

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
 POST CONSTRUCTION STORMWATER MANAGEMENT PLAN

MLV-505LD86

SUGAR HOLLOW MAINLINE VALVE YARD

CHESTNUTHILL TOWNSHIP, MONROE COUNTY, PENNSYLVANIA

APRIL 2021
 REVISED JULY 2022

PROJECT OWNER/APPLICANT

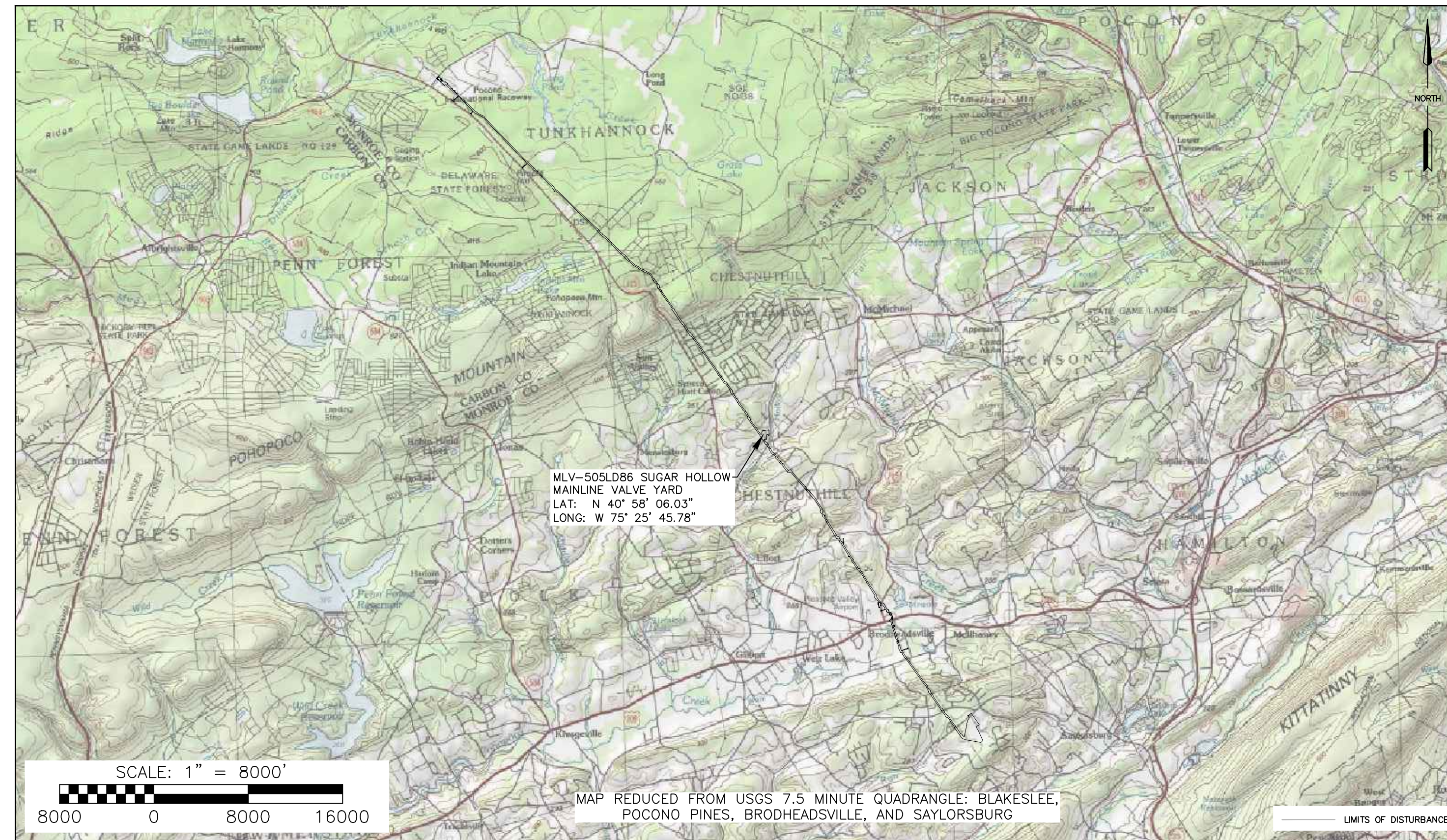
TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
 2800 POST OAK BLVD, LEVEL 11
 HOUSTON, TX 77056
 CONTACT: JOSEPH DEAN, MANAGER PERMITTING

PLAN PREPARER / ENGINEER

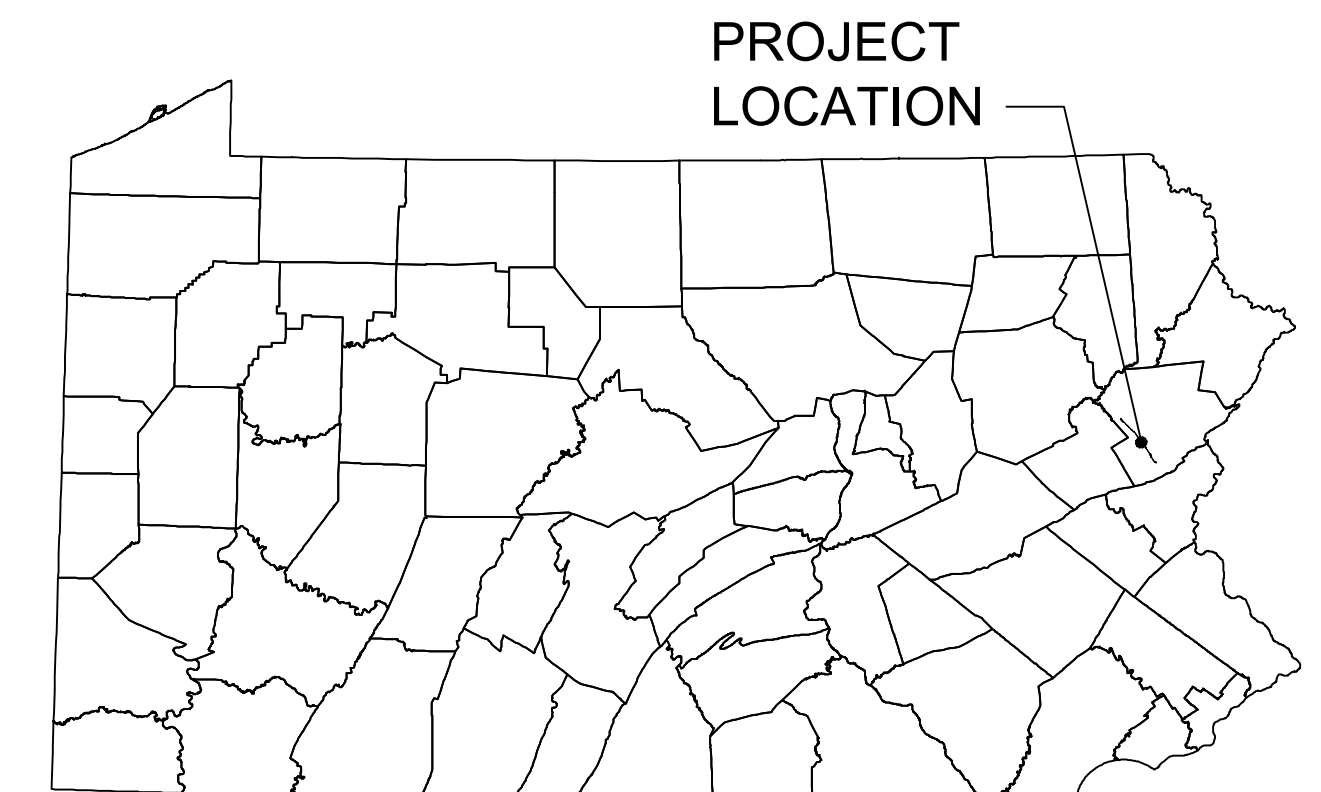
WHM CONSULTING, LLC
 366 WALKER DRIVE SUITE 300
 STATE COLLEGE, PA 16801
 PH: (814) 689-1650
 CONTACT: RYAN NELSON, PROJECT MANAGER

BAI GROUP, LLC

366 WALKER DRIVE SUITE 300
 STATE COLLEGE, PA 16801
 PH: (814) 238-2060
 CONTACT: PATRICK WOZINSKI, P.E. PROJECT ENGINEER



LOCATION MAP



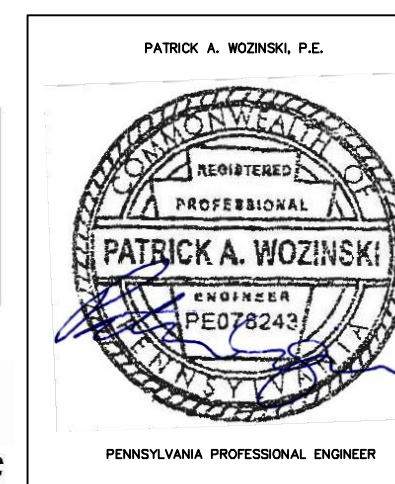
VICINITY MAP
 N.T.S.

SHEET INDEX	
SHEET NUMBER	DRAWING TITLE
1 OF 8	COVER SHEET
2 OF 8	EXISTING CONDITIONS PLAN SHEET 1
3 OF 8	EXISTING CONDITIONS PLAN SHEET 2
4 OF 8	PROPOSED CONDITIONS PLAN SHEET 1
5 OF 8	PROPOSED CONDITIONS PLAN SHEET 2
6 OF 8	NOTES
7 OF 8	DETAILS SHEET 1
8 OF 8	DETAILS SHEET 2

RECEIVING WATERS			
NAME	DESIGNATED USE	EXISTING USE	PFBC CLASSIFICATION
SUGAR HOLLOW CREEK	CWF	HQ-CWF, MF	CLASS A TROUT STREAM

Call before you dig.
 1-800-242-1776 or **811**

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



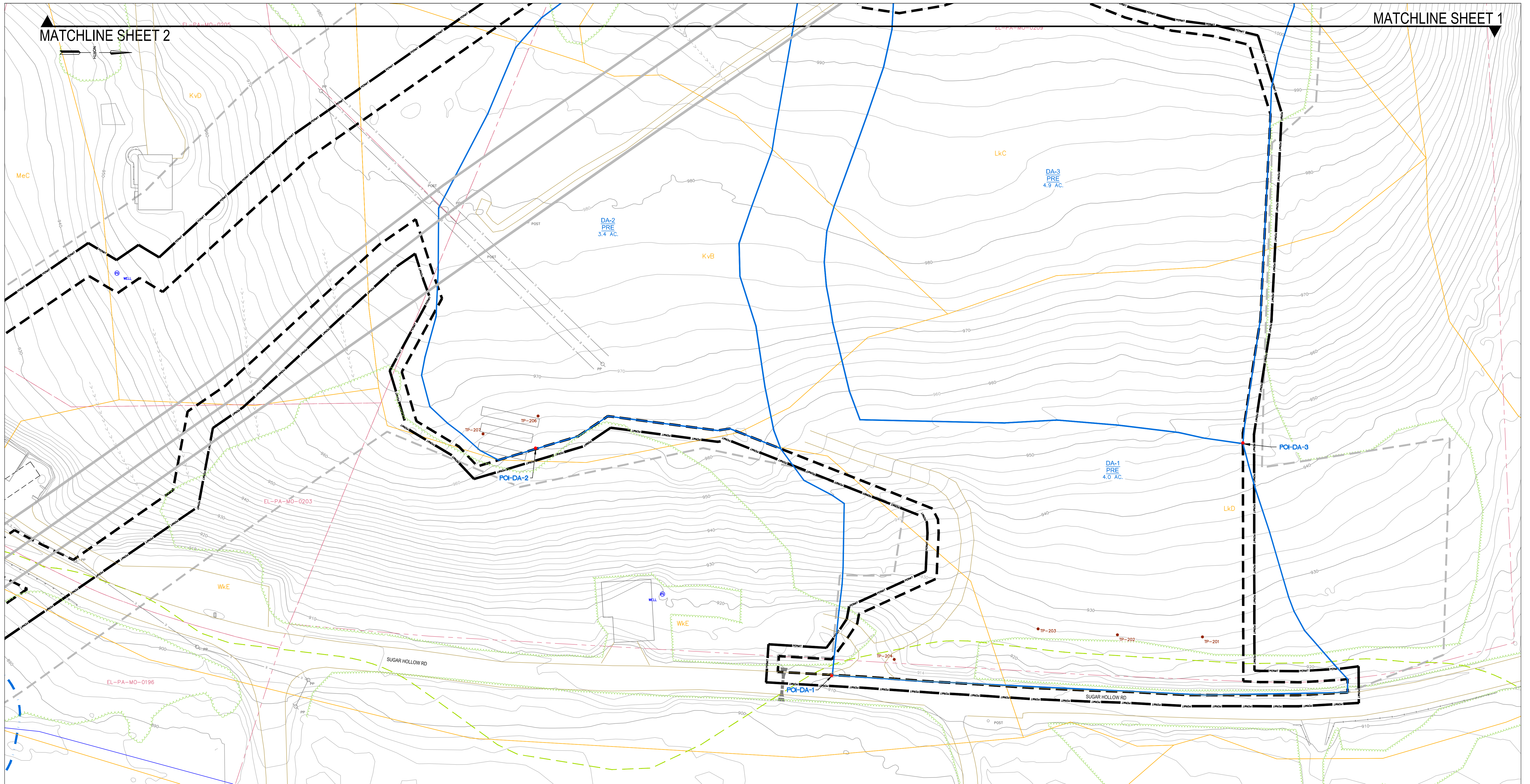
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TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
 REGIONAL ENERGY ACCESS EXPANSION PROJECT
 MLV-505LD86
 POST CONSTRUCTION STORMWATER MANAGEMENT PLAN
 COVER SHEET



CHESTNUTHILL TOWNSHIP, MONROE COUNTY, PENNSYLVANIA

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CHECKED BY: RJN	DATE: 03/31/21	ISSUED FOR CONSTRUCTION:	REVISION:
APPROVED BY: PW	DATE: 03/31/21	DRAWING NUMBER: 26-1000-70-28-D	SHEET 1 OF 8
WO: 1222637	RID: 108		



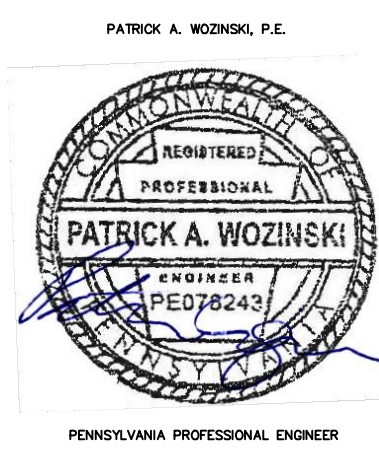
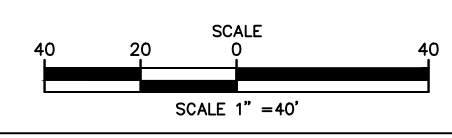
LEGEND

—	PROPERTY LINE	—	EXISTING LEADY / TOPL PIPELINES
—	EXISTING RIGHT-OF-WAY	—	EXISTING FOREIGN PIPELINES
—	ESCP PERMIT BOUNDARY	—	EXISTING UTILITY POLE / TOWER
—	LIMITS OF DISTURBANCE	—	EXISTING VALVE
—	EXISTING FENCE	—	EXISTING CULVERT
—	EXISTING STONE ROW	—	EXISTING ELECTRIC LINE
—	EXISTING STRUCTURE	—	EXISTING UNDERGROUND ELECTRIC LINE
—	EXISTING EDGE OF ROAD	—	EXISTING GAS LINE
—	EXISTING GRADE MAJOR CONTOURS (10' C.I.)	—	EXISTING WATER LINE
—	EXISTING GRADE MINOR CONTOURS (2' C.I.)	—	EXISTING SANITARY LINE
—	EXISTING WATERBAR AND OUTLET STRUCTURE	—	EXISTING STORM SEWER
—	APPROX. ENVIRONMENTAL STUDY LIMITS	—	EXISTING TELEPHONE LINE
—	DELINEATED WETLAND	—	EXISTING FIBER OPTIC LINE
—	DELINEATED WATERWAY / STREAM (TOP OF BANK)	—	EXISTING UNDERGROUND CABLE LINE
—	STREAM FLOW DIRECTION	—	EXISTING STORM INLET
—	RIPIARIAN BUFFER	—	EXISTING SANITARY MANHOLE
—	50'/FEMA FLOODWAY	—	EXISTING COMMUNICATION/ELECTRIC MANHOLE
—	FEMA 100-YEAR FLOODPLAIN	—	EXISTING FIRE HYDRANT
—	SOIL BOUNDARY / TYPE	—	EXISTING POWER POLE
—	EXISTING TREELINE / TREE/SHRUB	—	EXISTING WELL
		—	PRE-CONSTRUCTION DRAINAGE AREA

SOIL LEGEND

LkB	LECK HILL CHANNERY SILT LOAM, 2 TO 8 PERCENT SLOPES
LkC	LECK HILL CHANNERY SILT LOAM, 8 TO 15 PERCENT SLOPES
KvB	KINESVILLE CHANNERY SILT LOAM, 3 TO 8 PERCENT SLOPES
KvC	KINESVILLE CHANNERY SILT LOAM, 8 TO 15 PERCENT SLOPES
WkE	WEIKERT AND KINESVILLE SOILS, STEEP

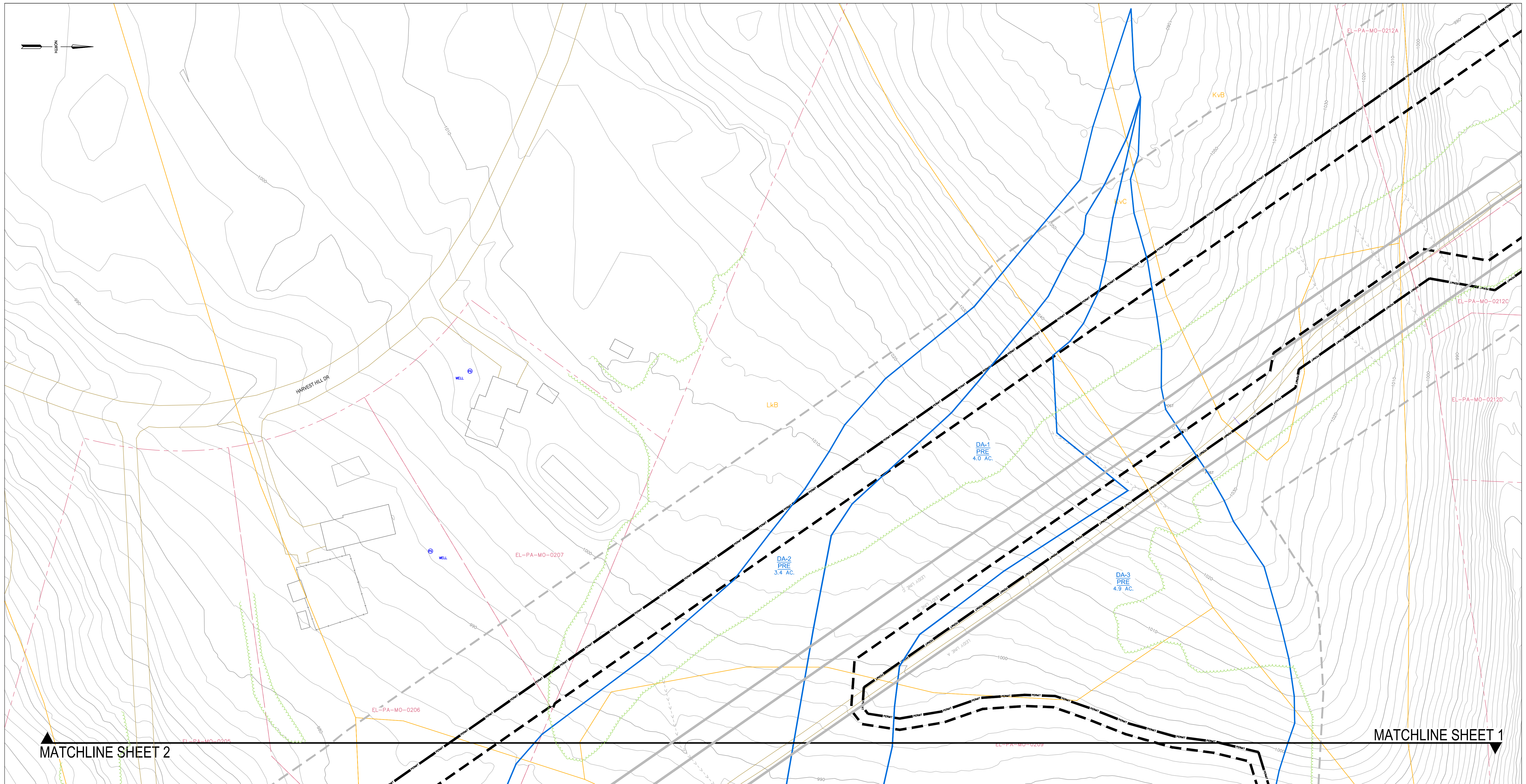
- EXISTING CONDITION NOTES/SOURCES**
- EXISTING ROADWAYS, CONTOURS, PROPERTY LINE, TREE LINE, ETC. ARE DERIVED FROM A FIELD SURVEY PERFORMED BY TRANSCO BETWEEN 2019 AND 2020.
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 REGIONAL ENERGY ACCESS EXPANSION PROJECT
 MLV-505LD86
 POST CONSTRUCTION STORMWATER MANAGEMENT PLAN
 EXISTING CONDITIONS PLAN SHEET 1
 CHESTNUTHILL TOWNSHIP, MONROE COUNTY, PENNSYLVANIA

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LEGEND

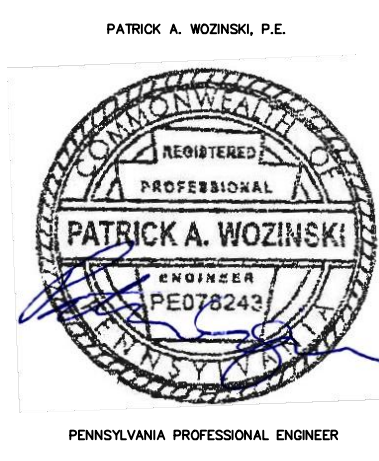
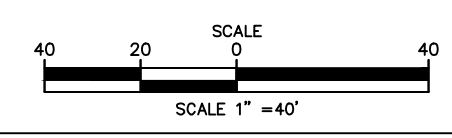
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—	RIPARIAN BUFFER	—	EXISTING SANITARY MANHOLE
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—	FEMA 100-YEAR FLOODPLAIN	—	EXISTING FIRE HYDRANT
—	SOIL BOUNDARY / TYPE	—	EXISTING POWER POLE
—	EXISTING TREELINE / TREE/SHRUB	—	EXISTING WELL
		—	PRE-CONSTRUCTION DRAINAGE AREA

SOIL LEGEND

L4B LECK KILL CHANNERY SILT LOAM, 2 TO 8 PERCENT SLOPES
 L4C LECK KILL CHANNERY SILT LOAM, 8 TO 15 PERCENT SLOPES
 K4B KLINEVILLE CHANNERY SILT LOAM, 3 TO 6 PERCENT SLOPES
 K4C KLINEVILLE CHANNERY SILT LOAM, 6 TO 15 PERCENT SLOPES
 W4E WEIKERT AND KLINEVILLE SOILS, STEEP

EXISTING CONDITION NOTES/SOURCES

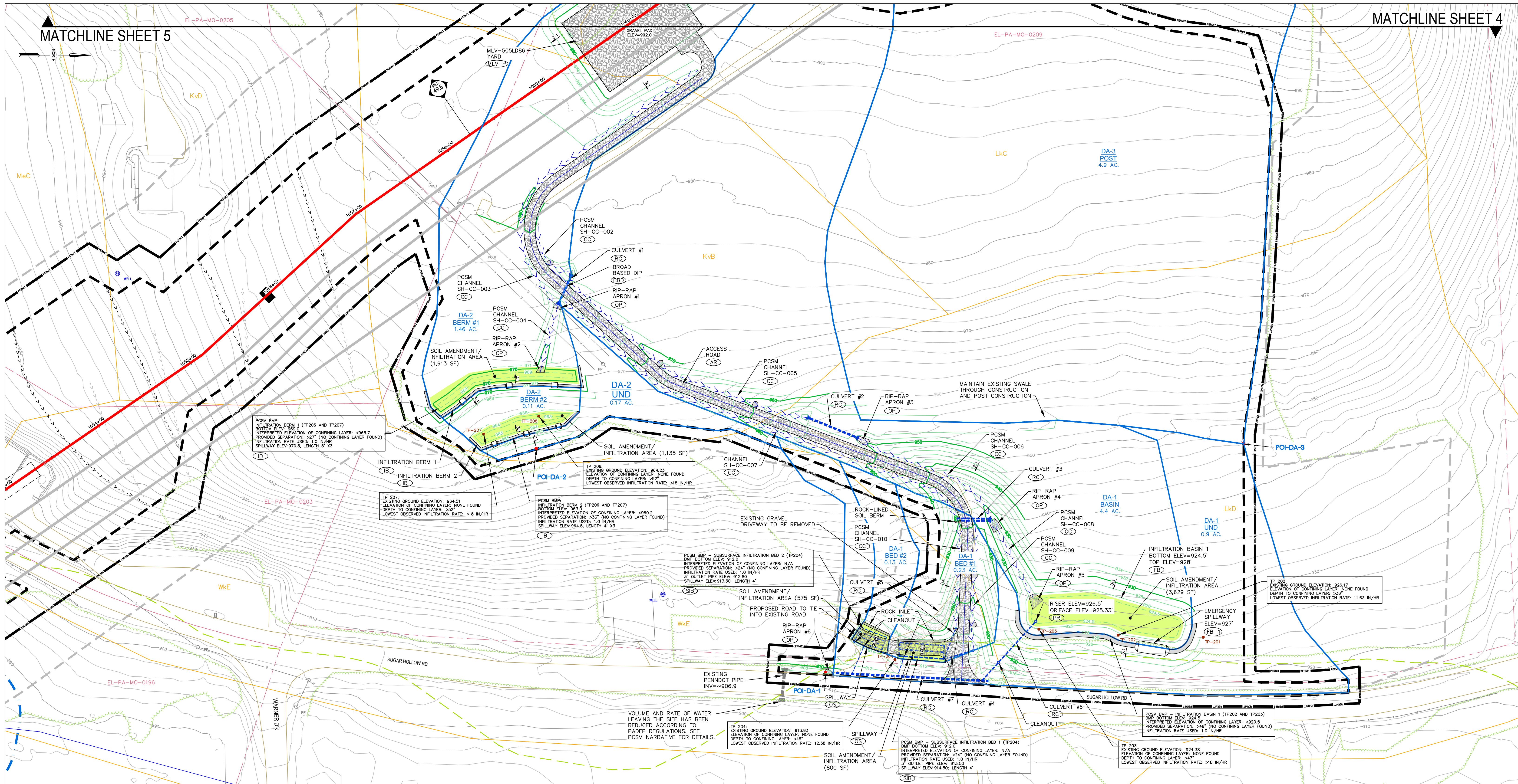
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 MLV-505LD86
 POST CONSTRUCTION STORMWATER MANAGEMENT PLAN
 EXISTING CONDITIONS PLAN SHEET 2
 CHESTNUTHILL TOWNSHIP, MONROE COUNTY, PENNSYLVANIA

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W.O. 1222637	RID: 108		



LEGEND

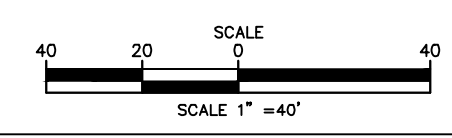
--- (dashed line)	PROPERTY LINE	--- (dashed line)	EXISTING LEADY / TOPL PIPELINES	--- (dashed line)	PROPOSED PIPELINE
--- (dashed line)	EXISTING RIGHT-OF-WAY	--- (dashed line)	EXISTING FOREIGN PIPELINES	--- (dashed line)	PROPOSED PIPELINE GROUNDED
--- (dashed line)	ESCP PERMIT BOUNDARY	--- (dashed line)	EXISTING UTILITY POLE / TOWER	--- (dashed line)	PROPOSED WATERBAR AND OUTLET STRUCTURE
--- (dashed line)	LIMITS OF DISTURBANCE	--- (dashed line)	EXISTING VALVE	--- (dashed line)	PROPOSED CHANNEL
--- (dashed line)	EXISTING FENCE	--- (dashed line)	EXISTING CULVERT	--- (dashed line)	PROPOSED FENCE
--- (dashed line)	EXISTING STONE ROW	--- (dashed line)	EXISTING ELECTRIC LINE	--- (dashed line)	PROPOSED GRAVEL
--- (dashed line)	EXISTING STRUCTURE	--- (dashed line)	EXISTING UNDERGROUND ELECTRIC LINE	--- (dashed line)	PROPOSED GRADE MAJOR CONTOURS (10' C.I.)
--- (dashed line)	EXISTING EDGE OF ROAD	--- (dashed line)	EXISTING GAS LINE	--- (dashed line)	PROPOSED GRADE MINOR CONTOURS (2' C.I.)
--- (dashed line)	EXISTING GRADE MAJOR CONTOURS (10' C.I.)	--- (dashed line)	EXISTING WATER LINE	--- (dashed line)	PROPOSED INFILTRATION AREA W/ SOIL AMENDMENT
--- (dashed line)	EXISTING GRADE MINOR CONTOURS (2' C.I.)	--- (dashed line)	EXISTING SANITARY LINE	--- (dashed line)	POST-CONSTRUCTION DRAINAGE AREA
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--- (dashed line)	FEMA 100-YEAR FLOODPLAIN	--- (dashed line)	EXISTING FIRE HYDRANT	--- (dashed line)	
--- (dashed line)	M=2 SOIL BOUNDARY / TYPE	--- (dashed line)	EXISTING POWER POLE	--- (dashed line)	
--- (dashed line)	EXISTING TREELINE / TREE/SHRUB	--- (dashed line)	EXISTING WELL	--- (dashed line)	

SOIL LEGEND

LMB	LECK KILL CHANNELRY SILT LOAM, 2 TO 8 PERCENT SLOPES
LKC	LECK KILL CHANNELRY SILT LOAM, 8 TO 15 PERCENT SLOPES
KKB	KLINESVILLE CHANNELRY SILT LOAM, 3 TO 8 PERCENT SLOPES
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PATRICK A. WOZINSKI, P.E.

PATRICK A. WOZINSKI
PROFESSIONAL ENGINEER
PENNSYLVANIA PROFESSIONAL ENGINEER

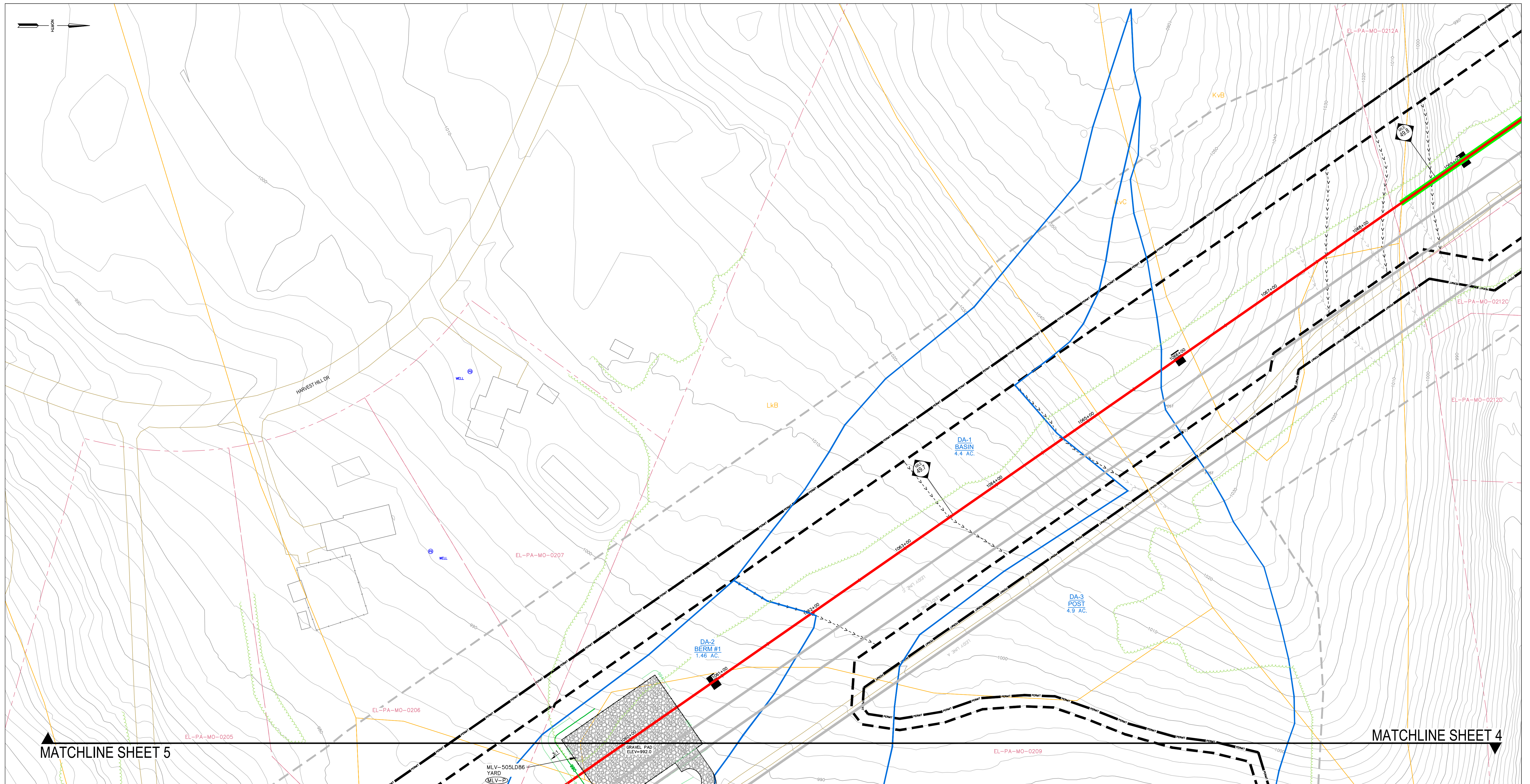
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MLV-505LD86
POST CONSTRUCTION STORMWATER MANAGEMENT PLAN
PROPOSED CONDITIONS PLAN SHEET 1

CHESTNUTHILL TOWNSHIP, MONROE COUNTY, PENNSYLVANIA

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MATCHLINE SHEET 5

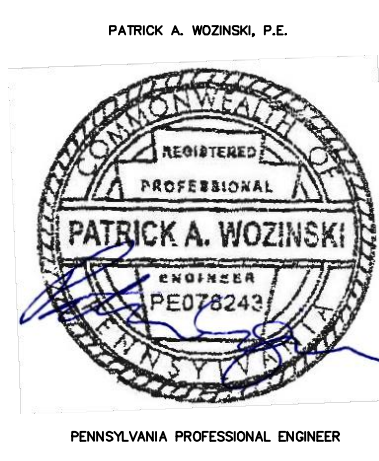
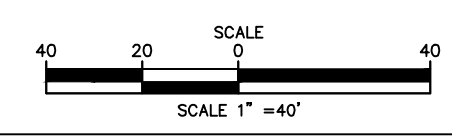
MATCHLINE SHEET 4

LEGEND	
	PROPERTY LINE
	EXISTING RIGHT-OF-WAY
	ESCP PERMIT BOUNDARY
	LIMITS OF DISTURBANCE
	EXISTING FENCE
	EXISTING STONE ROW
	EXISTING STRUCTURE
	EXISTING EDGE OF ROAD
	EXISTING GRADE MAJOR CONTOURS (10' C.I.)
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	EXISTING FOREIGN PIPELINES
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	PROPOSED CHANNEL
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RESOLUTION OF SOIL LIMITATIONS

TRANSCO PROPOSES THE FOLLOWING RESOLUTIONS TO COMPENSATE FOR SOIL LIMITATIONS SUMMARIZED IN TABLE 3 ABOVE:

- TO OFFSET THE CAVING OF CUTBANKS, TRENCHING OPERATIONS WILL BE CONDUCTED IN ACCORDANCE WITH THE OSHA TECHNICAL MANUAL FOR TRENCHING.
- PREVENTATIVE COATINGS SHALL BE USED TO PREVENT CORROSION OF CONCRETE AND/ OR STEEL.
- WHEN BEDROCK IS ENCOUNTERED IT WILL BE REMOVED BY MECHANICAL METHODS OR BLASTING. BLASTING OPERATIONS WILL CONFORM WITH LOCAL, STATE, AND FEDERAL REGULATIONS.
- PRECAUTIONS WILL BE TAKEN TO PREVENT SOLE FAILURE WHEN WORKING WITHIN LOW STRENGTH SOILS BY FLATTENING CUT / FILL SLOPES, NOT OVERLOADING, MAINTAINING LATERAL SUPPORT, AND PREVENTING SATURATION OF SOILS. LOW STRENGTH SOILS WILL NOT BE USED FOR ROADWAY CONSTRUCTION.
- EXCAVATION IN SOILS PRONE TO FLOODING, SLOW PERCOLATION, PONDING, WEATED, LOCATED IN A SEASONAL HIGH WATER TABLE, OR WHICH ARE HYDRIC, WILL LIKELY ENCOUNTER WATER. COMPENSATION WILL INVOLVE DETERMINING WITH APPROPRIATE MEANS SUCH AS PUMP WATER FILTER BAGS, SEDIMENT TRAPS, ETC.
- SOILS THAT HAVE THE POTENTIAL TO SWELL, SHRINK, OR HEAVE DUE TO FROST ACTION MAY CAUSE DAMAGE TO ROADWAYS OR PADS. WHERE FOUNDATIONS ARE CRITICAL, COMPENSATION MAY REQUIRE REMOVAL AND REPLACEMENT OF SOILS WITH SUITABLE MATERIAL.
- IN CIRCUMSTANCES WHERE SOILS APPEAR TO BE A POOR SOURCE OF TOPSOIL, DROUGHTY OR PRONE TO WEATNESS, SOIL TESTING WILL BE PERFORMED TO DETERMINE THE APPROPRIATE APPLICATIONS OF SOIL AMENDMENTS TO PROMOTE GROWTH. SOILS ONSITE THAT ARE FAIR SOURCES OF TOPSOIL, WILL BE IDENTIFIED, STRIPPED AND STOCKPILED FOR USE DURING RESTORATION.
- IN ORDER TO MINIMIZE EROSION OF SOILS THAT ARE EASILY ERODIBLE, COMPENSATION MAY INVOLVE PROVIDING A PROTECTIVE LINING, TO APPLY SEED, MULCH, EROSION CONTROL BLANKETS (EITHER IN ROLLS OR HYDRAULICALLY APPLIED), TRACKING SLOPES, UPSTREAM DIVERSIONS, WATERBARS, ETC. TO MINIMIZE SOIL EROSION.

Soil Mapping Unit	Soil Series
MLV-50SLD86	
K4B	Kilnesville channery silt loam, 3 to 8 percent slopes
K4D	Kilnesville channery silt loam, 15 to 25 percent slopes
L4B	Leck kill channery silt loam, 2 to 8 percent slopes
L4C	Leck kill channery silt loam, 8 to 15 percent slopes
L4D	Leck kill channery silt loam, 15 to 25 percent slopes
WKE	Weikert and Kilnesville soils, steep

SOIL NAME	SOILS WITH SLOPE CLASS CUTBANKS/CAVE	CONCRETE TO CONCRETE/STEEL	DRAGGAGE	EASILY ERODIBLE	FLOODING DEPTH TO SATURATED ZONE/SATURATED WATER TABLE	HYDRIC/HYDRIC	LOW STRENGTH/LOW	SLOW PERCOLATION	POOR SOURCE OF TOPSOIL	SHRINK – SWELL	POTENTIAL SHIMHOLE	POUNDING	WEATNESS
KILNESVILLE	K4B, K4D	X	C/S	X	X	X	X	X	X	X	X		
LECK KILL	L4B, L4C, L4D	X	C				X	X	X	X	X		X
WEIKERT	WKE	X	C/S	X			X	X	X	X	X		

CHARACTERISTICS OF EARTH DISTURBANCE ACTIVITY, INCLUDING PAST, PRESENT, AND PROPOSED LAND USES AND PROPOSED ALTERATIONS TO THE AREA

TRANSCO WILL BE INSTALLING MLV-50SLD86 NEAR THE EFFORT LOOP PIPELINE AS A MEANS TO ISOLATE GAS FLOWS, PIG LAUNCHERS/RECEIVERS, VALVES AND OTHER ANCILLARY FACILITIES WILL BE LOCATED AT THIS MLV FACILITY. THE WORK AND DISTURBED AREAS ARE LOCATED WITHIN TRANSCO PROPERTY, EXISTING EASEMENTS, OR LEGALLY OBTAINED WORKSPACE WHERE THE PAST, PRESENT, AND PROPOSED LAND USE IS PRIMARILY AN EXISTING PIPELINE ROW. THE TEMPORARY WORKSPACES WILL BE RESTORED TO THE ORIGINAL CONTIGUOUS LANDS USING DATA TAKEN FROM GOOGLE EARTH AND MULTI-RESOLUTION LAND CHARACTERISTICS (MRLC) CONSORTIUM WEBSITE (HTTPS://WWW.MRLC.GOV/VIEWER/). IT APPEARS THAT A MAJOR PORTION OF THE EFFORT LOOP MLV WAS EXISTING AND MAINTAINED GAS PIPELINE RIGHT-OF-WAY FOR THE PAST 20 YEARS AND WILL CONTINUE TO BE AN EXISTING AND MAINTAINED GAS PIPELINE RIGHT-OF-WAY ONCE THE PROJECT IS COMPLETE. ALONG THE EDGES OF THE ROW LAND USE IS PRIMARILY FORESTED, BASED ON THE SURROUNDING LAND CHARACTERISTICS. LAND USE PRIOR TO ROW CONSTRUCTION WILL BE THE PAST AND FUTURE WOODLAND, OPENLY RESTORED LAND OR MEADOW. A GRAVEL PAD AND ACCESS ROAD WILL BE CONSTRUCTED AT THE EFFORT LOOP MLV SITE. THE CONTRACTOR WILL CONSTRUCT STORMWATER BEST MANAGEMENT PRACTICES (BMPs) TO MITIGATE THE INCREASE IN VOLUME AND PEAK RATES ASSOCIATED WITH CONSTRUCTION. THE PROPOSED BMPs ARE DESIGNED TO EVAPORATE AND INFILTRATE THE NET INCREASE IN VOLUME BETWEEN THE PRE- AND POST-DEVELOPMENT 2-YEAR RAIN EVENTS.

BMP DESCRIPTION NARRATIVE

CONVEYANCE BMPs, TWO INFILTRATION BERMS, TWO SUBSURFACE INFILTRATION BEDS AND AN INFILTRATION BASIN WILL BE INSTALLED ACROSS THE DEVELOPED AREA. MANAGE THE INCREASE IN VOLUME BETWEEN THE PRE- AND POST-DEVELOPMENT 2-YEAR STORM EVENTS AND MITIGATE THE INCREASE (PRE-POST DEVELOPMENT) IN PEAK RUNOFF FOR THE 2-, 10-, 25-, 50-, AND 100-YEAR STORM EVENTS. A SUMMARY OF THE PROPOSED BMPs IS INCLUDED BELOW:

- CHANNELS AND CULVERTS TO COLLECT AND CONVEY RUNOFF TO THE PROPOSED STORMWATER INFILTRATION BMPs.
- TWO INFILTRATION BERMS WITH A HEIGHT OF 2 FEET AND OVERALL LENGTHS OF 112 AND 188 FEET, RESPECTIVELY.
- TWO SUBSURFACE INFILTRATION BEDS LOCATED UNDER THE PROPOSED DRIVEWAY WITH A 4" OR 6" DISCHARGE PIPE AND A 2' OVERFLOW SPILLWAY.
- AN INFILTRATION BASIN WITH A DEPTH OF 3.5 FEET, 3:1 INSIDE SLOPES, 2:1 OUTSIDE SLOPES, A RISER PRINCIPAL SPILLWAY AND AN EMBANKMENT EMERGENCY SPILLWAY.

TEMPORARY WORKSPACE ASSOCIATED WITH MLV50SLD86 IS PARTIALLY LOCATED WITHIN THE FORESTED RIPARIAN BUFFER OF SUGAR HOLLOW CREEK. AFTER COMPLETING CONSTRUCTION ACTIVITIES, THE AREA WILL BE RESTORED TO A HERBACEOUS STATE, AS THE FORESTED PORTION OF THE RIPARIAN BUFFER WILL NOT BE REPLANTED. THIS AREA IS LOCATED WITHIN THE LINE-OF-SIGHT FOR THE VALVE SETTING PERMANENT ACCESS ROAD THAT JOINS SUGAR HOLLOW ROAD. A STATE ROAD AND MUST REMAIN NON-FORESTED TO MAINTAIN LINE-OF-SIGHT FOR PA DEPARTMENT OF TRANSPORTATION REQUIREMENTS TO ABATE A SUBSTANTIAL THREAT TO PUBLIC HEALTH OR SAFETY.

BMP INSTALLATION SEQUENCE

THE PCSM BMPs SHOULD BE INSTALLED IN A MANNER DESIGNED TO:

- PROTECT BMP AREAS ASSOCIATED WITH INFILTRATION FROM COMPACTION PRIOR TO AND DURING INSTALLATION.
- INSTALL PROPER EROSION AND SEDIMENT CONTROL MEASURES DURING CONSTRUCTION.
- AS AREAS ARE COMPLETED, SEED AND MULCH IN ACCORDANCE WITH THE SECTION BELOW.
- DO NOT REMOVE EROSION AND SEDIMENT CONTROL MEASURES UNTIL SITE IS FULLY STABILIZED.
- INSTALL BMPs AS FOLLOWS:

- COMPLETE SITE GRADING AND STABILIZE WITHIN THE LIMIT OF DISTURBANCE EXCEPT WHERE THE INFILTRATION BERMS WILL BE CONSTRUCTED. MAKE EVERY EFFORT TO MINIMIZE BERM FOOTPRINT AND NECESSARY ZONE OF DISTURBANCE (INCLUDING BOTH REMOVAL OF EXISTING VEGETATION AND DISTURBANCE OF EMPTY SOIL).
- MAINTAIN COMPOST FILTER SOCK/SEDIMENT TRAP #13 UNTIL INFILTRATION BERMS ARE COMPLETED.
- INFILTRATION BERM CONSTRUCTION SHOULD BEGIN WITH THE CONSTRUCTION OF BERM #2 AND PROCEED IN AN UPGRADIENT MANNER TO BERM #1.
- LIGHTLY SCARIFY THE SOIL IN THE AREA OF THE PROPOSED BERM BEFORE PLACEMENT OF BERM FILL. DECOMPACT SUBGRADE AS NECESSARY TO A DEPTH OF 2" IF SUBGRADE HAS BEEN OVERCOMPACTED. LIMIT CONSTRUCTION EQUIPMENT ONLY TO THE BERM FOOTPRINT.
- INSTALL SUITABLE FILL MATERIAL TO MAKE UP THE MAJOR PORTION OF THE BERM. SOIL SHOULD BE ADDED IN 8-INCH LIFTS AND COMPACTED AFTER EACH ADDITION ACCORDING TO DESIGN SPECIFICATIONS. THE SLOPE AND SHAPE OF THE BERM SHOULD BE GRADED OUT AS SOIL IS ADDED.
- PROTECT THE SURFACE PONDING AREA AT THE BASE OF THE BERM FROM COMPACTION. IF COMPACTION OF THIS AREA DOES OCCUR, SCARIFY THE SOIL TO A DEPTH OF AT LEAST 8 INCH.
- COMPLETE INFILTRATION TESTING PRIOR TO INSTALLATION OF SOIL AMENDMENT AND SUBMIT TO MCCD.
- COMPLETE INFILTRATION TESTING FOLLOWING INSTALLATION OF SOIL AMENDMENT AND SUBMIT TO MCCD.
- COMPLETE FINAL GRADING OF THE BERM AFTER THE TOP LAYER OF SOIL IS ADDED. TAMP SOIL DOWN LIGHTLY AND SMOOTH SIDES OF THE BERM. THE CREST AND BASE OF THE BERM SHOULD BE AT LEVEL GRADE. INSTALL EROSION CONTROL BLANKET AS SPECIFIED.
- PLANT BERM WITH TURF, MEADOW PLANTS, SHRUBS OR TREES, AS DESIRED.
- MULCH PLANTED AND DISTURBED AREAS WITH COMPOST MULCH TO PREVENT EROSION WHILE PLANTS BECOME ESTABLISHED.
- FOLLOWING BERM CONSTRUCTION, REMOVE COMPOST FILTER SOCK/SEDIMENT TRAP #13 AND ESTABLISH PCSM CHANNEL C-4 INTO THE BERM AREA.

INFILTRATION BASIN*

- PROTECT INFILTRATION BASIN AREA FROM COMPACTION PRIOR TO INSTALLATION.
- DEWATER SEDIMENT TRAP AS NECESSARY USING PUMP WATER FILTER BAGS. FILTER BAGS WILL BE WITHIN THE DRAINAGE AREA OF EXISTING PERIMETER COMPOST FILTER SOCK.
- REMOVE SEDIMENT ACCUMULATED WITHIN THE BASIN DURING ITS USE AS A SEDIMENT TRAP.
- CONVERT TEMPORARY SEDIMENT TRAP/OUTLET CONTROL STRUCTURE TO THE PERMANENT OUTLET STRUCTURE FOR THE INFILTRATION BASIN. PLUG PERFORATIONS USING SHRINK-PROOF, WATER-PROOF SEALANT. CONTACT MCCD PRIOR TO BMP CONVERSION.
- COMPLETE INFILTRATION TESTING PRIOR TO INSTALLATION OF SOIL AMENDMENT AND SUBMIT TO MCCD.
- INSTALL SOIL AMENDMENT ACCORDING TO DETAIL.
- COMPLETE INFILTRATION TESTING FOLLOWING INSTALLATION OF SOIL AMENDMENT AND SUBMIT TO MCCD.
- DO NOT REMOVE INLET PROTECTION OR OTHER EROSION AND SEDIMENT CONTROL MEASURES UNTIL SITE IS FULLY STABILIZED.

SUBSURFACE INFILTRATION BED*

- PROTECT INFILTRATION BED AREA FROM COMPACTION PRIOR TO INSTALLATION.
- EXCAVATE INFILTRATION BEDS.
- COMPLETE INFILTRATION TESTING PRIOR TO INSTALLATION OF SOIL AMENDMENT AND SUBMIT TO MCCD.
- INSTALL SOIL AMENDMENT ACCORDING TO THE DETAIL.
- COMPLETE INFILTRATION TESTING FOLLOWING INSTALLATION OF SOIL AMENDMENT AND SUBMIT TO MCCD.
- INSTALL UPSTREAM AND DOWNSTREAM CONTROL STRUCTURES, CLEANOUTS, PERFORATED PIPING, AND ALL OTHER NECESSARY STORMWATER STRUCTURES.
- INSTALL GEOTEXTILE IN ACCORDANCE WITH THE MANUFACTURER'S STANDARDS AND RECOMMENDATIONS.
- CLEAN-WASHED, UNIFORMLY GRADED AGGREGATE SHOULD BE PLACED IN THE BED IN MAXIMUM 8-INCH LIFTS. LIGHTLY COMPACT EACH LAYER, KEEPING CONSTRUCTION EQUIPMENT OFF THE BED BOTTOM AS MUCH AS POSSIBLE.

CHANNELS/CULVERTS*

- CONSTRUCT PCSM CHANNELS C-5 AND C-6 AS SHOWN IN THE PLAN.
- STABILIZE THE CHANNELS WITH SPECIFIED CHANNEL LININGS.
- INSTALL CULVERTS AS SHOWN ON THE PLAN.
- SEDIMENT THAT ENTERS BMPs DURING CONSTRUCTION IS TO BE REMOVED WITHIN 24 HOURS.
- SEED AND STABILIZE REMAINING TOPSOIL AS PER SEEDING AND MULCHING SPECIFICATIONS.
- FOLLOW LONG TERM OPERATION AND MAINTENANCE GUIDELINES.

PORTIONS OF THE BMP INSTALLATION SEQUENCE DENOTED WITH AN ASTERISK () ABOVE ARE CRITICAL STAGES AS DISCUSSED ON THIS SHEET.

SEEDING AND MULCHING

THE CONSTRUCTION SITE SHOULD BE STABILIZED AS SOON AS POSSIBLE AFTER CONSTRUCTION IS COMPLETED. ESTABLISHMENT OF TEMPORARY COVER MUST TAKE PLACE WITHIN 4 DAYS OF CESSATION OF WORK. TEMPORARY EROSION AND SEDIMENTATION CONTROL BMPs CAN BE REMOVED WHEN THE SITE MEETS FINAL STABILIZATION. FINAL STABILIZATION MEANS THAT ALL SOIL-DISTURBING ACTIVITIES ARE COMPLETED, AND THAT A PERMANENT VEGETATIVE COVER WITH A DENSITY OF 70% OR GREATER HAS BEEN ESTABLISHED OR THAT HARD COVER SUCH AS PAVEMENT OR BUILDINGS HAS STABILIZED THE SURFACE. IT SHOULD BE NOTED THAT THE 70% REQUIREMENT REFERS TO THE TOTAL AREA VEGETATED AND NOT JUST A PERCENT OF THE SITE. NO HAY OR STRAW MULCH SHALL BE PLACED ON WATERBODY BANKS. AT A MINIMUM, ALL WATERBODY BANKS SHALL BE COVERED WITH EROSION CONTROL BLANKET. IN ADDITION, ONLY STRAW MULCH SHALL BE USED IN AREAS ADJACENT TO WETLANDS.

TEMPORARY REVEGETATION

AFTER GRADING AND EXCAVATION IS COMPLETED WITHIN AN AREA, VEGETATION WILL BE SOWN PROMPTLY AFTER CEASING EARTHWORK. IN THOSE AREAS, HAY, STRAW MULCH, OR OTHER SIMILAR MATERIAL WILL BE APPLIED TO NEWLY SEEDD AREAS TO PROTECT AGAINST EROSION UNTIL THE VEGETATION IS ESTABLISHED. HAY, STRAW MULCH, OR OTHER SIMILAR MATERIAL SHALL BE APPLIED AT A RATE OF AT LEAST 3 TONS PER ACRE. EROSION CONTROL BLANKET SHALL BE USED ON STRAW BANKS. NO HAY OR STRAW, MULCH OR BLANKET SHALL BE UTILIZED IN WETLAND AREAS.

PERMANENT SEEDING AND MULCHING

TOPSOIL WILL BE REPLACED PRIOR TO STABILIZATION. DISTURBED AREAS SHALL BE SEEDDED WITH A MIXTURE AS OUTLINED IN THE DETAILS PAGES OF THE EROSION AND SEDIMENT CONTROL PLAN SET. APPLY LIMB AND FERTILIZER IN ACCORDANCE WITH SOIL TEST RECOMMENDATIONS OR AS OUTLINED IN THE BELOW TABLE. HAY, STRAW MULCH, OR OTHER SIMILAR MATERIAL SHALL BE APPLIED AT A RATE OF AT LEAST 3 TONS PER ACRE.

TABLE 11.2 Soil Amendment Application Rate Equivalents

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
10-20-20 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

Adapted from Penn State, "Erosion Control and Conservation Plantings on Noncropland"

NOTE: A compost blanket which meets the standards of this chapter may be substituted for the soil amendments shown in Table 11.2.

TABLE 11.3 Plant Tolerances of Soil Limitation Factors

Species	Growth Habit ¹	Tolerates				Minimum Seed Specifications ²				Seeds/ft ² (1,000lb)
		Wet Soil	Dry Soil	Low Fertility	Acid Soil (pH 5-5.9) ³	Purity (%)	Ready Germ (%)	Hard Seed (%)	Total Germ (%)	
Warm-Season Grasses										
Deertongue	bunch	yes	yes	yes	yes	95	75	75	250	
Winged lovegrass	bunch	no	no	yes	yes	97	75	75	1,500	
Switchgrass	bunch	yes	yes	yes	yes				(60 PLS)	
Big bluestem	bunch	no	no	yes	yes				150	
Cool-Season Grasses										
Redtop	sod	yes	yes	yes	yes	92	80	80	5,000	
Fine fescues	sod	no	no	yes	no	95	80	80	400	
Perennial ryegrass	bunch	yes	no	no	no	95	85	85	227	
Annual ryegrass	bunch	yes	no	yes	no	95	85	85	227	
Kentucky bluegrass	sod	no	no	no	no	85	75	75	2,200	
Reese canarygrass	sod	yes	yes	yes	no	95	70	70	523	
Orchardgrass	bunch	yes	yes	yes	yes	95	80	80	604	
Timothy	bunch	yes	no	yes	yes	95	80	80	1,233	
Smooth bromegrass	sod	no	yes	yes	no	92	80	80	133	
Legumes⁴										
Birdsfoot trefoil ⁵	bunch	yes	no	yes	yes	95	60	20	80	400
Flatpea	sod	no	no	yes	yes	95	55	20	75	10
Scorpa lespedeza	bunch	no	yes	yes	yes	95	60	20	80	335
Cereals										
Winter wheat	bunch	no	no	no	no	95	85	85	15	
Winter rye	bunch	no	no	yes	yes	95	85	85	18	
Spring oats	bunch	no	no	no	no	95	85	85	13	
Sudangrass	bunch	no	yes	no	no	95	85	85	65	
Japanese millet	bunch	yes	no	yes	yes	95	80	80	155	

- Growth habit refers to the ability of the species to either form a dense sod by vegetative means (clonons, rhizomes, or roots) or remain in a bunch or single plant form. If seeded heavily enough, even bunch formers can produce a very dense stand. This is sometimes called a sod, but not in the sense of a sod formed by vegetative means.
- Once established, plants may grow at a somewhat lower pH, but cover generally is only adequate at pH 6.0 or above.
- Minimum seed lots are truly minimum, and seed lots to be used for revegetation purposes should equal or exceed these standards. Thus, deertongue grass should germinate 75% or better.
- Commonly, seed lots are available that equal or exceed minimum specifications. Remember that disturbed sites are adverse for plant establishment. Ready germination refers to seed that germinates during the period of the germination test and that would be expected, if conditions are favorable, to germinate rapidly when planted. The opposite of ready germination is dormant seed, of which hard seed is one type.
- Switchgrass seed is sold only on the basis of PLS.
- Need specific legume inoculant. Inoculant suitable for garden peas and sweetpeas usually is satisfactory for flatpea.
- Birdsfoot trefoil is adapted over the entire state, except in the extreme southeast where crown and root rots may injure stands.

Penn State, "Erosion Control and Conservation Plantings on Noncropland."

PERCENTAGE OF MIX COMPOSITION	SCIENTIFIC NAME	COMMON NAME
30.0%	PANICUM CLANDESTINUM	DEERTONGUE
20.0%	ELYMUS VIRGINICUS	VIRGINIA MILDREY
11.8%	ANDROPOGON GERARDII	BIG BLUESTEM
10.5%	SORGHASTRUM NUTANS	INDIANGRASS
5.0%	PANICUM VIRGATUM	SMTONGRASS
4.0%	CHAMAECRISTA FASCICULATA	PARTRIDGE PEA
4.0%	VERBENA HASTATA	BLUE VERVAIN
3.0%	JUNCUS EFFRUSUS	SOFT RUSH
3.0%	RUDEBECKIA HIRTA	BLACKEYED SUSAN
2.0%	HELIOPSIS HELIANTHOIDES	OXEYE SUNFLOWER
1.0%	ASCLEPIAS INCARNATA	SWAMP MILKWEED
0.7%	ASTER NOVAE-ANGLIAE	NEWENGLAND ASTER
0.7%	ASTER UMBELLATUS	FLAT TOPPED WHITE ASTER
0.7%	EUPATORIUM PEROLIATUM	BONESET
0.5%	AGROSTIS PEREVIANUS	AUTUMN BENTGRASS
0.5%	HELENIUM AUTUMNALE	COMMON SNEEZEWEED
0.5%	MONARDA FISTULOSA	WILD BERGAMOT
0.5%	VERNONIA NOBILIBRACENSIS	NEWYORK IRONWEED
0.4%	PYCNANTHEMUM TENUIFOLIUM	NARROWLEAF MOUNTAINMINT
0.4%	SOLIDAGO PATULA	ROUGHLEAF GOLDENROD
0.3%	EUPATORIUM TITULOSUM	JOE PYEWEED
0.3%	LOBELIA SIPHILITICA	GREAT BLUE LOBELIA
0.2%	ASTER PUMICEUS	FURLESTEM ASTER

- SEEDING RATE: 20 LBS/ACRE WITH THE FOLLOWING NURSE CROPS. DRY SITES - GRAIN OATS, JAN 1- AUG 1, OR, GRAIN RYE, AUG 1- JAN 1, MOIST SITES - GRAIN RYE YEAR ROUND. THIS SEED MIX IS TO BE USED TO REVEGETATE WORKSPACE WITHIN THE DESIGNATED RIPARIAN BUFFER AREA WHERE SLOPES ARE LESS THAN 10%. IF THE SLOPE EXCEEDS 10%, A STANDARD UPL AND ROW MIX SHOULD BE USED.

Mixture Number	Species	Seeding Rate-Pure Live Seed ³	
		Moist Sites	Adverse Sites
1 ¹	Spring oats (spring), or Annual ryegrass (spring or fall), or Winter Wheat (fall), or Winter rye (fall)	64	10
		10	15
		96	112
2 ¹	Fine fescue, or Kentucky bluegrass, plus Redtop ² , or Perennial ryegrass	35	30
		15	20
		15	20
11	Deertongue, plus Birdsfoot trefoil	6	10
		15	20
		15	20
12 ¹	Switchgrass, or Big bluestem, plus Birdsfoot trefoil	6	10
		15	20
		15	20
13	Orchardgrass, plus Smooth bromegrass, plus Birdsfoot trefoil	20	30
		25	35
		6	10

PENN STATE, "EROSION CONTROL AND CONSERVATION PLANTINGS ON NONCROPLAND"

- PLS IS THE PRODUCT OF THE PERCENTAGE OF PURE SEED TIMES PERCENTAGE GERMINATION DIVIDED BY 100. FOR EXAMPLE, TO SECURE THE ACTUAL PLANTING RATE FOR SMITONGRASS, DIVIDE 12 POUNDS PLS SHOWN ON THE SEED TAG. THUS, IF THE PLS CONTENT OF A GIVEN SEED LOT IS 35%, DIVIDE 12 PLS BY 0.35 TO OBTAIN 34.3 POUNDS OF SEED REQUIRED TO PLANT ONE ACRE. ALL MIXTURES IN THIS TABLE ARE SHOWN IN TERMS OF PLS.
- IF HIGH-QUALITY SEED IS USED, FOR MOST SITES SEED SPRING OATS AT A RATE OF 2 BUSHELS PER ACRE, WINTER WHEAT AT 11.5 BUSHELS PER ACRE, AND WINTER RYE AT 1 BUSHEL PER ACRE. IF GERMINATION IS BELOW 90%, INCREASE THESE SEEDING RATES BY 0.5 BUSHEL PER ACRE.
- THIS MIXTURE IS SUITABLE FOR FREQUENT MOWING. DO NOT CUT SHORTER THAN 4 INCHES.
- KEEP SEEDING RATE TO THAT RECOMMENDED IN TABLE. THESE SPECIES HAVE MANY SEEDS PER POUND AND ARE VERY COMPETITIVE. TO SEED SMALL QUANTITIES OF SMALL SEEDS SUCH AS WEEPING LOVEGRASS AND REDTOP, DILUTE WITH DRY SAWDUST, SAND, RICE HULLS, BUCKWHEAT HULLS, ETC.
- DO NOT MOW SHORTER THAN 9 TO 10 INCHES.

PCSM CRITICAL STAGES

CRITICAL POINTS REQUIRING VISITS BY THE LICENSED PROFESSIONAL OR DELEGATE ARE AS FOLLOWS:

- PRIOR TO CONSTRUCTION TO ENSURE THE AREAS OF THE INFILTRATION BERMS, INFILTRATION BASIN AND SUBSURFACE INFILTRATION BEDS HAVE BEEN PROPERLY SECURED WITH FENCING OR OTHER METHODS TO PREVENT COMPACTION OF THE INFILTRATION AREAS.
- FOR THE FINAL GRADING OF THE ACCESS ROAD, ENSURING IT IS CONSTRUCTED ACCORDING TO THE PLAN DETAILS FOR PROPER CONVEYANCE OF RUNOFF.
- FOLLOWING FINAL GRADING AND SEEDING OF THE CHANNELS IN ORDER TO CONFIRM THEY HAVE BEEN CONSTRUCTED ACCORDING TO THE PLAN DETAILS FOR PROPER COLLECTION AND CONVEYANCE OF RUNOFF. PERIODIC ASSESSMENTS WILL NEED TO BE MADE TO ENSURE ACCUMULATED SEDIMENT HAVE BEEN CLEANED OUT, SO THE CHANNELS MAINTAIN THE NECESSARY DESIGN VOLUMES.
- AT THE START OF CONSTRUCTION OF THE INFILTRATION BERMS, INFILTRATION BASIN AND SUBSURFACE INFILTRATION BEDS TO ASCERTAIN THE INFILTRATION AREAS HAVE NOT BEEN COMPACTED.
- PRIOR TO INSTALLATION OF THE SOIL AMENDMENT TO COMPLETE INFILTRATION TESTING.
- DURING THE LAYOUT AND EXCAVATION OF CONTROL STRUCTURES FOR THE INFILTRATION BASIN AND BEDS, THE PROFESSIONAL OR DELEGATE WILL ENSURE SIZING, MATERIALS SPECIFICATIONS, AND CONSTRUCTION PROCEDURES ARE FOLLOWED TO ENABLE PROPER STORAGE IN THE BASIN.
- FOLLOWING INSTALLATION OF THE SOIL AMENDMENT TO COMPLETE INFILTRATION TESTING.
- FOLLOWING FINAL GRADING AND SEEDING OF THE INFILTRATION BERMS, INFILTRATION BASIN AND SUBSURFACE INFILTRATION BEDS IN ORDER TO CONFIRM THEY HAVE BEEN CONSTRUCTED ACCORDING TO THE PLAN DETAILS FOR PROPER COLLECTION, INFILTRATION, AND CONVEYANCE OF RUNOFF. PERIODIC ASSESSMENT WILL NEED TO BE MADE TO ENSURE THAT ACCUMULATED SEDIMENT HAVE BEEN CLEANED OUT SO THE BMPs MAINTAIN THE NECESSARY DESIGN VOLUMES.
- FOR FINAL INSPECTION OF CONSTRUCTED CHANNELS, CULVERTS, BERMS, BASIN AND BEDS.
- AT THE ESTABLISHMENT OF HARD SURFACE STABILIZATION OR 70% VEGETATIVE COVERS TO ALLOW REMOVAL OF E&S CONTROLS.
- DURING THE CONSTRUCTION, THE LICENSED PROFESSIONAL SHALL PREPARE A WRITTEN REPORT INCLUDING PHOTOGRAPHS DOCUMENTING THE VARIOUS CRITICAL STAGE INSPECTIONS FOR THE PROJECT. THIS REPORT SHALL BE AVAILABLE TO THE MCCD UPON REQUEST.

LONG TERM OPERATION AND MAINTENANCE SCHEDULE

PCSM BMPs SHOULD BE PROPERLY MAINTAINED TO ENSURE THEIR EFFECTIVENESS. SHEET FLOW CONDITIONS AND INFILTRATION MUST BE SUSTAINED THROUGHOUT THE LIFE OF THE BMP. BMPs SHOULD BE INSPECTED FOR CLOGGING FROM SEDIMENT OF DEBRIS, DAMAGE BY FOOT OR VEHICULAR TRAFFIC, AND FLOW CHANNELIZATION. INSPECTIONS SHOULD BE MADE ON A QUARTERLY BASIS FOR THE FIRST TWO YEARS FOLLOWING INSTALLATION, AND THEN TWICE PER YEAR THEREAFTER. INSPECTIONS SHOULD ALSO BE MADE AFTER EVERY STORM EVENT GREATER THAN 1 INCH DURING THE ESTABLISHMENT PERIOD.

CHANNEL LININGS SHOULD BE INSPECTED FOR SIGNS OF EROSION OR DISLOGGING, AS APPLICABLE. CHANNELS SHOULD BE INSPECTED FOR DEBRIS, OVERGROWN VEGETATION, AND OTHER BLOCKAGES. CHANNELS SHOULD BE CLEANED WHENEVER TOTAL CHANNEL DEPTH IS REDUCED BY 25% AT LOCATION. VEGETATED AREAS WILL BE INSPECTED WEEKLY AND AFTER RUNOFF EVENTS UNTIL PERMANENT VEGETATION IS ACHIEVED. ONCE THE VEGETATION IS ESTABLISHED, INSPECTIONS OF HEALTH, DIVERSITY,

NOTES:

- CROSS SECTION TO BE APPLIED TO DRY AREAS WITHOUT DRAINAGE CONCERNS.
- EXISTING MATERIAL TO BE REMOVED AND STOCKPILED IN AN APPROVED LOCATION ONLY.
- EXISTING DRAINAGE PATTERNS SHALL BE MAINTAINED IN ACCORDANCE WITH THE APPROVED EROSION & SEDIMENT POLLUTION CONTROL PLAN FOR THE PROJECT.
- GRADING AND CROSS SLOPES VARY BY EXISTING CONDITIONS; SEE SPECIFIC DESIGN AND PROFILE FOR MORE DETAIL.
- WITHIN EXTENTS OF GRADING FOR PERMANENT ACCESS ROADS AND VALVE SITES, COMPACT ALL SOIL FILL/BACKFILL AND COARSE AGGREGATE WITH FINES TO 95% OF MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D-1557. CONTRACTOR SHALL UTILIZE ADEQUATELY SIZED AND CONFIGURED EQUIPMENT TO ACHIEVE SPECIFIED COMPACTION.
- AS DIRECTED BY ENGINEER AND APPROVED BY OWNER, EXCAVATE AND STABILIZE SOFT SPOTS, UNSATISFACTORY SOILS AND AREAS OF EXCESSIVE PUMPING OR RUTTING.
- PROOF-ROLLING OF SUBGRADE MAY BE REQUIRED TO DETERMINE PROPER COMPACTION BY OWNER.
- TEMPORARILY WIDENED ROAD SHOULD FOLLOW THE SAME SPECIFICATION FOR WIDENED ROADS. THE EXISTING ROAD SHALL BE MAINTAINED.
- ROADS FOR TEMPORARY CONSTRUCTION USE WILL BE MAINTAINED AND RESTORED TO THEIR PREVIOUS CONDITIONS IN ACCORDANCE WITH CHAPTER 102 ROAD MAINTENANCE ACTIVITIES. PLAN VIEW ACCESS ROAD CALLOUTS IDENTIFY THE PROPOSED ROAD MAINTENANCE ACTIVITY FOR THE PROJECT (I.E. MAINTENANCE ONLY, TEMPORARY WIDENING, ETC.).

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO./CHK./APP.

TRANSCONTINENTAL GAS PIPE LINE CORPORATION
STANDARD ENVIRONMENTAL DETAIL
PERMANENT/TEMPORARY STONE ACCESS ROAD

NOTES:

- CROSS SECTION TO BE APPLIED TO DRY AREAS WITHOUT DRAINAGE CONCERNS.
- EXISTING MATERIAL TO BE REMOVED AND STOCKPILED IN AN APPROVED LOCATION ONLY.
- EXISTING DRAINAGE PATTERNS SHALL BE MAINTAINED IN ACCORDANCE WITH THE APPROVED EROSION & SEDIMENT POLLUTION CONTROL PLAN FOR THE PROJECT.
- GRADING AND CROSS SLOPES VARY BY EXISTING CONDITIONS; SEE SPECIFIC DESIGN AND PROFILE FOR MORE DETAIL.
- WITHIN EXTENTS OF GRADING FOR PERMANENT ACCESS ROADS AND VALVE SITES, COMPACT ALL SOIL FILL/BACKFILL AND COARSE AGGREGATE WITH FINES TO 95% OF MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D-1557. CONTRACTOR SHALL UTILIZE ADEQUATELY SIZED AND CONFIGURED EQUIPMENT TO ACHIEVE SPECIFIED COMPACTION.
- AS DIRECTED BY ENGINEER AND APPROVED BY OWNER, EXCAVATE AND STABILIZE SOFT SPOTS, UNSATISFACTORY SOILS AND AREAS OF EXCESSIVE PUMPING OR RUTTING.
- PROOF-ROLLING OF SUBGRADE MAY BE REQUIRED TO DETERMINE PROPER COMPACTION BY OWNER.

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO./CHK./APP.

TRANSCONTINENTAL GAS PIPE LINE CORPORATION
STANDARD ENVIRONMENTAL DETAIL
MAIN LINE VALVE PAD

INFILTRATION BERM NO.	BOT. ELEV. (ft)	TOP ELEV. (ft)	HEIGHT (ft)	BERM TOP WIDTH	OVERALL LENGTH (ft)	SHWT (in BELOW GROUND)	BEDROCK (in BELOW GROUND)
1	969	971	2	2	188	NOT ENCOUNTERED	NOT ENCOUNTERED
2	963	965	2	2	112	NOT ENCOUNTERED	NOT ENCOUNTERED

NOTES:

- AN INFILTRATION BERM IS A MOUND OF COMPACTED EARTH WITH SLOPING SIDES THAT IS USUALLY LOCATED ALONG A CONTOUR ON RELATIVELY GENTLY SLOPING SITES.
- MAINTAIN A MINIMUM 2-FOOT SEPARATION TO BEDROCK AND SEASONALLY HIGH WATER TABLE. PROVIDE DISTRIBUTED INFILTRATION AREA (5:1 IMPERVIOUS AREA TO INFILTRATION AREA - MAXIMUM), SITE ON NATURAL, UNCOMPACTED SOILS WITH ACCEPTABLE INFILTRATION CAPACITY.
- BERMS SHOULD BE RELATIVELY LOW, PREFERABLY NO MORE THAN 24 INCHES IN HEIGHT.
- THE BACK OF THE BERM SHALL BE LINED WITH SC150BN LINING WITH A STAPLE D PATTERN AND SHALL EXTEND AT LEAST 10 FT BEYOND THE TOE OF THE BERM.
- BERMS SHALL HAVE SIDE SLOPES OF 2:1 AND ARE NOT TO BE MOWED.
- THE CREST OF THE BERM SHOULD BE LOCATED NEAR ON EDGE OF THE BERM, RATHER THAN IN THE MIDDLE, TO ALLOW FOR A MORE NATURAL, ASYMMETRICAL SHAPE.
- BERMS SHOULD BE VEGETATED USING SEED MIXTURE 1 PLUS 3 FROM TABLE 11.5.
- INFILTRATION TESTING WILL BE PERFORMED PRIOR TO AND AFTER THE INSTALLATION OF THE SOIL AMENDMENTS. INFILTRATION TESTING RESULTS SHALL BE SUBMITTED TO MONROE COUNTY CONSERVATION DISTRICT.

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO./CHK./APP.

TRANSCONTINENTAL GAS PIPE LINE CORPORATION
STANDARD ENVIRONMENTAL DETAIL
INFILTRATION BERM

Channel ID.	LENGTH [FT]	SLOPE [%]	BASE WIDTH [FT]	DEPTH [FT]	SIDE SLOPES [Z1/Z2]	TOP WIDTH [FT]	LINING	STAPLE PATTERN	OUTLET
SH-CC-001	414	1.0	1.0	.75	2/2	4.0	GRASS/SC150BN	D	Level Spreader #1
SH-CC-002	101	3.8	2.0	.75	2/2	5.0	GRASS/SC150BN	D	CULVERT #1
SH-CC-003	295	4.0	2.0	1.0	2/2	6.0	GRASS/SC150BN	D	RIP-RAP APRON #1
SH-CC-004	63	11.0	4.0	.75	2/2	7.0	GRASS/SC150BN	D	RIP-RAP APRON #2
SH-CC-005	246	9.0	3.0	1.00	2/2	7.0	GRASS/SC150BN	D	CULVERT #2
SH-CC-006	171	13.0	2.0	1.00	2/2	6.0	R-4 RIPRAP	-	RIP-RAP APRON #4
SH-CC-007	405	11.3	2.0	1.00	2/2	6.0	R-4 RIPRAP	-	CULVERT #3
SH-CC-008	75	6.3	2.0	1.0	2/2	6.0	GRASS/SC150BN	D	INFILTRATION BASIN #1
SH-CC-009	110	13.9	1.0	.75	2/2	4.0	GRASS/SC150BN	D	CULVERT #4
SH-CC-010	93	14.8	1.0	.75	2/2	4.0	GRASS/SC150BN	D	CULVERT #5

No.	Pipe/CH Dia. Do (in)	Tailwater Cond. (Max or Min)	Mannings "n"	Slope (ft/ft)	Q (cfs)	V (fps)	RipRap Size	Rt (in)	Al (ft)	Atw (ft)	Atw (ft)
1	12	Min	0.012	0.017	1.55	5.87	R-3	9	6	3.0	9.0
2	24	Min	0.012	0.11	1.76	3.74	R-3	9	6	12.0	18.0
3	18	Min	0.012	0.01	3.82	5.76*	R-3	9	8	4.5	12.5
4	(2) 12	Min	0.012	0.045	12.80	11.49	R-5	27	16	5.0	21.0
5	24	Min	0.012	0.063	4.40	3.71	R-3	9	6	6.0	12.0
6	18	Min	0.012	0.025	3.90	8.08*	R-4	18	6	4.5	10.5

*DESIGNED FOR 100 YEAR STORM

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO./CHK./APP.

TRANSCONTINENTAL GAS PIPE LINE CORPORATION
STANDARD ENVIRONMENTAL DETAIL
TYPICAL PCSM CHANNEL AND DIVERSION CHANNEL (GRASS-LINED)

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO./CHK./APP.

TRANSCONTINENTAL GAS PIPE LINE CORPORATION
STANDARD ENVIRONMENTAL DETAIL
RIPRAP APRON OUTLET PROTECTION

NOTES:

- INFILTRATION TESTING WILL BE PERFORMED PRIOR TO AND AFTER THE INSTALLATION OF THE SOIL AMENDMENTS. INFILTRATION TESTING RESULTS SHALL BE SUBMITTED TO MONROE COUNTY CONSERVATION DISTRICT.

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO./CHK./APP.

TRANSCONTINENTAL GAS PIPE LINE CORPORATION
STANDARD ENVIRONMENTAL DETAIL
SUBSURFACE INFILTRATION BED 1

NOTES:

- INFILTRATION TESTING WILL BE PERFORMED PRIOR TO AND AFTER THE INSTALLATION OF THE SOIL AMENDMENTS. INFILTRATION TESTING RESULTS SHALL BE SUBMITTED TO MONROE COUNTY CONSERVATION DISTRICT.

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO./CHK./APP.

TRANSCONTINENTAL GAS PIPE LINE CORPORATION
STANDARD ENVIRONMENTAL DETAIL
SUBSURFACE INFILTRATION BED 2

TRANSCONTINENTAL GAS PIPE LINE CORPORATION
REGIONAL ENERGY ACCESS EXPANSION PROJECT
POST CONSTRUCTION STORMWATER MANAGEMENT PLAN
DRAFTSHEET 1

CHESTNUTHILL TOWNSHIP, MONROE COUNTY, PENNSYLVANIA

DRAWN BY: RHM	DATE: 03/31/21	ISSUED FOR BID:	SCALE: AS NOTED
CHECKED BY: RJN	DATE: 03/31/21	ISSUED FOR CONSTRUCTION:	REVISION:
APPROVED BY: PW	DATE: 03/31/21		
W.O. 1222637	RID: 108	DRAWING NUMBER: 26-1000-70-28-D	SHEET 7 OF 8

TRANSCONTINENTAL GAS PIPE LINE CORPORATION
STANDARD ENVIRONMENTAL DETAIL

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
1	06/29/21	RHM	REVISED PER PADEP COMMENTS.			
2	03/01/22	RHM	RESPONSE TO PADEP TECHNICAL DEFICIENCY LETTER			
3	07/08/22	RHM	RESPONSE TO PADEP JUNE 2022 TECHNICAL DEFICIENCY LETTER			

PATRICK A. WOZINSKI, P.E.
PROFESSIONAL ENGINEER
PENNSYLVANIA PROFESSIONAL ENGINEER
PE#78243

TRANSCONTINENTAL GAS PIPE LINE CORPORATION, LLC
REGIONAL ENERGY ACCESS EXPANSION PROJECT
POST CONSTRUCTION STORMWATER MANAGEMENT PLAN
DRAFTSHEET 1

CHESTNUTHILL TOWNSHIP, MONROE COUNTY, PENNSYLVANIA

DRAWN BY: RHM DATE: 03/31/21 ISSUED FOR BID: SCALE: AS NOTED

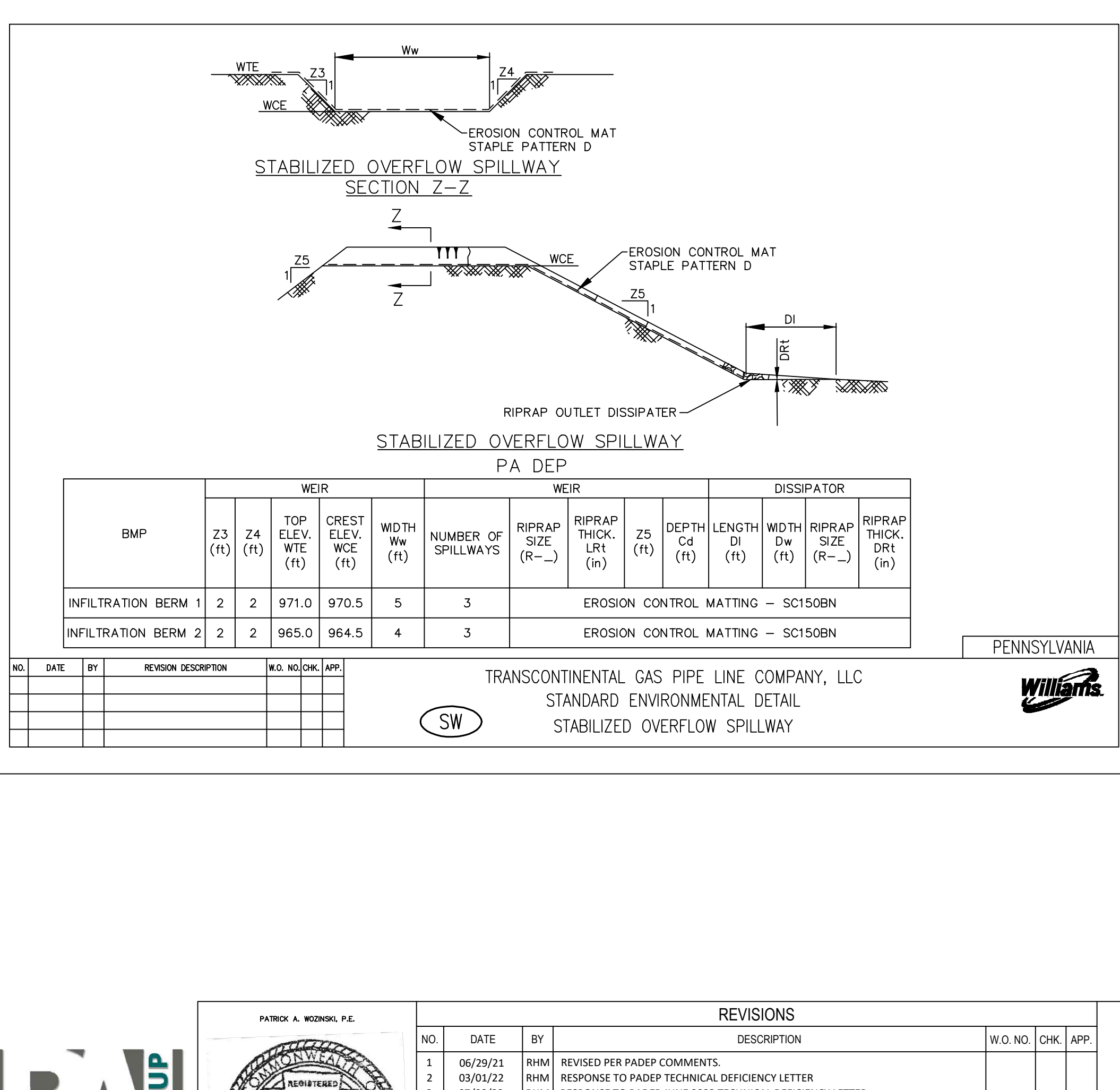
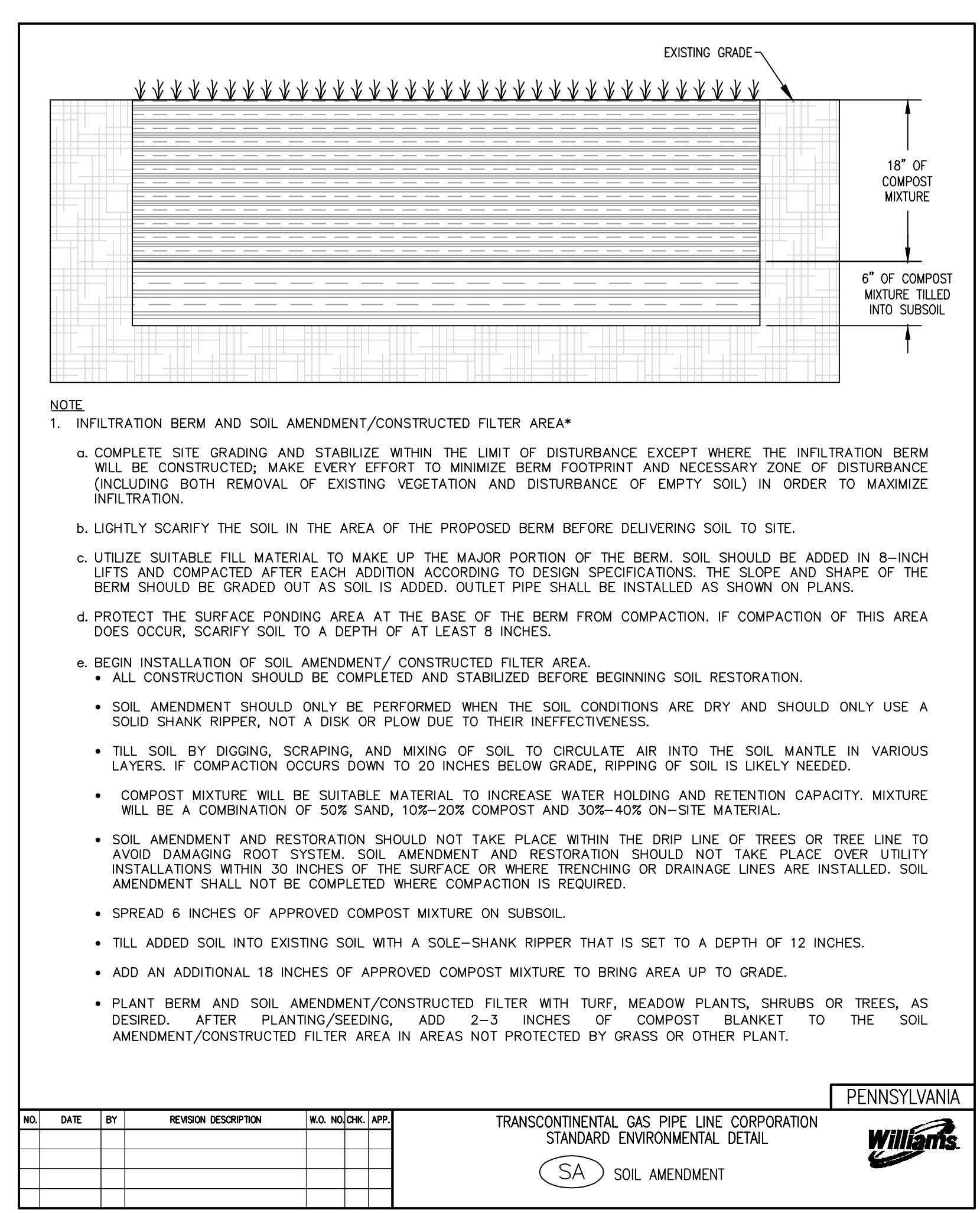
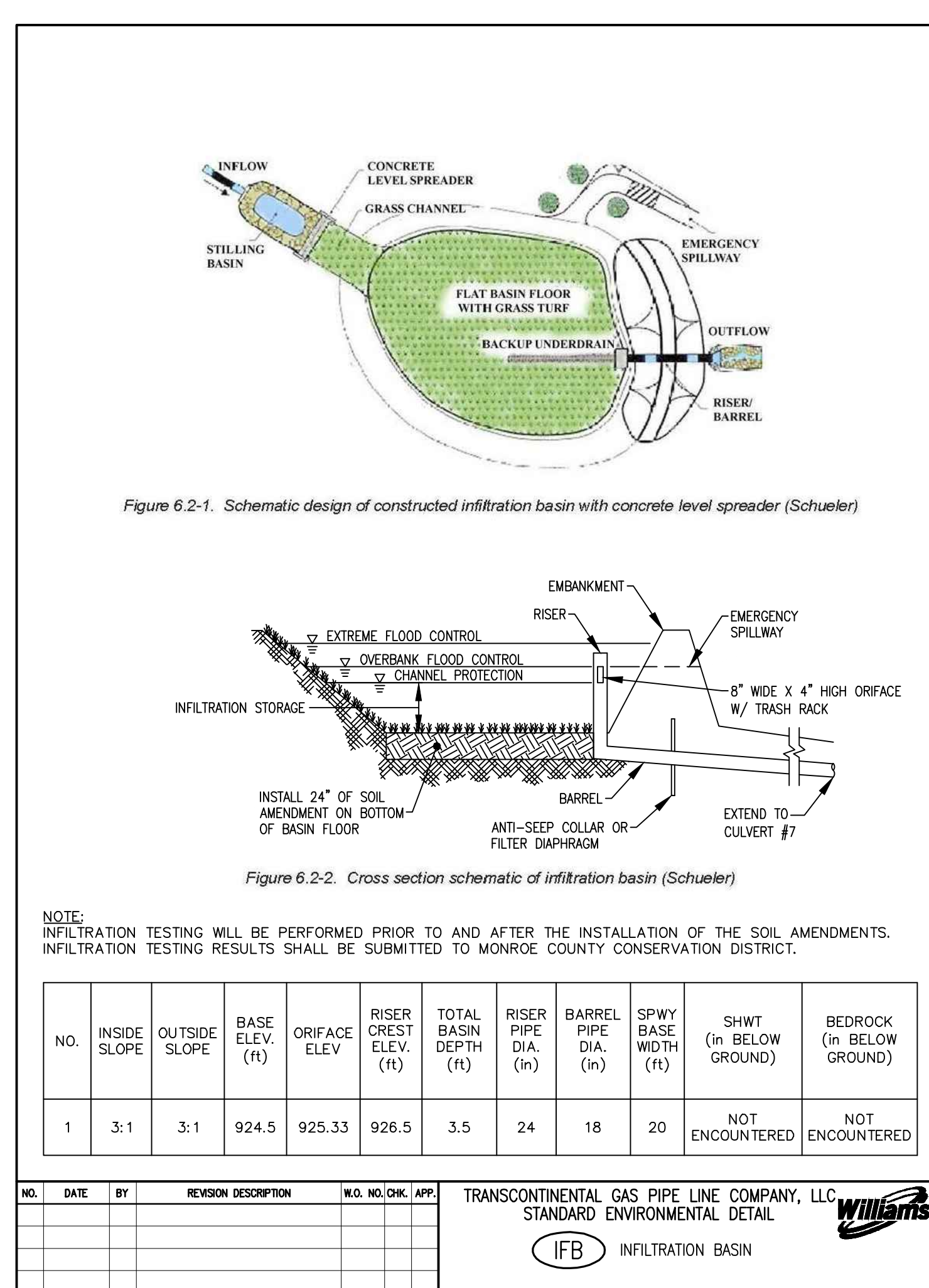
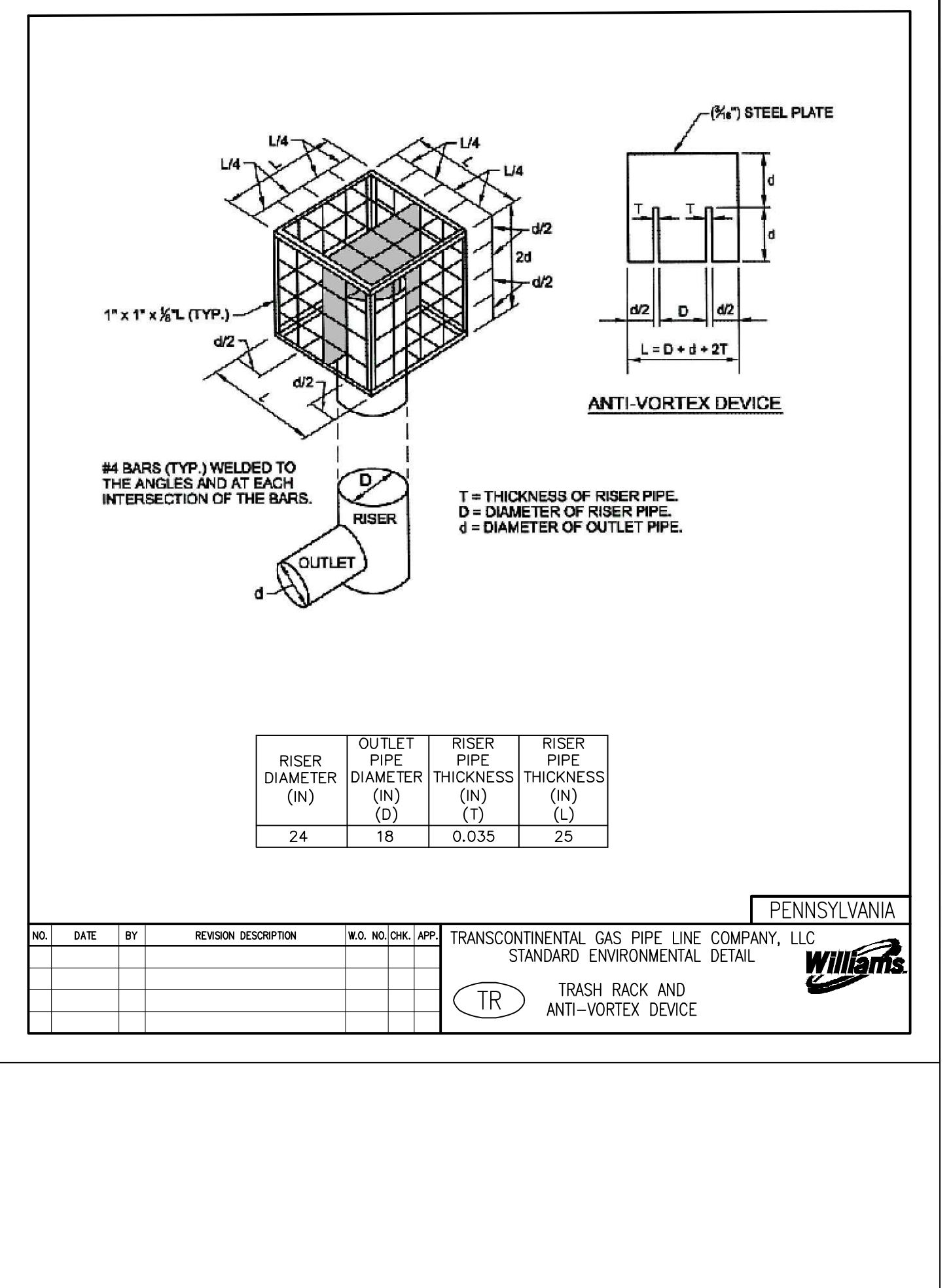
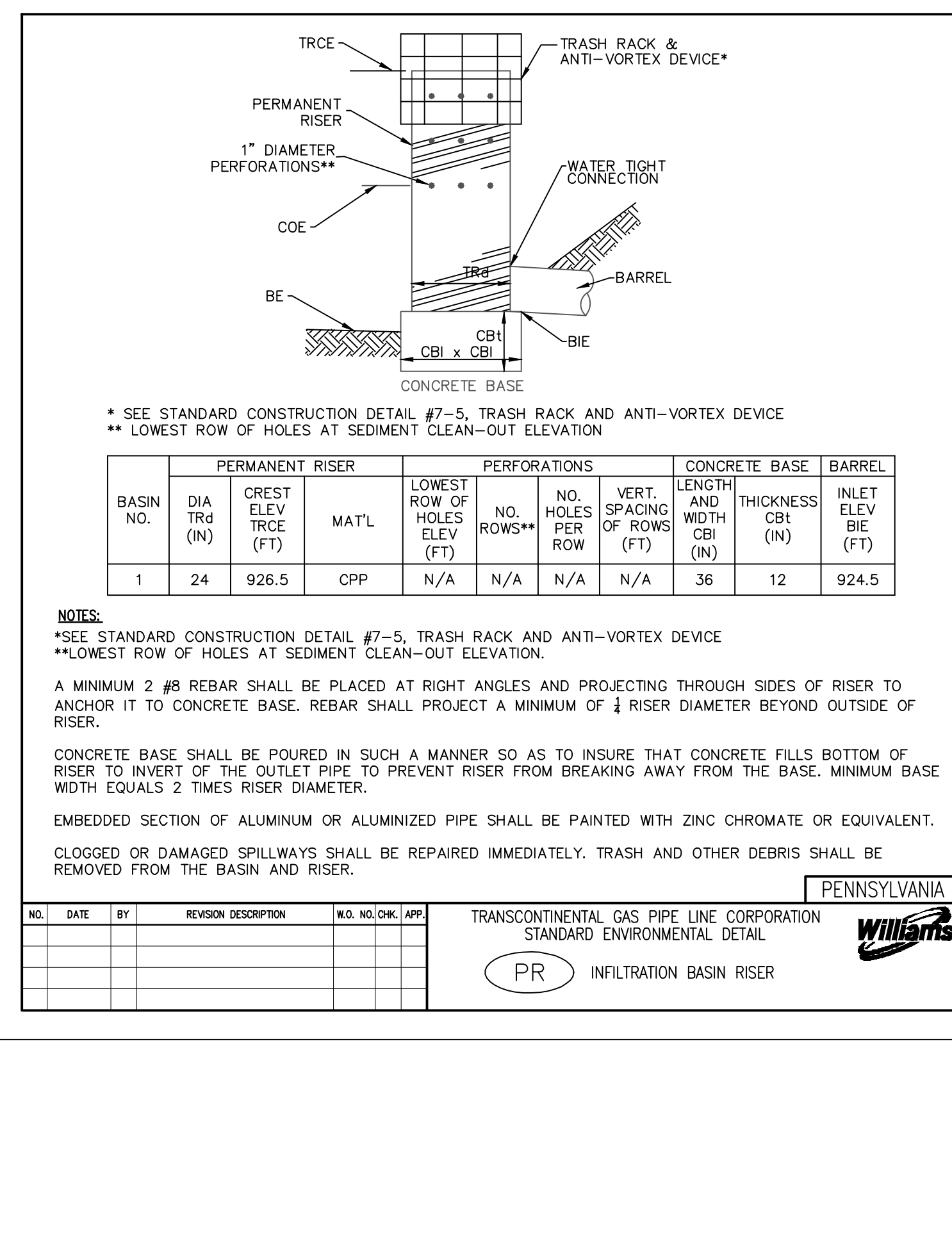
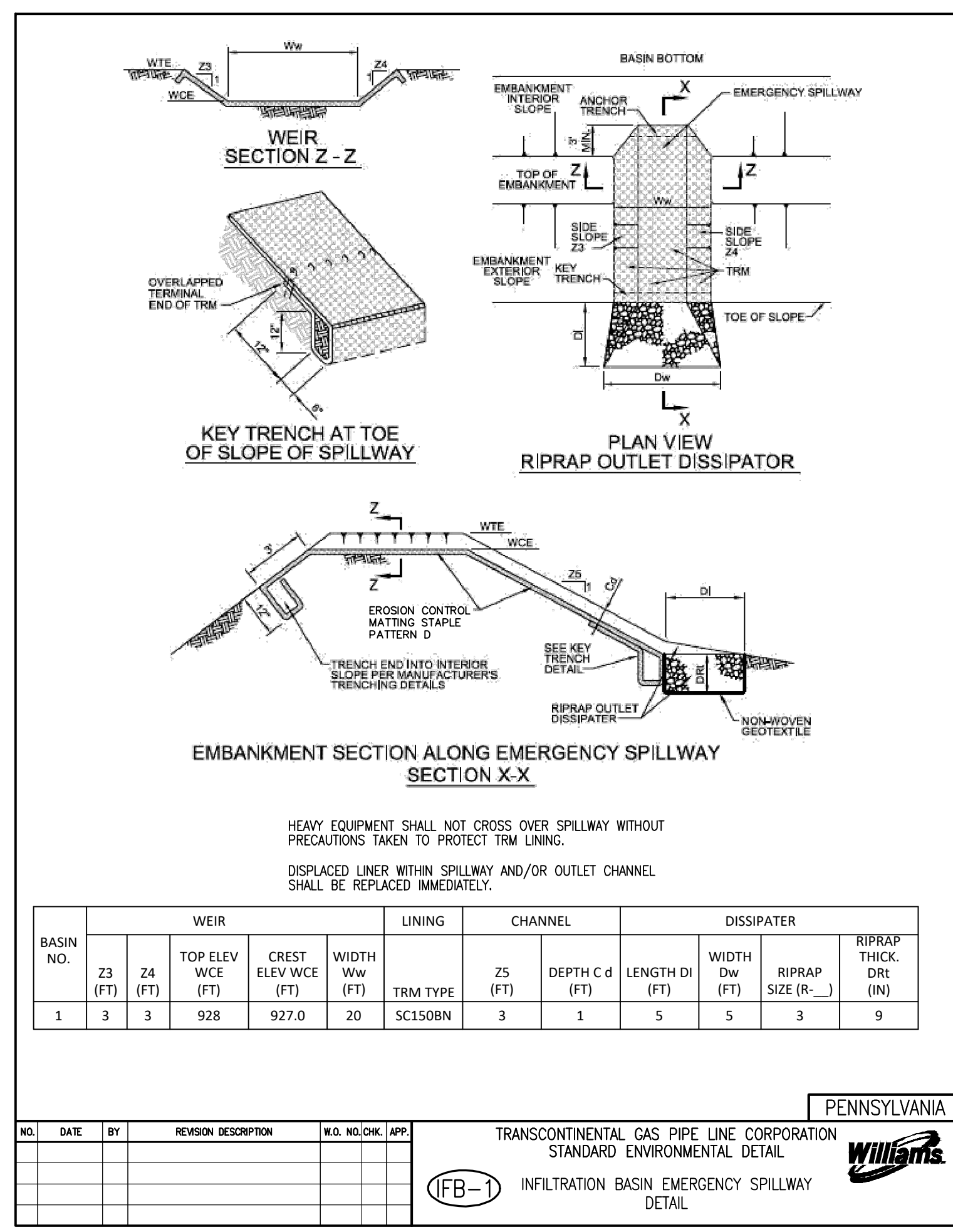
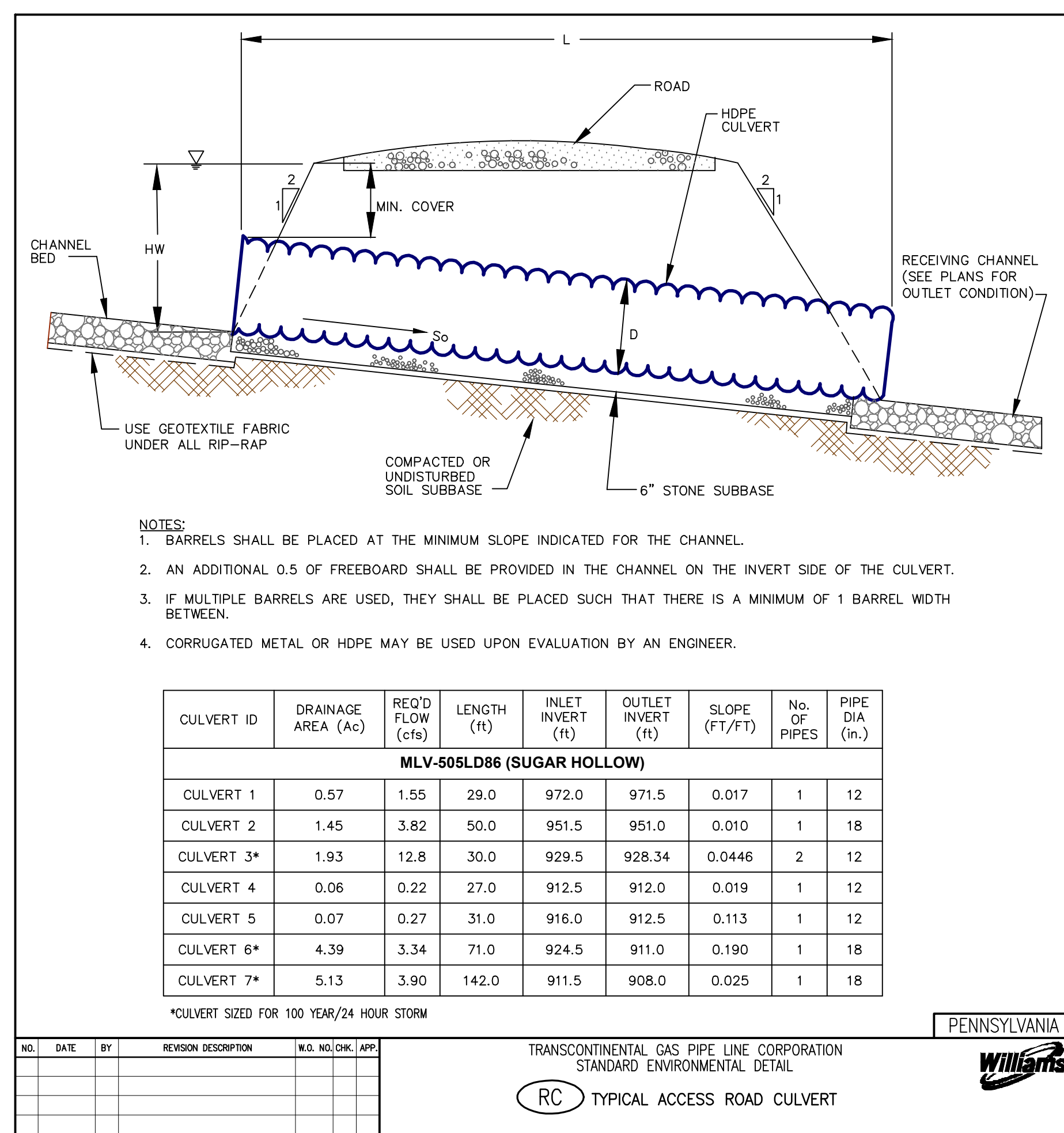
CHECKED BY: RJN DATE: 03/31/21 ISSUED FOR CONSTRUCTION: REVISION:

APPROVED BY: PW DATE: 03/31/21

W.O. 1222637 RID: 108 DRAWING NUMBER: 26-1000-70-28-D SHEET 7 OF 8

IBA GROUP
WWM consulting, LLC

PATRICK A. WOZINSKI, P.E.
PROFESSIONAL ENGINEER
PENNSYLVANIA PROFESSIONAL ENGINEER
PE#78243



NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO./CHK./APP.

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

IFB INFILTRATION BASIN

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO./CHK./APP.

TRANSCONTINENTAL GAS PIPE LINE CORPORATION
STANDARD ENVIRONMENTAL DETAIL

SA SOIL AMENDMENT

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
1	06/29/21	RHM	REVISED PER PADEP COMMENTS.			
2	03/01/22	RHM	RESPONSE TO PADEP TECHNICAL DEFICIENCY LETTER			
3	07/08/22	RHM	RESPONSE TO PADEP JUNE 2022 TECHNICAL DEFICIENCY LETTER			

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

SW STABILIZED OVERFLOW SPILLWAY

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
REGIONAL ENERGY ACCESS EXPANSION PROJECT
MLV-505LD86
POST CONSTRUCTION STORMWATER MANAGEMENT PLAN

DETAILS SHEET 2

CHESTNUT HILL TOWNSHIP, MONROE COUNTY, PENNSYLVANIA

DRAWN BY: RHM DATE: 03/31/21 ISSUED FOR BID: SCALE: AS NOTED

CHECKED BY: RHM DATE: 03/31/21 ISSUED FOR CONSTRUCTION: REVISION:

APPROVED BY: PW DATE: 03/31/21

W.O. 1222637 RID: 108 DRAWING NUMBER: 26-1000-70-28-D SHEET 8 OF 8

BAL GROUP

WWM consulting, LLC

PATRICK A. WOZINSKI, P.E.

PATRICK A. WOZINSKI, P.E.

REVISIONS

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
REGIONAL ENERGY ACCESS EXPANSION PROJECT
MLV-505LD86
POST CONSTRUCTION STORMWATER MANAGEMENT PLAN
DETAILS SHEET 2
CHESTNUT HILL TOWNSHIP, MONROE COUNTY, PENNSYLVANIA

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W.O. 1222637 RID: 108 DRAWING NUMBER: 26-1000-70-28-D SHEET 8 OF 8