

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC ATLANTIC SUNRISE PROJECT PROPOSED 42" CENTRAL PENN LINE SOUTH

BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET

PINE GROVE, TREMONT, FRAILEY, PORTER, HEGINS, ELDRED
TOWNSHIPS

SCHUYLKILL COUNTY

BMP DETAIL SUMMARY

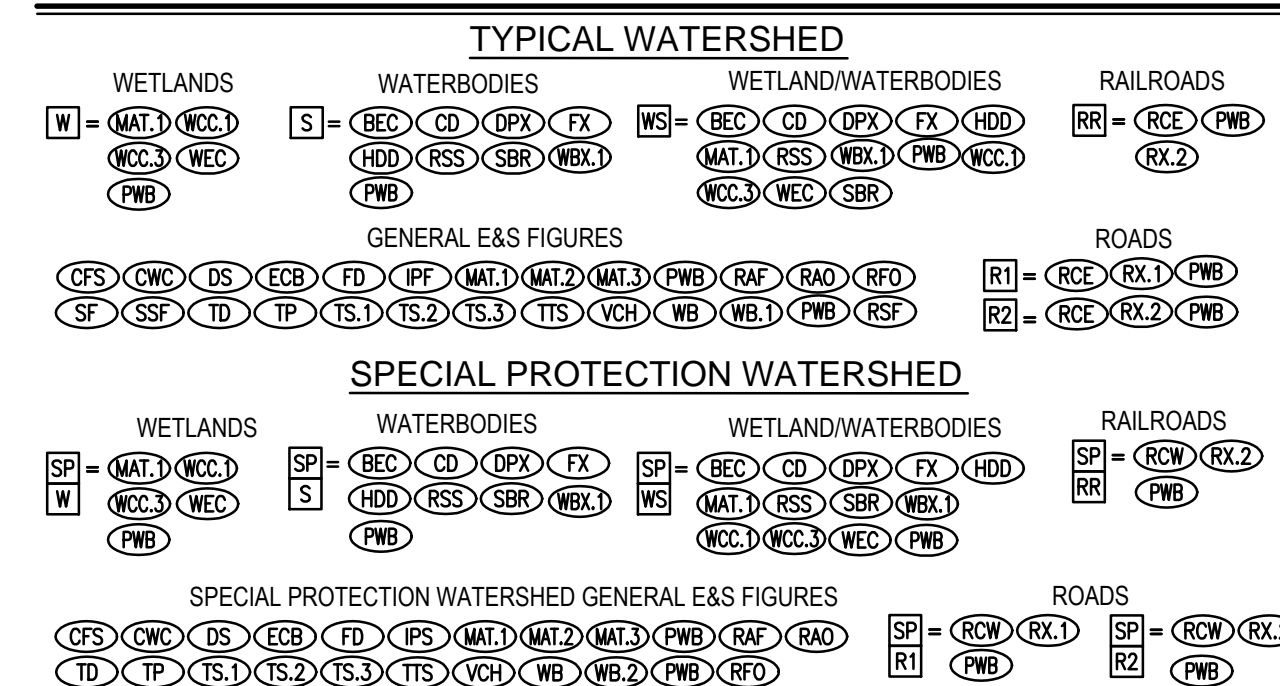
FIGURE	FIGURE TITLE	SHEET NO.
ARF	ABACT ROCK FILTER	1
BBB	BROAD-BASED BMP	
BEC	BRIDGE EQUIPMENT CROSSING	
CD	COFFERDAM STREAM CROSSING	
CDM	CHECK DAM	2
CFS	COMPOST FILTER SOCK	
CS	CLEANOUT STAKE	
CST	COMPOST SOCK SEDIMENT TRAP	
CWC	CLEAN WATER CROSSING (TEMPORARY LEVEL SPREADER)	3
DPX	DAM AND PUMP STREAM CROSSING	
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ECB	EROSION CONTROL BLANKET	
FD	FILTER SOCK DIVERSION	4
FEN	CONSTRUCTION FENCE	
FX	FLUME STREAM CROSSING	
HDD	HORIZONTAL DIRECTIONAL DRILL	
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DETAILS THAT ARE NOT UTILIZED IN THIS COUNTY ARE STRUCK THROUGH IN THIS TABLE. THESE DETAILS ARE ALSO CROSSED OUT WITH A NOTE THAT READS "DETAILS ARE NOT UTILIZED IN THIS COUNTY" ON THEIR RESPECTIVE SHEET.

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E&S DETAIL GROUP LEGEND FOR PIPELINE CROSSINGS



DETAILS IN THIS LEGEND ARE NOT COMPREHENSIVE AND ONLY REFER TO BMPs RELATED TO PIPELINE CROSSINGS. ADDITIONAL BMPs ARE PROVIDED FOR ACCESS ROADS.
E&S DETAIL GROUP LEGEND IS ALSO PROVIDED ON THE PIPELINE E&S PLANS. LEGEND IS SHOWN HERE FOR COORDINATION PURPOSES.



REVISIONS			
NO.	DATE	BY	DESCRIPTION
0	08/26/2015	BL	ISSUED FOR PADEP SUBMITTAL
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL
2	02/04/2016	BL	ISSUED FOR PADEP RESUBMITTAL
3	3/28/2016	BL	ISSUED FOR PADEP RESUBMITTAL
4	Oct. 2016	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1
5	April 2017	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #2

DRAWN BY: ELZ				DATE: 05/15/15				ISSUED FOR: CONSTRUCTION				SCALE:			
CHECKED BY: JLK				DATE: 07/02/15				ISSUED FOR: CONSTRUCTION				REVISION: 5			
APPROVED BY: SMK				DATE: 07/08/15				DRAWING NUMBER: 24-1600-70-28-A/LL113_9-BMP				SHEET 1 OF 1			



PIPELINE BMP INSTALLATION SEQUENCE

- AT LEAST 7 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, INCLUDING CLEARING AND GRUBBING, THE OWNER AND/OR OPERATOR SHALL INVITE ALL CONTRACTORS, ENVIRONMENTAL INSPECTORS, THE LANDOWNER, APPROPRIATE MUNICIPAL OFFICIALS, THE E&S PLAN PREPARER, THE PCSM PLAN PREPARER, THE LICENSED PROFESSIONAL RESPONSIBLE FOR OVERSIGHT OF CRITICAL STAGES OF IMPLEMENTATION OF THE PCSM PLAN, AND A REPRESENTATIVE FROM THE LOCAL CONSERVATION DISTRICT TO AN ON-SITE PRECONSTRUCTION MEETING.
- AT LEAST 3 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, OR EXPANDING INTO AN AREA PREVIOUSLY UNMARKED, THE PENNSYLVANIA ONE CALL SYSTEM INC. SHALL BE NOTIFIED AT 1-800-242-1776 FOR THE LOCATION OF EXISTING UNDERGROUND UTILITIES.
- HOLD PRE-CONSTRUCTION CONFERENCE WITH THE ENVIRONMENTAL INSPECTORS, LOCAL COUNTY CONSERVATION DISTRICT (CCD), PADEP, AND DESIGN ENGINEER.
- LOCATE STAGING AREAS AND ACCESS POINTS INCLUDING CONSTRUCTION ENTRANCES. FIELD LOCATE THE LOD.
- LOCATE, STAKE AND/OR INSTALL ORANGE CONSTRUCTION FENCE AROUND SPECIAL AREAS OF CONCERN (I.E. WETLANDS, STREAMS, CULTURAL RESOURCES.)
- PERFORM NON-MECHANIZED TREE CUTTING WHERE REQUIRED.
- INSTALL CONSTRUCTION ENTRANCES.
- ALL OFF-SITE WASTE AND BORROW AREAS MUST HAVE AN E&S PLAN APPROVED BY THE LOCAL COUNTY CONSERVATION DISTRICT OR DEP AND BE FULLY IMPLEMENTED PRIOR TO BEING ACTIVATED. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE REMOVAL OF ANY EXCESS MATERIAL AND TO DEVELOP A PLAN THAT MEETS THE CONDITIONS OF CHAPTER 102, NPDES PERMIT CONDITIONS, AND/OR OTHER STATE AND FEDERAL REGULATIONS.
- REMOVE BRUSH, INCLUDING STUMPS, ONLY IN AREAS NECESSARY TO EFFECTIVELY INSTALL PERIMETER SEDIMENT BARRIERS, UPSLOPE TEMPORARY FILTER SOCK DIVERSIONS AND TEMPORARY DIVERSION SWALES. LEVEL SIDE CUTS REQUIRED TO GRANT ACCESS FOR VEHICLES AND WORKERS TO SAFELY PERFORM THE INSTALLATION OF SEDIMENT BARRIERS AS SHOWN ON THE E&S PLANS.
- INSTALL PERIMETER CONTROLS (SEDIMENT BARRIERS). ACCESS REQUIREMENTS FOR PERIMETER CONTROLS ALONG PRIVATE DRIVES WITHIN THE LOD SHALL BE IN ACCORDANCE WITH THE LANDOWNER AGREEMENTS.
- INSTALL PERMANENT AND TEMPORARY ACCESS ROADS AND ASSOCIATED BMPS (VEGETATED ROADSIDE DITCHES, DITCH RELIEF CULVERTS, AND RIPRAP OUTLET PROTECTION). SEE ACCESS ROAD SEQUENCE OF CONSTRUCTION FOR SPECIFIC CONSTRUCTION STEPS ASSOCIATED WITH ROAD CONSTRUCTION (PROVIDED IN SECTION 2 OF THE ESCGP-2 NOI).
- THE COMPLIANCE MANAGER SHALL PROVIDE PADEP AT LEAST THREE DAYS' NOTICE PRIOR TO BULK EARTH DISTURBANCE AND UPON COMPLETED INSTALLATION OF PERIMETER EROSION CONTROLS.
- HAVE SURVEY CREWS LOCATE AND RE-STAKE AS NEEDED, IF ANY STAKES ARE DAMAGED, IN ALL SPECIAL AREAS OF CONCERN (I.E., WETLANDS, STREAMS, ETC.)
- UPON TEMPORARY CESSATION OF AN EARTH DISTURBANCE ACTIVITY OR ANY STAGE OF AN ACTIVITY WHERE THE CESSATION OF EARTH DISTURBANCE ACTIVITIES WILL EXCEED FOUR DAYS, THE SITE SHALL BE IMMEDIATELY SEEDED, MULCHED, OR OTHERWISE PROTECTED FROM ACCELERATED E&SC PENDING FUTURE EARTH DISTURBANCE ACTIVITIES. FOR AN EARTH DISTURBANCE ACTIVITY OR ANY STAGE OF AN ACTIVITY TO BE CONSIDERED TEMPORARILY STABILIZED, THE DISTURBED AREAS SHALL BE COVERED WITH ONE OF THE FOLLOWING: A MINIMUM UNIFORM COVERAGE OF MULCH AND SEED, WITH A DENSITY CAPABLE OF RESISTING ACCELERATED E&SC, OR AN ACCEPTABLE E&SC BMP WHICH TEMPORARILY MINIMIZES ACCELERATED E&SC. TEMPORARY STABILIZATION WILL NOT OCCUR ON ACTIVE VEHICULAR TRAVEL WAYS WITHIN THE ROW.
- PROCEED WITH MAJOR CLEARING AND GRUBBING.
- BEGIN CONSTRUCTION STAKING FOR TEMPORARY GRADING.
- INSTALL CLEAN WATER CROSSINGS, INCLUDING LINERS, RIP RAP APRON ENERGY DISSIPATORS AND FLUME CROSSINGS
- AS THE GRUBBING OPERATION COMMENCES, INSTALL ROCK FILTERS AND WATERBARS ALONG THE ALIGNMENT.
- STRIP AND STOCKPILE TOPSOIL; INSTALL SEDIMENT BARRIERS AROUND STOCKPILES.
- HAUL PIPE TO RIGHT-OF-WAY. BEND, PLACE ON SUPPORTS, ALIGN, AND WELD. INSTALL STREAM AND WETLAND CROSSING BMPS (TIMBER MATTING, TIMBER MAT BRIDGES). LAY PIPE IN DITCH. IMMEDIATELY AFTER INSTALLING CROSSING, RESTORE DISTURBED AREA AND INSTALL STREAMBANK STABILIZATION.
- CLEAR, GRUB, AND CONSTRUCT STREAM AND WETLAND CROSSINGS IN ACCORDANCE WITH CHAPTER 105, SECTION 404, 401, AND RELATED PERMITS. INSTALL STREAM FLUMES, AND/OR DAM AND PUMP AS SPECIFIED IN CHAPTER 105 PERMIT DOCUMENTS FOR CROSSING OF STREAM AND WETLAND AREAS. CONTRACTOR SHALL PLACE PIPE, INSTALL TRENCH PLUGS, BACKFILL TRENCH, AND TEMPORARILY STABILIZE WITHIN 48 HOURS OF EXCAVATING TRENCH IN RESOURCE CROSSING LOCATIONS.
- DIG TRENCH OUTSIDE OF RESOURCE CROSSINGS. CONTRACTOR SHALL PLACE PIPE, INSTALL TRENCH PLUGS, AND BACKFILL TRENCH WITHIN 30 DAYS OF EXCAVATING TRENCH.
- PERFORM NON-DESTRUCTIVE TESTING (NDT) INSPECTION OF WELDS AND APPLY COATING TO WELD AREA.
- INSTALL TRENCH PLUGS.
- BACKFILL PIPE TRENCH, REPAIR PERMANENT WATERBARS, REMOVE TEMPORARY WATERBARS, RETURN TEMPORARILY GRADED AREAS TO PRE-DEVELOPMENT GRADE, REPAIR/INSTALL EROSION CONTROL BLANKET AS NEEDED, REPLACE TOPSOIL AND IMMEDIATELY SEED AND STABILIZE DISTURBED AREAS (SLOPES, DITCHES AND CHANNELS) AS THEY ARE RETURNED TO FINAL GRADE. REFER TO PLANTING PLANS AND RIPARIAN BUFFER PLANTINGS, AS APPLICABLE, IN THE BMP PLAN SET AND E&S NARRATIVE. ANY AREA THAT USED STONE AND/OR TIMBER MATS FOR TEMPORARY STABILIZATION AND/OR ACCESS WILL BE COMPLETELY REMOVED, SOIL WILL BE DE-COMPACTED BY USING TRACKED EQUIPMENT MAKING MULTIPLE PASSES OVER AREA. RE-ESTABLISH PRECONSTRUCTION CONTOURS, AND REPLACE TOPSOIL TO A MINIMUM OF 4-8 INCHES DEEP AND SEED AND MULCH AREAS. VEHICULAR TRAFFIC SHOULD BE RESTRICTED FROM AREAS TO PREVENT SOIL COMPACTION.
- TRANSOCO WILL COMPLETE UPLAND FINAL GRADING, TOPSOIL REPLACEMENT, INSTALLATION OF PERMANENT E&S MEASURES WITHIN 20 DAYS AFTER BACKFILLING THE TRENCH IN ALL AREAS EXCEPT RESIDENTIAL AREAS, WHICH WILL BE COMPLETED WITHIN 10 DAYS.
- PERFORM HYDROSTATIC PRESSURE TEST OF PIPELINE.
- DEWATER PIPELINE UTILIZING APPROPRIATE BMPS, COMPLETE FINAL TIE-INS, AND DRY PIPELINE.
- AN AREA SHALL BE CONSIDERED TO HAVE ACHIEVED FINAL STABILIZATION WHEN IT HAS 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. WHEN CONTROLS ARE TO BE REMOVED IN AGRICULTURAL NON-SENSITIVE AREAS (STREAMS/WETLANDS), AGRICULTURAL LANDOWNERS SHALL MAINTAIN AGRICULTURAL BMPS PER PADEP REGULATIONS.
- UPON COMPLETION OF ALL EARTH DISTURBANCE ACTIVITIES AND PERMANENT STABILIZATION OF ALL DISTURBED AREAS, THE PERMITEE AND/OR OPERATORS SHALL CONTACT THE LOCAL CCD AND/OR PADEP FOR AN INSPECTION PRIOR TO THE REMOVAL OF THE E&SC BMPS. REMOVAL OF TEMPORARY WETLAND AND STREAM CROSSINGS, TEMPORARY BMPS INCLUDING SEDIMENT BARRIERS, TEMPORARY FILTER SOCK DIVERSION SWALES, TEMPORARY CLEAN WATER DIVERSION SWALES (AND ASSOCIATED GRADING), CLEAN WATER CROSSING OUTFALL PROTECTION AND LEVEL SPREADERS, ROCK FILTERS, AND TEMPORARY WATERBARS ALONG THE ALIGNMENT.
- ALL GRADED AREAS SHALL BE PERMANENTLY STABILIZED IMMEDIATELY UPON REACHING FINISHED GRADE. CUT SLOPES IN COMPETENT BEDROCK AND ROCK FILLS NEED NOT BE VEGETATED. SEEDING AREAS WITHIN 100 FEET OF A HIGH-VOL SURFACE WATER AND WITHIN 50 FEET OF NON-HQ/LEV SURFACE WATER, OR AS OTHERWISE SHOWN ON THE PLAN DRAWINGS, SHALL BE BLANKETED ACCORDING TO THE STANDARDS OF THIS PLAN.
- COMPLETE SITE RESTORATION AND STABILIZATION, INCLUDING SOIL AERATION, SOIL TREATMENT, SEED APPLICATION AND MULCHING IN AREAS DISTURBED BY E&SC BMP REMOVAL. INSTALL RIPARIAN BUFFER PLANTINGS PER THE RIPARIAN BUFFER PLANTING PLANS.
- REMOVE AND PROPERLY DISPOSE OF/RECYCLE E&SC BMPS. REMOVE STAKES AND ORANGE CONSTRUCTION FENCE. REPAIR AND PERMANENTLY STABILIZE AREAS DISTURBED DURING E&SC BMP REMOVAL.

MAINTENANCE PROGRAM

THE FOLLOWING INSPECTION AND MAINTENANCE PRACTICES WILL BE USED TO MAINTAIN EROSION AND SEDIMENT CONTROLS AND STABILIZATION MEASURES. REFER TO BMP DETAILS FOR SPECIFIC OPERATION AND MAINTENANCE REQUIREMENTS.

- ALL EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSPECTED ONCE EVERY SEVEN DAYS AND AFTER EACH RUNOFF EVENT. A WRITTEN REPORT MUST ALSO BE COMPLETED DOCUMENTING EACH INSPECTION AND, IF NECESSARY, ANY REPAIR, REPLACEMENT OR MAINTENANCE ACTIVITY.
 - ALL MEASURES WILL BE MAINTAINED IN GOOD WORKING ORDER; IF REPAIRS OR ADDITIONAL MEASURES ARE FOUND TO BE NECESSARY, THEY WILL BE INITIATED WITHIN 24 HOURS OF THE INSPECTION REPORT.
 - BUILT UP SEDIMENT WILL BE REMOVED FROM PERIMETER BMPS WHEN IT HAS REACHED ONE-THIRD THE HEIGHT OF THE BMP.
 - PERIMETER BMPS WILL BE INSPECTED FOR DEPTH OF SEDIMENT, DAMAGE, ETC., TO ENSURE THE MEASURE IS IN PROPER WORKING ORDER, AND THAT ANY POSTS/WOOD STAKES ARE SECURELY IN THE GROUND.
 - TEMPORARY SEDIMENT TRAPS, IF PRESENT, WILL BE INSPECTED FOR DEPTH OF SEDIMENT, AND BUILT UP SEDIMENT WILL BE REMOVED WHEN IT REACHES THE DESIGN CLEANOUT DEPTH.
 - TEMPORARY AND PERMANENT SEEDING, AND OTHER STABILIZATION MEASURES, WILL BE INSPECTED FOR BARE SPOTS, WASHOUTS, AND HEALTHY GROWTH.
 - A MAINTENANCE INSPECTION REPORT WILL BE MADE AFTER EACH INSPECTION. COPIES OF THE REPORT FORMS TO BE COMPLETED BY THE INSPECTOR ARE INCLUDED IN THIS ESCP.
 - THE INSPECTOR WILL IMPLEMENT INSPECTION AND MAINTENANCE PRACTICES NECESSARY FOR KEEPING THE EROSION AND SEDIMENT CONTROLS THAT ARE USED ON THE SITE IN GOOD WORKING ORDER. THE INSPECTOR WILL ALSO BE TRAINED IN THE COMPLETION OF, INITIATION OF ACTIONS REQUIRED BY, AND THE FILING OF THE INSPECTION FORMS.
 - DISTURBED AREAS AND MATERIALS STORAGE AREAS WILL BE INSPECTED FOR EVIDENCE OF OR POTENTIAL FOR POLLUTANTS ENTERING THE STORMWATER.
- A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN(S) WILL BE AVAILABLE ON THE SITE AT ALL TIMES.

ONCE ANY EROSION CONTROL MEASURES ARE INSTALLED, THE MAINTENANCE AND INSPECTION PROCEDURES ABOVE SHALL BEGIN. THE CONTRACTOR SHOULD BE AWARE THAT THE INSPECTION FORMS BECOME AN INTEGRAL PART OF THE ESCP AND SHALL BE MADE READILY AVAILABLE TO THE GOVERNMENT INSPECTION OFFICIALS, THE PROJECT OWNER'S ENGINEER, AND THE PROJECT OWNER FOR REVIEW UPON REQUEST DURING VISITS TO THE PROJECT SITE.

INSPECTORS SHOULD BE KNOWLEDGEABLE IN THE PRINCIPLES AND PRACTICE OF EROSION AND SEDIMENT CONTROLS AND POSSESS THE SKILLS TO ASSESS CONDITIONS AT THE CONSTRUCTION SITE THAT COULD IMPACT STORMWATER QUALITY AND TO ASSESS THE EFFECTIVENESS OF ANY SEDIMENT AND EROSION CONTROL MEASURES SELECTED TO CONTROL THE QUALITY OF STORMWATER DISCHARGES FROM THE CONSTRUCTION SITE. THEY SHOULD ALSO HAVE READ AND UNDERSTOOD ALL PORTIONS OF THIS ESCP, INCLUDING THE ESCGP-2.

THE INDIVIDUAL(S) RESPONSIBLE FOR POST-STORM AND STORM EVENT BMP INSPECTIONS, AND THE QUALIFIED PERSON(S) ASSIGNED RESPONSIBILITY TO ENSURE FULL COMPLIANCE WITH THE PERMIT AND IMPLEMENTATION OF ALL ELEMENTS OF THE ESCP, INCLUDING THE PREPARATION OF THE ANNUAL COMPLIANCE EVALUATION AND THE ELIMINATION OF ALL UNAUTHORIZED DISCHARGES ARE:

NAME: _____
 PHONE NUMBER: _____ EMERGENCY PHONE #: _____
 COMPANY: _____
 RESPONSIBILITIES: _____
 NAME: _____
 PHONE NUMBER: _____ EMERGENCY PHONE #: _____
 COMPANY: _____
 RESPONSIBILITIES: _____

TEMPORARY AND PERMANENT STABILIZATION

1. TEMPORARY STABILIZATION

TEMPORARY SEEDING WITH STRAW MULCH COVER FOR INTERIM STABILIZATION IS A TYPE OF BMP THAT CAN USUALLY BE PROVIDED WHERE THE EARTH DISTURBANCE ACTIVITY TEMPORARILY CEASES (I.E. 4 DAYS OR MORE) UNLESS DIRECTED BY THE PROJECT OWNER, PADEP, OR CONSERVATION DISTRICT.

THE INSTALLATION OF AN EROSION CONTROL BLANKET OR APPLICATION OF STRAW MULCH UPON SEEDED CAN BE UTILIZED TO PROTECT THE SEEDBED UNTIL VEGETATION IS ESTABLISHED.

2. PERMANENT STABILIZATION

UPON COMPLETION OF ANY EARTH DISTURBANCE ACTIVITY, THE SITE SHALL BE IMMEDIATELY SEEDED, MULCHED, OR OTHERWISE PROTECTED FROM ACCELERATED EROSION AND SEDIMENTATION.

EROSION & SEDIMENTATION CONTROLS SHALL BE LEFT IN PLACE UNTIL SUCH TIME AS THE DISTURBED AREAS HAVE PERMANENT STABILIZATION. AN AREA SHALL BE CONSIDERED TO HAVE ACHIEVED FINAL STABILIZATION WHEN IT HAS 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.

WHEN EROSION & SEDIMENTATION CONTROLS ARE TO BE REMOVED IN AGRICULTURAL NON-SENSITIVE AREAS (STREAMS/WETLANDS), AGRICULTURAL LANDOWNERS SHALL MAINTAIN AGRICULTURAL BMPS PER PADEP REGULATIONS.

3. STABILIZATION DURING NON-GROWING SEASONS

WHEN UTILITY CONSTRUCTION MUST BE DONE AND IS COMPLETED DURING A NON-GROWING SEASON, INTERIM STABILIZATION BMPS MUST BE IMPLEMENTED AND ADEQUATELY MAINTAINED. THE APPLICATION OF STRAW MULCH AT THE RATE OF 3.0 TONS PER ACRE IS REQUIRED. THE BMPS SHOULD BE INSPECTED WEEKLY (UNLESS SNOW COVERED) AND AFTER EACH RUNOFF EVENT TO IDENTIFY AREAS THAT BECOME BARE.

BARE AREAS SHOULD BE COVERED WITH A PROPERLY INSTALLED EROSION CONTROL BLANKET. ALL TEMPORARY EROSION AND SEDIMENT POLLUTION CONTROLS MUST BE MAINTAINED UNTIL PERMANENT VEGETATION IS ESTABLISHED.

4. WHERE REQUIRED, STRAW MULCH MUST BE APPLIED AT A MINIMUM OF 3.0 TONS PER ACRE.

5. STRAW MULCH SHALL BE APPLIED IN LONG STRANDS, NOT FINELY CHOPPED OR BROKEN.

6. PRIOR TO ANY SEEDING, LIME, OR FERTILIZATION APPLICATION, A SOIL TEST SHALL BE PERFORMED TO DETERMINE THE pH FACTOR. ADDITIONAL LIME AND FERTILIZER MAY BE REQUIRED. NO LIME OR FERTILIZERS SHALL BE USED IN WETLAND AREAS.

7. LIME, FERTILIZE, SEED, AND MULCH DISTURBED AREAS PER THE EROSION AND SEDIMENT CONTROL PLANS. IN AREAS OF STEEP SLOPES OR OBVIOUS AREAS WHERE POTENTIAL EROSION MAY OCCUR, AND EROSION CONTROL MAT OR FLEXIBLE GROWTH MEDIUM (FGM) SHALL BE USED. FGM SHALL BE APPLIED PER MANUFACTURER SPECIFICATIONS. NO LIME OR FERTILIZERS SHALL BE USED IN WETLAND OR STREAM AREAS.

8. WATERBARS WITHIN AGRICULTURAL OR RESIDENTIAL AREAS SHALL BE USED AS TEMPORARY FEATURES. WATERBARS MAY BE REMOVED WHEN THE TRIBUTARY DRAINAGE AREA IS AT LEAST 70% STABILIZED WITH PERENNIAL VEGETATION AS PER PA CHAPTER 102.22.

PIPELINE WORK SEQUENCE IN WETLANDS

FOR WORK IN WETLANDS, THE FOLLOWING STEPS SHALL BE INSERTED IN THE GENERAL PIPELINE CONSTRUCTION SEQUENCE ABOVE:

1. INSTALL ORANGE FLAGGING AROUND PERIMETER OF WETLAND AND SEDIMENT BARRIERS ALONG THE LIMITS OF DISTURBANCE.

2. LOCATE STAGING AREAS AT LEAST 50 FEET FROM THE EDGE OF THE WETLAND.

3. INSTALL SEDIMENT BARRIERS DOWN SLOPE OF THESE AREAS.

4. INSTALL CONSTRUCTION ENTRANCE AS SHOWN ON THE PLANS.

5. MATS, PADS, OR SIMILAR DEVICES SHALL BE USED DURING THE CROSSINGS OF WETLANDS. ORIGINAL GRADES THROUGH WETLANDS MUST BE RESTORED AFTER TRENCHING AND BACKFILLING. ANY EXCESS FILL MATERIALS MUST BE REMOVED FROM THE WETLAND AND NOT SPREAD ON-SITE.

6. SOIL EXCAVATED FROM WETLAND AREAS SHALL BE CAREFULLY REMOVED WITH THE ROOTS INTACT. THIS SOIL SHOULD BE PLACED IN A SEPARATE STOCKPILE TO BE REUSED DURING THE WETLAND SURFACE RESTITUTION.

7. DEWATER WORK AREA: WATER FROM THE EXCAVATION SHALL BE PUMPED TO A SEDIMENT TRAP OR A FILTER BAG.

8. INSTALL PIPE.

9. INSTALL TRENCH PLUGS IN WETLAND AREAS PER THE E&S PLAN TO PREVENT THE TRENCH FROM DRAINING THE WETLAND OR CHANGING ITS MICROHYDROLOGY.

10. BACKFILL PIPE TRENCH. BACKFILL THE TOP 12-INCHES OF THE EXCAVATED TRENCH WITH THE STOCKPILED WETLAND SOIL TO MATCH ORIGINAL SURFACE GRADES.

11. COMPACT BACKFILL AND GRADE THE SURFACE OF THE TRENCH AREA TO ALLOW FOR POSITIVE DRAINAGE TO SOIL E&SCS AND TO PREPARE DISTURBED AREAS FOR PERMANENT TRENCH RESTORATION.

12. MAINTAIN ALL E&SC DEVICES UNTIL SITE WORK IS COMPLETE AND A MINIMUM UNIFORM 70 PERCENT PERENNIAL VEGETATIVE COVER IS ESTABLISHED.

13. REMOVE ALL SOIL AND E&SC MEASURES UPON ESTABLISHMENT OF A MINIMUM UNIFORM 70 PERCENT PERENNIAL VEGETATIVE COVER OVER THE DISTURBED AREA. REGRADE AND REVEGETATE AREAS DISTURBED DURING THE REMOVAL OF THE SOIL E&SCS.

PIPELINE WORK SEQUENCE AT STREAM CROSSINGS

FOR STREAM CROSSINGS, THE FOLLOWING STEPS SHALL BE INSERTED IN THE GENERAL PIPELINE CONSTRUCTION SEQUENCE ABOVE:

1. AFTER INSTALLATION OF SEDIMENTATION BMPS, INSTALL BYPASS HOSE, PUMP, OR COFFERDAM AS DESCRIBED IN STREAM CROSSING DETAILS AROUND THE WORK AREA.

2. DEWATER WORK AREA. WATER FROM THE EXCAVATION SHALL BE PUMPED TO A SEDIMENT FILTER BAG. WHERE POSSIBLE, EXCAVATION SHALL BE FROM THE TOP OF THE STREAM BANK.

3. STABILIZE CHANNEL EXCAVATION AND STREAM BANKS PRIOR TO REDIRECTING STREAM FLOW WITHIN 24 HOURS OF CROSSING BEING DONE FOR ALL STREAMS SMALLER THAN 10 FEET AND 48 HOURS FOR STREAMS LARGER THAN 10 FEET WIDE.

4. REMOVE BYPASS HOSE, PUMP, AND TEMPORARY DAM AS NEEDED.

ACCESS ROAD BMP INSTALLATION SEQUENCE

REFER TO SPECIFIC ACCESS ROAD CONSTRUCTION SEQUENCE NOTES INCLUDED IN THE ACCESS ROAD E&S PLAN SETS UNDER SEPARATE COVER.

ACID-PRODUCING SOILS AND BEDROCK CONTROL PLAN

THE FOLLOWING ACID PRODUCING SOILS CONTROL PLAN WAS DEVELOPED TO IDENTIFY BMPS AND PROCEDURES FOR MINIMIZING THE POTENTIAL FOR POLLUTION ASSOCIATED WITH THE DISTURBANCE OF THE AREAS WITHIN THE PROPOSED RIGHT-OF-WAY THAT CONTAIN ACID-PRODUCING SOILS WITH A pH LESS THAN 4.0.

ACID-PRODUCING SOILS AND BEDROCK CONTROL PLAN:


- CONTRACTOR SHALL LIMIT THE EXCAVATION AREA AND EXPOSURE TIME WHEN HIGH ACID-PRODUCING SOILS ARE ENCOUNTERED. LOCATIONS WHERE ACIDIC SOILS ARE ANTICIPATED TO BE PRESENT ALONG THE PIPELINE CORRIDOR ARE PROVIDED IN THE COUNTY-SPECIFIC TABLE INCLUDED AT THE END OF THIS PLAN SET.
- CONTRACTOR SHALL SEPARATELY STORE TOPSOIL STRIPPED FROM THE SITE AWAY FROM TEMPORARILY STOCKPILED HIGH ACID-PRODUCING SOILS AND BEDROCK S.
- CONTRACTOR SHALL STOCKPILE HIGH ACID-PRODUCING SOILS AND BEDROCK MATERIAL ON LEVEL GROUND TO MINIMIZE ITS MOVEMENT, ESPECIALLY WHEN THESE MATERIALS HAVE A HIGH CLAY CONTENT.
- CONTRACTOR SHALL COVER TEMPORARILY STOCKPILED HIGH ACID-PRODUCING SOIL AND BEDROCK MATERIAL TO BE EXPOSED MORE THAN 7 DAYS WITH PROPERLY ANCHORED, HEAVY-GRATE SHEETS OF POLYETHYLENE, WHERE POSSIBLE. IF NOT POSSIBLE, STOCKPILES SHALL BE COVERED WITH A MINIMUM OF THREE TO SIX INCHES OF WOOD CHIPS TO MINIMIZE EROSION OF THE STOCKPILE. IN ADDITION, THE CONTRACTOR SHALL INSTALL SILT FENCE AT THE TOE OF THE STOCKPILE SLOPE TO CONTAIN MOVEMENT OF MATERIAL. CONTRACTOR SHALL NOT APPLY TOPSOIL TO THE HIGH ACID-PRODUCING SOIL OR BEDROCK STOCKPILES TO PREVENT TOPSOIL CONTAMINATION.
- CONTRACTOR SHALL ULTIMATELY DISPOSE OF HIGH ACID-PRODUCING SOILS OR BEDROCK WITH A pH OF FOUR OR LESS, OR CONTAINING IRON SULFIDE (INCLUDING BORROW FROM CUTS) BY PLACING THE MATERIAL COMBINED WITH LIMESTONE AT THE RATE OF 6 TONS PER ACRE (OR 275 POUNDS PER 1,000 SQUARE FEET OF SURFACE AREA) AND COVERING THE MIXTURE WITH A MINIMUM OF 12 INCHES OF SETTLED SOILS WITH A PH OF FIVE OR MORE EXCEPT AS FOLLOWS:
 - IN THE AREAS WHERE TREES OR SHRUBS ARE TO BE PLANTED, THE CONTRACTOR SHALL COVER THE LIMESTONE/SOIL MIXTURE WITH A MINIMUM OF 24 INCHES OF SOILS WITH A PH OF FIVE OR MORE.
 - CONTRACTOR SHALL NOT LOCATE ANY DISPOSAL AREA WITHIN 24 INCHES OF ANY SURFACE OF A SLOPE OR BANK, SUCH AS BERMS, STREAM BANKS, DITCHES, AND OTHER SURFACE WATERS TO PREVENT POTENTIAL LATERAL LEACHING DAMAGES.
- AT THE END OF EACH DAY, CONTRACTOR SHALL CLEAN ALL EQUIPMENT USED TO HANDLE HIGH ACID-PRODUCING SOILS OR BEDROCK TO PREVENT SPREADING OF HIGH-ACID MATERIALS TO OTHER PARTS OF THE PROPOSED RIGHT-OF-WAY, INTO STREAMS, OR STORMWATER CONVEYANCES, AND TO PROTECT MACHINERY FROM ACCELERATED CORROSION.
- CONTRACTOR SHALL PROVIDE AND INSTALL NON-VEGETATIVE EROSION CONTROLS (STONE TRACKING PADS, STRATEGICALLY-PLACE LIMESTONE CHECK DAMS, SILT FENCES, WOOD CHIPS) TO LIMIT THE MOVEMENT OF HIGH ACID-PRODUCING SOILS FROM, AROUND, OR OFF OF THE PROPOSED RIGHT-OF-WAY.
- FOLLOWING THE BURIAL OR REMOVAL OF HIGH ACID-PRODUCING SOILS AND BEDROCK, TOP SOILING, AND SEEDING OF THE PROPOSED RIGHT-OF-WAY, TRANSOCO SHALL MONITOR THE SITE FOR APPROXIMATELY SIX TO 12 MONTHS TO ASSURE THERE IS ADEQUATE STABILIZATION AND THAT NO HIGH-ACID SOIL OR BEDROCK PROBLEMS EMERGE. CONTRACTOR SHALL CORRECT ANY PROBLEMS THAT ARE DISCOVERED WITHIN THIS TIME PERIOD.
- IF PROBLEMS OCCUR WHERE HIGH ACID-PRODUCING SOILS OR BEDROCK HAVE BEEN PLACED OR BURIED, THE APPLICANT SHALL MONITOR THESE AREAS FOR AT LEAST TWO YEARS TO ASSURE THERE IS NO MIGRATION OF POTENTIAL ACID LEACHATE.

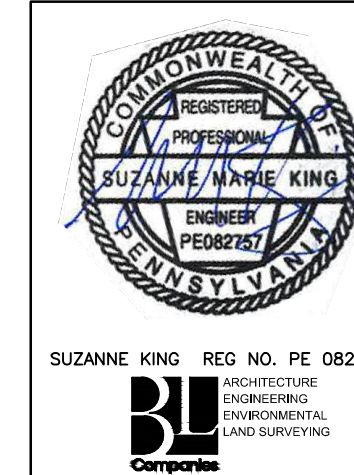
AGRIGULTURAL EROSION & SEDIMENT CONTROL NOTES

- PER PA CHAPTER 102 REGULATIONS, ALL FARMS ARE REQUIRED TO DEVELOP AND IMPLEMENT A WRITTEN PLAN TO REDUCE EROSION WHEN PLOWING AND TILLING (INCLUDES NO-TILL CROPPING).
- AREAS WITHIN 100-FT OF A STREAM MUST MAINTAIN A MINIMUM OF 25% PLANT COVER OR CROP RESIDUE.
- ADDITIONAL BMPS MAY BE NEEDED TO MINIMIZE ACCELERATED EROSION AND SEDIMENTATION FOR FIELDS WITH LESS THAN 25% PLANT COVER OR CROP RESIDUE COVER AND WITHIN 100-FT OF A RIVER OR PERENNIAL OR INTERMITTENT STREAM.

RIPARIAN BUFFER REPLANTING NOTES

- PIPELINE CONSTRUCTION AREAS THAT ENROACH THE RIPARIAN BUFFER SHALL BE SEEDED WITH THE RIPARIAN BUFFER MIX ERNMX-178 AS SHOWN ON SHEET 3 OF 3 OF THIS PLAN SET AND PLANTED WITH SHRUBS PER THE RIPARIAN AREA IMPACT ASSESSMENT AND RESTORATION PLAN INCLUDED THE EROSION AND SEDIMENT CONTROL PLAN NARRATIVE FOR EACH COUNTY (UNDER SEPARATE COVER).

REVISIONS							TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC					
NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.	ATLANTIC SUNRISE PROJECT					
0	08/26/2015	BL	ISSUED FOR PADEP SUBMITTAL	W0572385	JLK	SMK	PENNSYLVANIA BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET					
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK						
2	Oct. 2016	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1	W0572385	JLK	SMK						
3	April 2017	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #2	W0572385	JLK	SMK	GENERAL NOTES					
							DRAWN BY:	ELZ	DATE:	05/15/15	ISSUED FOR BID:	SCALE:
							CHECKED BY:	JLK	DATE:	07/02/15	ISSUED FOR CONSTRUCTION:	REVISION:
							APPROVED BY:	SMK	DATE:	07/08/15	DRAWING NUMBER:	ASR-BMP-GN
							W.O.:					SHEET 2
												OF 3



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
Rock Size (Inches)						
42	100					
30		100				
24	15-50		100			
18		15-50		100		
15	0-15					
12		0-15	15-50		100	
9				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 ¹ V _{max} (ft/sec)	AASHTO #1	AASHTO #1	AASHTO #1	AASHTO #3	AASHTO #3	AASHTO #57
	17.0	14.5	13.0	11.5	9.0	6.5

Adapted from PennDOT Pub. 408, Section 703.2(c), Table C

ADAPTED FROM PENNDOT PUB. 408, 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%.

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.

SLOPE SEED MIX

Common Name	Scientific Name	# PLS/ acre	PLS/ sq ft	% of Mix
Big Bluestem	<i>Andropogon gerardii</i>	2	6	10
Little Bluestem	<i>Schizachyrium scoparium</i>	1	6	10
Switchgrass	<i>Panicum virgatum</i>	1.3	12	20
Timothy	<i>Phleum pratense</i>	0.4	12	20
Virginia Wildrye	<i>Elymus virginicus</i>	4.4	7.5	13
Deertongue	<i>Dichanthelium clandestinum</i>	0.7	6	10
Blackeyed Susan	<i>Rudbeckia hirta</i>	0.1	3	5
White Clover	<i>Trifolium repens</i>	0.2	3	5
Oxeye Sunflower	<i>Helopsis helianthoides</i>	0.6	1.5	3
Partridge Pea	<i>Chamaecrista fasciculata</i>	1.1	1.5	3
Purple Coneflower	<i>Echinacea purpurea</i>	0.6	1.5	3
Total	--	12.3	60	100

NOTES:

1. PLS IS ROUNDED TO THE NEAREST TENTH OF A POUND.
2. PLS = PURE LIVE SEED

ROW SEED MIX

Common Name	Scientific Name	# PLS/ acre ¹	PLS/sq ft	% of Mix
Red Top	<i>Agrostis gigantea</i>	0.1	12.0	20
Timothy	<i>Phleum pratense</i>	0.4	12.0	20
Tall Fescue	<i>Festuca arundinacea</i>	1.7	9.0	15
Annual Ryegrass	<i>Lolium perenne multiflorum</i>	1.7	9.0	15
Italian Ryegrass	<i>Festulium</i>	1.7	9.0	15
Alsike Clover	<i>Trifolium hybridum</i>	0.2	3.0	5
White Clover	<i>Trifolium repens</i>	0.2	3.0	5
Ladino White Clover	<i>Trifolium repens latum</i>	0.2	3.0	5
Total	--	6.2	60.0	100

NOTES:

1. PLS IS ROUNDED TO THE NEAREST TENTH OF A POUND.
2. PLS = PURE LIVE SEED

COVER CROP SEED MIXES

Common Name	Crop Type	# PLS/ acre	PLS/ sq ft	% of Mix
Warm Season				
Pearl Millet	Grass	6.9	12.6	70
Sunh Hemp	Legume	10.5	3.6	20
Nitro Radishes	Brassicacae	3.1	1.8	10
Total	--	20.5	18	100
Cool Season				
Annual ryegrass	Grass	8	35.1	65
Red Clover	Legume	3.2	13.5	25
Nitro Radishes	Brassicacae	9.4	5.4	10
Total	--	20.6	54	100

NOTES:

1. PLS IS ROUNDED TO THE NEAREST TENTH OF A POUND.
2. PLS = PURE LIVE SEED

TEMPORARY SEED MIXTURE

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 30 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.

SPECIES TYPE AND SEASON OF PLANTING

Species Type and Season of Planting Cover Crops ¹	
Cool Season - Spring	March 1 to June 1
Warm Season	June 1 to August 15
Cool Season - Fall	August 15 - October 15
Permanent Crop ²	
Spring	April 20 to June 15
Late Fall (dormant)	October 10 - March 1

NOTES:

1. SEEDING DATES FOR COVER CROPS ARE BASED ON DATES REFERENCED BY CLARK, ____.

2. SEEDING DATES FOR PERMANENT CROPS ARE BASED ON DATES REFERENCED BY LANDSHOOT, 1997 AND DELONG AND BRITTINGHAM, 2002.

SEED AFTER OCTOBER 10 WHEN GROUND TEMPERATURES AT A DEPTH OF 4 INCHES ARE 4 F OR LOWER AND COOLER AIR TEMPERATURES ARE FORECASTED.

DORMANT SEEDING CAN OCCUR UNTIL SOIL IS FROZEN AND ADEQUATE PENETRATION OF THE DRILL SEEDER DOES NOT OCCUR.

PERMANENT SEED MIXTURES COOL & WARM SEASON GRASSES

HAYFIELDS

Common Name	Scientific Name	# PLS/acre	PLS/sq ft	% of Mix
Orchardgrass	<i>Dactylis glomerata</i>	4.0	60.0	40
Timothy	<i>Phleum pratense</i>	2.0	60.0	40
Ladino White Clover	<i>Trifolium repens latum</i>	0.8	15.0	10
Red Clover	<i>Trifolium pratense</i>	2.4	15.0	10
Total	--	9.2	150.0	100

PASTURES

Common Name	Scientific Name	# PLS/acre	PLS/sq ft	% of Mix
Timothy	<i>Phleum pratense</i>	0.5	15.0	25%
Perennial Ryegrass	<i>Lolium perenne</i>	2.3	12.0	20%
Red Top	<i>Agrostis gigantea</i>	0.1	9.0	15%
Italian Ryegrass	<i>Festulolium</i>	1.7	9.0	15%
Alsike Clover	<i>Trifolium hybridum</i>	0.6	9.0	15%
Ladino White Clover	<i>Trifolium repens latum</i>	0.3	6.0	10%
Total	--	5.5	60.0	100%

SLOPING/FORESTED LAND

Common Name	Scientific Name	# PLS/acre	PLS/sq ft	% of Mix
Sideoats Grama	<i>Bouteloua curtipendula</i>	1.4	6.0	10%
Little Bluestem	<i>Schizachyrium scoparium</i>	1.0	6.0	10%
Switchgrass	<i>Panicum virgatum</i>	1.3	12.0	20%
Timothy	<i>Phleum pratense</i>	0.4	12.0	20%
Virginia Wildrye	<i>Elymus virginicus</i>	4.24	7.2	12%
Deertongue	<i>Dichanthelium clandestinum</i>	0.7	6.0	10%
Blackeyed Susan	<i>Rudbeckia hirta</i>	0.1	2.4	4%
White Clover	<i>Trifolium repens</i>	0.1	2.4	4%
Oxeye Sunflower	<i>Helopsis helianthoides</i>	0.8	1.8	3%
Partridge Pea	<i>Chamaecrista fasciculata</i>	1.7	2.4	4%
Purple Coneflower	<i>Echinacea purpurea</i>	0.7	1.8	3%
Total	--	12.3	60.0	100%

DROUGHT/ROCKY SITES

Common Name	Scientific Name	# PLS/acre	PLS/sq ft	% of Mix
Little Bluestem	<i>Schizachyrium scoparium</i>	1.5	9.0	15%
Timothy	<i>Phleum pratense</i>	0.3	9.0	15%
Prairie Junegrass	<i>Koeleria macrantha</i>	0.1	6.0	10%
Deertongue	<i>Dichanthelium clandestinum</i>	1.0	9.0	15%
Sideoats Grama	<i>Bouteloua curtipendula</i>	2.7	12.0	20%
Virginia Wildrye	<i>Elymus virginicus</i>	3.5	6.0	10%
Partridge Pea	<i>Chamaecrista fasciculata</i>	2.1	3.0	5%
Ladino White Clover	<i>Trifolium repens latum</i>	0.2	3.0	5%
Lanceleaf Coreopsis	<i>Coreopsis lanceolata</i>	0.6	3.0	5%
Total	--	12.0	60.0	100%

NON-AGRICULTURAL MEADOWS

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%

NATIVE NON-NATIVE FOOD PLOT MIX

Common Name	Scientific Name	# PLS/acre	PLS/sq ft	% of Mix
Timothy	<i>Phleum pratense</i>	0.4	12.0	20%
Upland Bent Grass	<i>Agrostis perennans</i>	0.1	9.0	15%
Virginia Wildrye	<i>Elymus virginicus</i>	5.3	9.0	15%
White Clover	<i>Trifolium repens</i>	0.5	9.0	15%
Ladino White Clover	<i>Trifolium repens latum</i>	0.7	12.0	20%
Crimson Clover	<i>Trifolium incarnatum</i>	3.5	9.0	15%
Total	--	10.4	60.0	100%

POLLINATOR MIX (TO BE ADDED TO ANY MIX UPON LANDOWNER REQUEST)

Common Name	Scientific Name	# PLS/acre	PLS/sq ft	% of Mix
Butterfly Milkweed	<i>Asclepias tuberosa</i>	2.6	3.0	15%
Purple Coneflower	<i>Echinacea purpurea</i>	1.1	3.0	15%
Dense Blazing Star	<i>Liatris spicata</i>	0.7	2.0	10%
Lanceleaf Coreopsis	<i>Coreopsis lanceolata</i>	0.4	2.0	10%
Blackeyed Susan	<i>Rudbeckia hirta</i>	0.1	3.0	15%
Oxeye Sunflower	<i>Helopsis</i>	1.3	3.0	15%
Wild Bergamot	<i>Monarda fistulosa</i>	0.1	2.0	10%
Hoary Mountainmint	<i>Pycnanthemum</i>	0.0	2.0	10%
Total	--	6.3	20.0	100%

BRASSICA MIX

Common Name	Scientific Name	# PLS/acre	PLS/sq ft	% of Mix
Bonar (Rape)	<i>Brassica napus</i>	2.7	6.6	33%
Turnip	<i>Brassica rapa</i>	12.9	6.6	33%
Nitro Radish	<i>Raphanus</i>	11.8	6.8	34%
Total	--	27.4	20.0	100%

MULCH

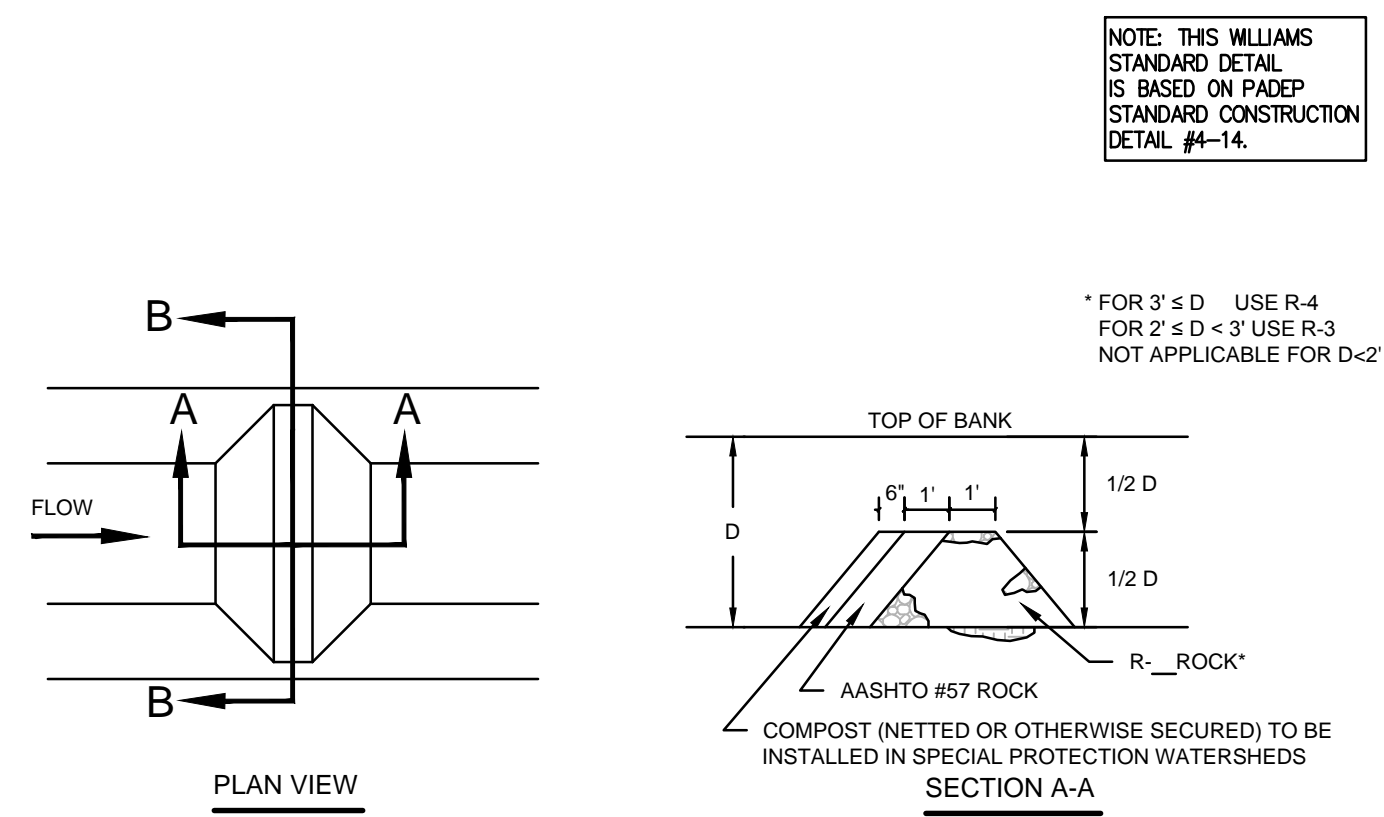
1. MULCHES SHOULD BE APPLIED AT THE RATES SHOWN IN TABLE 11.6
2. STRAW AND HAY MULCH SHOULD BE ANCHORED OR TACKIFIED IMMEDIATELY AFTER APPLICATION TO PREVENT BEING WINDBLOWN. A TRACTOR-DRAWN IMPLEMENT MAY BE USED TO "CRIMP" THE STRAW OR HAY INTO THE SOIL - ABOUT 3 INCHES. THIS METHOD SHOULD BE LIMITED 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.
3. 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 45F 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.
4. 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.
5. MULCH ON SLOPES 8X 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.
6. SHREDDED PAPER HYDROMULCH SHOULD NOT BE USED ON SLOPES STEEPER THAN 5X. 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.
7. 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).
8. 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

OPERATIONS AND MAINTENANCE PROGRAM PERMANENT STORMWATER FACILITIES

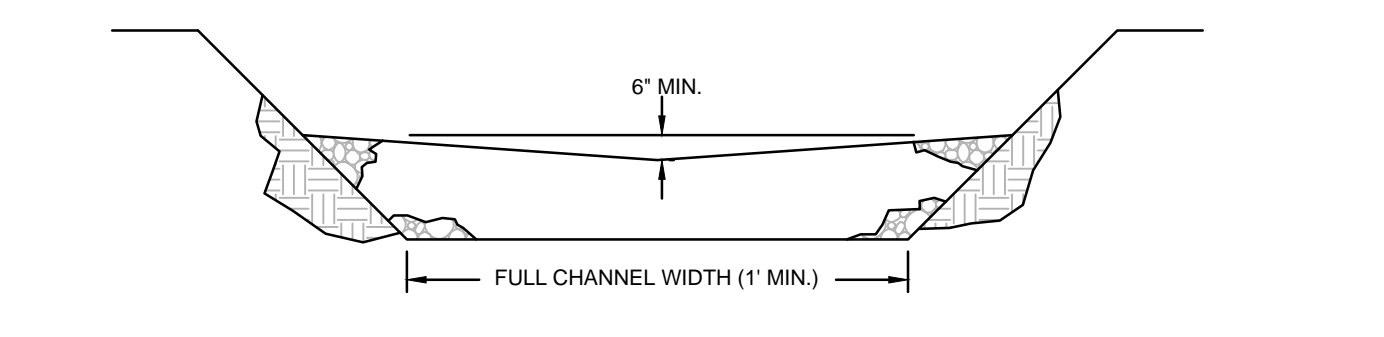
THE PERMIT APPLICANT SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF PERMANENT STORMWATER FACILITIES LOCATED ON THE SUBJECT PROPERTIES. PERMANENT MAINTENANCE OF THE STORM SYSTEM AFTER ACCEPTANCE WILL PRIMARILY CONSIST OF ROUTINE CLEANING OF ACCUMULATED SEDIMENT AND DEBRIS BY FACILITY STAFF OR PRIVATE CONTRACTORS. THE SPECIFIC MAINTENANCE STEPS AND SCHEDULE ARE LISTED BELOW.

1. VEGETATED SWALES
 - ALL SWALES MUST BE KEPT FREE OF OBSTRUCTIONS SUCH AS FILL, FALLEN LEAVES & WOODY DEBRIS, ACCUMULATED SEDIMENT, AND CONSTRUCTION MATERIAL/WASTES. SWALES SHALL BE KEPT MOWED AND/OR FREE OF ALL WEEDY, BRUSHY OR WOODY GROWTH. ANY UNDERGROUND UTILITIES RUNNING ACROSS/THROUGH THE SWALE(S) SHALL BE IMMEDIATELY BACKFILLED AND THE SWALE(S) REPAIRED AND STABILIZED PER THE SWALE CROSS SECTION DETAIL. ANY DISTURBANCE TO THE SWALES SHALL BE IMMEDIATELY REPAIRED AND STABILIZED PER THE SWALE CROSS SECTION DETAIL. REFER TO THE ADJACENT TABLE FOR THE OPERATION AND MAINTENANCE PROCEDURES FOR THE VEGETATED SWALES.
2. MAINLINE VALVE SITES
 - ALL VALVE SITES MUST BE KEPT FREE OF OBSTRUCTIONS SUCH AS FILL, FALLEN LEAVES & WOODY DEBRIS, ACCUMULATED SEDIMENT, AND CONSTRUCTION MATERIAL/WASTES. ANY DISTURBANCE TO THE VALVE SITE SHALL BE IMMEDIATELY REPAIRED AND STABILIZED. COMPACTION OF THE VALVE SITE BOTTOM SHALL BE PREVENTED.
3. ANNUAL CERTIFICATION OF MAINTENANCE PROCEDURES
 - THE OWNER SHALL MAINTAIN A CHECKLIST WHENEVER THE PERMANENT FACILITIES ARE INSPECTED AND CLEANED. AN ANNUAL LIST OF INSPECTIONS AND MAJOR CLEANING OPERATIONS AND REPAIRS (REPAIR CHECK DAMS, REPLACE AGGREGATE, ETC.) SHALL BE MAINTAINED. THE COUNTY CONSERVATION DISTRICT(S) OR ENFORCEMENT OFFICIALS SHALL HAVE ACCESS TO THOSE RECORDS.
4. ESCP-2 COMPLIANCE WITH ESCP-2 REQUIREMENTS AND RECORD KEEPING FOR PERMANENT STORMWATER DISCHARGE AND MAINTENANCE AND OTHER APPLICABLE ESCP-2 AND DEP REQUIREMENTS REGARDING DISCHARGES.
5. PROTECT SENSITIVE/SPECIAL VALUE FEATURES
 - PROTECTED AREAS SHALL REMAIN UNDISTURBED AFTER CONSTRUCTION ACTIVITIES CEASE. PROTECTED AREAS SHALL RECEIVE A BIENNIAL HEALTH INSPECTION. DEAD OR DYING VEGETATION SHALL BE IMMEDIATELY REPL



NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #14.

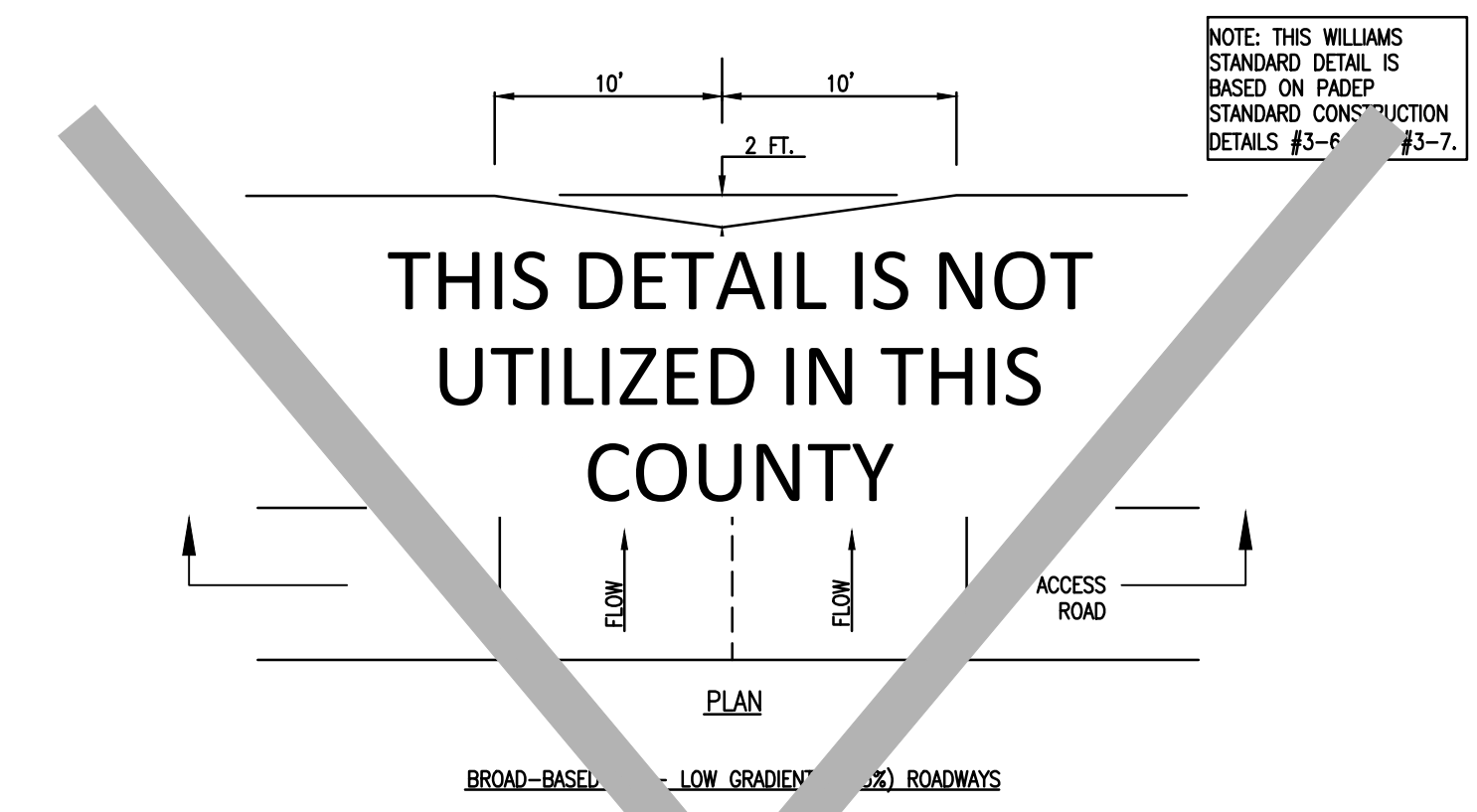
*FOR 3' ± D USE R-4
FOR 2' ± D ± 3' USE R-3
NOT APPLICABLE FOR D > 2'



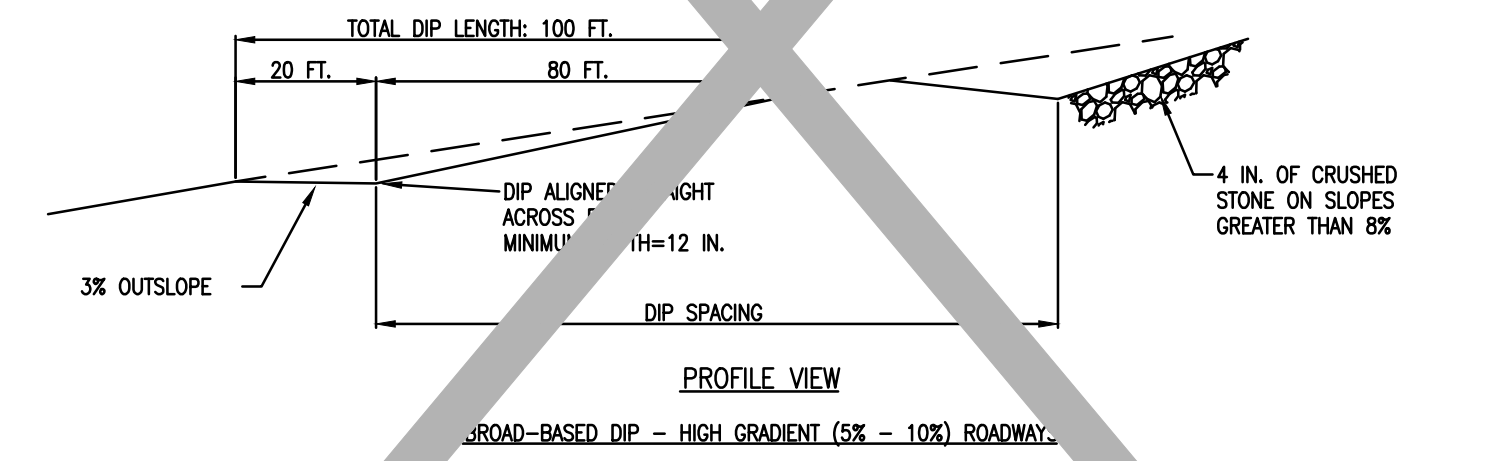
ROCK FILTER NO.	LOCATION	D (FT.)	RIPRAP SIZE
ALL	ACCESS ROADS AS NECESSARY	2	R-3

- NOTES:
- SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH 1/2 THE HEIGHT OF THE FILTER.
 - IMMEDIATELY UPON STABILIZATION OF EACH CHANNEL, INSTALLER SHALL REMOVE ACCUMULATED SEDIMENT, REMOVE ROCK FILTER, AND STABILIZE DISTURBED AREAS.
 - IN SPECIAL PROTECTION WATERSHEDS, HQ OR EV, THE ANTIDEGRADATION BEST AVAILABLE COMBINATION OF TECHNOLOGIES (AASHTO) ROCK FILTER WITH THE 6" LAYER OF COMPOST ANCHORED ON TOP OF THE UPSLOPE SIDE OF THE AASHTO #57 STONE SHALL BE USED. IN NON-SPECIAL PROTECTION WATERSHEDS, THE COMPOST LAYER MAY BE OMITTED.

NO.	DATE	BY	REVISION DESCRIPTION	NO.	CHK.	APP.	TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL
							(ARF) ABACT ROCK FILTER



NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAILS #3-6, #3-7.

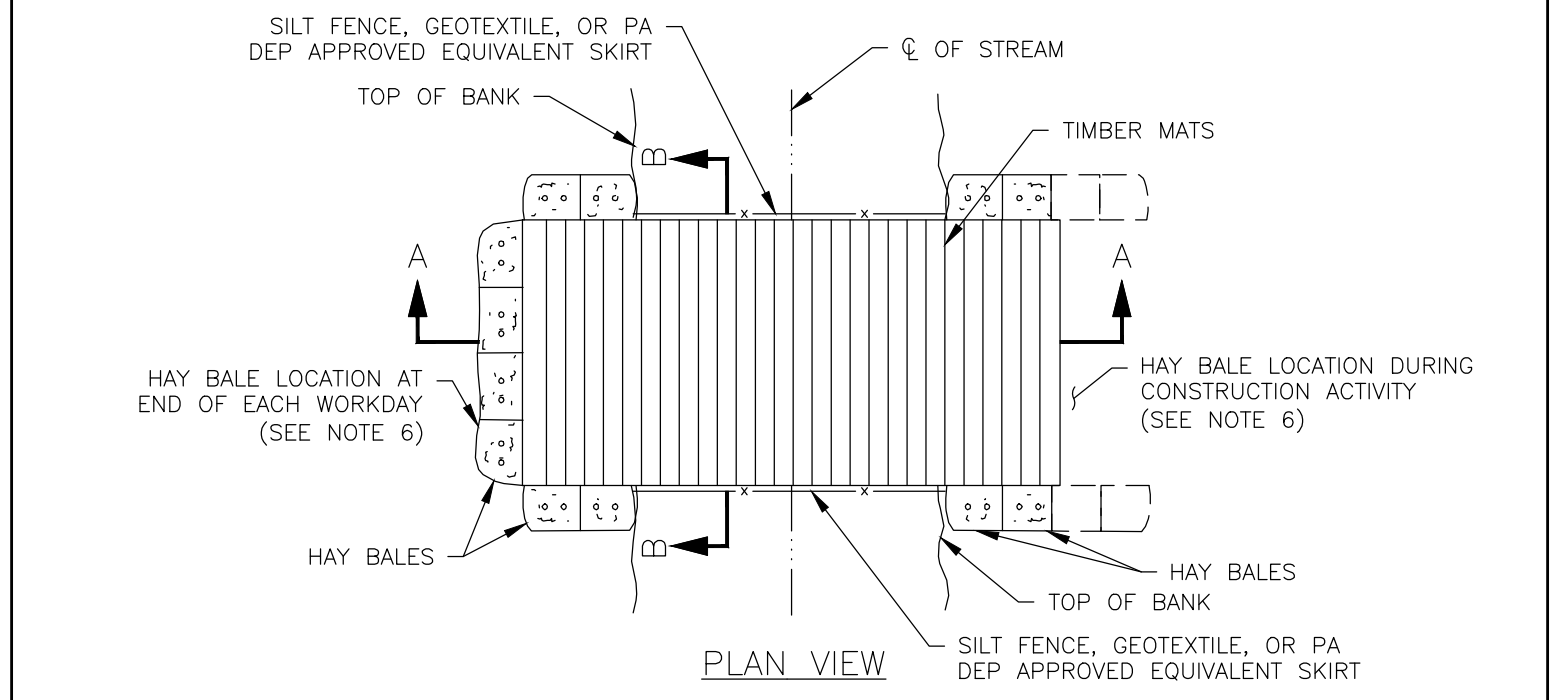
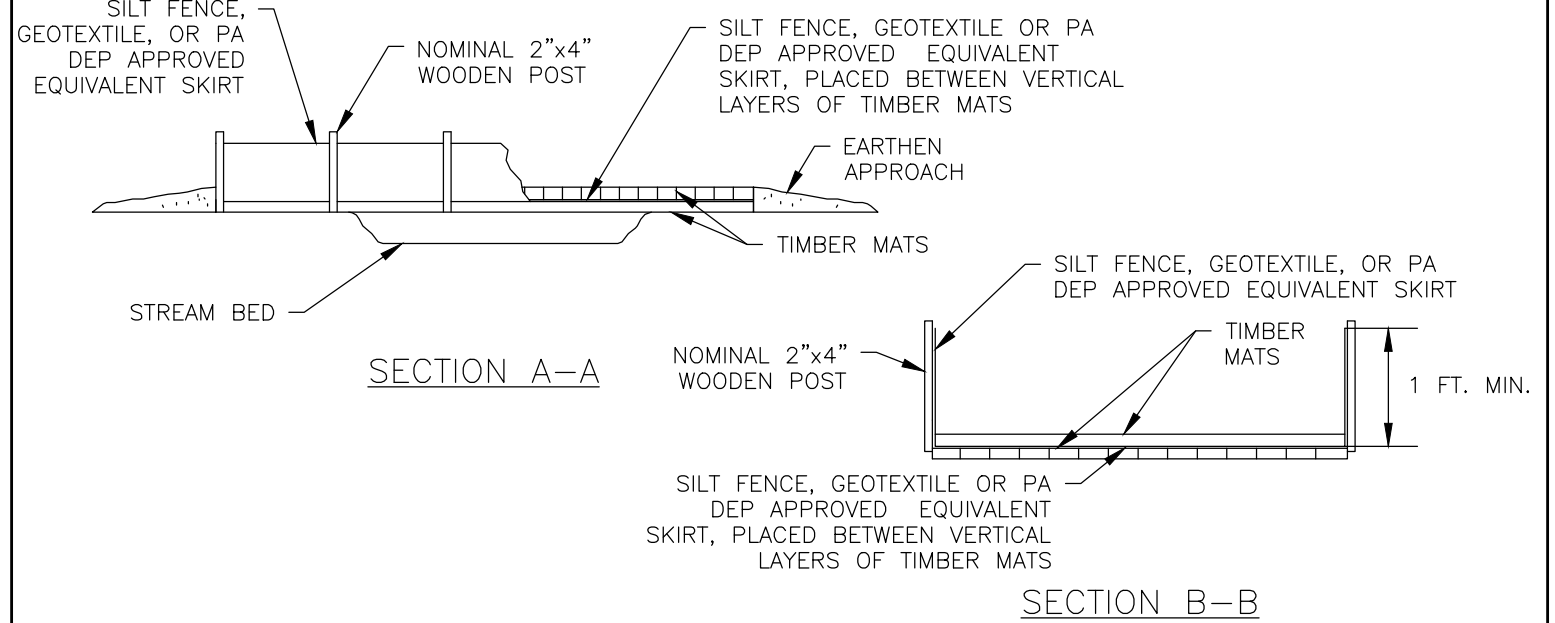


- NOTES:
- BROAD-BASED DIPS SHALL BE CONSTRUCTED TO THE DIMENSIONS SHOWN AND AT THE LOCATIONS SHOWN IN THE PLAN DRAWINGS.
 - DIPS SHALL BE ORIENTED SO AS TO DISCHARGE TO THE LOW SIDE OF THE ROADWAY.
 - DIPS SHALL BE INSPECTED DAILY. DAMAGED OR NON-FUNCTIONING DIPS SHALL BE REPAIRED AT THE END OF THE WORKDAY.
 - MAXIMUM SPACING OF BROAD-BASED DIPS SHALL BE AS SHOWN IN TABLE 3.2.
 - INSTALL A 2' WIDE BY 4' LONG BY 2' DEEP SUMP AND 18" COMPOST FILTER SOCK ON THE DOWNHILL SIDE OF THE BROAD BASED DIP. THE ORIENTATION OF THE COMPOST FILTER SOCK WILL VARY BASED ON EXISTING GROUND ELEVATIONS. INSTALL THE COMPOST PARALLEL TO EXISTING CONTOURS.

PERCENT SPACING BETWEEN BROAD-BASED DIPS (FT)	MAXIMUM SPACING (FT)
<2	300
3	235
4	200
5	180
6	150
7	145
8	140
9	140
10	140

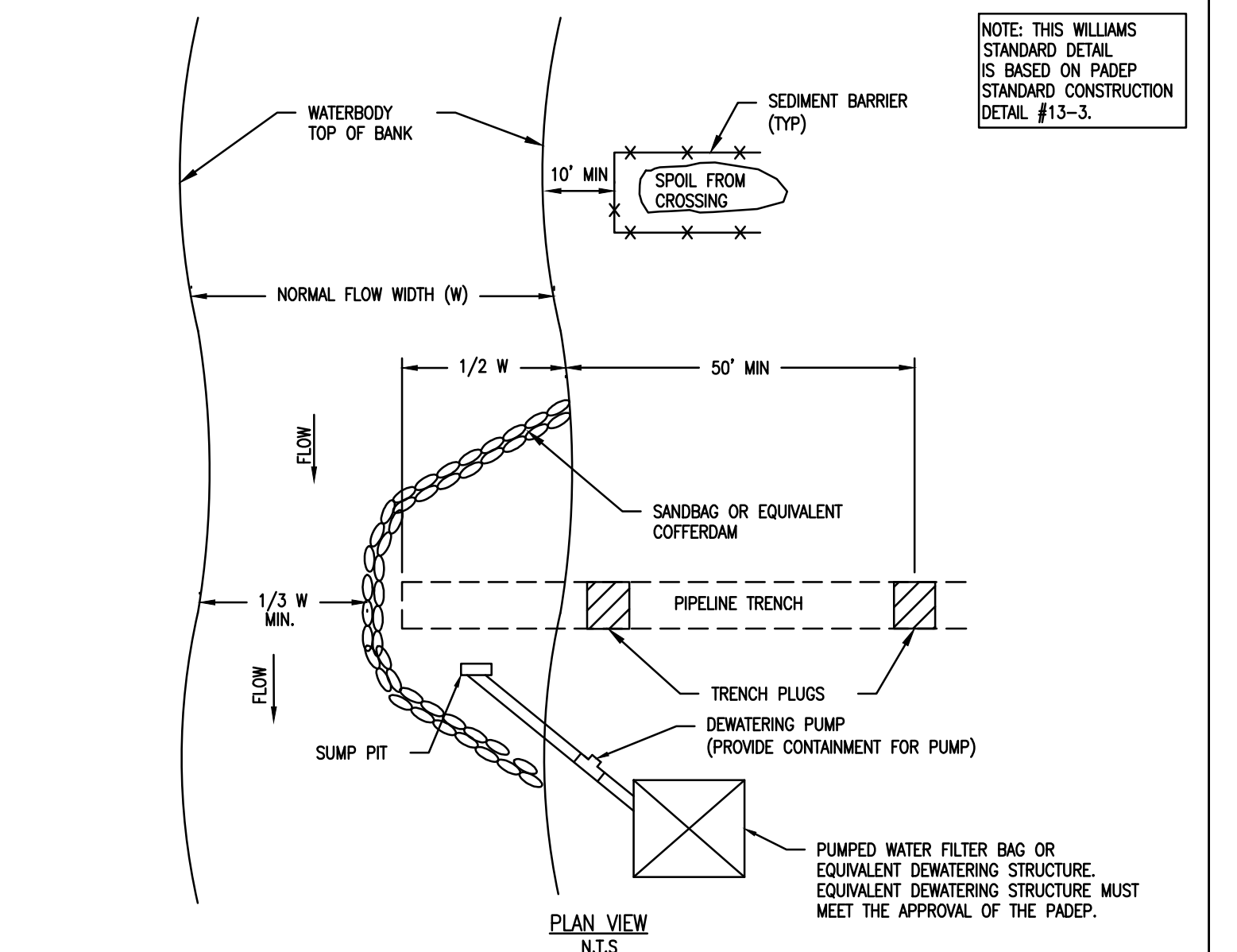
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NO.	DATE	BY	REVISION DESCRIPTION	NO.	CHK.	APP.	TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL
							(BBD) BROAD-BASED DIP



- NOTES:
- THIS TYPE OF BRIDGE IS GENERALLY USED FOR SMALL STREAM CROSSINGS LESS THAN 25 FEET IN WIDTH IN COMBINATION WITH A PROPER STREAM BANK CONFIGURATION.
 - BRIDGE SHALL BE TEMPORARILY REMOVED IF HIGH WATER RENDERS IT UNSAFE FOR CROSSING.
 - BRIDGE TO REMAIN IN PLACE UNTIL THE COMPLETION OF FINAL RESTORATION.
 - A SKIRT FORMED OF SILT FENCE, GEOTEXTILE FABRIC OR PA DEP APPROVED EQUIVALENT SHALL BE PLACED ON THE SIDES AND BOTTOM OF THE BRIDGE TO TRAP SEDIMENT AS NECESSARY.
 - INDIVIDUAL MATS SHALL BE ANCHORED AND BUTTED TIGHTLY TO MINIMIZE THE INTRODUCTION OF SEDIMENT TO THE WATERBODY.
 - HAY BALES OR 12" COMPOST FILTER SOCK SHALL BE PLACED AT THE ENDS OF THE EQUIPMENT BRIDGE AT THE END OF EACH WORK DAY TO PREVENT EROSION BUT WILL BE REMOVED DURING CONSTRUCTION ACTIVITY.
 - THE TIMBER BRIDGE SHALL EXTEND AT LEAST FIVE FEET BEYOND TOP OF BANK ON BOTH SIDES OF STREAM.
 - THE CONTRACTOR SHALL MINIMIZE OR PREVENT ANY EARTH DISTURBANCE AT OR NEAR THE TOP OF BANK ON BOTH SIDES OF STREAM.
 - THE FILTER SOCK SHALL BE INSTALLED UP TO AND ABUT AGAINST THE TIMBER BRIDGE.
 - IN SLOPED AREAS THAT LEAD TO THE APPROACHES TO THE TIMBER BRIDGE, THE POTENTIAL FOR STORMWATER TO RUNOFF ONTO THE BRIDGE SURFACE SHALL BE MINIMIZED OR ELIMINATED BY INSTALLING BROAD BASED DIPS, INTERCEPTOR DIKES, OR WATERBARS IMMEDIATELY BEFORE AND AFTER THE TIMBER BRIDGE. FOR EXTENDED PERIODS WHEN WORK HAS CEASED OR BEEN DELAYED DURING RAIN EVENTS, FILTER SOCK OR SAND BAGS SHALL BE TEMPORARILY INSTALLED TO DEFLECT SURFACE RUNOFF AWAY FROM ENTERING THE BRIDGE SURFACE, THE STREAM CHANNEL OR THE WETLAND.

NO.	DATE	BY	REVISION DESCRIPTION	NO.	CHK.	APP.	TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL
							(BEC) BRIDGE EQUIPMENT CROSSING (TIMBER MAT BRIDGE)

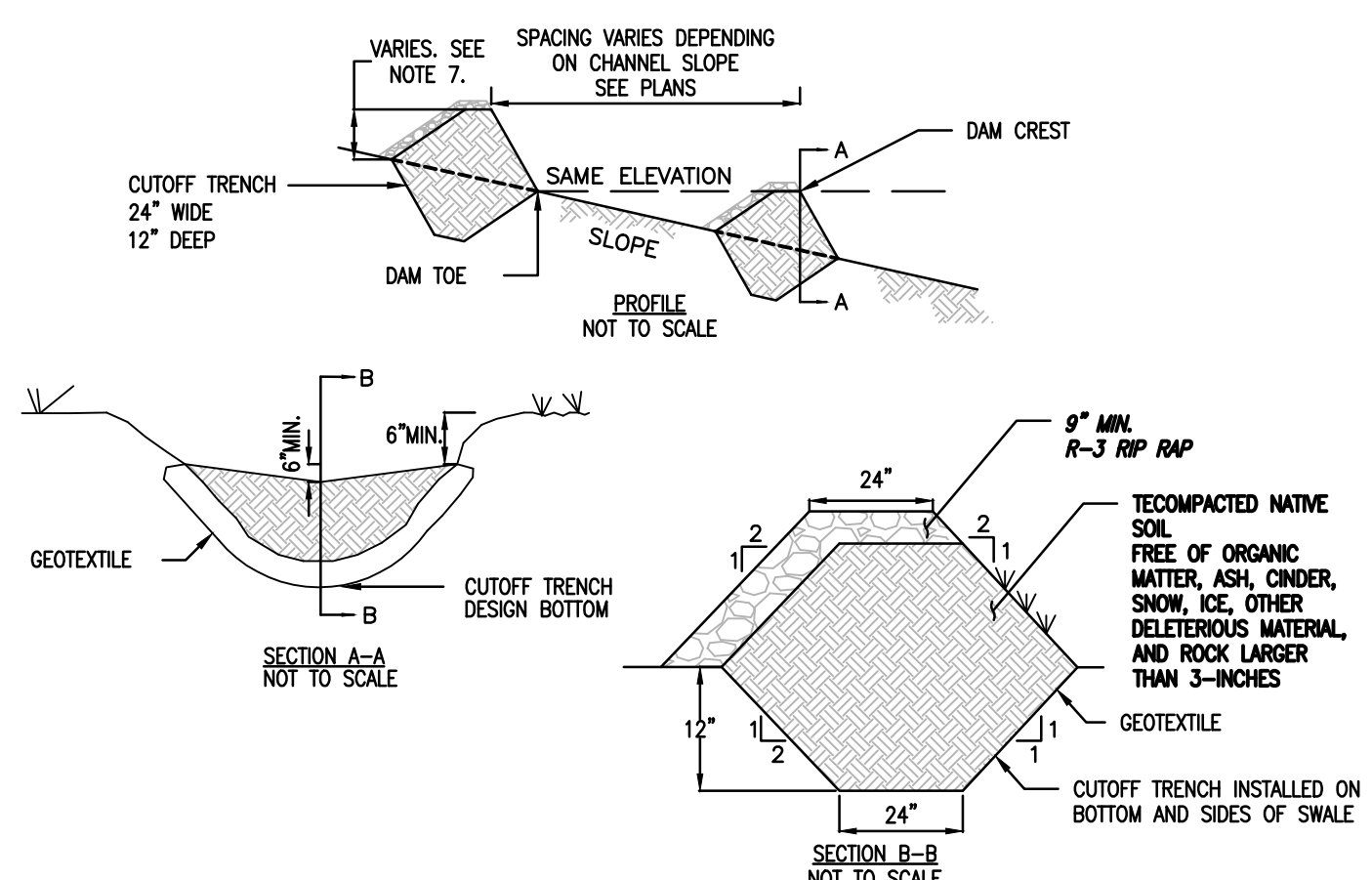


NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #13-3.

- PADEP STANDARD NOTES:
- GRUBBING SHALL NOT TAKE PLACE WITHIN 50 FEET OF TOP-OF-BANK UNTIL ALL MATERIALS REQUIRED TO COMPLETE CROSSING ARE ON SITE AND PIPE IS READY FOR INSTALLATION.
 - TRENCH PLUG SHALL BE INSTALLED WITHIN THE TRENCH ON BOTH SIDES OF THE WATERBODY CHANNEL.
 - WATER ACCUMULATING WITHIN THE WORK AREA SHALL BE PUMPED TO A PUMPED WATER FILTER BAG OR SEDIMENT TRAP PRIOR TO DISCHARGING INTO ANY SURFACE WATER.
 - HAZARDOUS OR POLLUTANT MATERIAL STORAGE AREAS SHALL BE LOCATED AT LEAST 100 FEET BACK FROM THE TOP OF WATERBODY BANK.
 - ALL EXCESS EXCAVATED MATERIAL SHALL BE IMMEDIATELY REMOVED FROM THE WATERBODY CROSSING AREA.
 - ALL DISTURBED AREAS WITHIN 50 FEET OF TOP-OF-BANK SHALL BE BLANKETED OR MATED WITHIN 24 HOURS OF INITIAL DISTURBANCE FOR MINOR WATERBODIES OR 48 HOURS OF INITIAL DISTURBANCE FOR INTERMEDIATE WATERBODIES UNLESS OTHERWISE AUTHORIZED.
 - ALL STREAM CROSSINGS WILL BE PERFORMED DURING LOW FLOW CONDITIONS WITH OVERSIGHT FROM AN ENVIRONMENTAL INSPECTOR. STORM EVENT WEATHER FORECASTS WILL BE MONITORED PRIOR TO AND DURING THE STREAM CROSSING.

- WILLIAMS STANDARD NOTES:
- APPROPRIATE WATERBODY BANK PROTECTION SHALL BE PROVIDED WITHIN THE CHANNEL.
 - THE WATERBODY CROSSING WILL GENERALLY BE COMPLETED IN 2 STAGES. THE DETAIL DEPICTS STAGE 1. STAGE 2 WILL GENERALLY BE COMPLETED USING THE SAME CONFIGURATION FROM THE OPPOSITE BANK.

NO.	DATE	BY	REVISION DESCRIPTION	NO.	CHK.	APP.	TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL
							(CD) COFFERDAM STREAM CROSSING



- NOTES:
- CHECK DAMS ARE APPLICABLE FOR SMALL DITCHES AND SWALES AND ARE NOT TO BE USED IN LIVE FLOWING STREAMS.
 - CHECK DAMS SHALL BE INSTALLED SUCH THAT COMPLETE COVERAGE OF THE ENTIRE WIDTH OF THE DITCH OR SWALE IS ACHIEVED.
 - SEDIMENT SHALL BE REMOVED WHEN IT ACCUMULATES TO A DEPTH OF ONE-HALF THE ORIGINAL DAM HEIGHT.
 - SET SPACING OF CHECK DAMS TO ASSUME THAT THE ELEVATIONS OF THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION OF THE TOE OF THE UPSTREAM DAM.
 - INSTALL A CUTOFF TRENCH A MINIMUM OF 12 INCHES INTO THE SWALE BOTTOM AND SIDES TO PREVENT CUTTING AROUND THE DAM.
 - ENSURE THAT CHANNEL APPURTENANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONE.
 - THE HEIGHT OF CHECK DAMS IN SWALES ALONG ACCESS ROADS IS EQUAL TO THE DEPTH OF SWALE MINUS 6 INCHES. THE DEPTH OF SWALE IS SHOWN ON THE "SOIL EROSION CONTROL PLAN" IN THE "EROSION CONTROL AND LAYOUT PLANS FOR ACCESS ROADS" AND THE "POST CONSTRUCTION STORMWATER PLAN" IN THE "POST CONSTRUCTION STORMWATER PLAN FOR PERMANENT ACCESS ROADS" UNDER SEPARATE COVERS.

NO.	DATE	BY	REVISION DESCRIPTION	NO.	CHK.	APP.	TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL
							(CDM) CHECK DAM



REVISIONS						
NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
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1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
2	02/04/2016	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	ASB
3	03/26/2016	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	ASB
4	04/01/2016	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1	W0572385	JLK	ASB

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC ATLANTIC SUNRISE PROJECT			
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APPROVED BY:	SMK	DATE:	07/08/15
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DRAWING NUMBER:	ASR-BMP	REVISION:	4
SHEET:	1	OF:	11



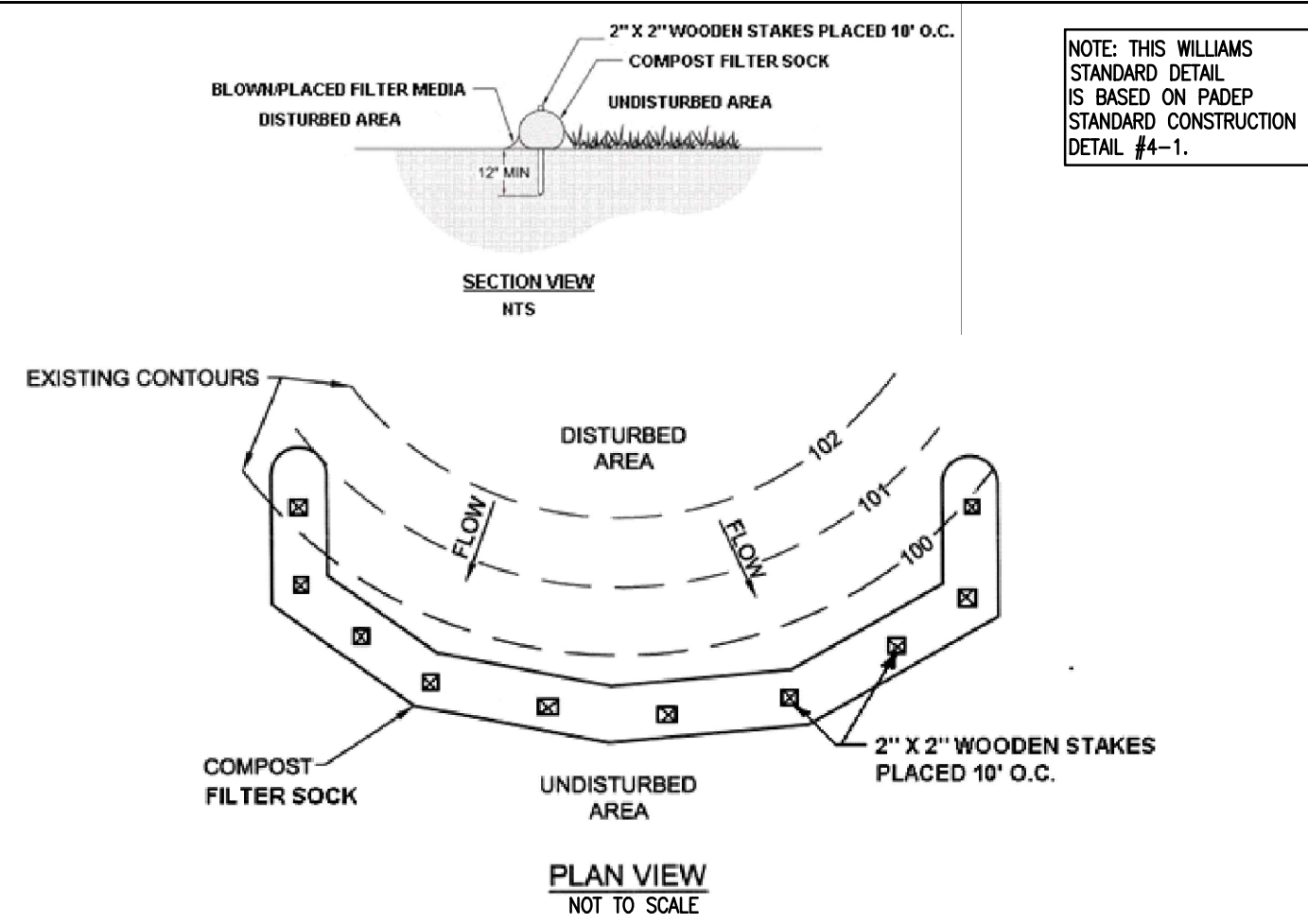


FIGURE 4.1
Sediment Barrier Alignment

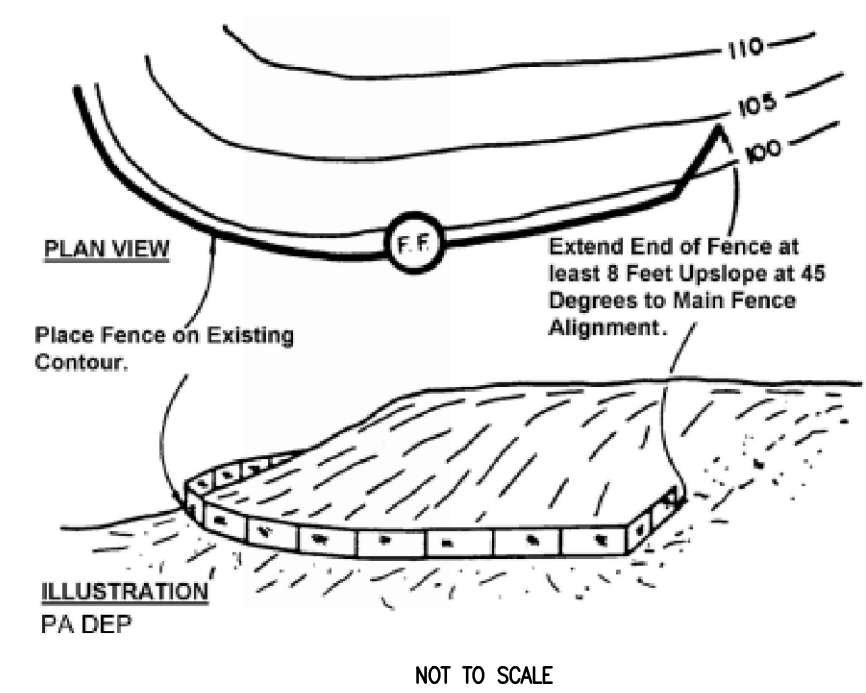
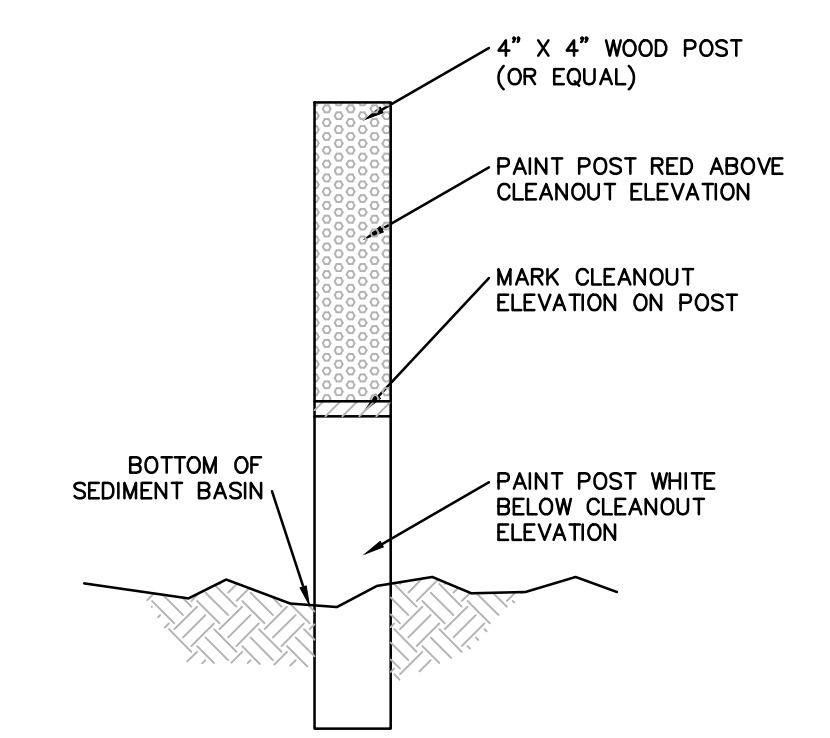


FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS



NOTE: 8" diameter socks should only be used to control small (< 1/4 acre) disturbed areas on individual house lots.

TABLE 4.1
COMPOST SOCK FABRIC MINIMUM SPECIFICATIONS

Material Type	COMPOST SOCK FABRIC MINIMUM SPECIFICATIONS				
	3 mil HDPE	4 mil HDPE	5 mil HDPE	Multi-Filament Polypropylene (MFPP)	Heavy Duty Multi-Filament Polypropylene (HDMFPP)
Material Characteristics	Photo-degradable	Photo-degradable	Bio-degradable	Photo-degradable	Photo-degradable
Sock Diameters	12", 18"	12", 18", 24"	12", 18", 24", 32"	12", 18", 24", 32"	12", 18", 24", 32"
Mesh Opening	3/8"	3/8"	3/8"	3/8"	3/8"
Tensile Strength		26 psi	26 psi	44 psi	202 psi
Ultraviolet Stability % Original Strength (ASTM G-155)	23% at 1000 hr	23% at 1000 hr		100% at 1000 hr	100% at 1000 hr
Minimum Functional Longevity	6 months	6 months	6 months	1 year	2 years

Two-ply systems: HDPE biaxial net, Continuously wound, Fusion-welded junctures, 3/4" X 3/4" Max. aperture size. Composite Polypropylene Fabric (Woven layer and non-woven fleece mechanically fused via needle punch), 3/16" Max. aperture size.

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.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL
CFS COMPOST FILTER SOCK

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL
CS CLEANOUT STAKE

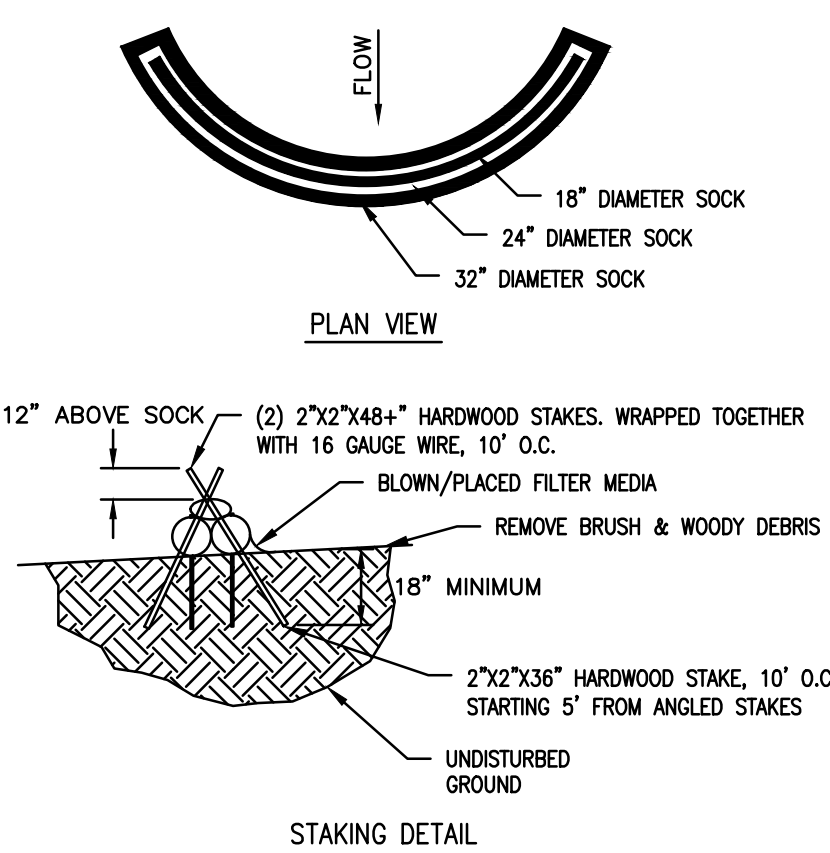


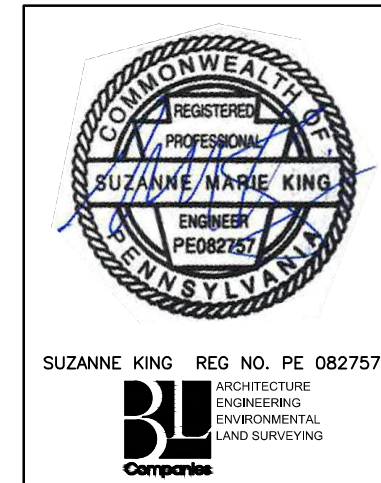
FIGURE 4.3
Compost Sock Sediment Trap

- NOTES:
- SEE COMPOST FILTER SOCK (CFS) DETAIL FOR MORE INFORMATION. SOCK MATERIAL SHALL MEET THE STANDARDS OF TABLE 4.1. COMPOST SHALL MEET THE STANDARDS OF TABLE 4.2.
 - COMPOST SOCK SEDIMENT TRAPS SHALL NOT EXCEED THREE SOCKS IN HEIGHT AND SHALL BE STACKED IN PYRAMIDAL FORM AS SHOWN ABOVE. MINIMUM TRAP HEIGHT IS ONE 24" DIAMETER SOCK. ADDITIONAL STORAGE MAY BE PROVIDED BY MEANS OF AN EXCAVATED SUMP 12" DEEP EXTENDING 1 TO 3 FEET UPSLOPE OF THE SOCKS ALONG THE LOWER SIDE OF THE TRAP.
 - THE MAXIMUM TRIBUTARY DRAINAGE AREA IS 5.0 ACRES. SINCE COMPOST SOCKS ARE "FLOW-THROUGH," NO SPILLWAY IS REQUIRED.
 - COMPOST SOCK SEDIMENT TRAPS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. SEDIMENT SHALL BE REMOVED WHEN IT REACHES 1/3 THE HEIGHT OF THE SOCKS.
 - PHOTODEGRADABLE AND BIODEGRADABLE SOCKS SHALL NOT BE USED FOR MORE THAN 1 YEAR.
 - DESIGN NOTES:
 - COMPOST SOCK SEDIMENT TRAP SHALL BE SIZED TO PROVIDE 2,000 CUBIC FEET OF STORAGE CAPACITY WITH 12" FIBERBOARD FOR EACH ACRE TRIBUTARY TO THE TRAP.
 - MINIMUM BASE WIDTH IS EQUIVALENT TO THE HEIGHT.
 - SEDIMENT ACCUMULATION SHALL NOT EXCEED 1/3 THE TOTAL HEIGHT OF THE TRAP.
 - SOCKS SHALL BE OF LARGER DIAMETER AT THE BASE OF THE TRAP AND DECREASE IN DIAMETER FOR SUCCESSIVE LAYERS AS INDICATED TO THE LEFT.
 - ENDS OF THE TRAP SHALL BE A MINIMUM OF 1 FOOT HIGHER IN ELEVATION THAN THE MID-SECTION, WHICH SHALL BE LOCATED AT THE POINT OF DISCHARGE.

REFER TO THE QUANTITY, CROSSING AND ACIDIC SOIL TABLES FOR DETAIL AND DESIGN

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL
CWC CLEAN WATER CROSSING (TEMP. LEVEL SPREADER)

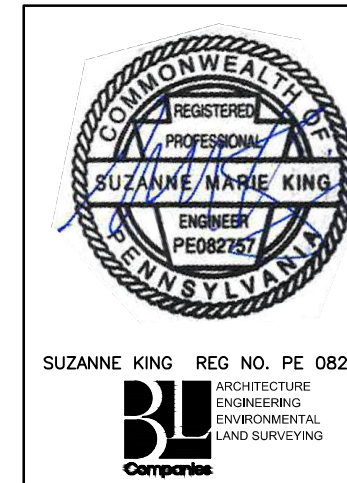
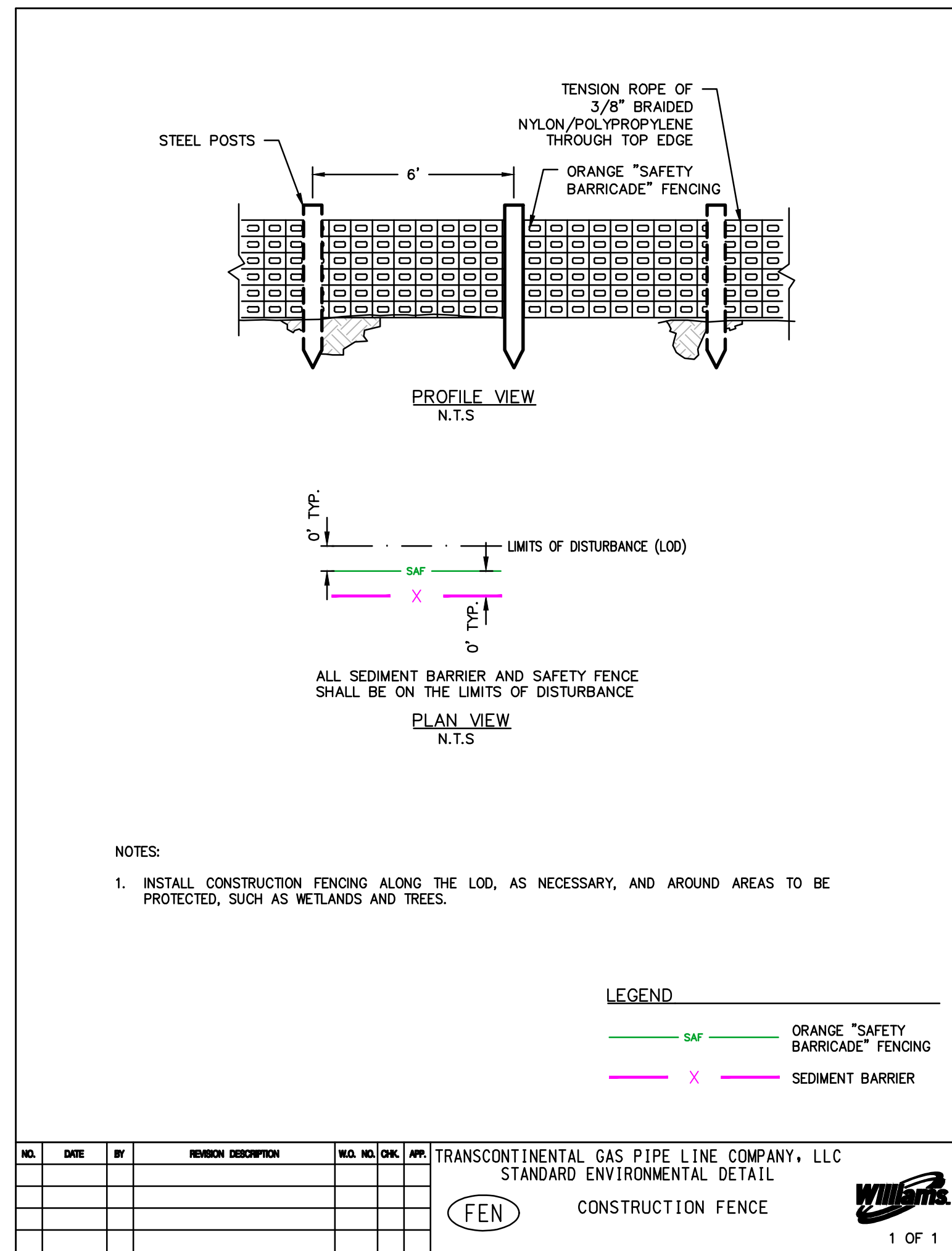
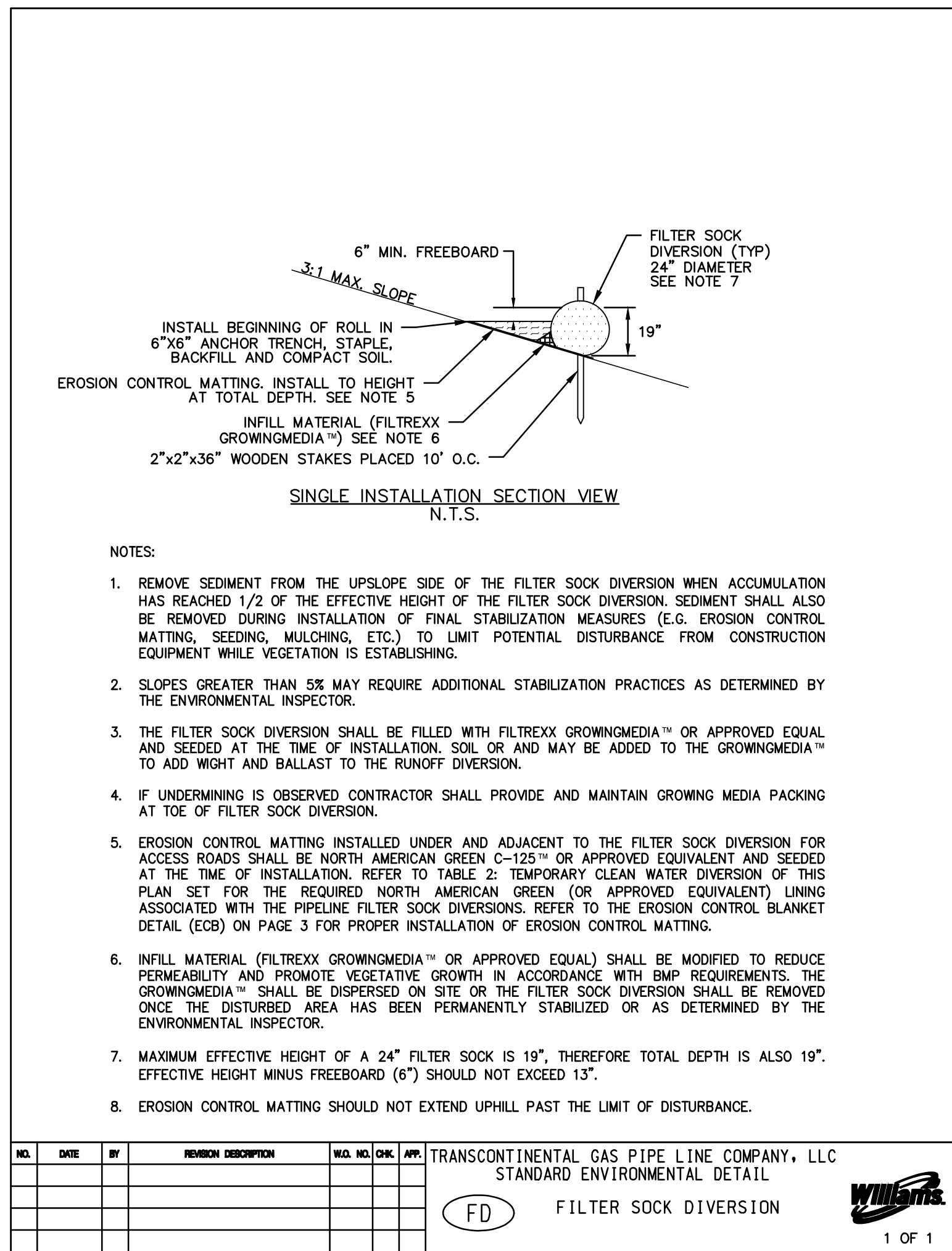
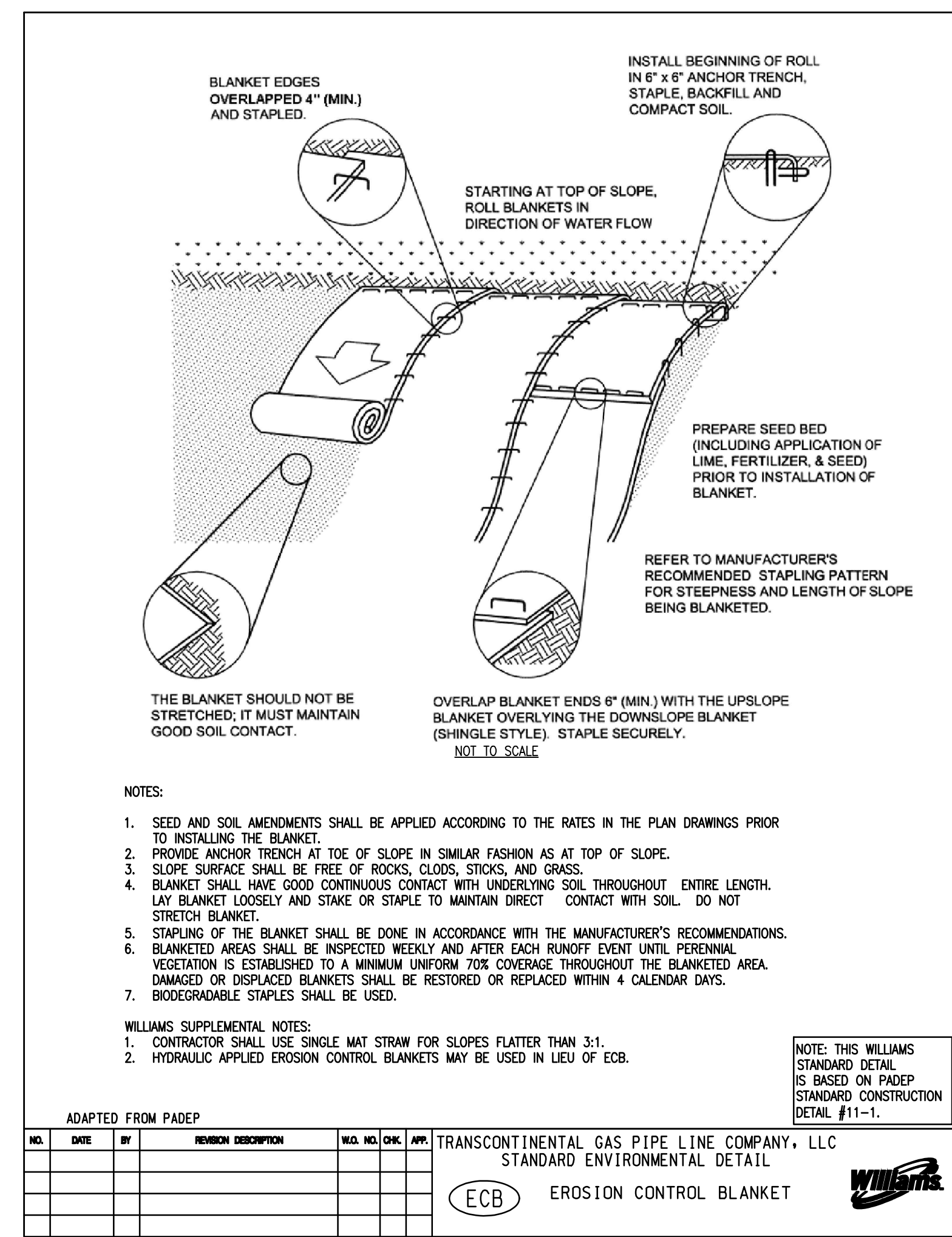
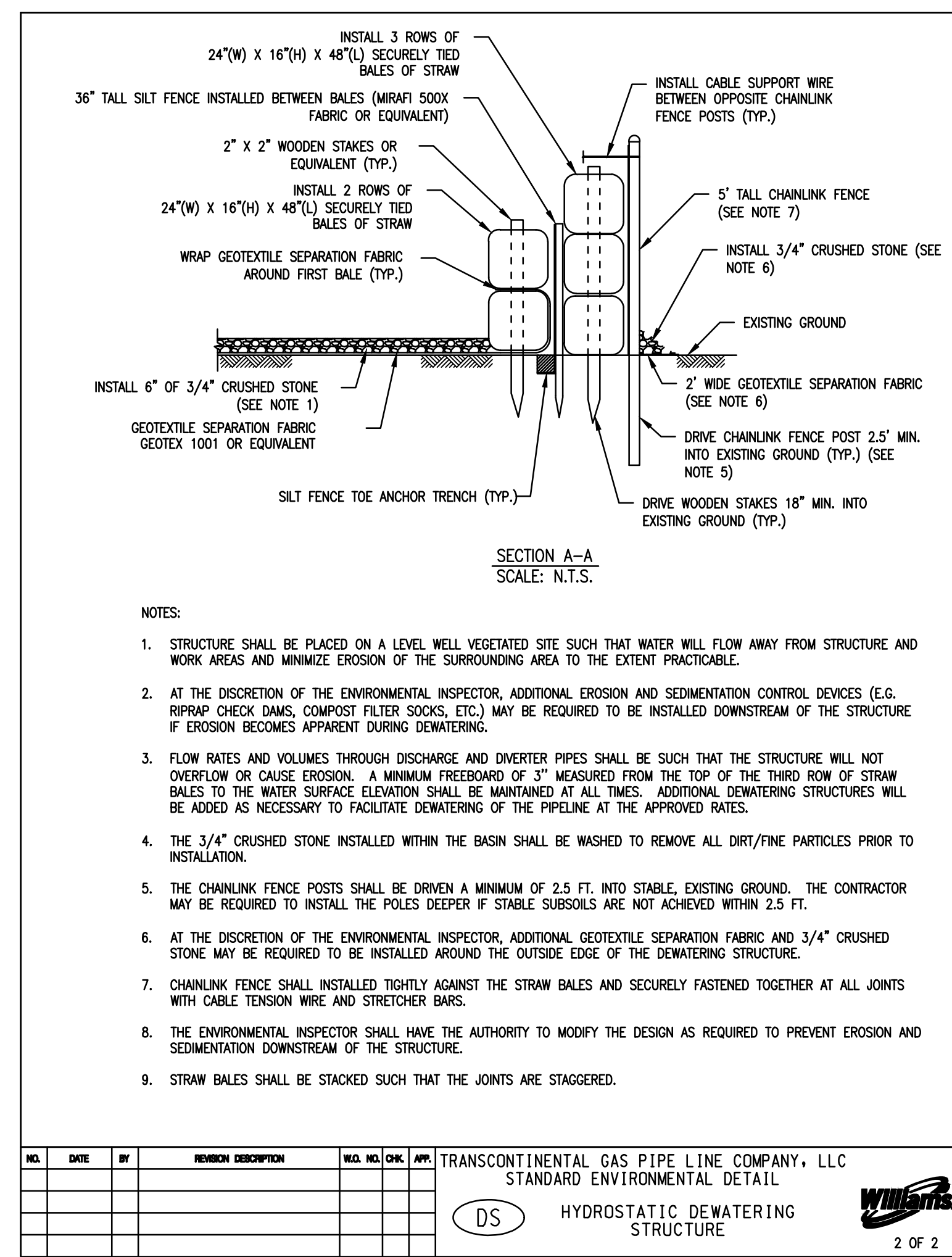
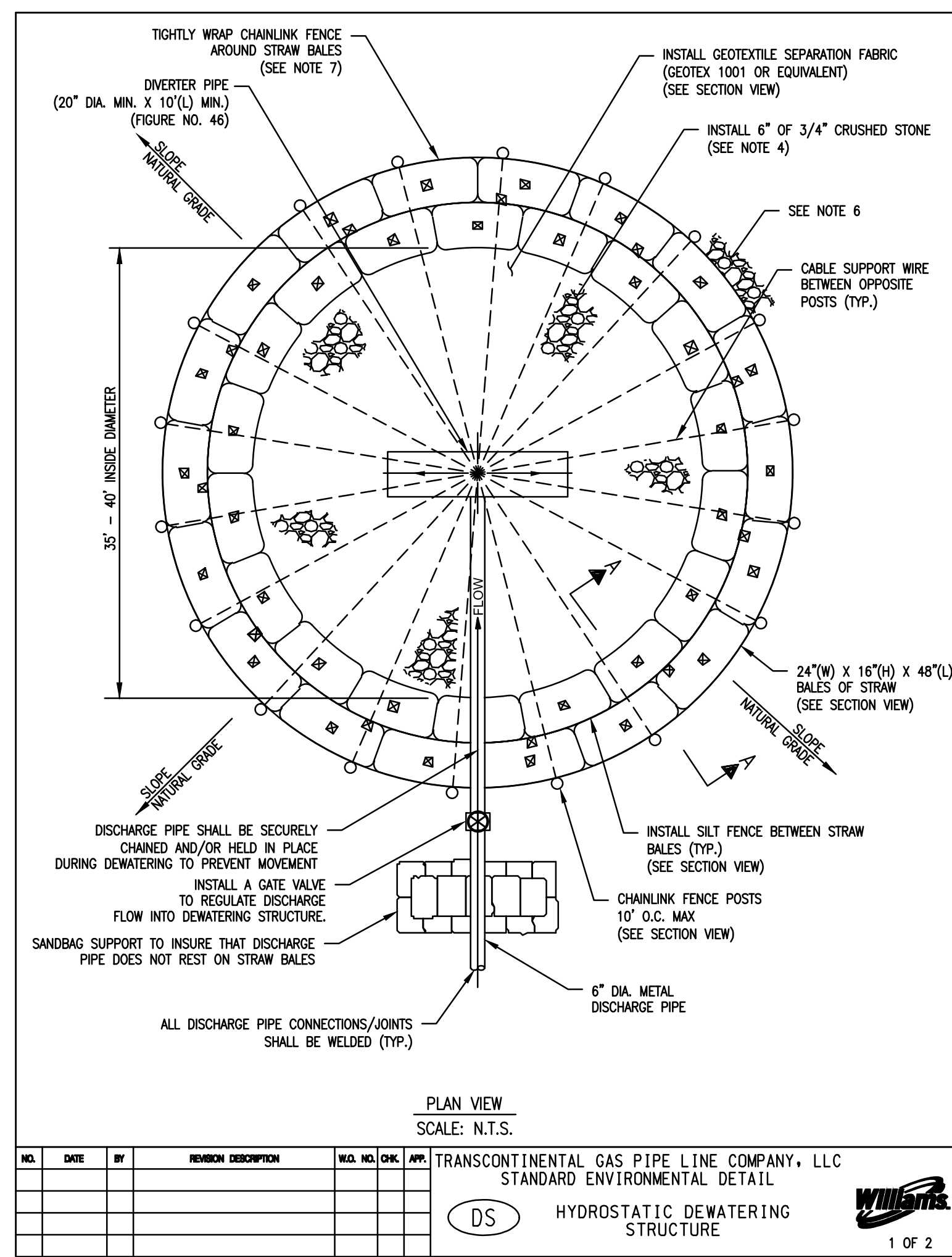
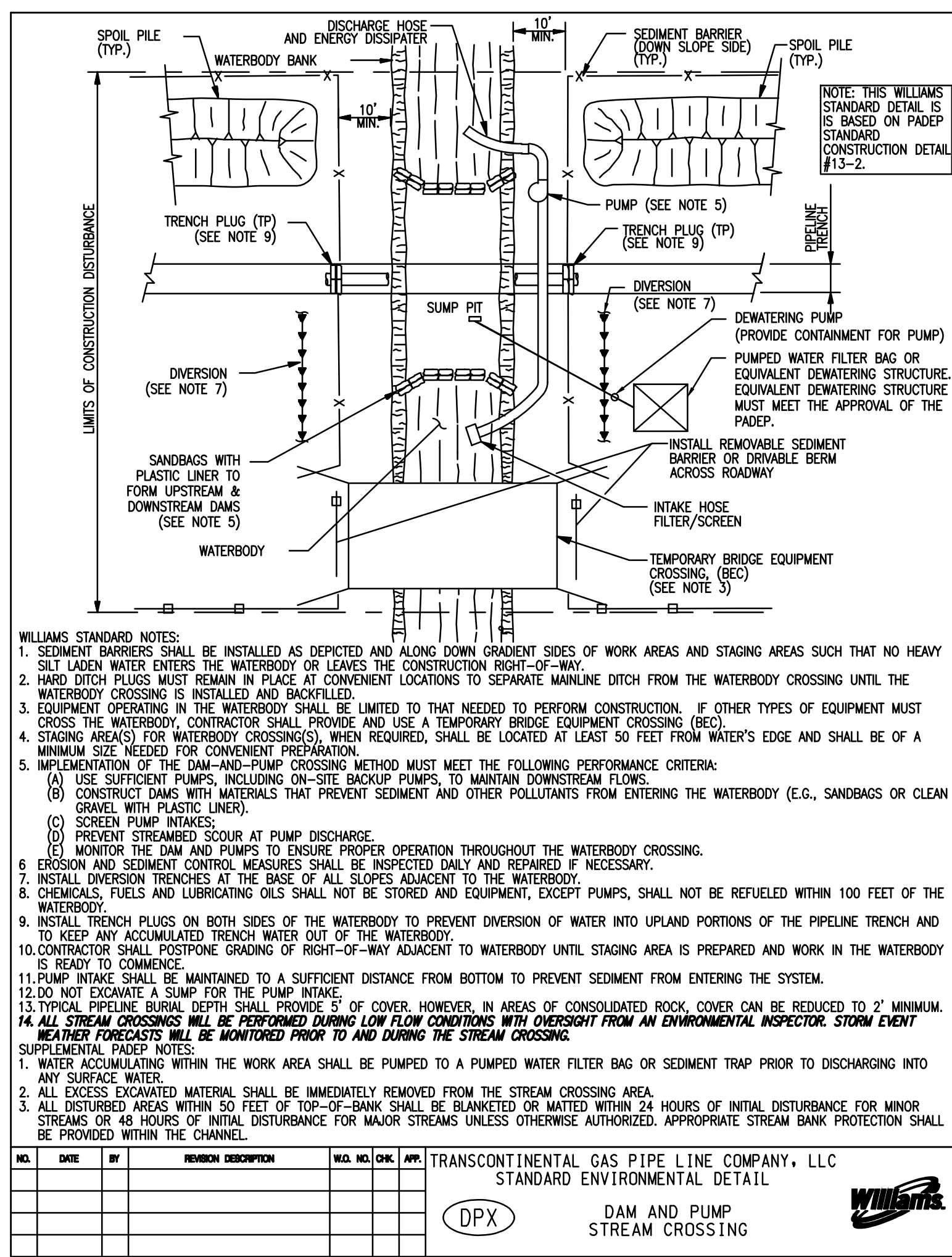


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2	Oct. 2016	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1	W0572385	JLK	SMK
3	April 2017	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #2	W0572385	JLK	SMK

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BEST MANAGEMENT PRACTICES DETAILS						
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APPROVED BY:	SMK	DATE:	07/08/15	DRAWING NUMBER:	ASR-BMP	SHEET 2 OF 11

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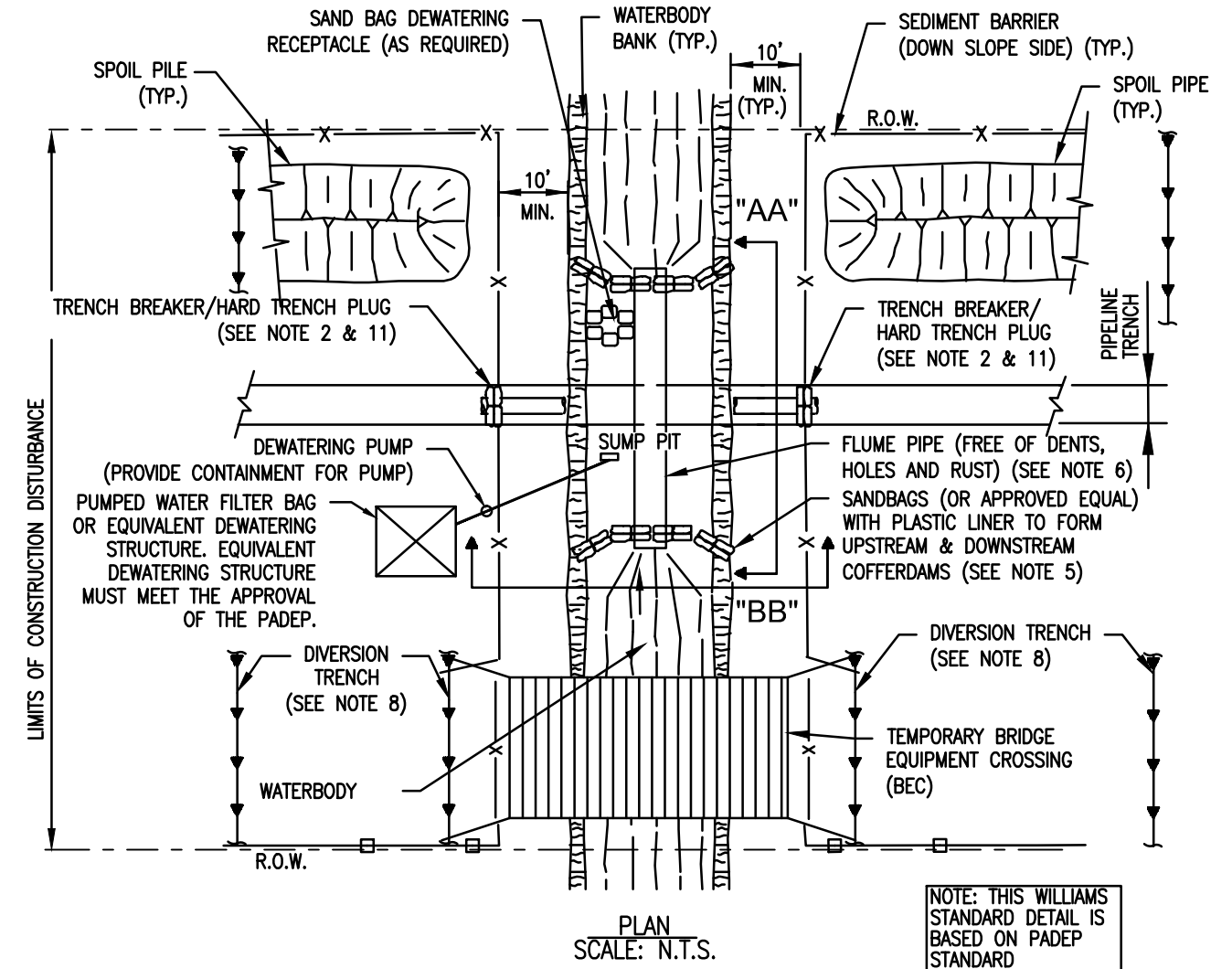


Figure 1. Technique

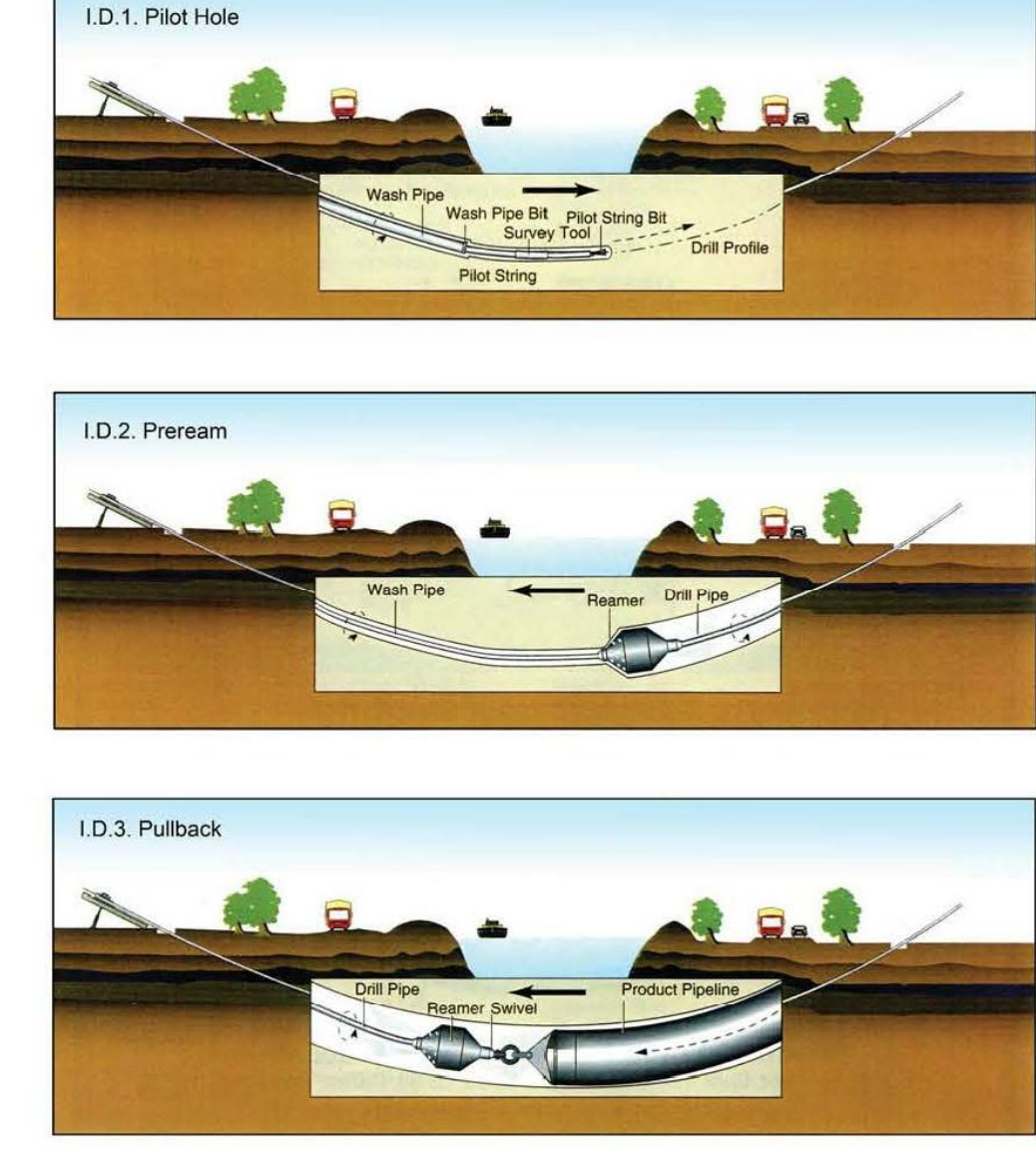


Figure 2. Rig Side Work Space

- 1. Rig Unit
- 2. Control Cab/Power Unit
- 3. Drill Pipe
- 4. Water Pump
- 5. Slurry Mixing Tank
- 6. Cuttings Separation Equipment
- 7. Slurry Pump
- 8. Bentonite Storage
- 9. Power Generators
- 10. Spares Storage
- 11. Site Office
- 12. Site Office
- 13. Entry Point Slurry Containment
- 14. Cuttings Settlement

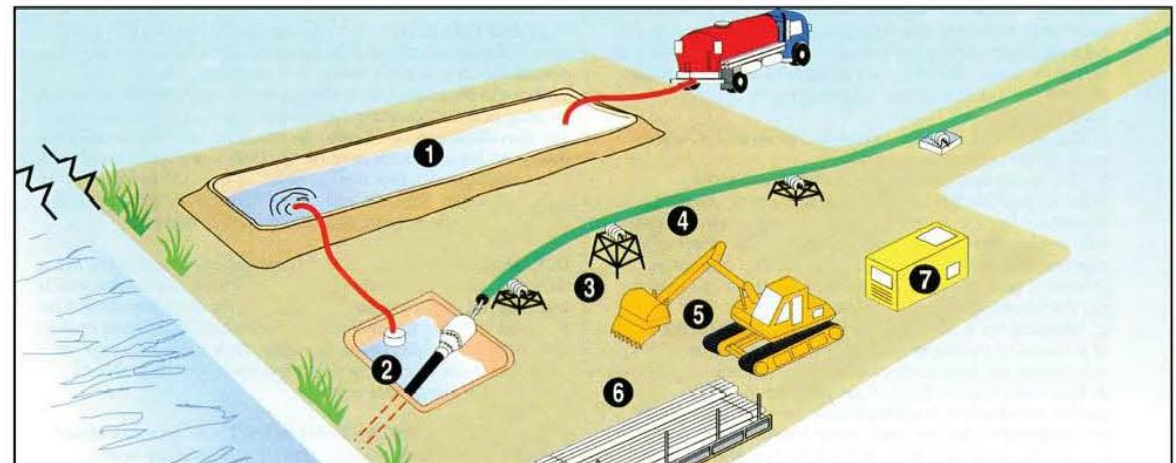


Figure 3. Pipe Side Work Space

- 1. Cuttings Settlement
- 2. Exit Point Slurry Containment
- 3. Pipeline Rollers
- 4. Product Pipeline
- 5. Construction Equipment
- 6. Drill Pipe
- 7. Spares Storage

- NOTES:
- SEDIMENT BARRIERS SHALL BE INSTALLED AS DEPICTED AND ALONG DOWN GRADIENT SIDES OF WORK AREAS AND STAGING AREAS SUCH THAT NO HEAVY SILT LADEN WATER ENTERS THE WATERBODY OR LEAVES THE CONSTRUCTION RIGHT-OF-WAY.
 - HARD TRENCH PLUGS MUST REMAIN IN PLACE AT CONVENIENT LOCATIONS TO SEPARATE THE MAINLINE DITCH FROM THE WATERBODY CROSSING UNTIL THE WATERBODY CROSSING IS INSTALLED AND BACKFILLED.
 - EQUIPMENT OPERATING IN THE WATERBODY SHALL BE LIMITED TO THAT NEEDED TO PERFORM CONSTRUCTION. IF OTHER TYPES OF EQUIPMENT MUST CROSS THE WATERBODY, THE CONTRACTOR SHALL PROVIDE AND USE A TEMPORARY BRIDGE EQUIPMENT CROSSING.
 - STAGING AREA(S) FOR WATERBODY CROSSING(S), WHEN REQUIRED, SHALL BE LOCATED AT LEAST 50 FEET FROM THE WATER'S EDGE AND SHALL BE OF A MINIMUM SIZE NEEDED FOR CONVENIENT PREPARATION.
 - FLUME CROSSING METHOD REQUIREMENTS INCLUDE:
 - (A) INSTALL FLUME PIPE(S) AFTER BLASTING (IF NECESSARY), BUT BEFORE ANY TRENCHING.
 - (B) USE SAND BAG OR SAND BAG AND PLASTIC SHEETING DIVERSION STRUCTURES OR EQUIVALENT TO DEVELOP AN EFFECTIVE SEAL AND TO DIVERT WATERBODY FLOW THROUGH THE FLUME PIPE (SOME MINOR MODIFICATIONS TO THE WATERBODY BOTTOM MAY BE REQUIRED TO ACHIEVE AN EFFECTIVE SEAL).
 - (C) PROPERLY ALIGN FLUME PIPE(S) TO PREVENT BANK EROSION AND WATERBODY CHANNEL BED SCOUR.
 - (D) DO NOT REMOVE FLUME PIPE DURING TRENCHING, PIPE LAYING, OR BACKFILLING ACTIVITIES, OR INITIAL STREAM BED RESTORATION EFFORTS.
 - (E) REMOVE ALL FLUME PIPES AND DAMS THAT ARE NOT ALSO PART OF THE EQUIPMENT BRIDGE AS SOON AS FINAL CLEANUP OF THE STREAM BED AND BANK IS COMPLETE.
 - THE FLUME PIPE MUST BE SIZED TO ADEQUATELY CONVEY MAXIMUM ANTICIPATED FLOW RATES AT THE TIME OF THE CROSSING WITHOUT FLOODING THE TRENCH, WHILE MAINTAINING ADEQUATE FLOW RATES TO PROTECT AQUATIC LIFE AND PREVENT THE INTERRUPTION OF EXISTING DOWNSTREAM USES.

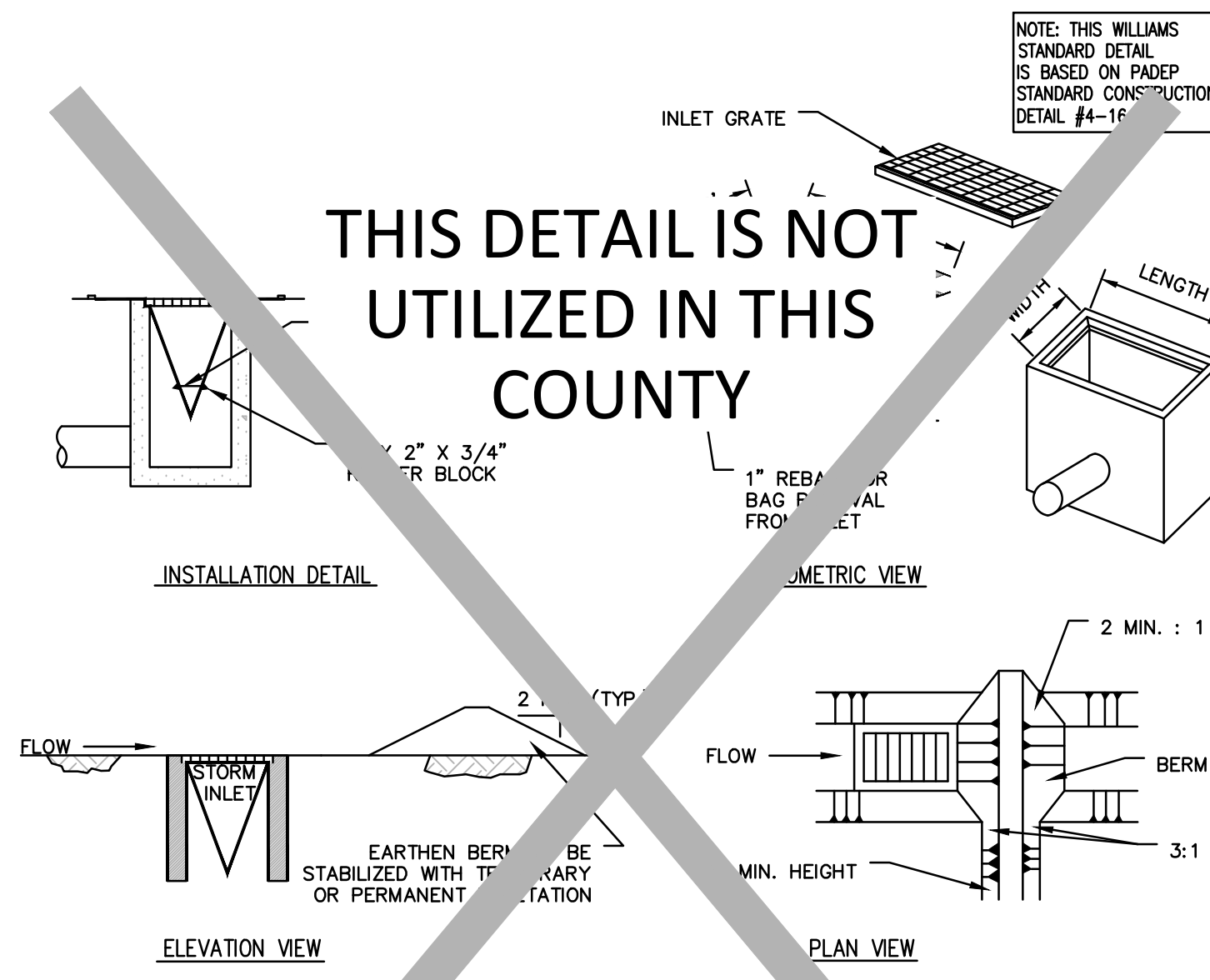
- EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED DAILY AND REPAIRED IF NECESSARY.
- INSTALL DIVERSION TRENCHES AT THE BASE OF ALL SLOPES ADJACENT TO THE WATERBODY AND AT 50' FROM WATERBODY BANKS.
- CHEMICALS, FUELS AND LUBRICATING OILS SHALL NOT BE STORED AND EQUIPMENT, EXCEPT FOR PUMPS, SHALL NOT BE REFUELED WITHIN 100 FEET OF THE WATERBODY UNLESS OTHERWISE APPROVED BY THE ENVIRONMENTAL INSPECTOR.
- WATER ACCUMULATING IN THE WORK SPACE SHALL BE PUMPED TO A FILTER BAG PRIOR TO DISCHARGE TO A WATERBODY.
- INSTALL TRENCH BREAKERS ON BOTH SIDES OF THE WATERBODY TO PREVENT DIVERSION OF WATER INTO UPLAND PORTIONS OF THE PIPELINE TRENCH AND TO KEEP ANY ACCUMULATED TRENCH WATER OUT OF THE WATERBODY.
- EXCEPT FOR BLASTING AND OTHER ROCK BREAKING MEASURES, THE CONTRACTOR SHALL COMPLETE IN WATERBODY CONSTRUCTION ACTIVITIES (INCLUDING TRENCHING, PIPE INSTALLATION, BACKFILL, AND RESTORATION OF THE WATERBODY CHANNEL CONTOURS) WITHIN 24 HOURS. WATERBODY BANKS AND UNCONSOLIDATED WATERBODY CHANNELS MAY REQUIRE ADDITIONAL RESTORATION AFTER THIS PERIOD.
- TYPICAL PIPELINE BURIAL DEPTH SHALL PROVIDE 5' OF COVER. HOWEVER, IN AREAS OF CONSOLIDATED ROCK, COVER CAN BE REDUCED TO 2' MINIMUM.
- ALL STREAM CROSSINGS WILL BE PERFORMED DURING LOW FLOW CONDITIONS WITH OVERTSIGHT FROM AN ENVIRONMENTAL INSPECTOR. STORM EVENT WEATHER FORECASTS WILL BE MONITORED PRIOR TO AND DURING THE STREAM CROSSING.**

- SUPPLEMENTAL PADEP NOTES:
- WATER ACCUMULATING WITHIN THE WORK AREA SHALL BE PUMPED TO A PUMPED WATER FILTER BAG OR SEDIMENT TRAP PRIOR TO DISCHARGING INTO ANY SURFACE WATER.
 - ALL EXCESS EXCAVATED MATERIAL SHALL BE IMMEDIATELY REMOVED FROM THE STREAM CROSSING AREA.
 - ALL DISTURBED AREAS WITHIN 50 FEET OF TOP-OF-BANK SHALL BE BLANKETED OR MATTED WITHIN 24 HOURS OF INITIAL DISTURBANCE FOR MINOR STREAMS OR 48 HOURS OF INITIAL DISTURBANCE FOR MAJOR STREAMS UNLESS OTHERWISE AUTHORIZED. APPROPRIATE STREAM BANK PROTECTION SHALL BE PROVIDED WITHIN THE CHANNEL.

NO.	DATE	BY	REVISION DESCRIPTION	W.D. NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL			
			(FX) FLUME STREAM CROSSING			

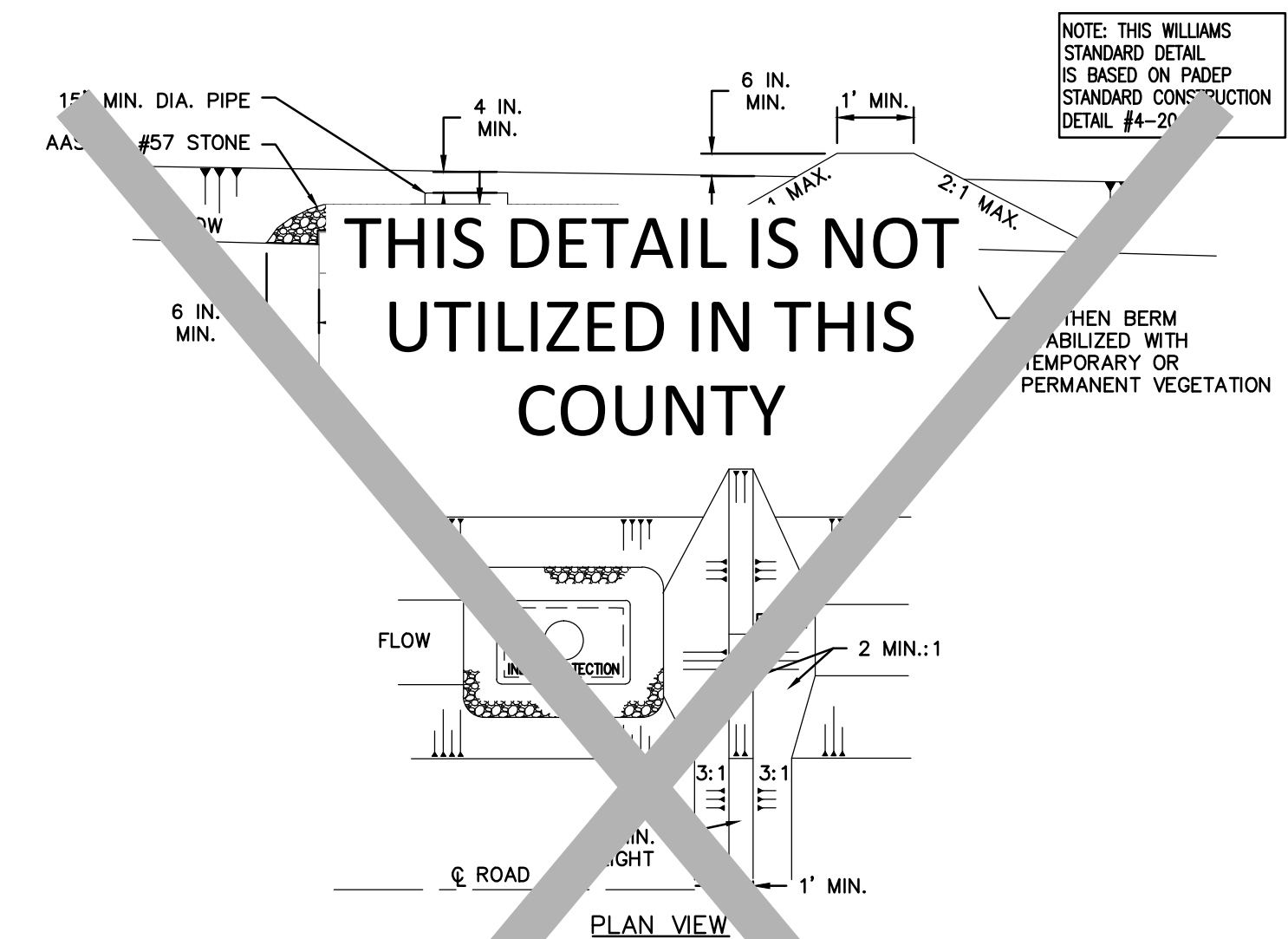
NO.	DATE	BY	REVISION DESCRIPTION	W.D. NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL			
			(FX) FLUME STREAM CROSSING (SECTIONS)			

NO.	DATE	BY	REVISION DESCRIPTION	W.D. NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL			
			(HDD) HORIZONTAL DIRECTIONAL DRILL			



- NOTES:
- MAXIMUM DRAINAGE AREA = 1 ACRE.
 - INLET PROTECTION SHALL NOT BE REQUIRED FOR INLET TRIBUTARY TO SEDIMENT BASIN OR TRAP. BERMS SHALL BE REQUIRED FOR ALL INSTALLATIONS.
 - ROLLED EARTHEN BERM IN ROADWAY SHALL BE MAINTAINED UNTIL ROADWAY IS STONED. ROAD SUBBASE BERM SHALL BE MAINTAINED UNTIL ROADWAY IS PAVED. EARTHEN BERM IN CHANNEL SHALL BE MAINTAINED UNTIL PERMANENT STABILIZATION IS COMPLETED OR REMAINS PERMANENTLY.
 - AT A MINIMUM, FABRIC SHALL HAVE A MINIMUM GRAB TENSILE STRENGTH OF 120 LBS, A MINIMUM BURST STRENGTH OF 200 PSI, AND A MINIMUM TRAPEZOIDAL TEAR STRENGTH OF 50 LBS. FILTER BAGS SHALL BE CAPABLE OF TRAPPING PARTICLES NOT PASSING A NO. 40 SIEVE.
 - INLET BAGS SHALL BE INSPECTED ON A WEEKLY BASIS AND AFTER EACH RUNOFF EVENT. BAGS SHALL BE EXAMINED AND REPLACED WHEN HALF FULL OR WHEN FLOW CAPACITY HAS BEEN REDUCED SO AS TO CAUSE FLOODING OR PASSING OF BAGS. ALL NEEDED REPAIRS SHALL BE INITIATED IMMEDIATELY AFTER THE INSPECTION. DISPOSE OF ACCUMULATED SEDIMENT AS WELL AS ALL USED BAGS ACCORDING TO THE PLAN NOTES.
 - DO NOT USE ON MAJOR PAVED ROADWAYS WHERE PONDING MAY CAUSE TRAFFIC HAZARDS.

NO.	DATE	BY	REVISION DESCRIPTION	W.D. NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL			
			(IPF) FILTER BAG INLET PROTECTION - TYPE M			

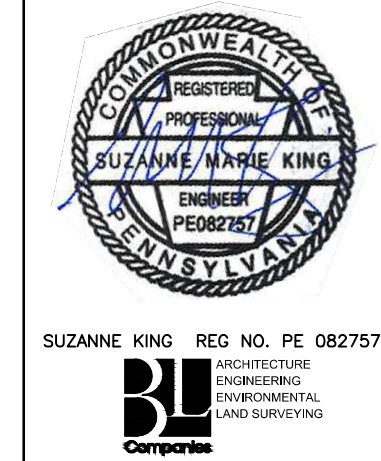


- NOTES:
- INLET PROTECTION SHALL NOT BE REQUIRED FOR INLET TRIBUTARY TO SEDIMENT BASIN OR TRAP. BERMS SHALL BE REQUIRED FOR ALL INSTALLATIONS NOT LOCATED AT A LOW WATER ELEVATION.
 - ROLLED EARTHEN BERM IN ROADWAY SHALL BE PROVIDED AND MAINTAINED IMMEDIATELY DOWN GRADIENT OF THE PROTECTED INLET UNTIL ROADWAY IS STONED. ROAD SUBBASE BERM ON ROADWAY SHALL BE MAINTAINED UNTIL ROADWAY IS PAVED. EARTHEN BERM IN CHANNEL SHALL BE MAINTAINED UNTIL PERMANENT STABILIZATION IS COMPLETED OR TO REMAIN PERMANENTLY.
 - STONE INLET PROTECTION AND BERM FOR A TYPE M INLET CAN BE USED IN ONE ACRE MAXIMUM DRAINAGE AREA WITH 15" OVERFLOW PIPE AND 4" IN. HEAD. A PERFORATED PLATE WELDED TO METAL RISER MAY NOT BE SUBSTITUTED FOR THE WIRE MESH. A SLOTTED PLATE WELDED TO THE RISER MAY BE USED IN CONJUNCTION WITH THE WIRE MESH IF CALCULATIONS ARE PROVIDED TO SHOW SUFFICIENT CAPACITY OF THE INLET TO ACCEPT THE PEAK RUNOFF FOR A 2-YEAR STORM EVENT FROM THE TRIBUTARY DRAINAGE AREA. TOP OF BERM SHALL BE AT LEAST 6 INCHES BELOW ADJACENT ROADWAY IF PONDING WATER WOULD BE A SAFETY HAZARD TO TRAFFIC. EARTHEN BERM SHALL BE ROLLED.
 - BERM SHALL BE REMOVED WHEN IT REACHES HALF THE HEIGHT OF THE STONE. DAMAGED OR CLOGGED INSTALLATIONS SHALL BE REPAIRED OR REPLACED IMMEDIATELY.
 - FOR SYSTEMS DISCHARGING TO HQ OR EV SURFACE WATER, A 6 IN. THICK COMPOST LAYER SHALL BE SECURELY ANCHORED ON OUTSIDE AND OVER TOP OF STONE. COMPOST SHALL MEET THE STANDARDS IN TABLE 4.2 OF THE PA DEP EROSION CONTROL MANUAL.
 - DO NOT USE ON MAJOR PAVED ROADWAYS WHERE PONDING MAY CAUSE TRAFFIC HAZARDS.

NO.	DATE	BY	REVISION DESCRIPTION	W.D. NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL			
			(IPS) STONE AND CONCRETE INLET PROTECTION - TYPE M			

NO.	DATE	BY	REVISION DESCRIPTION	W.D. NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL			
			(IPF) FILTER BAG INLET PROTECTION - TYPE M			

NO.	DATE	BY	REVISION DESCRIPTION	W.D. NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL			
			(IPS) STONE AND CONCRETE INLET PROTECTION - TYPE M			



REVISIONS						
NO.	DATE	BY	DESCRIPTION	W.D. NO.	CHK.	APP.
0	08/26/2015	BL	ISSUED FOR PADEP SUBMITTAL	W0572385	JLK	SMK
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
2	Oct. 2016	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1	W0572385	JLK	SMK
3	April 2017	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #2	W0572385	JLK	SMK

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC			
ATLANTIC SUNRISE PROJECT			
BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET			
BEST MANAGEMENT PRACTICES DETAILS			
DRAWN BY:	ELZ	DATE:	05/15/15
CHECKED BY:	JLK	DATE:	07/02/15
APPROVED BY:	SMK	DATE:	07/08/15
ISSUED FOR:	ISSUED FOR CONSTRUCTION	SCALE:	J
DRAWING NUMBER:	ASR-BMP	SHEET:	4
OF:			11

Drawn By & Date/Time: tdelo Apr 27, 2017 10:49am
 Drawing Location & Name: G:\08514\14C\14C4909\205\SC-BMP-04.dwg

TABLE 6.6
Riprap Gradation, Filter Blanket Requirements, Maximum Velocities

Class, Size No. Rock Size (Inches)	Percent Passing (Square Openings)					
	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		100	
9				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 ¹	AASHTO #1	AASHTO #1	AASHTO #1	AASHTO #3	AASHTO #3	AASHTO #57
V _{max} (ft/sec)	17.0	14.5	13.0	11.5	9.0	6.5

Adapted from PennDOT Pub. 408, 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%.

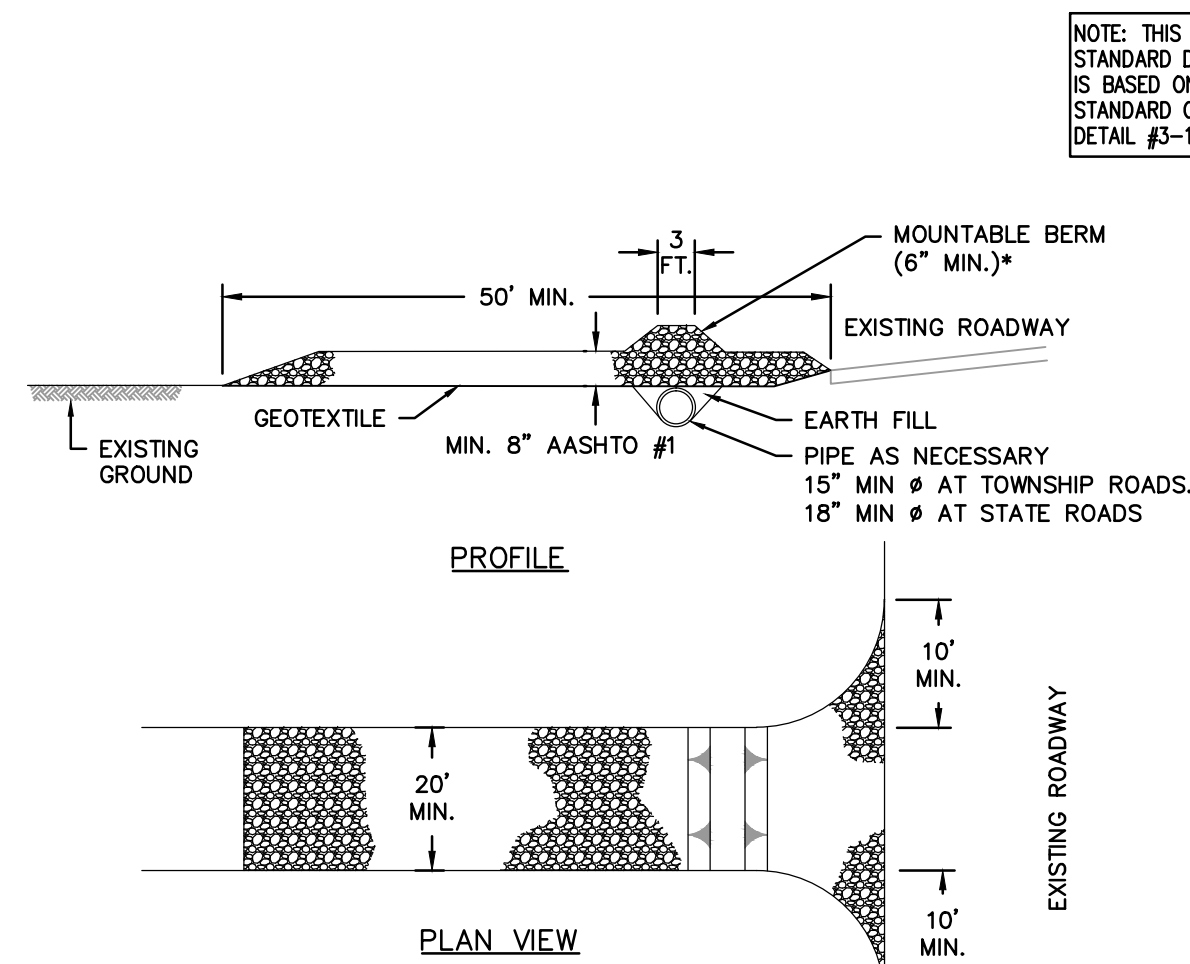
TABLE 6.7
Comparison of Various Gradations of Coarse Aggregates

AASHTO NUMBER	Total Percent Passing															
	6"	4"	3 1/2"	2 1/2"	2"	1 1/2"	1"	3/4"	1/2"	3/8"	#4	#8	#16	#30	#100	
1	100	90-100	25-60	0-15	0-5											
3			100	90-100	35-70	0-15	0-5	0-5								
5					100	90-100	20-55	0-10	0-5							
57					100	90-100	25-60			0-10	0-5					
67					100	90-100		20-55	0-10	0-5						
7					100	90-100	40-70	0-15	0-5							
8						100	85-100	10-30	0-10	0-5						
10							100	75-100							10-30	

PennDOT Publication 408, Section 703.2(c), Table C

Tables 6.6 and 6.7 should be placed on the plan drawings of all sites where riprap channel linings are proposed.

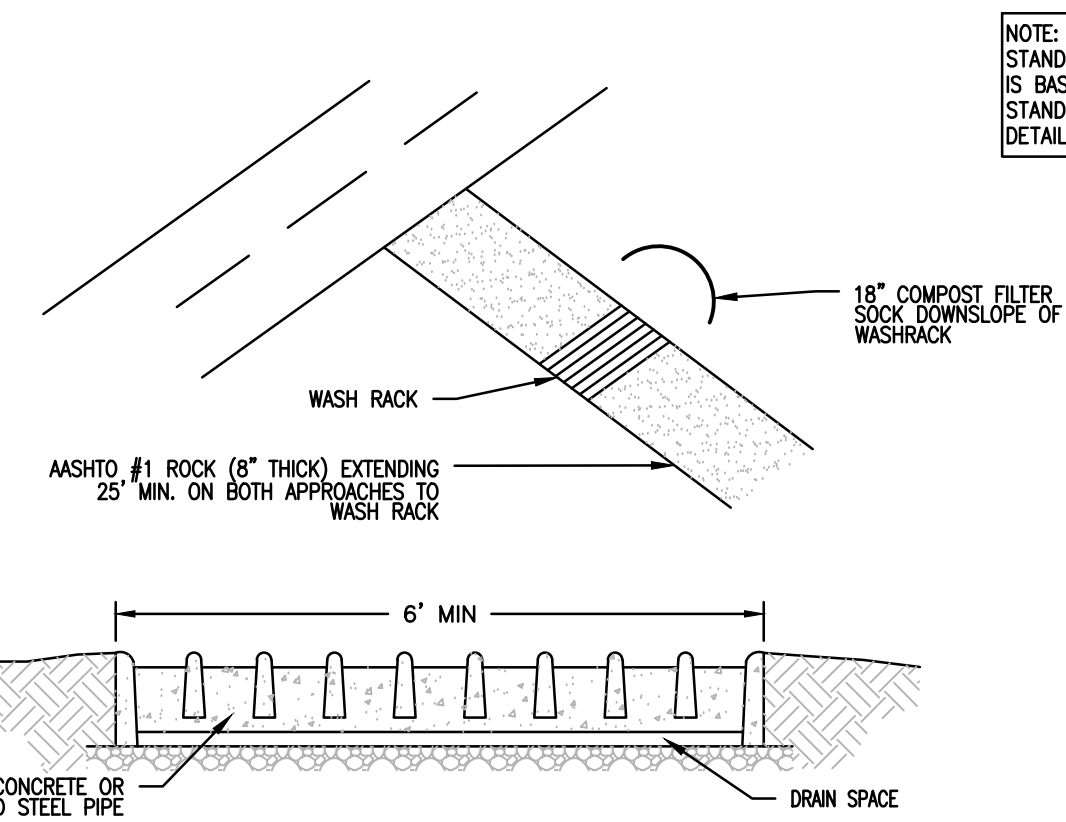
NO.	DATE	BY	REVISION DESCRIPTION	W.D. NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL			
			(RAP) RIP RAP GRADATION			



NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #3-1.

- NOTES:
- REMOVE TOPSOIL PRIOR TO INSTALLATION OF ROCK CONSTRUCTION ENTRANCE. EXTEND ROCK OVER FULL WIDTH OF ENTRANCE.
 - RUNOFF SHALL BE DIVERTED FROM ROADWAY TO A SUITABLE SEDIMENT REMOVAL BMP PRIOR TO ENTERING ROCK CONSTRUCTION ENTRANCE.
 - MOUNTABLE BERM SHALL BE INSTALLED WHEREVER OPTIONAL CULVERT PIPE IS USED AND PROPER PIPE COVER AS SPECIFIED BY MANUFACTURER IS NOT OTHERWISE PROVIDED. PIPE SHALL BE SIZED APPROPRIATELY FOR SIZE OF DITCH BEING CROSSED.
 - MAINTENANCE: ROCK CONSTRUCTION ENTRANCE THICKNESS SHALL BE CONSTANTLY MAINTAINED TO THE SPECIFIED DIMENSIONS BY ADDING ROCK. A STOCKPILE OF ROCK SHALL BE MAINTAINED ON SITE FOR THIS PURPOSE. ALL SEDIMENT DEPOSITED ON PAVED ROADWAYS SHALL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE IMMEDIATELY. IF EXCESSIVE AMOUNTS OF SEDIMENT ARE BEING DEPOSITED ON ROADWAY, EXTEND LENGTH OF ROCK CONSTRUCTION ENTRANCE BY 50 FOOT INCREMENTS UNTIL CONDITION IS ALLEVIATED OR INSTALL WASH RACK. WASHING THE ROADWAY OR SWEEPING THE DEPOSITS INTO ROADWAY DITCHES, SEWERS, CULVERTS, OR OTHER DRAINAGE COURSES IS NOT ACCEPTABLE.
 - RCE WITH WASH RACK, SEE DETAIL ROW, TO BE INSTALLED IN, OR WITHIN 100 FEET OF, SPECIAL PROTECTION WATERSHEDS AS WELL AS WITHIN 50 FEET OF WETLANDS.
 - WITHIN WETLANDS RCE AND/OR RCE WITH WASHRACK SHALL BE REPLACED WITH TIMBER MAT AND CLASS 1 GEOTEXTILE UNDERLAYMENT.

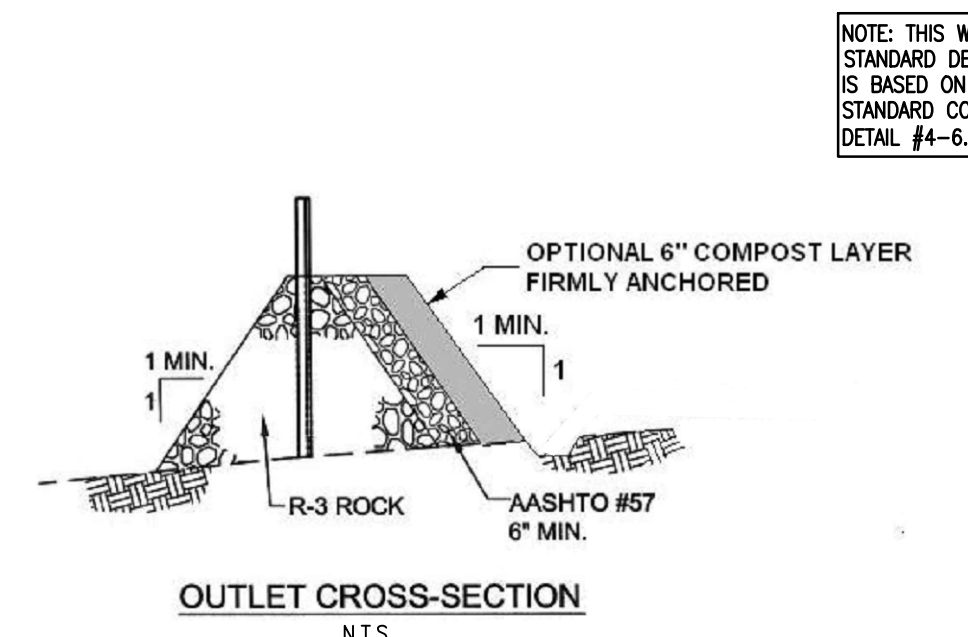
NO.	DATE	BY	REVISION DESCRIPTION	W.D. NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL			
			(RCE) ROCK CONSTRUCTION ENTRANCE			



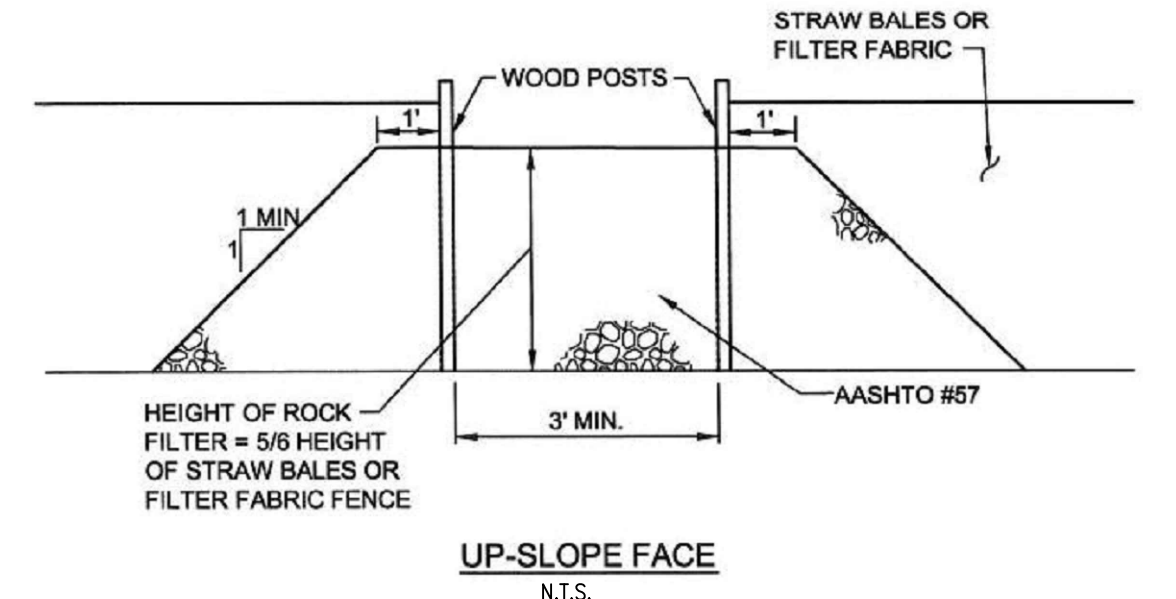
NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #3-2.

- 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:
- RCE 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 1" 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 TARPULIN.
 - WITHIN WETLANDS RCE AND/OR RCE WITH WASHRACK SHALL BE REPLACED WITH TIMBER MAT AND CLASS 1 GEOTEXTILE UNDERLAYMENT.

NO.	DATE	BY	REVISION DESCRIPTION	W.D. NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL			
			(RCW) ROCK CONSTRUCTION ENTRANCE WITH WASH RACK			

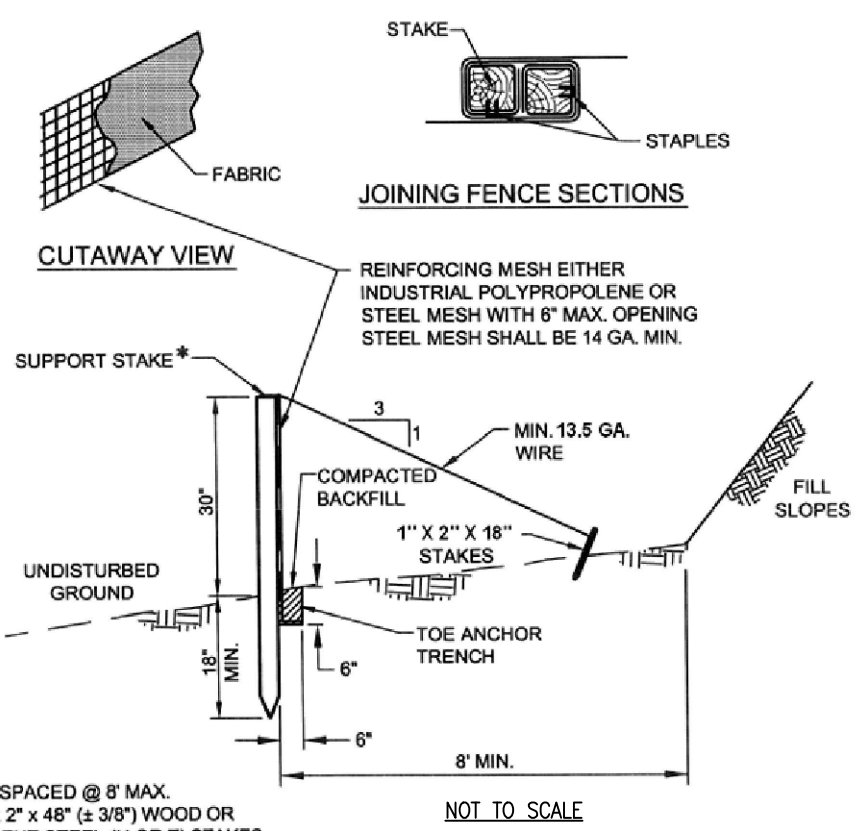


NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #4-6.



- ADAPTED FROM MARYLAND DOE
- NOTES:
- A ROCK FILTER OUTLET SHALL BE INSTALLED WHERE FAILURE OF A STRAW BALE BARRIER OR FILTER FABRIC FENCE HAS OCCURRED DUE TO CONCENTRATED FLOW.
 - SEDIMENT MUST BE REMOVED WHEN ACCUMULATIONS REACH 1/3 THE HEIGHT OF THE OUTLET.
- PADEP SUPPLEMENTAL NOTE:
- ANCHORED COMPOST LAYER SHALL BE USED ON UP SLOPE FACE IN HQ AND EV WATERSHEDS.

NO.	DATE	BY	REVISION DESCRIPTION	W.D. NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL			
			(RFO) ROCK FILTER OUTLET			



NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #4-8.

AT A MINIMUM, THE FABRIC SHALL HAVE THE FOLLOWING PROPERTIES:

FABRIC PROPERTY	MINIMUM ACCEPTABLE VALUE	TEST METHOD
GRAB TENSILE STRENGTH (LB)	120	ASTM D1682
ELONGATION AT FAILURE (%)	20% MAX.	ASTM D1682
MULLEN BURST STRENGTH (PS)	200	ASTM D 3786
TRAPEZOIDAL TEAR STRENGTH (LB)	50	ASTM 5141
PUNCTURE STRENGTH (LB)	40	ASTM D 751 (MODIFIED)
SLURRY FLOW RATE (GAL/MIN/SF)	0.3	ASTM 5141
EQUIVALENT OPENING SIZE	30	US STD. SIEVE CW-02215
ULTRAVIOLET RADIATION STABILITY (%)	80	ASTM G-26

ADAPTED FROM NEW YORK DEC AND PENN-DOT PUB 408

MAXIMUM SLOPE LENGTHS FOR REINFORCED SILTY FENCE:

SLOPE-PERCENT	MAXIMUM SLOPE LENGTH (FT)
2 (OR LESS)	500
5	250
10	150
15	100
20	70
25	55
30	45
35	40
40	35
45	30
50	25

- FABRIC WIDTH SHALL BE 42" MINIMUM. STAKES SHALL BE HARDWOOD OR EQUIVALENT STEEL (1/2" OR 1") STAKES. 18" SUPPORT STAKE SHALL BE DRIVEN 12" MIN. INTO UNDISTURBED GROUND.
- SILTY FENCE SHALL BE INSTALLED AT EXISTING LEVEL GRADE. BOTH ENDS OF EACH FENCE SECTION SHALL BE EXTENDED AT LEAST 8 FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT.
- SEDIMENT SHALL BE REMOVED WHERE ACCUMULATIONS REACH 1/2 THE ABOVE GROUND HEIGHT OF THE FENCE.
- ANY SECTION OF SILTY FENCE WHICH HAS BEEN UNDERMINED OR TOPPED SHALL BE IMMEDIATELY REPLACED WITH A ROCK FILTER OUTLET (RFO).
- FENCE SHALL BE REMOVED AND PROPERLY DISPOSED OF WHEN TRIBUTARY AREA IS PERMANENTLY STABILIZED.
- SILTY FENCE SHOULD BE PLACED ON CONTOURS TO THE EXTENT PRACTICAL. SILTY FENCE SHOULD NOT BE USED TO DELINEATE THE LIMITS OF THE CONSTRUCTION RIGHT-OF-WAY.
- SILTY FENCE IS NOT ALLOWED IN CERTAIN SPECIAL PROTECTION WATERSHEDS; COMPOST FILTER SOCKS SHALL BE USED.

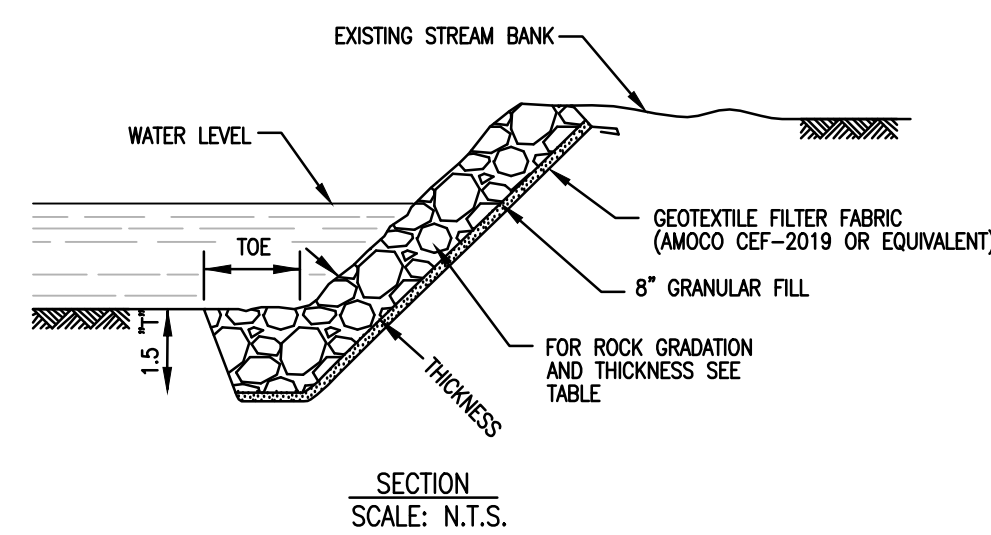
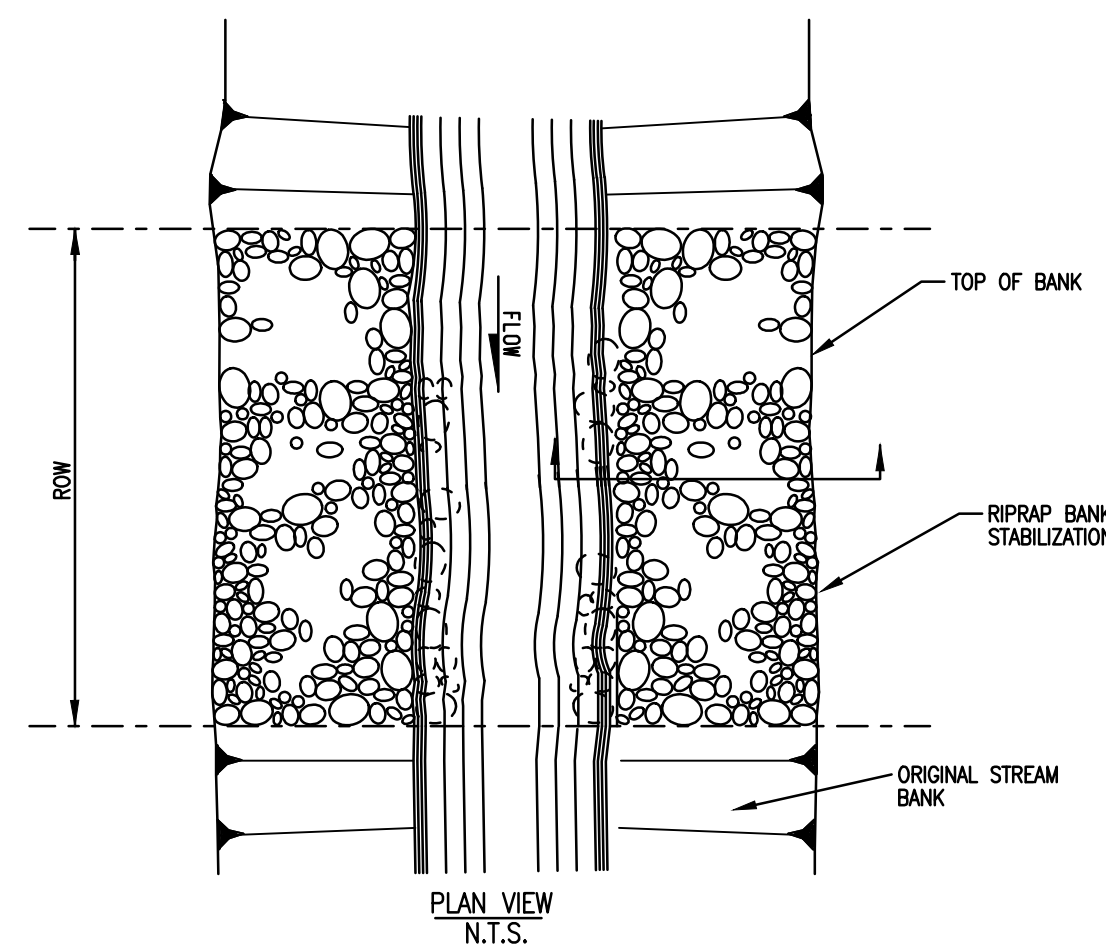
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NO.	DATE	BY	REVISION DESCRIPTION	W.D. NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL			
			(RSF) REINFORCED SILTY FENCE (30" HIGH)			



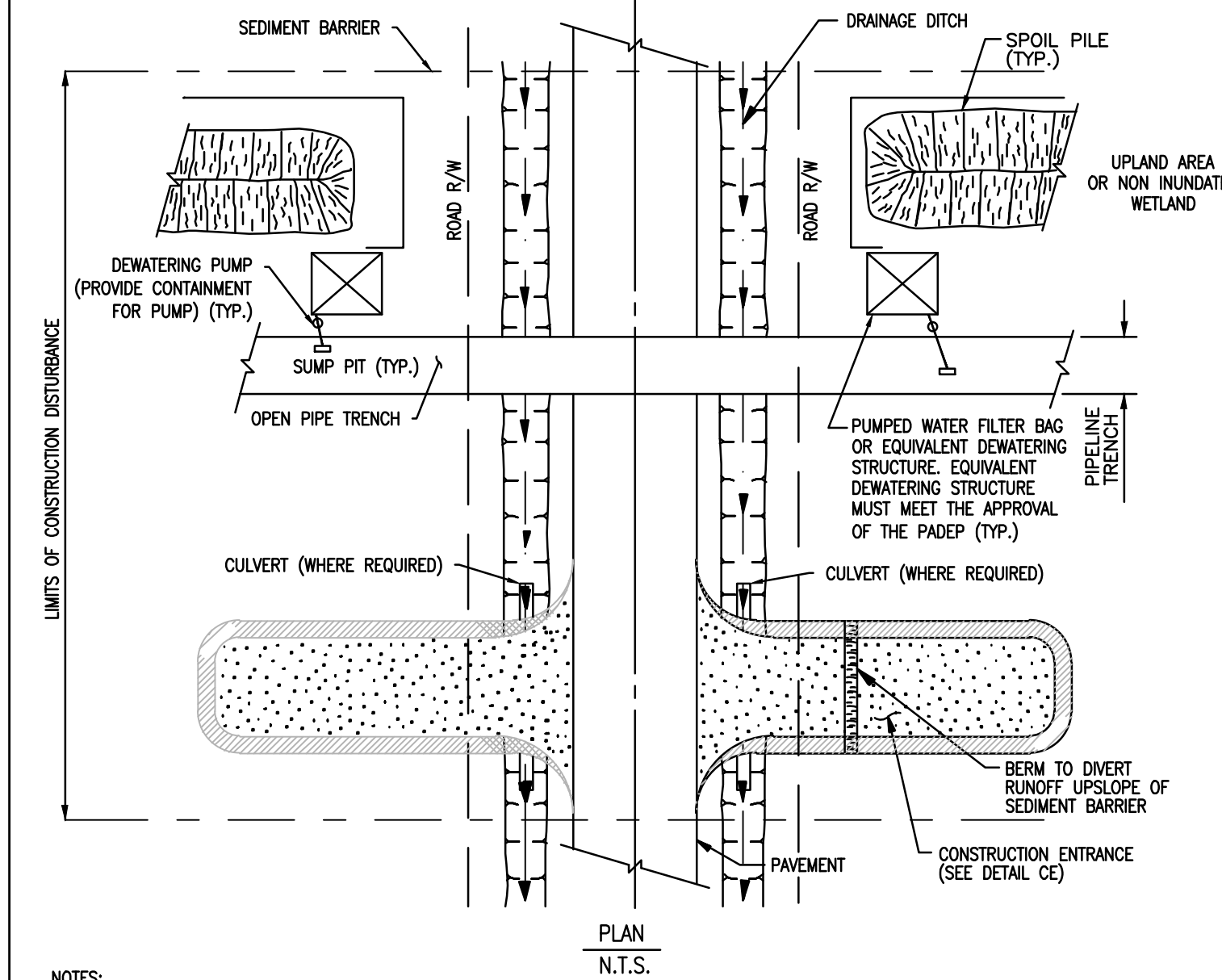
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1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
2	02/04/2016	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
3	03/26/2016	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	ARB
4	04/2016	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1	W0572385	JLK	ARB

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC			
ATLANTIC SUNRISE PROJECT			
BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET			
BEST MANAGEMENT PRACTICES DETAILS			
DRAWN BY:	ELZ	DATE:	05/15/15
CHECKED BY:	JLK	DATE:	07/02/15
APPROVED BY:	SMK	DATE:	07/08/15
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OF:	11		

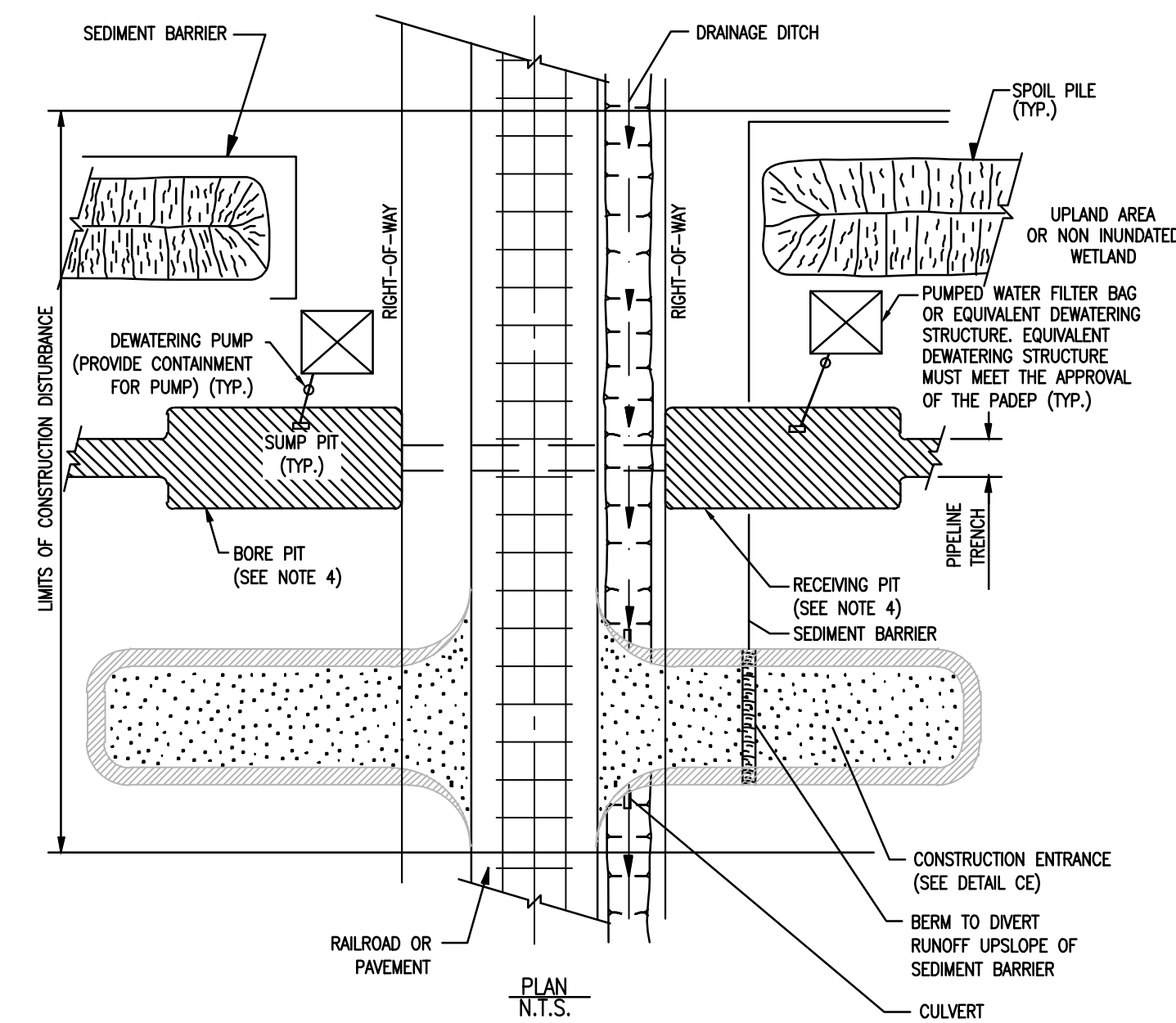


RIP RAP GRADATION TABLE		
REFER TO TABLE 6.6 RIP RAP GRADATION, FILTER BLANKET REQUIREMENTS, MAXIMUM VELOCITIES ON PAGE 6 OF THIS SET.		
REFER TO TABLE 6.7 COMPARISON OF VARIOUS GRADATIONS OF COARSE AGGREGATES ON PAGE 6 OF THIS SET.		

- NOTES:
- ROCK UTILIZED FOR RIPRAP SHALL CONSIST OF SOUND, DURABLE ROCK, INSOLUBLE IN WATER, AND RESISTANT TO WEATHERING.
 - ALL MATERIAL SHALL BE FREE OF STRUCTURAL DEFECTS, SHALE SEAMS AND ORGANIC MATTER.
 - INDIVIDUAL PIECES SHOULD BE SHARPLY ANGULAR, BLOCK SHAPED AND HAVE A MINIMUM SPECIFIC GRAVITY OF 2.5.
 - NO PIECE SHALL HAVE A LENGTH EXCEEDING THREE (3) TIMES ITS WIDTH OR DEPTH.
 - EACH LOAD OF ROCK SHALL BE OF WELL-GRADED MIXTURE. A WELL-GRADED MIXTURE, AS USED HEREIN, IS DEFINED AS A MIXTURE COMPOSED PRIMARILY OF LARGER STONE, BUT WITH A SUFFICIENT MIXTURE OF SMALLER SIZES TO FILL THE VOIDS.
 - MATERIAL SHALL MEET NSA SPECIFICATIONS - SEE TABLE ABOVE.
 - IF STREAM WIDTH IS EQUAL TO OR LESS THAN 2 TIMES THE TOE WIDTH, RIPRAP SHALL BE PLACED ACROSS THE ENTIRE STREAM WIDTH.
 - RIPRAP SHALL BE PLACED TO THE FULL COURSE THICKNESS IN ONE CONTINUOUS OPERATION. OPERATIONS WHICH CAUSE SEGREGATION OF THE MATERIALS SHALL NOT BE PERMITTED. INDIVIDUAL ROCKS MAY BE REARRANGED, AND THE VOIDS FILLED WITH HAND PLACED SMALLER ROCK IN ORDER TO ACHIEVE THE DESIRED UNIFORM ARMOR.
 - SLOPE SHALL BE GRADED TO 2:1 OR FLATTER PRIOR TO PLACING GRANULAR FILL, FILTER FABRIC, OR RIPRAP.
 - ENDS OF THE RIPRAP SHALL BE KEED INTO A STABLE BANK. WHEN TYING INTO OTHER STRUCTURES, LARGER RIPRAP CAN BE LAID IN STEPS OR STACKED AS NEEDED TO FIT. STONES LARGER THAN THOSE DESIGNED FOR FLOW SHALL BE USED FOR THIS PURPOSE.
 - REMAINING DISTURBED AREAS SHALL BE GRADED AND PERMANENTLY SEEDED AND MULCHED.



- NOTES:
- SEDIMENT BARRIER SHALL BE INSTALLED AT THE BASE OF SLOPES ADJACENT TO ROAD CROSSINGS WHERE VEGETATION IS DISTURBED, TO INTERCEPT SURFACE RUNOFF. TEMPORARILY RELOCATE SEDIMENT BARRIERS WITHIN LIMITS OF TRENCH OPENING AS NEEDED TO INSTALL PIPE. IMMEDIATELY REPLACE BARRIERS AFTER BACKFILLING TRENCH.
 - PROTECTION FOR SPOIL PILES SHALL BE INSTALLED ONLY WHERE SEDIMENT BARRIERS ACROSS THE ENTIRE DISTURBED AREA ARE NOT REQUIRED.
 - SEDIMENT BARRIERS SHALL REMAIN IN PLACE UNTIL PERMANENT REVEGETATION IS ESTABLISHED.
 - CULVERTS TO BE SIZED AND PLACED WHERE REQUIRED TO MAINTAIN WATER FLOW.
 - CONTRACTOR SHALL BE REQUIRED TO KEEP THE ROAD CLEAN OF DEBRIS AT ALL TIMES.
 - CONTRACTOR MAY ELECT TO UTILIZE SHEET PILING IN ORDER TO STABILIZE PIPE TRENCH.
 - CONTRACTOR MAY ELECT TO UTILIZE WELL-POINTS IN ORDER TO REDUCE THE WATER TABLE PRIOR TO COMMENCING EXCAVATION.
 - DEPENDING ON TOPOGRAPHY AND STATE REQUIREMENTS, SEDIMENT BARRIER MAY BE REQUIRED ACROSS THE ENTIRE CONSTRUCTION RIGHT-OF-WAY AT THE EDGE OF ROAD. IN ADDITION TO THIS DETAIL, REFER TO THE ENVIRONMENTAL ALIGNMENT DRAWINGS FOR PLACEMENT OF SEDIMENT BARRIERS.
 - CONSTRUCTION ENTRANCE NEEDED AS SHOWN ON SPECIFIC PLAN.



- NOTES:
- SEDIMENT BARRIER SHALL BE INSTALLED AT THE BASE OF SLOPES ADJACENT TO ROAD CROSSINGS WHERE VEGETATION IS DISTURBED, TO INTERCEPT SURFACE RUNOFF. TEMPORARILY RELOCATE SEDIMENT BARRIERS WITHIN LIMITS OF TRENCH OPENING AS NEEDED TO INSTALL PIPE. IMMEDIATELY REPLACE BARRIERS AFTER BACKFILLING TRENCH.
 - PROTECTION FOR SPOIL PILES SHALL BE INSTALLED ONLY WHERE SEDIMENT BARRIERS ACROSS THE ENTIRE DISTURBED AREA ARE NOT REQUIRED.
 - SEDIMENT BARRIERS SHALL REMAIN IN PLACE UNTIL PERMANENT REVEGETATION IS ESTABLISHED.
 - WATER REMOVED FROM BORE PIT AND RECEIVING PIT SHALL BE FILTERED THROUGH A DEWATERING STRUCTURE OR FILTER BAG.
 - IF WELL POINTING IS REQUIRED PRIOR TO EXCAVATING BORE PITS, CONTRACTOR SHALL CONSULT WITH COMPANY'S ENVIRONMENTAL INSPECTOR PRIOR TO COMMENCEMENT OF WORK IN ORDER TO DETERMINE PROPER DEWATERING LOCATION.
 - CONTRACTOR SHALL BE REQUIRED TO KEEP THE CROSSING CLEAN OF DEBRIS AT ALL TIMES.
 - CONTRACTOR MAY ELECT TO UTILIZE SHEET PILING IN ORDER TO STABILIZE BORE PITS.
 - DEPENDING ON TOPOGRAPHY AND STATE REQUIREMENTS, SEDIMENT BARRIER MAY BE REQUIRED ACROSS THE ENTIRE CONSTRUCTION RIGHT OF WAY AT THE EDGE OF ROAD. IN ADDITION TO THIS DETAIL, REFER TO THE ENVIRONMENTAL ALIGNMENT DRAWINGS FOR PLACEMENT OF SEDIMENT BARRIERS.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

(RSS) RIP RAP STREAM BANK STABILIZATION

1 OF 2

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

(RSS) RIP RAP STREAM BANK STABILIZATION

2 OF 2

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

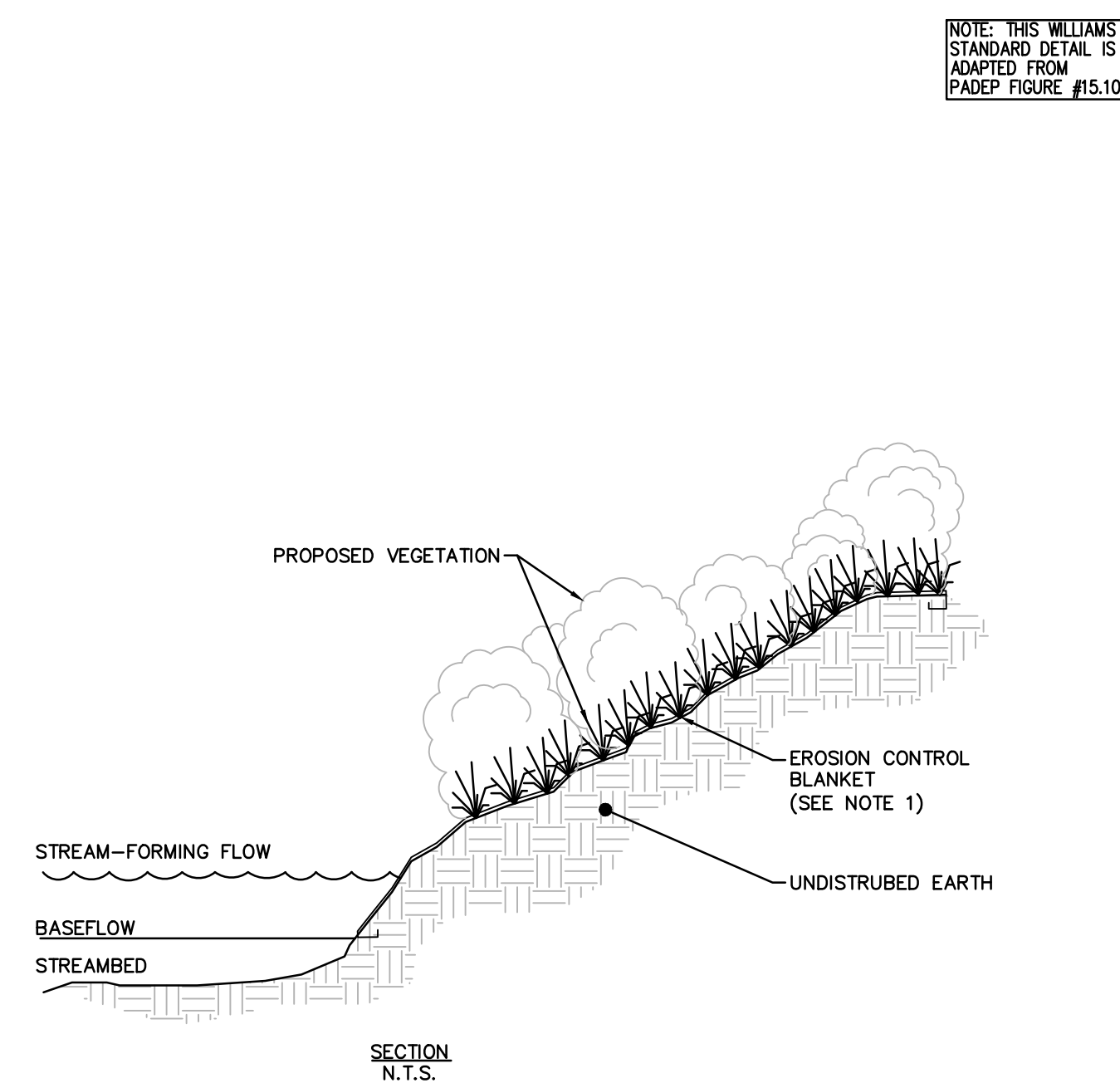
TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

(RX.1) TRENCHED ROAD CROSSING

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

(RX.2) BORED ROAD/RAILROAD CROSSING

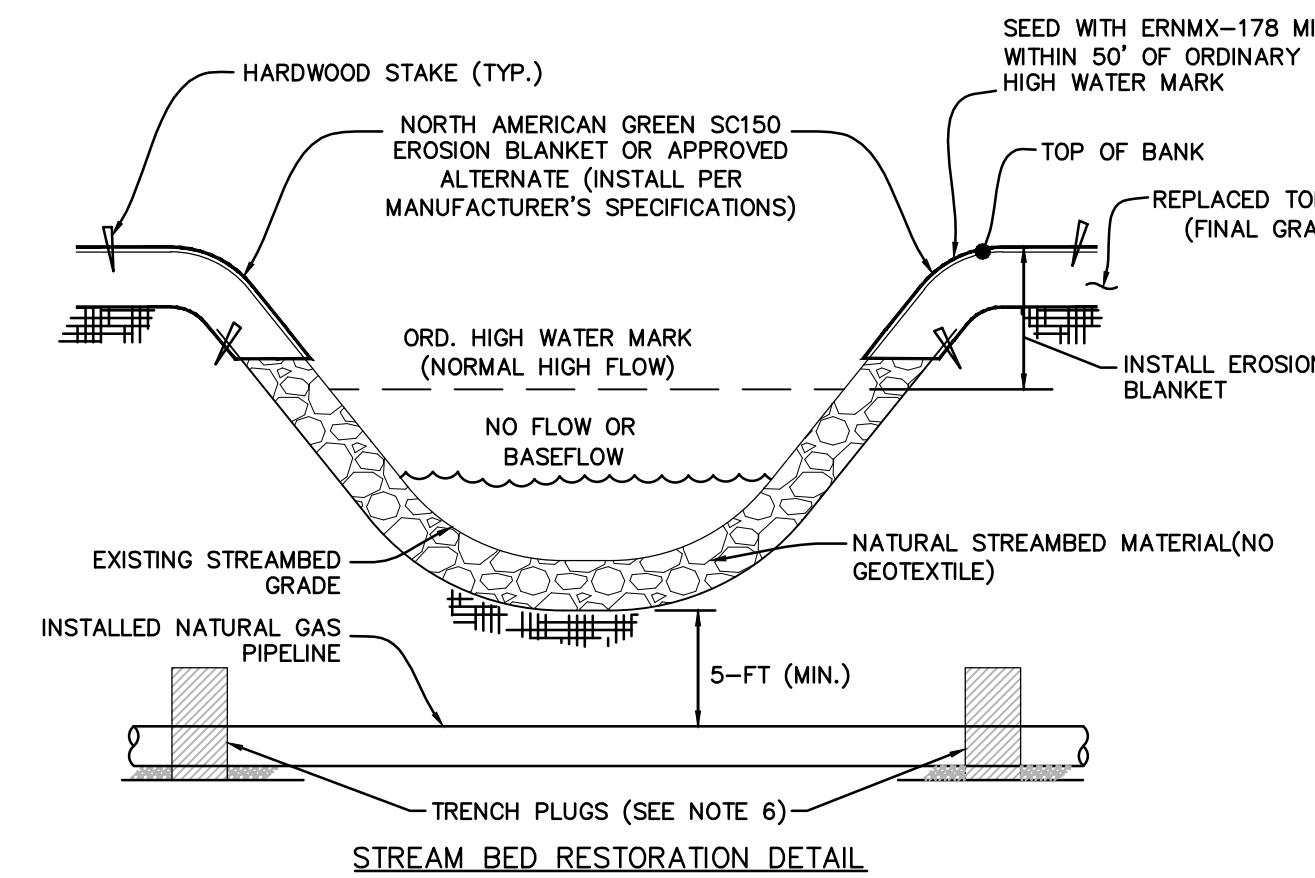


- NOTES:
- ON STREAM BANKS WITH SLOPES 2:1 OR LESS, EROSION CONTROL BLANKET NAG SC150 OR APPROVED EQUAL SHALL BE USED. FOR ALL OTHER SLOPES, EROSION CONTROL BLANKET NAG C125 OR APPROVED EQUAL SHALL BE UTILIZED. REFER TO EROSION CONTROL BLANKET DETAIL (ECB) FOR INSTALLATION.
 - STREAM BANK STABILIZATION SHALL UTILIZE REINFORCEMENT BLANKET EXCEPT WHEN STABILIZATION CANNOT BE ACHIEVED IN THE FIELD. IN WHICH CASE, RIP RAP STREAM BANK STABILIZATION SHALL BE IMPLEMENTED. REFER TO THE RIP RAP STREAM BANK STABILIZATION DETAIL, RSS, IN THIS PLAN SET.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

(SBR) STREAM BANK STABILIZATION WITH REINFORCEMENT BLANKET



- NOTES:
- REMOVE EXISTING STREAMBED MATERIAL AND STOCKPILE SEPARATELY.
 - ONCE PIPELINE IS INSTALLED, REPLACE SUBSTRATE BACK IN STREAMBED AND RESTORE TO EXISTING CONDITION.
 - SEE RECOMMENDED SEED MIXTURES TABLES FOR SEED MIXES.
 - ON STREAMBANKS WITH SLOPES 2:1 OR LESS, EROSION CONTROL BLANKET NAG SC150 OR APPROVED EQUAL SHALL BE USED. FOR ALL OTHER SLOPES, EROSION CONTROL BLANKET NAG C125 OR APPROVED EQUAL SHALL BE UTILIZED.
 - THE USE OF EROSION CONTROL BLANKET IS NOT ALLOWED ON STATE GAME LANDS. HYDRAULICALLY APPLIED SLOPE STABILIZATION MUST BE USED.
 - REFER TO TRENCH PLUG INSTALLATION DETAIL (TP) FOR MORE INFORMATION.

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

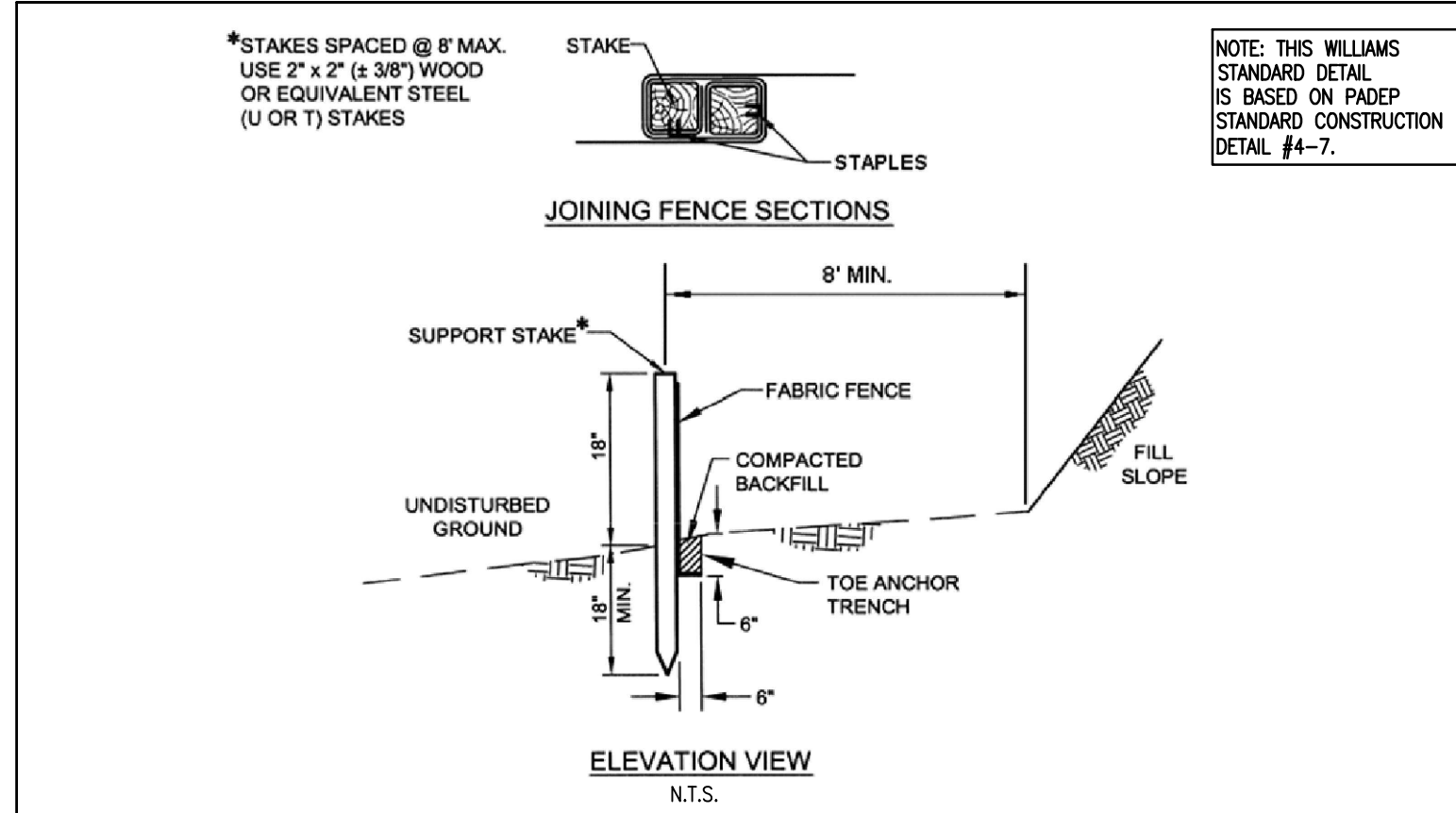
TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

(SBR) STREAM BANK STABILIZATION WITH REINFORCEMENT BLANKET



REVISIONS							
NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.	
0	08/26/2015	BL	ISSUED FOR PADEP SUBMITTAL	W0572385	JLK	SMK	
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK	
2	Oct. 2016	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1	W0572385	JLK	SMK	
3	April 2017	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #2	W0572385	JLK	SMK	

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC ATLANTIC SUNRISE PROJECT							
BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET							
BEST MANAGEMENT PRACTICES DETAILS							
DRAWN BY:	ELZ	DATE:	05/15/15	ISSUED FOR BID:	SCALE:		
CHECKED BY:	JLK	DATE:	07/02/15	ISSUED FOR CONSTRUCTION:	REVISION:	J	
APPROVED BY:	SMK	DATE:	07/08/15	DRAWING NUMBER:	ASR-BMP	SHEET	7
W.O. NO.:				OF	11		



AT A MINIMUM, THE FABRIC SHALL HAVE THE FOLLOWING PROPERTIES:

FABRIC PROPERTY	MINIMUM ACCEPTABLE VALUE	TEST METHOD
GRAB TENSILE STRENGTH (LB)	120	ASTM D1682
ELONGATION AT FAILURE (%)	20% MAX.	ASTM D1682
MULLEN BURST STRENGTH (PSI)	200	ASTM D 3786
TRAPEZOIDAL TEAR STRENGTH (LB)	50	ASTM 5141
PUNCTURE STRENGTH (LB)	40	ASTM D 751 (MODIFIED)
SLURRY FLOW RATE (GAL/MIN/SF)	0.3	ASTM 5141
EQUIVALENT OPENING SIZE	30	US STD. SIEVE CW-02215
ULTRAVIOLET RADIATION STABILITY (%)	80	ASTM G-26

ADAPTED FROM NEW YORK DEC AND PENN-DOT PUB 408 MAXIMUM SLOPE LENGTHS FOR SILT FENCE

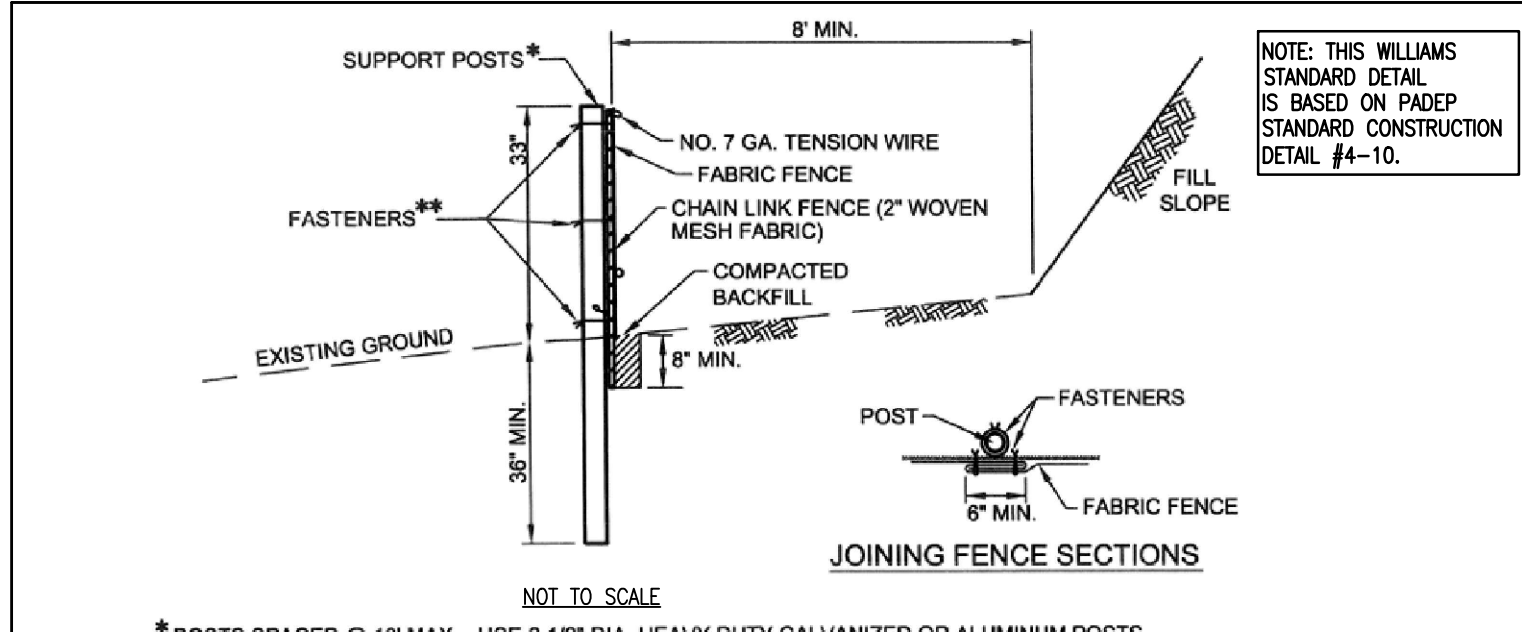
SLOPE-PERCENT	MAXIMUM SLOPE LENGTH (FT)
2 (OR LESS)	150
5	100
10	50
15	35
20	25
25	20
30	15
35	15
40	15
45	10
50	10

ADAPTED FROM PA DEP

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

(SF) STANDARD SILT FENCE (18" HIGH)



AT A MINIMUM, THE FABRIC SHALL HAVE THE FOLLOWING PROPERTIES:

FABRIC PROPERTY	MINIMUM ACCEPTABLE VALUE	TEST METHOD
GRAB TENSILE STRENGTH (LB)	120	ASTM D1682
ELONGATION AT FAILURE (%)	20% MAX.	ASTM D1682
MULLEN BURST STRENGTH (PSI)	200	ASTM D 3786
TRAPEZOIDAL TEAR STRENGTH (LB)	50	ASTM 5141
PUNCTURE STRENGTH (LB)	40	ASTM D 751 (MODIFIED)
SLURRY FLOW RATE (GAL/MIN/SF)	0.3	ASTM 5141
EQUIVALENT OPENING SIZE	30	US STD. SIEVE CW-02215
ULTRAVIOLET RADIATION STABILITY (%)	80	ASTM G-26

ADAPTED FROM NEW YORK DEC AND PENN-DOT PUB 408

MAXIMUM SLOPE LENGTHS FOR SUPER SILT FENCE

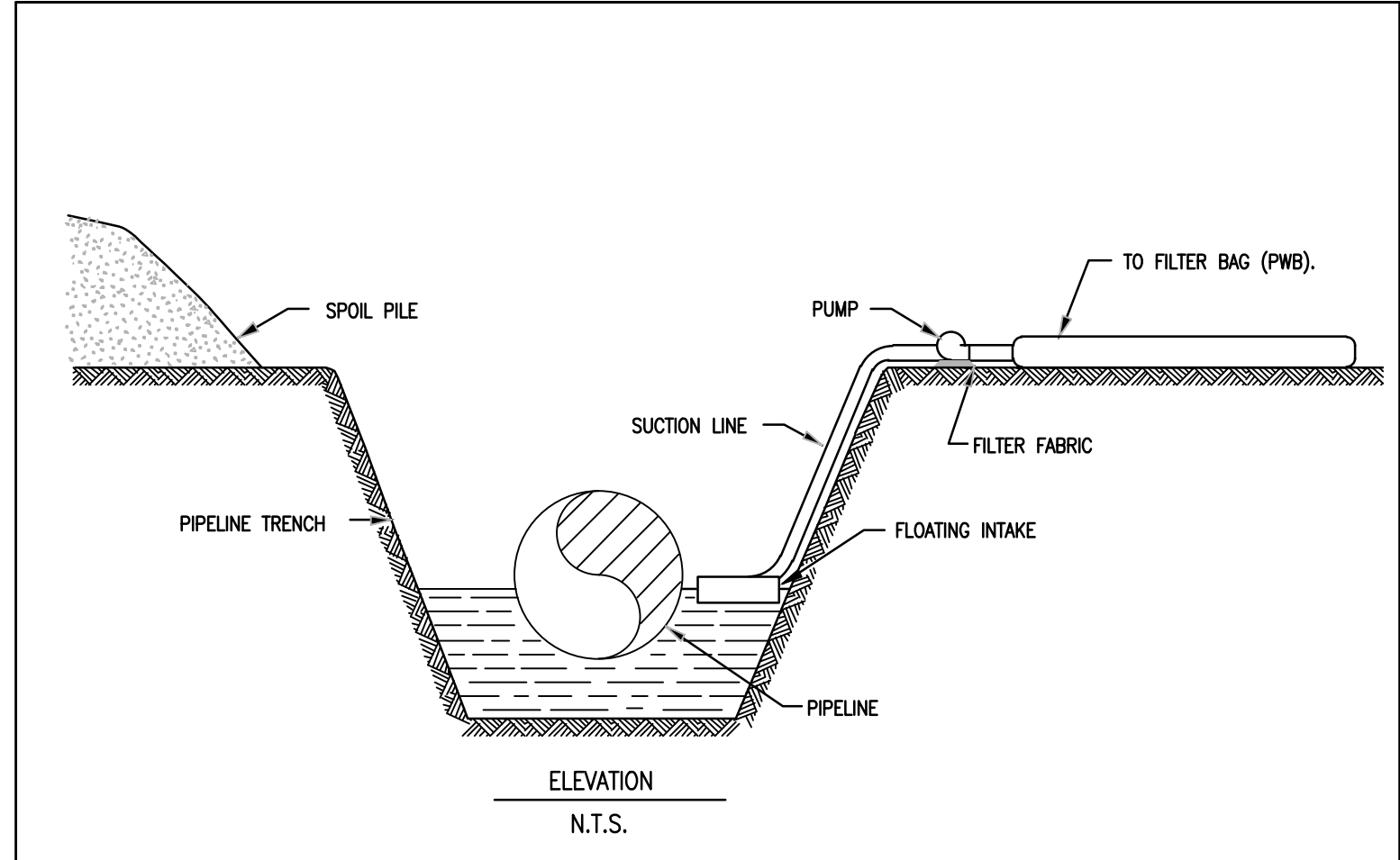
SLOPE-PERCENT	MAXIMUM SLOPE LENGTH (FT)
2 (OR LESS)	1000
5	550
10	325
15	215
20	175
25	135
30	100
35	85
40	75
45	60
50	50

ADAPTED FROM PA DEP

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

(SSF) SUPER SILT FENCE (33" HIGH)



ADAPTED FROM MARYLAND DOE

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

(TD) TRENCH DEWATERING

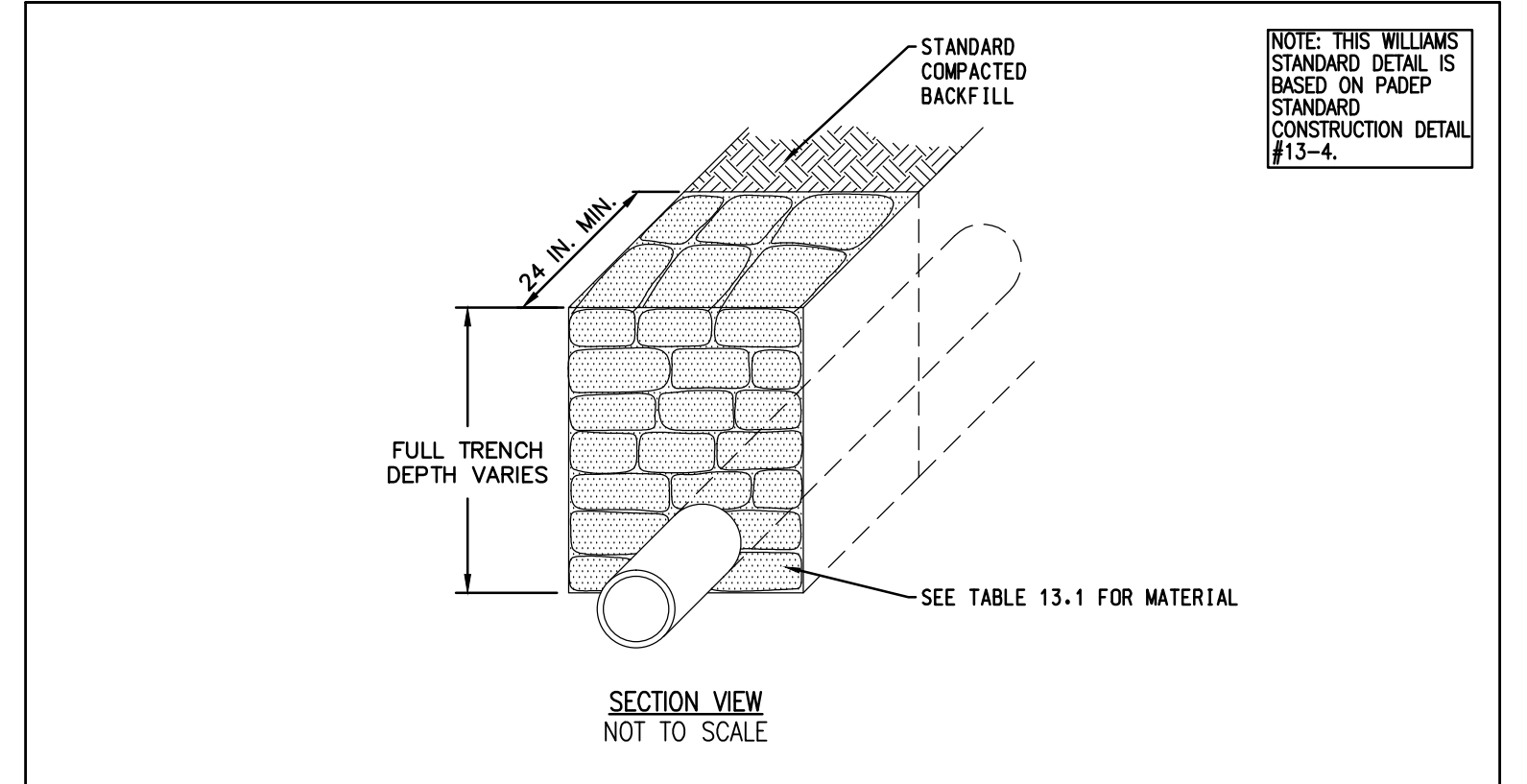


TABLE 13.1
MAXIMUM SPACING AND MATERIALS FOR TRENCH PLUGS

TRENCH SLOPE (%)	SPACING L (FT)	TRENCH PLUG MATERIAL FOR FILLED SACKS
<5	1,000	* CLAY, BENTONITE, OR CONCRETE FILLED SACKS
5 - 15	500	* CLAY, BENTONITE, OR CONCRETE FILLED SACKS
15 - 25	300	* CLAY, BENTONITE, OR CONCRETE FILLED SACKS
25 - 35	200	* CLAY, BENTONITE, OR CONCRETE FILLED SACKS
35 - 100	100	* CLAY, BENTONITE, OR CONCRETE FILLED SACKS
>100	50	CEMENT FILLED BAGS (WETTED) OR MORTARED STONE

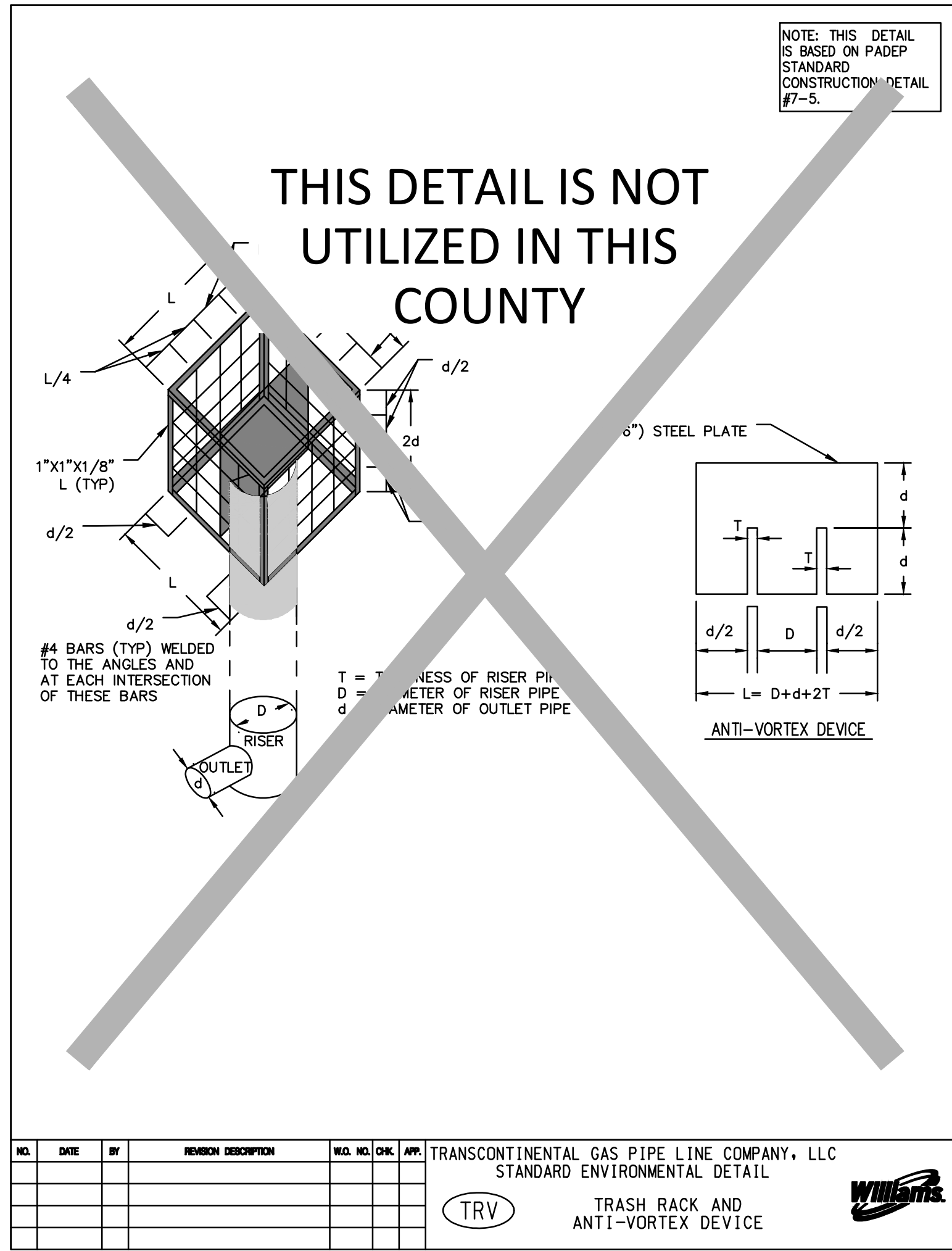
*TOPSOIL MAY NOT BE USED TO FILL SACKS.
IMPERVIOUS TRENCH PLUGS ARE REQUIRED FOR ALL STREAM, RIVER, WETLAND, OR OTHER WATER BODY CROSSINGS. FOAM TRENCH PLUGS ARE NOT TO BE USED IN WETLANDS.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

(TP) TRENCH PLUG INSTALLATION



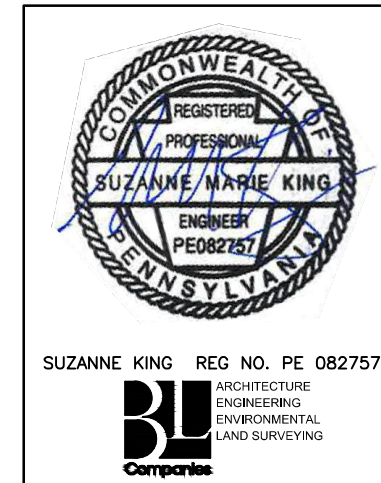
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NO.	DATE	BY	REVISION DESCRIPTION	NO.	NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

(TRV) TRASH RACK AND ANTI-VORTEX DEVICE

Drawn By & Date/Time: Idelo Apr 27, 2017 - 10:53am
Drawing Location & Name: G:\08514\14C\14C4909\DWG\BMPs&DETAILS\PL_DNT14C4909(205)_SC-BMP-08.dwg



REVISIONS							
NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.	
0	08/26/2015	BL	ISSUED FOR PADEP SUBMITTAL	W0572385	JLK	SMK	
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK	
2	Oct. 2016	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1	W0572385	JLK	SMK	
3	April 2017	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #2	W0572385	JLK	SMK	

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC ATLANTIC SUNRISE PROJECT							
BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET							
BEST MANAGEMENT PRACTICES DETAILS							
DRAWN BY:	ELZ	DATE:	05/15/15	ISSUED FOR:	CONSTRUCTION	SCALE:	
CHECKED BY:	JLK	DATE:	07/02/15	ISSUED FOR:	CONSTRUCTION	REVISION:	J
APPROVED BY:	SMK	DATE:	07/08/15	DRAWING NUMBER:	ASR-BMP	SHEET	8
W.O. NO.:		NO. OF SHEETS:		TOTAL SHEETS:		OF	11

Drawn By & Date/Time: Idelo Apr 27, 2017 - 10:55am
 Drawing Location & Name: G:\0851\14C\14C4909\DWG\BMPs&DETAILS\PL_DNT14C4909(205)_SC-BMP-09.dwg

FULL RIGHT-OF-WAY TOPSOIL STRIPPING ADJACENT EXISTING PIPELINE

FULL RIGHT-OF-WAY TOPSOIL STRIPPING-SIDE SLOPES

NOTES:

1. ALLOW FOR A 3' SEPARATION BETWEEN THE TOPSOIL PILE AND THE TRENCH SPOIL.
2. RETURN TRENCH SPOIL TO TRENCH AND COMPACT. FEATHER OUT EXCESS SPOIL OVER STRIPPED AREA LEAVING A LOW CROWN CENTERED OVER THE TRENCH. ALLEVIATE COMPACTION OF SUBSOILS OVER THE STRIPPED AREA.
3. RETURN TOPSOIL EVENLY OVER THE STRIPPED AREA AFTER TRENCH HAS SUFFICIENTLY SETTLED OR HAS BEEN COMPACTED.
4. ALLEVIATE COMPACTION OF TOPSOIL OVER ENTIRE RIGHT-OF-WAY.
5. SEGREGATED TOPSOIL MAY NOT BE USED FOR PADDING THE PIPE.
6. INSTALL SEDIMENT BARRIER AS SHOWN ON PLAN.

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL			
			(TS.1) TOPSOIL SEGREGATION (1)			

DITCH LINE TOPSOIL STRIPPING
ALSO USED IN NON-SATURATED WETLANDS

DITCH PLUS SPOIL SIDE SEGREGATION

NOTES:

1. ALLOW FOR A 3' SEPARATION BETWEEN THE TOPSOIL PILE AND THE TRENCH SPOIL.
2. RETURN TRENCH SPOIL TO TRENCH AND COMPACT. FEATHER OUT EXCESS SPOIL OVER STRIPPED AREA LEAVING A LOW CROWN CENTERED OVER THE TRENCH. ALLEVIATE COMPACTION OF SUBSOILS OVER THE STRIPPED AREA.
3. RETURN TOPSOIL EVENLY OVER THE STRIPPED AREA AFTER TRENCH HAS SUFFICIENTLY SETTLED OR HAS BEEN COMPACTED.
4. ALLEVIATE COMPACTION OF TOPSOIL OVER ENTIRE RIGHT-OF-WAY.
5. SEGREGATED TOPSOIL MAY NOT BE USED FOR PADDING THE PIPE.
6. INSTALL SEDIMENT BARRIER AS SHOWN ON PLAN.

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL			
			(TS.2) TOPSOIL SEGREGATION (2)			

FULL RIGHT-OF-WAY TOPSOIL STRIPPING - A

FULL RIGHT-OF-WAY TOPSOIL STRIPPING - B

NOTES:

1. ALLOW FOR A 3' SEPARATION BETWEEN THE TOPSOIL PILE AND THE TRENCH SPOIL.
2. RETURN TRENCH SPOIL TO TRENCH AND COMPACT. FEATHER OUT EXCESS SPOIL OVER STRIPPED AREA LEAVING A LOW CROWN CENTERED OVER THE TRENCH. ALLEVIATE COMPACTION OF SUBSOILS OVER THE STRIPPED AREA.
3. RETURN TOPSOIL EVENLY OVER THE STRIPPED AREA AFTER TRENCH HAS SUFFICIENTLY SETTLED OR HAS BEEN COMPACTED.
4. ALLEVIATE COMPACTION OF TOPSOIL OVER ENTIRE RIGHT-OF-WAY.
5. SEGREGATED TOPSOIL MAY NOT BE USED FOR PADDING THE PIPE.
6. INSTALL SEDIMENT BARRIER AS SHOWN ON PLAN.

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL			
			(TS.3) TOPSOIL SEGREGATION (3)			

CROSS SECTION SCALE: N.T.S.

NOTES:

1. TWO-TONE THE RIGHT-OF-WAY TO LIMIT THE NEED FOR DEEP CUTS AND ADDITIONAL RIGHT-OF-WAY ON STEEP SLOPES. THE MINIMUM WORKSPACE WIDTH ALONG STEEP SIDE SLOPES WILL VARY DEPENDING ON THE DIAMETER OF PIPE TO BE INSTALLED. ADDITIONAL TEMPORARY WORKSPACE MAY BE REQUIRED FOR WORKER SAFETY DEPENDING ON THE SEVERITY OF THE GRADE.
2. EMPLOY EROSION CONTROL MEASURES SUCH AS WATERBARS, CROSS DITCHES, TEMPORARY DRAINAGE PIPES, TEMPORARY SWALES, TEMPORARY OUTLET PROTECTION, ETC. AS REQUIRED TO PREVENT EROSION AND SEDIMENTATION OUTSIDE OF THE CONSTRUCTION RIGHT-OF-WAY. CLEAR AND STAKE ATWS TO ALLOW FOR EXTRA SPACE.
3. ENSURE SIDE BOOM TRACTORS ARE EQUIPPED WITH BOOM EXTENDERS AND COUNTERWEIGHTS IF REQUIRED.
4. USE BACKHOE TO ASSIST BULLDOZERS WITH REPLACING CUTS.
5. RESTORE GRADE TO NEAR PRE-CONSTRUCTION TOPOGRAPHY, REPLACE TOPSOIL AND INSTALL PERMANENT EROSION CONTROL MEASURES AS REQUIRED.
6. REVEGETATE / SEED DISTURBED AREAS AS NOTED IN THE CONSTRUCTION DOCUMENTS OR AS DETERMINED BY THE ENVIRONMENTAL INSPECTOR.

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL			
			(TTS) SIDE SLOPE (TWO-TONE) CONSTRUCTION PROCEDURE			



REVISIONS						
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0	08/26/2015	BL	ISSUED FOR PADEP SUBMITTAL	W0572385	JLK	SMK
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
2	Oct. 2016	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1	W0572385	JLK	SMK
3	April 2017	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #2	W0572385	JLK	SMK

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
ATLANTIC SUNRISE PROJECT

BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET

BEST MANAGEMENT PRACTICES DETAILS

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CHECKED BY:	JLK	DATE:	07/02/15	ISSUED FOR CONSTRUCTION:	REVISION:
APPROVED BY:	SMK	DATE:	07/08/15	DRAWING NUMBER:	ASR-BMP
W.O.:					

SHEET 9 OF 11

Drawn By & Date/Time: tdelo Apr 27, 2017 10:56am
 Drawing Location & Name: G:\08514\14C\14C4909\DWG\BMPs&DETAILS\PL_DNT14C4909(205)_SC-BMP-10.dwg

NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #6-1.

OVERLAP 6 IN. MIN. EXCAVATE CHANNEL TO DESIGN GRADE AND CROSS SECTION SOIL BACKFILL
 LONGITUDINAL ANCHOR TRENCH
 INTERMITTENT CHECK SLOT
 ISOMETRIC VIEW
 CHANNEL CROSS-SECTION

PREPARE SOIL AND APPLY SEED BEFORE INSTALLING BLANKETS, MATS, OR OTHER TEMPORARY CHANNEL LINER SYSTEM.
 SHINGLE-LAP SPICED ENDS OR BEGIN NEW ROLL IN AN INTERMITTENT CHECK SLOT MIN. SHINGLE LAP=6 IN.

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

NOTES:
 ANCHOR TRENCHES SHALL BE INSTALLED AT BEGINNING AND END OF CHANNEL IN THE SAME MANNER AS LONGITUDINAL ANCHOR TRENCHES.
 CHANNEL DIMENSIONS SHALL BE CONSTANTLY MAINTAINED. CHANNEL SHALL BE CLEANED WHENEVER TOTAL CHANNEL 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 CHANNEL 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 CHANNELS TO ENSURE SUFFICIENT CHANNEL CAPACITY.
 REFER TO "TABLE 2: TEMPORARY CLEAN WATER DIVERSION SUMMARY" AT THE END OF THIS PLAN SET FOR CHANNEL INFORMATION CHART FOR THE DIVERSION SWALES ALONG THE PIPELINE RIGHT OF WAY.

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL			
			(VCH) VEGETATED CHANNEL			

PIPELINE R.O.W. DISTANCE VARIES

SECTION
 PLAN VIEW

SLOPE ACROSS R.O.W. % (SLOPE)	CENTERLINE OF SWALE TO EDGE OF GRADING FT (A1)	CENTERLINE OF SWALE TO LOD FT (A2)	BOTTOM WIDTH OF SWALE FT (B)	TOTAL WIDTH OF SWALE AT EDGE OF GRADING FT (C)	SWALE DEPTH FT (D1)	SWALE DEPTH AT EXISTING GRADE FT (D2)	SIDE SLOPES OF SWALE (Z1 AND Z2)
0-5	6.11	7	2	11.100	2	2.25	2:1
0-5	7.33	8	2	13.300	2.5	2.80	2:1
0-5	8.56	9	2	15.560	3	3.35	2:1
5-15	9.28	10	2	14.280	2	2.75	2:1
5-15	11.14	12	2	17.140	2.5	3.40	2:1
5-15	13	13	2	20	3	4.05	2:1
15-25	15	15	2	20	2	3.25	2:1
15-25	18	18	2	24	2.5	4.00	2:1
15-25	21	21	2	28	3	4.75	2:1
25-33	25	25	2	30	2	3.65	2:1
25-33	30	30	2	36	2.5	4.48	2:1
25-33	35	35	2	42	3	5.31	2:1

NOTES:
 1. SWALES SHALL BE CONSTRUCTED AT A STANDARD DEPTH (D2) FROM CENTERLINE OF SWALE BOTTOM TO EXISTING GRADE.
 2. VEGETATED CHANNEL GRADING IS FOR VEGETATED CHANNELS ALONG THE PIPELINE RIGHT OF WAY. SEE THE ACCESS ROAD E&SC AND PCSM PLANS FOR VEGETATED CHANNEL GRADING AT MLV SITES.

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL			
			(VCH) VEGETATED CHANNEL GRADING			

NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #3-5.

PLAN VIEW
 N.T.S.

PADEP STANDARD NOTES:
 1. WATERBARS SHALL DISCHARGE TO A STABLE AREA.
 2. WATERBARS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED OR ERODED WATERBARS SHALL BE RESTORED TO ORIGINAL DIMENSIONS WITHIN 24 HOURS OF INSPECTION.
 3. MAINTENANCE OF WATERBARS SHALL BE PROVIDED UNTIL ROADWAY, SKIDTRAIL, OR RIGHT-OF-WAY HAS ACHIEVED PERMANENT STABILIZATION.
 4. WATERBARS ON RETIRED ROADWAYS, SKIDTRAILS, AND RIGHT-OF-WAYS SHALL BE LEFT IN PLACE AFTER PERMANENT STABILIZATION HAS BEEN ACHIEVED.

WILLIAMS STANDARD NOTES:
 1. ALL WATERBARS SHOWN ON THE PLANS ARE INTENDED TO BE PERMANENT BMPs.
 2. ADDITIONAL WATERBARS MAY BE INSTALLED AS APPROPRIATE DURING CONSTRUCTION.
 3. WATERBARS SHOULD BE CONSTRUCTED TO DISCHARGE TO ALTERNATE SIDES OF THE ROW, WHERE POSSIBLE/PRACTICAL.
 4. A SOFT TRENCH PLUG MAY BE USED TO CONTROL INSTANCES WHERE A WATERBAR DISCHARGES TO THE TRENCH IN STEEP SLOPE AREAS.
 5. A 'J'-HOOK OUTLET MAY BE USED AT WATERBARS TO CONTROL THE FLOW OF RUNOFF. STRAW BALES, SILT SOCKS OR SUPER SILT FENCE TRENCHED IN MAY BE USED AS 'J'-HOOK OUTLETS.
 6. THE POST CONSTRUCTION STORMWATER MANAGEMENT PLAN (PCSM) FOR THE LINEAR PORTION OF THIS PROJECT IS TO RESTORE THE CONSTRUCTION RIGHT-OF-WAY TO ITS ORIGINAL CONTOURS FOLLOWING PIPELINE INSTALLATION AND RESTORATION. THE ENTIRE AREA WILL BE PERMANENTLY RE-VEGETATED OR STABILIZED WITH PERVIOUS MATERIAL. WATER BARS INSTALLED DURING CONSTRUCTION ACTIVITIES WILL REMAIN AS PERMANENT WATER BARS AND ACT AS PCSM BMPs.

SUPPLEMENTAL NOTE:
 1. DO NOT EXCAVATE UPHILL SWALE WITHIN 10' OF CENTERLINE OF PIPE TO MAINTAIN MINIMUM 3' COVER OVER THE PIPE. SLIGHTLY MODIFY WATERBAR FLOWLINE GRADING TO PROMOTE POSITIVE DRAINAGE TO LOW SIDE OF WATERBAR.
 2. ALL WATERBARS ARE PERMANENT EXCEPT FOR THOSE LOCATED IN AGRICULTURAL AREAS, WETLANDS, TRANSPORTATION FACILITIES, AND LAWNS. ALL WATERBARS IN THESE AREAS ARE TO BE REMOVED DURING FINAL RESTORATION.

PERCENT SLOPE	SPACING (FT)
<5	200
5-15	150
>15-30	100
>30	50

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL			
			(WB) WATERBAR			

SECTION A-A

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL			
			(WB.1) WATERBAR LAYOUT DETAIL			

PROVIDE SUMP ALONG CFS 24" WIDE BY 24" DEEP WATERBAR
 10 LINEAR FEET 18" CFS WELL VEGETATED AREA

NOTES:
 1. 10 LINEAR FEET OF 18 INCH COMPOST FILTER SOCK (CFS) SHALL BE INSTALLED WITH ONE END RESTING ON THE WATERBAR AS PER DETAIL CFS, ALLOWING FOR 8 FEET OF EFFECTIVE LENGTH AND A SPECIFIED FLOW THROUGH RATE OF 15 GALLONS PER MINUTE PER LINEAR FOOT. A PASS THROUGH FLOW OF 0.26 CUBIC FEET PER SECOND CAN BE ACCOMMODATED THROUGH THE FILTER SOCK. THIS FLOW RATE IS ADEQUATE FOR 20,000 SQUARE FEET OF DRAINAGE AREA FOR THE 2-YEAR, 24-HOUR STORM, 5 MINUTE TIME OF CONCENTRATION (RATIONAL METHOD).
 2. CONSTRUCTION OF A 24" WIDE AND 24" DEEP SUMP AT THE DISCHARGE END OF THE WATERBAR WILL REDUCE VELOCITY AND PROVIDE A SHEET FLOW CONDITION TO THE CFS. THE SUMP SHALL BE MAINTAINED AND CLEANED OUT WHEN IT BECOMES A MINIMUM OF 12" DEEP. THE SUMP SHALL BE FILLED AND STABILIZED WHEN THE CFS IS REMOVED AFTER SITE STABILIZATION.
 3. TRAFFIC SHALL NOT BE PERMITTED TO CROSS FILTER SOCKS.
 4. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES HALF THE ABOVEGROUND HEIGHT OF THE SOCK AND DISPOSED IN ACCORDANCE WITH WILLIAMS STANDARDS. 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.
 5. BIODEGRADABLE FILTER SOCK SHALL BE REPLACED AFTER 6 MONTHS; PHOTODEGRADABLE SOCKS AFTER 1 YEAR. POLYPROPYLENE SOCKS SHALL BE REPLACED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL			
			(WB.2) COMPOST FILTER SOCK AND SUMP AT WATERBAR DISCHARGE (PADEP APPROVED ALTERNATE DETAIL)			

PLAN N.T.S.
 PROFILE N.T.S.

NOTES:
 1. SEDIMENT BARRIER SHALL BE INSTALLED AT THE BASE OF SLOPES ADJACENT TO ROAD CROSSINGS WHERE VEGETATION IS DISTURBED TO INTERCEPT SURFACE RUNOFF.
 2. PROTECTION FOR SOIL FILES SHALL BE INSTALLED ONLY WHERE SEDIMENT BARRIERS ACROSS THE ENTIRE DISTURBED AREA ARE NOT REQUIRED.
 3. SEDIMENT BARRIERS SHALL REMAIN IN PLACE UNTIL PERMANENT REVEGETATION IS ESTABLISHED.
 4. WATER REMOVED FROM BORE PIT AND RECEIVING PIT SHALL BE FILTERED THROUGH A DEWATERING STRUCTURE OR FILTER BAG.
 5. IF WELL POINTING IS REQUIRED PRIOR TO EXCAVATING BORE PITS, CONTRACTOR SHALL CONSULT WITH THE ENVIRONMENTAL INSPECTOR PRIOR TO COMMENCEMENT OF WORK IN ORDER TO DETERMINE PROPER DEWATERING LOCATION.
 6. CONTRACTOR SHALL BE REQUIRED TO KEEP THE AREA CLEAN OF DEBRIS AT ALL TIMES.
 7. CONTRACTOR MAY ELECT TO UTILIZE SHEET PILING IN ORDER TO STABILIZE BORE PITS.
 8. DEPENDING ON TOPOGRAPHY AND STATE REQUIREMENTS, SEDIMENT BARRIER MAY BE REQUIRED ACROSS THE ENTIRE CONSTRUCTION RIGHT OF WAY AT THE EDGE OF ROAD. IN ADDITION TO THIS DETAIL, REFER TO THE ENVIRONMENTAL ALIGNMENT DRAWINGS FOR PLACEMENT OF SEDIMENT BARRIERS.

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL			
			(WBX.1) BORED WATERBODY CROSSING			



REVISIONS						
NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	08/26/2015	BL	ISSUED FOR PADEP SUBMITTAL	W0572385	JLK	SMK
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
2	Oct. 2016	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1	W0572385	JLK	SMK
3	April 2017	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #2	W0572385	JLK	SMK

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
 ATLANTIC SUNRISE PROJECT

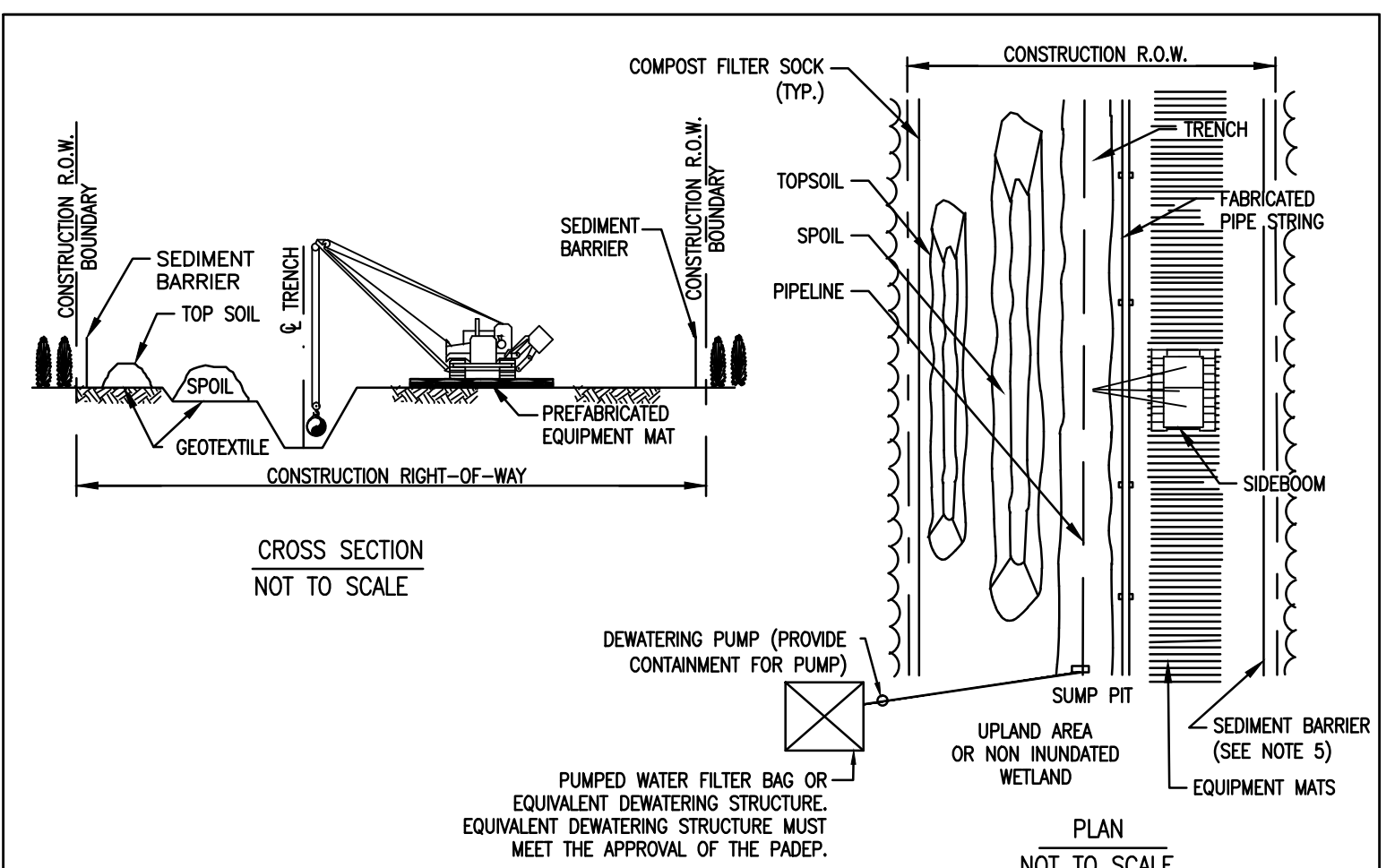
BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET

BEST MANAGEMENT PRACTICES DETAILS

DRAWN BY:	ELZ	DATE:	05/15/15	ISSUED FOR BID:	SCALE:
CHECKED BY:	JLK	DATE:	07/02/15	ISSUED FOR CONSTRUCTION:	REVISION:
APPROVED BY:	SMK	DATE:	07/08/15	DRAWING NUMBER:	ASR-BMP

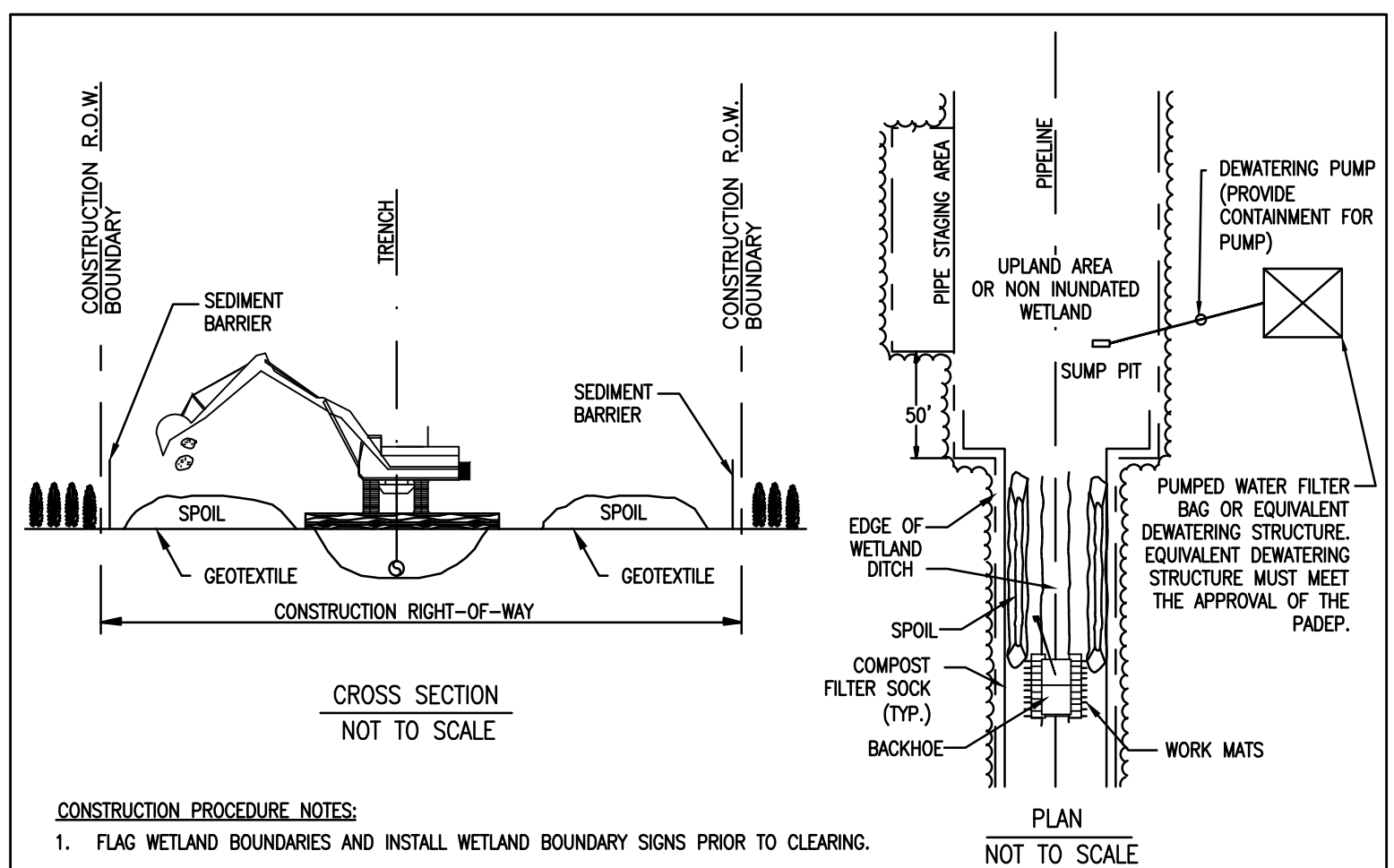
WILLIAMS GAS PIPELINE

SHEET 10 OF 11



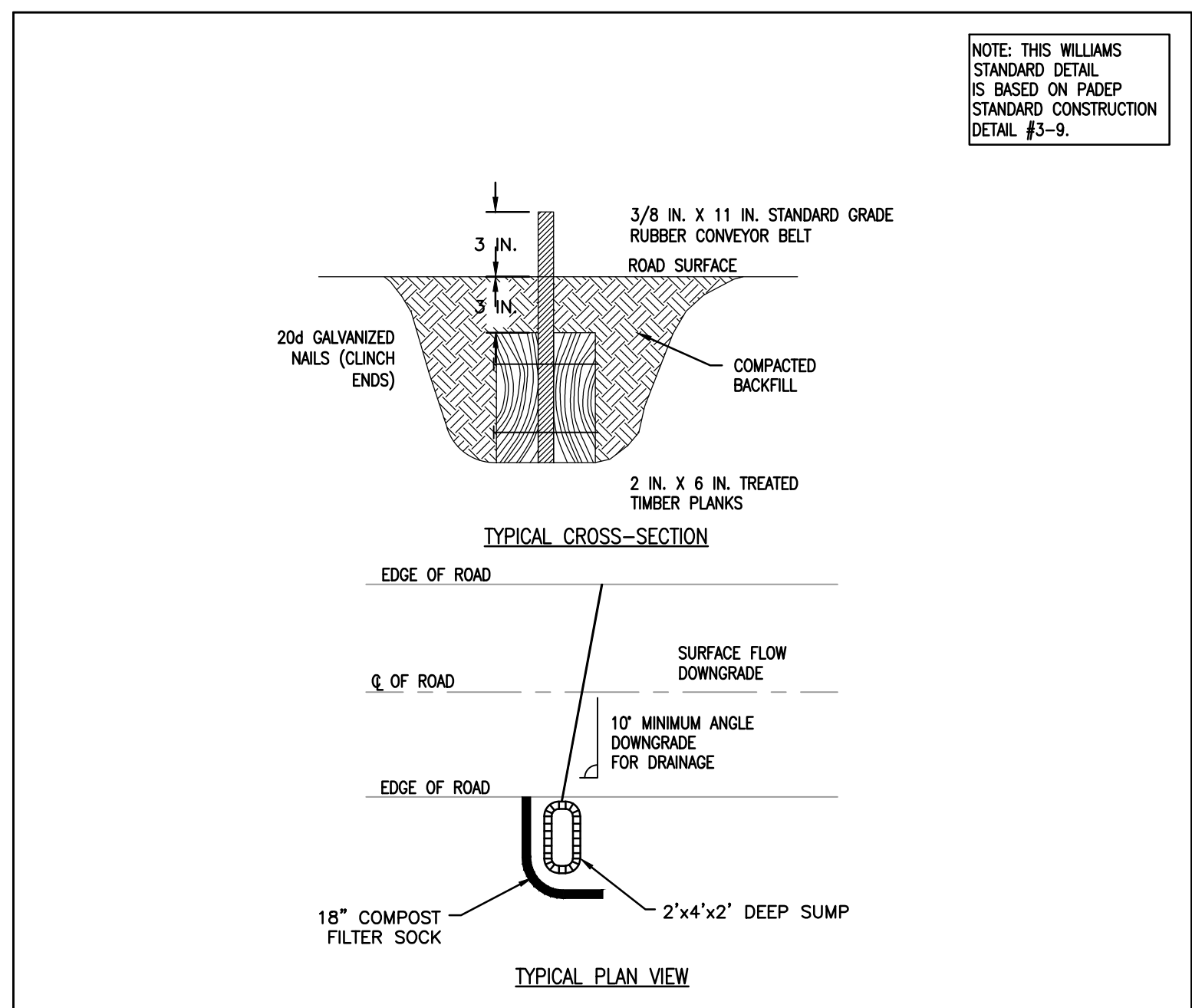
- CONSTRUCTION PROCEDURE NOTES:**
1. FLAG WETLAND BOUNDARIES AND INSTALL BOUNDARY SIGNS PRIOR TO CLEARING.
 2. NO OVERNIGHT PARKING OR REFUELING OF MOBILE EQUIPMENT IS ALLOWED WITHIN 100 FEET OF WETLAND. PLACE "NO FUELING" SIGN POSTS 100 FEET BACK FROM WETLAND BOUNDARY.
 3. INSTALL TEMPORARY SLOPE BREAKERS UPSLOPE OF WETLAND BOUNDARIES AS SHOWN ON DRAWINGS AND SPECIFICATIONS.
 4. INSTALL PREFABRICATED EQUIPMENT MATS THROUGH ENTIRE WETLAND AREA ON THE WORKING SIDE OF THE CONSTRUCTION CORRIDOR.
 5. AVOID ADJACENT WETLANDS. INSTALL SEDIMENT BARRIERS AT OUTER BOUNDARIES OF THE WETLAND AND ALONG BOTH WETLAND EDGES. INSTALL SEDIMENT BARRIERS ALONG THE EDGE OF THE SPOIL SIDE OF THE CONSTRUCTION CORRIDOR THROUGH THE WETLAND AND ALONG THE DOWN SLOPE EDGE OF THE WETLAND. IF THE DOWN SLOPE EDGE OF THE WETLAND IS THE SPOIL SIDE, THEN SEDIMENT BARRIERS ARE NOT REQUIRED ON THE WORKING SIDE OF THE CORRIDOR UNLESS EQUIPMENT TRAVERSING THROUGH THE WETLAND CAUSES SPOIL AND SEDIMENT TO EXIT THE CONSTRUCTION CORRIDOR.
 6. LIMIT PULLING OF TREE STUMPS AND GRADING ACTIVITIES TO DIRECTLY OVER THE TRENCH LINE. DO NOT GRADE OR REMOVE STUMPS OR ROOT SYSTEMS FROM THE REST OF THE RIGHT-OF-WAY IN WETLANDS UNLESS THE CHIEF INSPECTOR AND ENVIRONMENTAL INSPECTOR DETERMINE THAT SAFETY RELATED CONSTRUCTION CONSTRAINTS REQUIRE REMOVAL OF TREE STUMPS FROM UNDER THE WORKING SIDE OF THE RIGHT-OF-WAY.
 7. CONDUCT TRENCH LINE TOPSOIL STRIPPING (IF TOPSOIL IS NOT SATURATED). SALVAGE TOPSOIL TO ACTUAL DEPTH OR A MAXIMUM DEPTH OF 12 INCHES, AS DETERMINED BY THE ENVIRONMENTAL INSPECTOR. SEGREGATED TOPSOIL PILE MAY BE LOCATED ON SPOIL SIDE, AS REQUIRED.
 8. LEAVE HARD PLUGS AT THE EDGES OF WETLAND UNTIL JUST PRIOR TO TRENCHING.
 9. TRENCHING THROUGH WETLANDS MAY PROCEED WHEN THE PIPE SECTION IS FABRICATED AND READY TO LAY. ONCE TRENCHING COMMENCES, CONSTRUCTION THROUGH THE WETLAND IS TO PROCEED CONTINUOUSLY UNTIL THE CROSSING IS COMPLETED, BACK FILLED AND RESTORED IN ORDER TO MINIMIZE THE LENGTH OF TIME THE TRENCH IS OPEN.
 10. PIPE SECTION MAY BE FABRICATED WITHIN THE WETLAND ADJACENT TO PIPE TRENCH OR IN STAGING AREA OUTSIDE THE WETLAND AND WALKED IN. NO CONCRETE COATING ACTIVITY WITHIN 100 FEET OF WETLAND BOUNDARY UNLESS APPROVED BY ENVIRONMENTAL INSPECTOR.
 11. LOWER-IN PIPE. PRIOR TO BACK FILLING TRENCH, INSTALL TRENCH PLUGS IN ACCORDANCE WITH DRAWINGS AND SPECIFICATIONS.
 12. RESTORE GRADE TO NEAR PRE-CONSTRUCTION TOPOGRAPHY, REPLACE TOPSOIL AND INSTALL PERMANENT EROSION CONTROL.
 13. REMOVE PREFABRICATED MATS FROM WETLANDS UPON COMPLETION.
 14. IF WETLAND IS SATURATED, THE TOPSOIL STOCKPILE SHALL NOT OCCUR AS SHOWN IN DETAIL.

NO.	DATE	BY	REVISION DESCRIPTION	W.D.	NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL				
			(WCC-1) WETLAND INSTALLATION PROCEDURE				



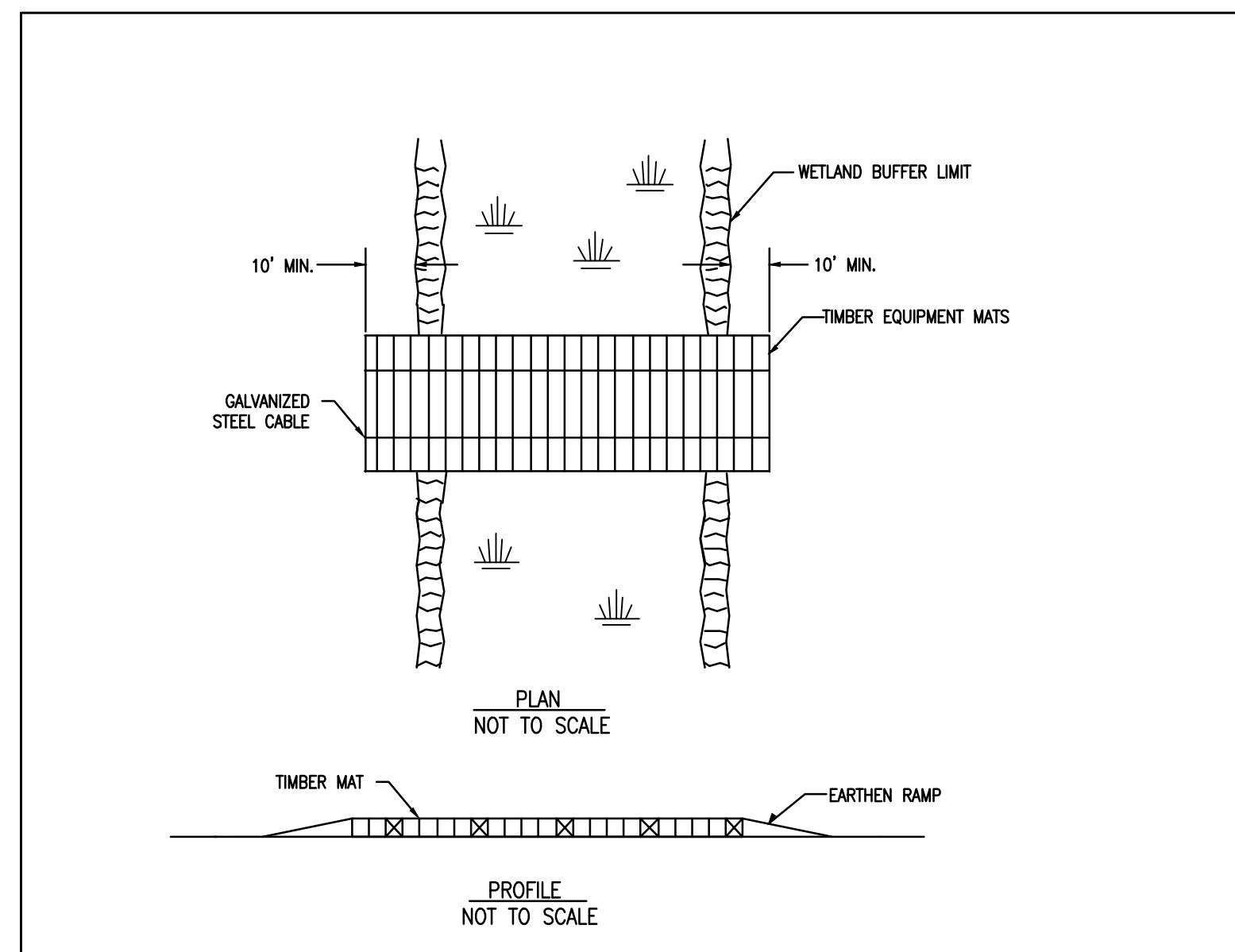
- CONSTRUCTION PROCEDURE NOTES:**
1. FLAG WETLAND BOUNDARIES AND INSTALL WETLAND BOUNDARY SIGNS PRIOR TO CLEARING.
 2. NO OVERNIGHT PARKING OR REFUELING OF MOBILE EQUIPMENT IS ALLOWED WITHIN 100 FEET OF WETLAND. PLACE "NO FUELING" SIGN POSTS 100 FEET BACK FROM WETLAND BOUNDARY.
 3. INSTALL TEMPORARY SLOPE BREAKERS UPSLOPE OF WETLAND BOUNDARIES AS SHOWN ON DRAWINGS AND SPECIFICATIONS.
 4. AVOID ADJACENT WETLANDS. INSTALL SEDIMENT BARRIERS AT OUTER BOUNDARIES OF WETLAND AND ALONG BOTH WETLAND EDGES.
 5. LIMIT PULLING OF TREE STUMPS AND GRADING ACTIVITIES TO DIRECTLY OVER TRENCH LINE. DO NOT GRADE OR REMOVE STUMPS OR ROOT SYSTEMS FROM THE REST OF THE RIGHT-OF-WAY IN WETLANDS UNLESS THE CHIEF INSPECTOR AND ENVIRONMENTAL INSPECTOR DETERMINE THAT SAFETY RELATED CONSTRUCTION CONSTRAINTS REQUIRE REMOVAL OF TREE STUMPS FROM UNDER THE WORKING SIDE OF THE RIGHT-OF-WAY.
 6. TOPSOIL STRIPPING SHALL NOT BE REQUIRED IN SATURATED SOIL CONDITIONS.
 7. UTILIZE AMPHIBIOUS EXCAVATORS (PONTON MOUNTED BACKHOES) OR TRACKED BACKHOES SUPPORTED BY PREFABRICATED EQUIPMENT MATS OR FLOATS, TO EXCAVATE TRENCH. IF PREFABRICATED EQUIPMENT MATS ARE USED FOR STABILIZATION, THE BACKHOE SHALL GRADUALLY MOVE ACROSS THE WETLAND BY MOVING THE MATS FROM IMMEDIATELY BEHIND TO IMMEDIATELY IN FRONT OF THE BACKHOE'S PATH.
 8. FABRICATE PIPE IN A STAGING AREA OUTSIDE THE TYPE III WETLAND. NO CONCRETE COATING ACTIVITY WITHIN 100 FEET OF WETLAND BOUNDARY, UNLESS APPROVED BY ENVIRONMENTAL INSPECTOR.
 9. LEAVE HARD PLUGS AT THE EDGE OF "INUNDATED WETLAND UNTIL JUST PRIOR TO PIPE PLACEMENT.
 10. FLOAT PIPE IN PLACE, LOWER-IN, INSTALL TRENCH PLUGS, AND BACKFILL.
 11. RESTORE GRADE TO NEAR PRE-CONSTRUCTION TOPOGRAPHY AND INSTALL PERMANENT EROSION CONTROL.
 12. REMOVE ANY MATS UTILIZED TO SUPPORT AMPHIBIOUS EQUIPMENT FROM WETLANDS UPON COMPLETION.
 13. WETLANDS CROSSED USING PUSH/PULL METHOD TEND TO BE TOO WET FOR EFFECTIVE SEEDING. HOWEVER, IF THE SITE IS DRY ENOUGH AND IF DIRECTED BY THE ENVIRONMENTAL INSPECTOR, THE RIGHT-OF-WAY SHALL BE SEEDDED.

NO.	DATE	BY	REVISION DESCRIPTION	W.D.	NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL				
			(WCC-3) "INUNDATED WETLAND" INSTALLATION PROCEDURE				



- NOTES:**
1. DEFLECTORS SHALL BE USED ON TEMPORARY ACCESS ROADS WITH SLOPES GREATER THAN 10 PERCENT. MAXIMUM DEFLECTOR SPACING SHALL BE 100 FEET.
 2. DEFLECTOR SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT.
 3. ACCUMULATED SEDIMENT SHALL BE REMOVED FROM DEFLECTOR WITHIN 24 HOURS OF INSPECTION.
 4. BELT SHALL BE REPLACED WHEN WORN AND NO LONGER EFFECTIVE.
 5. INSTALL A 2' WIDE BY 4' LONG BY 2' DEEP SUMP AND 18" COMPOST FILTER SOCK ON THE DOWNHILL SIDE OF THE WATER DEFLECTOR. THE ORIENTATION OF THE COMPOST FILTER SOCK WILL VARY BASED ON THE EXISTING GROUND ELEVATION. INSTALL THE COMPOST FILTER SOCK PARALLEL TO EXISTING CONTOURS.

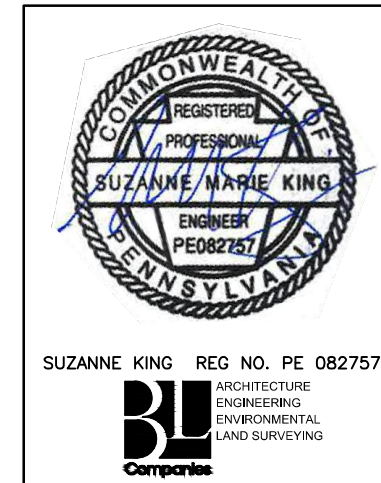
NO.	DATE	BY	REVISION DESCRIPTION	W.D.	NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL				
			(WD) WATER DEFLECTOR				



- NOTES:**
1. PERIODICALLY CHECK INSTALLATION AND REMOVE BUILD-UP OF SEDIMENT OR DEBRIS.
 2. MATERIALS PLACED IN WETLANDS SHALL BE COMPLETELY REMOVED DURING FINAL CLEAN-UP. REMOVAL OF THIS STRUCTURE IS NOT CONTINGENT UPON ESTABLISHMENT OF PERMANENT VEGETATION.
 3. IF A WATERBODY IS LOCATED WITHIN A WETLAND SYSTEM, EXTEND TIMBER EQUIPMENT MATS TO THE BRIDGE EQUIPMENT CROSSING (BEC) USED TO CROSS THE WATERBODY IN ORDER TO ALLOW FOR CONTINUOUS TIMBER EQUIPMENT MAT COVERAGE THROUGH THE WETLAND AND WATERBODY AREA.
 4. USE ADDITIONAL TIMBER MAT LAYERS TO RAISE CROSSING ABOVE GRADE WHERE POOR SOIL CONDITIONS EXIST.
 5. TIMBER EQUIPMENT MATS SHALL EXTEND A MINIMUM OF 10 FEET OUTSIDE OF THE WETLAND BOUNDARIES.
 6. INSTALL EARTHEN RAMP APPROACHES TO TIMBER EQUIPMENT MATS. EARTHEN RAMP SHALL BE CONSTRUCTED OF UPLAND MATERIAL, TOP SOIL SHALL NOT BE USED TO CONSTRUCT EARTHEN RAMP.
 7. A GEOTEXTILE UNDERLAYMENT SHALL BE USED UNDER THE WOOD MAT.

NO.	DATE	BY	REVISION DESCRIPTION	W.D.	NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL				
			(WEC) WETLAND EQUIPMENT CROSSING				

Drawn By & Date: Idelo Apr 27, 2017 - 10:43am
 Drawing Location & Name: G:\08514\14C\14C4909\DWG\BMPs&DETAILS\PL_DNT14C4909(205)_SC-BMP-11.dwg



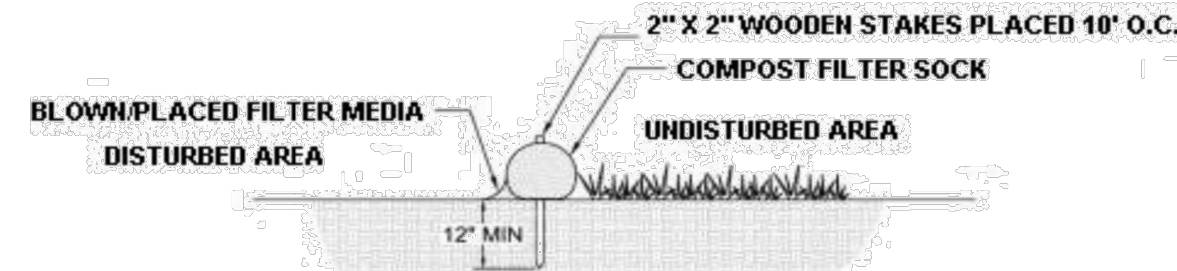
REVISIONS							
NO.	DATE	BY	DESCRIPTION	W.D.	NO.	CHK.	APP.
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1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK	
2	Oct. 2016	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1	W0572385	JLK	SMK	
3	April 2017	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #2	W0572385	JLK	SMK	

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC ATLANTIC SUNRISE PROJECT			
BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET			
BEST MANAGEMENT PRACTICES DETAILS			
DRAWN BY:	ELZ	DATE:	05/15/15
CHECKED BY:	JLK	DATE:	07/02/15
APPROVED BY:	SMK	DATE:	07/08/15
ISSUED FOR:	ISSUED FOR CONSTRUCTION	REVISION:	J
DRAWING NUMBER:	ASR-BMP	SHEET:	11
		OF:	11



TABLE 1: SEDIMENT BARRIER SUMMARY

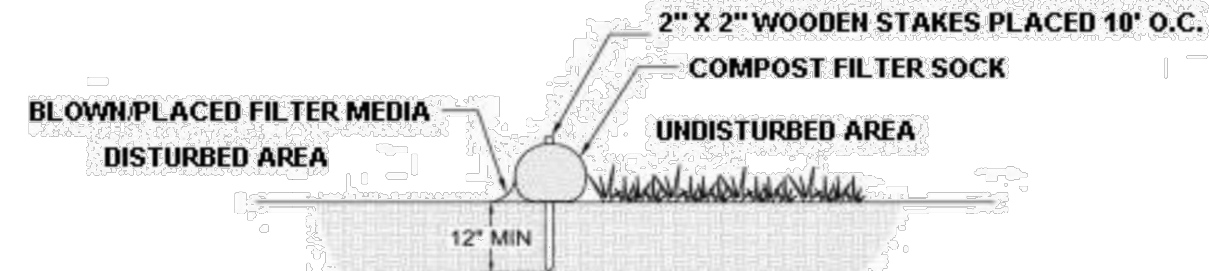
E&S WORKSHEET #1
Compost Filter Sock
 PROJECT NAME: ATLANTIC SUNRISE PROPOSED GAS PIPELINE
 LOCATION: SCHUYLKILL COUNTY
 PREPARED BY: ESS DATE: 03/20/2017
 CHECKED BY: JLK DATE: 04/10/2017



MILEPOST	Dia. In.	LOCATION			SLOPE PERCENT	SLOPE LENGTH ABOVE BARRIER (FT)
		BEGIN STA.	END STA.	TYPE		
64	12	3394+75	to 3404+25	Road	6	145
	12	3404+25	to 3404+50	Road	6	172
	24	3405+00	to 3408+00	Road	4	550
	12	3408+00	to 3410+00	Road	7	135
	24	3410+00	to 3413+75	Road	7	375
	32	3420+25	to 3427+25	Road	7	495
	32	3430+50	to 3431+75	Road	21	55
	12	3431+25	to 3432+25	Road	8	123
	12	3432+25	to 3432+50	Road	7	65
	12	3432+50	to 3432+75	Road	2	215
	12	3432+75	to 3522+09	Stream/Wetland	9	35
M-0474	12	0+00	to 3525+00	Stream/Wetland	9	35
	18	3+00	to 3+00	Road	27	103
	18	3+00	to 3+00	Road	12	125
	32	3440+50	to 3443+75	Road	9	411
	24	3442+75	to 3443+75	Road	15	90
	18	3444+00	to 3444+00	Road	25	88
	12	3446+00	to 3447+00	Road	5	218
	18	3447+50	to 3449+00	Road	3	387
	18	3449+50	to 3451+00	Stream/Wetland/Waterbody	3	425
	12	3451+25	to 3453+00	Road	2	325
	12	3452+75	to 3453+50	Stream	3	366
	12	3453+50	to 3460+25	Road	4	100
	12	3460+25	to 3461+00	Stream/Wetland	7	40
	12	3461+00	to 3462+75	Road	4	207
	12	3463+00	to 3463+00	Road	3	45
	18	3470+25	to 3472+00	Road	11	148
	12	3472+75	to 3473+75	Road	24	31
	12	3474+00	to 3475+75	Road	15	40
M-0177	12	3475+75	to 3+50	Road	11	115
	18	2+25	to 5+00	Road	5	268

- Reroute Area
 SOURCE: Pennsylvania Erosion and Sediment Pollution Control Manual, Page 372

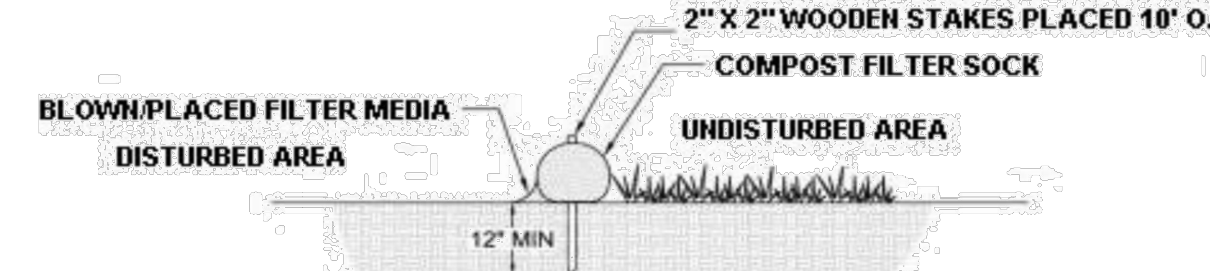
E&S WORKSHEET #1
Compost Filter Sock
 PROJECT NAME: ATLANTIC SUNRISE PROPOSED GAS PIPELINE
 LOCATION: SCHUYLKILL COUNTY
 PREPARED BY: ESS DATE: 03/20/2017
 CHECKED BY: JLK DATE: 04/10/2017



MILEPOST	Dia. In.	LOCATION			SLOPE PERCENT	SLOPE LENGTH ABOVE BARRIER (FT)
		BEGIN STA.	END STA.	TYPE		
M-0221	18	0+00	to 3+75	Road	5	268
	12	3+75	to 4+00	Road	4	127
	18	4+00	to 8+62	Road	10	195
M-0301	18	0+00	to 3+00	Road	10	195
	18	3+25	to 4+25	Wetland/Stream	27	30
	12	4+50	to 5+00	Road	15	55
	12	5+00	to 5+25	Road	8	175
M-0221	18	5+75	to 18+25	Road	8	202
	24	18+25	to 22+50	Road	11	130
	32	22+50	to 3517+00	Road	9	404
	12	3517+00	to 3522+09	Stream/Wetland	8	120
	18	3525+00	to 3525+50	Road	14	170
	32	3534+00	to 3535+50	Road	4	691
M-0196	12	0+00	to 12+25	Road	4	667
	12	1+75	to 11+00	Road	7	100
	24	13+50	to 18+00	Road	7	356
67	12	18+50	to 21+25	Road	3	292
	12	3553+00	to 3555+50	Road	2	280
	12	3557+75	to 3559+00	Road	3	77
	12	3561+25	to 3567+00	Road	5	191
	18	3567+00	to 3568+25	Road	31	47
	18	3567+50	to 3568+75	Road	9	167
	12	3568+50	to 3569+75	Stream/Wetland	2	30
	12	3569+25	to 3570+25	Road	26	25
	18	3570+25	to 3570+25	Road	15	126
	18	3577+00	to 3577+25	Road	18	107
	18	3577+25	to 3582+00	Road	9	166
	24	3582+25	to 3585+00	Road	10	110
	24	3585+00	to 3585+75	Wetland	10	110
68	24	3585+75	to 3590+50	Wetland	25	110

- Reroute Area
 SOURCE: Pennsylvania Erosion and Sediment Pollution Control Manual, Page 372

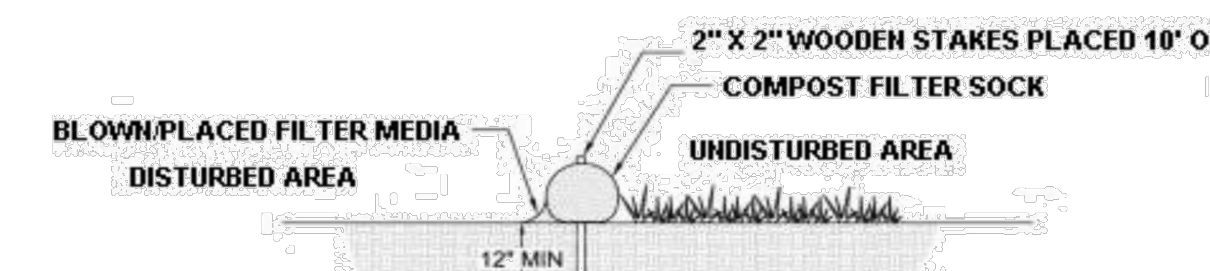
E&S WORKSHEET #1
Compost Filter Sock
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 LOCATION: SCHUYLKILL COUNTY
 PREPARED BY: ESS DATE: 03/20/2017
 CHECKED BY: JLK DATE: 04/10/2017



MILEPOST	Dia. In.	LOCATION			SLOPE PERCENT	SLOPE LENGTH ABOVE BARRIER (FT)
		BEGIN STA.	END STA.	TYPE		
68	24	3590+50	to 3596+00	Road	18	212
	12	3596+50	to 3602+00	Road	9	134
	12	3603+25	to 3609+00	Road	6	154
	12	3609+00	to 3610+25	Stream	10	87
	18	3610+25	to 3612+50	Stream	15	184
	18	3612+00	to 3618+00	Stream	105	17
	18	3619+00	to 3624+25	Stream	13	128
	24	3624+75	to 3633+50	Road	25	142
	12	3633+50	to 3634+50	Road	10	20
	24	3643+75	to 3644+00	Stream	30	84
69	32	3643+75	to 3646+50	Stream	20	214
	18	3647+00	to 3647+25	Road	15	120
	18	3646+75	to 3648+00	Stream	10	125
	18	3647+75	to 3650+50	Stream	12	132
	12	3650+50	to 3651+75	Road	8	131
	12	3651+75	to 3652+25	Road	8	134
	12	3652+25	to 3653+25	Road	9	100
M-0223	12	0+00	to 2+65	Road	9	100
	24	3656+25	to 3670+25	Road	27	100
70	32	3670+75	to 3704+75	Road	25	175
	18	3705+00	to 3718+75	Road	12	143
	18	3719+00	to 3727+25	Road	4	384
	24	3727+00	to 3733+00	Road	48	65
	24	3733+00	to 3733+50	Road	35	70
	24	3733+50	to 3735+50	Road	34	70
	12	3735+50	to 3736+00	Road	30	20
	18	3736+00	to 3739+75	Road	21	124
	24	3738+00	to 3740+00	Road	15	204
M-0181	18	0+50	to 4+00	Road	12	131
	12	5+00	to 5+50	Road	5	192
	24	6+25	to 7+25	Road	20	152

- Reroute Area
 SOURCE: Pennsylvania Erosion and Sediment Pollution Control Manual, Page 372

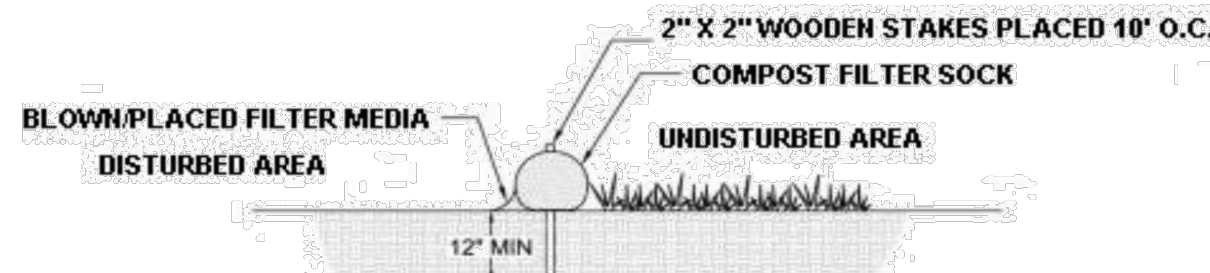
E&S WORKSHEET #1
Compost Filter Sock
 PROJECT NAME: ATLANTIC SUNRISE PROPOSED GAS PIPELINE
 LOCATION: SCHUYLKILL COUNTY
 PREPARED BY: ESS DATE: 03/20/2017
 CHECKED BY: JLK DATE: 04/10/2017



MILEPOST	Dia. In.	LOCATION			SLOPE PERCENT	SLOPE LENGTH ABOVE BARRIER (FT)
		BEGIN STA.	END STA.	TYPE		
	24	3826+25	to 3829+75	Road	39	68
	24	3829+75	to 3831+50	Road	23	114
	12	3831+75	to 3832+00	Road	5	107
	24	3832+00	to 3835+75	Road	5	163
	18	3836+00	to 3522+09	Road	14	150
	24	3836+25	to 3836+50	Road	14	116
	12	3836+50	to 3837+00	Stream	12	100
	24	3836+75	to 3840+00	Road	8	132
	18	3838+00	to 3844+00	Road	33	47
	24	3844+00	to 3847+50	Road	24	151
	12	3847+50	to 3850+25	Road	6	178
73	24	3848+25	to 3855+75	Road	20	94
	18	3855+75	to 3859+50	Road	8	188
	24	3859+25	to 3861+50	Road	7	253
	18	3860+75	to 3861+75	Road	16	103
	12	3862+00	to 3864+50	Road	4	190
	24	3864+50	to 3868+00	Road	8	294
	18	3865+00	to 3871+00	Road	5	277
	18	3869+50	to 3871+50	Road	8	229
	24	3871+50	to 3875+50	Road	19	155
	12	3876+00	to 3876+00	Road	2	157
	12	3877+00	to 3877+00	Road	3	165
	24	3877+25	to 3878+00	Road	12	204
	18	3878+25	to 3878+50	Stream	15	132
	24	3879+00	to 3882+25	Road	4	227
	12	3882+50	to 3884+50	Wetland/Stream	3	218
	12	3883+75	to 3884+50	Road	3	138
	12	3885+00	to 3885+50	Road	3	70
74	18	3885+75	to 3907+25	Road/Wetland	9	217
	24	3907+25	to 3909+75	Road	24	149
	18	3909+75	to 3910+25	Wetland	28	58

- Reroute Area
 SOURCE: Pennsylvania Erosion and Sediment Pollution Control Manual, Page 372

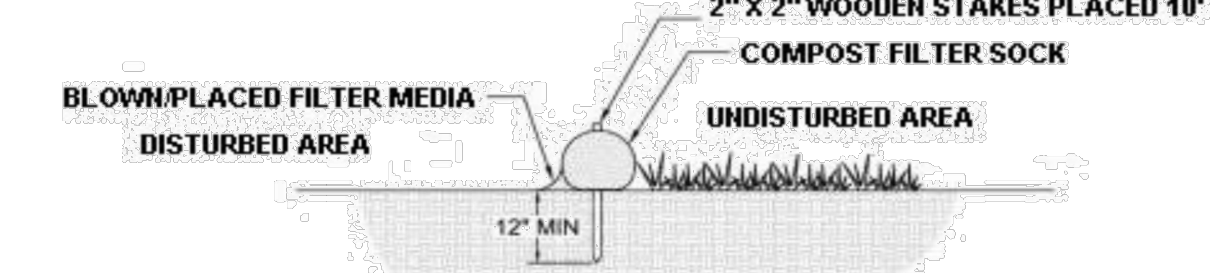
E&S WORKSHEET #1
Compost Filter Sock
 PROJECT NAME: ATLANTIC SUNRISE PROPOSED GAS PIPELINE
 LOCATION: SCHUYLKILL COUNTY
 PREPARED BY: ESS DATE: 03/20/2017
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MILEPOST	Dia. In.	LOCATION			SLOPE PERCENT	SLOPE LENGTH ABOVE BARRIER (FT)
		BEGIN STA.	END STA.	TYPE		
24	3826+25	to 3829+75	Road	39	68	
24	3829+75	to 3831+50	Road	23	114	
12	3831+75	to 3832+00	Road	5	107	
24	3832+00	to 3835+75	Road	5	163	
18	3836+00	to 3522+09	Road	14	150	
24	3836+25	to 3836+50	Road	14	116	
12	3836+50	to 3837+00	Stream	12	100	
24	3836+75	to 3840+00	Road	8	132	
18	3838+00	to 3844+00	Road	33	47	
24	3844+00	to 3847+50	Road	24	151	
12	3847+50	to 3850+25	Road	6	178	
24	3848+25	to 3855+75	Road	20	94	
18	3855+75	to 3859+50	Road	8	188	
24	3856+25	to 3861+50	Road	7	253	
18	3860+75	to 3861+75	Road	16	103	
12	3862+00	to 3864+50	Road	4	190	
24	3864+50	to 3868+00	Road	8	294	
18	3865+00	to 3871+00	Road	5	277	
18	3869+50	to 3871+50	Road	8	229	
24	3871+50	to 3875+50	Road	19	155	
12	3876+00	to 3876+00	Road	2	157	
24	3877+00	to 3877+00	Road	3	165	
24	3877+25	to 3878+00	Road	12	204	
18	3878+25	to 3878+50	Stream	15	132	
24	3879+00	to 3882+25	Road	4	227	
12	3882+50	to 3884+50	Wetland/Stream	3	218	
12	3883+75	to 3884+50	Road	3	138	
12	3885+00	to 3885+50	Road/Wetland	3	70	
18	3885+75	to 3907+25	Road	9	217	
24	3907+25	to 3909+75	Road	24	149	
18	3909+75	to 3910+25	Wetland	28	58	

- Reroute Area
 SOURCE: Pennsylvania Erosion and Sediment Pollution Control Manual, Page 372

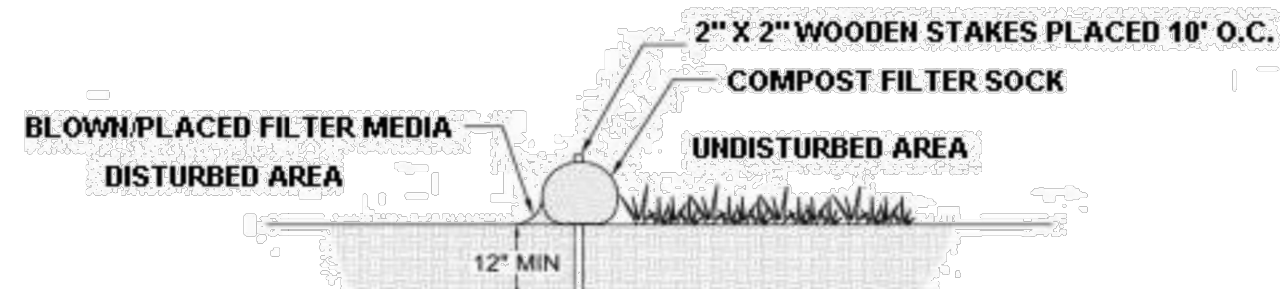
E&S WORKSHEET #1
Compost Filter Sock
 PROJECT NAME: ATLANTIC SUNRISE PROPOSED GAS PIPELINE
 LOCATION: SCHUYLKILL COUNTY
 PREPARED BY: ESS DATE: 03/20/2017
 CHECKED BY: JLK DATE: 04/10/2017



MILEPOST	Dia. In.	LOCATION			SLOPE PERCENT	SLOPE LENGTH ABOVE BARRIER (FT)
		BEGIN STA.	END STA.	TYPE		
24	3910+50	to 3913+50	Road	6	271	
18	3913+75	to 3914+75	Road	21	118	
24	3914+75	to 3916+00	Wetland	29	98	
12	3916+00	to 3916+41	Railroad	4	26	
12	3916+00	to 3916+41	Railroad	4	26	
M-						

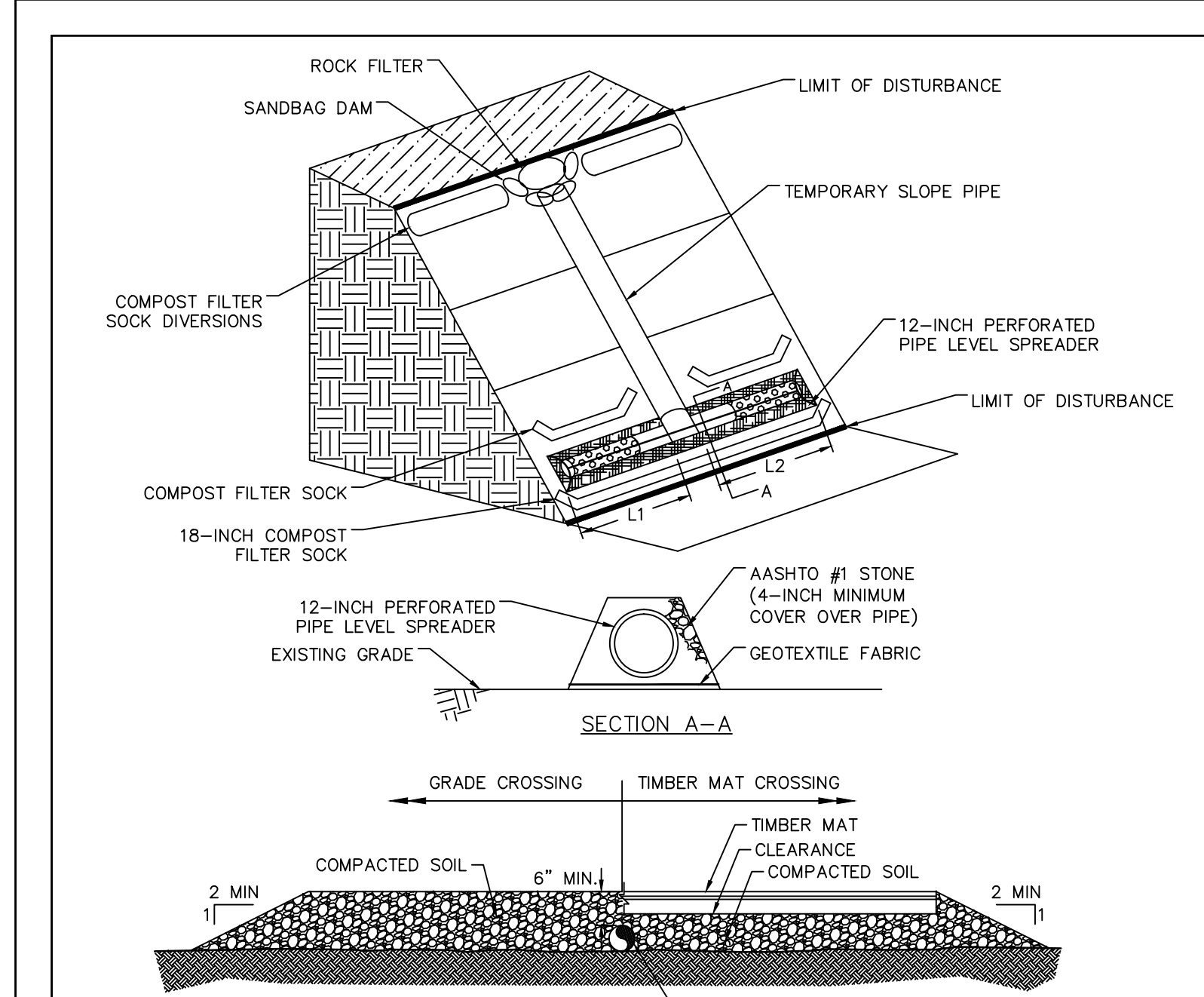
TABLE 1: SEDIMENT BARRIER SUMMARY

E&S WORKSHEET #1
Compost Filter Sock
PROJECT NAME: ATLANTIC SUNRISE PROPOSED GAS PIPELINE
LOCATION: SCHUYLKILL COUNTY
PREPARED BY: ESS DATE: 03/20/2017
CHECKED BY: JLK DATE: 04/10/2017



MILEPOST	Dia. In.	LOCATION		SLOPE PERCENT	SLOPE LENGTH ABOVE BARRIER (FT)
		BEGIN STA.	END STA.		
M-0194	12	5+25	6+50	19	125
	12	6+50	7+25	14	10
	24	7+00	9+50	26	109
	12	9+50	9+75	5	11
	24	11+00	21+50	41	50
	24	21+50	27+00	5	422
	12	27+00	27+50	1	186
	12	27+25	33+00	10	146
	18	33+00	39+00	17	130
	12	39+25	41+25	9	148
M-0247	12	41+25	0+50	20	40
	12	0+75	1+50	9	80
	24	5+50	15+25	36	51
	32	15+75	17+00	6	532
	32	17+00	18+75	45	72

- Reroute Area
SOURCE: Pennsylvania Erosion and Sediment Pollution Control Manual, Page 372



- NOTES:
- LEVEL SPREADER PIPES TO BE 12-INCH J.M. EAGLE CORR PE PERFORATED PIPE (OR APPROVED EQUAL) AND SHALL BE CAPPED AT BOTH ENDS.
 - LEVEL SPREADER TO BE INSTALLED PARALLEL TO CONTOURS AT LEVEL ELEVATION.
 - PERFORATED PIPE TO BE UNDERLAIN WITH GEOTEXTILE FABRIC AND COVERED WITH AASHTO NO. 1 STONE. MINIMUM STONE COVER SHALL BE 4-INCHES OVER PERFORATED PIPE.
 - ALL LEVEL SPREADER STONE WILL BE REMOVED AND DISBURTED AREA TO BE RESTORED IN ACCORDANCE WITH E&S PLAN.
 - LEVEL SPREADERS TO BE INSTALLED AT ALL TEMPORARY SLOPE PIPE DISCHARGES AT LOW POINTS OF DIVERSION BERM.
 - LEVEL SPREADERS TO BE INSPECTED WEEKLY OR AFTER MEASURABLE RAINFALL EVENT AND SHALL BE MAINTAINED IN GOOD CONDITION AT ALL TIMES.
 - TOTAL REQUIRED LEVEL SPREADER LENGTH TO BE L1 + L2.
 - DESIGN AND CALCULATIONS PROVIDED BY STV ENERGY SERVICES, INC.

NO.	DATE	BY	REVISION DESCRIPTION	NO.	CHK.	APP.
1	08/28/2015	BL	ISSUED FOR PADEP SUBMITTAL	W0572385	JLK	SMK
2	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
3	Oct. 2016	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1	W0572385	JLK	SMK
4	April 2017	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #2	W0572385	JLK	SMK

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
STANDARD ENVIRONMENTAL DETAIL
CLEAN WATER CROSSING (TEMP. LEVEL SPREADER)

TABLE 2: TEMPORARY CLEAN WATER DIVERSION SUMMARY

MILE POST	TEMPORARY DIVERSION SUMMARY - SCHUYLKILL COUNTY, PENNSYLVANIA										WATERBODY**			TEMP. PIPE (CLEAN WATER) CROSSING			
	DIVERSION ID	DIVERSION TYPE	BOTTOM WIDTH B (FT)	DEPTH D (FT)	TOP WIDTH W (FT)	Z1 (FT)	Z2 (FT)	TEMPORARY LINING	PERMANENT LINING	DISCHARGE TYPE	INITIAL AND TERMINAL WIDTH (FT)	LENGTH (FT)	RIP RAP SIZE*** (IN.)	RIP RAP THICKNESS (IN.)	R.O.W. SLOPE (%)	Q (CFS)	# OF 12" DIAMETER PIPES
64	64.03	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	8	3.68	1
65	65.01	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	2	0.8	1
	65.02	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	7	2.4	1
66	66.01	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	13	2.4	1
	66.02	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	6	1.6	1
	66.03	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	13	2.21	1
67	67.01	FILTER SOCK	0	1.6	9.5	0	6	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	5	3.68	1
	67.02	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	18	12.96	1
	67.03	SWALE	2	2	10	2	2	SC250	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	11	13.6	1
	67.04A	SWALE	2	2	10	2	2	P550	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	8	12.96	2
	67.04B	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	14	8	1
	67.04C	SWALE	2	2	10	2	2	C125	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	16	8	1
	67.05A	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	23	6.72	1
	67.05B	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	25	7.2	1
	67.05C	SWALE	2	2	10	2	2	SC250	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	26	7.2	1
	67.05D	SWALE	2	2	10	2	2	C125	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	25	6.88	1
68	68.01	SWALE	2	2	10	2	2	W3000	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	12	12.16	1
	68.02	SWALE	2	2	10	2	2	SC250	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	13	16.32	2
	68.03	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	8	6.24	1
	68.04	SWALE	2	2.5	12	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	12	24.64	2
	68.05	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	5	9.76	2
	68.06	SWALE	2	2	10	2	2	W3000	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	8	26.4	3
	68.07	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	6	6.88	1
	68.08	SWALE	2	2.5	12	2	2	SC250	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	7	36	3
	68.09	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	3	6.08	1
	68.10	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	7	18.88	2
	68.11	SWALE	2	2	10	2	2	SC250	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	11	19.84	2
	68.12	SWALE	2	2	10	2	2	C125	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	13	8	1
	68.13A	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	9	7.68	1
	68.13B	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	12	7.52	1
	68.13C	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	16	6.88	1
	68.13D	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	20	6.4	1
	68.13E	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	23	6.24	1
	68.13F	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	20	5.76	1
	68.14	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	29	10.24	1
69	69.01	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	14	7.84	1
	69.02	SWALE	2	2	10	2	2	SC250	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	12	47.2	4
	69.03A	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	8	5.92	1
	69.03B	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	7	3.36	1
	69.04A	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	8	8	1
	69.04B	SWALE	2	2	10	2	2	SC250	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	9	4.48	1
	69.05	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	7	6.4	1
	69.06	FILTER SOCK	0	1.6	7.9	0	5	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	20	5.6	1
	69.07A	FILTER SOCK	0	1.6	7.9	0	5	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	30	3.36	1
	69.07B	SWALE	2	2	10	2	2	SC250	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	23	6.08	1
70	70.01	SWALE	2	3	14	2	2	SC250	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	16	97.12	6
	70.02	SWALE	2	2	10	2	2	SC250	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	17	24.96	2
72	72.01	FILTER SOCK	0	1.5	9.9	0	6.6	P550	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	18	5.92	1
	72.02A	FILTER SOCK	0	1.25	8.0	0	8	P550	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	14	4.8	1
	72.02B	SWALE	2	2	10	2	2	P550	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	13	6.88	1
	72.02C	FILTER SOCK	0	1	8.0	0	8	C125	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	19	2.56	1
	72.03	SWALE	2	2	10	2	2	W3000	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	11	10.4	1
	72.04	FILTER SOCK	0	1.25	8.75	0	7	P550	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	12	2.88	1
	72.05	FILTER SOCK	0	1.6	9.5	0	6	P550	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	17	0.96	1
	72.06	FILTER SOCK	0	1.6	7.9	0	5	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	10	2.88	1
73	73.01	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	11	5.12	1
	73.02A	SWALE	2	2	10	2	2	C125	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	12	6.4	1
	73.02B	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	11	6.88	1
	73.02C	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	11	7.68	1
	73.02D	FILTER SOCK	0	1.25	10.0	0	8	C125	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	9	4.16	1
	73.03A	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	13	3.52	1
	73.03B	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	17	7.2	1
76	76.01A	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	4	4.16	1
	76.01B	SWALE	2	3	14	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	4	30.88	4
	76.01C	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	4	17.76	3
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TABLE 3: WATERBODIES CROSSED BY CPLS PIPELINE AND ACCESS ROADS IN SCHUYLKILL COUNTY

Waterbody ID	Waterbody Name	Milepost	County	Township	Stream Type	State Water Quality Use Classification - Designated Use	State Fishery Classification	Crossing Method	Crossing Window
WW-T34-7001	UNT to Mill Creek(WW-T34-7001)	65.02	Schuylkill	Pine Grove	Perennial	CWF, MF	Wild Trout Waters	Dam-and-Pump	January 1 through September 30
WB-T35-7001	Unnamed Pond	65.34	Schuylkill	Pine Grove	N/A	None	None	Dam-and-Pump	None
WW-T35-7002	Mill Creek(WW-T35-7002)	65.40	Schuylkill	Pine Grove	Perennial	CWF, MF	Wild Trout Waters	Dam-and-Pump	January 1 through September 30
WW-T34-7002	UNT to Mill Creek(WW-T34-7002)	65.54	Schuylkill	Pine Grove	Perennial	CWF, MF	Wild Trout Waters	Dam-and-Pump	January 1 through September 30
WW-T34-8001	UNT to Swatara Creek(WW-T34-8001)	MOC-0301 0.07	Schuylkill	Pine Grove	Perennial	CWF, MF	None	Dam-and-Pump	None
WW-T34-8001A	UNT to Swatara Creek(WW-T34-8001A)	MOC-0301 0.08	Schuylkill	Pine Grove	Intermittent	CWF, MF	None	Dam-and-Pump	None
WW-T31-7001	UNT to Swatara Creek(WW-T31-7001)	MOC-0468 0.02	Schuylkill	Pine Grove	Perennial	CWF, MF	None	Dam-and-Pump	None
WW-T18-7007C	UNT to Swatara Creek(WW-T18-7007C)	68.36	Schuylkill	Pine Grove	Intermittent	CWF, MF	None	Dam-and-Pump	None
WW-T18-7007A	UNT to Swatara Creek(WW-T18-7007A)	68.38	Schuylkill	Pine Grove	Perennial	CWF, MF	None	Dam-and-Pump	None
WW-T18-7007	UNT to Swatara Creek(WW-T18-7007)	68.38	Schuylkill	Pine Grove	Perennial	CWF, MF	None	Dam-and-Pump	None
WW-T21-7001	UNT to Swatara Creek(WW-T21-7001)	69.01	Schuylkill	Pine Grove	Intermittent	CWF, MF	None	Dam-and-Pump	None
WW-T21-7002	UNT to Swatara Creek(WW-T21-7002)	69.09	Schuylkill	Pine Grove	Intermittent	CWF, MF	None	Dam-and-Pump	None
WW-T31-8001	Lorberry Creek(WW-T31-8001)	MOC-0181 0.145	Schuylkill	Tremont	Perennial	CWF, MF	Wild Trout Waters (under review)	Dam-and-Pump	January 1 through September 30
WW-T31-8001A	UNT to Lorberry Creek(WW-T31-8001A)	MOC-0181 0.161	Schuylkill	Tremont	Ephemeral	CWF, MF	Wild Trout Waters (under review)	Dam-and-Pump	January 1 through September 30
WB-T32-8002	Unnamed Pond	MOC-198 0.13	Schuylkill	Tremont	N/A	None	None	N/A	None
WW-T43-8002	UNT to Lower Rausch Creek(WW-T43-8002)	MOC-0198 0.26	Schuylkill	Tremont	Perennial	CWF, MF	Wild Trout Waters (under review)	Dam-and-Pump	January 1 through September 30
WW-T43-8001	UNT to Lower Rausch Creek(WW-T43-8001)	MOC-0198 0.283	Schuylkill	Tremont	Intermittent	CWF, MF	Wild Trout Waters (under review)	Dam-and-Pump	January 1 through September 30
WW-T24-8003	UNT to Lower Rausch Creek(WW-T24-8003)	72.67	Schuylkill	Tremont	Intermittent	CWF, MF	Wild Trout Waters (under review)	Dam-and-Pump	January 1 through September 30
WW-T24-8002	Lower Rausch Creek(WW-T24-8002)	73.45	Schuylkill	Frailey	Perennial	CWF, MF	Wild Trout Waters (under review)	Dam-and-Pump	January 1 through September 30
WW-T24-8001	UNT to Lower Rausch Creek(WW-T24-8001)	73.54	Schuylkill	Frailey	Intermittent	CWF, MF	Wild Trout Waters (under review)	Dam-and-Pump	January 1 through September 30
WW-T95-8001	UNT to Lower Rausch Creek(WW-T95-8001)	73.55	Schuylkill	Frailey	Intermittent	CWF, MF	Wild Trout Waters (under review)	Dam-and-Pump	January 1 through September 30
WW-T95-8001A	UNT to Lower Rausch Creek(WW-T95-8001A)	73.56	Schuylkill	Frailey	Ephemeral	CWF, MF	Wild Trout Waters (under review)	Dam-and-Pump	January 1 through September 30
WW-T35-8001	Good Spring Creek(WW-T35-8001)	74.74	Schuylkill	Porter	Perennial	CWF, MF	Wild Trout Waters (under review)	Dam-and-Pump	January 1 through September 30
WW-T20-8001A	UNT to Pine Creek(WW-T20-8001A)	MOC-0316 1.03	Schuylkill	Hegins	Perennial	CWF, MF	Approved Trout Waters; Wild Trout Waters	Dam-and-Pump	January 1 through September 30
WW-T20-8001	Pine Creek(WW-T20-8001)	76.14	Schuylkill	Hegins	Perennial	CWF, MF	Approved Trout Waters; Trout Stocked Stream; Wild Trout Waters	Dam-and-Pump	January 1 through September 30
WW-T20-9001	UNT to Pine Creek(WW-T20-9001)	76.54	Schuylkill	Hegins	Perennial	CWF, MF	Approved Trout Waters; Wild Trout Waters	Dam-and-Pump	January 1 through September 30
WW-T16-9001	UNT to Pine Creek(WW-T16-9001)	MOC-00170 0.01	Schuylkill	Hegins	Perennial	CWF, MF	Wild Trout Waters	Dam-and-Pump	January 1 through September 30
WB-T10-9001	Unnamed Pond	MOC-00170 0.03	Schuylkill	Hegins	N/A	None	None	N/A	None
WW-T16-9003	Deep Creek(WW-T16-9003)	77.97	Schuylkill	Hegins	Perennial	CWF, MF	Approved Trout Waters; Trout Stocked Stream	Flume	June 16 through February 28
WW-T11-9001	Mahantango Creek(WW-T11-9001)	80.25	Schuylkill	Eldred	Perennial	CWF, MF	Approved Trout Waters	Dam-and-Pump	None
WW-T09-9002	UNT to Little Mahantango Creek(WW-T09-9002)	81.18	Schuylkill	Eldred	Perennial	CWF, MF	None	Dam-and-Pump	None
WW-T09-9001	Little Mahantango Creek(WW-T09-9001)	MOC-0194 0.181	Schuylkill	Eldred	Perennial	CWF, MF	Approved Trout Waters	Dam-and-Pump	None
Access Roads									
WW-T65-8001A	UNT to Swatara Creek(WW-T65-8001A)	AR-SC-061-3	Schuylkill	Pine Grove	Intermittent	CWF, MF	None	N/A	None
WW-T65-8001	UNT to Swatara Creek(WW-T65-8001)	AR-SC-061-3	Schuylkill	Pine Grove	Perennial	CWF, MF	None	N/A	None
WW-T87-9001	UNT to Mahantango Creek(WW-T87-9001)	AR-SC-073	Schuylkill	Eldred	Perennial	CWF, MF	Approved Trout Waters	N/A	None

Key:
 CWF = Coldwater Fishes
 MF = Migratory Fishes
 UNT = Unnamed Tributary

TABLE 4: WETLANDS CROSSED BY CPLS PIPELINE IN SCHUYLKILL COUNTY

Wetland ID	Milepost	County	Township	Wetland Classes Impacted
W-T11-9002 / W-T11-9002-1	80.23	Schuylkill	Eldred	PEM
W-T11-9001	80.28	Schuylkill	Eldred	PEM
W-T09-9002	81.18	Schuylkill	Eldred	PFO
W-T24-8004	73.55	Schuylkill	Frailey	PEM
W-T24-8002	74.05	Schuylkill	Frailey	PEM
W-T20-8006	74.15	Schuylkill	Frailey	PFO
W-T20-8007	74.16	Schuylkill	Frailey	PFO
WW-T96-9003 / W-T96-9003-1 / W-T96-9003-2	MOC-201 0.26	Schuylkill	Frailey	PEM
W-T20-8003A / W-T20-8003A-1	MOC-0316 1.02	Schuylkill	Hegins	PEM
W-T16-9001	MOC-00170 0.01	Schuylkill	Hegins	PEM
W-T53-9001A / W-T53-9001A-1	77.86	Schuylkill	Hegins	PEM
W-T53-9001C	77.88	Schuylkill	Hegins	PFO
W-T16-9003C	77.95	Schuylkill	Hegins	PFO
W-T16-9003A	77.95	Schuylkill	Hegins	PEM
W-T35-7001	65.35	Schuylkill	Pine Grove	PEM
W-T34-7002	65.55	Schuylkill	Pine Grove	PEM
W-T34-8001 / W-T34-8001-1	MOC-0301 0.06	Schuylkill	Pine Grove	PFO
W-T31-7001	M-0468 0.02	Schuylkill	Pine Grove	PEM
W-T18-7005A	67.59	Schuylkill	Pine Grove	PEM
W-T21-7001	67.91	Schuylkill	Pine Grove	PSS
W-T96-9004	74.71	Schuylkill	Porter	PSS
W-T95-9001A	74.79	Schuylkill	Porter	PEM
W-T95-9001B / W-T95-9001B-1 / W-T95-9001B-2	74.82	Schuylkill	Porter	PSS
W-T62-8001	MOC-0181 0.182	Schuylkill	Tremont	PEM
W-T24-8005	MOC-0198 0.230	Schuylkill	Tremont	PEM

Key:
 PEM = Palustrine Emergent
 PFO = Palustrine Forested
 PSS = Palustrine Scrub-Shrub

Drawn By & Date/Time: Idelo Apr 28, 2017 10:43am
 Drawing Location & Name: G:\08514\14C\14C4909\DWG\BMPs&DETAILS\PL_DNT14C4909(205)_SC-TB.dwg


 <p>SUZANNE KING REG. NO. PE 082757</p>	REVISIONS					
	NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK. APP.
0	08/26/2015	BL	ISSUED FOR PADEP SUBMITTAL		W0572385	JLK SMK
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL		W0572385	JLK SMK
2	Oct. 2016	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1		W0572385	JLK SMK
3	April 2017	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #2		W0572385	JLK SMK
TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC ATLANTIC SUNRISE PROJECT PROPOSED 42" CENTRAL PENN LINE SOUTH PENNSYLVANIA BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET SCHUYLKILL COUNTY, PENNSYLVANIA QUANTITY, CROSSING AND ACIDIC SOIL TABLES						
DRAWN BY:	ELZ	DATE:	05/15/15	ISSUED FOR BID:		SCALE:
CHECKED BY:	JLK	DATE:	07/02/15	ISSUED FOR CONSTRUCTION:		REVISION:
APPROVED BY:	SMK	DATE:	07/08/15	DRAWING NUMBER:	24-1600-70-28-A/LL113_9-BMP-SC-TB	SHEET 3 OF 5
W.O.:						

TABLE 5: LOCATIONS OF ACID SOILS ALONG CPLS PIPELINE IN SCHUYLKILL COUNTY

MP Begin	MP End	County	Map Unit Symbol	pH	MP Begin	MP End	County	Map Unit Symbol	pH	MP Begin	MP End	County	Map Unit Symbol	pH
64.28	64.62	SCHUYLKILL	LeB	5.7	70.65	70.82	SCHUYLKILL	DMF	4.6	76.93	76.94	SCHUYLKILL	CaC	5.5
64.62	64.74	SCHUYLKILL	CaC	5.5	70.82	70.83	SCHUYLKILL	MkC	5.4	76.94	76.96	SCHUYLKILL	WkF	5.3
64.74	64.80	SCHUYLKILL	CaD	5.3	M-0181 0.00	M-0181 0.14	SCHUYLKILL	MkC	5.4	76.96	77.00	SCHUYLKILL	CaD	5.3
64.80	64.86	SCHUYLKILL	CaC	5.5	M-0181 0.14	M-0181 0.27	SCHUYLKILL	BxB	4.6	M-0170 0.00	M-0170 0.00	SCHUYLKILL	CaD	5.3
64.86	64.97	SCHUYLKILL	CaD	5.3	M-0181 0.27	M-0181 0.31	SCHUYLKILL	LdC	4.6	M-0170 0.00	M-0170 0.03	SCHUYLKILL	KeB	4.6
64.97	64.99	SCHUYLKILL	WkF	5.3	71.15	71.24	SCHUYLKILL	LdC	4.6	M-0170 0.03	M-0170 0.09	SCHUYLKILL	MeC	4.6
64.99	65.03	SCHUYLKILL	KeB	4.6	71.24	71.26	SCHUYLKILL	MkC	5.4	M-0170 0.09	M-0170 0.22	SCHUYLKILL	MeB	4.6
65.03	65.06	SCHUYLKILL	CaD	5.3	71.26	71.45	SCHUYLKILL	LdC	4.6	M-0170 0.22	M-0170 0.27	SCHUYLKILL	MeC	4.6
65.06	65.11	SCHUYLKILL	LeC	5.7	71.45	71.58	SCHUYLKILL	DMF	4.6	77.26	77.28	SCHUYLKILL	MeC	4.6
65.11	65.15	SCHUYLKILL	LeB	5.7	71.58	71.63	SCHUYLKILL	HfC	5.4	77.28	77.46	SCHUYLKILL	DMF	4.6
65.15	65.22	SCHUYLKILL	LeC	5.7	M-0198 0.00	M-0198 0.13	SCHUYLKILL	HfC	5.4	77.46	77.47	SCHUYLKILL	LhC	5.4
65.22	65.31	SCHUYLKILL	MeB	4.6	M-0198 0.13	M-0198 0.20	SCHUYLKILL	LdC	4.6	77.47	77.63	SCHUYLKILL	DMF	4.6
65.31	65.35	SCHUYLKILL	Ln	5.8	M-0198 0.20	M-0198 0.26	SCHUYLKILL	BxD	4.5	77.63	77.77	SCHUYLKILL	LeC	5.7
65.35	65.41	SCHUYLKILL	Ba	5.0	M-0198 0.26	M-0198 0.32	SCHUYLKILL	DR	5.1	77.77	77.82	SCHUYLKILL	MeB	4.6
65.41	65.50	SCHUYLKILL	MeB	4.6	M-0198 0.32	M-0198 0.34	SCHUYLKILL	BxD	4.5	77.82	77.91	SCHUYLKILL	KeB	4.6
65.50	65.54	SCHUYLKILL	Ba	5.0	M-0198 0.34	M-0198 0.48	SCHUYLKILL	HfC	5.4	77.91	77.94	SCHUYLKILL	At	5.0
65.54	65.58	SCHUYLKILL	MeB	4.6	M-0198 0.48	M-0198 0.49	SCHUYLKILL	DMF	4.6	77.94	77.99	SCHUYLKILL	Ba	5.0
65.58	65.63	SCHUYLKILL	HaD	5.0	M-0198 0.49	M-0198 0.53	SCHUYLKILL	HfC	5.4	77.99	78.00	SCHUYLKILL	WkF	5.3
65.63	65.67	SCHUYLKILL	HaC	5.0	M-0198 0.53	M-0198 0.56	SCHUYLKILL	DR	5.1	78.00	78.01	SCHUYLKILL	Ba	5.0
65.67	65.70	SCHUYLKILL	HaB	5.0	M-0198 0.56	M-0198 0.59	SCHUYLKILL	HfC	5.4	78.01	78.04	SCHUYLKILL	CaB	5.5
65.70	65.91	SCHUYLKILL	HaC	5.0	72.21	72.23	SCHUYLKILL	HfC	5.4	78.04	78.09	SCHUYLKILL	LeB	5.7
65.91	65.94	SCHUYLKILL	HaB	5.0	72.23	72.25	SCHUYLKILL	DR	5.1	78.09	78.12	SCHUYLKILL	LeC	5.7
M-0177 0.00	M-0177 0.07	SCHUYLKILL	HaB	5.0	72.25	72.34	SCHUYLKILL	HfC	5.4	78.12	78.17	SCHUYLKILL	CaC	5.5
M-0177 0.07	M-0177 0.10	SCHUYLKILL	HaC	5.0	72.34	72.39	SCHUYLKILL	UM	6.5	78.17	78.24	SCHUYLKILL	CaB	5.5
M-0221 0.00	M-0221 0.16	SCHUYLKILL	HaC	5.0	72.39	72.39	SCHUYLKILL	DMF	4.6	78.24	78.34	SCHUYLKILL	LeB	5.7
M-0301 0.00	M-0301 0.02	SCHUYLKILL	HaC	5.0	72.39	72.53	SCHUYLKILL	HfC	5.4	78.34	78.37	SCHUYLKILL	CaB	5.5
M-0301 0.02	M-0301 0.04	SCHUYLKILL	BeD	5.7	72.53	72.60	SCHUYLKILL	UM	6.5	78.37	78.45	SCHUYLKILL	LeB	5.7
M-0301 0.04	M-0301 0.16	SCHUYLKILL	WkF	5.3	72.60	72.64	SCHUYLKILL	HfC	5.4	78.45	78.54	SCHUYLKILL	BxB	4.6
M-0301 0.16	M-0301 0.17	SCHUYLKILL	HaC	5.0	72.64	72.69	SCHUYLKILL	BxB	4.6	78.54	78.63	SCHUYLKILL	BxD	4.5
M-0221 0.33	M-0221 0.50	SCHUYLKILL	HaC	5.0	72.69	72.96	SCHUYLKILL	DMF	4.6	78.63	78.84	SCHUYLKILL	LdC	4.6
M-0221 0.50	M-0221 0.50	SCHUYLKILL	HaB	5.0	72.96	73.32	SCHUYLKILL	DkC	5.1	M-0213 0.00	M-0213 0.10	SCHUYLKILL	LdC	4.6
66.43	66.59	SCHUYLKILL	HaB	5.0	73.32	73.38	SCHUYLKILL	DMF	4.6	M-0213 0.10	M-0213 0.22	SCHUYLKILL	DMF	4.6
66.59	66.66	SCHUYLKILL	HaC	5.0	73.38	73.63	SCHUYLKILL	WaB	5.4	M-0213 0.22	M-0213 0.29	SCHUYLKILL	DR	5.1
M-0468 0.00	M-0468 0.03	SCHUYLKILL	WkF	5.3	73.63	73.97	SCHUYLKILL	UM	6.5	M-0213 0.29	M-0213 0.36	SCHUYLKILL	DkC	5.1
M-0474 0.00	M-0474 0.01	SCHUYLKILL	HaC	5.0	73.97	74.02	SCHUYLKILL	DMF	4.6	M-0213 0.36	M-0213 0.76	SCHUYLKILL	DMF	4.6
M-0474 0.01	M-0474 0.09	SCHUYLKILL	HaB	5.0	74.02	74.09	SCHUYLKILL	UM	6.5	M-0213 0.76	M-0213 0.86	SCHUYLKILL	MkC	5.4
M-0468 0.03	M-0468 0.17	SCHUYLKILL	HaD	5.0	74.09	74.10	SCHUYLKILL	DMF	4.6	79.70	79.75	SCHUYLKILL	MkC	5.4
M-0474 0.09	M-0474 0.12	SCHUYLKILL	HaC	5.0	74.10	74.14	SCHUYLKILL	UM	6.5	79.75	79.83	SCHUYLKILL	MeC	4.6
M-0468 0.17	M-0468 0.26	SCHUYLKILL	HaC	5.0	74.14	74.17	SCHUYLKILL	ArB	5.5	79.83	79.89	SCHUYLKILL	MkC	5.4
66.82	66.87	SCHUYLKILL	HaC	5.0	M-0201 0.00	M-0201 0.08	SCHUYLKILL	ArB	5.5	79.89	79.92	SCHUYLKILL	MeB	4.6
66.87	66.93	SCHUYLKILL	WkF	5.3	M-0201 0.08	M-0201 0.48	SCHUYLKILL	BxD	4.5	79.92	80.03	SCHUYLKILL	LeC	5.7
M-0196 0.23	M-0196 0.24	SCHUYLKILL	HaC	5.0	74.65	74.69	SCHUYLKILL	BxD	4.5	80.03	80.06	SCHUYLKILL	CaD	5.3
M-0196 0.24	M-0196 0.40	SCHUYLKILL	HaB	5.0	74.69	74.73	SCHUYLKILL	ArB	5.5	80.06	80.24	SCHUYLKILL	WkF	5.3
M-0196 0.40	M-0196 0.40	SCHUYLKILL	LeB	5.7	74.73	74.80	SCHUYLKILL	UD	5.5	80.24	80.30	SCHUYLKILL	Ba	5.0
M-0196 0.40	M-0196 0.41	SCHUYLKILL	HaC	5.0	74.80	74.83	SCHUYLKILL	ArB	5.5	M-0351 0.00	M-0351 0.01	SCHUYLKILL	Ba	5.0
67.29	67.30	SCHUYLKILL	HaC	5.0	74.83	74.89	SCHUYLKILL	BxB	4.6	M-0351 0.01	M-0351 0.02	SCHUYLKILL	MeB	4.6
67.30	67.35	SCHUYLKILL	LeB	5.7	74.89	74.94	SCHUYLKILL	UM	6.5	M-0351 0.02	M-0351 0.07	SCHUYLKILL	WkF	5.3
67.35	67.38	SCHUYLKILL	MeB	4.6	74.94	75.07	SCHUYLKILL	Du	Dumps	M-0351 0.07	M-0351 0.13	SCHUYLKILL	CaD	5.3
67.38	67.52	SCHUYLKILL	LeB	5.7	M-0316 0.00	M-0316 0.04	SCHUYLKILL	Du	Dumps	80.42	80.46	SCHUYLKILL	CaD	5.3
67.52	67.56	SCHUYLKILL	HaC	5.0	M-0316 0.04	M-0316 0.08	SCHUYLKILL	UM	6.5	80.46	80.50	SCHUYLKILL	LeC	5.7
67.56	67.58	SCHUYLKILL	WkF	5.3	M-0316 0.08	M-0316 0.26	SCHUYLKILL	DMF	4.6	80.50	80.53	SCHUYLKILL	MeC	4.6
67.58	67.61	SCHUYLKILL	AgA	4.6	M-0316 0.26	M-0316 0.31	SCHUYLKILL	UM	6.5	80.53	80.57	SCHUYLKILL	LeC	5.7
67.61	67.76	SCHUYLKILL	LeC	5.7	M-0316 0.31	M-0316 0.34	SCHUYLKILL	DkC	5.1	80.57	80.59	SCHUYLKILL	CaD	5.3
67.76	67.82	SCHUYLKILL	LeB	5.7	M-0316 0.34	M-0316 0.38	SCHUYLKILL	UM	6.5	80.59	80.77	SCHUYLKILL	LeC	5.7
67.82	67.87	SCHUYLKILL	WkF	5.3	M-0316 0.38	M-0316 0.51	SCHUYLKILL	DkC	4.7	80.77	80.83	SCHUYLKILL	LeB	5.7
67.87	67.88	SCHUYLKILL	KeB	4.6	M-0316 0.51	M-0316 0.69	SCHUYLKILL	DMF	4.6	80.83	80.87	SCHUYLKILL	MeB	4.6
67.88	68.02	SCHUYLKILL	WkF	5.3	M-0316 0.69	M-0316 0.82	SCHUYLKILL	MkC	5.4	80.87	81.00	SCHUYLKILL	LeB	5.7
68.02	68.15	SCHUYLKILL	LeB	5.7	M-0316 0.82	M-0316 0.93	SCHUYLKILL	KvC	5.4	81.00	81.07	SCHUYLKILL	LeC	5.7
68.15	68.26	SCHUYLKILL	LeC	5.7	M-0316 0.93	M-0316 0.98	SCHUYLKILL	MkC	5.4	81.07	81.23	SCHUYLKILL	MeB	4.6
68.26	68.33	SCHUYLKILL	MeC	4.6	M-0316 0.98	M-0316 1.04	SCHUYLKILL	KvC	5.4	81.23	81.24	SCHUYLKILL	CaD	5.3
68.33	68.37	SCHUYLKILL	KvC	5.4	M-0316 1.04	M-0316 1.05	SCHUYLKILL	Ba	5.0	81.24	81.29	SCHUYLKILL	LeC	5.7
68.37	68.48	SCHUYLKILL	MeB	4.6	76.12	76.15	SCHUYLKILL	Ba	5.0	81.29	81.44	SCHUYLKILL	LeB	5.7
68.48	68.56	SCHUYLKILL	MeC	4.6	76.15	76.18	SCHUYLKILL	LeB	5.7	81.44	81.53	SCHUYLKILL	LeC	5.7
68.56	68.57	SCHUYLKILL	CaC	5.5	76.18	76.21	SCHUYLKILL	LeC	5.7	M-0194 0.00	M-0194 0.11	SCHUYLKILL	LeC	5.7
68.57	68.82	SCHUYLKILL	MeB	4.6	76.21	76.37	SCHUYLKILL	LeB	5.7	M-0194 0.11	M-0194 0.17	SCHUYLKILL	CaD	5.3
68.82	68.87	SCHUYLKILL	MkC	5.4	76.37	76.41	SCHUYLKILL	LeC	5.7	M-0194 0.17	M-0194 0.20	SCHUYLKILL	MeB	4.6
68.87	68.90	SCHUYLKILL	KeB	4.6	76.41	76.43	SCHUYLKILL	LeB	5.7	M-0194 0.20	M-0194 0.22	SCHUYLKILL	CaD	5.3
68.90	69.11	SCHUYLKILL	MkC	5.4	76.43	76.48	SCHUYLKILL	LeC	5.7	M-0194 0.22	M-0194 0.39	SCHUYLKILL	LeB	5.7
69.11	69.19	SCHUYLKILL	MeB	4.6	76.48	76.49	SCHUYLKILL	CaC	5.5	M-0194 0.39	M-0194 0.43	SCHUYLKILL	CaD	5.3
M-0223 0.00	M-0223 0.01	SCHUYLKILL	MeB	4.6	76.49	76.52	SCHUYLKILL	LeC	5.7	M-0194 0.43	M-0194 0.46	SCHUYLKILL	CaB	5.5
M-0223 0.01	M-0223 0.05	SCHUYLKILL	MkC	5.4	76.52	76.56	SCHUYLKILL	KeB	4.6	M-0194 0.46	M-0194 0.65	SCHUYLKILL	LeB	5.7
69.24	69.36	SCHUYLKILL	MkC	5.4	76.56	76.60	SCHUYLKILL	CaD	5.3	M-0194 0.65	M-0194 0.76	SCHUYLKILL	LeC	5.7
69.36	69.68	SCHUYLKILL	DMF	4.6	76.60	76.61	SCHUYLKILL	CaC	5.5	M-0194 0.76	M-0194 0.78	SCHUYLKILL	MeB	4.6
69.68	70.17	SCHUYLKILL	LhC	5.4	76.61	76.67	SCHUYLKILL	CaB	5.5	M-0194 0.78	M-0194 0.79	SCHUYLKILL	MeD	4.6
70.17	70.30	SCHUYLKILL	DMF	4.6	76.67	76.69	SCHUYLKILL	CaC	5.5	M-0247 0.00	M-0247 0.02	SCHUYLKILL	MeD	4.6
70.30	70.38	SCHUYLKILL	BxD	4.5	76.69	76.78	SCHUYLKILL	LeB	5.7	M-0247 0.02	M-0247 0.13	SCHUYLKILL	MeB	4.6
70.38	70.42	SCHUYLKILL	DMF	4.6	76.78	76.80	SCHUYLKILL	KeB	4.6	M-0247 0.13	M-0247 0.18	SCHUYLKILL	MkC	5.4
70.42	70.46	SCHUYLKILL	HGC	5.4	76.80	76.88	SCHUYLKILL	MeB	4.6	M-0247 0.18	M-0247 0.33	SCHUYLKILL	DMF	4.6
70.46	70.56	SCHUYLKILL	DMF	4.6	76.88	76.90	SCHUYLKILL	LeC	5.7					
70.56	70.65	SCHUYLKILL	DR	5.1	76.90	76.93	SCHUYLKILL	CaB	5.5					

NOTE: SEE THE SUPPORTING PIPELINE AND ACCESS ROAD EROSION AND SEDIMENT CONTROL NARRATIVES FOR DEFINITIONS AND DESCRIPTIONS OF THE MAP UNIT SYMBOL ABBREVIATIONS.

TABLE 6: LOCATIONS OF ACIDIC BEDROCK ALONG CPLS PIPELINE IN SCHUYLKILL COUNTY

Pipeline Facility/County	Mile Post with Shallow Bedrock		Linear Distance Crossed (miles)	Bedrock Formation	Acid Potential	Karst	Rock Type
	From	To					
CPL-SOUTH							
SCHUYLKILL	64.28	64.62	0.35	Sherman Creek Member of Catskill Formation	Typically non-acid sulfide bearing		mudstone, siltstone, and sandstone
SCHUYLKILL	64.62						

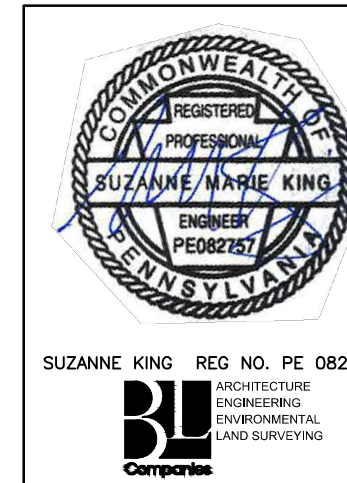
TABLE 7: RESOURCE SPECIFIC AVOIDANCE AND MINIMIZATION MEASURES

Resource Type (Stream or Wetland)	Resource Name	Resource ID	MP	Chapter 93 Classification, Wetland Classification	Stream Type (Perennial, Intermittent, Ephemeral)	Stream Trout Status (Class A Wild Trout, Wild Trout, Trout Stocked)	Cowardin Classification	Limits of Disturbance (LOD) Adjustments (Supporting Information for Technical Deficiencies #25 and 29)	Field Routing Adjustments within 600-foot Wide Corridor (Supporting Information for Technical Deficiency #13)*	Stream Bank Stabilization BMP	Width of Erosion Control Blanket Required for Stream Bank Stabilization (ft)
Wetland	N/A	W-T48-7001	65.02	EV	N/A	N/A	PEM	The LOD for W-T48-7001 has been modified to eliminate impacts.	This feature is no longer impacted based on LOD reductions.	N/A	N/A
Stream	UNT to Mill Creek (WW-T34-7001)	WW-T34-7001	65.01	CWF, MF	Perennial	Wild Trout Waters	R3	LOD has been reduced to 90' to minimize impacts to WW-T34-7001.	The pipeline was routed at this location to provide a perpendicular crossing of stream WW-T34-7001.	SBR with SC150 fabric	50
Pond	WB-T35-7001	WB-T35-7001	65.34	None	N/A	None	PUB	LOD has been reduced to 75' to minimize impacts to WB-T35-7001.	The pipeline was routed at this location to provide a perpendicular crossing of the waterbody. Additional route adjustments north or south were constrained by residences on both sides of the route.	SBR with SC150 fabric	50
Wetland	N/A	W-T35-7001	65.35	EV	N/A	N/A	PEM	LOD has been reduced to 75' to minimize impacts to W-T35-7001.	The pipeline was routed at this location to provide a perpendicular crossing of the wetland. Additional route adjustments north or south were constrained by residences on both sides of the route.	N/A	N/A
Stream	Mill Creek (WW-T35-7002)	WW-T35-7002	65.40	CWF, MF	Perennial	Wild Trout Waters	R3	LOD has been reduced to 90' to minimize impacts to WW-T35-7002.	The pipeline was routed at this location to provide a perpendicular crossing of stream WW-T35-7002.	SBR with SC150 fabric	50
Stream	UNT to Mill Creek (WW-T34-7002)	WW-T34-7002	65.54	CWF, MF	Perennial	Wild Trout Waters	R3	LOD has been reduced to 75' to minimize impacts to WW-T34-7002.	The pipeline was routed at this location to provide a perpendicular crossing of stream WW-T34-7002.	SBR with SC150 fabric	50
Wetland	N/A	W-T34-7002	65.55	EV	N/A	N/A	PEM	LOD has been reduced to 75' to minimize impacts to W-T34-7002.	The pipeline was routed at this location to provide a perpendicular crossing of the wetland. Avoidance of wetland W-T35-7002 was not feasible due to the linear nature of the wetland, extending south beyond the routing corridor. A route adjustment north was not feasible due to a residence located in the northern portion of the corridor.	N/A	N/A
Wetland	N/A	W-T34-8001/ W-T34-8001-1	M-0301.006	None	N/A	N/A	PFO	LOD reduced to 90' to minimize impacts to W-T34-8001. Further LOD reduction was not possible due to the adjacent stream and road crossing, as well as steep terrain immediately west of the wetland crossing. The additional workspace will be used for equipment crossing and spoil storage to accommodate a safe and efficient wetland crossing.	The pipeline was routed at this location to cross the narrowest section of the wetland, and along the wetland margin.	N/A	N/A
Stream	UNT to Swatara Creek (WW-T34-8001)	WW-T34-8001	M-0301.007	CWF, MF	Perennial	None	R3	LOD has been reduced to 90' to minimize impacts to WW-T34-8001.	The pipeline was routed in this location to provide a perpendicular crossing of stream WW-T34-8001.	SBR with SC150 fabric	50
Stream	UNT to Swatara Creek (WW-T34-8001A)	WW-T34-8001A	M-0301.008	CWF, MF	Intermittent	None	R4	LOD has been reduced to 90' to minimize impacts to WW-T34-8001A.	The pipeline was routed in this location to provide a perpendicular crossing of stream WW-T34-8001A.	SBR with SC150 fabric	50
Stream	UNT to Swatara Creek (WW-T31-7001)	WW-T31-7001	M-0468.002	CWF, MF	Perennial	None	R3	LOD has been reduced to 80' to minimize impacts to WW-T31-7001.	The pipeline was field routed in this area to cross stream WW-T31-7001 and riparian wetland W-T31-7001 at a perpendicular angle and near the northern extent of the system. A realignment to move the pipeline further north and avoid the system entirely was considered, but determined infeasible due to the proximity of a residence north of the current alignment.	SBR with SC150 fabric	50
Wetland	N/A	W-T31-7001	M-0468.002	None	N/A	N/A	PEM	LOD has been reduced to 80' to minimize impacts to W-T31-7001.	The pipeline was field routed in this area to cross stream WW-T31-7001 and riparian wetland W-T31-7001 at a perpendicular angle and near the northern extent of the system. A realignment to move the pipeline further north and avoid the system entirely was considered, but determined infeasible due to the proximity of a residence north of the current alignment.	N/A	N/A
Wetland	N/A	W-T18-7005A	67.59	None	N/A	N/A	PEM	LOD has been reduced to 75' to minimize impacts to W-T18-7005A.	The pipeline was field routed in this area to cross stream WW-T18-7004 to the northwest, cross the narrowest point of wetland W-T18-7005A, and minimize tree clearing to the northwest.	N/A	N/A
Wetland	N/A	W-T21-7001	67.91	None	N/A	N/A	PSS	This wetland encroaches within the eastern portion of the LOD only, and this portion of the LOD was reduced by 10' to minimize impacts to W-T21-7001.	The pipeline was routed in this location to cross the margin of the wetland. Shifting the route further west to completely avoid the wetland was constrained by steep slopes and a residence west of the route.	N/A	N/A
Stream	UNT to Swatara Creek (WW-T18-7007C)	WW-T18-7007C	68.36	CWF, MF	Intermittent	None	R4	LOD has been reduced to 90' to minimize impacts to WW-T18-7007C.	The pipeline was routed in this location to provide a perpendicular crossing of stream WW-T18-7007C.	SBR with SC150 fabric	50
Stream	UNT to Swatara Creek (WW-T18-7007A)	WW-T18-7007A	68.38	CWF, MF	Perennial	None	R3	LOD has been reduced to 90' to minimize impacts to WW-T18-7007A.	The pipeline was routed in this location to provide a perpendicular crossing of stream WW-T18-7007A.	SBR with SC150 fabric	50
Stream	UNT to Swatara Creek (WW-T18-7007)	WW-T18-7007	68.38	CWF, MF	Perennial	None	R3	LOD has been reduced to 90' to minimize impacts to WW-T18-7007.	The pipeline was routed in this location to provide a perpendicular crossing of stream WW-T18-7007.	SBR with SC150 fabric	50
Stream	UNT to Swatara Creek (WW-T21-7001)	WW-T21-7001	69.01	CWF, MF	Intermittent	None	R4	LOD has been reduced to 90' to minimize impacts to WW-T21-7001.	The pipeline was routed in this location to provide a perpendicular crossing of stream WW-T21-7001. Other routing considerations in this area included avoidance of residences and side slope construction.	SBR with SC150 fabric	50
Stream	UNT to Swatara Creek (WW-T21-7002)	WW-T21-7002	69.09	CWF, MF	Intermittent	None	R4	LOD has been reduced to 90' to minimize impacts to WW-T21-7002.	The pipeline was routed in this location to provide a perpendicular crossing of stream WW-T21-7002. Other routing considerations in this area included avoidance of residences and side slope construction.	SBR with SC150 fabric	50
Stream	Lorberry Creek (WW-T31-8001)	WW-T31-8001	M-0181.014	CWF, MF	Perennial	Wild Trout Waters (under review)	R3	LOD has been reduced to 90' to minimize impacts to WW-T31-8001.	The pipeline was routed in this location to provide a perpendicular crossing of stream WW-T31-8001.	SBR with SC150 fabric	50
Stream	UNT to Lorberry Creek (WW-T31-8001A)	WW-T31-8001A	M-0181.016	CWF, MF	Ephemeral	Wild Trout Waters (under review)	R5	LOD has been reduced to 90' to minimize impacts to WW-T31-8001A.	The pipeline was routed in this location to provide a perpendicular crossing of stream WW-T31-8001A.	SBR with SC150 fabric	50
Wetland	N/A	W-T62-8001	M-0181.018	EV	N/A	N/A	PEM	The LOD for W-T62-8001 has been modified to eliminate impacts.	This feature is no longer impacted based on LOD reductions.	N/A	N/A
Pond	WB-T32-8002	WB-T32-8002	M-0198.013	None	N/A	None	PUB	Full ROW width is needed at this location due to surrounding steep terrain and approaching PI.	The pipeline was routed at this location to avoid crossing the pond with the trench line.	SBR with SC150 fabric	50
Wetland	N/A	W-T24-8005	M-0198.023	EV	N/A	N/A	PEM	LOD has been reduced to 75' to minimize impacts to W-T24-8005.	The pipeline was routed at this location to cross the narrowest section of the wetland, and to provide a perpendicular crossing.	N/A	N/A
Stream	UNT to Lower Raush Creek (WW-T43-8002)	WW-T43-8002	M-0198.026	CWF, MF	Perennial	Wild Trout Waters (under review)	R3	LOD has been reduced to 90' to minimize impacts to WW-T43-8002.	The pipeline was routed in this location to provide a perpendicular crossing of stream WW-T43-8002.	SBR with SC150 fabric	50
Stream	UNT to Lower Raush Creek (WW-T43-8001)	WW-T43-8001	M-0198.028	CWF, MF	Intermittent	Wild Trout Waters (under review)	R4	LOD has been reduced to 90' to minimize impacts to WW-T43-8001.	The pipeline was routed in this location to provide a perpendicular crossing of stream WW-T43-8001.	SBR with SC150 fabric	50
Pond	WB-T32-8001	WB-T32-8001	M-0198.030	None	N/A	None	PUB	LOD has been modified to eliminate impacts to this feature.	This feature is no longer impacted based on LOD reductions.	N/A	N/A
Stream	UNT to Lower Raush Creek (WW-T24-8003)	WW-T24-8003	72.67	CWF, MF	Intermittent	Wild Trout Waters (under review)	R4	LOD has been reduced to 90' to minimize impacts to WW-T24-8003.	The pipeline was routed in this location to provide a perpendicular crossing of stream WW-T24-8003.	SBR with SC150 fabric	50
Stream	Lower Raush Creek (WW-T24-8002)	WW-T24-8002	73.45	CWF, MF	Perennial	Wild Trout Waters (under review)	R3	LOD has been reduced to 90' to minimize impacts to WW-T24-8002.	The pipeline was routed in this location to provide a perpendicular crossing of stream WW-T24-8002.	SBR with SC150 fabric	50
Stream	UNT to Lower Raush Creek (WW-T24-8001)	WW-T24-8001	73.54	CWF, MF	Intermittent	Wild Trout Waters (under review)	R4	LOD has been reduced to 90' to minimize impacts to WW-T24-8001.	The pipeline was routed in this location to provide a perpendicular crossing of stream WW-T24-8001.	SBR with SC150 fabric	50
Wetland	N/A	W-T24-8004	73.55	EV	N/A	N/A	PEM	This wetland encroaches within the northern portion of the LOD only, and this portion of the LOD was reduced by 10' to minimize impacts to W-T24-8004.	The pipeline was routed in this location to provide a perpendicular crossing of stream W-T24-8004.	N/A	N/A

Resource Type (Stream or Wetland)	Resource Name	Resource ID	MP	Chapter 93 Classification, Wetland Classification	Stream Type (Perennial, Intermittent, Ephemeral)	Stream Trout Status (Class A Wild Trout, Wild Trout, Trout Stocked)	Cowardin Classification	Limits of Disturbance (LOD) Adjustments (Supporting Information for Technical Deficiencies #25 and 29)	Field Routing Adjustments within 600-foot Wide Corridor (Supporting Information for Technical Deficiency #13)*	Stream Bank Stabilization BMP	Width of Erosion Control Blanket Required for Stream Bank Stabilization (ft)
Stream	UNT to Lower Raush Creek (WW-T95-8001)	WW-T95-8001	73.55	CWF, MF	Intermittent	Wild Trout Waters (under review)	R4	LOD has been reduced to 90' to minimize impacts to WW-T95-8001.	The pipeline was routed in this location to provide a perpendicular crossing of stream WW-T95-8001.	SBR with SC150 fabric	50
Stream	UNT to Lower Raush Creek (WW-T95-8001A)	WW-T95-8001A	73.56	CWF, MF	Ephemeral	Wild Trout Waters (under review)	R6	LOD has been reduced to 90' to minimize impacts to WW-T95-8001A.	The pipeline was routed in this location to provide a perpendicular crossing of stream WW-T95-8001A.	SBR with SC150 fabric	50
Wetland	N/A	W-T24-8003	73.59	EV	N/A	N/A	PEM	The LOD for W-T24-8003 has been modified to eliminate impacts.	This feature is no longer impacted based on LOD reductions.	N/A	N/A
Wetland	N/A	W-T24-8002	74.05	None	N/A	N/A	PEM	LOD has been reduced to 75' to minimize impacts to W-T24-8002.	The pipeline was routed in this location to provide a perpendicular crossing of wetland W-T24-8002.	N/A	N/A
Wetland	N/A	W-T20-8006	74.15	None	N/A	N/A	PFO	W-T20-8006 does not extend across the full width of the LOD. Since the wetland width within the LOD is less than 75', the FERC Procedures do not require LOD reduction. In addition, LOD reduction at this location to minimize impacts is not possible due to the adjacent railroad crossing and approaching PI.	The pipeline was routed in this location to cross the margin of the wetland with workspace only.	N/A	N/A
Wetland	N/A	W-T20-8007	74.16	None	N/A	N/A	PFO	W-T20-8007 does not extend across the full width of the LOD. Since the wetland width within the LOD is less than 75', the FERC Procedures do not require LOD reduction. In addition, LOD reduction at this location to minimize impacts is not possible due to the adjacent railroad crossing and approaching PI.	The pipeline was routed in this location to cross the margin of the wetland with workspace only.	N/A	N/A
Wetland	N/A	W-T96-9003 / W-T96-9003-1 / W-T96-9003-2	M-201.026	EV	N/A	N/A	PEM	LOD reduced to 90' to minimize impacts to W-T96-9003. Further LOD reduction was not possible due to the saturated nature of the wetland with unconsolidated soils. The additional workspace will be used for equipment crossing and spoil storage to accommodate a safe and efficient wetland crossing.	The pipeline was routed in this location to cross the northern margin of this large wetland complex, which extends to the north well beyond the routing corridor. Further minimization of impacts by shifting the route south was not possible due to the presence of an active railroad.	N/A	N/A
Wetland	N/A	W-T96-9004	74.71	EV	N/A	N/A	PSS	LOD has been reduced to 75' to minimize impacts to W-T96-9004.	The pipeline was routed in this location to cross the narrowest portion of the wetland.	N/A	N/A
Stream	Good Spring Creek (WW-T35-8001)	WW-T35-8001	74.74	CWF, MF	Perennial	Wild Trout Waters (under review)	R3	LOD has been reduced to 90' to minimize impacts to WW-T35-8001.	The pipeline was routed in this location to provide a perpendicular crossing of stream WW-T35-8001.	SBR with SC150 fabric	50
Wetland	N/A	W-T95-9001B-2	74.82	None	N/A	N/A	PSS	This wetland encroaches within the western portion of the LOD only, and this portion of the LOD was reduced by 10' to minimize impacts to W-T95-9001B-2.	The pipeline was routed in this location to provide a perpendicular crossing of the wetland. Avoidance of this wetland was not possible as it extends for a significant distance both east and west of the routing corridor.	N/A	N/A
Wetland	N/A	W-T95-9001A / W-T95-9001B / W-T95-9001B-1	74.82	None	N/A	N/A	PEM, PSS	LOD reduced to 90' to minimize impacts to W-T95-9001A-W-T95-9001B-W-T95-9001B-1. Further LOD reduction was not possible due to the saturated nature of the wetland with unconsolidated soils, and adjacent stream and road crossings. The additional workspace will be used for equipment crossing and spoil storage to accommodate a safe and efficient wetland crossing.	The pipeline was routed in this location to provide a perpendicular crossing of the wetland. Avoidance of this wetland was not possible as it extends for a significant distance both east and west of the routing corridor.	N/A	N/A
Wetland	N/A	W-T20-8003A / W-T20-8003A-1	M-0316.102	EV	N/A	N/A	PEM	LOD has been reduced to 75' to minimize impacts to W-T20-8003.	The pipeline was routed in this location to avoid multiple stream crossings to the east of the LOD, and to minimize crossing distance within the wetland as much as possible.	N/A	N/A
Stream	UNT to Pine Creek (WW-T20-8001A)	WW-T20-8001A	M-0316.103	CWF, MF	Perennial	Approved Trout Waters; Wild Trout Waters	R3	LOD has been reduced to 90' to minimize impacts to WW-T20-8001A.	The pipeline was routed in this location to avoid multiple stream crossings to the east of the LOD, and to cross stream WW-T20-8001A at a perpendicular angle.	SBR with SC150 fabric	50
Stream	Pine Creek (WW-T20-8001)	WW-T20-8001	76.14	CWF, MF	Perennial	Approved Trout Waters; Trout Stocked Stream; Wild Trout Waters	R3	LOD has been reduced to 75' to minimize impacts to WW-T20-8001.	The pipeline was routed in this location to avoid multiple stream crossings to the east of the LOD, and to cross stream WW-T20-8001 at a perpendicular angle.	SBR with SC150 fabric	50
Stream	UNT to Pine Creek (WW-T20-9001)	WW-T20-9001	76.54	CWF, MF	Perennial	Approved Trout Waters; Wild Trout Waters	R3	LOD has been reduced to 90' to minimize impacts to WW-T20-9001.	The pipeline was routed in this location to cross stream WW-T20-9001 at a perpendicular angle.	SBR with SC150 fabric	50
Wetland	N/A	W-T16-9001	M-0170.001	EV	N/A	N/A	PEM	LOD has been reduced to 75' to minimize impacts to W-T16-9001.	The pipeline was routed in this location to cross wetland W-T16-9001 at a perpendicular angle.	N/A	N/A
Stream	UNT to Pine Creek (WW-T16-9001)	WW-T16-9001	M-0170.001	CWF, MF	Perennial	Wild Trout Waters	R3	LOD has been reduced to 75' to minimize impacts to WW-T16-9001.	The pipeline was routed in this location to cross stream WW-T16-9001 at a perpendicular angle.	SBR with SC150 fabric	50
Pond	WB-T10-9001	WB-T10-9001	M-0170.002	None	N/A	N/A	PUB	The LOD for WB-T10-9001 has been modified to eliminate impacts.	This feature is no longer impacted based on LOD reductions.	N/A	N/A
Wetland	N/A	W-T53-9001A / W-T53-9001A-1 / W-T53-9001C	77.85 / 77.73 / 77.85	None	N/A	N/A	PEM, PFO	LOD has been reduced to 75' to minimize impacts to W-T53-9001.	The pipeline was routed in this location to cross the narrowest portion of the wetland, primarily along its eastern margin.	N/A	N/A
Wetland	N/A	W-T16-9003A / W-T16-9003C	77.95 / 77.95	None	N/A	N/A	PEM, PFO	LOD has been reduced to 75' to minimize impacts to W-T16-9003.	The pipeline was routed in this location to cross the narrowest portion of the wetland.	N/A	N/A
Stream	Deep Creek (WW-T16-9003)	WW-T16-9003	77.97	CWF, MF	Perennial	Approved Trout Waters; Trout Stocked Stream	R3	LOD has been reduced to 90' to minimize impacts to WW-T16-9003.	The pipeline was routed in this location to cross stream WW-T16-9003 at a perpendicular angle.	SBR with SC150 fabric	50
Stream	UNT to Mahantango Creek (WW-T87-9001)	WW-T87-9001	80.11	CWF, MF	Perennial	Approved Trout Waters	R3	LOD reduced to 'X' to accommodate an equipment bridge crossing of the stream.	The access road was routed to cross this stream along an existing dirt/gravel road. The bridge equipment crossing will minimize stream impacts.	SBR with SC150 fabric	50
Wetland	N/A	W-T11-9002 / W-T11-9002-1	80.23	None	N/A	N/A	PEM	LOD has been reduced to 75' to minimize impacts to W-T11-9002.	The pipeline was routed in this location to cross wetland W-T11-9002 at a narrow location with workspace only.	N/A	N/A
Stream	Mahantango Creek (WW-T11-9001)	WW-T11-9001	80.25	CWF, MF	Perennial	Approved Trout Waters	R3	LOD has been reduced to 90' to minimize impacts to WW-T11-9001.	The pipeline was routed in this location to cross stream WW-T11-9001 at a perpendicular angle.	SBR with SC150 fabric	50
Wetland	N/A	W-T11-9001	80.28	None	N/A	N/A	PEM	LOD has been reduced to 75' to minimize impacts to W-T11-9001.	The pipeline was routed in this location to cross the western margin of wetland W-T11-9001 at a perpendicular angle.	N/A	N/A
Stream	UNT to Little Mahantango Creek (WW-T09-9002)	WW-T09-9002	81.18	CWF, MF	Perennial	None	R3	LOD has been reduced to 75' to minimize impacts to WW-T09-9002.	The pipeline was routed in this location to cross the western margin of stream WW-T09-9002 at a perpendicular angle.	SBR with SC150 fabric	50
Wetland	N/A	W-T09-9002	81.18	None	N/A	N/A	PFO	LOD has been reduced to 75' to minimize impacts to W-T09-9002.	The pipeline was routed in this location to cross the western margin of wetland W-T09-9002 at a perpendicular angle.	N/A	N/A
Stream	Little Mahantango Creek (WW-T09-9001)	WW-T09-9001	MDC0194.018	CWF, MF	Perennial	Approved Trout Waters	R3	LOD has been reduced to 80' to minimize impacts to WW-T09-9001.	The pipeline was routed in this location to cross stream WW-T09-9001 at a perpendicular angle, and avoid impact wetland W-T09-9001 located approximately 25 feet west of the LOD.	SBR with SC150 fabric	50

Note: *The FERC Alignment Sheets provided in Attachment H-1 show field delineated streams and wetlands within the 300-foot wide environmental survey corridor, and surrounding land use features on an aerial base map.

Drawn By & Date/Time: Sking May 01, 2017 - 10:43am
Drawing Location & Name: G:\0551\14C\14C4909\DWG\BMPs&DETAILS\PL_DNT14C4909(205)_SC-TB.dwg



REVISIONS						
NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	08/26/2015	BL	ISSUED FOR PADEP SUBMITTAL	W0572385	JLK	SMK
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
2	Oct. 2016	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1	W0572385	JLK	SMK
3	April 2017	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #2	W0572385	JLK	SMK

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
ATLANTIC SUNRISE PROJECT
PROPOSED 42" CENTRAL PENN LINE SOUTH PENNSYLVANIA BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET
SCHUYLKILL COUNTY, PENNSYLVANIA
QUANTITY, CROSSING AND ACIDIC SOIL TABLES

WILLIAMS GAS PIPELINE

DRAWN BY: ELZ DATE: 05/15/15 ISSUED FOR BID: SCALE:
CHECKED BY: JLK DATE: 07/02/15 ISSUED FOR CONSTRUCTION: REVISION: J
APPROVED BY: SMK DATE: 07/08/15 DRAWING NUMBER: 24-1600-70-28-A/LL113_9-BMP-SC-TB SHEET 5 OF 5