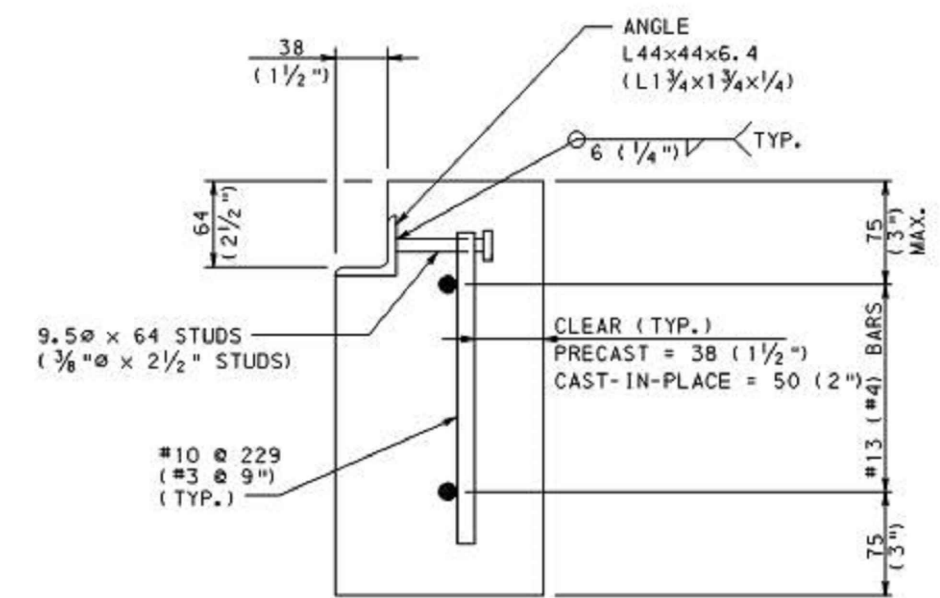
PLAN VIEW

SECTION B-B

ONE PIECE CAST IRON GRATE - BICYCLE SAFE



DETAIL 1




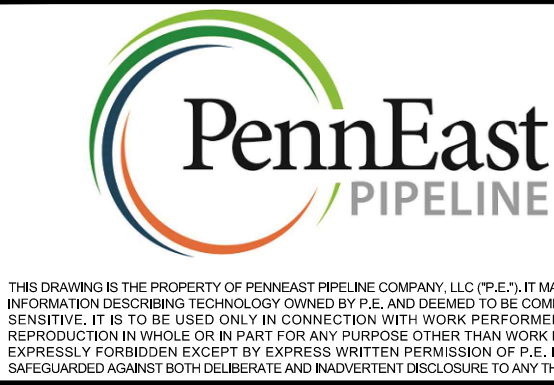
PRECAST INLET BOXES
(NOT TO SCALE)

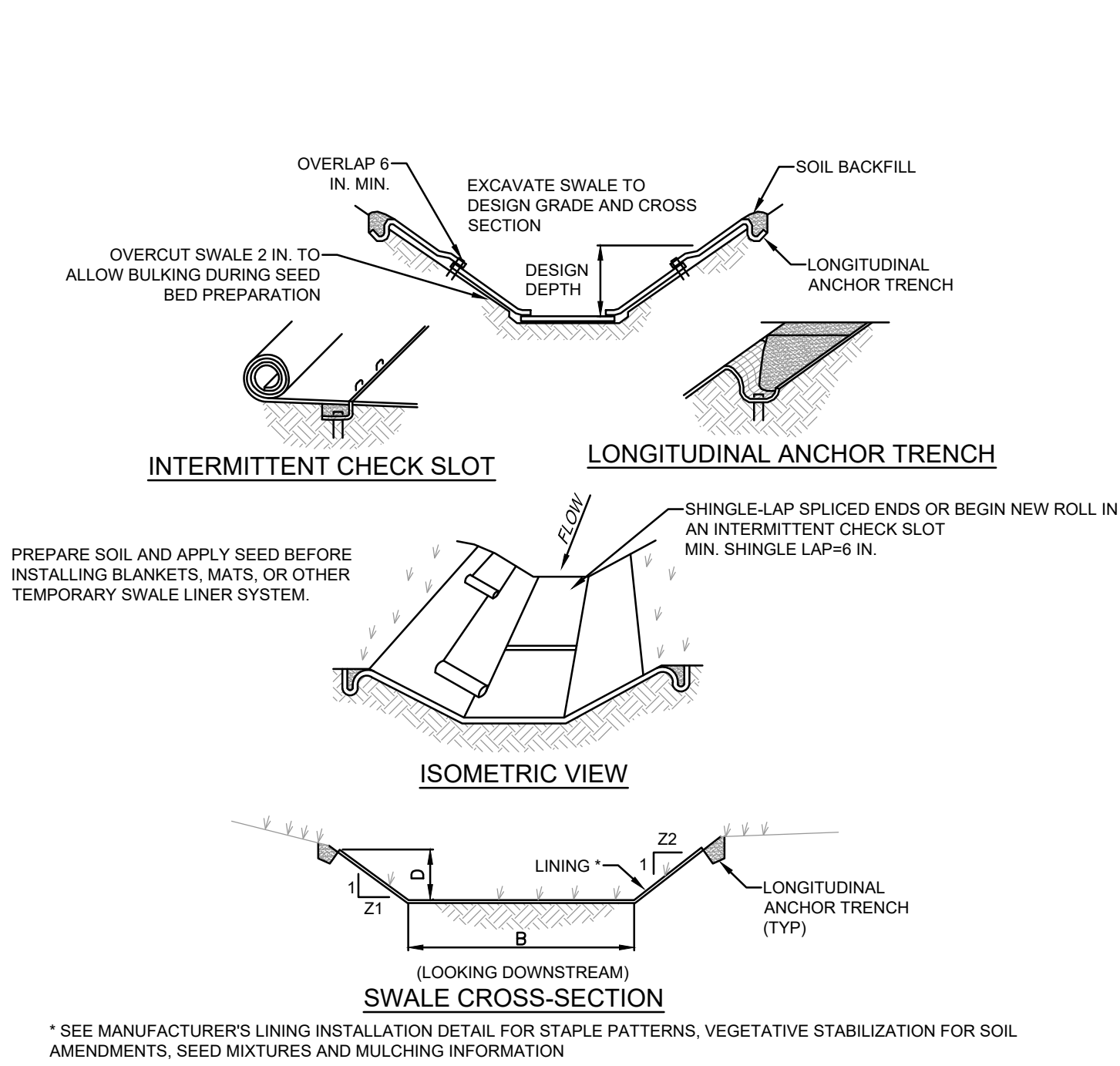
NOTE:

THESE DETAILS HAVE BEEN ADAPTED FROM PENNDOT JUNE 2010 STANDARD DRAWINGS. ADDITIONAL INFORMATION FROM STANDARD PENNDOT DRAWINGS AND SPECIFICATIONS ARE INCORPORATED AS REFERENCED.



<div><p>Know what's below. Call before you dig.</p></div>		CLIENT APPROVAL			
		DATE			
REVISIONS					
NO.	DESCRIPTION	DATE	DRAWN	CK	APPR
A	ISSUED FOR PADEP	10/15/2018	CAF(MM)	WMC(MM)	JRD(MM)
B	RE-ISSUED FOR PADEP	10/2019	MWF(MM)	DOW(MM)	WMC(MM)
	</				





NOTES:

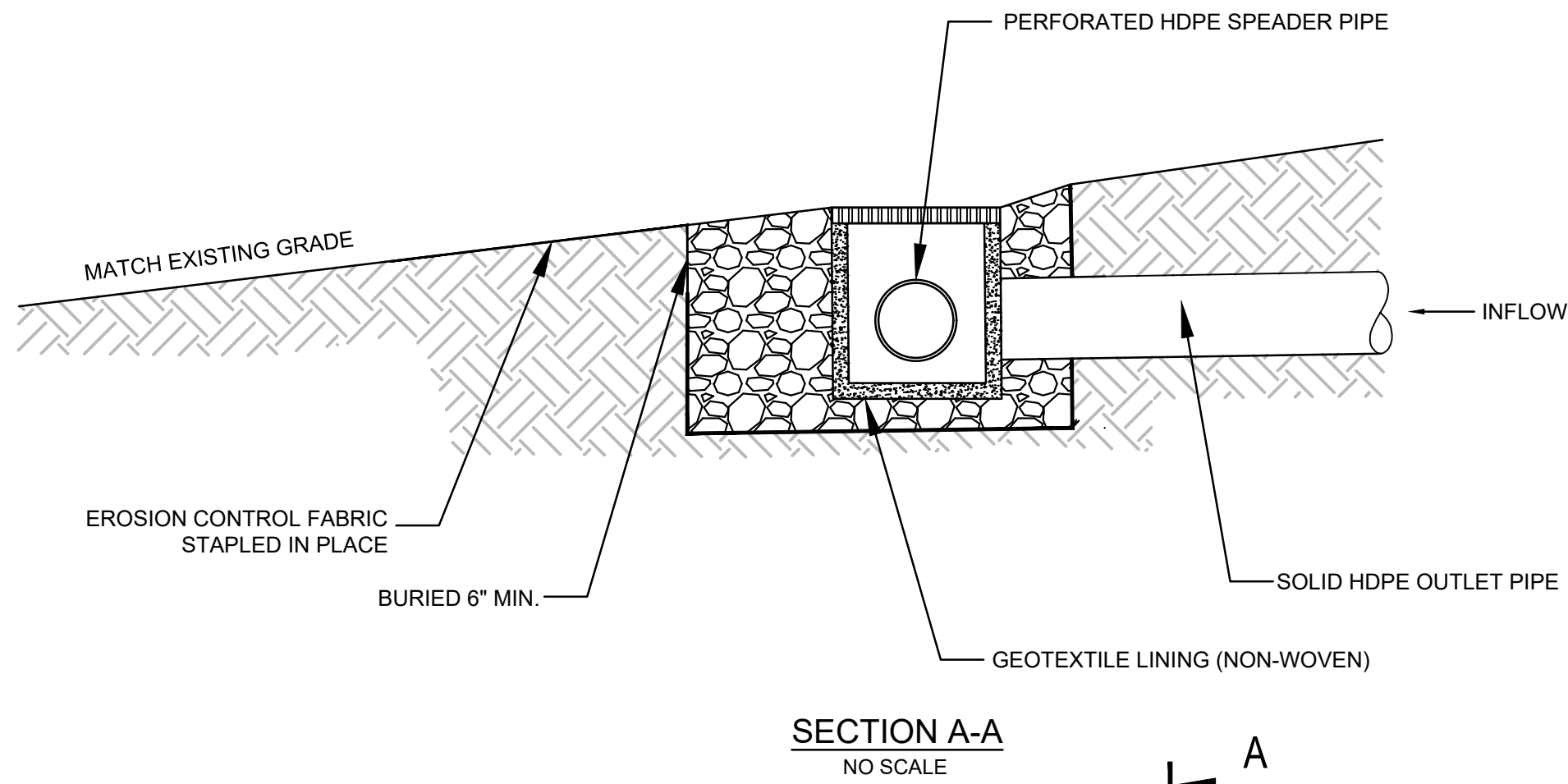
ANCHOR TRENCHES SHALL BE INSTALLED AT BEGINNING AND END OF SWALE IN THE SAME MANNER AS LONGITUDINAL ANCHOR TRENCHES.

SWALE DIMENSIONS SHALL BE CONSTANTLY MAINTAINED. SWALE SHALL BE CLEANED WHENEVER TOTAL SWALE DEPTH IS REDUCED BY 25% AT ANY LOCATION. SEDIMENT DEPOSITS SHALL BE REMOVED WITHIN 24 HOURS OF DISCOVERY OR AS SOON AS SOIL CONDITIONS PERMIT ACCESS TO SWALE WITHOUT FURTHER DAMAGE. DAMAGED LINING SHALL BE REPAIRED OR REPLACED WITHIN 48 HOURS OF DISCOVERY.

NO MORE THAN ONE THIRD OF THE SHOOT (GRASS LEAF) SHALL BE REMOVED IN ANY MOWING. GRASS HEIGHT SHALL BE MAINTAINED BETWEEN 2 AND 3 INCHES UNLESS OTHERWISE SPECIFIED. EXCESS VEGETATION SHALL BE REMOVED FROM PERMANENT SWALES TO ENSURE SUFFICIENT SWALE CAPACITY.

SWALE NO.	BOTTOM WIDTH B (FT)	DEPTH D (FT)	TOP WIDTH W (FT)	Z1 (FT)	Z2 (FT)	LINING
1	2.0	1.00	8.0	3.0	3.0	LANDLOK TRM-435 OR EQUAL
2	3.0	1.5	12	3.0	3.0	LANDLOK TRM-435 OR EQUAL

VEGETATED SWALE LINING
NO SCALE



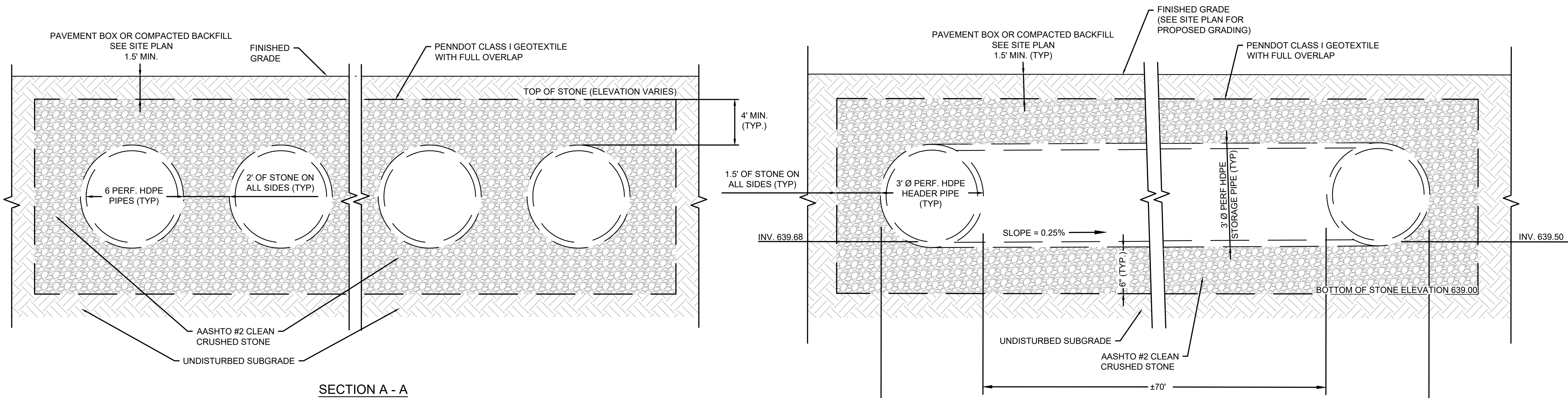
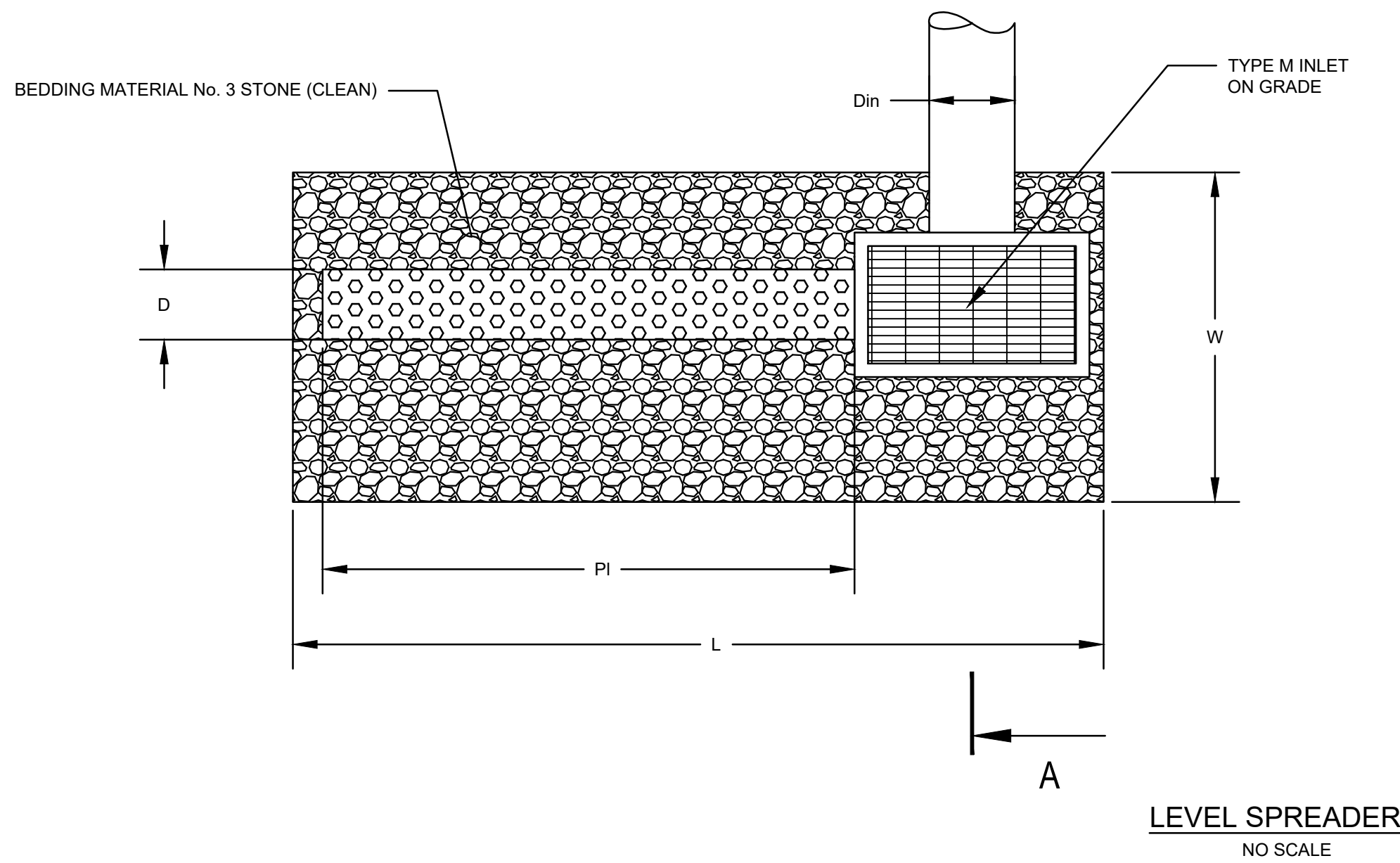
NOTES:

- STONE SHALL BE 2" TO 1" UNIFORMLY GRADED COARSE AGGREGATE, WITH A WASH LOSS OF NO MORE THAN 0.5%, AASHTO SIZE NUMBER 3 PER AASHTO SPECIFICATIONS, PART 1, 19TH ED., 1998, OR LATER AND SHALL HAVE VOIDS 35% AS MEASURED BY ASTM-C29.
- NONN-WOVEN GEOTEXTILE SHALL CONSIST OF NEEDLED NON-WOVEN POLYPROPYLENE FIBERS AND MEET THE FOLLOWING PROPERTIES:

a. GRAB TEXTILE STRENGTH (ARTM-D4632)	120 LBS
b. MULLEN BURST STRENGTH (ASTM-D3786)	225 PSI
c. FLOW RATE (ASTM-D4491)	95 GAL/MIN/FT ²
d. UV RESISTANCE AFTER 500 HRS (ASTM-D4355)	70%
e. HEAT-SET OR HEAT CALENDERED FABRICS ARE NOT PERMITTED	

 ACCEPTABLE TYPES INCLUDE MIRAFI 140N, AMOCO 4547, AND GEOTEX 451.
- TOPSOIL AMEND WITH COMPOST (SEE BMP 6.7.3, SOIL AMENDMENTS&RESTORATION)
- PIPE SHALL BE SOLID OR CONTINUOUSLY PERFORATED, SMOOTH INTERIOR, WITH A MINIMUM INSIDE DIAMETER OF 4-INCHES. HIGH-DENSITY POLYETHYLENE (HDPE) PIPE SHALL MEET AASHTO M252 TYPE S OR AASHTO M294, TYPE S.

SITE	SPREADER ID	L (FT)	W (FT)	D (IN)	Din (IN)	PI (FT)
BLUE MOUNTAIN INTERCONNECT	LS-1	30	5.25	15	15	24



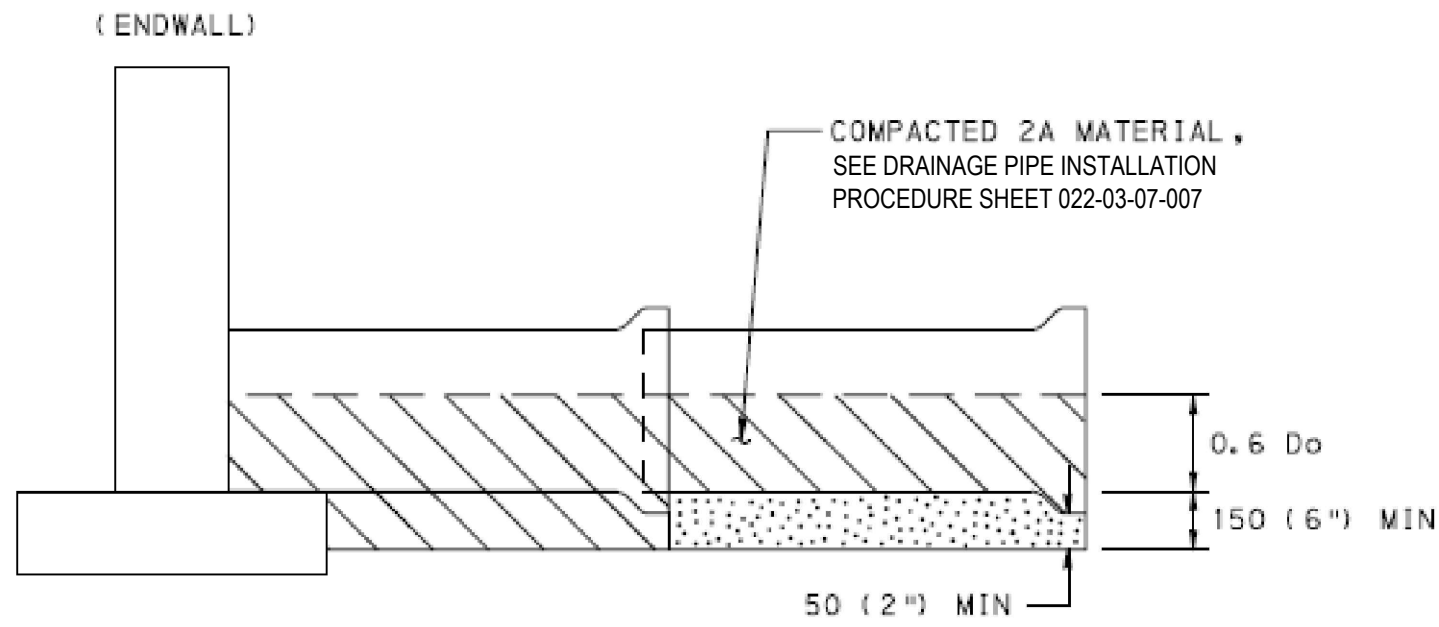
STATION	PIPE MATERIAL	PIPE DIA. (FT)
BLUE MOUNTAIN INTERCONNECT	DOUBLE WALLED PERFORATED HDPE	3

UNDERGROUND STORMWATER DETENTION SYSTEM
NO SCALE

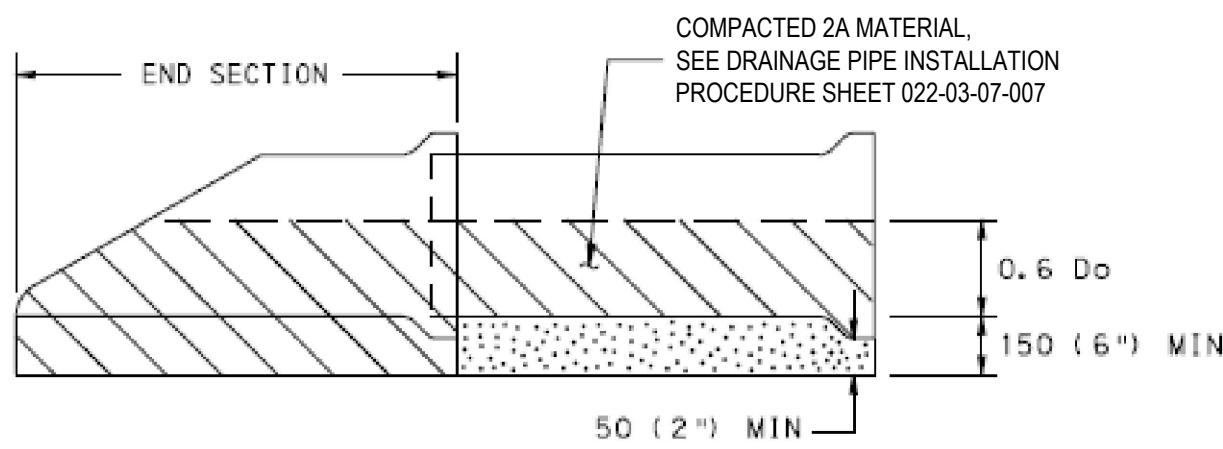


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		DATE																																																	
<p>REVISIONS</p> <table border="1"> <thead> <tr> <th>NO.</th> <th>DESCRIPTION</th> <th>DATE</th> <th>DRAWN</th> <th>CK</th> <th>APPR</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>ISSUED FOR PADEP</td> <td>10/15/2018</td> <td>CAF(MM)</td> <td>WMC(MM)</td> <td>JRD(MM)</td> </tr> <tr> <td>B</td> <td>RE-ISSUED FOR PADEP</td> <td>10/2019</td> <td>MWF(MM)</td> <td>DOW(MM)</td> <td>WMC(MM)</td> </tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>				NO.	DESCRIPTION	DATE	DRAWN	CK	APPR	A	ISSUED FOR PADEP	10/15/2018	CAF(MM)	WMC(MM)	JRD(MM)	B	RE-ISSUED FOR PADEP	10/2019	MWF(MM)	DOW(MM)	WMC(MM)																														
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		<p>PENNEAST PIPELINE PROJECT</p> <p>BLUE MOUNTAIN INTERCONNECT</p> <p>POST CONSTRUCTION STORMWATER</p> <p>MANAGEMENT DETAILS</p> <p>CARBON COUNTY, PENNSYLVANIA</p>																																																	
		<p>DRAWN BY CAF DATE ISSUED 10/15/2018</p> <p>CHECKED BY WMC SCALE AS SHOWN</p> <p>APPROVED BY JRD APPROVED BY</p> <p>DWG. NO. 028-03-07-004 REV. NO. 8</p>																																																	

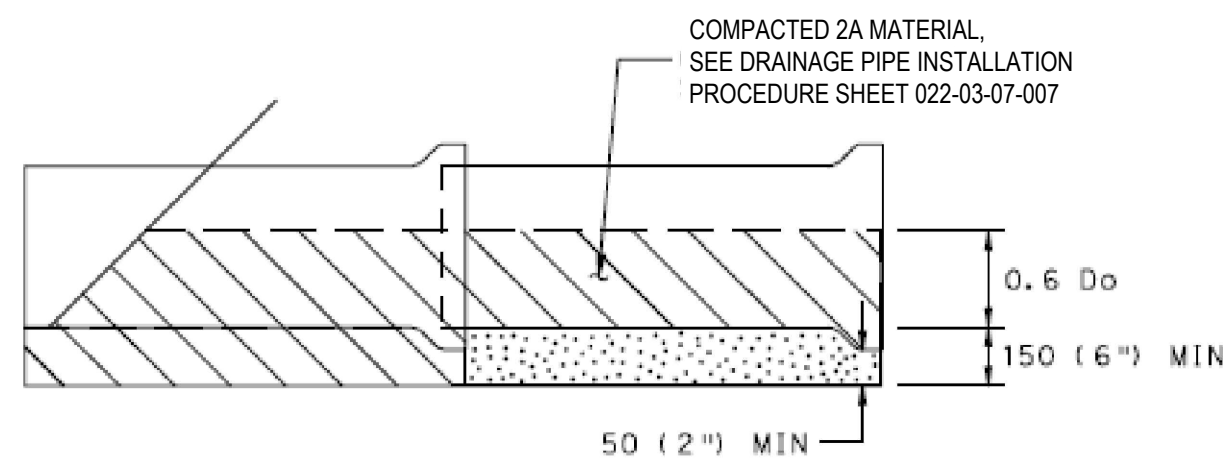
THIS DRAWING IS THE PROPERTY OF PENNEAST PIPELINE COMPANY, LLC ("P.E.C."). IT MAY CONTAIN INFORMATION DESCRIBING TECHNOLOGY OWNED BY P.E.C. AND DEEMED TO BE CONFIDENTIAL AND PROPRIETARY. IT IS TO BE USED ONLY IN CONNECTION WITH WORK PERFORMED FOR P.E.C. REPRODUCTION WHOLE OR IN PART FOR ANY PURPOSE OTHER THAN WORK FOR P.E.C. IS EXPRESSLY FORBIDDEN EXCEPT BY EXPRESS WRITTEN PERMISSION OF P.E.C. IT IS TO BE KEPT UNCLASSIFIED AND NOT TO BE RELEASED OR DISCLOSED TO ANY THIRD PARTY.



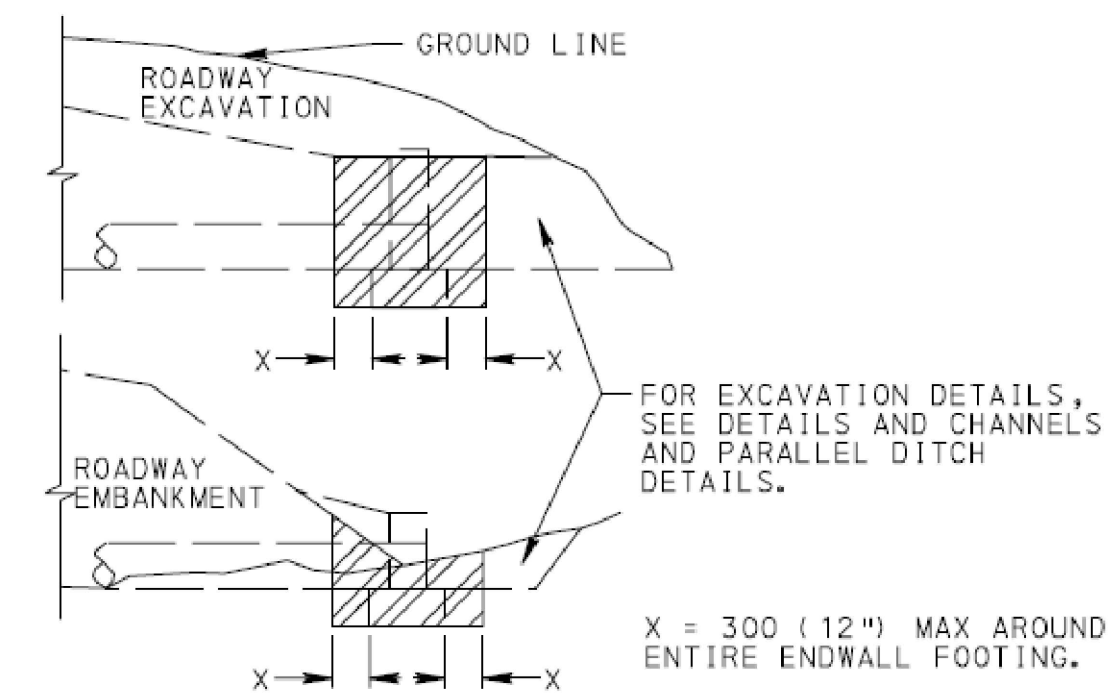
BACKFILL DETAIL AT ENDWALL
(FOR CONCRETE PIPE)



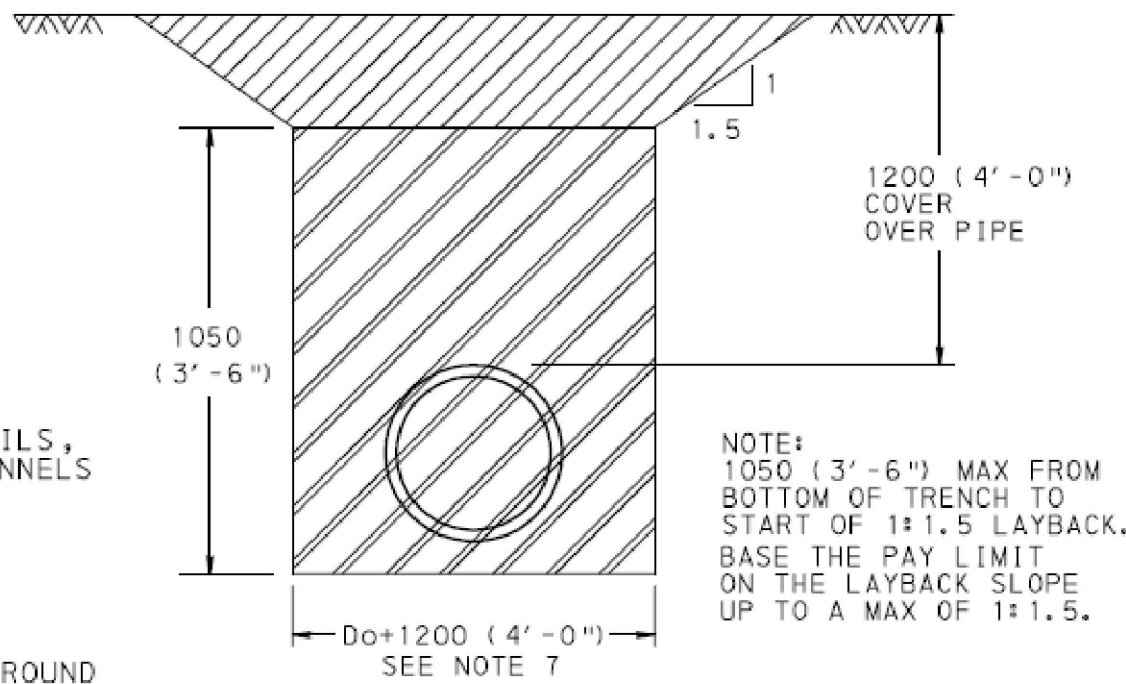
BACKFILL DETAIL AT END SECTION
(FOR CONCRETE PIPE)



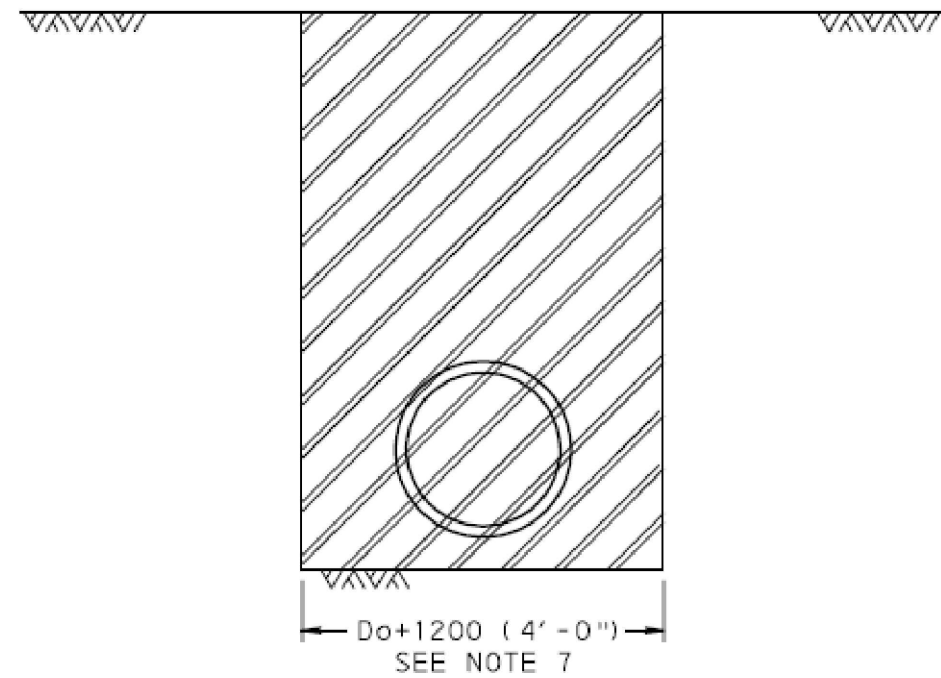
BACKFILL DETAIL AT LAST SECTION OF PIPE
(FOR CONCRETE PIPE)



EXCAVATION FOR ENDWALLS



ABOVE DRAWING SHOWS EXCAVATION FOR PIPE IN CUT OR FILL WHERE SUBGRADE IS 1050 (3'-6'') OR MORE ABOVE THE BOTTOM OF THE TRENCH.



ABOVE DRAWING SHOWS EXCAVATION FOR PIPE IN CUT OR FILL WHERE SHORING OR A TRENCH BOX IS USED.

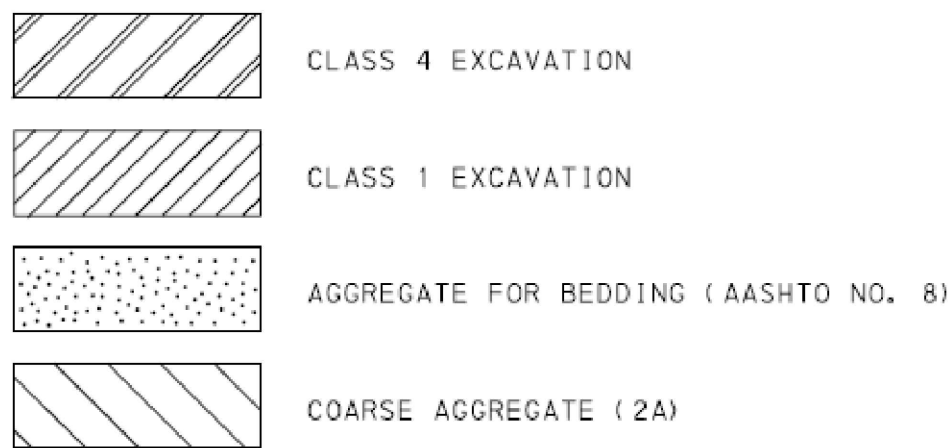
PAY LIMITS FOR PIPE EXCAVATION

PIPE TRENCH, BEDDING AND BACKFILL DETAIL
NO SCALE

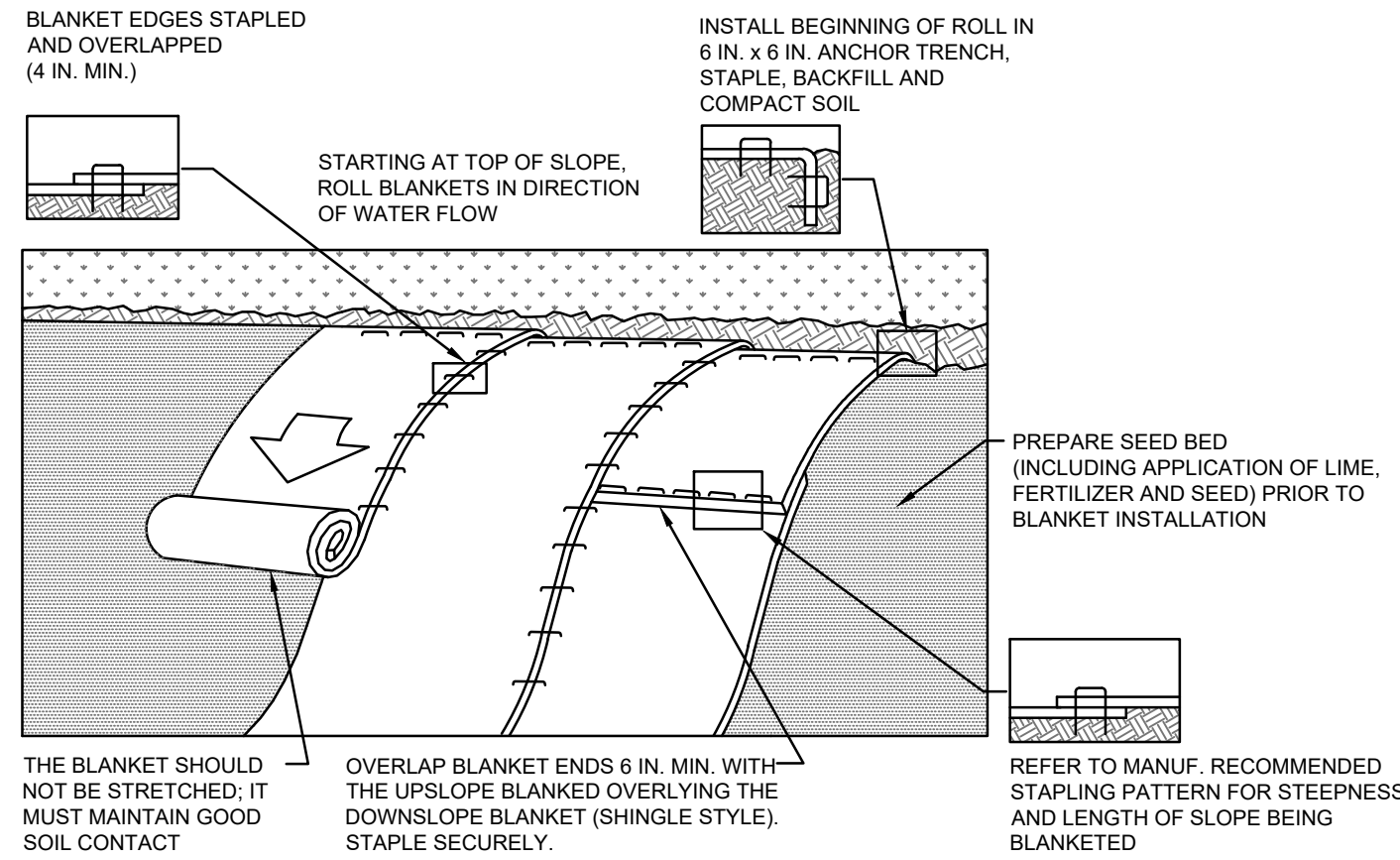
NOTES

1. PROVIDE MATERIALS AND CONSTRUCT AS SPECIFIED IN PUBLICATION 408, SECTION 601 FOR PIPE CULVERTS, SECTION 602 FOR CORRUGATED METAL PIPE-ARCH CULVERTS AND SECTION 603 FOR METAL PLATE CULVERTS.
2. SHORING OR TRENCH BOX INSTALLATION FOR FLEXIBLE PIPE IS NOT NORMALLY USED. IF SHORING OR TRENCH BOX INSTALLATION IS PERMITTED IN SPECIAL CIRCUMSTANCES, REFER TO PUBLICATION 408, SECTION 601.3(g).
3. IN ALL EXCAVATION AREAS FOLLOW OSHA SAFETY REQUIREMENTS.
4. DO NOT COMPACT NO. 8 MATERIAL USED FOR BEDDING UNDER CONCRETE PIPES.
5. ALLOW NO PAYMENT FOR EXCAVATION IN EXCESS OF SPECIFIED LIMITS AND FOR ADDITIONAL BACKFILL MATERIAL REQUIRED.
6. PAYMENT FOR THE BACKFILL ENVELOPE, INCLUDING BEDDING, COARSE AGGREGATE AND SUITABLE MATERIAL UP TO 300 (12'') ABOVE THE PIPE IS INCIDENTAL TO THE PIPE.
7. FOR BOTTOM TRENCH WIDTHS ≥ 2.5 m (8'-0''), ALL EXCAVATION IS CLASS 1.
8. FOR INLET OR OUTLET PROTECTION SEE DETAIL A-1.
9. CONSTRUCT FLEXIBLE BASE REPLACEMENT IN ACCORDANCE WITH THE REQUIREMENTS OF PUBLICATION 408, SECTION 316.
10. PREPARE EXPOSED VERTICAL AND HORIZONTAL SURFACES AS PER PUBLICATION 408, SECTION 409.3(k).
11. FOR NON-OVERLAY APPLICATIONS, THE TOP 40 (1 1/2'') OF BASE REPLACEMENT WILL BE SUPERPAVE WEARING COURSE.
12. FOR RESTORATION OF RIGID PAVEMENT, REFER TO PUBLICATION 408, SECTION 516 AND RC-26M.
13. FOR SUPERPAVE BASE REPLACEMENT, SAW CUTTING, EXCAVATION, HAULING AND DISPOSAL, BITUMINOUS TACK COAT, BITUMINOUS MATERIAL, AND SEALING OF THE JOINTS ARE CONSIDERED AS INCIDENTAL.
14. PERFORM AND COMPLETE PIPE RESTORATION WORK PRIOR TO THE FLEXIBLE SUPERPAVE BASE REPLACEMENT.

LEGEND



Do = OUTSIDE DIAMETER OF PIPE.

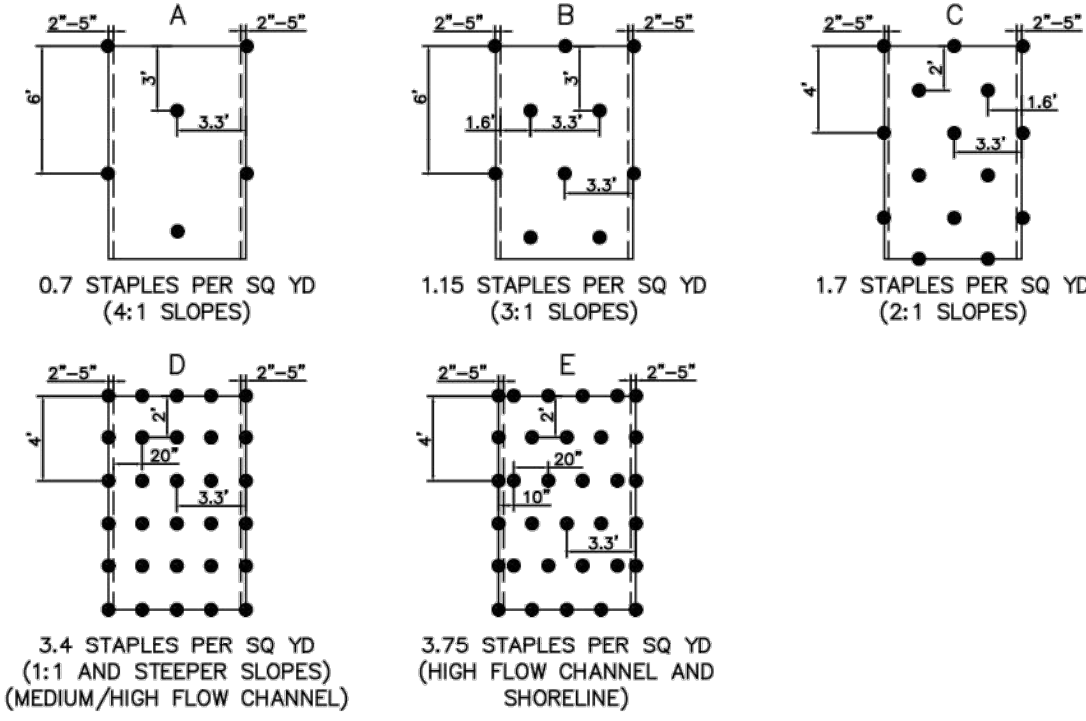


NOTES:

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

EROSION CONTROL BLANKET
INSTALLATION
STANDARD CONSTRUCTION DETAIL #11-1
NO SCALE

STAPLE PATTERN GUIDE



NOTES:

1. FOR SLOPES BETWEEN 3:1 AND 1:1, USE NORTH AMERICAN GREEN ERONET SC 150 OR OWNER APPROVED EQUAL MATERIAL/METHOD.
2. IN AREAS WHERE LIVESTOCK ARE KEPT, USE NORTH AMERICAN GREEN BIONET SC 150 BN OR OWNER APPROVED EQUAL MATERIAL/METHOD.
3. SEED AND SOIL AMENDMENTS SHALL BE APPLIED ACCORDING TO THE RATES IN THE PLAN DRAWINGS PRIOR TO INSTALLING THE BLANKET.
4. PROVIDE ANCHOR TRENCH AT TOE OF SLOPE IN SIMILAR FASHION AS AT TOP OF SLOPE
5. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS, AND GRASS.
6. BLANKET SHALL HAVE GOOD CONTINUOUS CONTACT WITH UNDERLYING SOIL THROUGHOUT ENTIRE PROJECT LENGTH. LAY BLANKET LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH SOIL. DO NOT STRETCH BLANKET.
7. THE BLANKET SHALL BE STAPLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
8. BLANKETED AREAS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT UNTIL PERENNIAL VEGETATION IS ESTABLISHED TO A MINIMUM UNIFORM 70% COVERAGE THROUGHOUT THE BLANKETED AREA. DAMAGED OR DISPLACED BLANKETS SHALL BE RESTORED OR REPLACED WITHIN 4 CALENDAR DAYS.

EROSION CONTROL BLANKET
STAPLE PATTERN GUIDE
NO SCALE



NOTE:

THESE DETAILS HAVE BEEN ADAPTED FROM PENNDOT JUNE 2010 STANDARD DRAWINGS. ADDITIONAL INFORMATION FROM STANDARD PENNDOT DRAWINGS AND SPECIFICATIONS ARE INCORPORATED AS REFERENCED.

<p>Know what's below. Call before you dig.</p>		CLIENT APPROVAL																																											
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<p>REVISIONS</p> <table border="1"> <thead> <tr> <th>NO.</th> <th>DESCRIPTION</th> <th>DATE</th> <th>DRAWN</th> <th>CK</th> <th>APPR</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>ISSUED FOR PADEP</td> <td>10/15/2018</td> <td>CAF(MM)</td> <td>WMC(MM)</td> <td>JRD(MM)</td> </tr> <tr> <td>B</td> <td>RE-ISSUED FOR PADEP</td> <td>10/2019</td> <td>MWF(MM)</td> <td>DOW(MM)</td> <td>WMC(MM)</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>				NO.	DESCRIPTION	DATE	DRAWN	CK	APPR	A	ISSUED FOR PADEP	10/15/2018	CAF(MM)	WMC(MM)	JRD(MM)	B	RE-ISSUED FOR PADEP	10/2019	MWF(MM)	DOW(MM)	WMC(MM)																								
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		<p>PENNEAST PIPELINE PROJECT BLUE MOUNTAIN INTERCONNECT POST CONSTRUCTION STORMWATER MANAGEMENT DETAILS CARBON COUNTY, PENNSYLVANIA</p>																																											
<p>DRAWN BY CAF DATE ISSUED 10/15/2018</p>		<p>CHECKED BY WMC SCALE AS SHOWN</p>																																											
<p>APPROVED BY JRD APPROVED BY</p>		<p>DWG. NO. 028-03-07-005 REV. NO. B</p>																																											

DRAINAGE PIPE INSTALLATION PROCEDURE

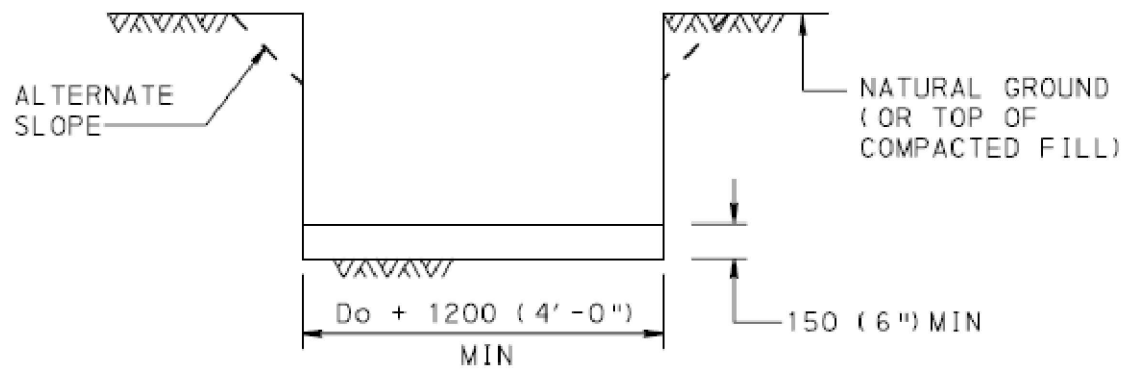
CONSTRUCTION DETAILS BELOW COVER THE FOLLOWING CONDITIONS:

- (A) PIPE LYING ON TOP OF THE NATURAL GROUND, ROCK OR COMPACTED (97% SPD) FILL.
- (B) THE EXISTING GROUND IS BETWEEN THE TOP AND THE BOTTOM OF THE PROPOSED PIPE AND THE PIPE IS TO BE COVERED WITH EARTH FILL.
- (C) THE TOP OF PIPE IS BELOW THE LEVEL OF THE NATURAL GROUND OR COMPACTED FILL (TO MINIMUM 97% SPD) AND TO BE COVERED WITH EARTH FILL TO HEIGHTS ABOVE THE NATURAL GROUND.

STEP 1 : REMOVE TOPSOIL (COMPRESSIBLE LAYER OF ORGANIC MATERIAL) TO A WIDTH EQUAL TO 5 OUTSIDE DIAMETERS OF THE PIPE IN ALL FILL CONDITIONS ABOVE (A), (B) & (C). ALSO IF SPECIFIED ON THE CONTRACT DRAWING, UNDERCUT FOR THE DEPTH BELOW THE BEDDING AS SHOWN BY DESIGN (MAKE MIN WIDTH 5 DIAMETERS OF PIPE). PAY AS CLASS 1 EXCAVATION.

STEP 2 : CONSTRUCT THE EMBANKMENT TO 1200 (4'-0") ABOVE THE TOP OF PIPE OR TO THE SUBGRADE ELEVATION, WHICHEVER IS LESS. FOR PIPES 1800 (72") OR GREATER SEE NOTE 1.

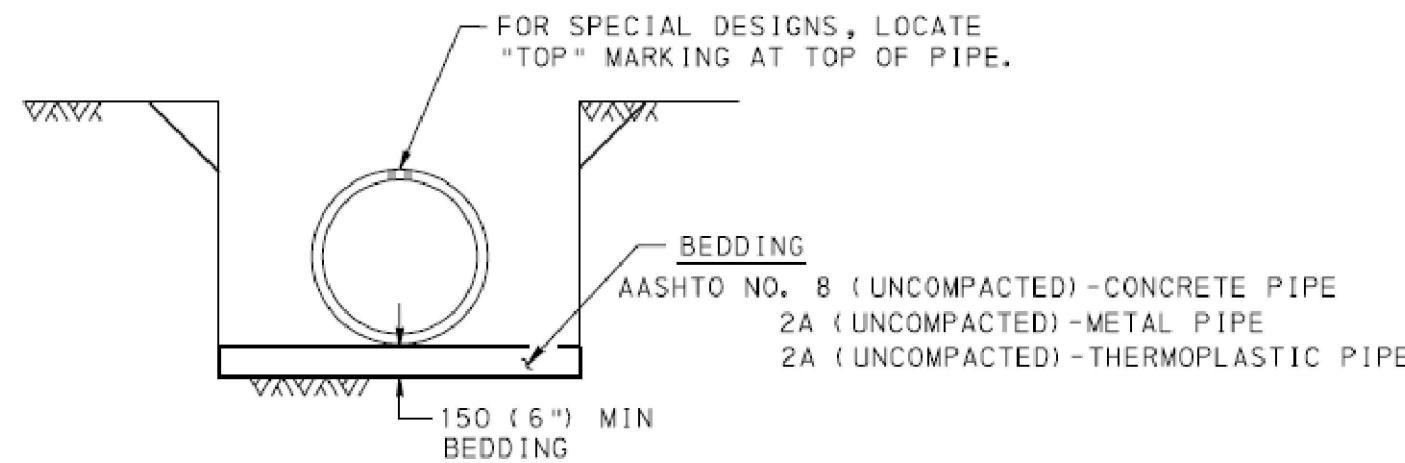
STEP 3 : EXCAVATE THE TRENCH TO THE WIDTH OF THE OUTSIDE DIAMETER OF THE PIPE BARREL PLUS 1200 (4'-0") AND CREATE AN APPROPRIATE BEDDING 150 (6") DEEP.



STEP 4 : FOR CONCRETE PIPE, IF THIS EXCAVATION IS THROUGH ROCK, OR HARD SHALE, OR IN AREAS OF UNDERCUT, PROVIDE 150+40 mm/m (6"+1/2" INCH/FT) OF Do+1200 (4'-0"), BELOW THE INTENDED BOTTOM ELEVATION OF THE PIPE, 400 (16") MAX.

NOTE: IF UNSUITABLE MATERIAL IS FOUND, UNDERCUT AS DIRECTED AND BACKFILL WITH SUITABLE MATERIAL TO BOTTOM OF BEDDING ELEVATION. (UNLESS OTHERWISE SPECIFIED.)

STEP 5 : LAY PIPE ON APPROPRIATE BEDDING. SEE STEP 6D FOR METAL PIPE ARCH AND METAL PLATE PIPE ARCH.



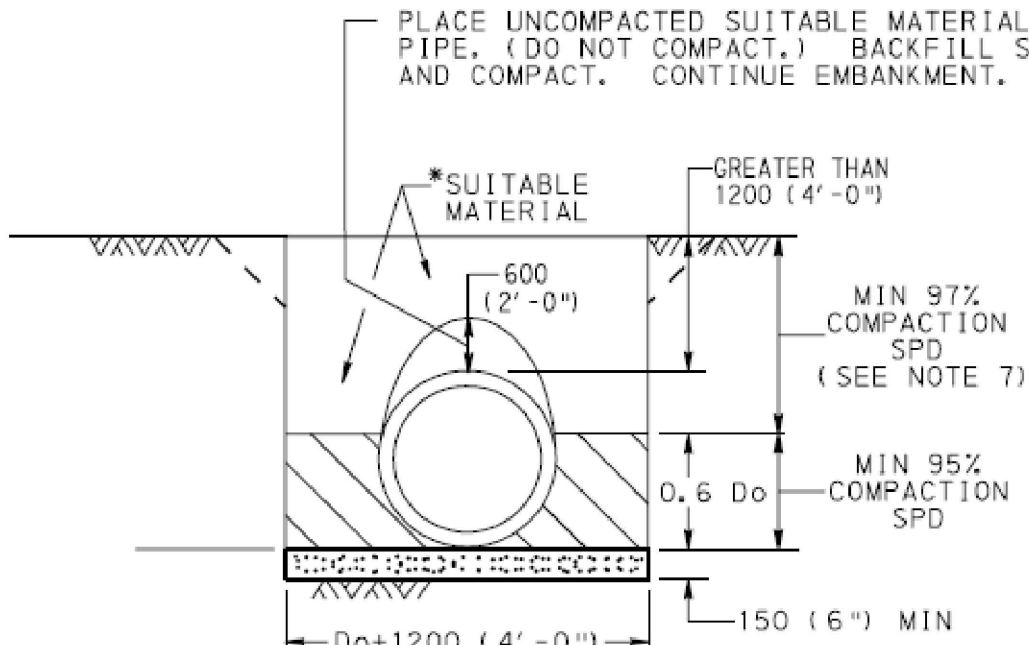
STEP 6 : FOR CONCRETE PIPE, SEE STEP 6A.
: FOR METAL PIPE AND METAL PLATE PIPE, SEE STEP 6B.
: FOR THERMOPLASTIC PIPE, SEE STEP 6C.
: FOR METAL PIPE ARCH AND METAL PLATE PIPE ARCH, SEE STEP 6D.

NOTE:

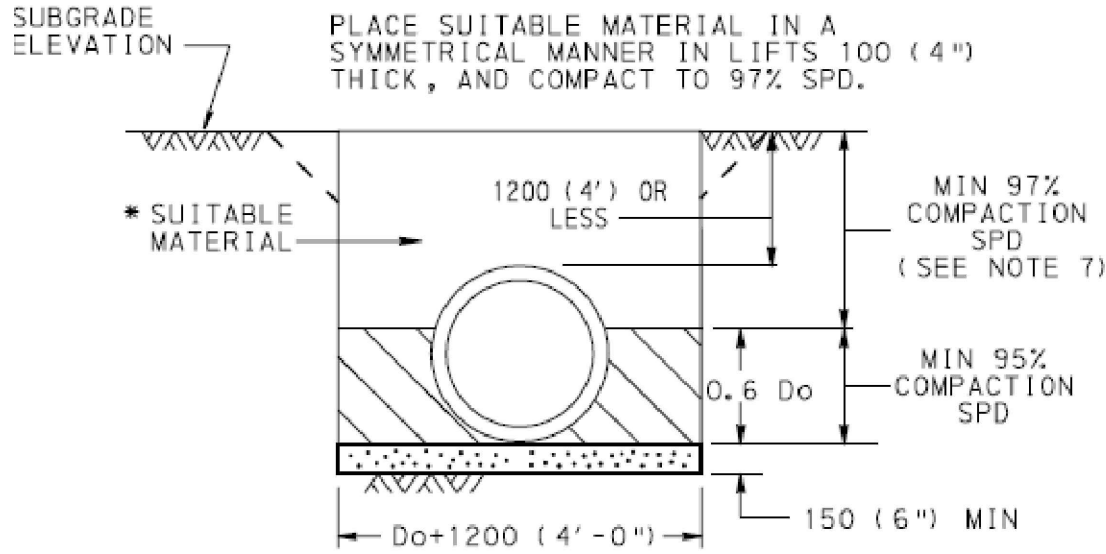
WHEN LAYING PIPE FOR INFILTRATION TRENCHES, LEVEL SPREADERS AND SUBSURFACE STORMWATER STORAGE FACILITIES CARE SHALL BE TAKEN TO AVOID COMPACTION OF SUBGRADE.

STEP 6A : CONCRETE PIPE

PLACE 2A COARSE AGGREGATE MATERIAL, IN LIFTS 100 (4") THICK, ADJACENT TO THE LOWER HAUNCHES TO A HEIGHT OF 0.6 Do. COMPACT TO 95% SPD. TEST THE SIDE BACKFILL MATERIAL AND CONTINUE EMBANKMENT IN ACCORDANCE WITH PUBLICATION 408, SECTION 601.



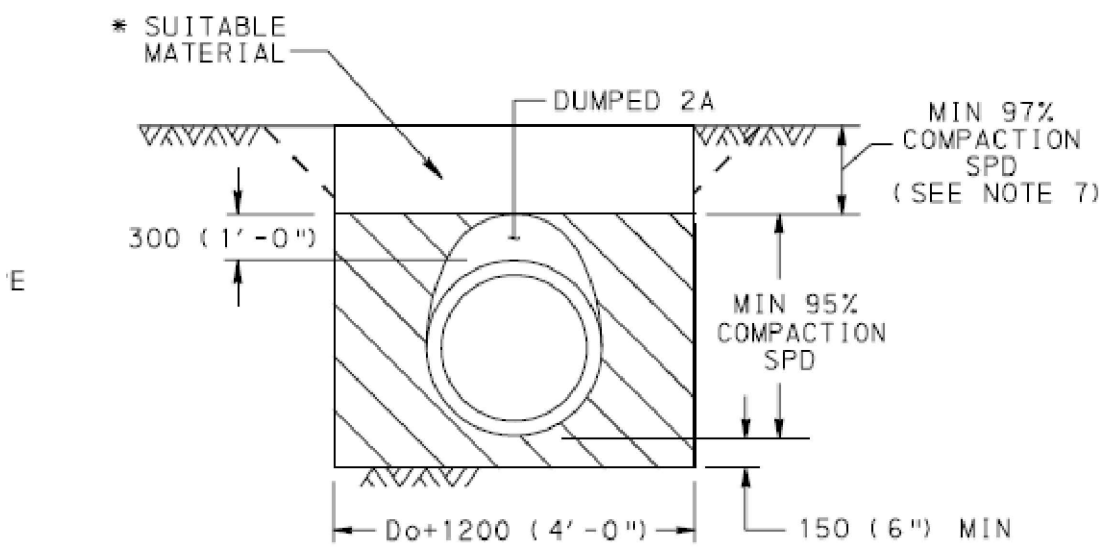
GREATER THAN 1.2 m (4') TO 14.6 m (48')
FOR FILLS OVER 14.6 m (48'), SEE NOTE 8.



SHALLOW FILLS 1200 (4'-0") AND LESS

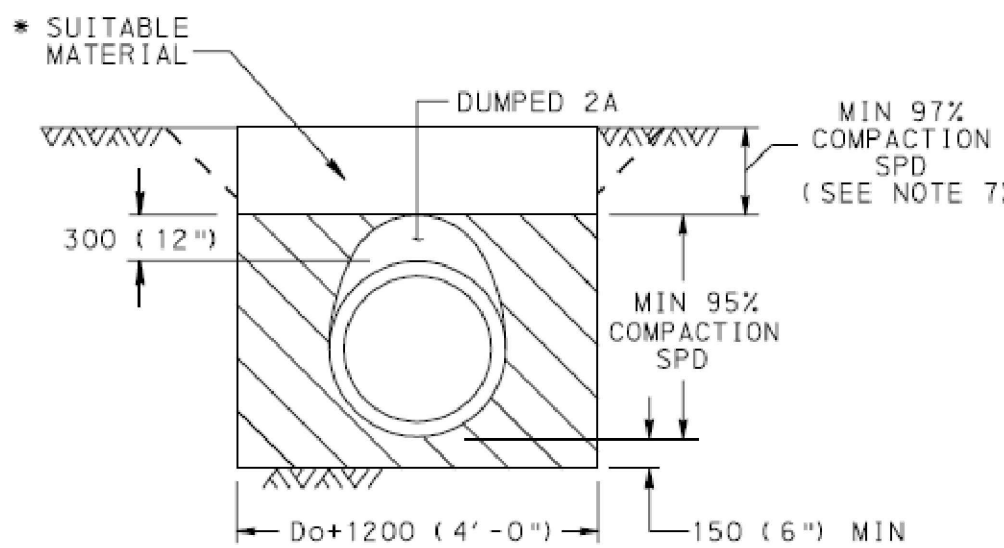
STEP 6B : METAL PIPE AND METAL PLATE PIPE

PLACE 2A COARSE AGGREGATE MATERIAL, IN LIFTS 100 (4") THICK, ADJACENT TO THE LOWER HAUNCHES TO A HEIGHT OF 300 (12") ABOVE TOP OF PIPE. COMPACT TO 95% SPD. TEST THE BACKFILL MATERIAL AND CONTINUE EMBANKMENT IN ACCORDANCE WITH PUBLICATION 408, SECTION 601.



STEP 6C: THERMOPLASTIC PIPE

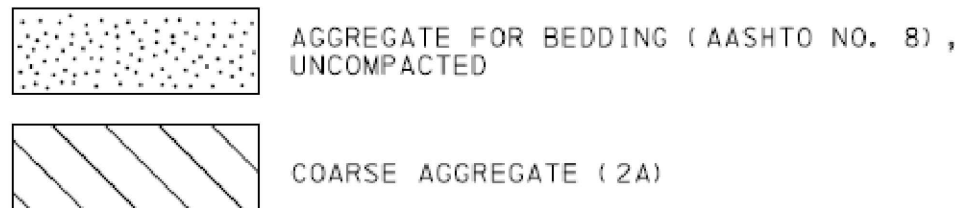
PLACE 2A COARSE AGGREGATE MATERIAL, IN LIFTS 100 (4") THICK, ADJACENT TO THE LOWER HAUNCHES TO A HEIGHT OF 300 (12") ABOVE TOP OF PIPE. COMPACT TO 95% SPD. TEST THE BACKFILL MATERIAL AND CONTINUE EMBANKMENT IN ACCORDANCE WITH PUBLICATION 408, SECTION 601.



NOTES

- THE INSTALLATION OF PIPES 1800 (72") OR GREATER INSIDE DIAMETER OR SPAN IS PERMITTED WITHOUT PLACING EMBANKMENT FIRST. MAKE THE BACKFILL ENVELOPE AS SHOWN ON THIS DRAWING EXCEPT PROVIDE 2A MATERIAL ON EACH SIDE OF THE PIPE EQUAL TO ONE OUTSIDE DIAMETER OR SPAN OF THE PIPE. FOR CONCRETE PIPE, THE WIDTH OF UNCOMPACTED AGGREGATE FOR BEDDING (AASHTO NO. 8) REMAINS AT Do + 1200 (4'-0"). PAYMENT FOR THE 2A MATERIAL IS AS PER NOTE 3.
- A HIGHER STRENGTH PIPE THAN SPECIFIED MAY BE SUPPLIED AT NO ADDITIONAL COST TO THE DEPARTMENT.
- PAYMENT FOR THE BACKFILL ENVELOPE INCLUDING BEDDING, COARSE AGGREGATE AND SUITABLE MATERIAL UP TO 300 (12") ABOVE THE PIPE IS INCIDENTAL TO THE PIPE.
- TO PRECLUDE POINT LOADING ON RELATIVELY RIGID CONCRETE PIPE, DO NOT COMPACT AASHTO NO. 8 BEDDING MATERIAL.
- FOR TRENCH BOX/SHORING INSTALLATION REQUIREMENTS REFER TO PUBLICATION 408, SECTION 601.
- PERMIT PLACEMENT OF BACKFILL MATERIAL IN LAYERS, LIFTS, 200 (8") THICK WHEN USING VIBRATORY COMPACTION EQUIPMENT.
- COMPACT TOP 1000 (3'-0") OF SUBGRADE TO 100% IN ACCORDANCE WITH PUBLICATION 408, SECTION 206.3.
- FOR REINFORCED CONCRETE PIPES INSTALLED WITH GREATER THAN 14.6 m (48') OF FILL, PROVIDE 300 (12") BEDDING MINIMUM AND 400 (16") WHEN ROCK IS PRESENT.

LEGEND



Do = OUTSIDE DIAMETER OF PIPE, MILLIMETERS (INCHES)

SPD = STANDARD PROCTOR DENSITY

ID = INSIDE DIAMETER

* SUITABLE = MATERIAL CONTAINING NO DEBRIS, ORGANIC MATTER, FROZEN MATERIAL OR LARGE STONES WITH A DIAMETER GREATER THAN ONE-HALF THE THICKNESS OF THE COMPACTED LAYERS BEING PLACED.


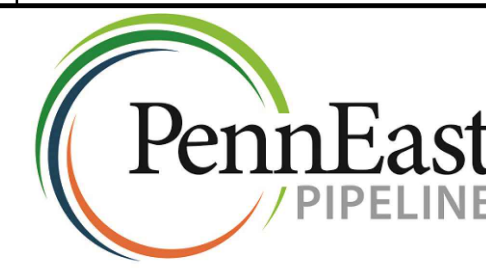
PIPE TRENCH, BEDDING AND BACKFILL DETAIL

NO SCALE

NOTE:

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		PENNEAST PIPELINE PROJECT BLUE MOUNTAIN INTERCONNECT POST CONSTRUCTION STORMWATER MANAGEMENT DETAILS CARBON COUNTY, PENNSYLVANIA			
		DRAWN BY	CAF	DATE ISSUED	10/15/2018
THIS DRAWING IS THE PROPERTY OF PENNEAST PIPELINE COMPANY, LLC (P.E.C.). IT MAY CONTAIN INFORMATION DESCRIBING TECHNOLOGY OWNED BY P.E.C. AND DEEMED TO BE CONFIDENTIAL AND SENSITIVE. IT IS TO BE USED ONLY IN CONNECTION WITH WORK PERFORMED FOR P.E.C. REPRODUCTION WHOLE OR IN PART FOR ANY PURPOSE OTHER THAN WORK FOR P.E.C. IS EXPRESSLY FORBIDDEN EXCEPT BY EXPRESS WRITTEN PERMISSION OF P.E.C. IT IS TO BE RETURNED TO P.E.C. WITHIN 10 BUSINESS DAYS OF COMPLETION OF THE PROJECT. IT IS TO BE DESTROYED AFTER 10 YEARS OF COMPLETION OF THE PROJECT.		CHECKED BY	WMC	SCALE	AS SHOWN
		APPROVED BY	JRD	APPROVED BY	
DWG. NO.		028-03-07-006		REV. NO.	B

POST CONSTRUCTION STORM WATER BMP NOTES:

GENERAL:

- DISTURBANCE TO VEGETATION AND EXISTING DRAINAGE FEATURES SHALL BE LIMITED TO THE GREATEST EXTENT PRACTICAL.
- POST CONSTRUCTION STORMWATER MANAGEMENT (PCSM) BMPS SHALL BE INSTALLED AS LATE IN THE CONSTRUCTION PROCESS AS POSSIBLE.
- AREAS TO BE OCCUPIED BY PCSM BMPS SHALL BE IDENTIFIED PRIOR TO CONSTRUCTION AND SURROUNDED WITH SAFETY FENCE OR OTHER BARRIER. CARE SHALL BE TAKEN TO PREVENT COMPACTION OF SOIL IN UNDISTURBED AREAS AND THOSE AREAS OCCUPIED OR TO BE OCCUPIED TO PCSM BMPS.
- ENTRY OF SEDIMENT LADEN WATER TO THE PCSM BMPS SHALL BE PREVENTED.
- PCSM BMPS SHALL BE INSPECTED DURING CONSTRUCTION AS PER THE REQUIREMENTS OF THE PA BMP MANUAL AND AS SPECIFIED ELSEWHERE ON CONSTRUCTION DRAWINGS.
- ALL PLANTINGS AND SEEDING SHALL BE NATIVE NON-INVASIVE SPECIES.

CONSTRUCTION SEQUENCE:

- AT LEAST SEVEN (7) DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITIES, THE OWNER AND/OR OPERATOR SHALL NOTIFY THE PADEP AND CARBON COUNTY CONSERVATION DISTRICT BY EITHER TELEPHONE OR CERTIFIED MAIL OF THE INTENT TO COMMENCE EARTH DISTURBANCE ACTIVITIES. ATTENDANCE AT A PRE-CONSTRUCTION CONFERENCE IS REQUIRED UPON REQUEST OF THE PADEP.
- AT LEAST THREE (3) DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITIES, ALL CONTRACTORS INVOLVED IN THOSE ACTIVITIES SHALL NOTIFY THE PENNSYLVANIA ONE CALL SYSTEM AT 1-800-242-1776 TO DETERMINE THE LOCATION OF EXISTING SUBSURFACE UTILITIES.
- INSTALL THE ROCK CONSTRUCTION ENTRANCE AS SHOWN ON THE ESC PLAN.
- INSTALL COMPOST FILTER SOCK SEDIMENT TRAPS ST-1 AND ST-2 ON THE NORTHERLY END OF THE INTERCONNECT SITE, DOWNSLOPE OF PROPOSED DISTURBED AREA AS SHOWN ON THE ESC PLAN. COMPOST FILTER SOCK SEDIMENT TRAPS ST-3 AND ST-4 WILL BE INSTALLED ON THE EASTERLY LIMITS OF DISTURBANCE. ENGINEER WILL INSPECT INSTALLATION OF THE COMPOST SOCK SEDIMENT TRAPS PRIOR TO THE START OF CLEARING AND GRUBBING OPERATIONS.
- PERFORM CLEARING AND GRUBBING TO THOSE AREAS DESCRIBED IN EACH STAGE OF WORK. REMOVE EXCESS TOPSOIL FROM THE LIMITS OF DISTURBANCE AND STOCKPILE OFF-SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT ANY OFF-SITE STOCKPILE/WASTE AREAS HAVE AN E&S PLAN APPROVED BY THE LOCAL CONSERVATION DISTRICT OR PADEP PRIOR TO BEING ACTIVATED. AFTER STRIPPING TOPSOIL, ORANGE SAFETY FENCING WILL BE INSTALLED AT THE PERIMETER OF STORMWATER INFILTRATION AREAS TO PREVENT COMPACTION OF SUBGRADE SOILS BY HEAVY CONSTRUCTION EQUIPMENT.
- PERFORM GRADING ACTIVITIES AS DESCRIBED BY PROPOSED CONTOURS, NOTES, AND DETAILS SHOWN ON THE PLAN DRAWINGS. INSTALL WEIGHTED FILTER TUBE IN SWALES 1 AND 2 AND MAINTAIN PER BMP MAINTENANCE SCHEDULE IN SECTION 7 OF THIS REPORT UNTIL THE SITE HAS BEEN STABILIZED. PER PROJECT SPECIFICATIONS, ADDITIONAL TEMPORARY PLACEMENT OF COMPOST FILTER SOCK MAY BE NECESSARY AT THE CONTRACTOR'S DISCRETION, SHOULD ACCELERATED EROSION BE ENCOUNTERED DURING GRADING ACTIVITIES.
- INSTALLATION OF SUBSURFACE STORMWATER DETENTION SYSTEM SHALL BE COORDINATED WITH BULK FILLING OPERATIONS. ENGINEER SHALL INSPECT THE SUBGRADE SOILS PRIOR TO INSTALLATION OF THE GEOTEXTILE FABRIC AND STONE BASE. INSTALL CRUSHED STONE BASE AND PERFORATED HDPE PIPING IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS. FILL THE AREAS BETWEEN THE PIPE RUNS AND THE EDGES WITH CRUSHED STONE. COORDINATE WITH THE ENGINEER FOR FINAL INSPECTION OF THE INSTALLED SUBSURFACE DETENTION SYSTEM BEFORE BACKFILLING. CONTRACTOR SHALL INSPECT THE COMPOST FILTER SOCK SEDIMENT TRAPS DAILY DURING FILLING OPERATIONS AND INSTALLATION OF THE STORMWATER DETENTION SYSTEM AND REMOVE SEDIMENT WHEN IT REACHES 1/3 OF THE HEIGHT OF THE SOCKS
- THE PROPOSED 4-INCH BLUE MOUNTAIN LATERAL PIPELINE WILL BE INSTALLED TO THE INTERCONNECT PAD AREA. ADDITIONAL TEMPORARY PLACEMENT OF COMPOST FILTER SOCK MAY BE NECESSARY AT THE ENGINEER'S OR CONTRACTOR'S DISCRETION SHOULD ACCELERATED EROSION BE ENCOUNTERED DURING TRENCHING, PIPELINE PLACEMENT AND BACKING.
- GRADES WILL BE LEFT 1 FOOT BELOW TOP OF STORMWATER INLET GRATE ELEVATIONS AT IN-1, IN-2 AND IN-3 TO PREVENT SILT-LADEN STORMWATER RUNOFF FROM ENTERING THE SUBSURFACE PIPING. INLET FILTER BAGS SHALL BE INSTALLED ON INLET GRATES AND CHECKED PER BMP MAINTENANCE SCHEDULE. INSTALL PCSM BMPS IN ACCORDANCE WITH PROPOSED CONTOURS, NOTES, AND DETAILS SHOWN ON THE E&SCP & PCSM PLAN DRAWINGS. ONCE THE SITE HAS BEEN STABILIZED AND INSPECTED BY THE ENGINEER, GRADING SHALL BE BROUGHT TO FINAL ELEVATIONS.
- GRAVEL SHALL BE INSTALLED ON THE PAD AREA AND ACCESS ROAD. GRAVEL SHALL BE FINE GRADED AND COMPACTED.
- PLACE TOPSOIL IN AREAS TO BE VEGETATED. FINE GRADE TOPSOIL, APPLY FERTILIZER AND SEED. AT THE COMPLETION OF SEEDING, INSTALL EROSION CONTROL BLANKETS OVER SEEDED AREAS IN ACCORDANCE WITH THIS PLAN.
- TEMPORARY BMPS INSTALLED BY CONTRACTOR DURING GRADING SHALL REMAIN IN PLACE UNTIL FINAL STABILIZATION HAS OCCURRED WITH A MINIMUM UNIFORM 70% PERENNIAL VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER, WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED SURFACE EROSION AND SUBSURFACE CHARACTERISTICS SUFFICIENT TO RESIST SLIDING AND OTHER MOVEMENTS.
- UPON ACHIEVING SITE STABILIZATION, EXCAVATE ACCUMULATED SEDIMENT IN TRAPS. REPAIR, REGRADE, RESEED, AND MULCH ANY BARE SOIL AREAS AS NEEDED TO STABILIZE THE SURFACE.
- CLEAN WORK AREA OF ANY DEBRIS CREATED DURING CONSTRUCTION ACTIVITIES.

SPECIFICATIONS:

PCSM FACILITIES SHALL BE CONSTRUCTED PER PENNSYLVANIA STORMWATER BEST MANAGEMENT PRACTICES MANUAL

- SITE PREPARATION
 - ALL EXCAVATION AREAS, EMBANKMENTS, AND WHERE STRUCTURES ARE TO BE INSTALLED SHALL BE CLEARED AND GRUBBED AS NECESSARY.
 - A MINIMUM 10-FOOT RADIUS AROUND THE INLET AND OUTLET STRUCTURES CAN BE CLEARED TO ALLOW CONSTRUCTION.
 - CARE SHOULD BE TAKEN TO PREVENT COMPACTION OF THE BOTTOM OF THE BASIN. IF COMPACTION SHOULD OCCUR, SOILS SHOULD BE RESTORED AND AMENDED TO A DEPTH OF 18" USING A MIXTURE OF 3 PARTS SAND TO 1 PART TOPSOIL.
- EARTH FILL MATERIAL & PLACEMENT
 - THE FILL MATERIAL SHOULD BE TAKEN FROM APPROVED DESIGNATED EXCAVATION AREAS. IT SHOULD BE FREE OF ROOTS, STUMPS, WOOD, RUBBISH, STONES GREATER THAN 6 INCHES, OR OTHER OBJECTIONABLE MATERIALS. MATERIALS ON THE OUTER SURFACE OF THE EMBANKMENT MUST HAVE THE CAPABILITY TO SUPPORT VEGETATION.
 - THE MOVEMENT OF THE HAULING AND SPREADING EQUIPMENT OVER THE SITE SHOULD BE CONTROLLED. FOR THE EMBANKMENT, EACH LIFT SHOULD BE COMPACTED TO 95% OF THE STANDARD PROCTOR. FILL MATERIAL SHOULD CONTAIN SUFFICIENT MOISTURE SO THAT IF FORMED IN TO A BALL IT WILL NOT CRUMBLE, YET NOT BE SO WET THAT WATER CAN BE SQUEEZED OUT.
- STRUCTURE BACKFILL
 - BACKFILL ADJACENT TO PIPES AND STRUCTURES SHOULD BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE ADJOINING FILL MATERIAL. THE FILL SHOULD BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED FOUR INCHES IN THICKNESS AND COMPACTED BY HAND TAMPERS OR OTHER MANUALLY DIRECTED COMPACTION EQUIPMENT. THE MATERIAL SHOULD FILL COMPLETELY ALL SPACES UNDER AND ADJACENT TO THE PIPE. AT NO TIME DURING THE BACKFILLING OPERATION SHOULD DRIVEN EQUIPMENT BE ALLOWED TO OPERATE CLOSER THAN FOUR FEET TO ANY PART OF THE STRUCTURE. EQUIPMENT SHOULD NOT BE DRIVEN OVER ANY PART OF A CONCRETE STRUCTURE OR PIPE, UNLESS THERE IS A COMPACTED FILL OF 24 INCHES OR GREATER OVER THE STRUCTURE OR PIPE.
 - STRUCTURE BACKFILL MAY BE FLOWABLE FILL MEETING THE REQUIREMENTS OF THE PADOT STANDARD SPECIFICATIONS FOR CONSTRUCTION. MATERIAL SHOULD BE PLACED SO THAT A MINIMUM OF 6 INCHES OF FLOWABLE FILL SHOULD BE UNDER (BEDDING), OVER AND, ON THE SIDES OF THE PIPE. IT ONLY NEEDS TO EXTEND UP TO THE SPRING LINE FOR RIGID CONDUITS. AVERAGE SLUMP OF THE FILL MATERIAL SHOULD BE 7 INCHES TO ASSURE FLOWABILITY OF THE MIXTURE. ADEQUATE MEASURES SHOULD BE TAKEN (SAND BAGS, ETC.) TO PREVENT FLOATING THE PIPE. WHEN USING FLOWABLE FILL METAL PIPE SHOULD BE BITUMINOUS COATED. ADJOINING SOIL FILL SHOULD BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED 4 INCHES IN THICKNESS AND COMPACTED BY HAND TAMPERS OR OTHER MANUALLY DIRECTED COMPACTION EQUIPMENT.
 - REFER TO CHAPTER 220 OF PENNDOT PUB. 408 (2000).

- ROCK RIPRAP
 - ROCK RIPRAP SHOULD MEET THE REQUIREMENTS OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS.
- STABILIZATION
 - BORROW AREAS SHOULD BE GRADED TO PROVIDE PROPER DRAINAGE AND LEFT IN A SLIGHTLY CONDITION. EXPOSED SURFACES OF THE EMBANKMENT, SPILLWAY, SPOIL AND BORROW AREAS, AND BERMS SHOULD BE STABILIZED BY SEEDING, PLANTING AND MULCHING.
- DRAINAGE PIPING, FLARED END SECTIONS, PRECAST STRUCTURES AND CASTINGS SHALL BE CONSTRUCTED IN ACCORDANCE WITH PADOT FORM 408 AS AMENDED.
- DRAINAGE PIPING SHALL HAVE WATER TIGHT JOINTS.

MAINTENANCE AND INSPECTION NOTES:

THESE REQUIREMENTS ARE INDEPENDENT OF THE EROSION AND SEDIMENT CONTROL REQUIREMENT DURING CONSTRUCTION. HOWEVER CERTAIN TASKS MAY OVERLAP. A REPRESENTATIVE FROM PENNEAST WILL BE RESPONSIBLE FOR THE OPERATION AND MAINTENANCE OF ALL STORMWATER BMP'S INSTALLED AT THIS SITE.

- SWALES:

MAINTENANCE ACTIVITIES TO BE DONE ANNUALLY AND WITHIN 48 HOURS AFTER EVERY MAJOR STORM EVENT (> 1 INCH RAINFALL DEPTH):

 - INSPECT AND CORRECT EROSION PROBLEMS, DAMAGE TO VEGETATION, AND SEDIMENT AND DEBRIS ACCUMULATION (ADDRESS WHEN > 3 INCHES AT ANY SPOT OR COVERING VEGETATION)
 - INSPECT VEGETATION ON SIDE SLOPES FOR EROSION AND FORMATION OF RILLS OR GULLIES. CORRECT AS NEEDED
 - INSPECT FOR POOLS OF STANDING WATER, DEWATER AND DISCHARGE TO AN APPROVED LOCATION AND RESTORE TO DESIGN GRADE
 - MOW AND TRIM VEGETATION TO ENSURE SAFETY, AESTHETICS, PROPER SWALE OPERATION, OR TO SUPPRESS WEEDS AND INVASIVE VEGETATION. DISPOSE OF CUTTINGS IN A LOCAL COMPOSTING FACILITY; MOW ONLY WHEN SWALE IS DRY TO AVOID RUTTING
 - INSPECT FOR LITTER; REMOVE PRIOR TO MOWING
 - INSPECT FOR UNIFORMITY IN CROSS-SECTION AND LONGITUDINAL SLOPE. CORRECT AS NEEDED
 - INSPECT SWALE INLET (CURB CUTS, PIPES, ETC.) AND OUTLET FOR SIGNS OF EROSION OR BLOCKAGE, CORRECT AS NEEDED

MAINTENANCE ACTIVITIES TO BE DONE AS NEEDED:

 - PLANT ALTERNATIVE GRASS SPECIES IN THE EVENT OF UNSUCCESSFUL ESTABLISHMENT
 - RESEED BARE AREAS; INSTALL APPROPRIATE EROSION CONTROL MEASURES WHEN NATIVE SOIL IS EXPOSED OR EROSION CHANNELS ARE FORMING
 - ROTTOTILL AND REPLANT SWALE IF DRAW DOWN TIME IS MORE THAN 48 HOURS
 - INSPECT AND CORRECT CHECK DAMS WHEN SIGNS OF ALTERED WATER FLOW (CHANNELIZATION, OBSTRUCTIONS, EROSION, ETC.) ARE IDENTIFIED
 - WATER DURING DRY PERIODS, FERTILIZE, AND APPLY PESTICIDE ONLY WHEN ABSOLUTELY NECESSARY

MAINTENANCE UNDER WINTER CONDITIONS:

 - INSPECT SWALE IMMEDIATELY AFTER THE SPRING MELT, REMOVE RESIDUALS (E.G. SAND) AND REPLACE DAMAGED VEGETATION WITHOUT DISTURBING REMAINING VEGETATION.
 - IF ROADSIDE OR PARKING LOT RUNOFF IS DIRECTED TO THE SWALE, MULCHING AND/OR SOIL AERATION/MANIPULATION MAY BE REQUIRED IN THE SPRING TO RESTORE SOIL STRUCTURE AND MOISTURE CAPACITY AND TO REDUCE THE IMPACTS OF DEICING AGENTS.
 - USE NONTOXIC, ORGANIC DEICING AGENTS, APPLIED EITHER AS BLENDED, MAGNESIUM CHLORIDE-BASED LIQUID PRODUCTS OR AS PRETREATED SALT.
 - USE SALT-TOLERANT VEGETATION IN SWALES.
- INFILTRATION BASINS:
 - OUTLET CONTROL STRUCTURES WILL BE INSPECTED AND CLEANED AT LEAST TWO TIMES PER YEAR AND AFTER RUNOFF EVENTS.
 - THE BASIN WILL BE INSPECTED AFTER RUNOFF EVENTS TO MAKE SURE THAT RUNOFF DRAINS DOWN WITHIN 72 HOURS. THE BASIN WILL ALSO BE INSPECTED FOR ACCUMULATION OF SEDIMENT, DAMAGE TO OUTLET CONTROL STRUCTURES, EROSION CONTROL MEASURES, SIGNS OF WATER CONTAMINATION/ SPILLS. ACCUMULATED SEDIMENT WILL BE REMOVED (ADDRESS WHEN > 3 INCHES AT ANY SPOT) BY EITHER MANUAL METHODS OR VACUUM TRUCK.
 - SEDIMENT WILL BE PROPERLY DISPOSED OF.

TABLE E-1 LIMITATIONS OF PENNSYLVANIA SOILS
PERTAINING TO EARTHMOVING PROJECTS
(ABSENCE OF AN X DOES NOT MEAN "NO POTENTIAL LIMITATION")

LIMITING SOIL CHARACTERISTICS LEGEND															
MAP SYMBOL	SOIL NAME	CUTBANKS CAVE	CORROSIVE TO CONCRETE/STEEL	DROUGHTY	EASILY ERODIBLE	FLOODING	DEPTH TO SATURATED ZONE/SEASONAL HIGH WATER TABLE	HYDRIC/HYRIC INCLUSIONS	LOW STRENGTH/ LANDSLIDE PRONE	SLOW PERCOLATION	PIPING	POOR SOURCE OF TOPSOIL	FROST ACTION	SHRINK - SWELL	POTENTIAL SINKHOLE
BhD	BUCHANAN VERY STONY LOAM, 8 TO 25 PERCENT SLOPES	X	C/S	X	X		X	X	X	X	X	X	X		
MbC2	MECKESVILLE CHANNERY LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED	X	C/S				X		X	X	X	X	X		
McD	MARDIN VERY STONY LOAM, 8 TO 25 PERCENT SLOPES	X	S	X	X		X	X	X	X	X		X		

SOURCE: PADEP EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL, TG NO.363-2134-008

THE SOIL LIMITATIONS SHALL BE ADDRESSED AS FOLLOWS:

LIMITATIONS AND RESOLUTIONS:

LIMITATION: CUTBANKS CAVE, LOW STRENGTH - CUTBANKS HAVE POTENTIAL TO CAVE AND MANY SOILS ARE LOW STRENGTH.
RESOLUTION: CONTRACTOR SHALL BE AWARE OF POTENTIAL ISSUES AND FOLLOW OSHA GUIDELINES FOR OPEN TRENCHING. LOW SOIL STRENGTH IS NOT A CONCERN DUE TO THE NATURE OF THE PROPOSED PROJECT. UTILITY TRENCHING WILL NOT BE ADVERSELY EFFECTED BY POOR SOIL STRENGTH.

LIMITATION: CORROSIVE TO STEEL AND/OR CONCRETE
RESOLUTION: IF STEEL PIPE IS USED RUST PROTECTION BY COATINGS AND/OR USE OF CATHODIC PROTECTION IS RECOMMENDED. IF CONCRETE IS USED SOIL SHALL BE TESTED AND CONCRETE COATED AS RECOMMENDED BY MANUFACTURER.

LIMITATION: DROUGHTY - SOILS EXHIBITING A POOR MOISTURE-HOLDING CAPACITY, WHICH MAY LIMIT THE VEGETATIVE STABILIZATION ABILITY OF THE SOIL.
RESOLUTION: FOR DROUGHTY SOILS, CONTRACTOR TO REFER TO "TABLE 11-3: PLANT TOLERANCES OF SOIL LIMITATION FACTORS" TO SELECT APPROPRIATE VEGETATION. EROSION CONTROL BLANKETS SHOULD ALSO BE CONSIDERED IN SOIL CONDITIONS THAT MAKE REVEGETATION DIFFICULT (E.G. DROUGHTY). WHEN INSTALLED PROPERLY, EROSION CONTROL BLANKETS CAN HELP HOLD SOIL PARTICLES IN PLACE AND RETAIN SOIL MOISTURE, PROMOTING SEED GERMINATION.

LIMITATION: EASILY ERODIBLE
RESOLUTION: SPECIAL ATTENTION SHALL BE GIVEN TO MAINTAINING EXISTING VEGETATION IN EASILY ERODIBLE SOILS, TO THE EXTENT POSSIBLE. EASILY ERODIBLE SOILS WITHIN 50 FEET OF A SURFACE WATER SHOULD BE BLANKETED. WHEREVER ERODIBLE SOILS ARE PRESENT, OR WHERE THERE IS NOT A SUFFICIENT VEGETATIVE FILTER STRIP BETWEEN THE WATERBAR AND A RECEIVING SURFACE WATER, THE WATERBAR SHOULD BE PROVIDED WITH A TEMPORARY PROTECTIVE LINER.

LIMITATION: FLOODING - ANY SOIL SUBJECT TO INUNDATION DURING A 2-YEAR/24HR STORM EVENT.
RESOLUTION: (SEE WET SOILS)

LIMITATION: HIGH WATER TABLE, POTENTIALLY HYDRIC - HIGH WATER TABLE IS TO BE EXPECTED AND MANY OF THE SOILS ARE POTENTIALLY HYDRIC.
RESOLUTION: FOLLOW E&S PLAN WITH REGARD TO PUMPING AND DEWATERING. DISCHARGE OF SEDIMENT LADEN WATER IS PROHIBITED UNLESS WITHOUT FIRST PASSING THRU A "PUMPED WATER FILTER BAG" BMP.

LIMITATION: HYDRIC / HYRIC INCLUSIONS - A SOIL THAT IS SATURATED, FLOODED, OR PONDED LONG ENOUGH DURING THE GROWING SEASON TO DEVELOP ANAEROBIC-CONDITIONS. WHEN SUCH A SOIL IS LOCATED IN AN AREA THAT HAS HYDROPHYTIC VEGETATION AND WETLAND HYDROLOGY, A WETLAND IS PRESENT.
RESOLUTION: HYDRIC SOILS THAT ARE DELINEATED WETLANDS, SHOULD BE AVOIDED TO THE EXTENT POSSIBLE. STAGING AREAS SHOULD BE LOCATED 50 FEET FROM THE EDGE OF WETLAND. MOVEMENT OF VEHICLES ACROSS WETLAND MUST BE MINIMIZED. WHERE VEHICLES NEED TO CROSS WETLANDS, THE USE OF TEMPORARY TIMBER MATS SHALL BE USED DUE TO THE POTENTIAL FOR RUTTING. TRENCH PLUGS SHALL BE INSTALLED TO PREVENT THE TRENCH FROM DRAINING THE WETLANDS OR CHANGING THE HYDROLOGY.

LIMITATION: LOW STRENGTH / LANDSLIDE PRONE - SOILS WITH LOW STRENGTH HAVE A LESSER ABILITY TO RESIST SLOPE FAILURE, SUCH AS SLUMPING, FLOWING, ETC. MATERIALS WITH LOW SHEAR STRENGTH ARE MORE SUSCEPTIBLE TO LANDSLIDES AND EMBANKMENT FAILURES.
RESOLUTION: PRECAUTIONS SHOULD BE TAKEN TO PREVENT SLOPE FAILURES DUE TO IMPROPER CONSTRUCTION PRACTICES SUCH AS OVER-STEEPENING AND OVERLOADING SLOPES, REMOVAL OF LATERAL SUPPORT, AND FAILURE TO PREVENT SATURATION OF SLOPES. SETBACKS SHOULD COMPLY WITH THE STANDARDS CONTAINED IN CHAPTER 16 OF THE, "PADEP - EROSION AND SEDIMENT CONTROL PROGRAM MANUAL," UNLESS IT CAN BE SHOWN THAT PROPOSED CUTS AND FILLS DO NOT POSE A HAZARD TO PUBLIC SAFETY OR SURFACE WATERS. ALSO, ROAD FILL MATERIAL WILL LIKELY NEED TO BE IMPORTED IN AREAS WHERE SOILS HAVE LOW STRENGTH.

LIMITATION: SLOW PERCOLATION - PERMEABILITY RATE LESS THAN OR EQUAL TO 0.2 INCHES/HR.
RESOLUTION: BMPS TO BE INSPECTED AFTER RUNOFF EVENTS, MAKE SURE THERE IS ADEQUATE AREA FOR PUMPED WATER DISCHARGE. PCSM FACILITIES DESIGN BASED ON SITE SPECIFIC TESTING.
LIMITATION: PIPING
RESOLUTION: PIPING POTENTIAL IN THE SOIL WILL BE MINIMIZED BY THE USE OF TRENCH PLUGS. FURTHERMORE, ANY PLANNED EMBANKMENTS OR PERMANENT IMPOUNDMENTS SUSCEPTIBLE TO PIPING SHALL UTILIZE ANTI-SEEP COLLARS OR FILTER DIAPHRAGMS ON OUTLET BARRELS.

LIMITATION: LIMITED AVAILABLE TOPSOIL
RESOLUTION: ANY EXCAVATED TOPSOIL WILL BE STOCKPILED AND REUSED. IF NECESSARY, ADDITIONAL TOPSOIL WILL BE BROUGHT ON-SITE.

LIMITATION: FROST ACTION - THE LIKELIHOOD OF UPWARD OR LATERAL EXPANSION OF THE SOIL CAUSED BY THE FORMATION OF SEGREGATED ICE LENSES, OR FROST HEAVE, AND THE SUBSEQUENT COLLAPSE OF THE SOIL AND LOSS OF STRENGTH ON THAWING, WHICH CAN DAMAGE ROADS, BUILDINGS, AND OTHER STRUCTURES AS WELL AS PLANT ROOTS.
RESOLUTION: PRECAUTIONS ARE NEEDED TO PREVENT DAMAGE TO ROADWAYS AND STRUCTURES.

LIMITATION: WET SOILS - SOME SOILS MAY EXHIBIT A HIGH WATER TABLE OR PONDING.
RESOLUTION: IF HIGH WATER TABLE IS ENCOUNTERED, TRENCH DEWATERING WILL BE EMPLOYED. LOCATE PCSM FACILITIES AWAY FROM WET SOILS.

LIMITATION: MIN. DEPTH TO BEDROCK - SOME SOILS HAVE A MIN DEPTH OF BEDROCK LESS THAN THE TYPICAL TRENCH DEPTH OF 7 FT (ASSUMES 3 FT OF COVER, PIPE DIAMETER, AND BEDDING DEPTH OF 1 FT).
RESOLUTION: CONTRACTOR TO PLAN FOR ROCK REMOVAL DURING TRENCHING OPERATIONS. FOR SEDIMENT BARRIERS REQUIRING STAKING (E.G. SILT FENCES, ETC.), DEPTH TO BEDROCK LESS THAN 2 FT CAN IMPACT ABILITY TO DRIVE STAKE AND/OR POLE (FOR SUPER SILT FENCE). IN THESE AREAS, COMPOST FILTER SOCK OR OTHER APPLICABLE BMP NOT REQUIRING STAKING MAY BE CONSIDERED.

LIMITATION: pH - SOME SOILS HAVE pH VALUES LESS THAN 5.5, WHICH MAY LIMIT THE VEGETATIVE STABILIZATION ABILITY OF THE SOIL.
RESOLUTION: AS IS TYPICAL FOR THESE TYPE OF SOILS, LIME WILL BE ADDED AS NEEDED TO PRODUCE VEGETATIVE STABILITY.

LIMITATION: LOW FERTILITY
RESOLUTION: IF NECESSARY TO PRODUCE VEGETATIVE STABILITY OF THE SOIL, FERTILIZER OR NUTRIENT SUPPLEMENTS WILL BE ADDED TO THE SOIL TO PRODUCE VEGETATIVE STABILITY. FOR LOW FERTILITY SOILS, CONTRACTOR TO REFER TO "TABLE 11-3: PLANT TOLERANCES OF SOIL LIMITATION FACTORS" TO SELECT APPROPRIATE VEGETATION. EROSION CONTROL BLANKETS SHOULD ALSO BE CONSIDERED IN SOIL CONDITIONS THAT MAKE REVEGETATION DIFFICULT (E.G. LOW FERTILITY). WHEN INSTALLED PROPERLY, EROSION CONTROL BLANKETS CAN HELP HOLD SOIL PARTICLES IN PLACE AND RETAIN SOIL MOISTURE, PROMOTING SEED GERMINATION.

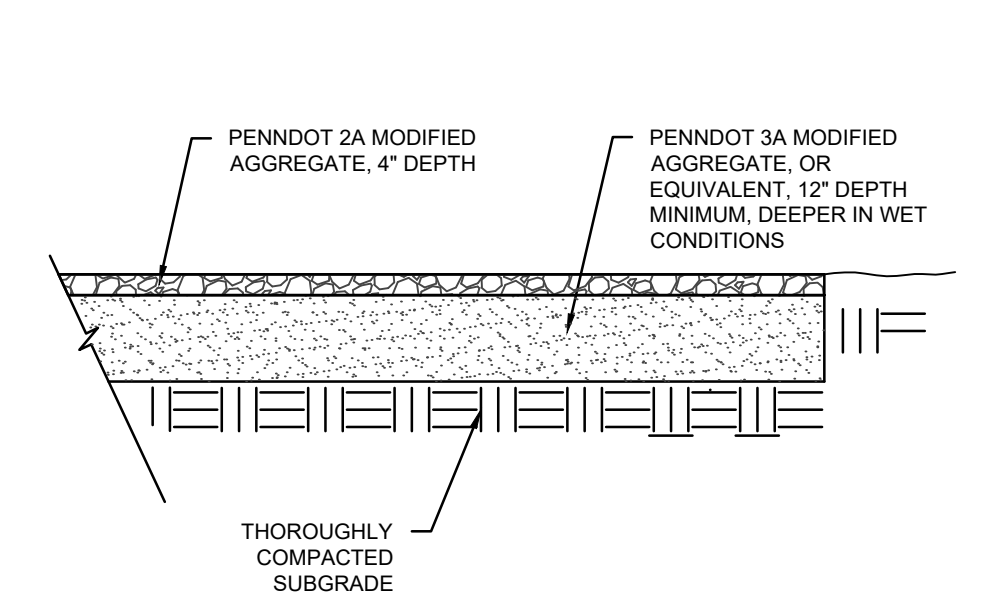
Test Pit No.	Existing Grade Elevation (feet)	Proposed BMP Invert (feet)	Infiltration Test Elevation (feet)	Excavation Depth Elevation (feet)	Depth to High Groundwater (feet)
BMP-6	649.0	639.0	646.5	644.5	No evidence of high groundwater observed
BMP-7	652.4	639.0	649.6	647.6	No evidence of high groundwater observed
BMP-8	642.7	639.0	638.7	636.7	No evidence of high groundwater observed
BMP-9	643.2	639.0	640.1	638.1	No evidence of high groundwater observed

Test Pit	Test #1	Test #2	Final Rate Used
BMP-6	0.25 inch/hr	0.25 inch/hr	0.25 inch/hr
BMP-7	0.50 inch/hr	0.25 inch/hr	0.38 inch/hr
Subsurface Infiltration Basin			
BMP-8	6.60 inch/hr	5.40 inch/hr	6.00 inch/hr
BMP-9	3.00 inch/hr	6.00 inch/hr	4.50 inch/hr
Observed Overall Rate			5.25 inch/hr
Design Rate (Factor of Safety of 2)			2.63 inch/hr

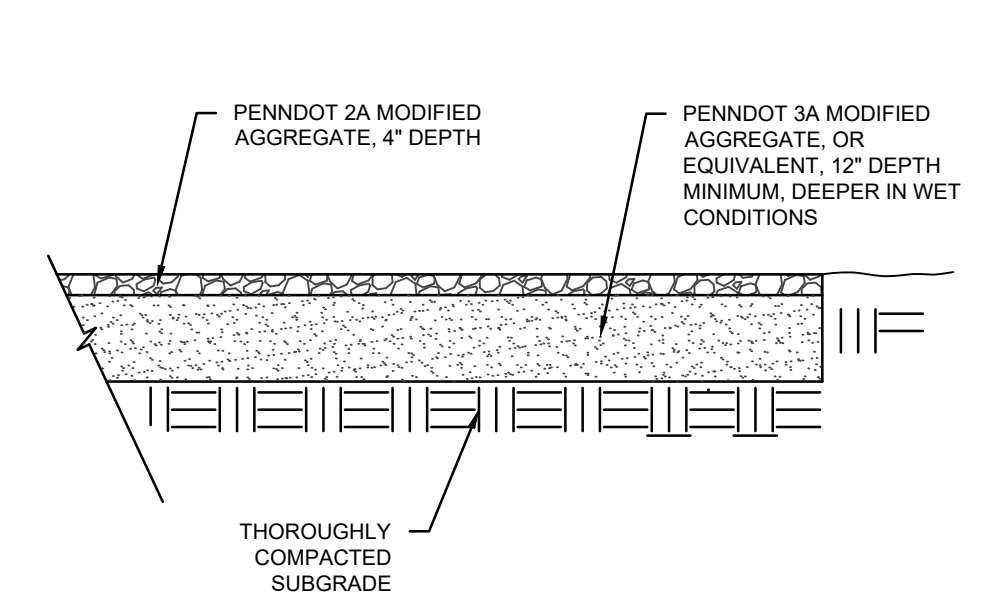
TEST PIT DATA



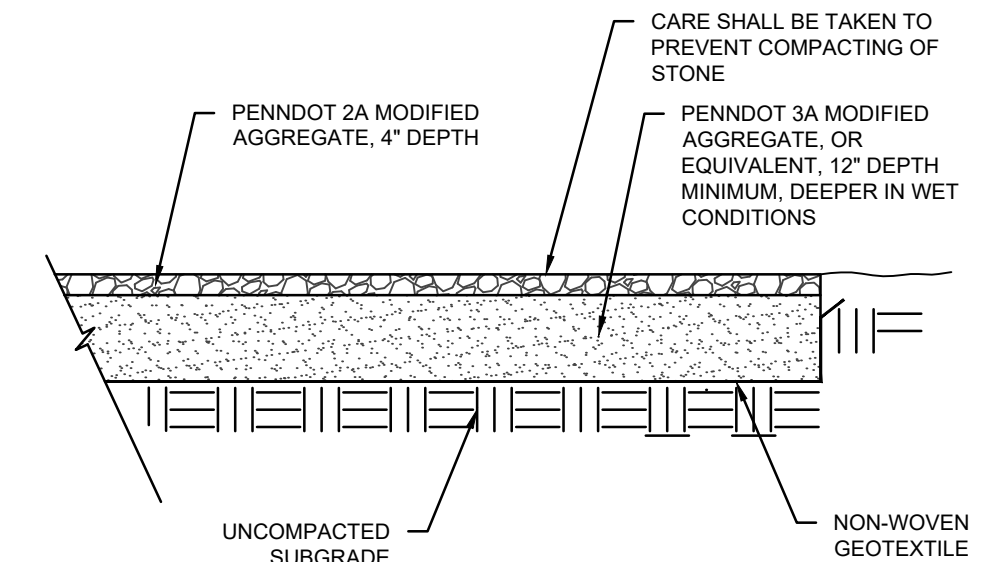
		CLIENT APPROVAL			
		DATE			
REVISIONS					
NO.	DESCRIPTION	DATE	DRAWN	CK	APPR
A	ISSUED FOR PADEP	10/15/2019	CAF(MM)	WMC(MM)	JRD(MM)
B	RE-ISSUED FOR PADEP	10/2019	MWF(MM)	DOW(MM)	WMC(MM)
			PENNEAST PIPELINE PROJECT BLUE MOUNTAIN INTERCONNECT POST CONSTRUCTION STORMWATER MANAGEMENT DETAILS CARBON COUNTY, PENNSYLVANIA		
			DRAWN BY CAF DATE ISSUED 10/15/2018 CHECKED BY WMC SCALE AS SHOWN APPROVED BY JRD APPROVED BY		
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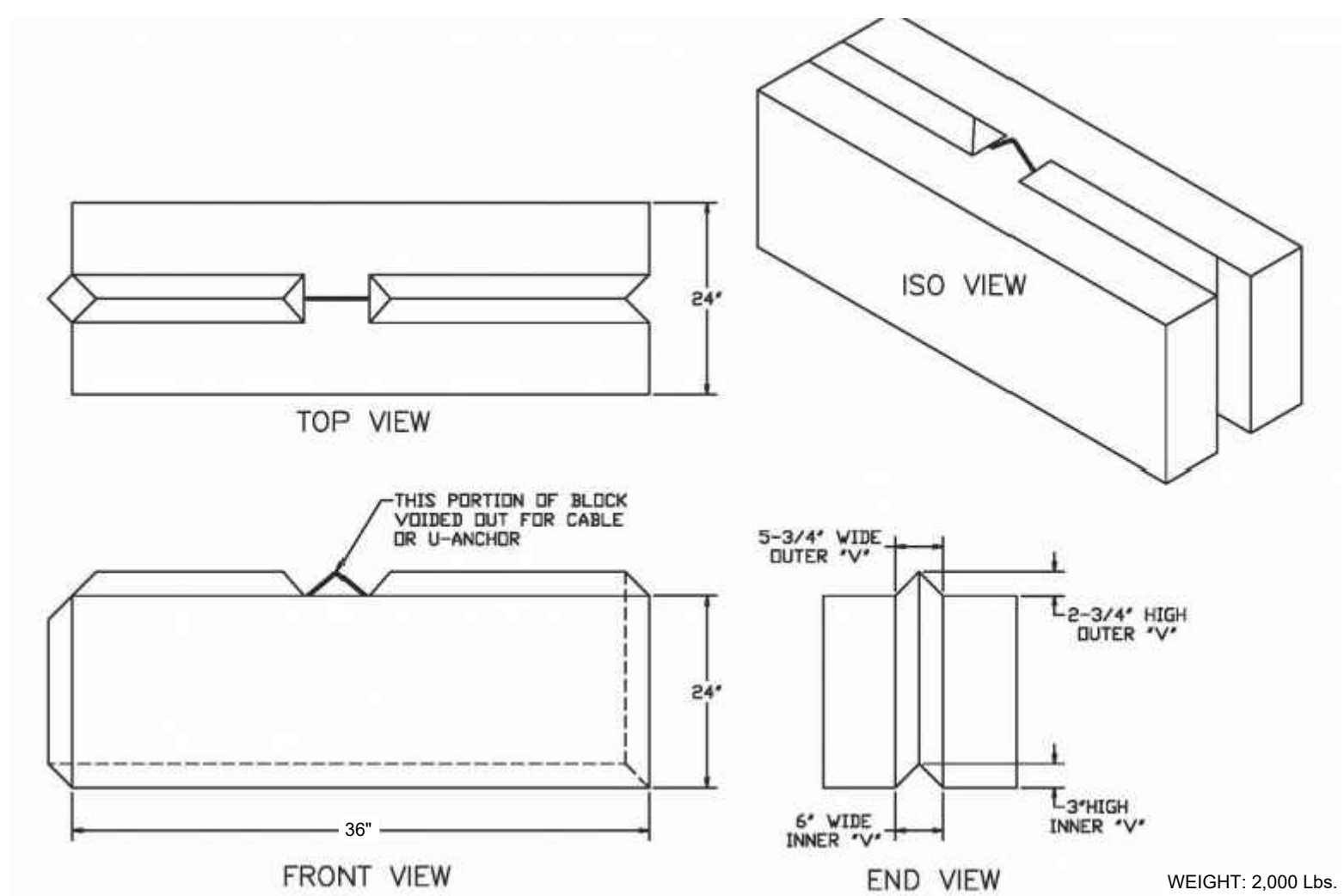
TYPICAL ACCESS ROAD CROSS-SECTION DETAIL
N.T.S.



TYPICAL PAD CROSS SECTION DETAIL
N.T.S.



PAD INFILTRATION AREA CROSS SECTION DETAIL
(COMPACTION TO BE MINIMIZED)
N.T.S.



TYPICAL CONCRETE BLOCK DETAIL
(NOT TO SCALE)

CLIENT APPROVAL

DATE

REVISIONS					
NO.	DESCRIPTION	DATE	DRAWN	CK	APPR
A	ISSUED FOR PADEP	10/15/2018	CAF(MM)	WMC(MM)	JRD(MM)
B	RE-ISSUED FOR PADEP	10/2019	MWF(MM)	DOW(MM)	WMC(MM)

PENNEAST PIPELINE PROJECT
BLUE MOUNTAIN INTERCONNECT
TYPICAL ACCESS ROAD AND PAD SECTIONS
CARBON COUNTY, PENNSYLVANIA

DRAWN BYCAFDATE ISSUED10/15/2018

CHECKED BYWMCSCALEAS SHOWN

APPROVED BYJRDAPPROVED BY

DWG. NO.028-03-07-008REV. NO.8

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