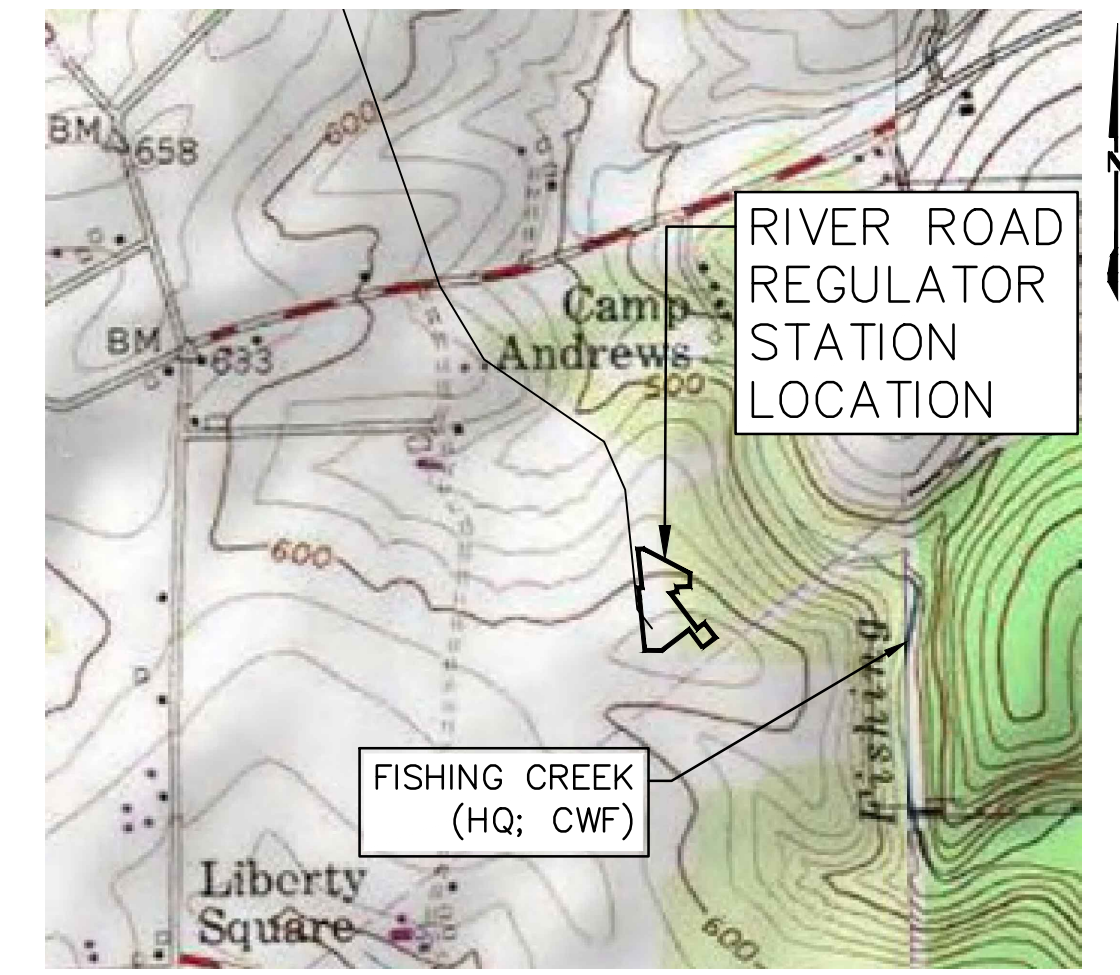


ATLANTIC SUNRISE PROJECT PROPOSED 42" NATURAL GAS PIPELINE

SOIL EROSION & SEDIMENT CONTROL AND LAYOUT PLANS FOR RIVER ROAD REGULATOR STATION



USGS HOLTWOOD QUADRANGLE
VICINITY MAP
SCALE: 1"=1,000'

FACILITY NAME & TYPE	DRAWING NO.	SHEET NO.	DRAWING NAME
RIVER ROAD REGULATOR STATION <i>REVISED</i>	(92-3400)VF-1A-11	1 of 8	COVER SHEET
	(92-3400)VF-1A-11	2 of 8	EXISTING CONDITIONS MAP
	(92-3400)VF-1A-11	3 of 8	BMP DRAINAGE AREA MAP
	(92-3400)VF-1A-11	4 of 8	SOIL EROSION & SEDIMENT CONTROL PLAN
	(92-3400)VF-1A-11	5 of 8	SOIL EROSION & SEDIMENT CONTROL NOTES
	(92-3400)VF-1A-11	6 of 8	SOIL EROSION & SEDIMENT CONTROL NOTES
	(92-3400)VF-1A-11	7 of 8	SOIL EROSION & SEDIMENT CONTROL NOTES
	(92-3400)VF-1A-11	8 of 8	SOIL EROSION & SEDIMENT CONTROL NOTES AND DETAILS

PHASE 2

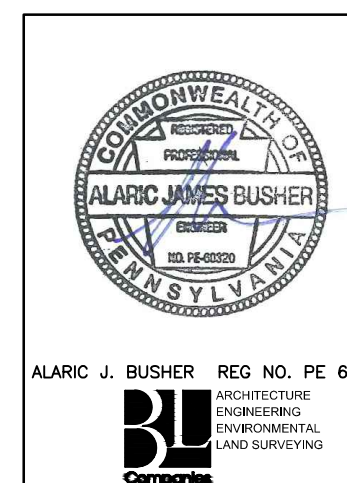
DRUMORE TOWNSHIP
LANCASTER COUNTY

PENNSYLVANIA



PENNSYLVANIA ACT 287 (1974)
AS AMENDED BY PENNSYLVANIA
ACT 199 (2004) REQUIRES NO
LESS THAN THREE (3) WORKING
DAYS AND NO MORE THAN (10)
WORKING DAYS NOTICE TO
UTILITIES BEFORE YOU EXCAVATE,
DRILL, BLAST OR DEMOLISH.

ENGINEER OF RECORD
BL COMPANIES
4242 CARLISLE PIKE, SUITE 260
CAMP HILL, PA 17011
P:717-651-9850
F:717-651-9858

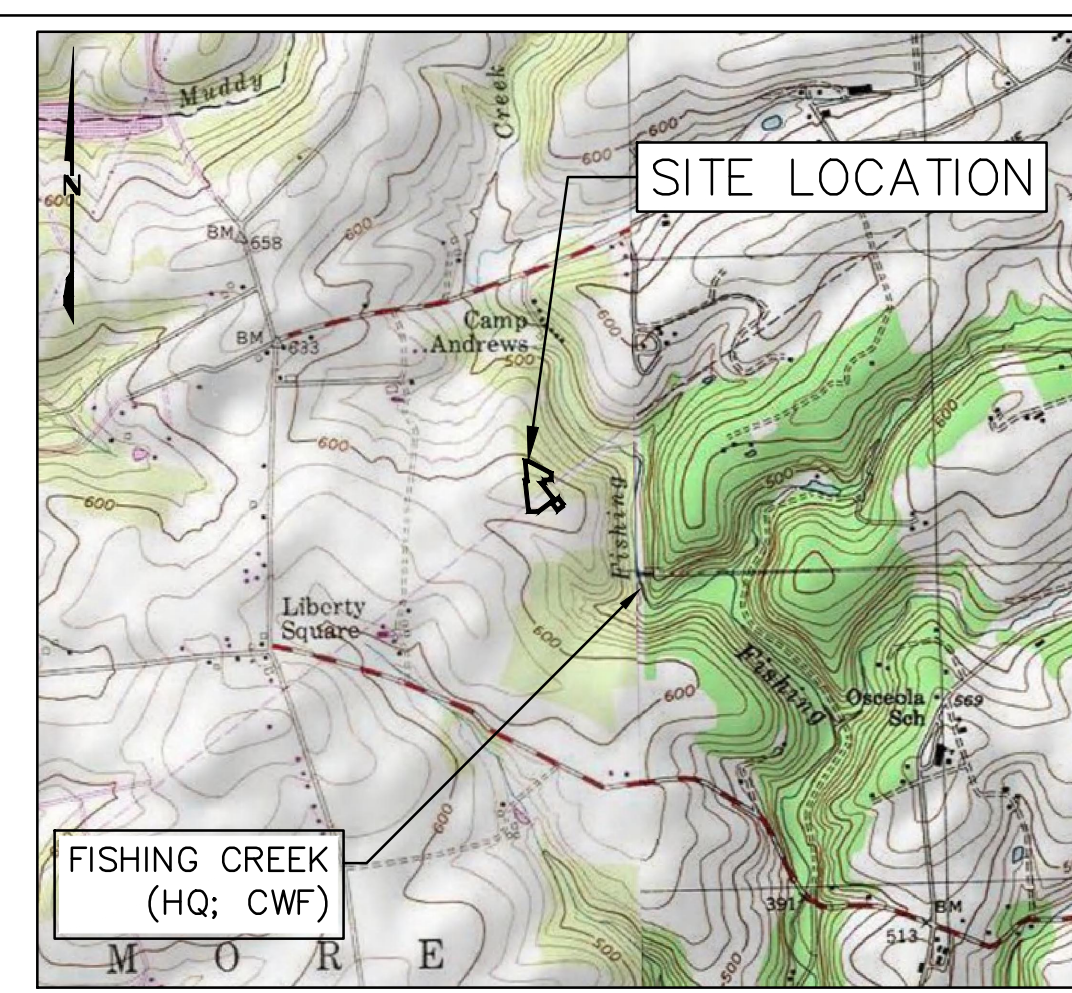


REVISIONS						
NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	08/26/2015	BL	ISSUED FOR PADEP SUBMITTAL	W0161509	DAK	AJB
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0161509	DAK	AJB
3	03/26/2016	BL	ISSUED FOR PADEP RESUBMITTAL	W0161509	DAK	AJB
4	Oct 2016	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1	W0161509	AJB	AJB

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC			
ATLANTIC SUNRISE PROJECT- PROPOSED 42" NATURAL GAS PIPELINE			
SOIL EROSION & SEDIMENT CONTROL AND LAYOUT PLANS			
FOR RIVER ROAD REGULATOR STATION			
DRUMORE TOWNSHIP, LANCASTER COUNTY, PENNSYLVANIA			
COVER SHEET			
DRAWN BY:	JEC	DATE:	04/03/15
CHECKED BY:	AJB	DATE:	04/03/15
APPROVED BY:	AJB	DATE:	07/17/15
W.O.:	1161509	DRAWING NUMBER:	(92-3400)VF-1A-11
SCALE:	AS NOTED	REVISION:	4
SHEET:	1	OF:	8



Drawn By & Date/Time: hthomas Nov 11, 2016 - 12:16pm
 Drawing Location & Name: G:\JOBS\14\14C\14C4909\DWG\020-CPLS\FRS_EC14C4909(20S)_RIVER.dwg



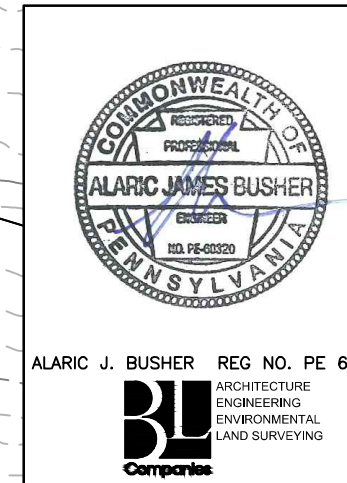
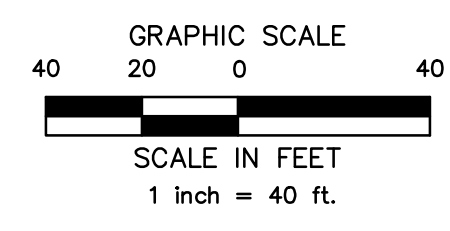
LOCATION MAP
 USGS HOLTWOOD QUADRANGLE
 SCALE: 1"=2,000'

LEGEND

- EXISTING FEATURES**
- PROPERTY BOUNDARY LINE (APPROXIMATE)
 - EXISTING MAJOR CONTOUR (10' INTERVAL)
 - EXISTING MINOR CONTOUR (2' INTERVAL)
 - FENCE
 - STONE ROW
 - SOIL BOUNDARY
 - TREE LINE
 - CENTERLINE STREAM/EDGE WATERBODY
 - DELINEATED WETLANDS
 - SPOT ELEVATION
x 1353.0
 - TREE OR BUSH
 - UTILITY POLE AND UTILITY LINE
 - GUY POLE
 - GUY POLE OR ANCHOR
 - POST
 - SIGN
 - WATER WELL
 - UTILITY BOX
 - MONUMENT (PROPERTY BOUNDARY MARKER)
 - IRON PIPE OR PIN (PROPERTY BOUNDARY MARKER)
 - SOIL TYPE DESIGNATION
 - ESCGP-2 PERMIT BOUNDARY
 - LIMIT OF DISTURBANCE (RIVER ROAD REGULATOR STATION)
 - LIMIT OF WORKSPACE (OVERALL PIPELINE PROJECT)
 - EXISTING ROAD
 - ROW

SITE SOIL TYPES

- CbB CHESTER SILT LOAM, 3 TO 8 PERCENT SLOPES
- GbB GLENELG SILT LOAM, 3 TO 8 PERCENT SLOPES
- GbC GLENELG SILT LOAM, 8 TO 15 PERCENT SLOPES
- MbD MANOR VERY STONY SILT LOAM, 8 TO 25 PERCENT SLOPES

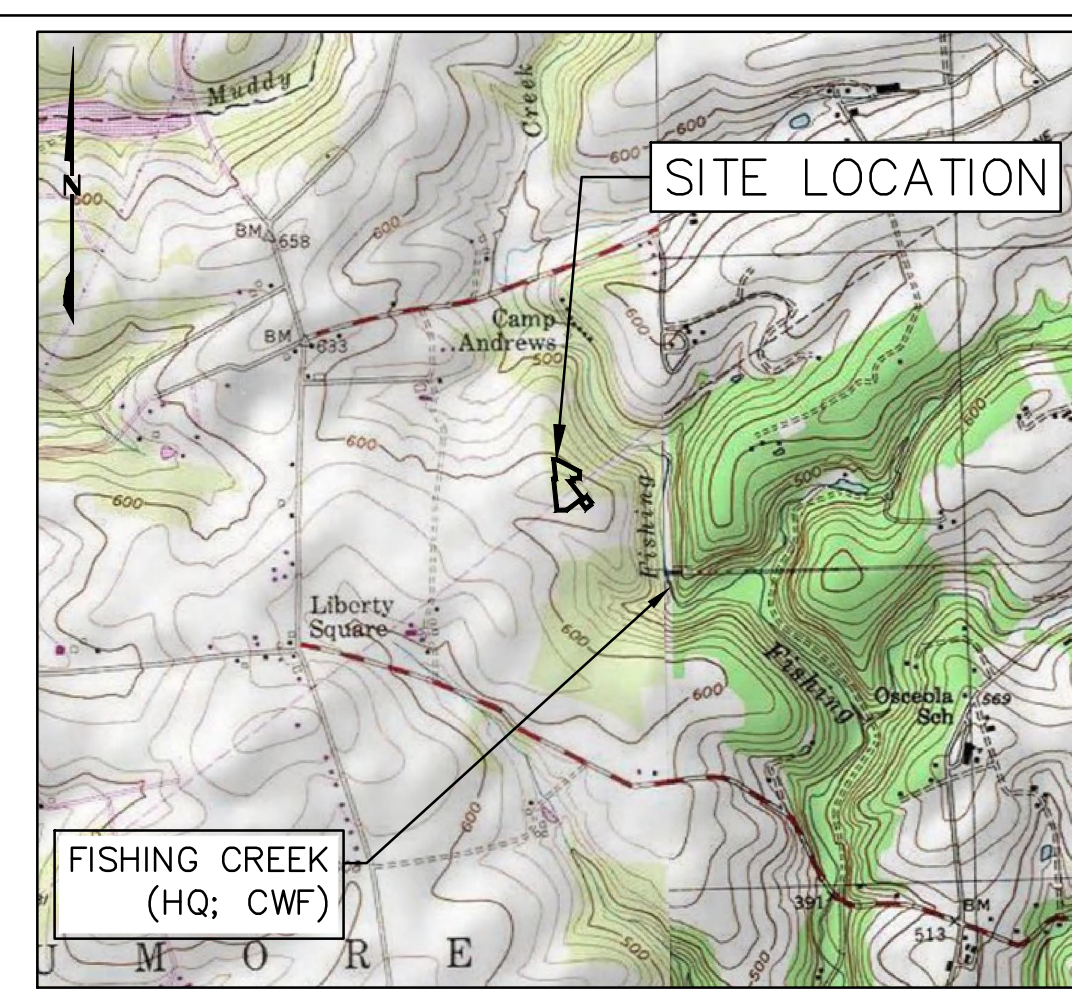
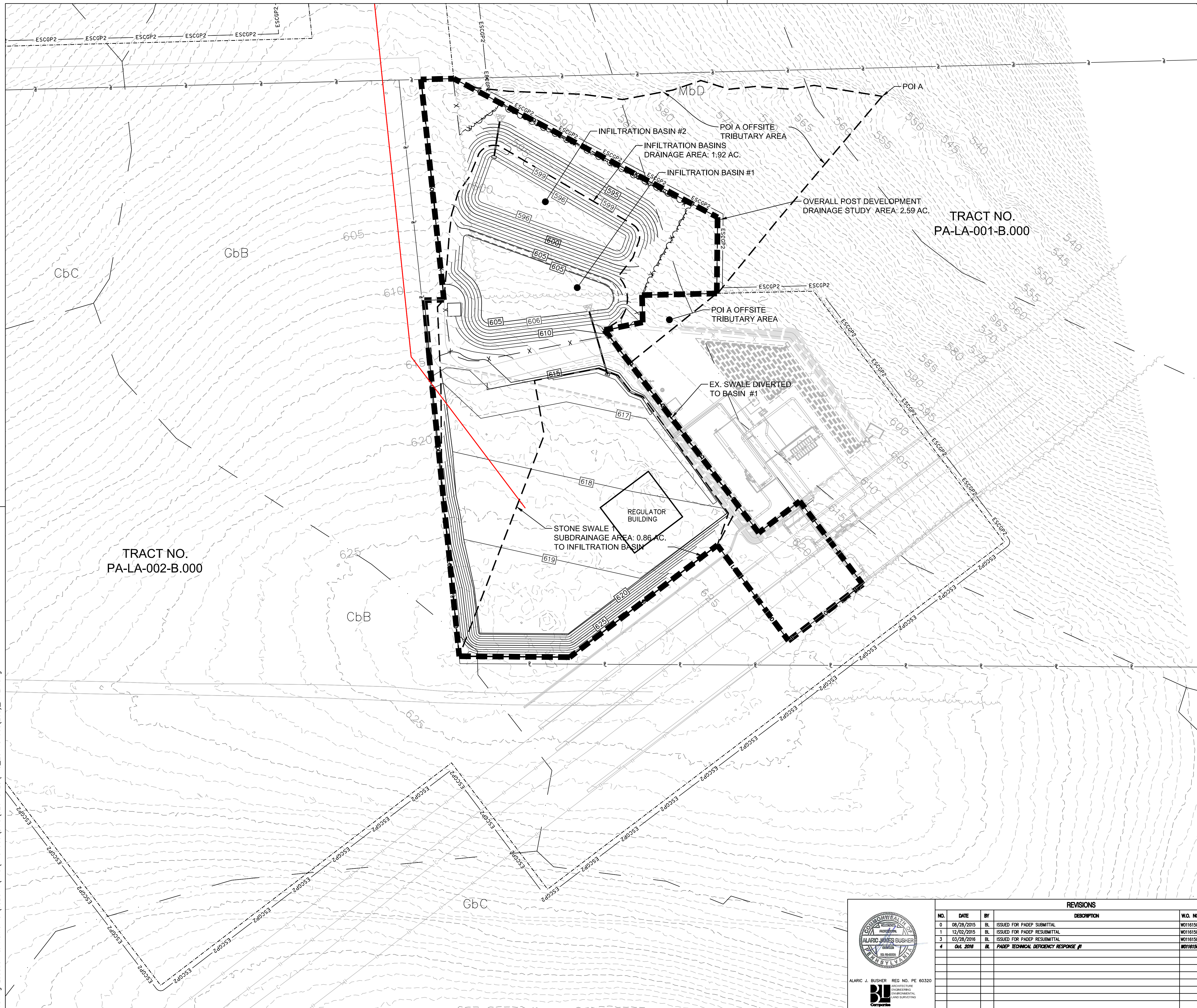


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TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC			
ATLANTIC SUNRISE PROJECT- PROPOSED 42" NATURAL GAS PIPELINE			
SOIL EROSION & SEDIMENT CONTROL AND LAYOUT PLANS			
FOR RIVER ROAD REGULATOR STATION			
DRUMORE TOWNSHIP, LANCASTER COUNTY, PENNSYLVANIA			
EXISTING CONDITIONS MAP			
DRAWN BY:	JEC	DATE:	04/03/15
CHECKED BY:	AJB	DATE:	04/03/15
APPROVED BY:	AJB	DATE:	07/17/15
W.O.:	1161509	DRAWING NUMBER:	(92-3400)VF-1A-11
SCALE:	AS NOTED	REVISION:	4
			SHEET 2 OF 8



Drawn By & Date/Time: hthomas Nov 11, 2016 - 12:16pm
 Drawing Location & Name: G:\JOBS\14\14C\14C4909\DWG\020-CPLS\FRS_EC14C4909(20S)_RIVER.dwg

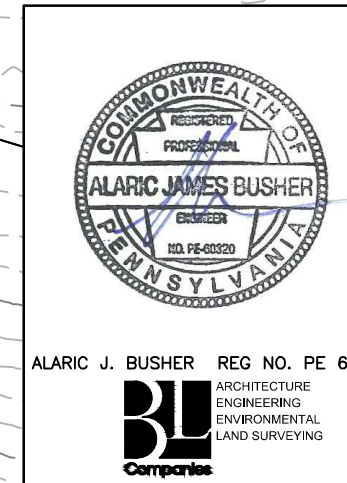
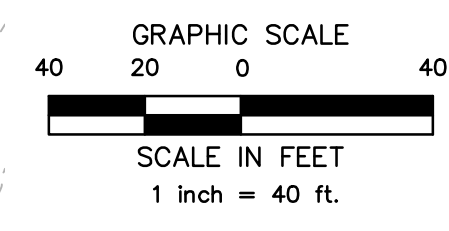


LEGEND

- PROPOSED FEATURES**
- PROPOSED MAJOR CONTOUR (5' INTERVAL)
 - PROPOSED MINOR CONTOUR (1' INTERVAL)
 - LIMIT OF DISTURBANCE (RIVER ROAD REGULATOR STATION)
 - ESCGP-2 PERMIT BOUNDARY
 - CENTERLINE GAS PIPELINE
 - LIMIT OF WORKSPACE (OVERALL PIPELINE PROJECT)
 - PROPOSED ACCESS ROAD
 - STUDY AREA BOUNDARY
 - DRAINAGE AREA BOUNDARIES
 - EXISTING MAJOR CONTOUR (10' INTERVAL)
 - EXISTING MINOR CONTOUR (2' INTERVAL)
 - PROPOSED TREELINE

SITE SOIL TYPES

- CbB CHESTER SILT LOAM, 3 TO 8 PERCENT SLOPES
- GbB GLENELG SILT LOAM, 3 TO 8 PERCENT SLOPES
- GbC GLENELG SILT LOAM, 8 TO 15 PERCENT SLOPES
- MbD MANOR VERY STONY SILT LOAM, 8 TO 25 PERCENT SLOPES



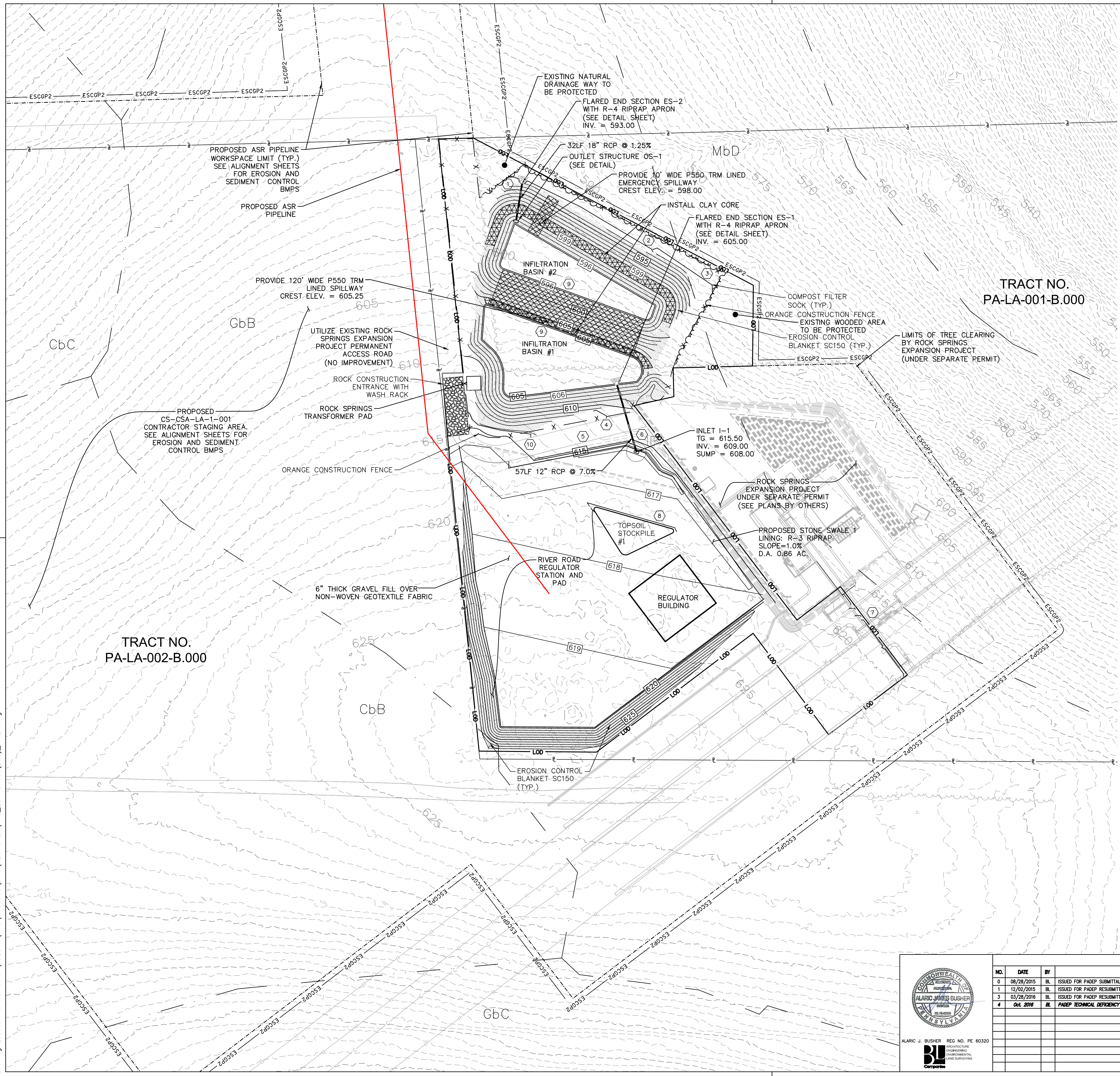
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TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
 ATLANTIC SUNRISE PROJECT- PROPOSED 42" NATURAL GAS PIPELINE
 SOIL EROSION & SEDIMENT CONTROL AND LAYOUT PLANS
 FOR RIVER ROAD REGULATOR STATION
 DRUMORE TOWNSHIP, LANCASTER COUNTY, PENNSYLVANIA
 BMP DRAINAGE AREA MAP

Williams

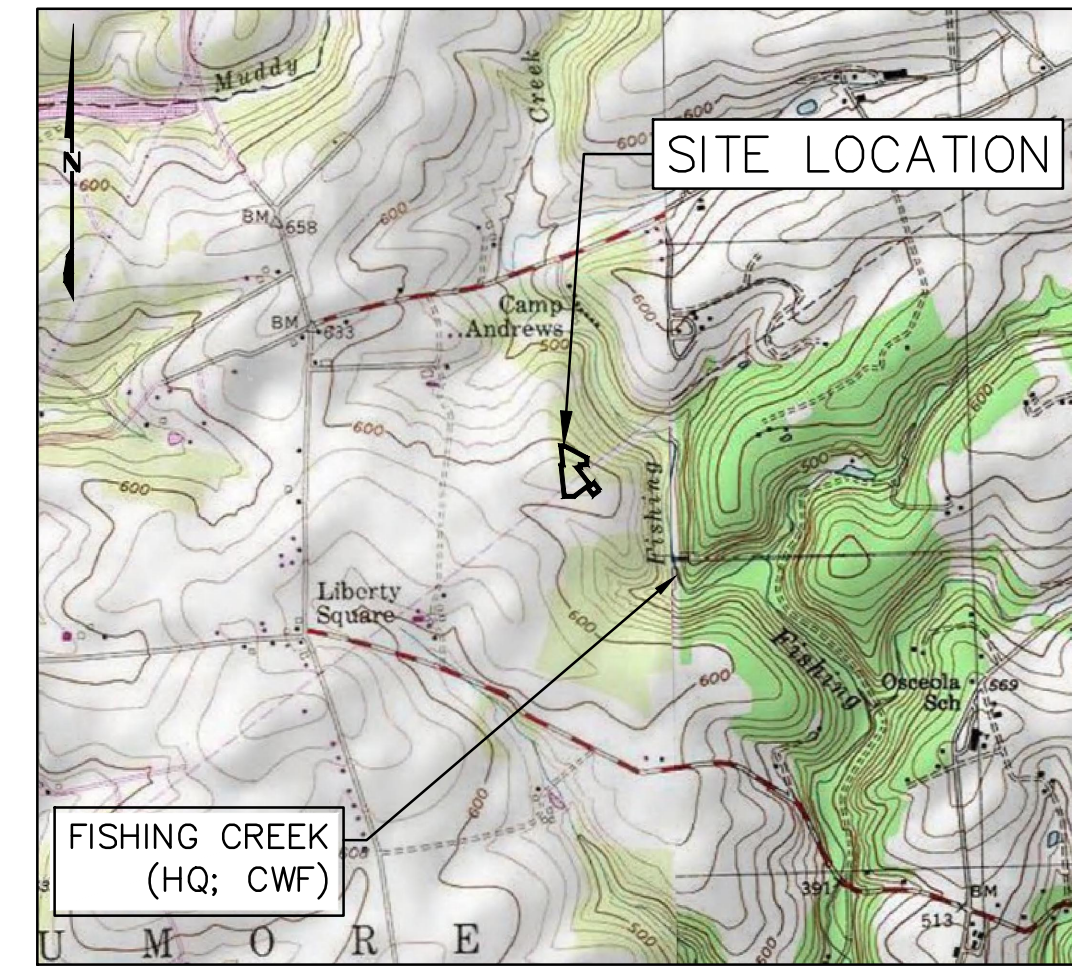
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CHECKED BY: AJB	DATE: 04/03/15	ISSUED FOR CONSTRUCTION:	REVISION: 4
APPROVED BY: AJB	DATE: 07/17/15	DRAWING NUMBER: (92-3400)VF-1A-11	SHEET 3 OF 8
W.D. NO: 1161509			

Drawn By & Date/Time: hthomas Nov 11, 2016 - 12:17pm
 Drawing Location & Name: G:\JOBS\14\14C\14C4909\20S\ESC02-020-CPLS\FRS_EC14C4909(20S)_RIVER.dwg



SEDIMENT BARRIER TABLE	
SEDIMENT BARRIER DESIGNATION	SEDIMENT BARRIER TYPE
1	32 INCH FILTER SOCK
2	32 INCH FILTER SOCK
3	32 INCH FILTER SOCK
4	12 INCH FILTER SOCK
5	18 INCH FILTER SOCK
6	18 INCH FILTER SOCK
7	12 INCH FILTER SOCK
8*	12 INCH FILTER SOCK
9	12 INCH FILTER SOCK
10	12 INCH FILTER SOCK

*STOCKPILE



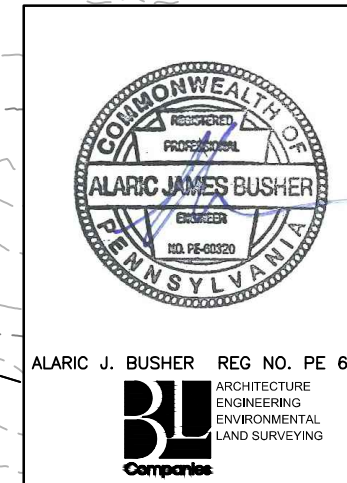
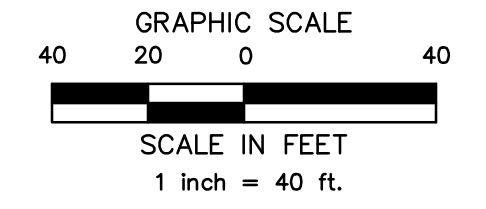
LOCATION MAP
 USGS HOLTWOOD QUADRANGLE
 SCALE: 1"=2,000'

LEGEND	
	EXISTING MAJOR CONTOUR (10' INTERVAL)
	EXISTING MINOR CONTOUR (2' INTERVAL)
	PROPOSED MAJOR CONTOUR (5' INTERVAL)
	PROPOSED MINOR CONTOUR (1' INTERVAL)
	LIMIT OF DISTURBANCE (RIVER ROAD REGULATOR STATION)
	LIMIT OF WORKSPACE (OVERALL PIPELINE PROJECT)
	ESCOP-2 PERMIT BOUNDARY
	FILTER SOCK DIVERSION
	SEDIMENT BARRIER
	ORANGE CONSTRUCTION FENCE
	CENTERLINE GAS PIPELINE
	SWALE LINING
	EROSION CONTROL BLANKET (SC150 OR APPROVED EQUAL)
	ROCK OUTLET/RIPRAP APRON
	EXISTING ACCESS ROAD
	SEDIMENT BARRIER DESIGNATION (SEE SHEET 9)
	ROCK CONSTRUCTION ENTRANCE
	BAFFLE
	INLET PROTECTION
	TRM LINING
	CLAY CORE LIMITS
	PROPOSED TREELINE

SITE SOIL TYPES	
CbB	CHESTER SILT LOAM, 3 TO 8 PERCENT SLOPES
GbB	GLENELG SILT LOAM, 3 TO 8 PERCENT SLOPES
GbC	GLENELG SILT LOAM, 8 TO 15 PERCENT SLOPES
MbD	MANOR VERY STONY SILT LOAM, 8 TO 25 PERCENT SLOPES

LIMIT OF DISTURBANCE
 AREA OF THE LIMIT OF DISTURBANCE IS:
 ±112,964 SF/ 2.59 AC.

RECEIVING WATERCOURSE - CHAPTER 93 DESIGNATION
 THE RECEIVING WATERCOURSE IS FISHING CREEK HQ, CWF
 APPROXIMATE DISTANCE FROM SITE TO FISHING CREEK: ±2,500 FT (EAST)



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TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC			
ATLANTIC SUNRISE PROJECT- PROPOSED 42" NATURAL GAS PIPELINE			
SOIL EROSION & SEDIMENT CONTROL AND LAYOUT PLANS			
FOR RIVER ROAD REGULATOR STATION			
DRUMORE TOWNSHIP, LANCASTER COUNTY, PENNSYLVANIA			
SOIL EROSION & SEDIMENT CONTROL PLAN			
DRAWN BY:	JEC	DATE:	04/03/15
CHECKED BY:	AJB	DATE:	04/03/15
APPROVED BY:	AJB	DATE:	07/17/15
W.D.:	1161509	DRAWING NUMBER:	(92-3400)VF-1A-11
SCALE:	AS NOTED	REVISION:	4
			SHEET 4 OF 8



RIP RAP GRADATION, FILTER BLANKET, MAXIMUM VELOCITIES

Riprap Gradation, Filter Blanket Requirements, Maximum Velocities						
Percent Passing (Square Openings)						
Class, Size NO.	R-8	R-7	R-6	R-5	R-4	R-3
42	100					
30		100				
24	15-50		100			
18		15-50		100		
15	0-15				100	
12		0-15	15-50			
9			15-50	15-50		
6			0-15		15-50	100
4				0-15		
3					0-15	15-50
2						0-15
Nominal Placement Thickness (inches)	63	45	36	27	18	9
Filter Stone V _{max} (ft/sec)	AASHTO #1 17.0	AASHTO #1 14.5	AASHTO #1 13.0	AASHTO #3 11.5	AASHTO #3 9.0	AASHTO #57 6.5

Adapted from PennDOT Pub. 406, Section 703.2(c), Table C

ADAPTED FROM PENNDOT PUB. 406, SECTION 703.2 (c), TABLE C.

1. THIS IS A GENERAL STANDARD. SOIL CONDITIONS AT EACH SITE SHOULD BE ANALYZED TO DETERMINE ACTUAL FILTER SIZE. A SUITABLE WOVEN OR NON-WOVEN GEOTEXTILE UNDERLAYMENT, USED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS, MAY BE SUBSTITUTED FOR THE FILTER STONE FOR GRADIENTS < 10%.

PERMANENT SEED MIXTURES COOL & WARM SEASON GRASSES

NON-AGRICULTURAL MEADOWS (USE IN ALL AREAS EXCEPT INFILTRATION BASINS)

Common Name	Scientific Name	# PLS/acre	PLS/sq ft	% of Mix
Virginia Wildrye	<i>Elymus virginicus</i>	5.3	9.0	15%
Little Bluestem	<i>Schizachyrium scoparium</i>	1.5	9.0	15%
Sideoats Grama	<i>Bouteloua curtipendula</i>	2.1	9.0	15%
Deertongue	<i>Dichanthelium clandestinum</i>	1.0	9.0	15%
Partridge Pea	<i>Chamaecrista fasciculata</i>	4.2	6.0	10%
Oxeye Sunflower	<i>Helopsis helianthoides</i>	1.3	3.0	5%
Lanceleaf Coreopsis	<i>Coreopsis lanceolata</i>	1.2	6.0	10%
Blackeyed Susan	<i>Rudbeckia hirta</i>	0.1	3.0	5%
Butterfly Milkweed	<i>Asclepias tuberosa</i>	5.2	6.0	10%
Total	--	21.8	60.0	100%

STORM BASIN MIX (USE IN INFILTRATION BASINS, SEE DETAILS FOR PLACEMENT)

Common Name	Scientific Name	# PLS/acre	12.0	20%
Orchardgrass	<i>Dactylis glomerata</i>	0.8	12.0	20%
Timothy	<i>Phleum pratense</i>	0.4	9.0	15%
Switchgrass	<i>Panicum virgatum</i>	1.0	12.0	20%
Virginia Wildrye	<i>Elymus virginicus</i>	7.1	9.0	15%
Fox Sedge	<i>Carex vulpinoidea</i>	0.3	3.0	5%
Oxeye Sunflower	<i>Helopsis helianthoides</i>	1.3	3.0	5%
Swamp Milkweed	<i>Asclepias incarnata</i>	1.7	60.0	100%
Total	--	12.6	12.0	20%

LIMING AND FERTILIZER RATES

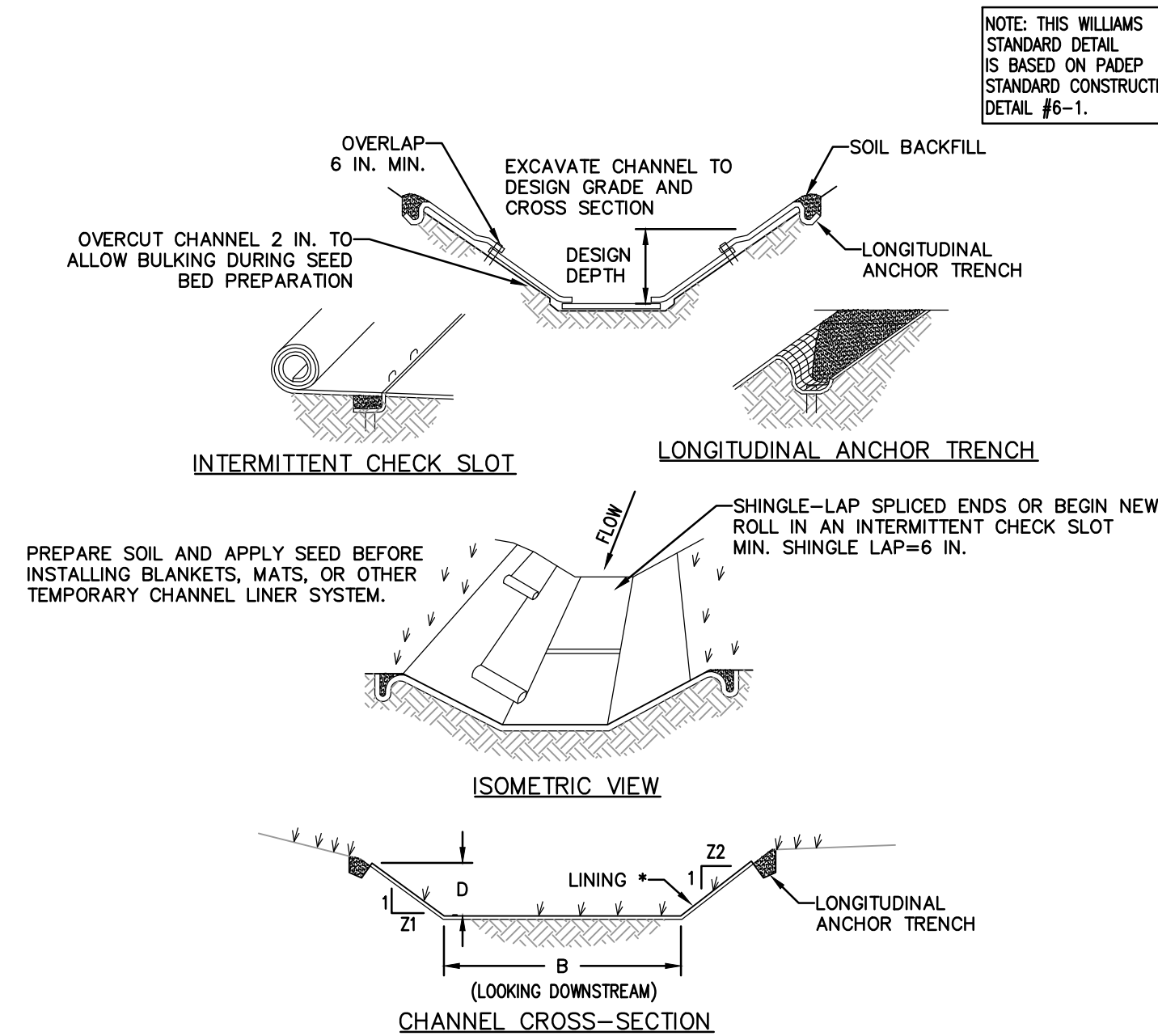
Soil Amendment	Permanent Seeding Application Rate			Notes
	Per Acre	Per 1,000 sq. ft.	Per 1,000 sq. yd.	
Agricultural lime	6 tons	240 lb.	2,480 lb.	Or as per soil test; may not be required in agricultural fields
10-10-20 fertilizer	1,000 lb.	25 lb.	210 lb.	Or as per soil test; may not be required in agricultural fields
Temporary Seeding Application Rate				
Agricultural lime	1 ton	40 lb.	410 lb.	Typically not required for topsoil stockpiles
10-10-10 fertilizer	500 lb.	12.5 lb.	100 lb.	Typically not required for topsoil stockpiles

PA DEP TABLE 11.2

1 NO LIME AND/OR FERTILIZER MAY BE APPLIED IN WETLANDS.

TEMPORARY SEED MIX

TEMPORARY SEEDING SHALL CONSIST OF ANNUAL RYEGRASS (100 PERCENT BY WEIGHT), OR EQUIVALENT, AND SHALL BE PLACED AT THE RATE OF 5 POUNDS PER 1,000 SQUARE YARDS. TEMPORARY SEEDING SHALL BE APPLIED TO THOSE AREAS THAT ARE A POTENTIAL EROSION PROBLEM DURING CONSTRUCTION AND TO THOSE AREAS EXPOSED FOR LONGER THAN 20 CALENDAR DAYS. IF CONDITIONS DO NOT PERMIT TEMPORARY SEEDING, MULCHING SHALL BE EMPLOYED. ADDITIONALLY, NITROGEN FERTILIZER (50-50-50) @ ONE (1) TON PER ACRE, AGRICULTURAL LIME @ ONE (1) TON PER ACRE, AND STRAW MULCH @ THREE (3) TONS PER ACRE. STRAW MULCH SHALL BE APPLIED IN LONG STRANDS, NOT CHOPPED OR FINELY BROKEN.



* SEE MANUFACTURER'S LINING INSTALLATION DETAIL FOR STAPLE PATTERNS, VEGETATIVE STABILIZATION FOR SOIL AMENDMENTS, SEED MIXTURES AND MULCHING INFORMATION

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 SUMMARY TABLE						
SWALE NO.	BOTTOM WIDTH B (FT)	DEPTH D (FT)	TOP WIDTH W (FT)	Z1 (FT)	Z2 (FT)	PERMANENT LINING
STONE SWALE 1	2.0	1.0	6.0	2.0	2.0	R-3 RIPRAP

STONE SWALE

N.T.S.

SITE SOIL TYPES AND LIMITATIONS

MAP UNIT NAME	MAP UNIT DESIGNATION	SLOPES	SOIL NAME	CUTBANKS CAVE	CORROSIVE TO CONCRETE/STEEL	DROUGHTY	EASILY ERODIBLE	FLOODING	HIGH WATER TABLE	HYDRIC/HYDRIC INCLUSIONS	LOW STRENGTH	SLOW PERCOLATION	PIPING	POOR SOURCE OF TOPSOIL	FROST ACTION	SHRINK-SWELL	POTENTIAL SINKHOLE	PONDING	WETNESS
CHESTER SILT LOAM	cbB	3-8%	CHESTER	X	C		X			X	X	X	X	X					
GLENELG SILT LOAM	gbB	3-8%	GLENELG	X	C		X		X	X	X	X	X	X					X
	gbC	8-15%		X	C		X		X	X	X	X	X	X	X				
MANOR VERY STONY SILT LOAM	mbD	8-25%	MANOR	X	C		X			X	X	X	X	X					

SOILS LIMITATIONS AND RESOLUTIONS

LIMITATION	RESOLUTION
CUTBANKS CAVE	EXCAVATIONS WILL BE PROPERLY SUPPORTED BY SHEETING AND SHORING TO PREVENT CAVES.
CORROSIVE TO CONCRETE/STEEL	NO CONCRETE OR STEEL PIPING IS PROPOSED WITHOUT APPROPRIATE COATING OR PROTECTION.
DROUGHTY	EXISTING SUITABLE TOPSOIL AND SOIL AMENDMENTS WILL BE USED DURING CONSTRUCTION.
EASILY ERODIBLE	TEMPORARY AND PERMANENT EROSION CONTROL BMPs WILL BE EMPLOYED THROUGHOUT THE SITE.
FLOODING	ENSURE THAT THE SITE HAS PROPER DRAINAGE.
HIGH WATER TABLE	A GEOTECHNICAL INVESTIGATION WAS CONDUCTED TO MINIMIZE CONFLICTS WITH SATURATED ZONES.
HYDRIC/HYDRIC INCLUSIONS	A WETLAND INVESTIGATION WAS COMPLETED TO DETERMINE IF WETLANDS ARE PRESENT IN THE DEVELOPMENT AREA.
LOW STRENGTH	A MAXIMUM OF 3:1 SLOPES ARE PROPOSED.
SLOW PERCOLATION	FIELD INVESTIGATIONS OF PERCOLATION RATES AT THE INFILTRATION AREAS WERE PERFORMED TO VERIFY THE SOILS PERCOLATION CAPACITY.
PIPING	WATERTIGHT PIPE, ANTISEEP COLLARS, CLAY CORES THROUGH BASIN BERMS, AND CONCRETE ENDWALLS WILL BE USED TO MINIMIZE THE DANGER OF PIPING.
POOR SOURCE OF TOPSOIL	EXISTING TOPSOIL, WHICH HAS PROVEN TO BE SUITABLE, WILL BE REUSED ON THE SITE.
FROST ACTION	PAVEMENT SUBBASE WILL BE PROVIDED TO MINIMIZE FROST AFFECTS.
SHRINK-SWELL	STONE BASE WILL BE PROVIDED TO PREVENT SHRINK-SWELL FROM EFFECTING PAVEMENT.
POTENTIAL SINKHOLE	GEOTECHNICAL ENGINEER OF RECORD RECOMMENDATIONS WILL BE FOLLOWED FOR ANY POTENTIAL OCCURRENCES.
PONDING	SURFACE GRADING AND DRAINAGE FACILITIES WILL BE PROVIDED TO MINIMIZE PONDING AFFECTS.
WETNESS	WET WEATHER CONSTRUCTION RECOMMENDATIONS, PER THE GEOTECHNICAL ENGINEER'S RECOMMENDATIONS, WILL BE EMPLOYED TO MINIMIZE THE AFFECTS OF WETNESS DURING CONSTRUCTION. SURFACE GRADING, SURFACE GRADING AND DRAINAGE WILL BE PROVIDED TO MINIMIZE WETNESS AFFECTS AFTER CONSTRUCTION.

MULCH

- MULCHES SHOULD BE APPLIED AT THE RATES SHOWN IN TABLE 11.6
- STRAW AND HAY MULCH SHOULD BE ANCHORED OR TACKIFIED IMMEDIATELY AFTER APPLICATION TO PREVENT BEING WINDBLOWN. A TRACTOR-DRAWN IMPLEMENT MAY BE USED TO "CRIMP" THE STRAW OR HAY INTO THE SOIL - ABOUT 3 INCHES. THIS METHOD SHOULD BE LIMITED TO SLOPES NO STEEPER THAN 3H:1V. THE MACHINERY SHOULD BE OPERATED ON THE CONTOUR. CRIMPING OF HAY OR STRAW BY RUNNING OVER IT WITH TRACKED MACHINERY IS NOT RECOMMENDED.
- POLYMERIC AND GUM TACKIFIERS 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 SHOULD GENERALLY BE HEAVIEST AT EDGES OF SEEDED AREAS AND AT CRESTS OF RIDGES AND BANKS TO PREVENT LOSS BY WIND. THE REMAINDER OF THE 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.
- 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.
- MULCH ON SLOPES 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.
- SHREDDED PAPER HYDROMULCH SHOULD NOT BE USED ON SLOPES STEEPER THAN 5%. WOOD FIBER HYDROMULCH MAY BE APPLIED ON STEEPER SLOPES PROVIDED A TACKIFIER IS USED. THE APPLICATION RATE FOR ANY HYDROMULCH SHOULD BE 2,000 LB/ACRE AT A MINIMUM.
- HYDRAULICALLY APPLIED BLANKETS CAN BE AN EFFECTIVE METHOD OF STABILIZING STEEP SLOPES WHEN USED PROPERLY. THEY MAKE USE OF A CROSS-LINKED HYDROCOLLOID TACKIFIER TO BOND THERMALLY PROCESSED WOOD FIBERS. APPLICATION RATES VARY ACCORDING TO SITE CONDITIONS. IN ANY CASE, MANUFACTURER'S RECOMMENDATIONS SHOULD BE FOLLOWED. SHOULD NOT BE USED IN AREAS OF CONCENTRATED FLOW (E.G. SWALES).
- NO MULCH MAY BE APPLIED IN WETLANDS.

TABLE 11.6				
MULCH APPLICATION RATES				
MULCH TYPE	APPLICATION RATE (MIN.)			NOTES
	PER ACRE	PER 1,000 SQ. FT.	PER 1,000 SQ. YD.	
STRAW	3 TONS	140 LB.	1,240 LB.	EITHER WHEAT OR OAT STRAW, FREE OF WEEDS, NOT CHOPPED OR FINELY BROKEN
WOOD CHIPS	4-6 TONS	185-275 LB.	1,650-2,500 LB.	MAY PREVENT GERMINATION OF GRASSES AND LEGUMES
HYDRO- MULCH	1 TON	47 LB.	415 LB.	SEE LIMITATIONS ABOVE
HYDRAULICALLY APPLIED BLANKETS	3,000 LB.	N/A	N/A	SLOPES UP TO 3H:1V
	4,000 LB.	N/A	N/A	SLOPES STEEPER THAN 3H:1V

Drawn By & Date/Time: hthomas Nov 15, 2016 - 4:21pm Drawing Location & Name: G:\JOBS\14\14C\14C4909\DWG\020-CPL\LS\FRS_EC14C4909(20S)_RIVER.dwg

ALARIC J. BUSHER REG. NO. PE 60320

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.D. NO.	CHK.	APP.
0	08/26/2015	BL	ISSUED FOR PADEP SUBMITTAL	W0161509	DAK	AJB
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0161509	DAK	AJB
3	03/26/2016	BL	ISSUED FOR PADEP RESUBMITTAL	W0161509	DAK	AJB
4	Oct. 2016	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1	W0161509	AJB	AJB

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

ATLANTIC SUNRISE PROJECT- PROPOSED 42" NATURAL GAS PIPELINE

SOIL EROSION & SEDIMENT CONTROL AND LAYOUT PLANS

FOR RIVER ROAD REGULATOR STATION

DRUMORE TOWNSHIP, LANCASTER COUNTY, PENNSYLVANIA

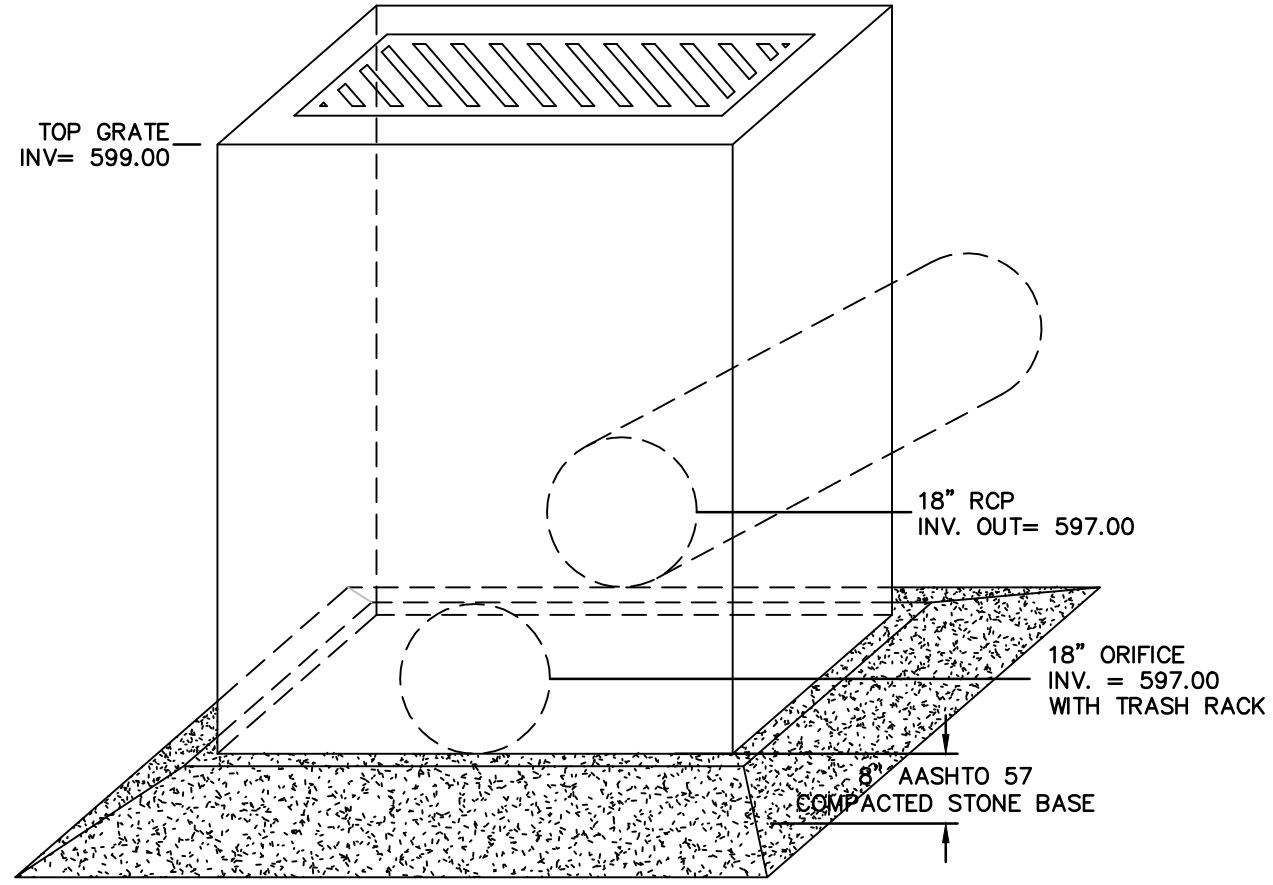
SOIL EROSION & SEDIMENT CONTROL NOTES

DRAWN BY: JEC DATE: 04/03/15 ISSUED FOR BID: SCALE: AS NOTED

CHECKED BY: AJB DATE: 04/03/15 ISSUED FOR CONSTRUCTION: REVISION: 4

APPROVED BY: AJB DATE: 07/17/15 DRAWING NUMBER: (92-3400)VF-1A-11 SHEET 7 OF 8

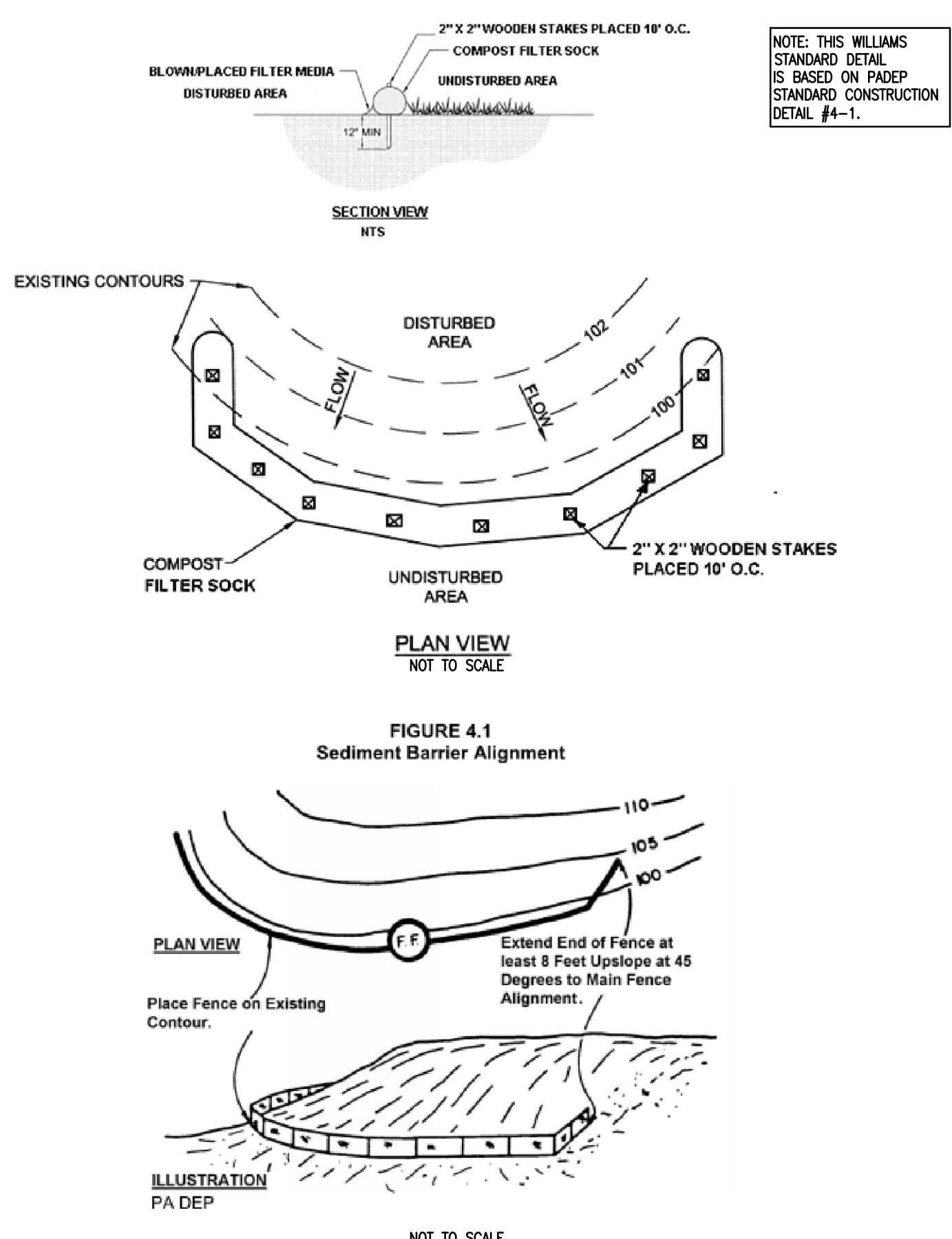
W.D. NO.: 1161509



TOP GRATE INV. = 599.00
18" RCP INV. OUT = 597.00
18" ORIFICE WITH TRASH RACK
8" AASHTO 57 COMPACTED STONE BASE

**INFILTRATION BASIN 2
PERMANENT OUTLET STRUCTURE OS-1**

N.T.S.



COMPOST FILTER SOCK

N.T.S. 1 OF 3

Material Type	3 mil HDPE	5 mil HDPE	5 mil HDPE	Multi-Filament (Polypropylene) (MFPP)	Heavy Duty Multi-Filament Polypropylene (DMFPP)
Material Characteristics	Photo-degradable	Photo-degradable	Bio-degradable	Photo-degradable	Photo-degradable
Sock Diameters	12", 18"	12", 18"	12", 18"	12", 18", 24", 32"	12", 18"
Mesh Opening	3/8"	3/8"	3/8"	3/8"	1/8"
Tensile Strength		29 psi	29 psi	44 psi	202 psi
Ultraviolet Stability %				100% at 1000 hr.	100% at 1000 hr.
Original Strength (ASTM G-155)	73% at 1000 hr.	73% 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 3/4" X 3/4" Max. aperture size
Outer Filtration Mesh	Composite Polypropylene Fabric (Woven layer and non-woven fleece mechanically fused via needle punch) 3/16" Max. aperture size

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

TABLE 4.2 COMPOST STANDARDS

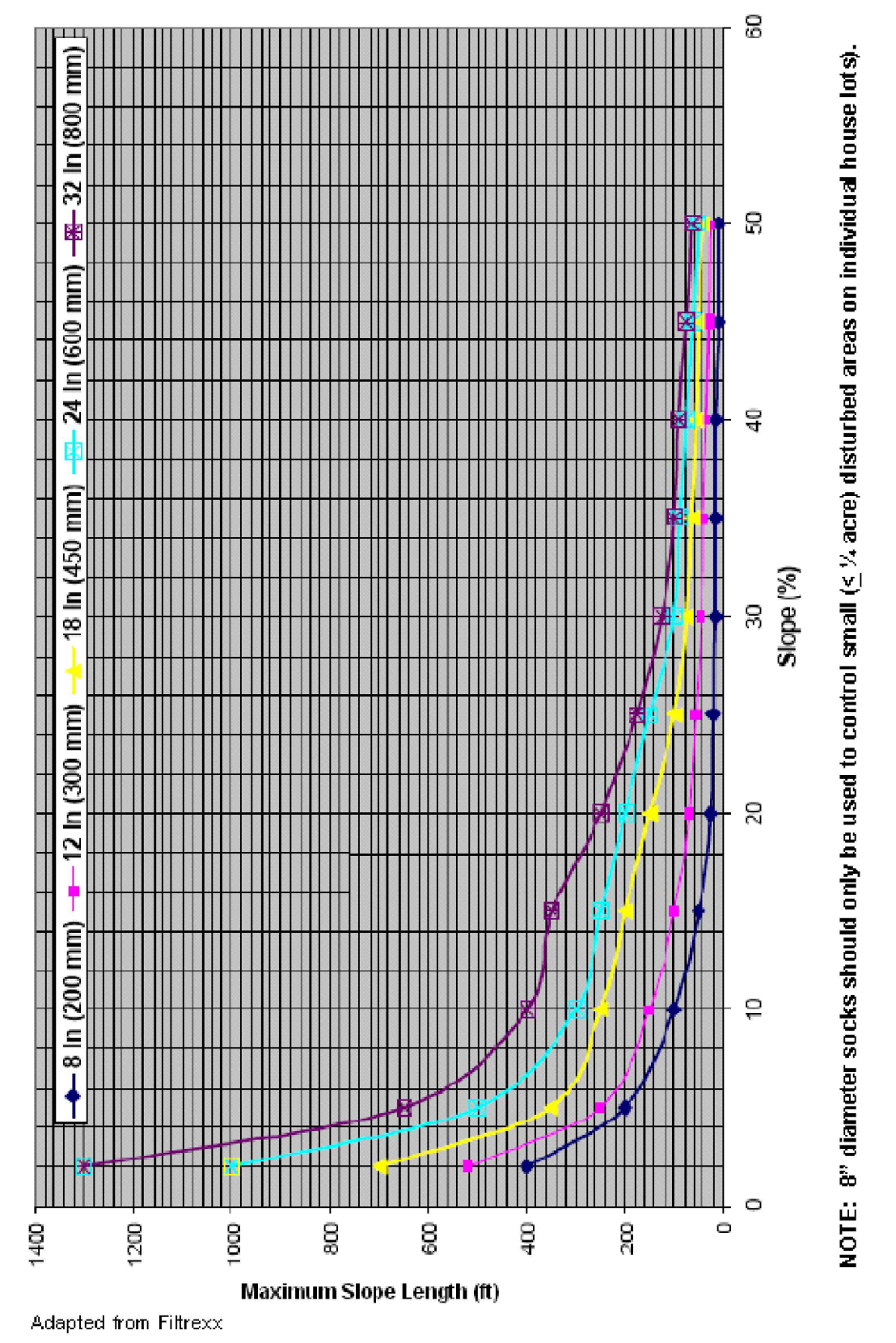
ORGANIC MATTER CONTENT	25%-100% (DRY WEIGHT BASIS)
ORGANIC PORTION	FIBROUS AND ELONGATED
pH	5.5 - 8.5
MOISTURE CONTENT	30% - 60%
PARTICLE SIZE	30%-50% PASS THROUGH 3/8" SIEVE
SOLUBLE SALT CONCENTRATION	5.0 DS/M (MMHOS/CM) MAXIMUM

- NOTES:
- SOCK FABRIC SHALL MEET STANDARDS OF TABLE 4.1. COMPOST SHALL MEET THE STANDARDS OF TABLE 4.2. (SEE SHEET 2 OF 3 OF THIS DETAIL.)
 - COMPOST FILTER SOCK SHALL BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE SOCK SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN SOCK ALIGNMENT. MAXIMUM SLOPE LENGTH ABOVE ANY SOCK SHALL NOT EXCEED THAT SHOWN ON FIGURE 4.2. (SEE SHEET 3 OF 3 OF THIS DETAIL.) STAKES MAY BE INSTALLED IMMEDIATELY DOWNSLOPE OF THE SOCK IF SO SPECIFIED BY THE MANUFACTURER.
 - TRAFFIC SHALL NOT BE PERMITTED TO CROSS COMPOST FILTER SOCKS.
 - ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES HALF THE ABOVEGROUND HEIGHT OF THE SOCK AND DISPOSED IN THE MANNER DESCRIBED ELSEWHERE IN THE PLAN.
 - SOCKS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED SOCKS SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S SPECIFICATIONS OR REPLACED WITHIN 24 HOURS OF INSPECTION.
 - BIODEGRADABLE FILTER SOCKS SHALL BE REPLACED AFTER 6 MONTHS; PHOTODEGRADABLE SOCKS AFTER 1 YEAR. POLYPROPYLENE SOCKS SHALL BE REPLACED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
 - UPON STABILIZATION OF THE AREA TRIBUTARY TO THE SOCK, STAKES SHALL BE REMOVED. THE SOCK MAY BE LEFT IN PLACE AND VEGETATED OR REMOVED. IN THE LATTER CASE, THE MESH SHALL BE CUT OPEN AND THE MULCH SPREAD AS A SOIL SUPPLEMENT.
 - SOCKS SHALL BE INSTALLED PARALLEL TO THE CONTOURS, TYPICALLY IN AREAS WHERE THE SLOPE OF THE CATCHMENT AREA IS LESS THAN FIVE PERCENT. THE SOCKS MAY BE INSTALLED AS NECESSARY TO MINIMIZE THE NUMBER OF SEPARATE SOCK SEGMENTS ALONG THE EDGE OF DISTURBANCE.

COMPOST FILTER SOCK

N.T.S. 2 OF 3

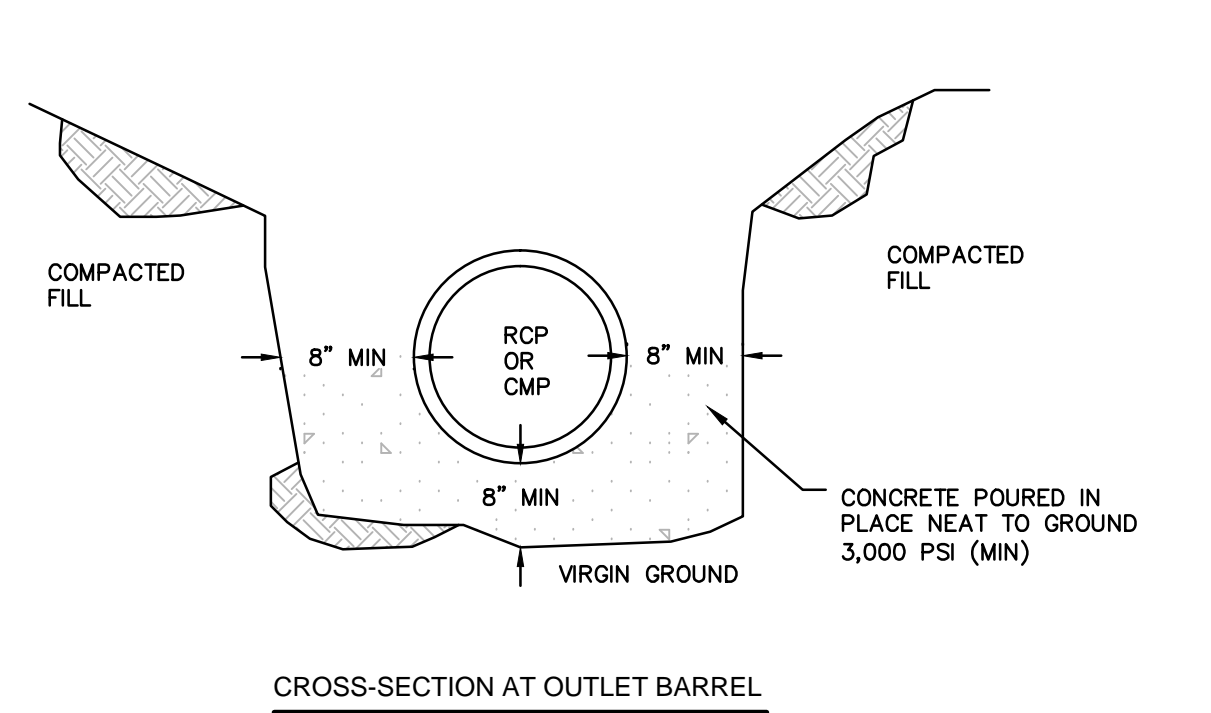
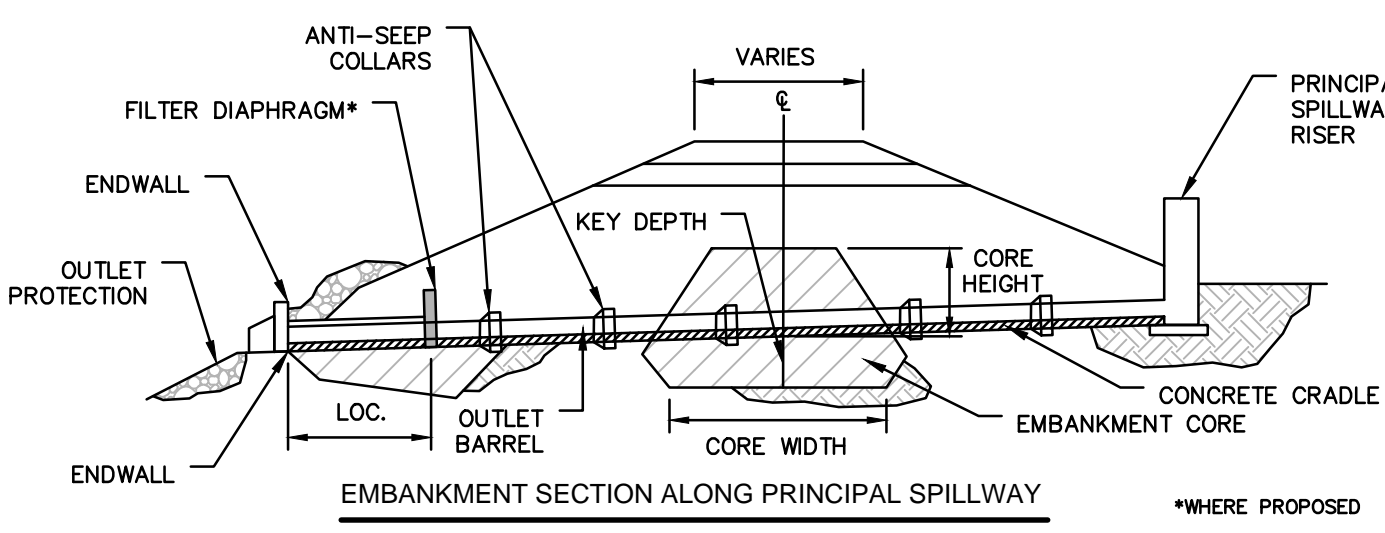
FIGURE 4.2 MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS



Adapted from Filtrixx

COMPOST FILTER SOCK

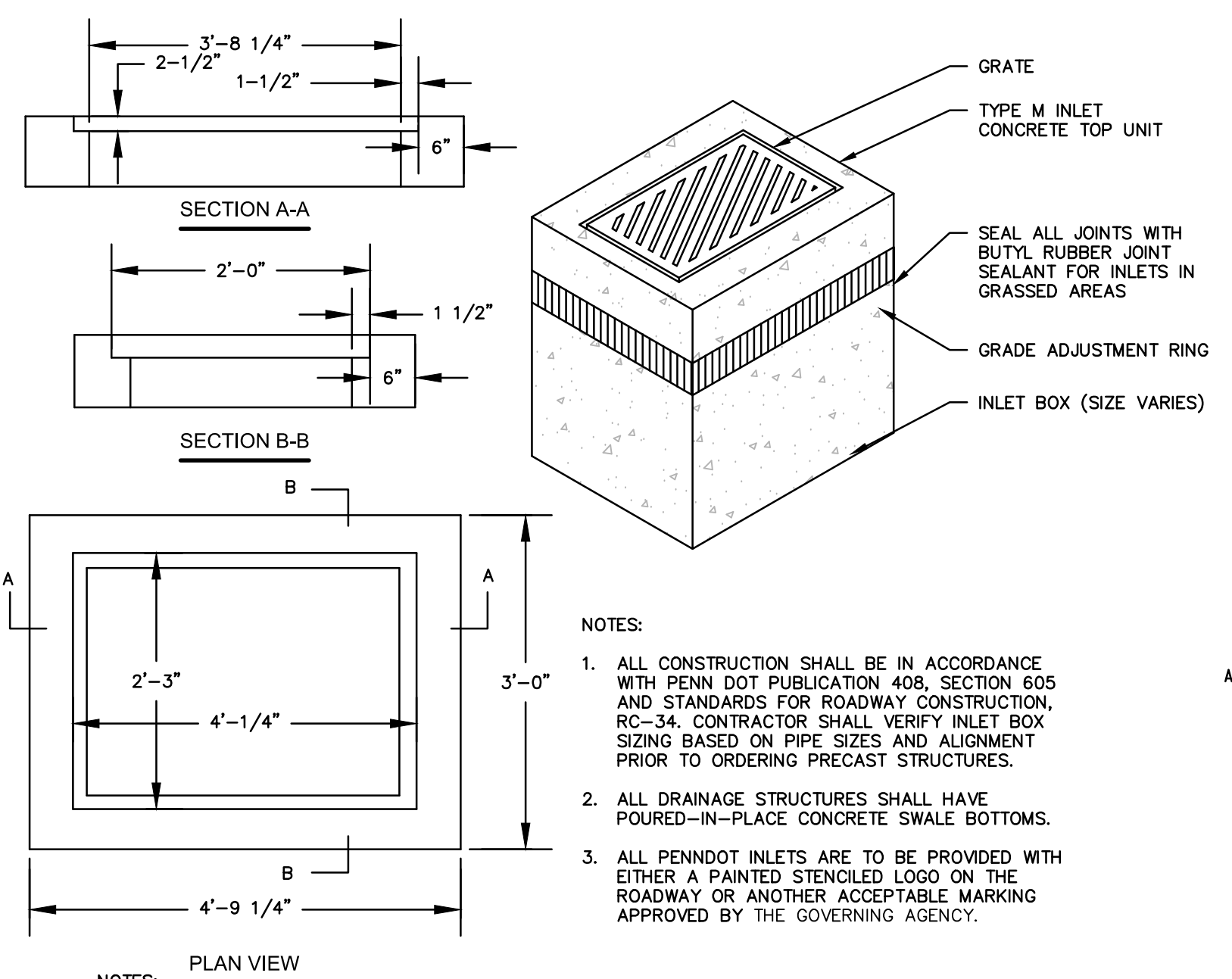
N.T.S. 3 OF 3



NOTE: A CONCRETE CRADLE MAY BE USED IN CONJUNCTION WITH ANTI-SEEP COLLARS AND/OR FILTER DIAPHRAGM.
ANTI-SEEP COLLAR NUMBER, SIZE AND SPACING SHALL BE AS SHOWN ELSEWHERE IN PLAN.
FILTER DIAPHRAGM LOCATION (LOC.) SHALL BE AS SHOWN IN FIGURE 7.8 FOUND IN PENNSYLVANIA DEP EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL.

CONCRETE CRADLE FOR BASIN OR TRAP OUTLET BARREL DETAIL

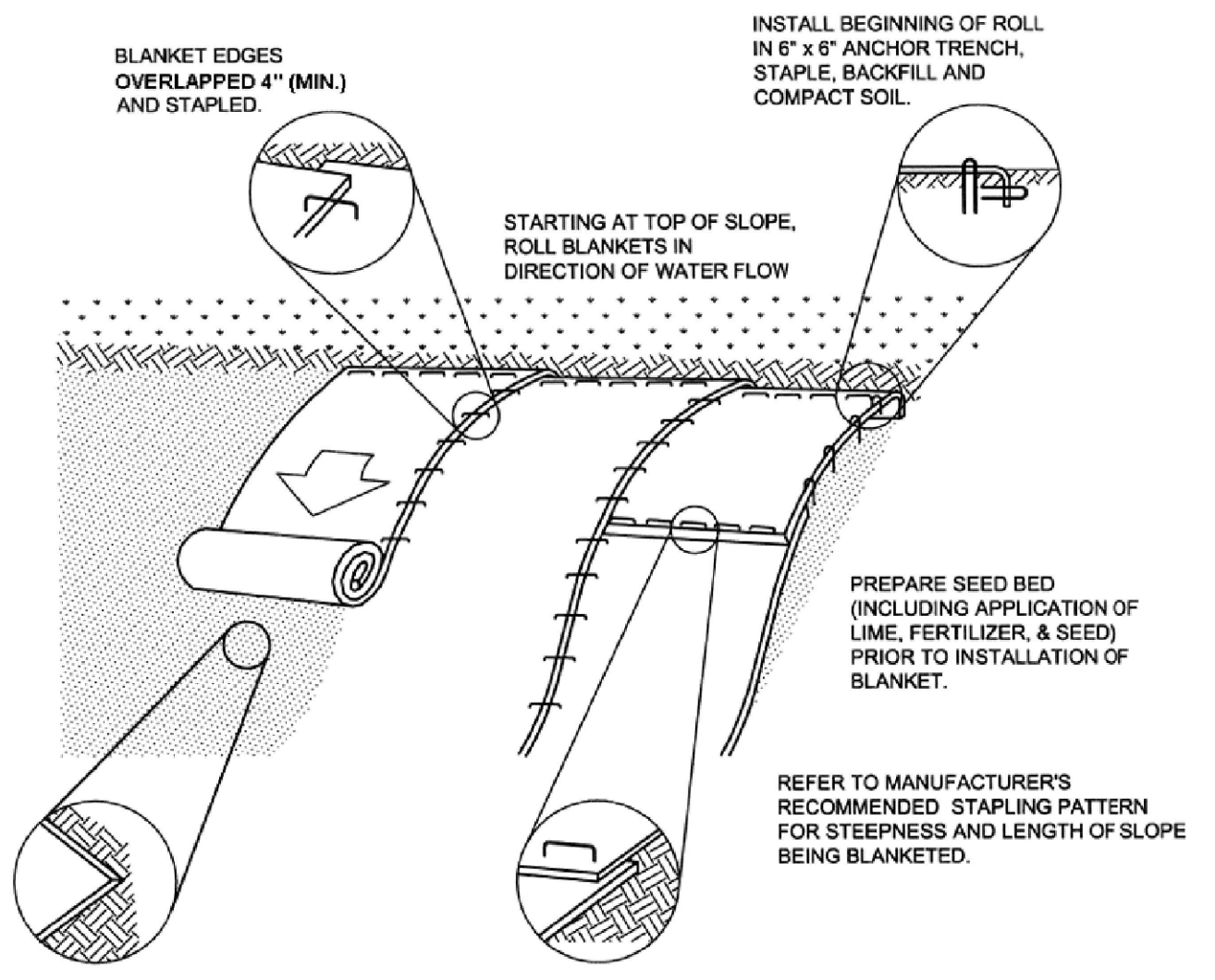
N.T.S. PADEP-7-17



- NOTES:
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH PENN DOT PUBLICATION 408, SECTION 605 AND STANDARDS FOR ROADWAY CONSTRUCTION, RC-34. CONTRACTOR SHALL VERIFY INLET BOX SIZING BASED ON PIPE SIZES AND ALIGNMENT PRIOR TO ORDERING PRECAST STRUCTURES.
 - ALL DRAINAGE STRUCTURES SHALL HAVE POURED-IN-PLACE CONCRETE TOP BOTTOMS.
 - ALL PENNDOT INLETS ARE TO BE PROVIDED WITH EITHER A PAINTED STENCILED LOGO ON THE ROADWAY OR ANOTHER ACCEPTABLE MARKING APPROVED BY THE GOVERNING AGENCY.

TYPE "M" INLET

N.T.S.



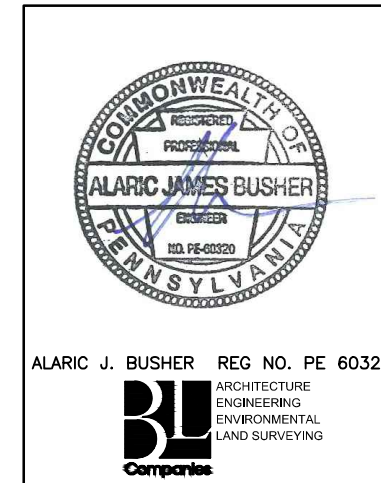
BLANKET EDGES OVERLAPPED 4" (MIN.) AND STAPLED.
INSTALL BEGINNING OF ROLL IN 6" X 6" ANCHOR TRENCH, STAPLE, BACKFILL AND COMPACT SOIL.
STARTING AT TOP OF SLOPE, ROLL BLANKETS IN DIRECTION OF WATER FLOW.
PREPARE SEED BED (INCLUDING APPLICATION OF LIME, FERTILIZER & SEED) PRIOR TO INSTALLATION OF BLANKET.
REFER TO MANUFACTURER'S RECOMMENDED STAPLING PATTERN FOR STEEPNESS AND LENGTH OF SLOPE BEING BLANKETED.

- 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 TOP 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.
 - STAPLING OF THE BLANKET SHALL BE DONE 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 70% COVERAGE THROUGHOUT THE BLANKETED AREA. DAMAGED OR DISPLACED BLANKETS SHALL BE RESTORED OR REPLACED WITHIN 4 CALENDAR DAYS.
 - BIODEGRADABLE STAPLES SHALL BE USED.

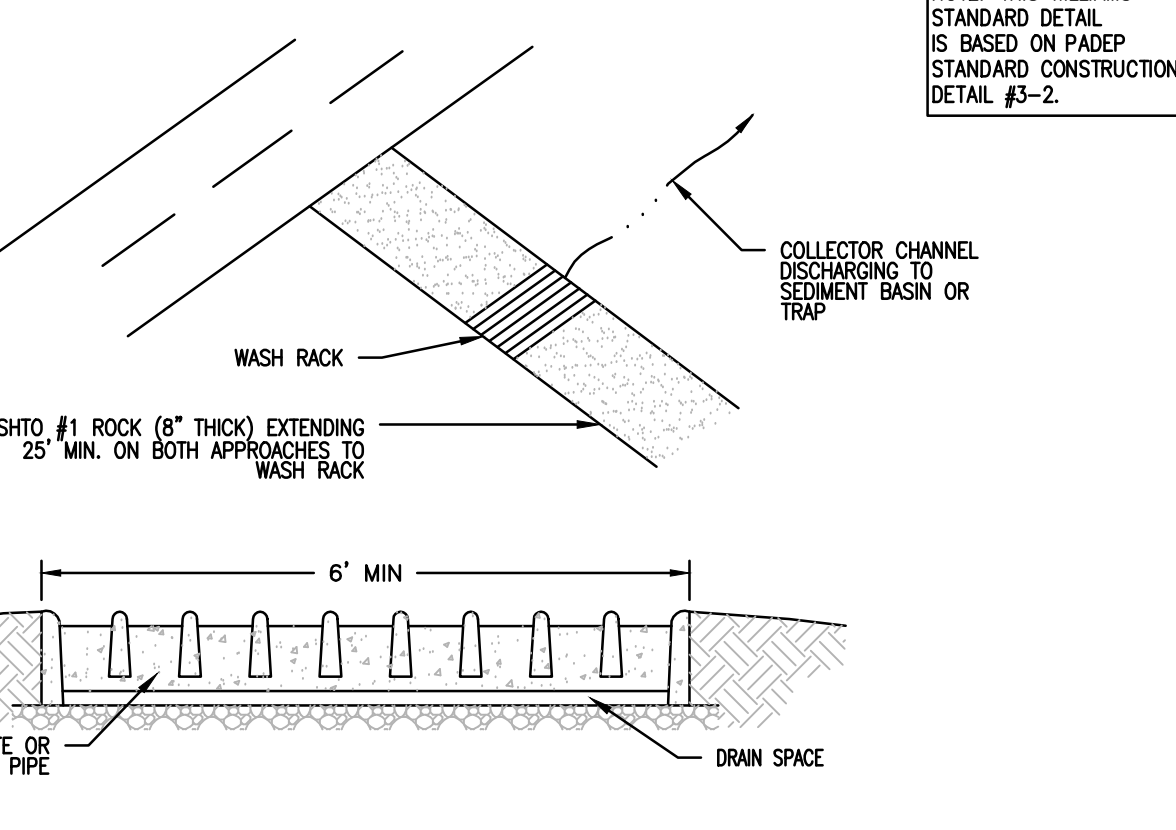
WILLIAMS SUPPLEMENTAL NOTES:
1. CONTRACTOR SHALL USE SINGLE MAT STRAW FOR SLOPES FLATTER THAN 3:1.
2. HYDRAULIC APPLIED EROSION CONTROL BLANKETS MAY BE USED IN LIEU OF ECB.

EROSION CONTROL BLANKET

N.T.S.



NO.		DATE		BY	DESCRIPTION	W.D.	CHK.	APP.
0	08/26/2015	BL			ISSUED FOR PADEP SUBMITTAL	W0161509	DAK	AJB
1	12/02/2015	BL			ISSUED FOR PADEP RESUBMITTAL	W0161509	DAK	AJB
3	03/29/2016	BL			ISSUED FOR PADEP RESUBMITTAL	W0161509	DAK	AJB
4	Oct. 2016	BL			PADEP TECHNICAL DEFICIENCY RESPONSE #1	W0161509	AJB	AJB



- PADEP STANDARD NOTES:
- WASH RACK SHALL BE 20 FEET (MIN.) WIDE OR TOTAL WIDTH OF ACCESS.
 - WASH RACK SHALL BE DESIGNED AND CONSTRUCTED TO ACCOMMODATE ANTICIPATED CONSTRUCTION VEHICULAR TRAFFIC.
 - A WATER SUPPLY SHALL BE MADE AVAILABLE TO WASH THE WHEELS OF ALL VEHICLES EXITING THE SITE.
 - MAINTENANCE: ROCK CONSTRUCTION ENTRANCE THICKNESS SHALL BE CONSTANTLY MAINTAINED TO THE SPECIFIED DIMENSIONS BY ADDING ROCK. A STOCKPILE OF ROCK MATERIAL SHALL BE MAINTAINED ON SITE FOR THIS PURPOSE. DRAIN SPACE UNDER WASH RACK SHALL BE KEPT OPEN AT ALL TIMES. DAMAGE TO THE WASH RACK SHALL BE REPAIRED PRIOR TO FURTHER USE OF THE RACK. ALL SEDIMENT DEPOSITED ON ROADWAYS SHALL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE IMMEDIATELY. WASHING THE ROADWAY OR SWEEPING THE DEPOSITS INTO ROADWAY DITCHES, SEWERS, CULVERTS, OR OTHER DRAINAGE COURSES IS NOT ACCEPTABLE.
- SUPPLEMENTAL NOTES:
- ROW TO BE INSTALLED IN, OR WITHIN 100 FEET OF, SPECIAL PROTECTION WATERSHEDS AS WELL AS WITHIN 50 FEET OF WETLANDS.
 - WASH RACK SHALL BE INSTALLED IN COORDINATION WITH THE NOXIOUS AND INVASIVE PLANT MANAGEMENT PLAN. ALTERNATIVE WHEEL WASHING METHODS, SUCH AS PRESSURE WASHING, BRUSHING, OR USE OF COMPRESSED AIR AND/OR AN ELEVATED WASH RACK, MAY BE USED IN CERTAIN LOCATIONS DEPENDING ON THE ANTICIPATED SEDIMENT AND LOCAL VEGETATION.
 - VACUUM SWEEPING MAY BE USED TO MITIGATE THE SPREAD OF SEDIMENT BEYOND THE RCEs. RCEs WILL BE INSPECTED FOR SEDIMENT TRACKING ONTO PUBLIC ROADWAYS. IF SEDIMENT IS OBSERVED IN THE PUBLIC ROADWAY, THE ROADWAY SHALL BE VACUUM SWEEPED UPON DISCOVERY. ANY LARGE CLUMPS OF DIRT THAT ACCUMULATE ON THE ROAD SURFACE WILL NEED TO BE HAND CLEARED BEFORE VACUUM SWEEPING. ALL VEHICLES LEAVING THE RCE SHALL BE INSPECTED FOR LARGE CLUMPS OF DEBRIS. IF DEBRIS, LARGER THAN 4" DIAMETER IS OBSERVED, IT SHALL BE MANUALLY REMOVED FROM THE VEHICLE. DIRT ROADS SHALL BE INSPECTED WEEKLY FOR RUTTING. THERE SHALL BE NO MORE THAN A MAXIMUM OF 6" OF RUTTING ON ACCESS ROADS. IF RUTTING IN EXCESS OF 6" IS OBSERVED, THE ROAD SHALL BE ROLLED AS SOON AS FEASIBLE. DUMP TRUCKS HAULING MATERIAL FROM RCEs IN SPECIAL PROTECTION WATERSHEDS WILL BE COVERED WITH A TARP/AULN.
 - WITHIN WETLANDS RCE AND/OR RCE WITH WASHRACK SHALL BE REPLACED WITH TIMBER MAT AND CLASS 1 GEOTEXTILE UNDERLAYMENT.

ROCK CONSTRUCTION ENTRANCE WITH WASH RACKS

N.T.S.

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
ATLANTIC SUNRISE PROJECT- PROPOSED 42" NATURAL GAS PIPELINE
SOIL EROSION & SEDIMENT CONTROL AND LAYOUT PLANS
FOR RIVER ROAD REGULATOR STATION
DRUMORE TOWNSHIP, LANCASTER COUNTY, PENNSYLVANIA

SOIL EROSION & SEDIMENT CONTROL DETAILS

DRAWN BY: JEC DATE: 04/03/15 ISSUED FOR BID: SCALE: AS NOTED
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APPROVED BY: AJB DATE: 07/17/15 DRAWING NUMBER: (92-3400)VF-1A-11 SHEET 8 OF 8
W.D.: 1161509

Drawn By & Date/Time: hthomas Nov. 15, 2016 - 4:21pm
Drawing Location & Name: G:\JOBS\14\14C\14C4909\DWG\020-CPL\15\FRS_EC14C4909(20S)_RIVER.dwg