

# TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC ATLANTIC SUNRISE PROJECT PROPOSED 30" CENTRAL PENN LINE NORTH

## BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET

FAIRMOUNT, ROSS, LAKE, LEHMAN, DALLAS, HARVEYS LAKE, JENKINS  
TOWNSHIPS

LUZERNE COUNTY

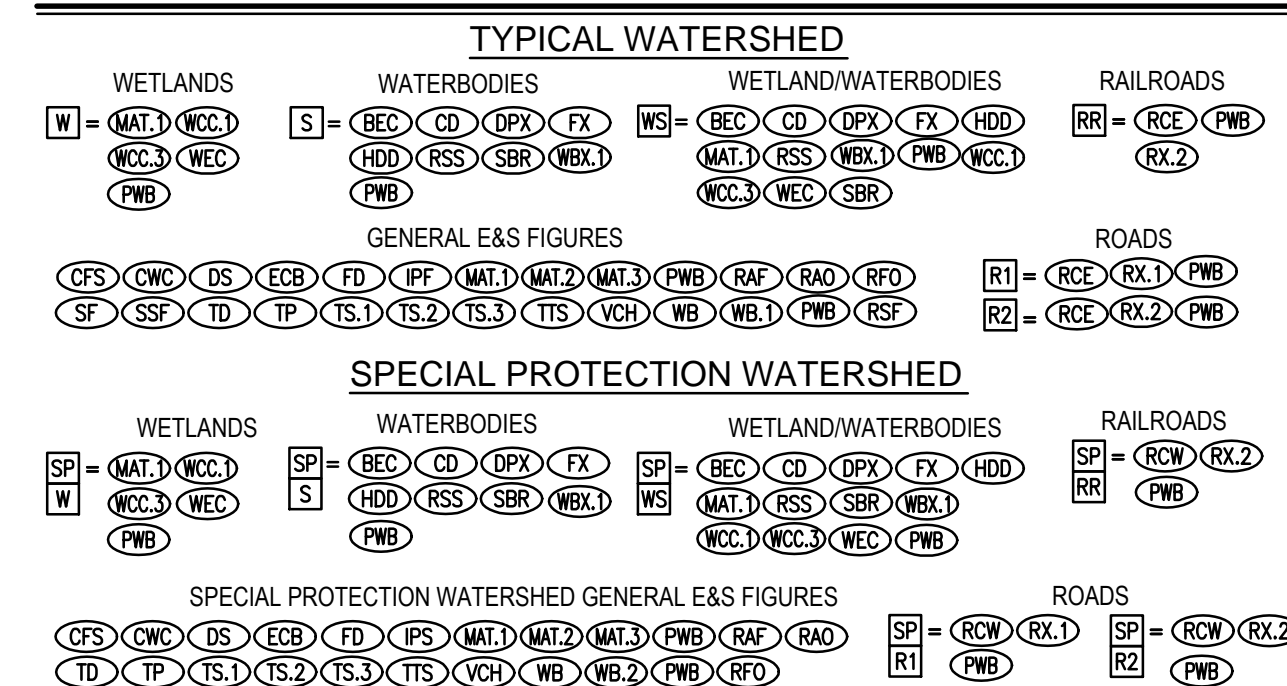
### BMP DETAIL SUMMARY

FIGURE	FIGURE TITLE	SHEET NO.
ARF	ABACT ROCK FILTER	1
BBD	BROAD-BASED DIP	
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	
DS	HYDROSTATIC DEWATERING STRUCTURE	
ECB	EROSION CONTROL BLANKET	
FD	FILTER SOCK DIVERSION	4
FEN	CONSTRUCTION FENCE	
FX	FLUME STREAM CROSSING	
HDD	HORIZONTAL DIRECTIONAL DRILL	
IPF	FILTER BAG INLET PROTECTION TYPE M	5
IPS	STONE AND CONCRETE INLET PROTECTION TYPE M	
MAT.1	TIMBER MATTING CONSTRUCTION	
MAT.2	TIMBER MATTING WITH FILL OVER EXISTING PIPELINES	
MAT.3	TIMBER MATTING AIR BRIDGE	6
PWB	PUMP WATER FILTER BAG	
RAO	RIP RAP APRON AT PIPE OUTLET WITHOUT FLARED END SECTION	
RAP	RIP RAP GRADATION	
RCE	ROCK CONSTRUCTION ENTRANCE	7
RCW	ROCK CONSTRUCTION ENTRANCE WITH WASH RACK	
RFO	ROCK FILTER OUTLET	
RSF	REINFORCED SILT FENCE (30" HIGH)	
RSS	RIP RAP STREAM BANK STABILIZATION	8
RX.1	TRENCHED ROAD CROSSING	
RX.2	BORED ROAD/RAILROAD CROSSING	
SBR	STREAM BANK STABILIZATION WITH REINFORCEMENT BLANKET	
SF	STANDARD SILT FENCE (18" HIGH)	9
SSF	SUPER SILT FENCE (33" HIGH)	
TD	TRENCH DEWATERING	
TP	TRENCH PLUG INSTALLATION	
TRV	TRASH RACK AND ANTI-VORTEX DEWICE	10
TS.1	TOPSOIL SEGREGATION (1)	
TS.2	TOPSOIL SEGREGATION (2)	
TS.3	TOPSOIL SEGREGATION (3)	
TTS	SIDE SLOPE (TWO-TONE) CONSTRUCTION PROCEDURE	11
VCH	VEGETATED CHANNEL	
WB	WATERBAR	
WB.1	WATERBAR LAYOUT DETAIL	
WB.2	COMPOST FILTER SOCK AND SUMP (PADEP APPROVED ALTERNATE DETAIL) AT WATERBAR DISCHARGE	11
WBX.1	BORED WATERBODY CROSSING	
WCC.1	WETLAND INSTALLATION PROCEDURE	
WCC.3	"INUNDATED WETLAND" INSTALLATION PROCEDURE	
WD	WATER DEFLECTOR	
WEC	WETLAND EQUIPMENT CROSSING	

### DRAWING INDEX

DRAWING NUMBER	SHEET NO.	DRAWING NAME
24-1601-70-28-A/1683_3-BMP	1-1	COVER SHEET
ASR-BMP-GN	1-3	GENERAL NOTES
ASR-BMP	1-11	BEST MANAGEMENT PRACTICES STANDARD CONSTRUCTION DETAILS
24-1600-70-28-A/1683_3-BMP-LU-TB	1-6	QUANTITY, CROSSING, AND ACIDIC SOIL TABLES

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

DRAWN BY: ELZ				DATE: 05/15/15				ISSUED FOR: CONSTRUCTION				SCALE:			
TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC				ATLANTIC SUNRISE PROJECT				PROPOSED 30" CENTRAL PENN LINE NORTH				PENNSYLVANIA BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET			
FAIRMOUNT, ROSS, LAKE, LEHMAN, DALLAS, HARVEYS LAKE, JENKINS TOWNSHIPS				LUZERNE COUNTY, PENNSYLVANIA				COVER SHEET				REVISION: 3			
APPROVED BY: SMK				DATE: 07/08/15				DRAWING NUMBER: 24-1601-70-28-A/1683_3-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&S 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.

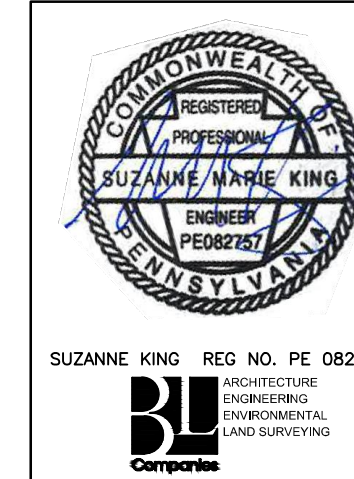
## AGRIGULTURAL EROSION & SEDIMENT CONTROL NOTES

- 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: J			
							APPROVED BY: SMK DATE: 07/08/15 DRAWING NUMBER: ASR-BMP-GN SHEET 2 OF 3			
							W.O.:			



# RIP RAP GRADATION, FILTER BLANKET, & MAXIMUM VELOCITIES

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					
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 <sup>1</sup> V <sub>max</sub> (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 <sup>1</sup>	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
Sunn Hemp	Legume	10.5	3.6	20
Nitro Radishes	Brassicaceae	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	Brassicaceae	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 <sup>1</sup>	
Cool Season - Spring	March 1 to June 1
Warm Season	June 1 to August 15
Cool Season - Fall	August 15 - October 15
Permanent Crop <sup>2</sup>	
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

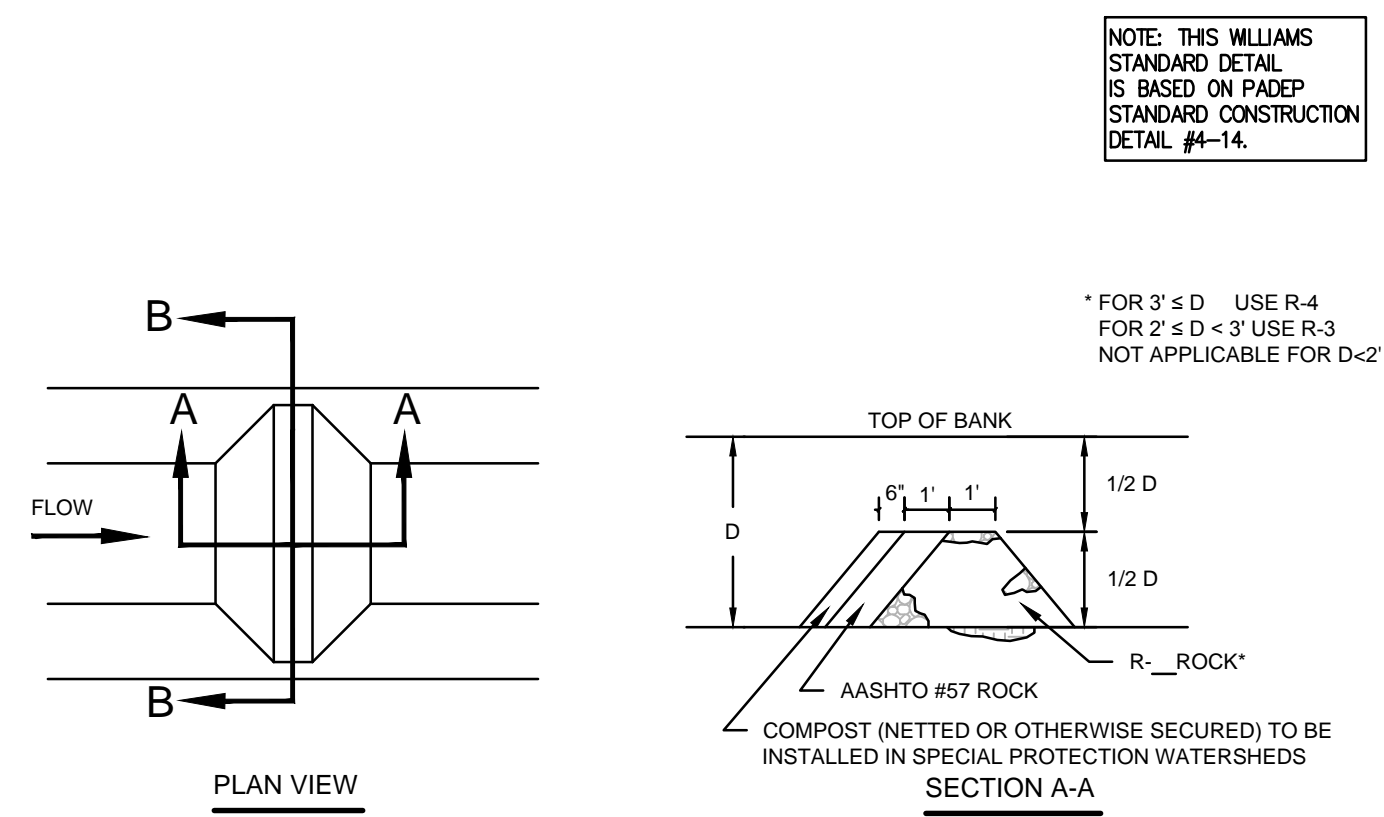
1. MULCHES SHOULD BE APPLIED AT THE RATES SHOWN IN TABLE 11.6
2. STRAW AND HAY MULCH SHOULD BE ANCHORED OR TACKIFIED IMMEDIATELY AFTER APPLICATION TO PREVENT BEING WINDBLOWN. A TRACTOR-DRAWN IMPLEMENT MAY BE USED TO "CRIMP" THE STRAW OR HAY INTO THE SOIL - ABOUT 3 INCHES. THIS METHOD SHOULD BE LIMITED 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 45°F ARE TYPICALLY REQUIRED. APPLICATION SHOULD GENERALLY BE HEAVIEST AT EDGES OF SEEDED AREAS AND AT CRESTS OF RIDGES AND BANKS TO PREVENT LOSS BY WIND. THE REMAINDER OF THE AREA SHOULD HAVE BINDER APPLIED UNIFORMLY. BINDERS MAY BE APPLIED AFTER MULCH IS SPREAD OR SPRAYED INTO THE MULCH AS IT IS BEING BLOWN ONTO THE SOIL. APPLYING STRAW AND BINDER TOGETHER IS GENERALLY MORE EFFECTIVE.
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 8% OR STEEPER SHOULD BE HELD IN PLACE WITH NETTING. LIGHTWEIGHT PLASTIC, FIBER, OR PAPER NETS MAY BE STAPLED OVER THE MULCH ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
6. SHREDDED PAPER HYDROMULCH SHOULD NOT BE USED ON SLOPES STEEPER THAN 5%. WOOD FIBER HYDROMULCH MAY BE APPLIED ON STEEPER SLOPES PROVIDED A TACKIFIER IS USED. THE APPLICATION RATE FOR ANY HYDROMULCH SHOULD BE 2,000 LB/ACRE AT A MINIMUM.
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

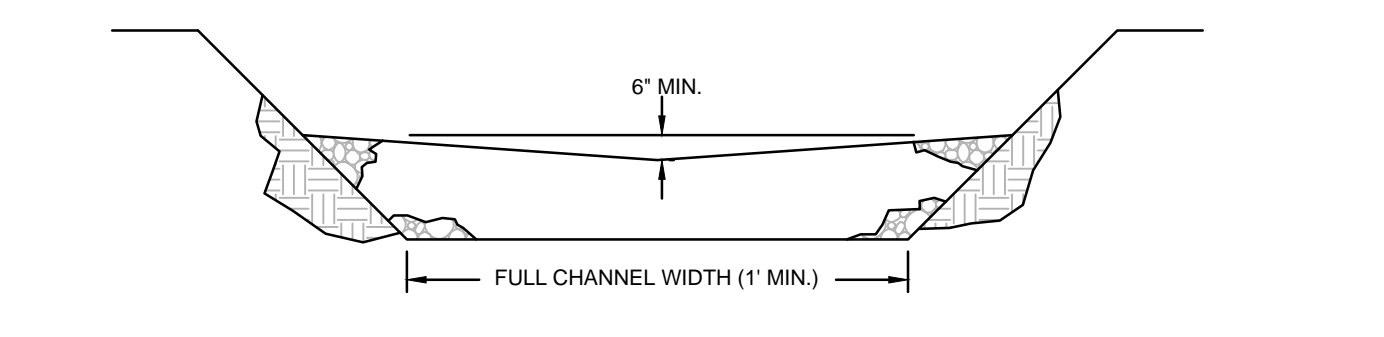
THE PERMIT APPLICANT SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF PERMANENT STORMWATER FACILITIES LOCATED ON THE SUBJECT PROPERTIES. PERMANENT MAINTENANCE OF THE STORM SYSTEM AFTER ACCEPTANCE WILL PRIMARILY CONSIST OF ROUTINE CLEANING OF ACCUMULATED SEDIMENT AND DEBRIS BY FACILITY STAFF OR PRIVATE CONTRACTORS. 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. **MANLINE 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. **ESCG-2**  
COMPLIANCE WITH ESCG-2 REQUIREMENTS AND RECORD KEEPING FOR PERMANENT STORMWATER DISCHARGE AND MAINTENANCE AND OTHER APPLICABLE ESCG-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 REPLACED WITH SUITABLE SPECIES. RESEED BARE AREAS AND INSTALL APPROPRIATE EROSION CONTROLS WHEN SOIL IS EXPOSED. ORANGE CONSTRUCTION FENCE WILL BE USED TO PROTECT SPECIAL VALUE/



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

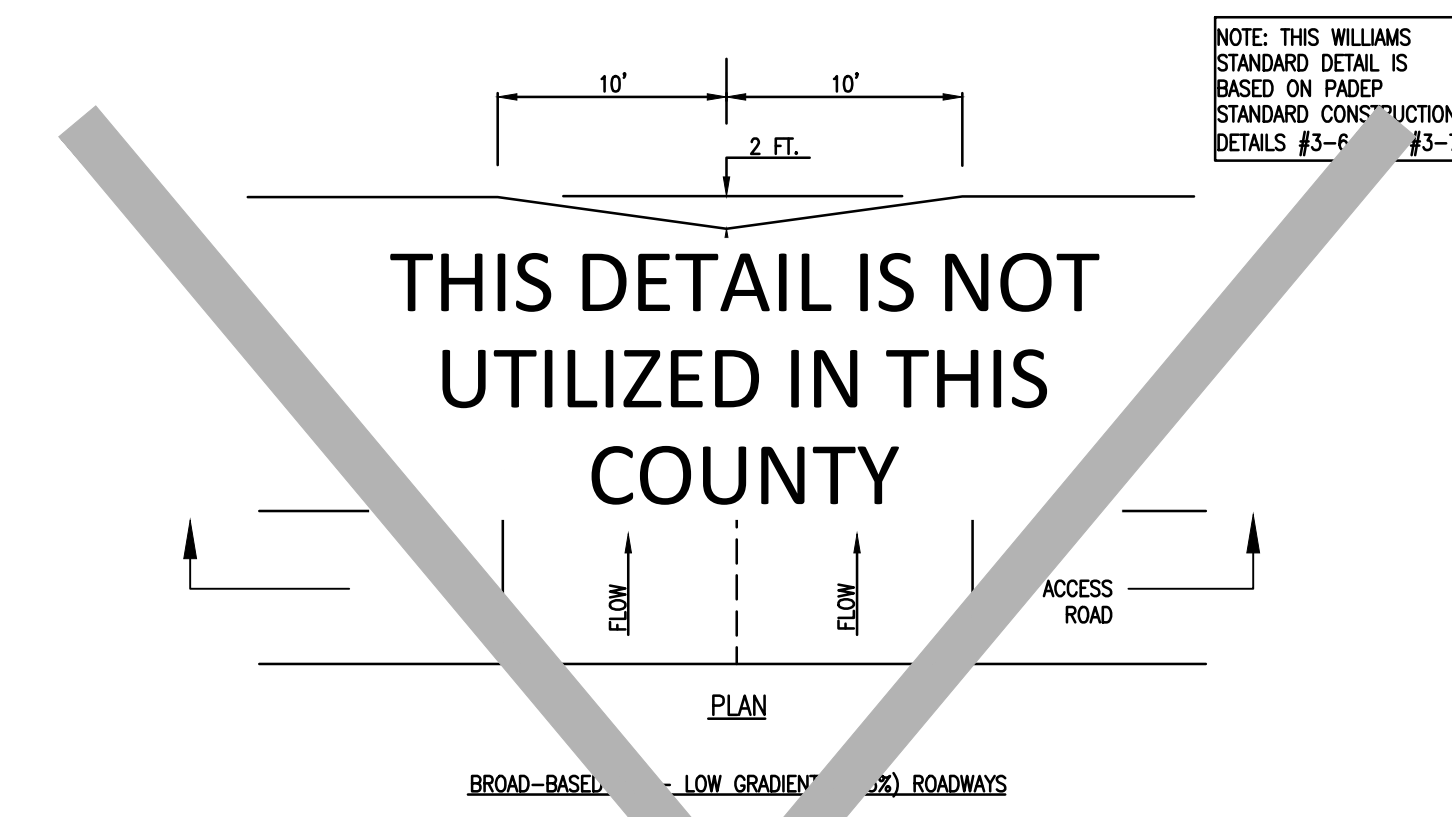
\*FOR 3' <math>D</math> USE R-4  
FOR 2' <math>D</math> <math>3'</math> USE R-3  
NOT APPLICABLE FOR D <math>2'</math>



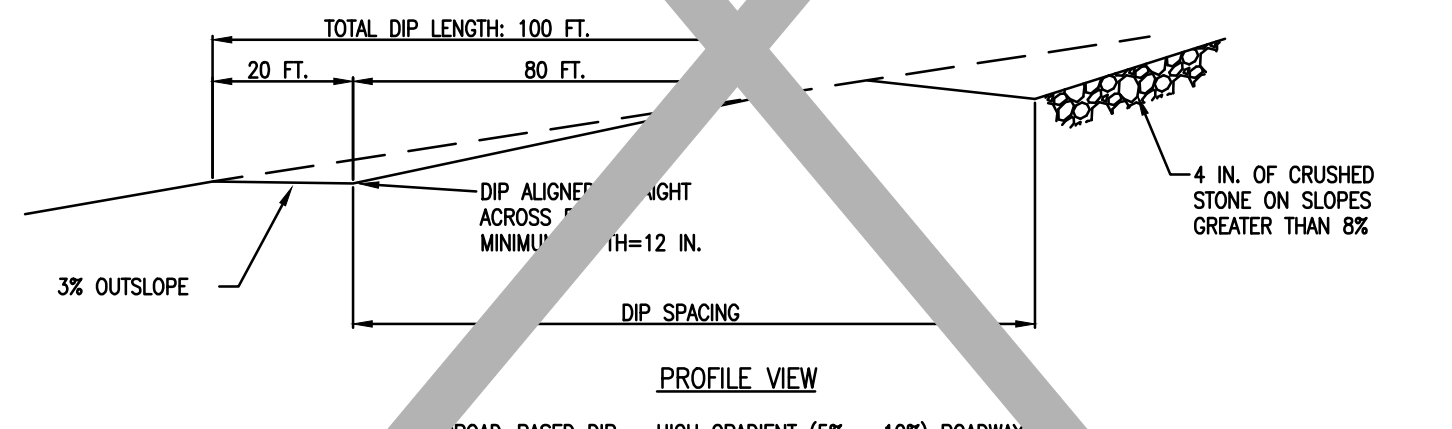
ROCK FILTER NO.	LOCATION	D (FT.)	RIPRAP SIZE
ALL	ACCESS ROADS AS NECESSARY	2	R-3

- 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.

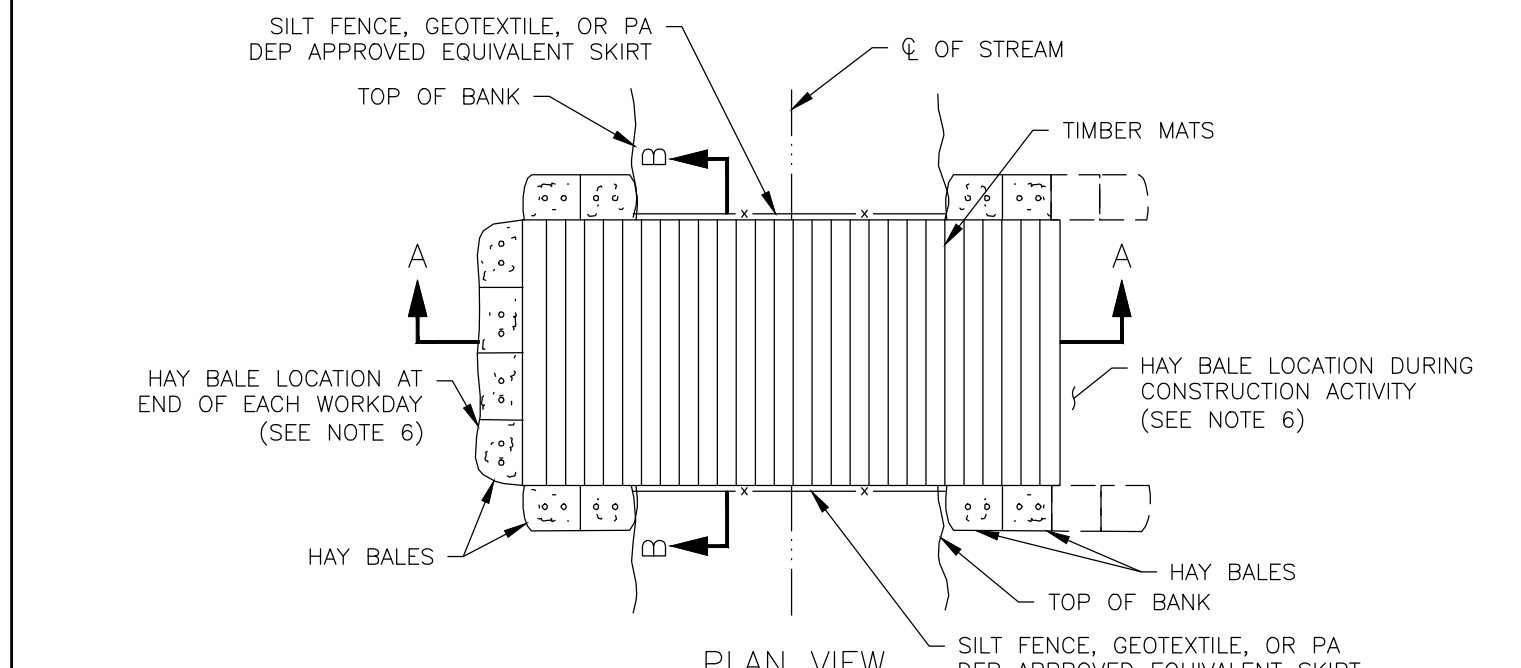
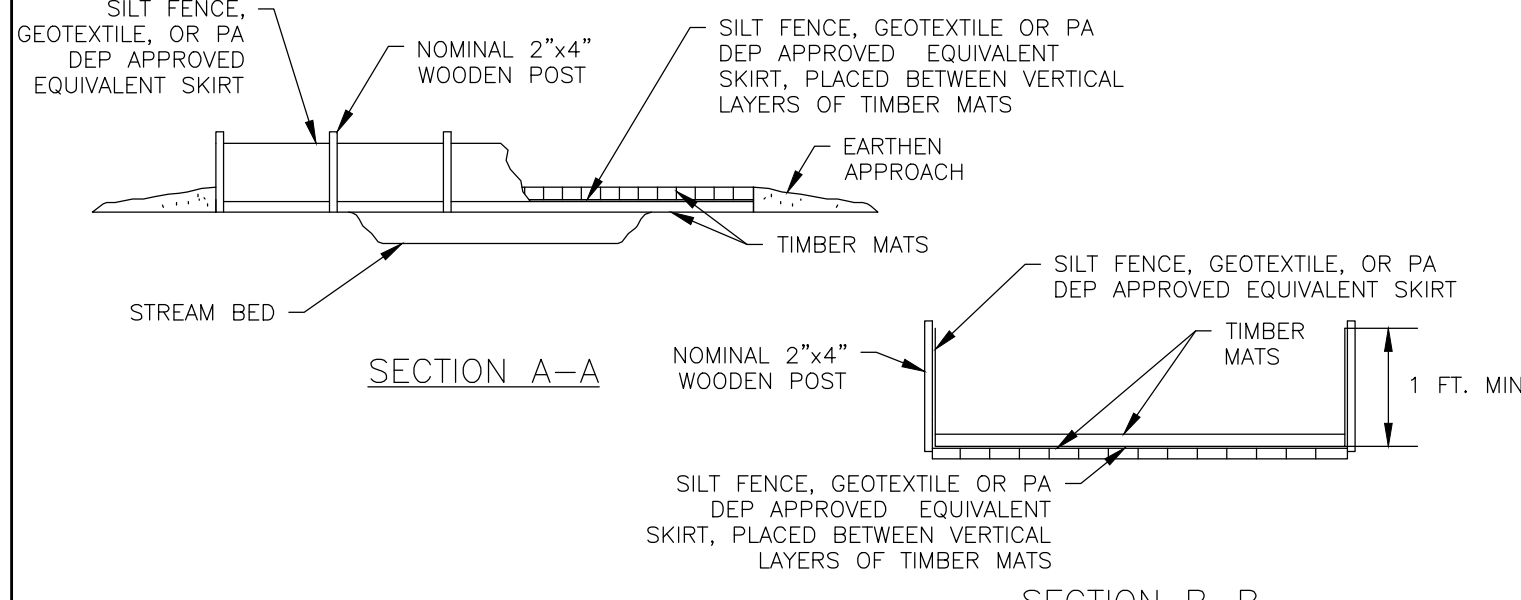


- NOTES:
- BROAD-BASED DIPS SHALL BE CONSTRUCTED TO THE DIMENSIONS SHOWN AND AT THE LOCATIONS SHOWN IN THE PLAN DRAWINGS.
  - DIPS SHALL BE ORIENTED SO AS TO DISCHARGE TO THE LOW SIDE OF THE ROADWAY.
  - DIPS SHALL BE INSPECTED DAILY. DAMAGED OR NON-FUNCTIONING DIPS SHALL BE REPAIRED AT THE END OF THE 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)
<math>< 2</math>	300
3	235
4	200
5	180
6	150
7	145
8	140
9	140
10	140

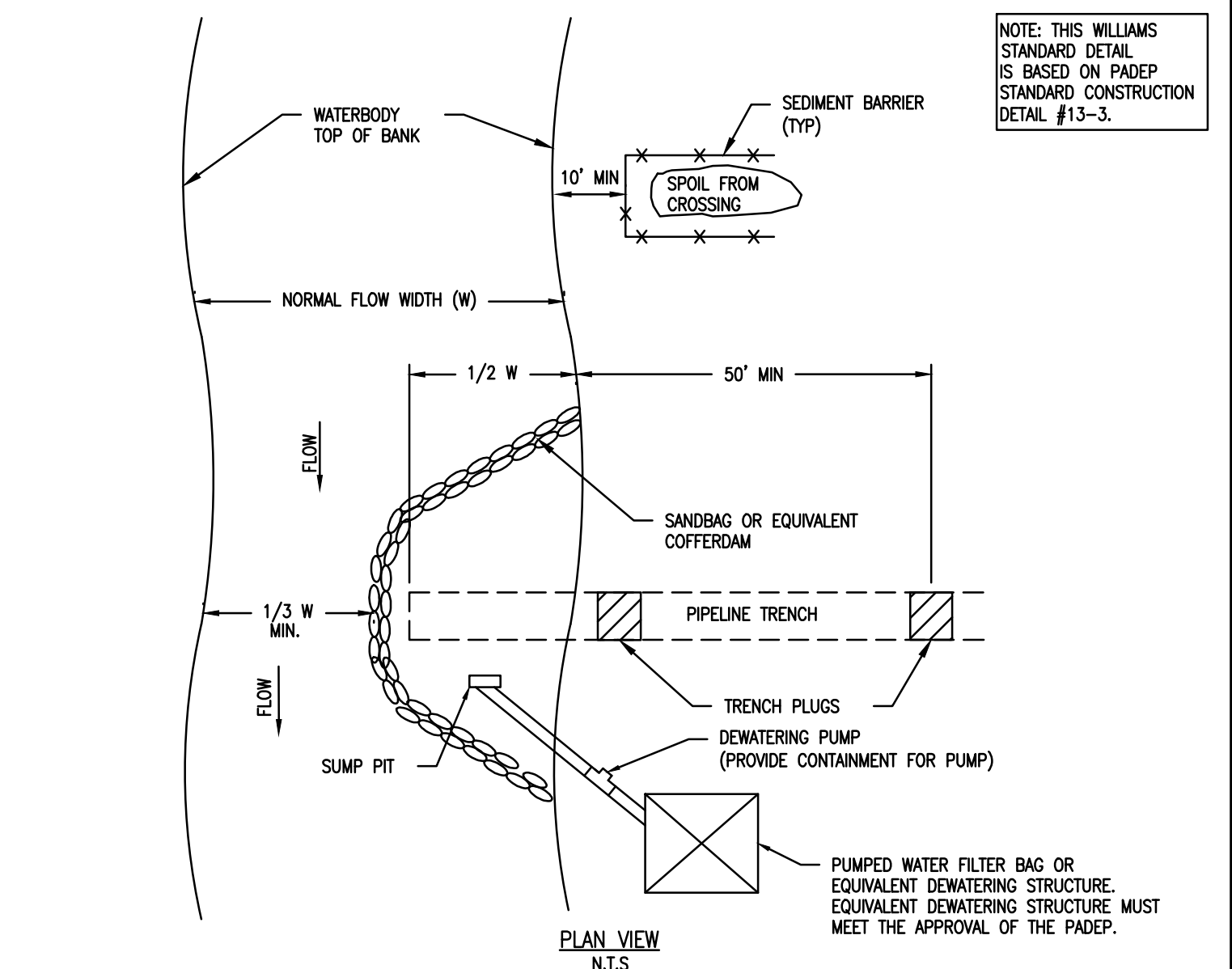
USDA FOREST SERVICE

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 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)

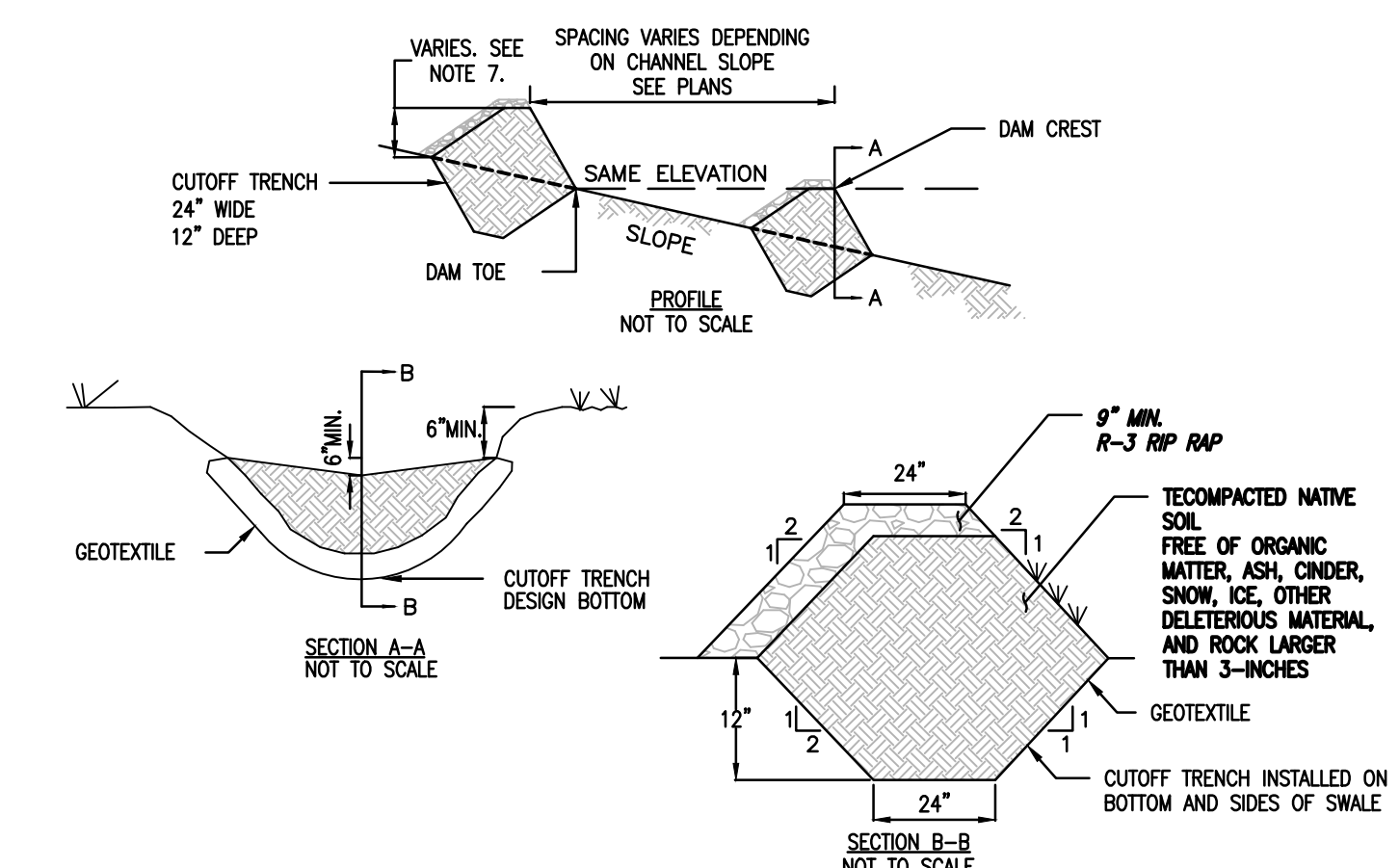


NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #13-3.

- 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.

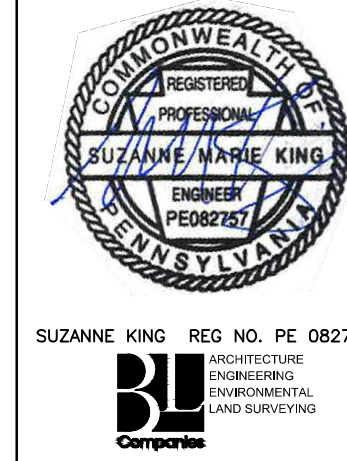
NO.	DATE	BY	REVISION DESCRIPTION	NO.	CHK.	APP.	TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL
							(CD) COFFERDAM STREAM CROSSING



- 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

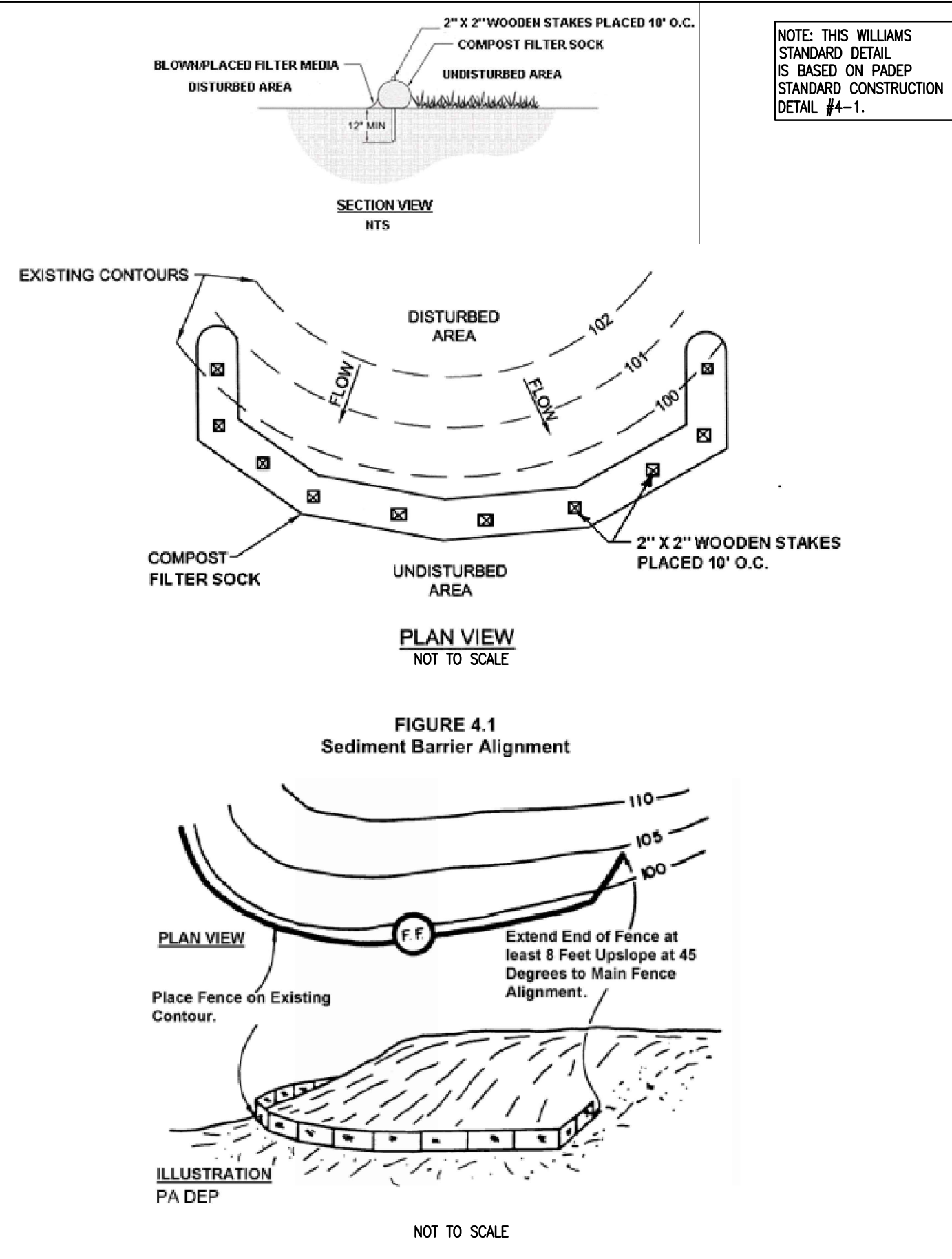
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REVISIONS						
NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	08/26/2015	BL	ISSUED FOR PADEP SUBMITTAL	W0572385	JLK	SMK
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
2	02/04/2016	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	ASB
3	03/26/2016	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	ASB
4	04/20/2017	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1	W0572385	JLK	ASB
5	04/20/2017	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #2	W0572385	JLK	ASB

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 CONSTRUCTION:		ISSUED FOR CONSTRUCTION:	
DRAWING NUMBER:	ASR-BMP	SCALE:	
REVISION:	5	SHEET:	1
OF:	11		





NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #4-1.

FIGURE 4.1 Sediment Barrier Alignment

NO.	DATE	BY	REVISION DESCRIPTION	NO.	NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL				
			(CFS) COMPOST FILTER SOCK				

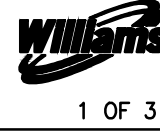


TABLE 4.1 COMPOST SOCK FABRIC MINIMUM SPECIFICATIONS

Material Type	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.	NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL				
			(CFS) COMPOST FILTER SOCK				

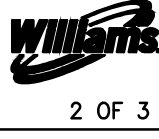
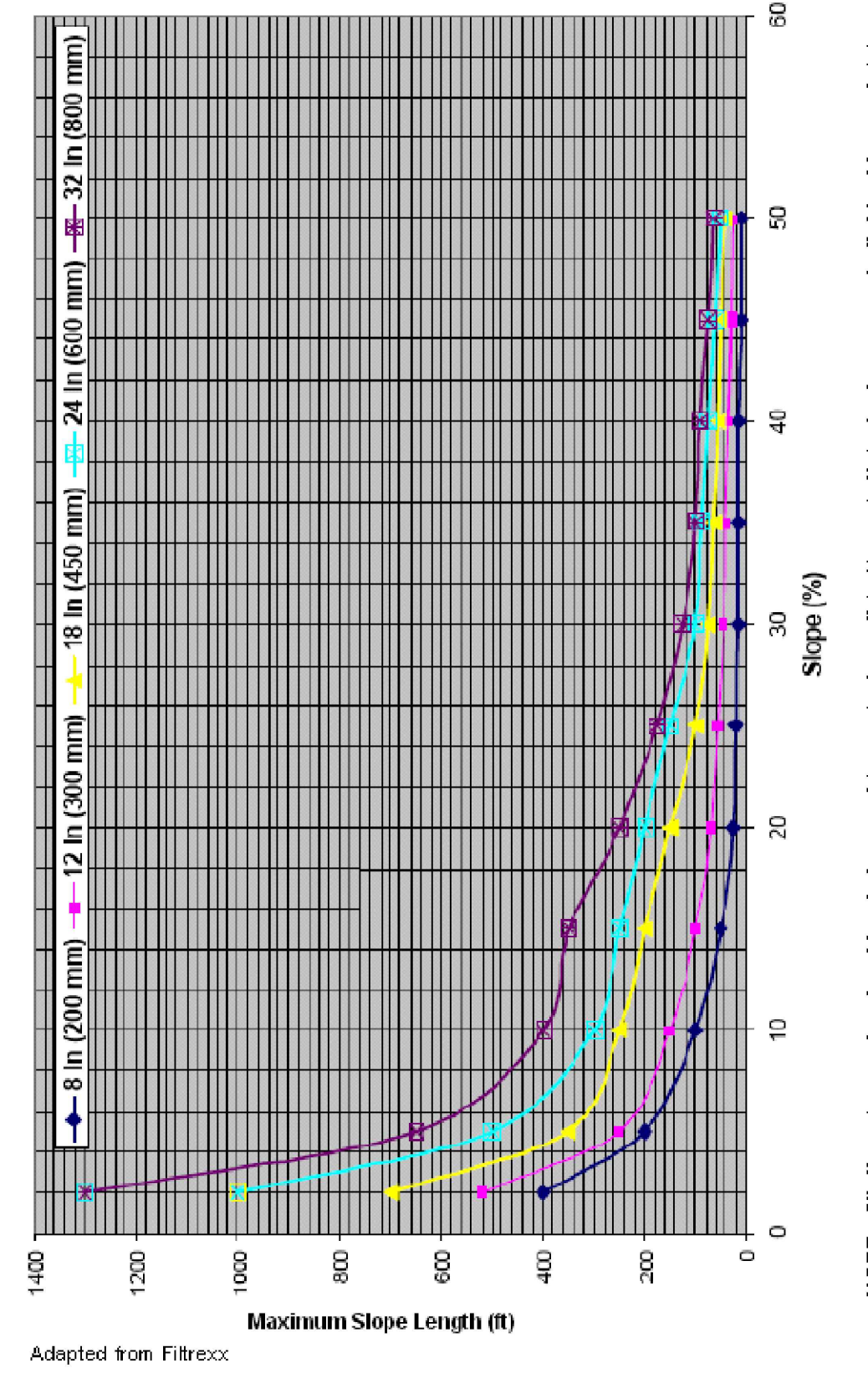
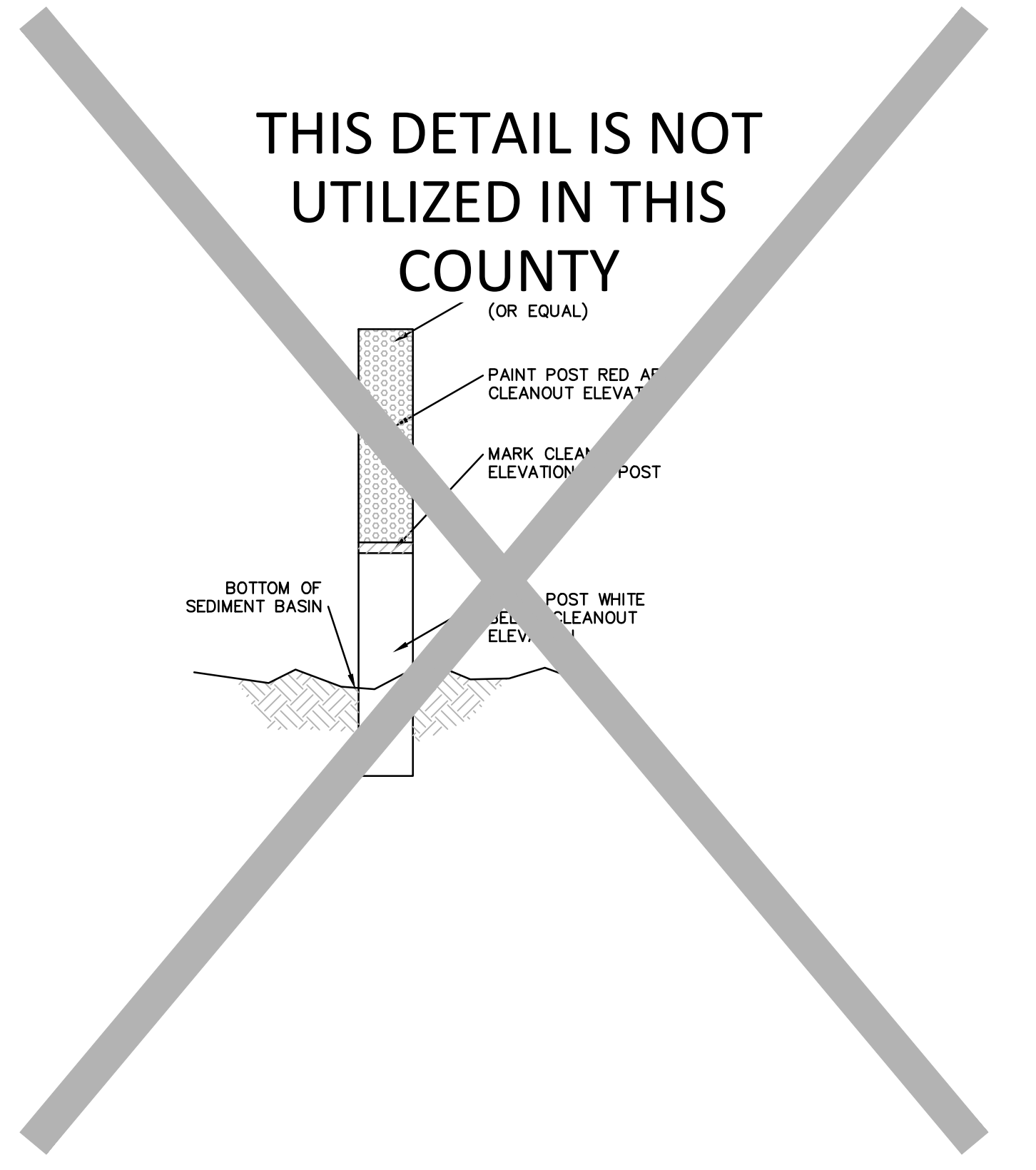


FIGURE 4.2 MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS



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

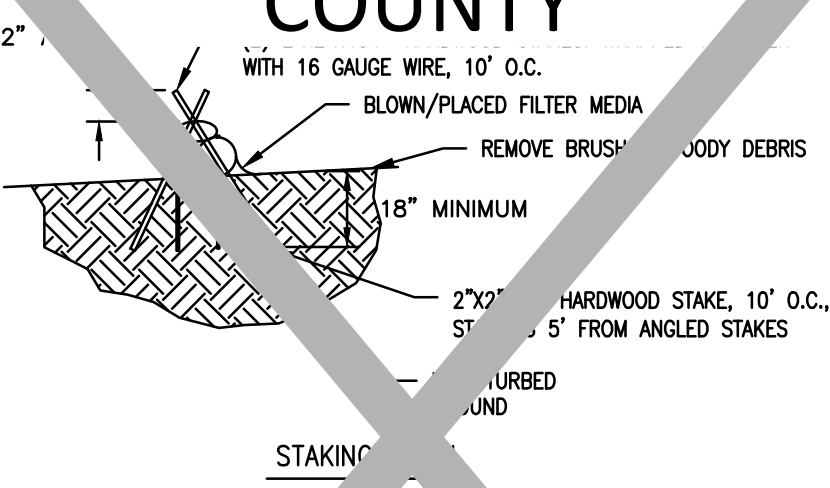
NO.	DATE	BY	REVISION DESCRIPTION	NO.	NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL				
			(CFS) COMPOST FILTER SOCK				



NO.	DATE	BY	REVISION DESCRIPTION	NO.	NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL				
			(CS) CLEANOUT STAKE				



THIS DETAIL IS NOT UTILIZED IN THIS COUNTY



NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #3-11.

- 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. ADDITIONAL STORAGE MAY BE PROVIDED BY MEANS OF AN EXCAVATED SUMP 12" DEEP, EXTENDING 1 TO 3 FEET UPSLOPE OF THE SLOPE ALONG THE LOWER SIDE OF THE TRAP.
  - THE MAXIMUM TRIBUTARY DRAINAGE AREA SHALL BE 0.5 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 PER 12" FREEBOARD FOR EACH AC 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.

NO.	DATE	BY	REVISION DESCRIPTION	NO.	NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL				
			(CST) COMPOST SOCK SEDIMENT TRAP				



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

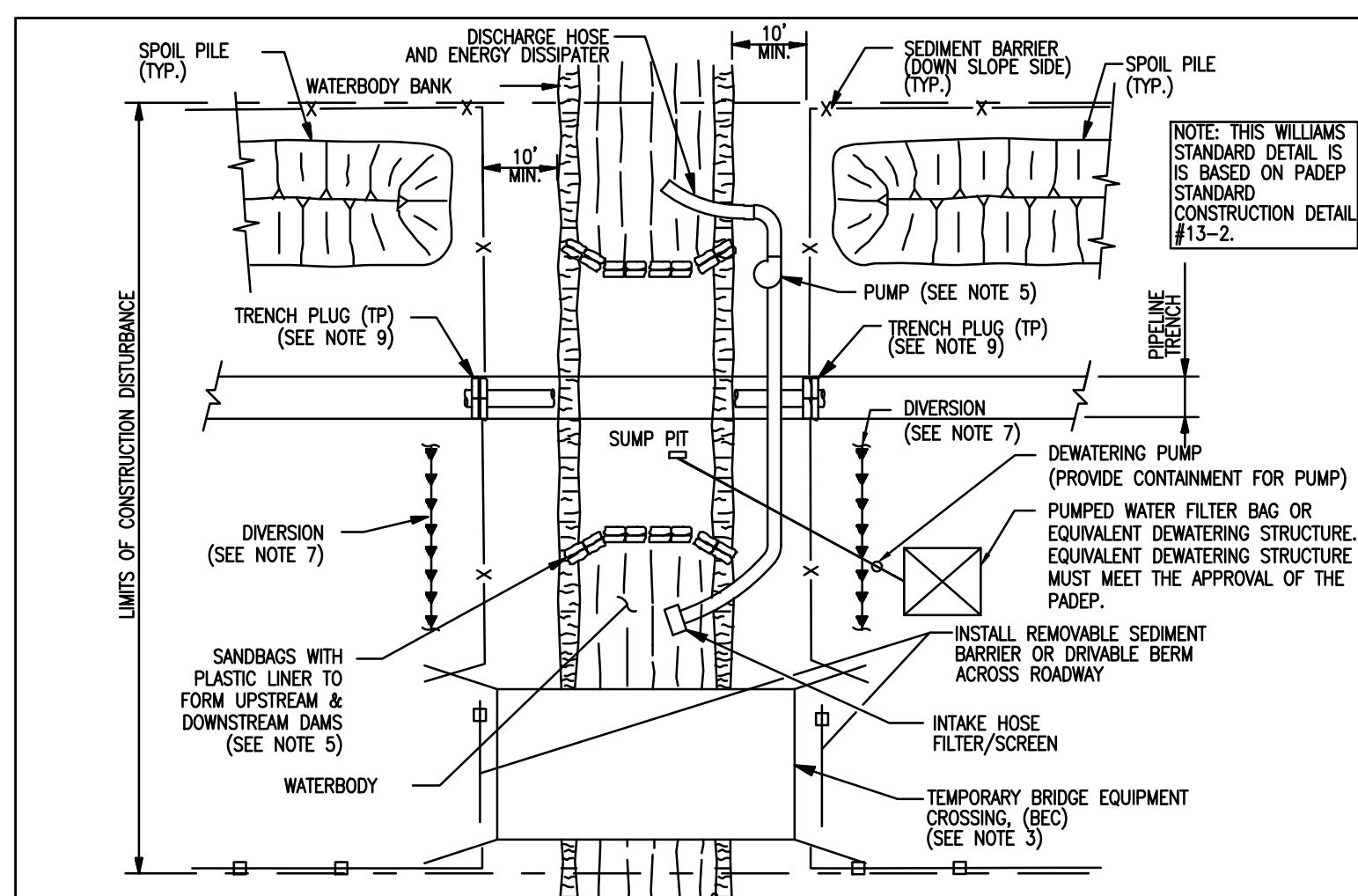
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			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL				
			(CWC) CLEAN WATER CROSSING (TEMP. LEVEL SPREADER)				



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	

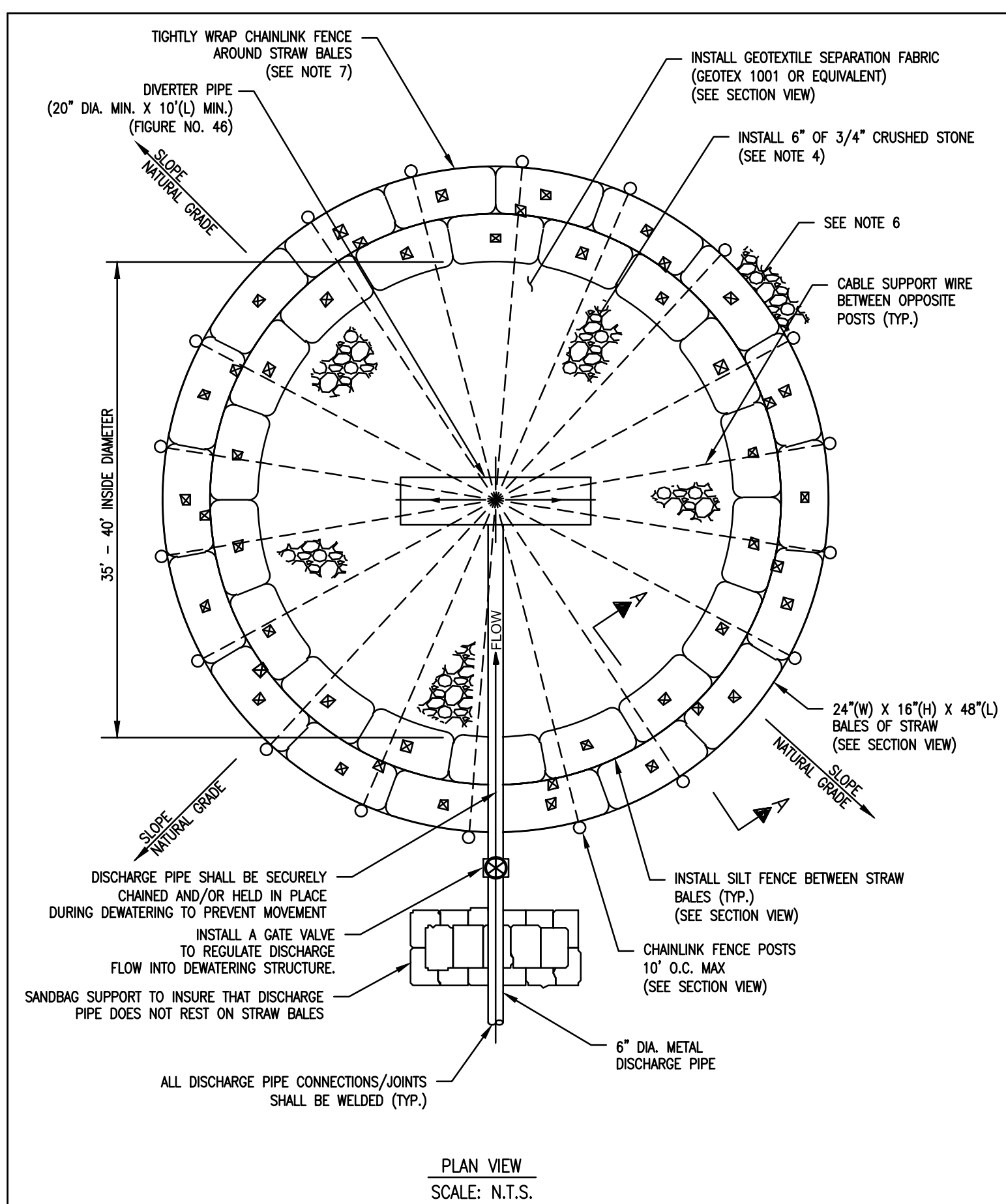
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BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET							
BEST MANAGEMENT PRACTICES DETAILS							
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CHECKED BY:	JLK	DATE:	07/02/15	ISSUED FOR CONSTRUCTION:		REVISION:	J
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W.O. NO.:						OF	11



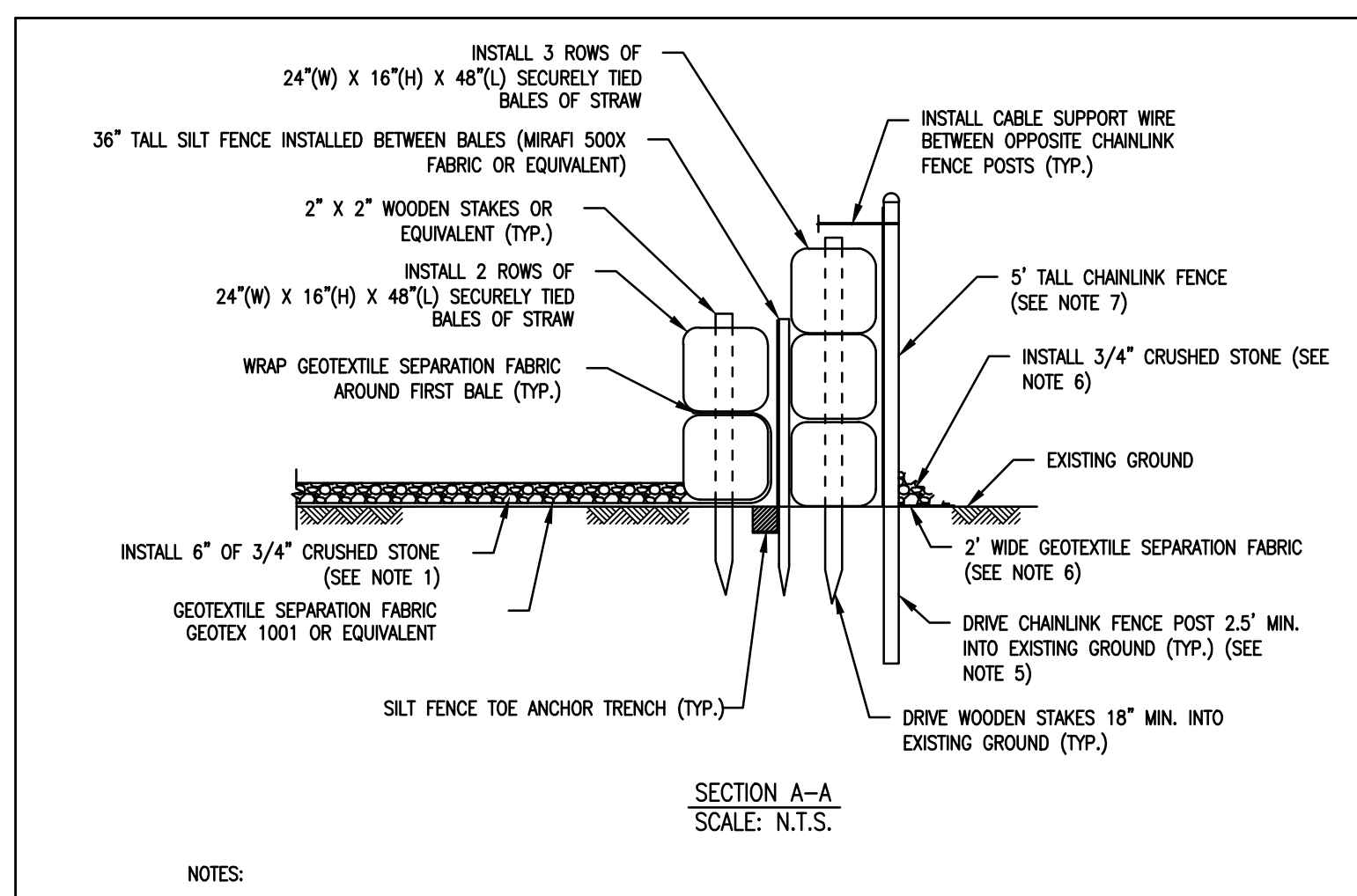


- WILLIAMS STANDARD NOTES:**
- SEDIMENT BARRIERS SHALL BE INSTALLED AS DEPICTED AND ALONG DOWN GRADIENT SIDES OF WORK AREAS AND STAGING AREAS SUCH THAT NO HEAVY SILT LADEN WATER ENTERS THE WATERBODY OR LEAVES THE CONSTRUCTION FOOT-OF-WAY.
  - HARD DITCH PLUGS MUST REMAIN IN PLACE AT CONVENIENT LOCATIONS TO SEPARATE 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, CONTRACTOR SHALL PROVIDE AND USE A TEMPORARY BRIDGE EQUIPMENT CROSSING (BEC).
  - STAGING AREAS FOR WATERBODY CROSSING(S), WHEN REQUIRED, SHALL BE LOCATED AT LEAST 50 FEET FROM WATER'S EDGE AND SHALL BE OF A MINIMUM SIZE NEEDED FOR CONVENIENT PREPARATION.
  - IMPLEMENTATION OF THE DAM-AND-PUMP CROSSING METHOD MUST MEET THE FOLLOWING PERFORMANCE CRITERIA:
    - USE SUFFICIENT PUMPS, INCLUDING ON-SITE BACKUP PUMPS, TO MAINTAIN DOWNSTREAM FLOWS.
    - CONSTRUCT DAMS WITH MATERIALS THAT PREVENT SEDIMENT AND OTHER POLLUTANTS FROM ENTERING THE WATERBODY (E.G., SANDBAGS OR CLEAN GRAVEL WITH PLASTIC LINER).
    - SCREEN PUMP INTAKES.
    - PREVENT STREAMBED SCOUR AT PUMP DISCHARGE.
    - MONITOR THE DAM AND PUMPS TO ENSURE PROPER OPERATION THROUGHOUT THE WATERBODY CROSSING.
  - 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.
  - CHEMICALS, FUELS AND LUBRICATING OILS SHALL NOT BE STORED AND EQUIPMENT, EXCEPT PUMPS, SHALL NOT BE REFUELED WITHIN 100 FEET OF THE WATERBODY.
  - INSTALL TRENCH PLUGS 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.
  - CONTRACTOR SHALL POSTONE GRADING OF FOOT-OF-WAY ADJACENT TO WATERBODY UNTIL STAGING AREA IS PREPARED AND WORK IN THE WATERBODY IS READY TO COMMENCE.
  - PUMP INTAKE SHALL BE MAINTAINED TO A SUFFICIENT DISTANCE FROM BOTTOM TO PREVENT SEDIMENT FROM ENTERING THE SYSTEM.
  - DO NOT EXCAVATE A SUMP FOR THE PUMP INTAKE.
  - 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 UNDER LOW FLOW CONDITIONS WITH OVERSIGHT FROM AN ENVIRONMENTAL INSPECTOR. STORM EVENT WEATHER FORECASTS WILL BE MONITORED PRIOR TO AND DURING THE STREAM CROSSING.

NO.	DATE	BY	REVISION DESCRIPTION	W.D.	NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL				
			DPX DAM AND PUMP STREAM CROSSING				

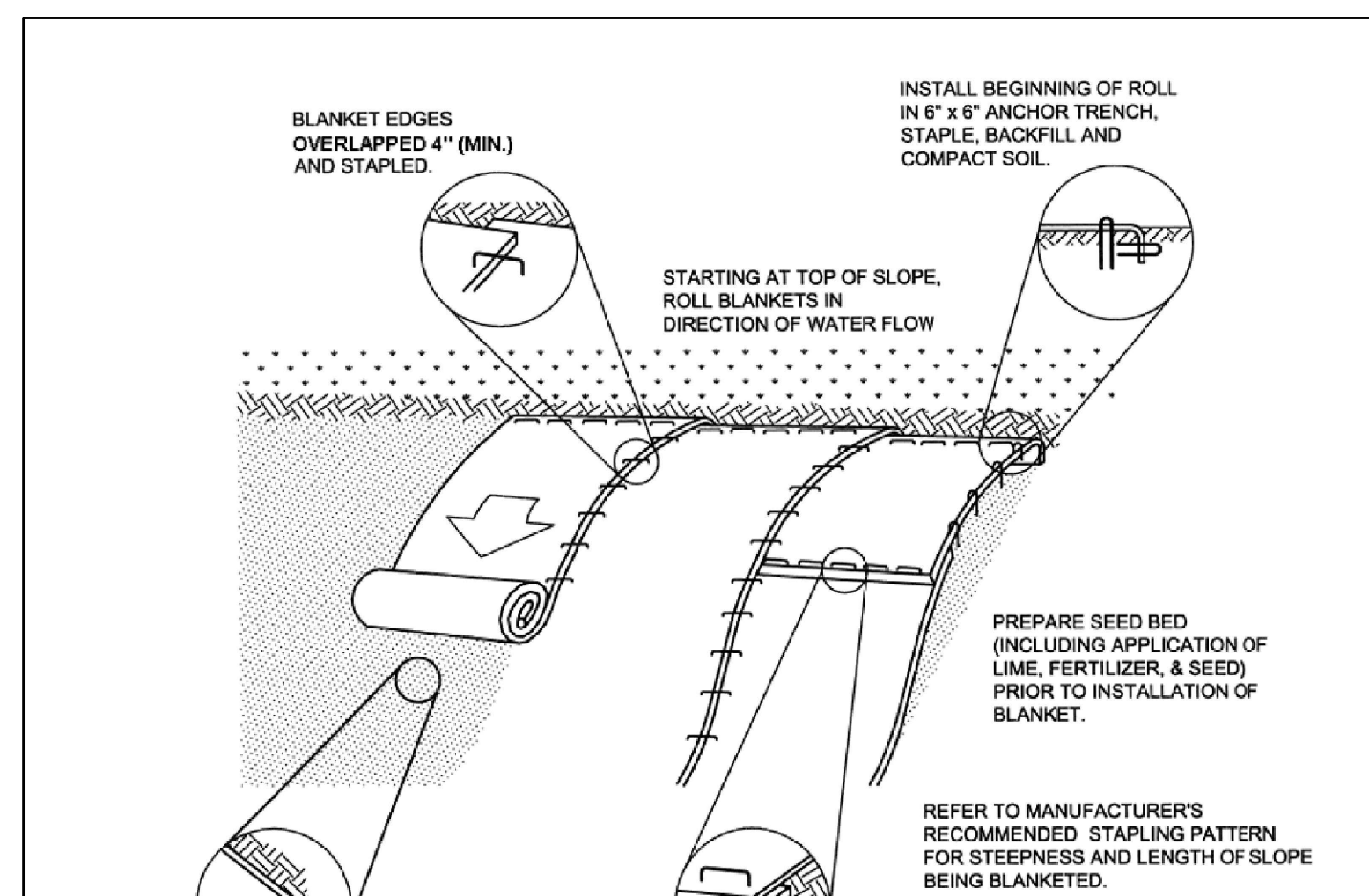


NO.	DATE	BY	REVISION DESCRIPTION	W.D.	NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL				
			DS HYDROSTATIC DEWATERING STRUCTURE				



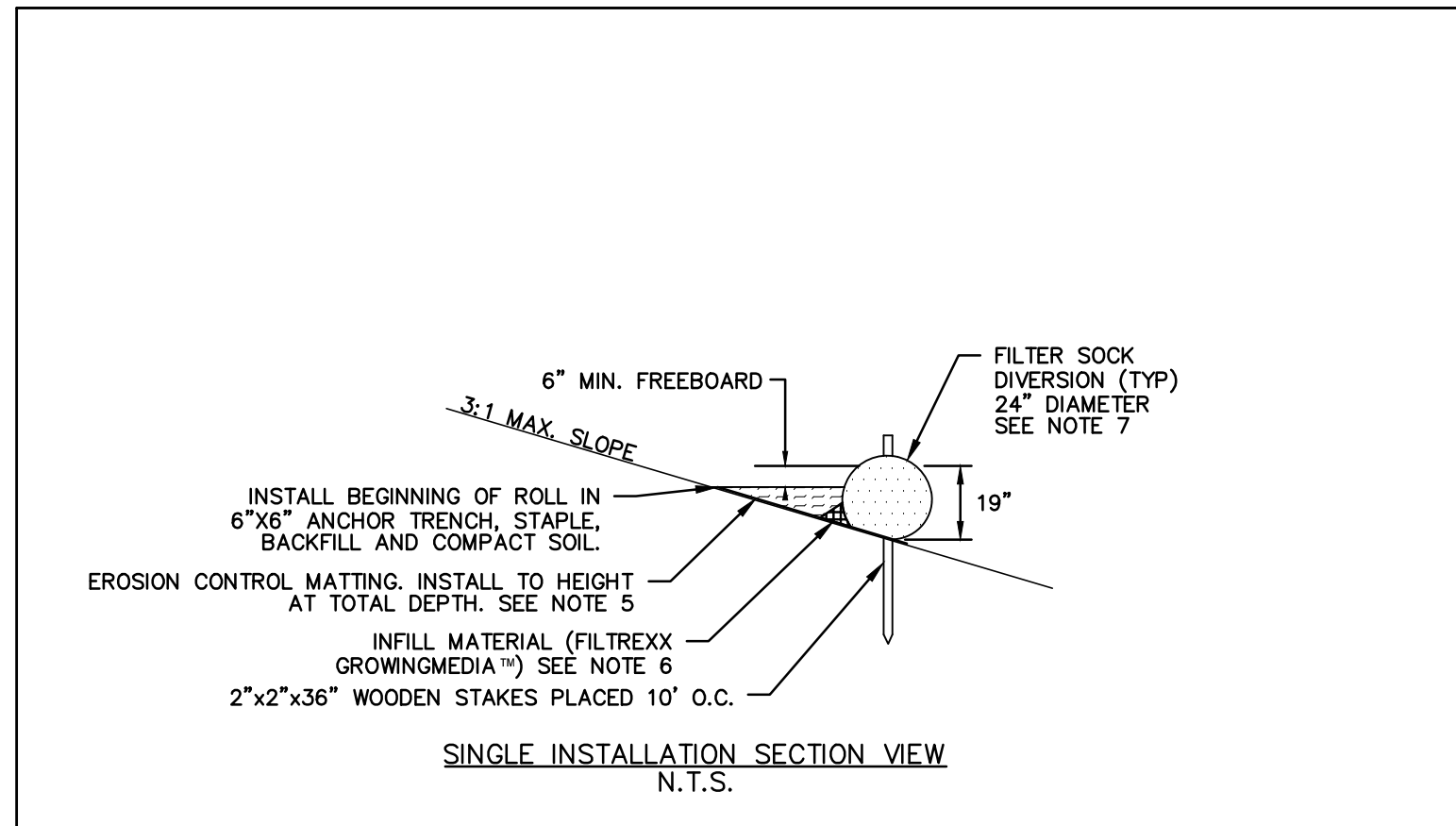
- NOTES:**
- STRUCTURE SHALL BE PLACED ON A LEVEL WELL VEGETATED SITE SUCH THAT WATER WILL FLOW AWAY FROM STRUCTURE AND WORK AREAS AND MINIMIZE EROSION OF THE SURROUNDING AREA TO THE EXTENT PRACTICABLE.
  - AT THE DISCRETION OF THE ENVIRONMENTAL INSPECTOR, ADDITIONAL EROSION AND SEDIMENTATION CONTROL DEVICES (E.G. RIPRAP CHECK DAMS, COMPOST FILTER SOCKS, ETC.) MAY BE REQUIRED TO BE INSTALLED DOWNSTREAM OF THE STRUCTURE IF EROSION BECOMES APPARENT DURING DEWATERING.
  - FLOW RATES AND VOLUMES THROUGH DISCHARGE AND DIVERTER PIPES SHALL BE SUCH THAT THE STRUCTURE WILL NOT OVERFLOW OR CAUSE EROSION. A MINIMUM FREEBOARD OF 3" MEASURED FROM THE TOP OF THE THIRD ROW OF STRAW BALES TO THE WATER SURFACE ELEVATION SHALL BE MAINTAINED AT ALL TIMES. ADDITIONAL DEWATERING STRUCTURES WILL BE ADDED AS NECESSARY TO FACILITATE DEWATERING OF THE PIPELINE AT THE APPROVED RATES.
  - THE 3/4" CRUSHED STONE INSTALLED WITHIN THE BASIN SHALL BE WASHED TO REMOVE ALL DIRT/FINE PARTICLES PRIOR TO INSTALLATION.
  - THE CHAINLINK FENCE POSTS SHALL BE DRIVEN A MINIMUM OF 2.5 FT. INTO STABLE, EXISTING GROUND. THE CONTRACTOR MAY BE REQUIRED TO INSTALL THE POLES DEEPER IF STABLE SUBSOILS ARE NOT ACHIEVED WITHIN 2.5 FT.
  - AT THE DISCRETION OF THE ENVIRONMENTAL INSPECTOR, ADDITIONAL GEOTEXTILE SEPARATION FABRIC AND 3/4" CRUSHED STONE MAY BE REQUIRED TO BE INSTALLED AROUND THE OUTSIDE EDGE OF THE DEWATERING STRUCTURE.
  - CHAINLINK FENCE SHALL BE INSTALLED TIGHTLY AGAINST THE STRAW BALES AND SECURELY FASTENED TOGETHER AT ALL JOINTS WITH CABLE TENSION WIRE AND STRETCHER BARS.
  - THE ENVIRONMENTAL INSPECTOR SHALL HAVE THE AUTHORITY TO MODIFY THE DESIGN AS REQUIRED TO PREVENT EROSION AND SEDIMENTATION DOWNSTREAM OF THE STRUCTURE.
  - STRAW BALES SHALL BE STACKED SUCH THAT THE JOINTS ARE STAGGERED.

NO.	DATE	BY	REVISION DESCRIPTION	W.D.	NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL				
			DS HYDROSTATIC DEWATERING STRUCTURE				



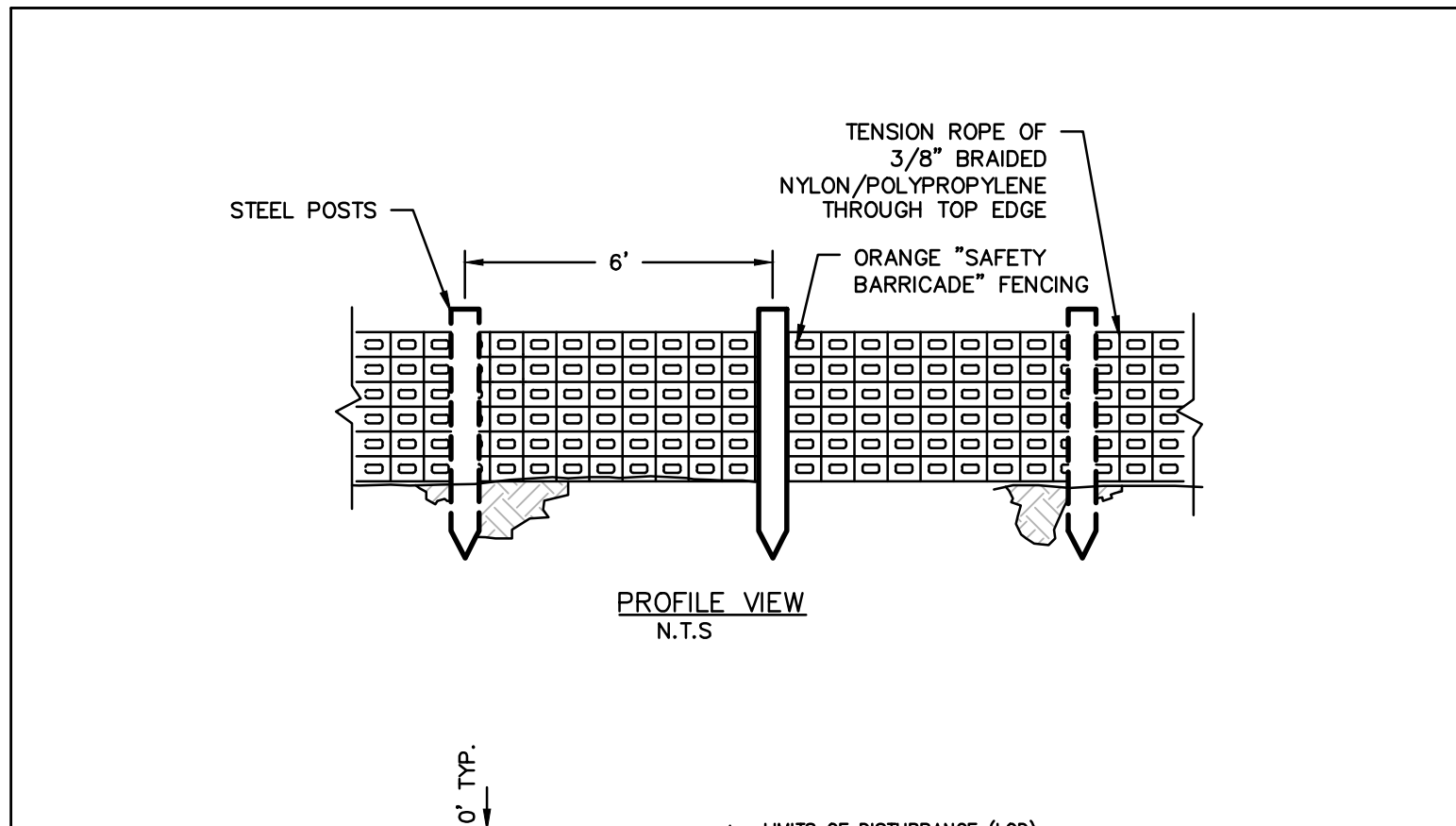
- NOTES:**
- SEED AND SOIL AMENDMENTS SHALL BE APPLIED ACCORDING TO THE RATES IN THE PLAN DRAWINGS PRIOR TO INSTALLING THE BLANKET.
  - PROVIDE ANCHOR TRENCH AT TOE OF SLOPE IN SIMILAR FASHION AS AT TOP OF SLOPE.
  - SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS, AND GRASS.
  - BLANKET SHALL HAVE GOOD CONTINUOUS CONTACT WITH UNDERLYING SOIL THROUGHOUT ENTIRE LENGTH. LAY BLANKET LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH SOIL. DO NOT STRETCH BLANKET.
  - STAPLING OF THE BLANKET SHALL BE DONE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
  - BLANKETED AREAS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT UNTIL PERENNIAL VEGETATION IS ESTABLISHED TO A MINIMUM UNIFORM 70% COVERAGE THROUGHOUT THE BLANKETED AREA. DAMAGED OR DISPLACED BLANKETS SHALL BE RESTORED OR REPLACED WITHIN 4 CALENDAR DAYS.
  - BIODEGRADABLE STAPLES SHALL BE USED.
- WILLIAMS SUPPLEMENTAL NOTES:**
- CONTRACTOR SHALL USE SINGLE MAT STRAW FOR SLOPES FLATTER THAN 3:1.
  - HYDRAULIC APPLIED EROSION CONTROL BLANKETS MAY BE USED IN LIEU OF ECB.

NO.	DATE	BY	REVISION DESCRIPTION	W.D.	NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL				
			ECB EROSION CONTROL BLANKET				



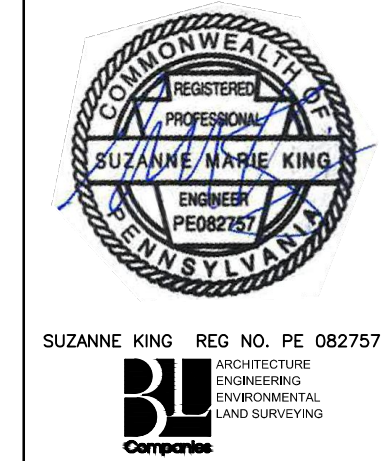
- NOTES:**
- REMOVE SEDIMENT FROM THE UPSLOPE SIDE OF THE FILTER SOCK DIVERSION WHEN ACCUMULATION HAS REACHED 1/2 OF THE EFFECTIVE HEIGHT OF THE FILTER SOCK DIVERSION. SEDIMENT SHALL ALSO BE REMOVED DURING INSTALLATION OF FINAL STABILIZATION MEASURES (E.G. EROSION CONTROL MATTING, SEEDING, MULCHING, ETC.) TO LIMIT POTENTIAL DISTURBANCE FROM CONSTRUCTION EQUIPMENT WHILE VEGETATION IS ESTABLISHING.
  - SLOPES GREATER THAN 5% MAY REQUIRE ADDITIONAL STABILIZATION PRACTICES AS DETERMINED BY THE ENVIRONMENTAL INSPECTOR.
  - THE FILTER SOCK DIVERSION SHALL BE FILLED WITH FILTRREXX GROWINGMEDIA™ OR APPROVED EQUAL AND SEEDED AT THE TIME OF INSTALLATION. SOIL OR SAND MAY BE ADDED TO THE GROWINGMEDIA™ TO ADD WEIGHT AND BALLAST TO THE RUNOFF DIVERSION.
  - IF UNDERMINING IS OBSERVED CONTRACTOR SHALL PROVIDE AND MAINTAIN GROWING MEDIA PACKING AT TOE OF FILTER SOCK DIVERSION.
  - EROSION CONTROL MATTING INSTALLED UNDER AND ADJACENT TO THE FILTER SOCK DIVERSION FOR ACCESS ROADS SHALL BE NORTH AMERICAN GREEN C-125™ OR APPROVED EQUIVALENT AND SEEDED AT THE TIME OF INSTALLATION. REFER TO TABLE 2: TEMPORARY CLEAN WATER DIVERSION OF THIS PLAN SET FOR THE REQUIRED NORTH AMERICAN GREEN (OR APPROVED EQUIVALENT) LINING ASSOCIATED WITH THE PIPELINE FILTER SOCK DIVERSIONS. REFER TO THE EROSION CONTROL BLANKET DETAIL (ECB) ON PAGE 3 FOR PROPER INSTALLATION OF EROSION CONTROL MATTING.
  - INFILL MATERIAL (FILTRREXX GROWINGMEDIA™ OR APPROVED EQUAL) SHALL BE MODIFIED TO REDUCE PERMEABILITY AND PROMOTE VEGETATIVE GROWTH IN ACCORDANCE WITH BMP REQUIREMENTS. THE GROWINGMEDIA™ SHALL BE DISPersed ON SITE OR THE FILTER SOCK DIVERSION SHALL BE REMOVED ONCE THE DISTURBED AREA HAS BEEN PERMANENTLY STABILIZED OR AS DETERMINED BY THE ENVIRONMENTAL INSPECTOR.
  - MAXIMUM EFFECTIVE HEIGHT OF A 24" FILTER SOCK IS 19", THEREFORE TOTAL DEPTH IS ALSO 19". EFFECTIVE HEIGHT MINUS FREEBOARD (6") SHOULD NOT EXCEED 13".
  - EROSION CONTROL MATTING SHOULD NOT EXTEND UPHILL PAST THE LIMIT OF DISTURBANCE.

NO.	DATE	BY	REVISION DESCRIPTION	W.D.	NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL				
			FD FILTER SOCK DIVERSION				



- NOTES:**
- INSTALL CONSTRUCTION FENCING ALONG THE LOD, AS NECESSARY, AND AROUND AREAS TO BE PROTECTED, SUCH AS WETLANDS AND TREES.

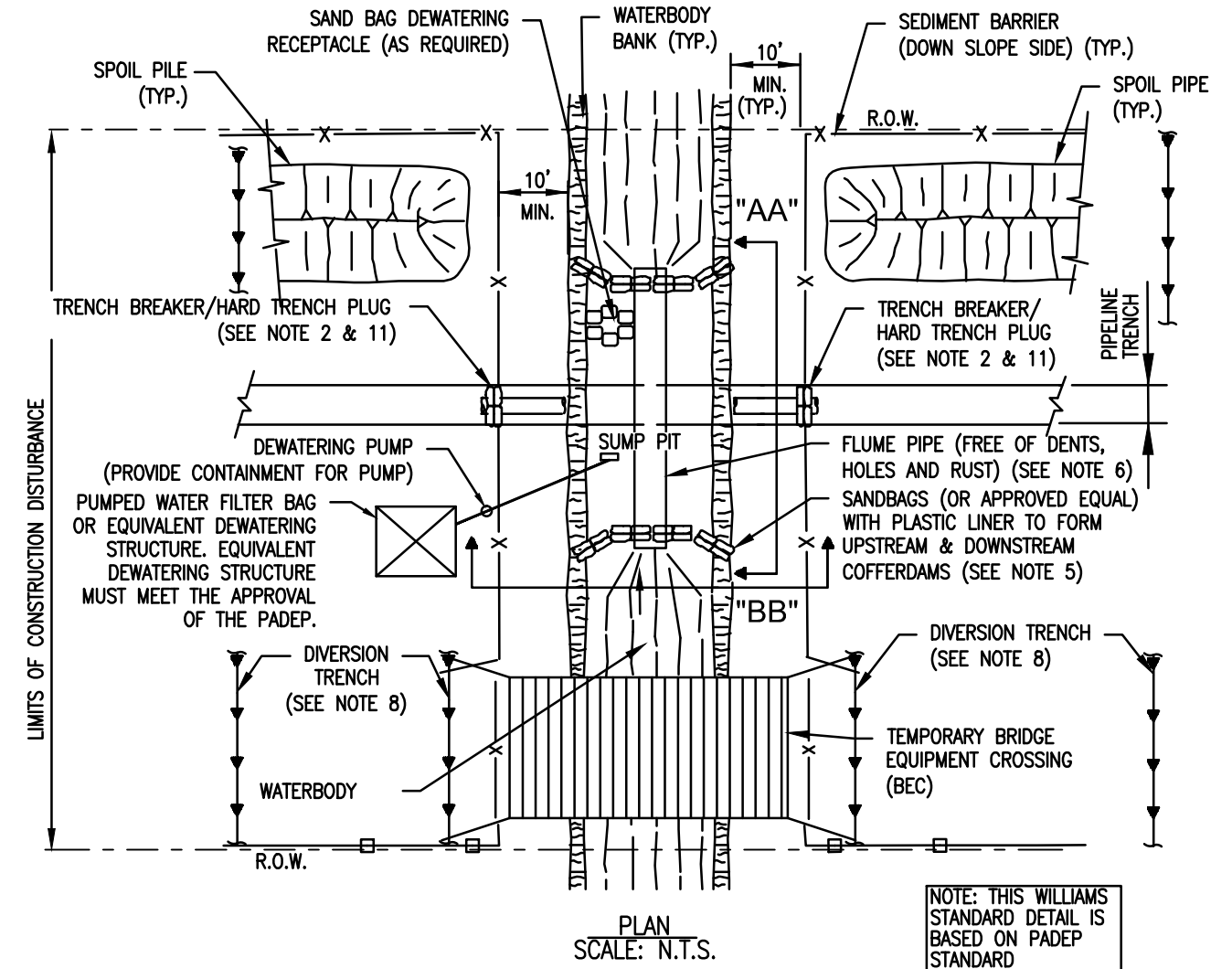
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			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL				
			FEN CONSTRUCTION FENCE				



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

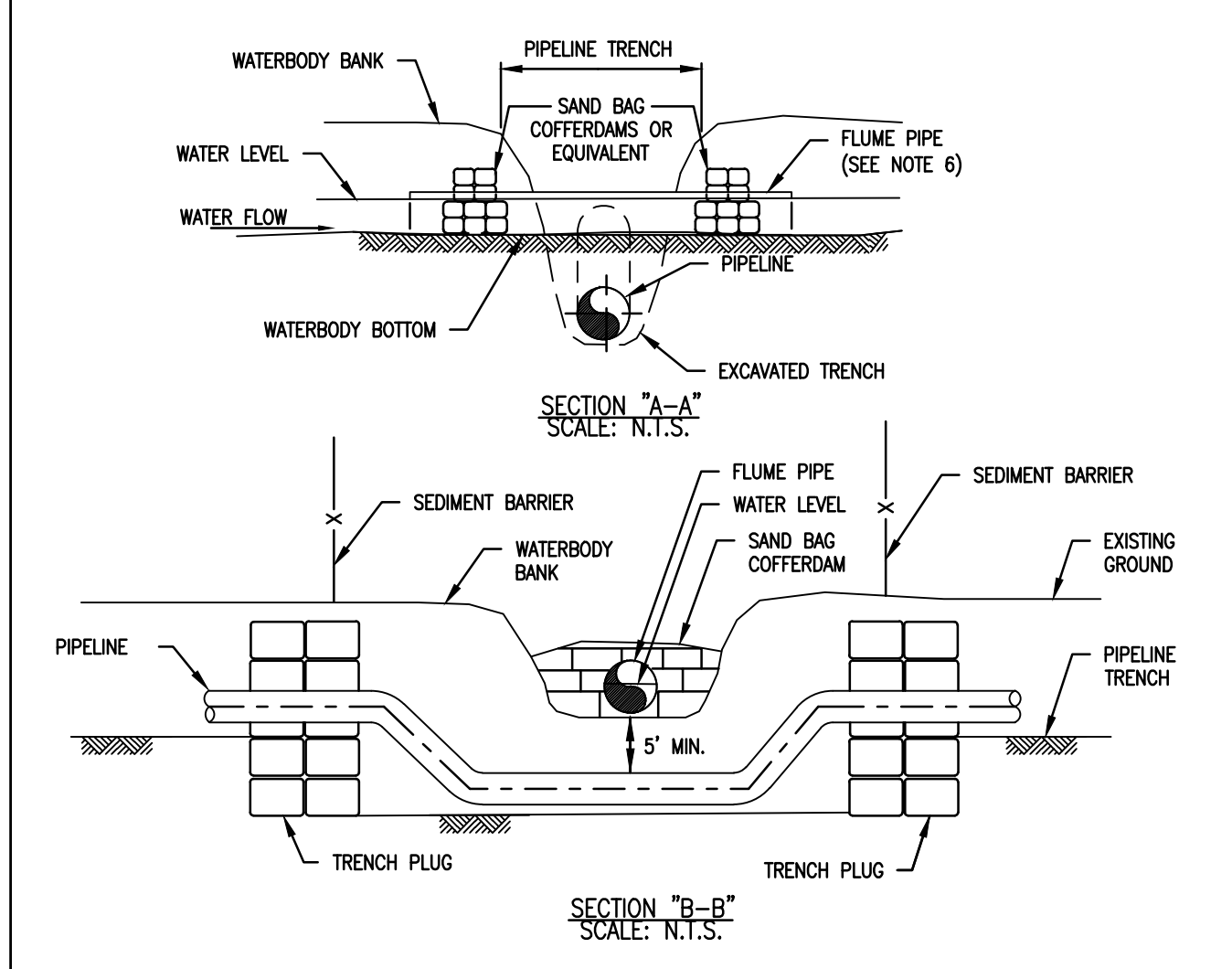
TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC			
ATLANTIC SUNRISE PROJECT			
BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET			
BEST MANAGEMENT PRACTICES DETAILS			
DRAWN BY:	ELZ	DATE:	05/15/15
CHECKED BY:	JLK	DATE:	07/02/15
APPROVED BY:	SMK	DATE:	07/08/15
W.D.:		DRAWING NUMBER:	ASR-BMP
SCALE:		ISSUED FOR CONSTRUCTION:	
REVISION:	J		
SHEET	3		
OF	11		

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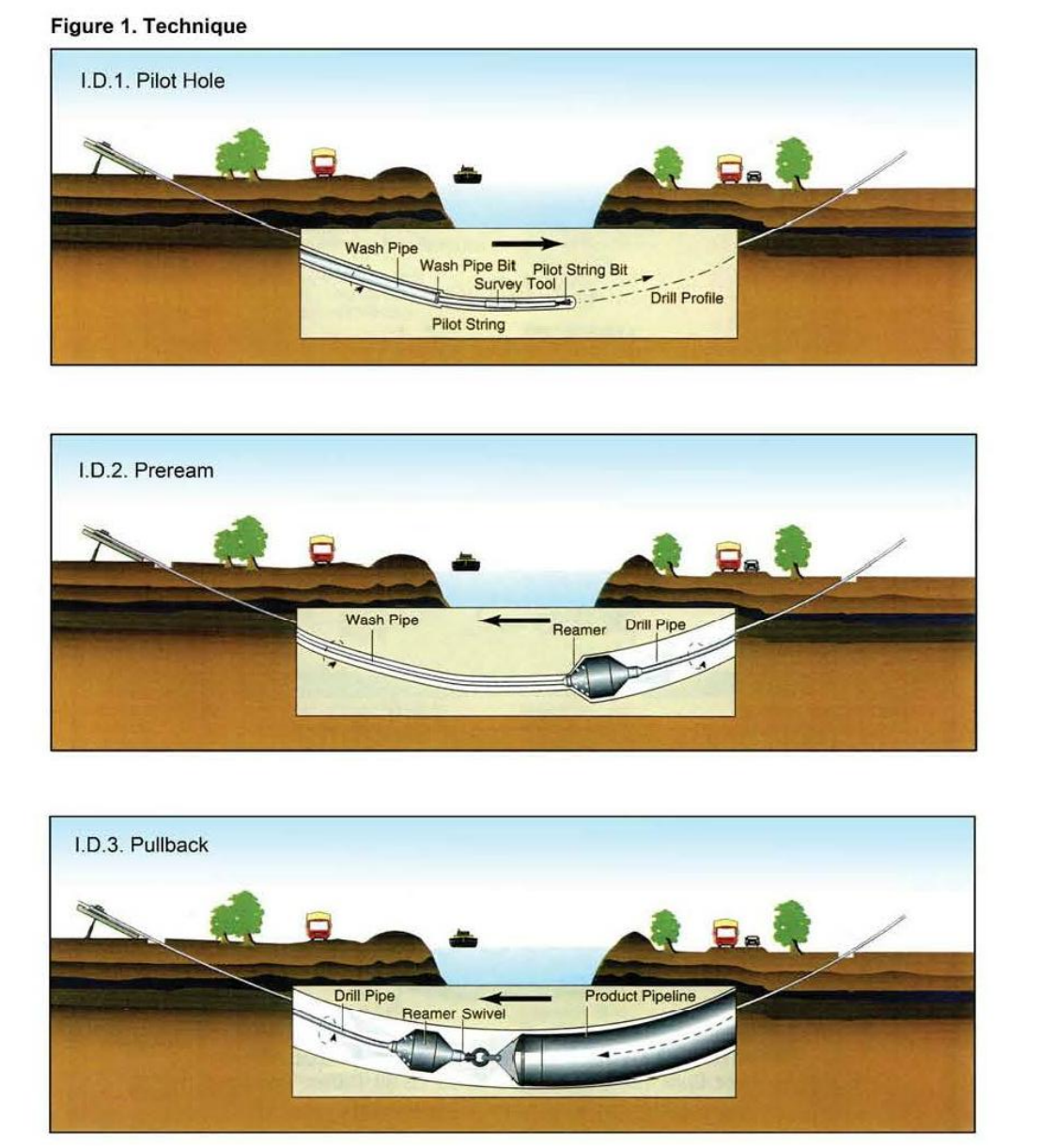
- NOTES:
- SEDIMENT BARRIERS SHALL BE INSTALLED AS DEPICTED AND ALONG DOWN GRADIENT SIDES OF WORK AREAS AND STAGING AREAS SUCH THAT NO HEAVY SILT LADEN WATER ENTERS THE WATERBODY OR LEAVES THE CONSTRUCTION RIGHT-OF-WAY.
  - HARD TRENCH PLUGS MUST REMAIN IN PLACE AT CONVENIENT LOCATIONS TO SEPARATE THE 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:
    - INSTALL FLUME PIPE(S) AFTER BLASTING (IF NECESSARY), BUT BEFORE ANY TRENCHING.
    - 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).
    - PROPERLY ALIGN FLUME PIPE(S) TO PREVENT BANK EROSION AND WATERBODY CHANNEL BED SCOUR.
    - DO NOT REMOVE FLUME PIPE DURING TRENCHING, PIPE LAYING, OR BACKFILLING ACTIVITIES, OR INITIAL STREAM BED RESTORATION EFFORTS.
    - 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.

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

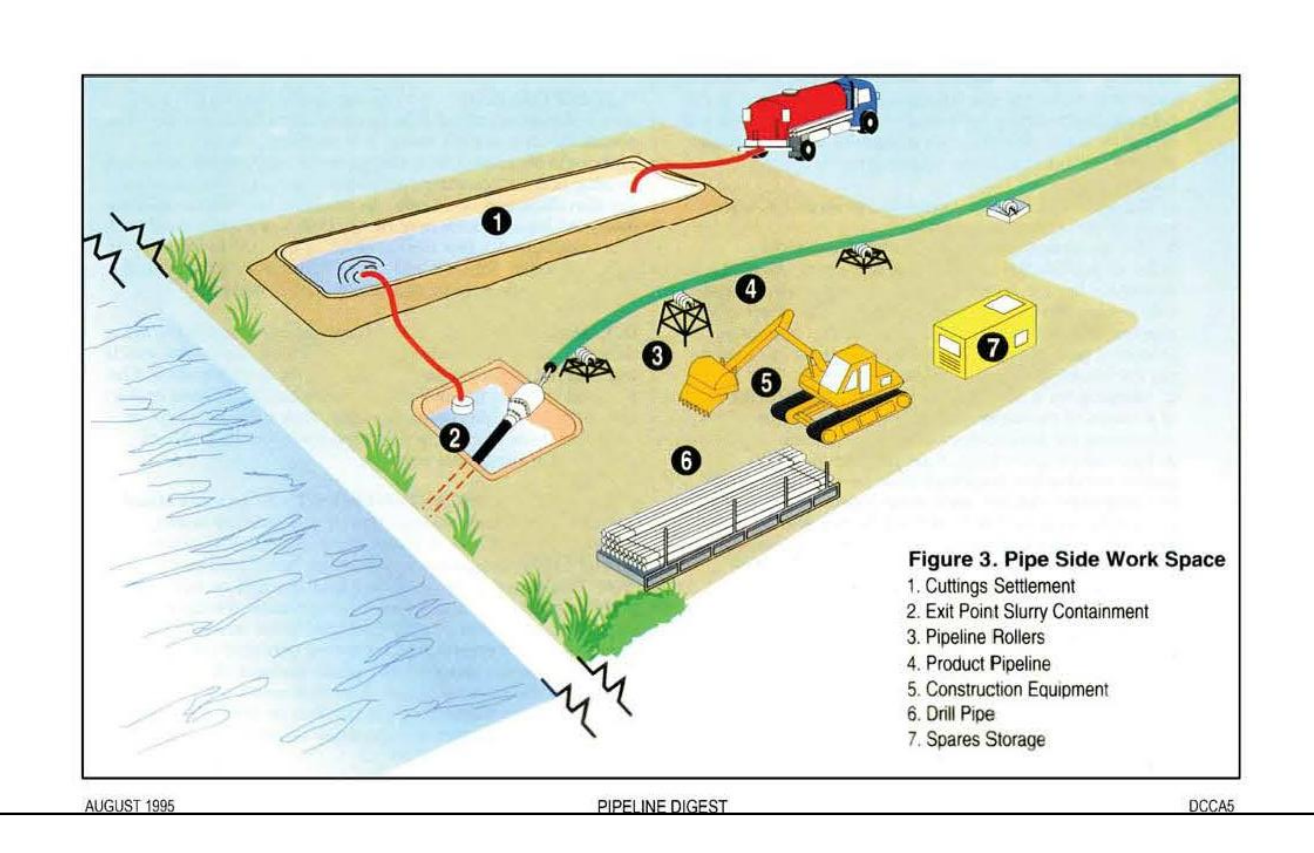
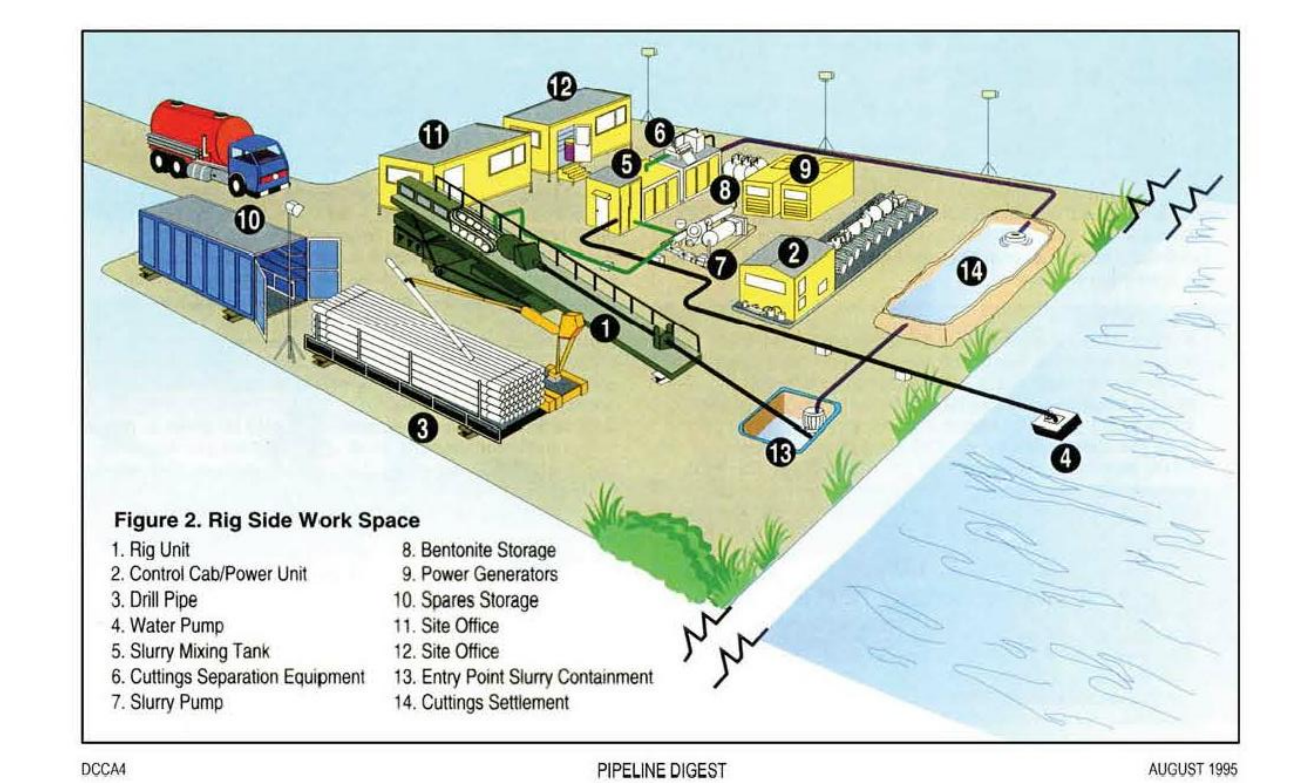


- EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED DAILY AND REPAIRED IF NECESSARY.
  - INSTALL DIVERSION TRENCHES AT THE BASE OF ALL SLOPES ADJACENT TO THE WATERBODY AND AT 50' FROM WATERBODY BANKS.
  - CHEMICALS, FUELS AND LUBRICATING OILS SHALL NOT BE STORED AND EQUIPMENT, EXCEPT FOR PUMPS, 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.

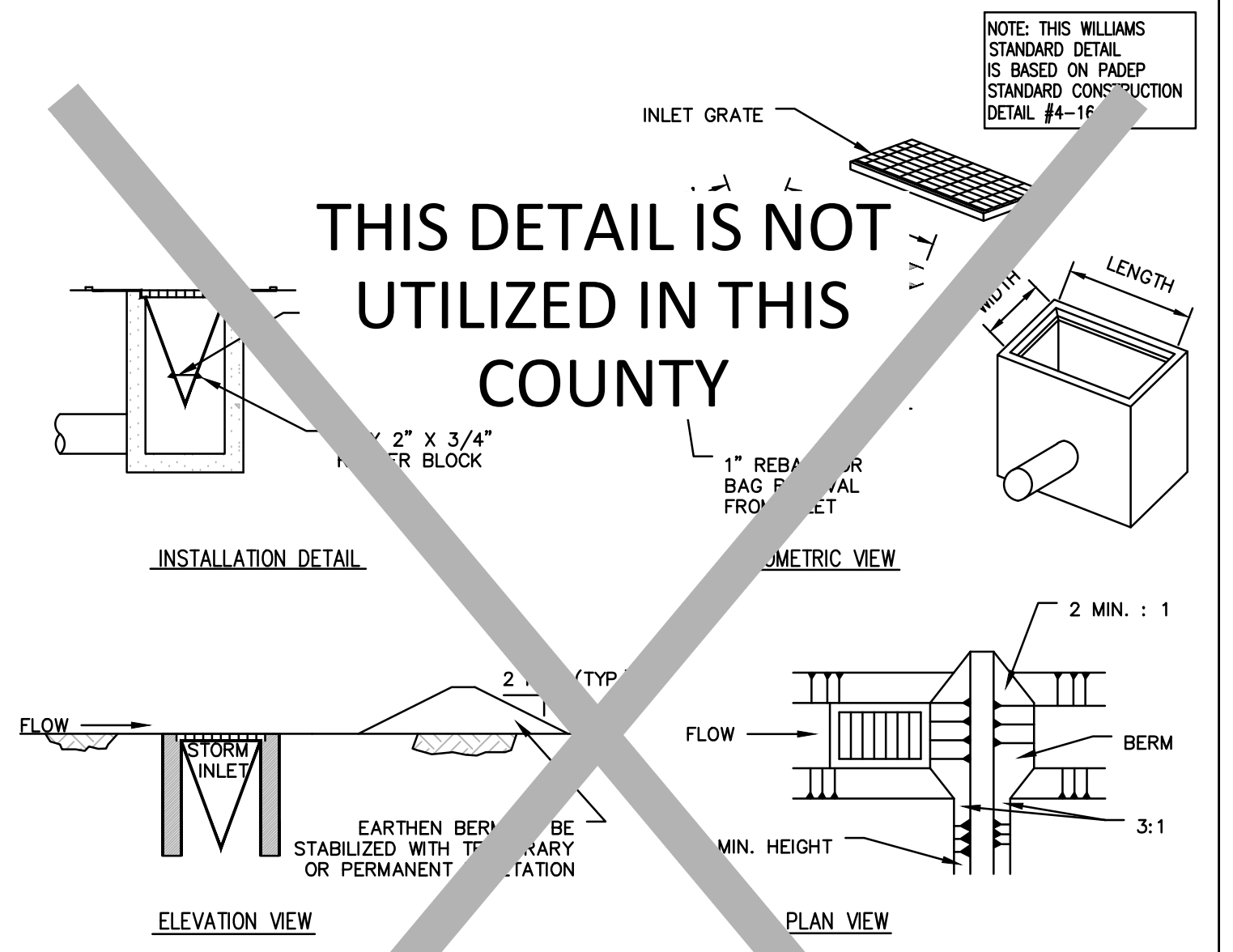
NO.	DATE	BY	REVISION DESCRIPTION	W.D. NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL			
			(FX) FLUME STREAM CROSSING (SECTIONS)			



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

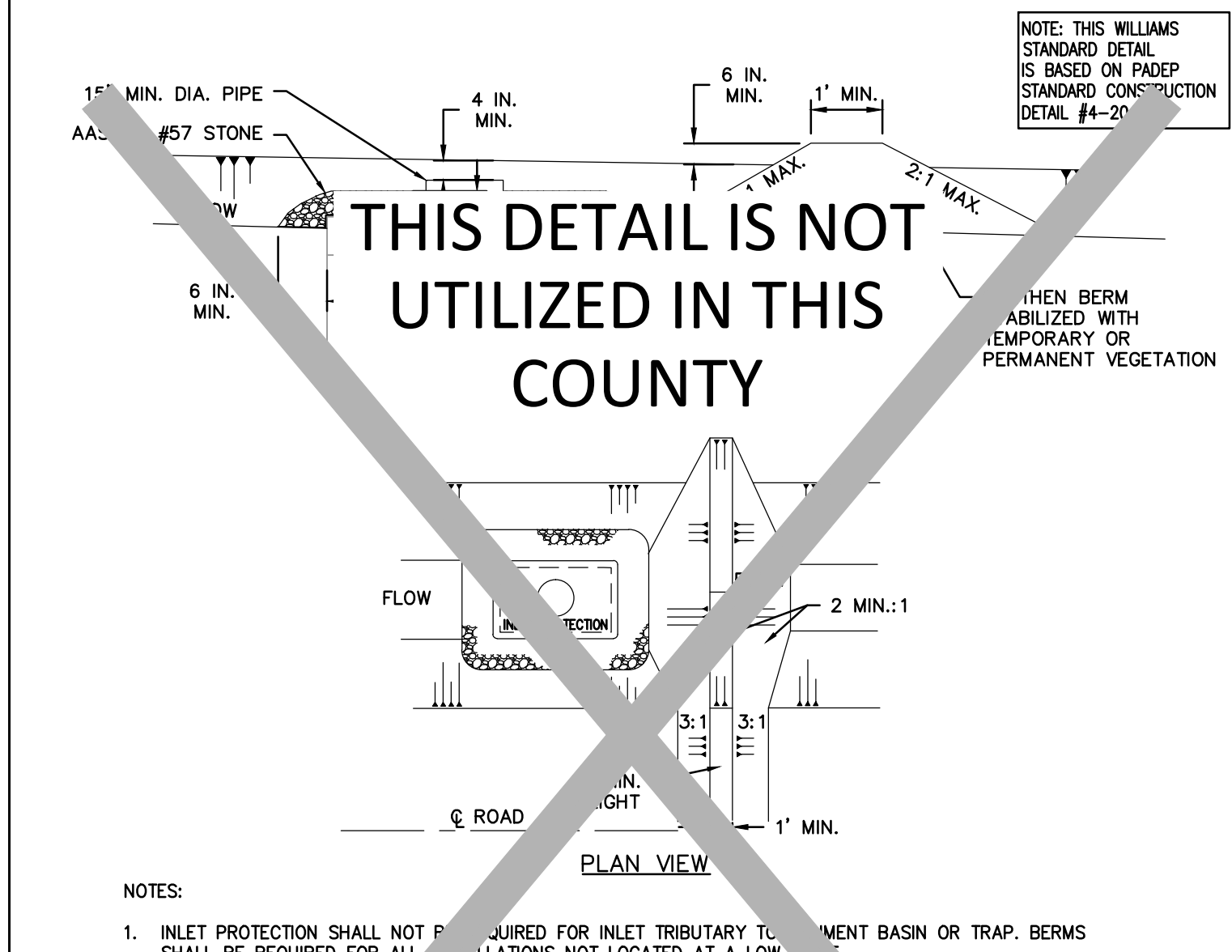


NO.	DATE	BY	REVISION DESCRIPTION	W.D. NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL			
			(HDD) HORIZONTAL DIRECTIONAL DRILL			



- NOTES:
- MAXIMUM DRAINAGE AREA = 1/4 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 PROTECTION 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.

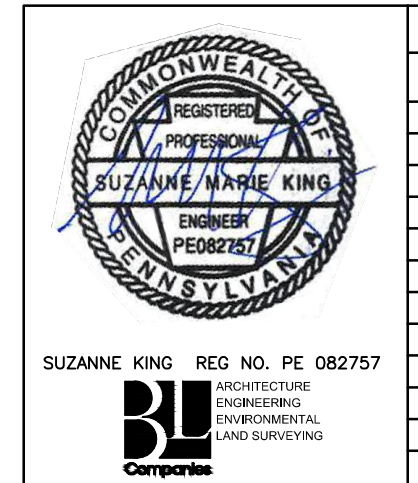
NO.	DATE	BY	REVISION DESCRIPTION	W.D. NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL			
			(IPF) FILTER BAG INLET PROTECTION - TYPE M			



- 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 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 PLATE SHALL BE AT LEAST 6 INCHES BELOW ADJACENT ROADWAY IF PONDING WATER WOULD BE A SAFETY HAZARD TO TRAFFIC. EARTHEN BERM SHALL BE ROLLED.
  - SEDIMENT 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			

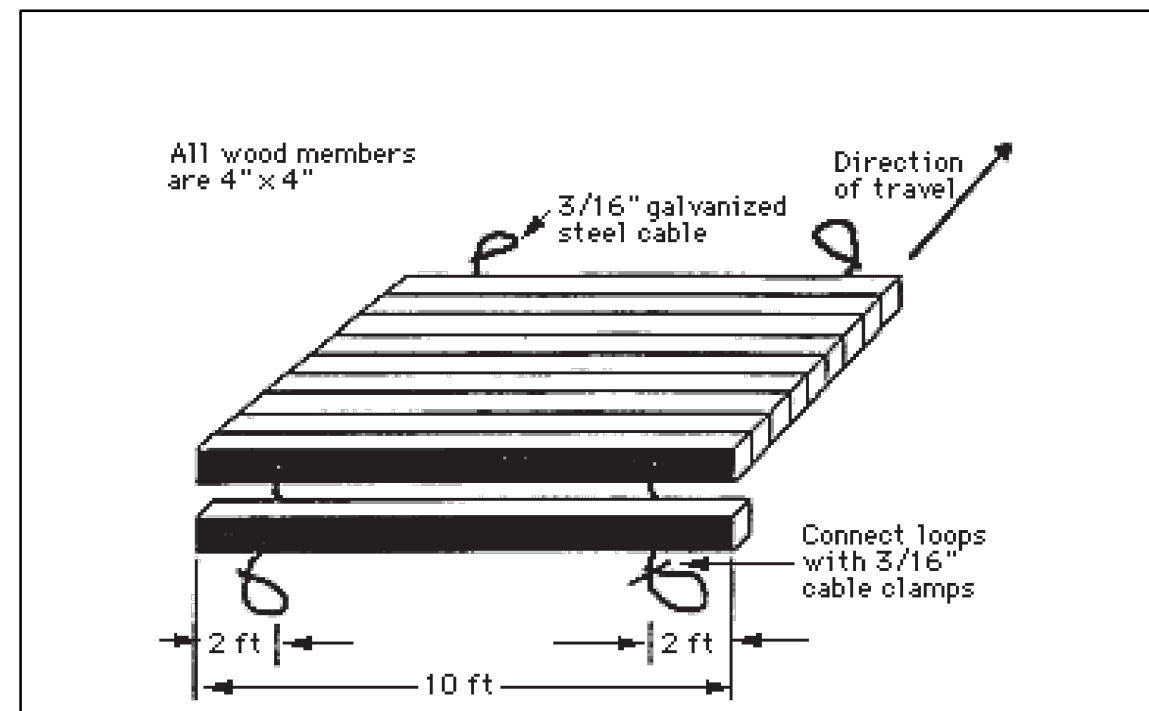
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1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
2	Oct. 2016	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1	W0572385	JLK	SMK
3	April 2017	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #2	W0572385	JLK	SMK

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	SCALE:	J
DRAWING NUMBER:	ASR-BMP	REVISION:	J
SHEET	4	OF	11

NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP FIGURE 3.07.

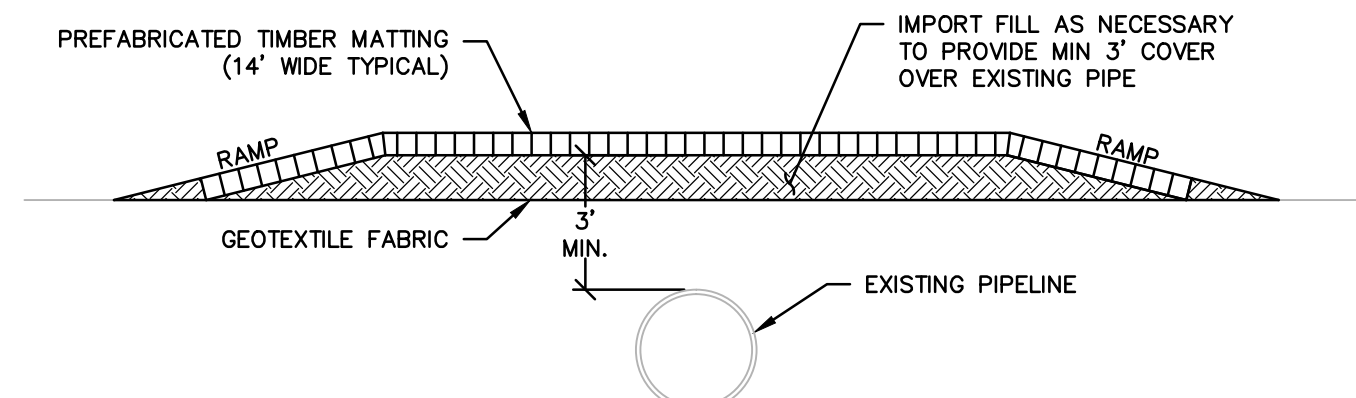


University of Minnesota FS 07009  
A geotextile underlayment shall be used under the wood mat.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC  
STANDARD ENVIRONMENTAL DETAIL

(MAT.1) TIMBER MATTING CONSTRUCTION

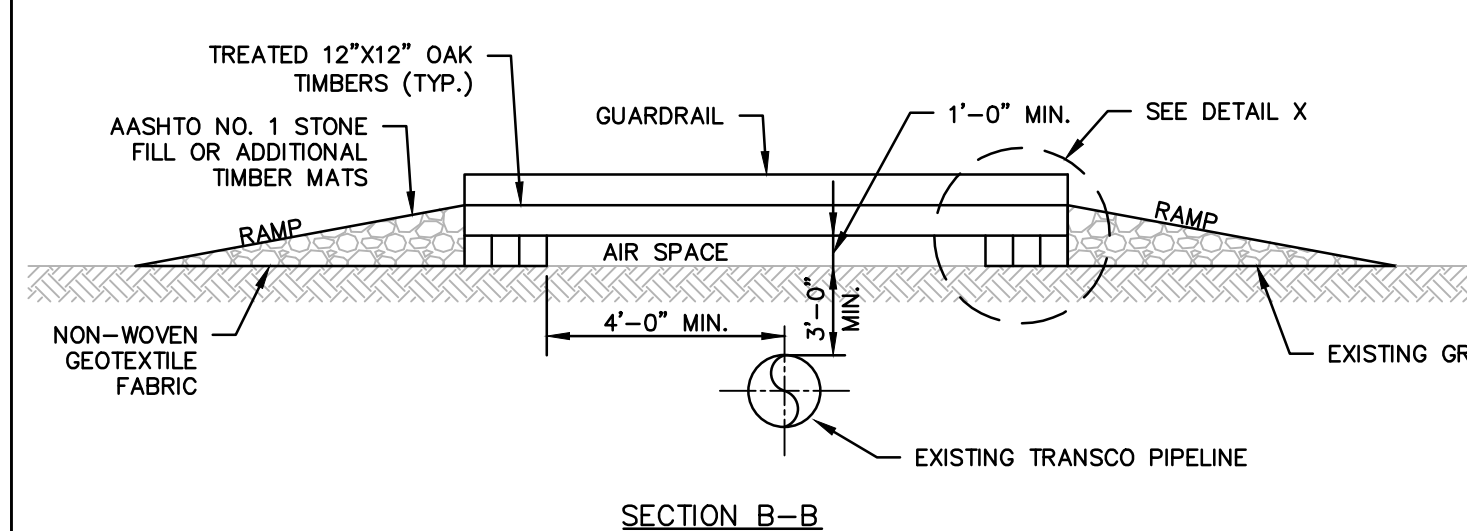
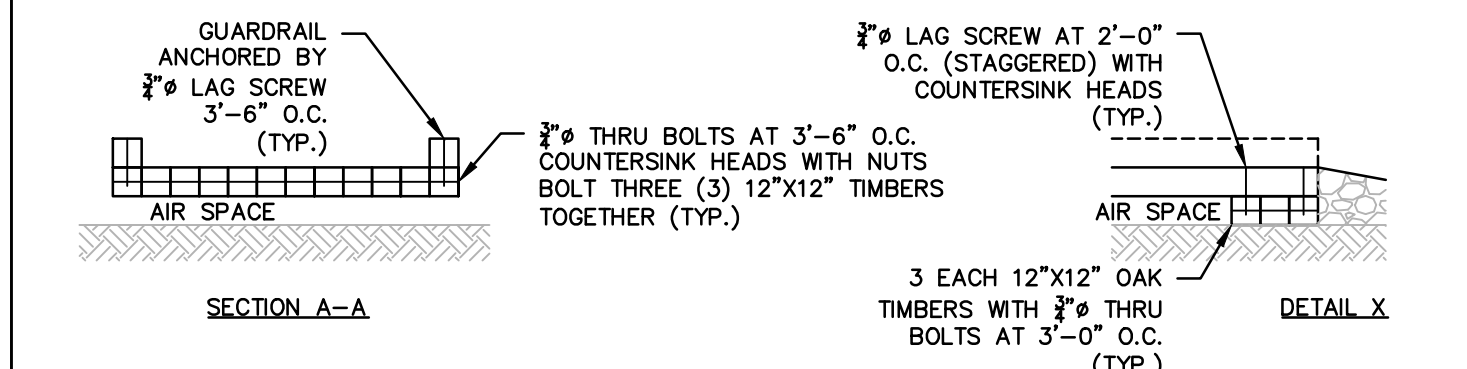
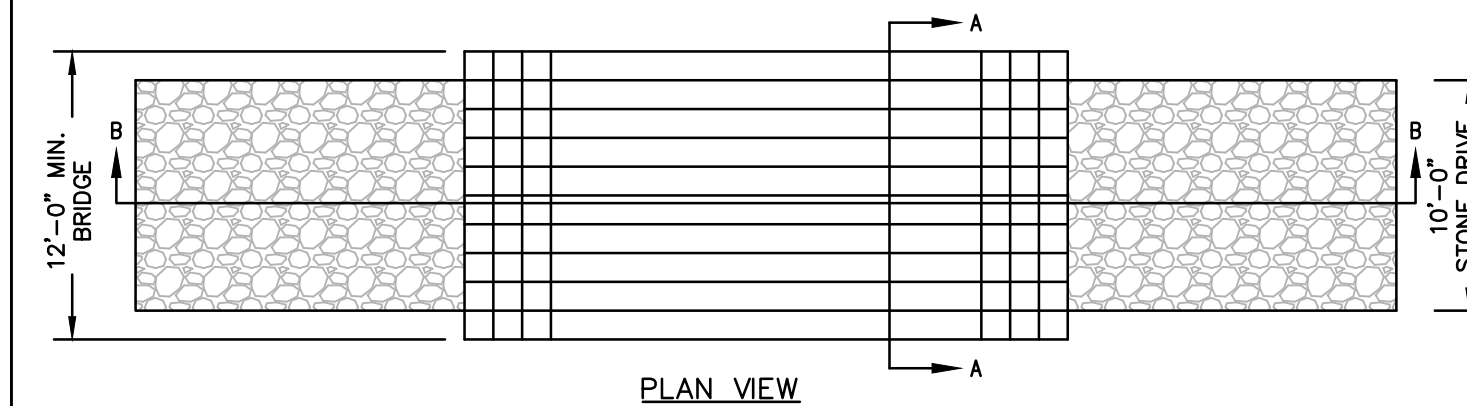


NOTES:  
1. THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER TO DETERMINE THE NUMBER OF EQUIPMENT MATS REQUIRED.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC  
STANDARD ENVIRONMENTAL DETAIL

(MAT.2) TIMBER MATTING WITH FILL OVER EXISTING PIPELINES



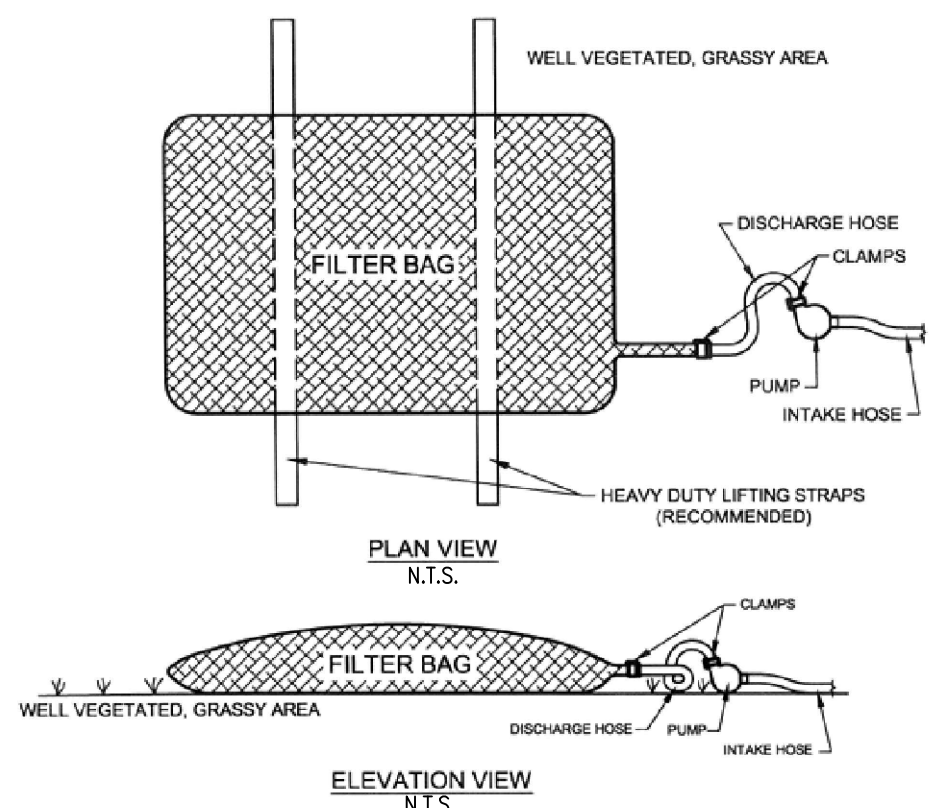
NOTES:  
1. IF STONE USED FOR RAMP, INSTALL 1 (ONE) LAYER OF NON-WOVEN GEOTEXTILE FABRIC PRIOR TO INSTALLING THE STONE.  
2. MINIMUM WIDTH OF BRIDGE IS 12'-0" WITH A 10'-0" WIDE STONE DRIVE.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC  
STANDARD ENVIRONMENTAL DETAIL

(MAT.3) TIMBER MATTING AIR BRIDGE

NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #3-16.



LOW VOLUME FILTER BAGS SHALL BE MADE FROM NON-WOVEN GEOTEXTILE MATERIAL SEWN WITH HIGH STRENGTH, DOUBLE STITCHED 'J' TYPE. THEY SHALL BE CAPABLE OF TRAPPING PARTICLES LARGER THAN 150 MICRONS. HIGH VOLUME FILTER BAGS MAY BE MADE FROM WOVEN GEOTEXTILES THAT MEET THE FOLLOWING STANDARDS:

PROPERTY	TEST METHOD	MINIMUM STANDARD
AVG. WIDE WIDTH STRENGTH	ASTM D-4884	60 LB/IN
GRAB TENSILE	ASTM D-4832	205 LB
PUNCTURE	ASTM D-4833	110 LB
MULLEN BURST	ASTM D-3786	350 PSI
UV RESISTANCE	ASTM D-4355	70%
AO5 % RETAINED	ASTM D-4751	80 SIEVE

A SUITABLE MEANS OF ACCESSING THE BAG WITH MACHINERY REQUIRED FOR DISPOSAL PURPOSES MUST BE PROVIDED. FILTER BAGS SHALL BE REPLACED WHEN THEY BECOME 1/2 FULL OF SEDIMENT. SPARE BAGS SHALL BE KEPT AVAILABLE FOR REPLACEMENT OF THOSE THAT HAVE FAILED OR ARE FILLED. BAGS TO BE PLACED ON STRAPS TO FACILITATE REMOVAL UNLESS BAGS COME WITH LIFTING STRAPS ALREADY ATTACHED.

BAGS SHALL BE LOCATED IN WELL-VEGETATED (GRASSY) AREA, AND DISCHARGE ONTO STABLE, EROSION RESISTANT AREAS. WHERE THIS IS NOT POSSIBLE, A GEOTEXTILE UNDERLAYMENT AND FLOW PATH SHALL BE PROVIDED. BAGS MAY BE PLACED ON FILTER STONE TO INCREASE DISCHARGE CAPACITY. BAGS SHALL NOT BE PLACED ON SLOPES GREATER THAN 5%. FOR SLOPES EXCEEDING 5%, CLEAN ROCK OR OTHER NON-ERODIBLE AND NON-POLLUTING MATERIAL MAY BE PLACED UNDER THE BAG TO REDUCE SLOPE STEEPNESS.

NO DOWNSLOPE SEDIMENT BARRIER IS REQUIRED FOR MOST INSTALLATIONS. COMPOST BERM OR COMPOST FILTER SOCK SHALL BE INSTALLED BELOW BAGS LOCATED IN HQ OR EV WATERSHEDS, WITHIN 50 FEET OF ANY RECEIVING SURFACE WATER OR WHERE GRASSY AREA IS NOT AVAILABLE.

THE PUMP DISCHARGE HOSE SHALL BE INSERTED INTO THE BAGS IN THE MANNER SPECIFIED BY THE MANUFACTURER AND SECURELY CLAMPED. A PIECE OF PVC PIPE IS RECOMMENDED FOR THIS PURPOSE.

THE PUMPING RATE SHALL BE NO GREATER THAN 750 GPM OR 1/2 THE MAXIMUM SPECIFIED BY THE MANUFACTURER, WHICHEVER IS LESS. PUMP INTAKES SHALL BE FLOATING AND SCREENED.

FILTER BAGS SHALL BE INSPECTED DAILY. IF ANY PROBLEM IS DETECTED, PUMPING SHALL CEASE IMMEDIATELY AND NOT RESUME UNTIL THE PROBLEM IS CORRECTED.

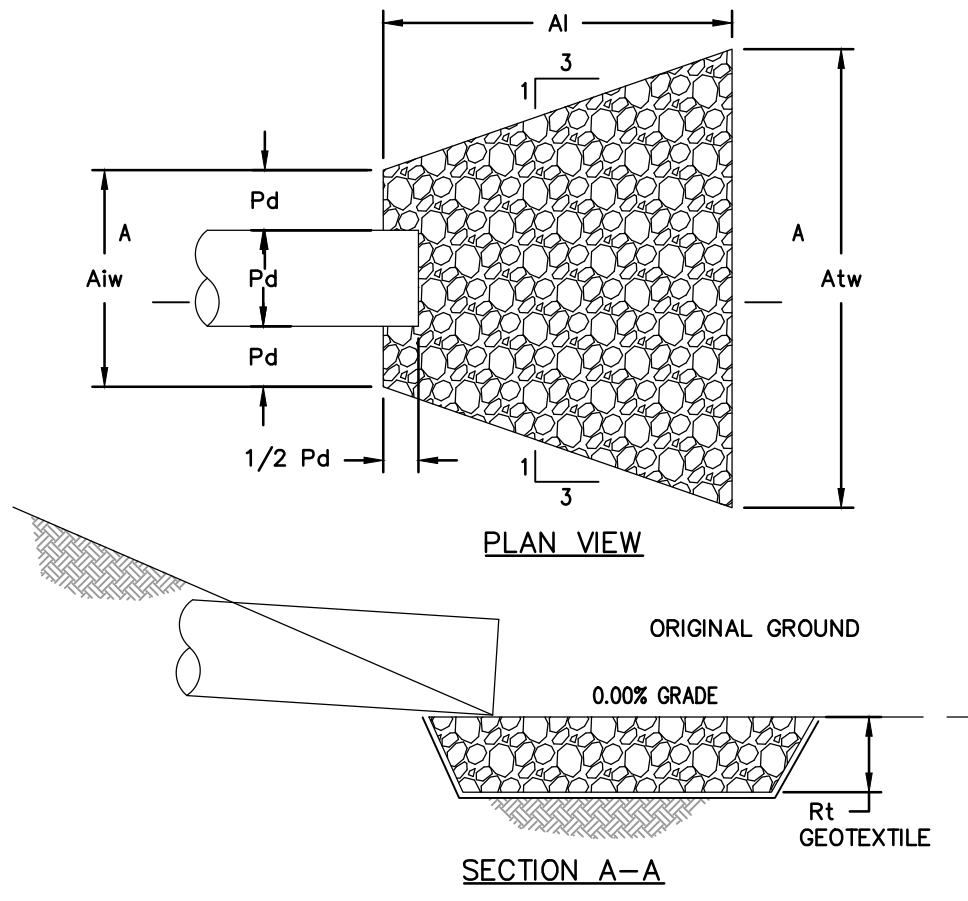
ADAPTED FROM PADEP

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC  
STANDARD ENVIRONMENTAL DETAIL

(PWB) PUMP WATER FILTER BAG

NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #9-2.



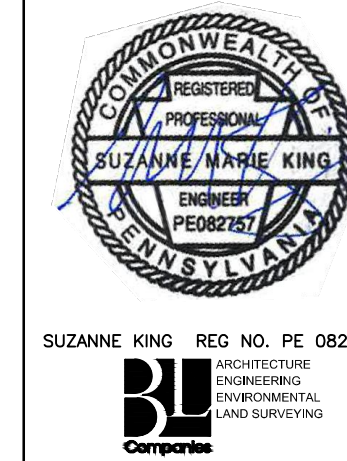
OUTLET NO.	PIPE DIA PD (IN)	RIPRAP		APRON	
		SIZE (R-)	THICK. Rt (IN)	LENGTH AI (FT)	TERMINAL WIDTH Atw (FT)

NOTES:  
1. ALL APRONS SHALL BE CONSTRUCTED TO THE DIMENSIONS SHOWN ON THE PLANS. TERMINAL WIDTHS SHALL BE ADJUSTED AS NECESSARY TO MATCH RECEIVING CHANNELS.  
2. ALL APRONS SHALL BE INSPECTED AT LEAST WEEKLY AND AFTER EACH RUNOFF EVENT. DISPLACED RIPRAP WITHIN THE APRON SHALL BE REPLACED IMMEDIATELY.  
3. EXTEND RIPRAP ON BACK SIDE OF APRON TO AT LEAST 1/2 DEPTH OF PIPE ON BOTH SIDES TO PREVENT SCOUR AROUND THE PIPE.  
4. FOR APRONS ON ACCESS ROADS, THE DIMENSIONS FOR THE APRONS ARE GIVEN AS FOLLOWS: L x D x W/W WHERE: L = LENGTH OF APRON OR "AI" AS SHOWN IN THE PLAN VIEW ABOVE  
D = DEPTH OF RIP RAP OR "Rt" AS SHOWN IN THE SECTION ABOVE  
W/W = WIDTH OF SHORT END OF APRON/WIDTH OF LONG END OF APRON OR "Aiw"/"Atw" AS SHOWN IN THE PLAN VIEW ABOVE  
5. FOR APRON ON SWALES AND FLUME CROSSINGS, THE DIMENSIONS FOR THE APRONS ARE AS FOLLOWS: DIMENSIONS LOCATED ON TABLE 2: TEMPORARY CLEAN WATER DIVERSION SUMMARY:  
a. RIP RAP SIZE (R-) UNDER WATERBODY  
b. APRON INITIAL WIDTH AND TERMINAL WIDTH IS TWO (2) FEET FOR FILTER SOCK DIVERSIONS AND SWALES.  
c. RIP RAP THICKNESS (Rt)  
d. APRON LENGTH (AI)

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC  
STANDARD ENVIRONMENTAL DETAIL

(RAO) RIP RAP APRON AT PIPE OUTLET WITHOUT FLARED END SECTION



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:	SCALE:	
CHECKED BY:	JLK	DATE:	07/02/15	ISSUED FOR:	CONSTRUCTION:	REVISION:
APPROVED BY:	SMK	DATE:	07/08/15	DRAWING NUMBER:	ASR-BMP	SHEET 5 OF 11

Drawn By & Date/Time: tdelo Apr 27, 2017 9:09am  
Drawing Location & Name: G:\08514\14C\14C4909\DWG\BMPs&DETAILS\PL\_DNT14C4909(10)\_LU-BMP-05.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 <sup>1</sup>	AASHTO #1	AASHTO #1	AASHTO #1	AASHTO #3	AASHTO #3	AASHTO #57
V <sub>max</sub> (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%.

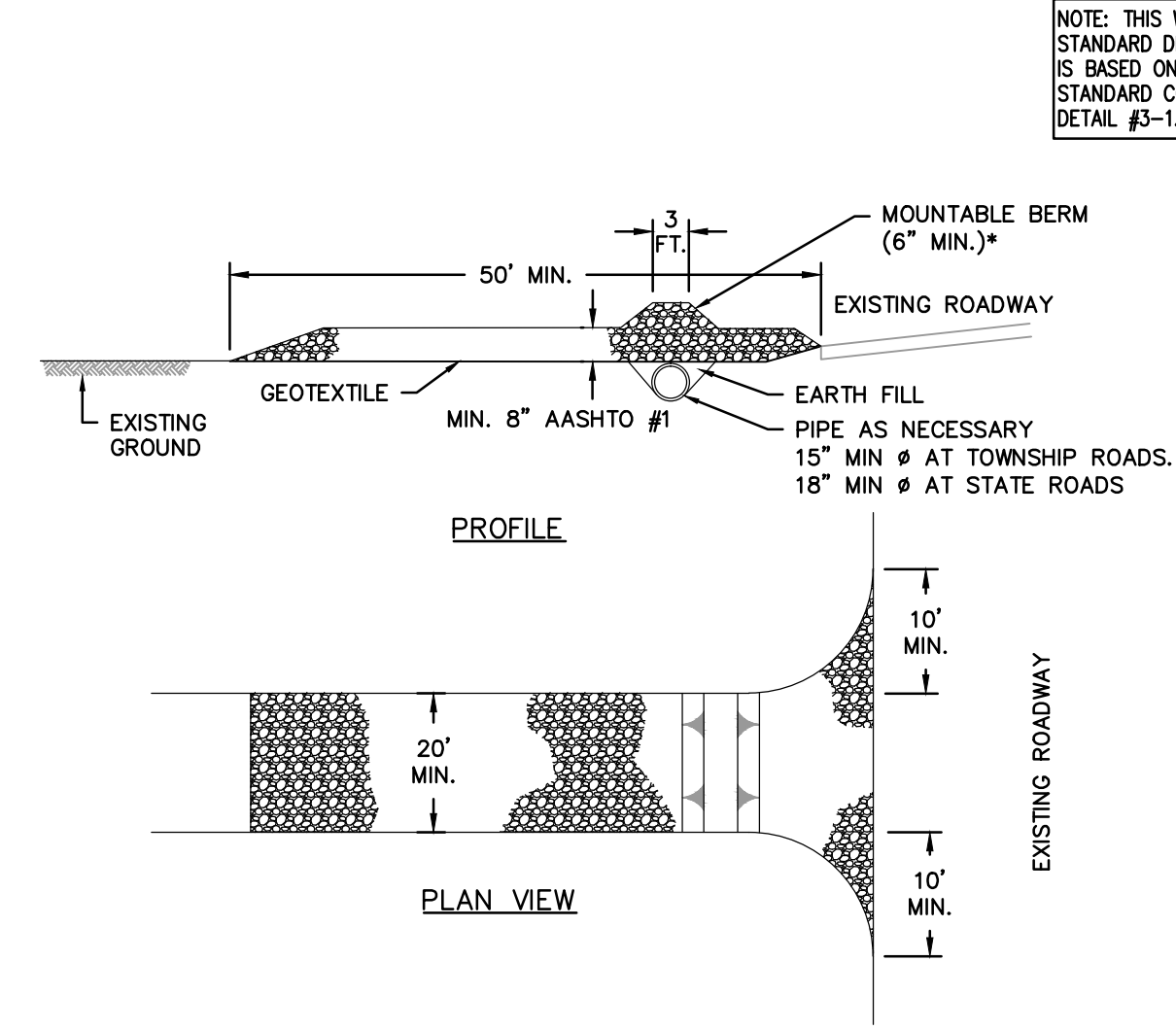
**TABLE 6.7**  
Comparison of Various Gradations of Coarse Aggregates

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			

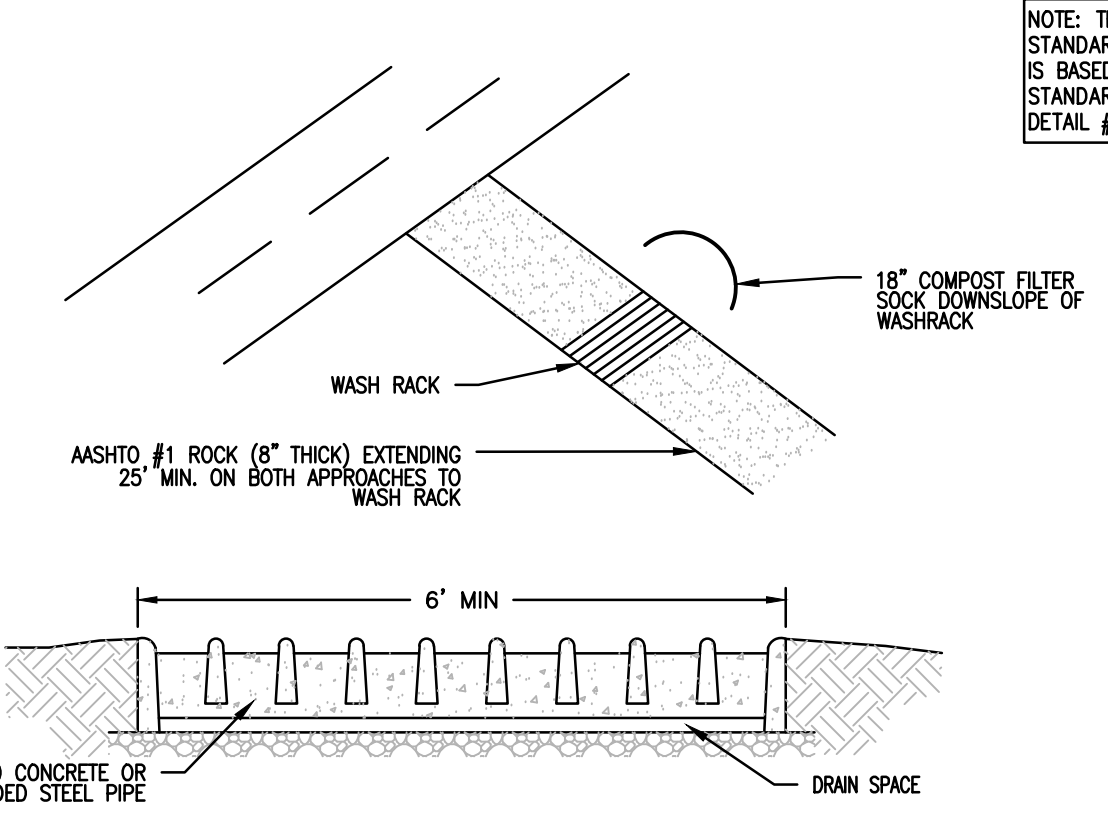


NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #3-1.

- 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 MATERIAL 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.

\* MOUNTABLE BERM USED TO PROVIDE PROPER COVER FOR PIPE

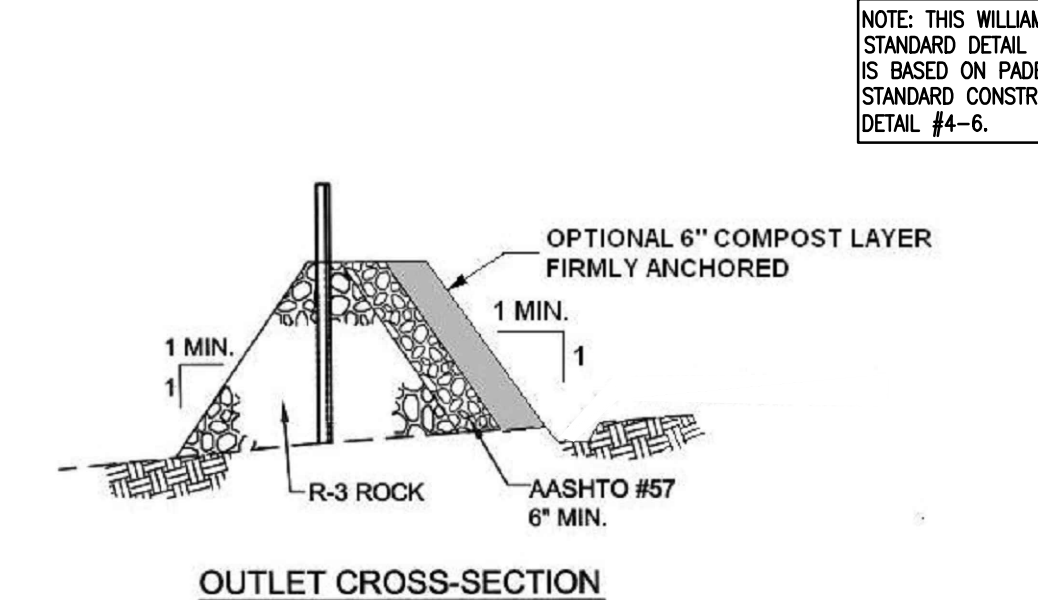
NO.	DATE	BY	REVISION DESCRIPTION	W.D. NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL			
			(RCE) ROCK CONSTRUCTION ENTRANCE			



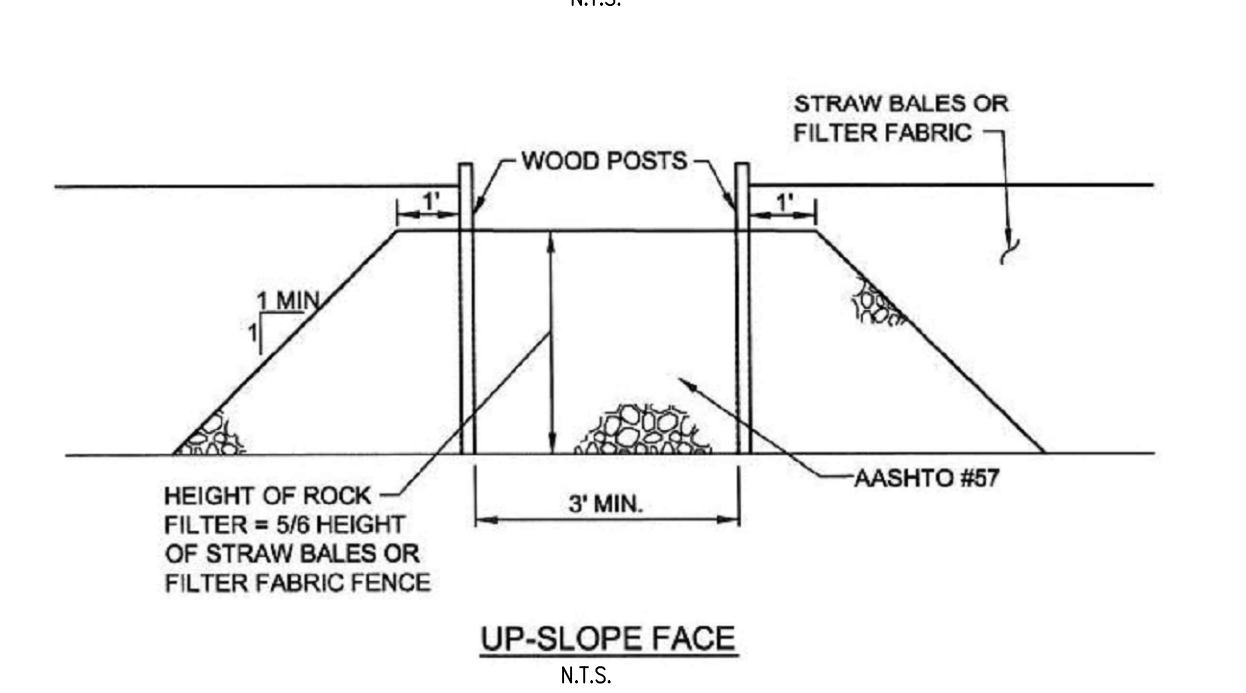
NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #3-2.

- 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			

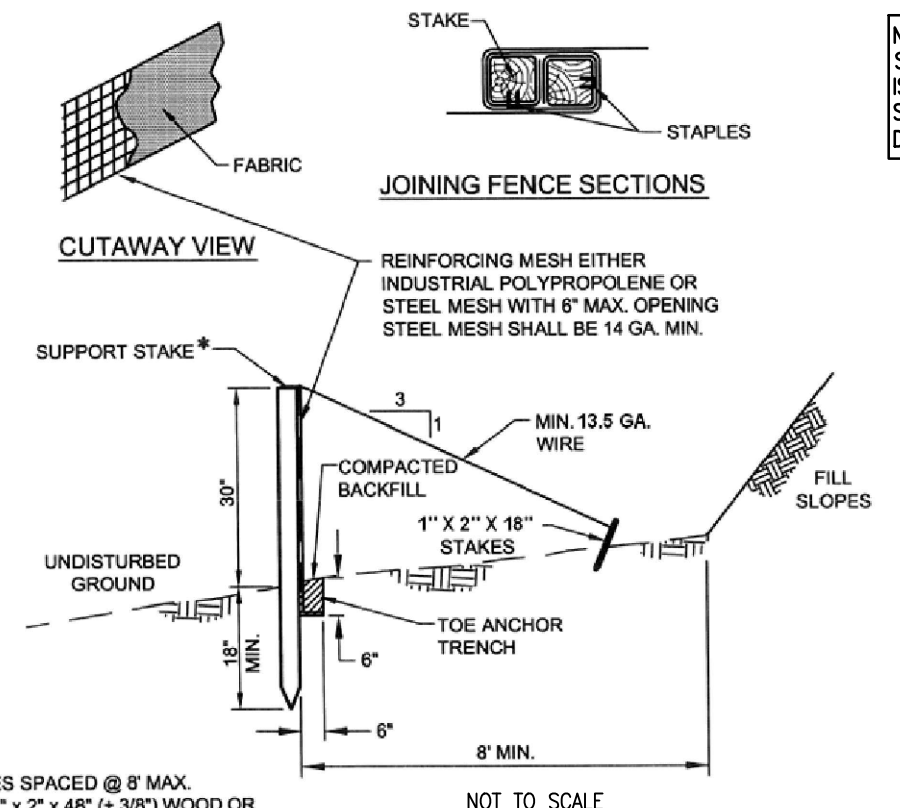


NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #4-6.



- 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

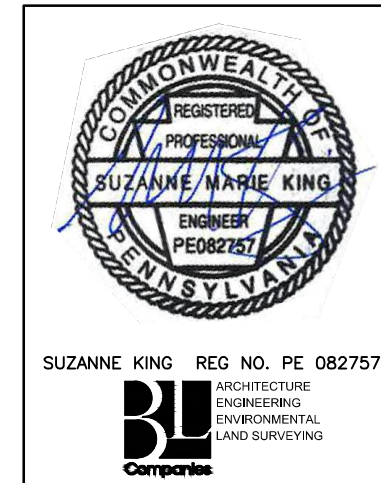
ADAPTED FROM NEW YORK DEC AND PENN-DOT PUB 408

MAXIMUM SLOPE LENGTHS FOR REINFORCED SILT 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.
- SILT 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 SILT 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.
- SILT FENCE SHOULD BE PLACED ON CONTOURS TO THE EXTENT PRACTICAL. SILT FENCE SHOULD NOT BE USED TO DELINEATE THE LIMITS OF THE CONSTRUCTION RIGHT-OF-WAY.
- SILT FENCE IS NOT ALLOWED IN CERTAIN SPECIAL PROTECTION WATERSHEDS; COMPOST FILTER SOCKS SHALL BE USED.

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

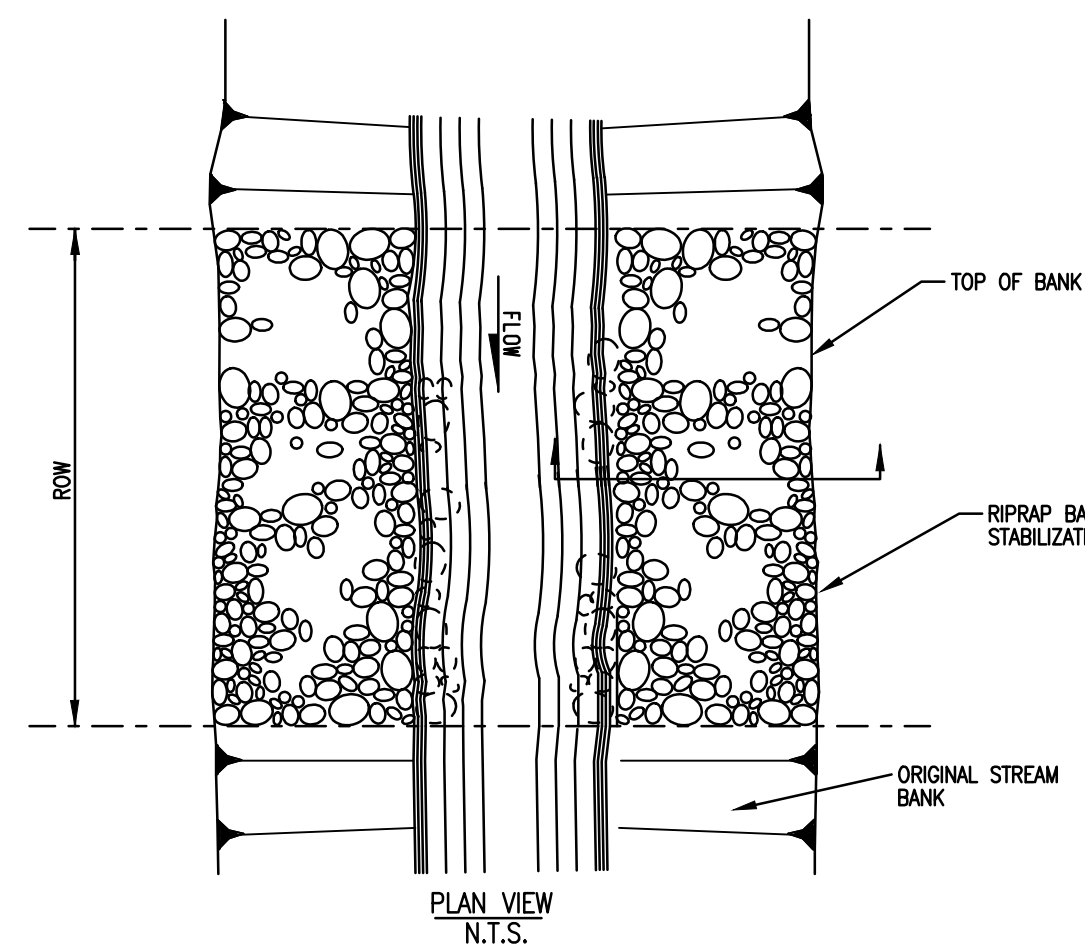


REVISIONS						
NO.	DATE	BY	DESCRIPTION	W.D. NO.	CHK.	APP.
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1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
2	02/04/2016	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
3	03/26/2016	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	ASB
4	04/1/2017	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1	W0572385	JLK	ASB
5	04/1/2017	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #2	W0572385	JLK	ASB

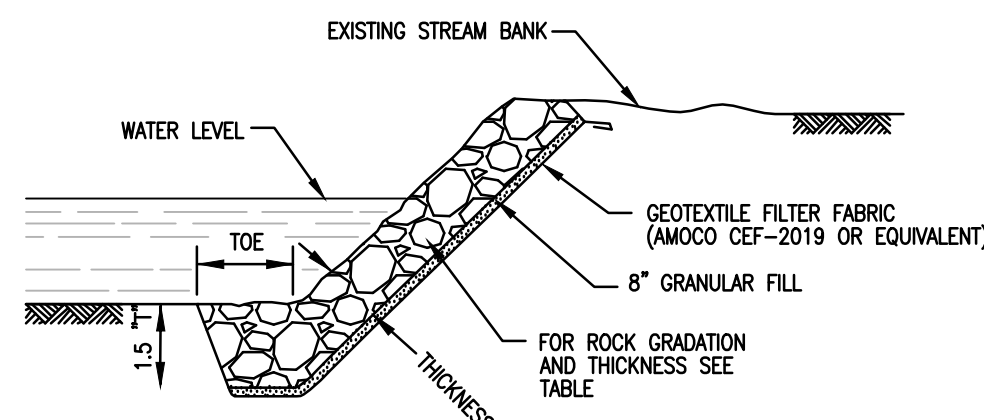
TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC			
ATLANTIC SUNRISE PROJECT			
BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET			
BEST MANAGEMENT PRACTICES DETAILS			
DRAWN BY:	ELZ	DATE:	05/15/15
CHECKED BY:	JLK	DATE:	07/02/15
APPROVED BY:	SMK	DATE:	07/08/15
ISSUED FOR:	CONSTRUCTION	ISSUED FOR:	CONSTRUCTION
DRAWING NUMBER:	ASR-BMP	SCALE:	
REVISION:	5	SHEET:	6
OF:	11		



Drawn By & Date/Time: tdelo Apr 27, 2017 8:10am Drawing Location & Name: G:\0851\14C\14C4909\DWG\BMPs&DETAILS\PL\_DNT14C4909(10)\_LU-BMP-06.dwg



PLAN VIEW  
N.T.S.

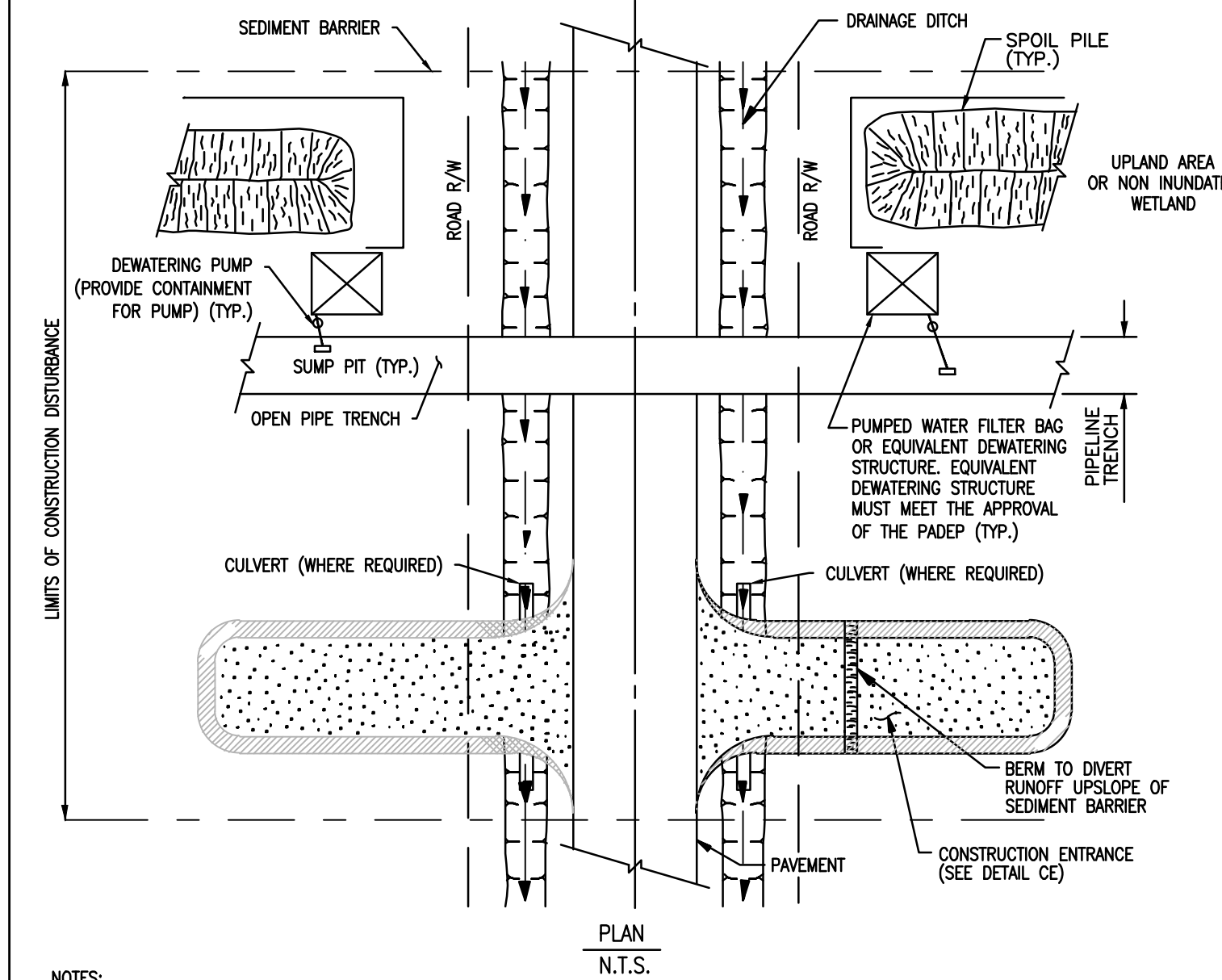


SECTION  
SCALE: N.T.S.

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:

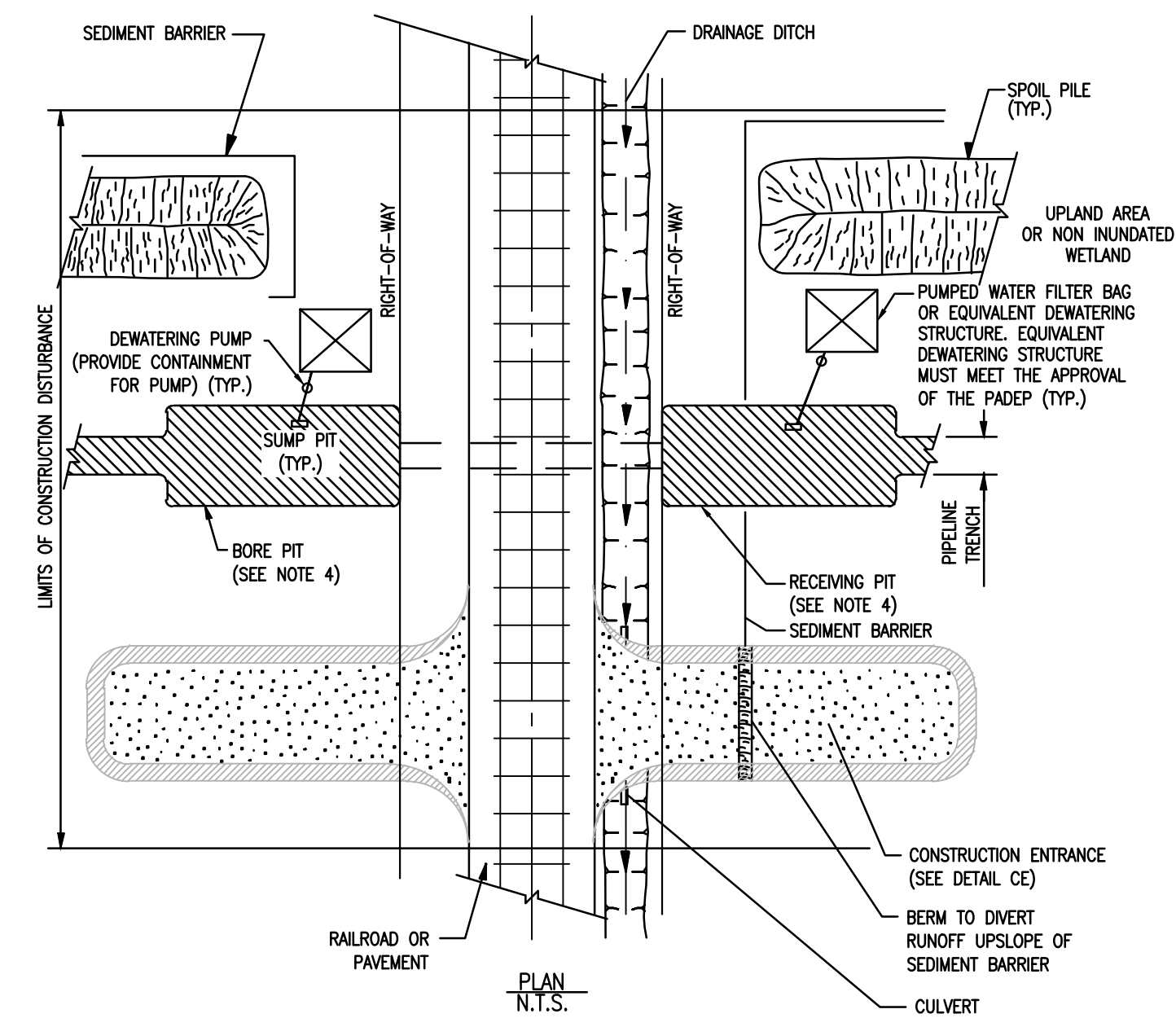
- ROCK UTILIZED FOR RIPRAP SHALL CONSIST OF SOUND, DURABLE ROCK, INSOLUBLE IN WATER, AND RESISTANT TO WEATHERING.
- ALL MATERIAL SHALL BE FREE OF STRUCTURAL DEFECTS, SHALE SEAMS AND ORGANIC MATTER.
- INDIVIDUAL PIECES SHOULD BE SHARPLY ANGULAR, BLOCK SHAPED AND HAVE A MINIMUM SPECIFIC GRAVITY OF 2.5.
- 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.



PLAN  
N.T.S.

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.



PLAN  
N.T.S.

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.

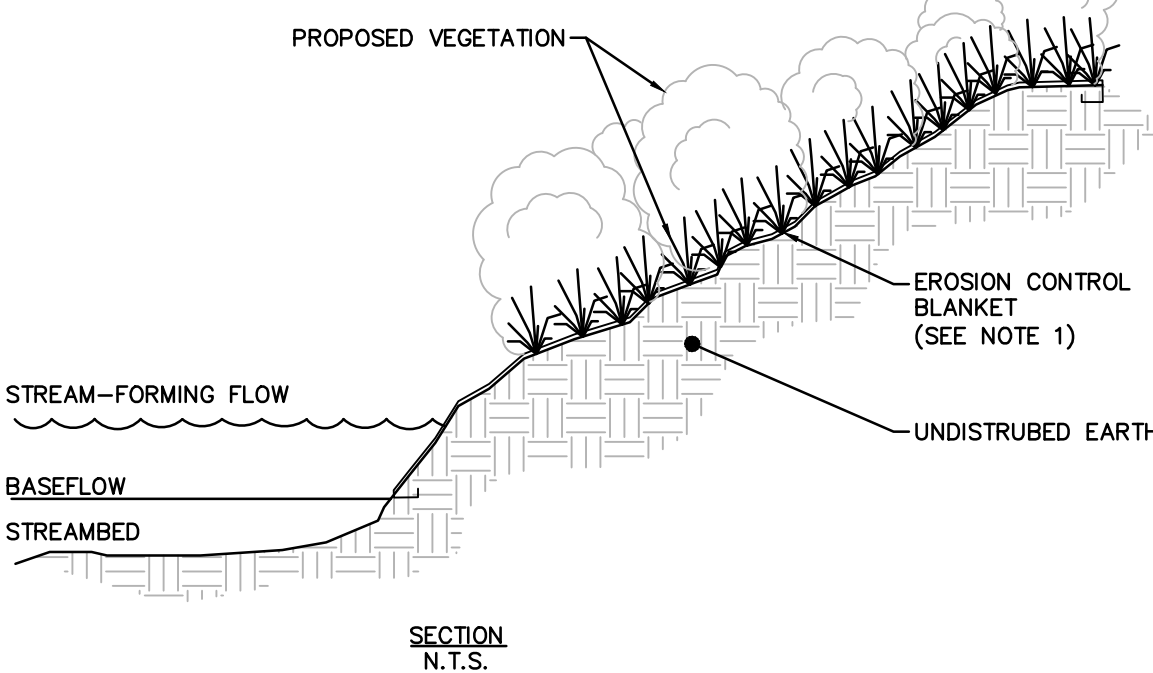
TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC  
STANDARD ENVIRONMENTAL DETAIL

(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



SECTION  
N.T.S.

NOTE: THIS WILLIAMS STANDARD DETAIL IS ADAPTED FROM PADEP FIGURE #15.10

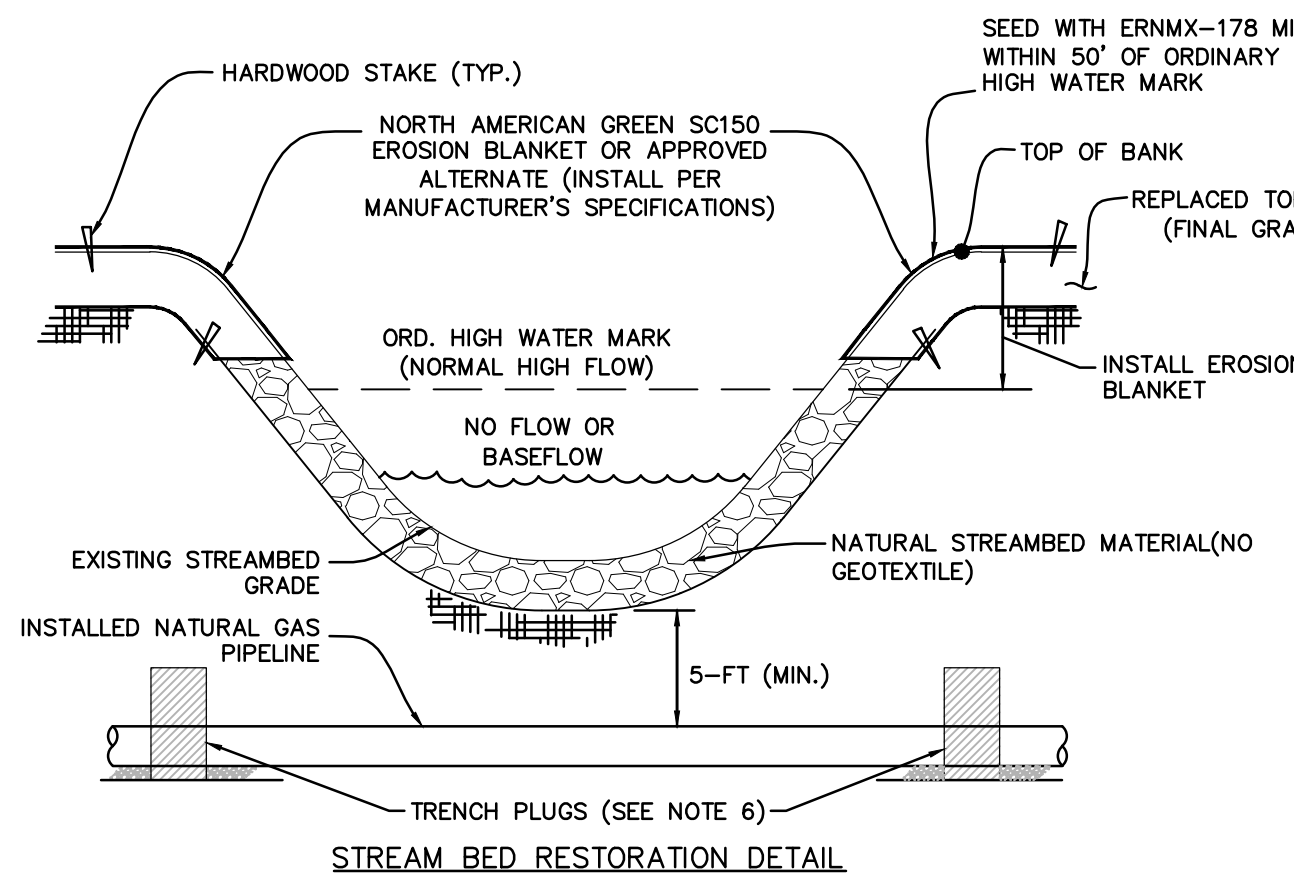
NOTES:

- 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



SECTION  
N.T.S.

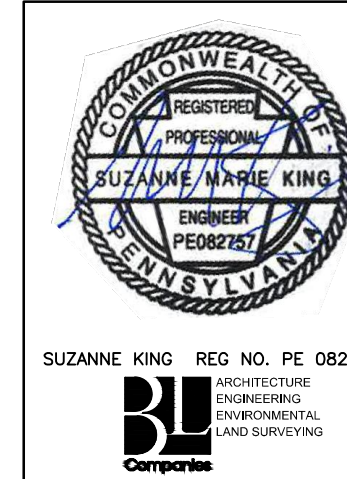
NOTES:

- 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.

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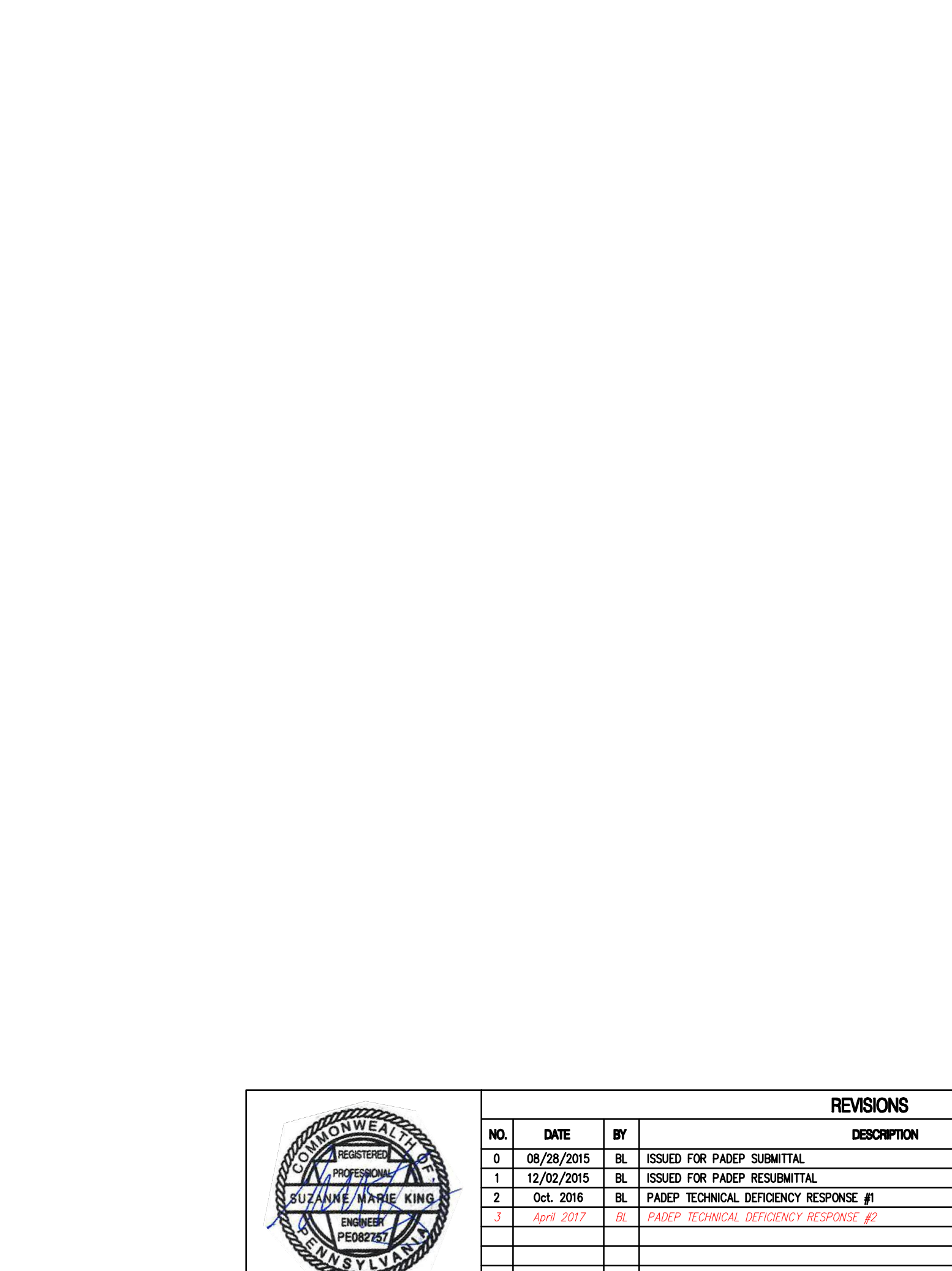
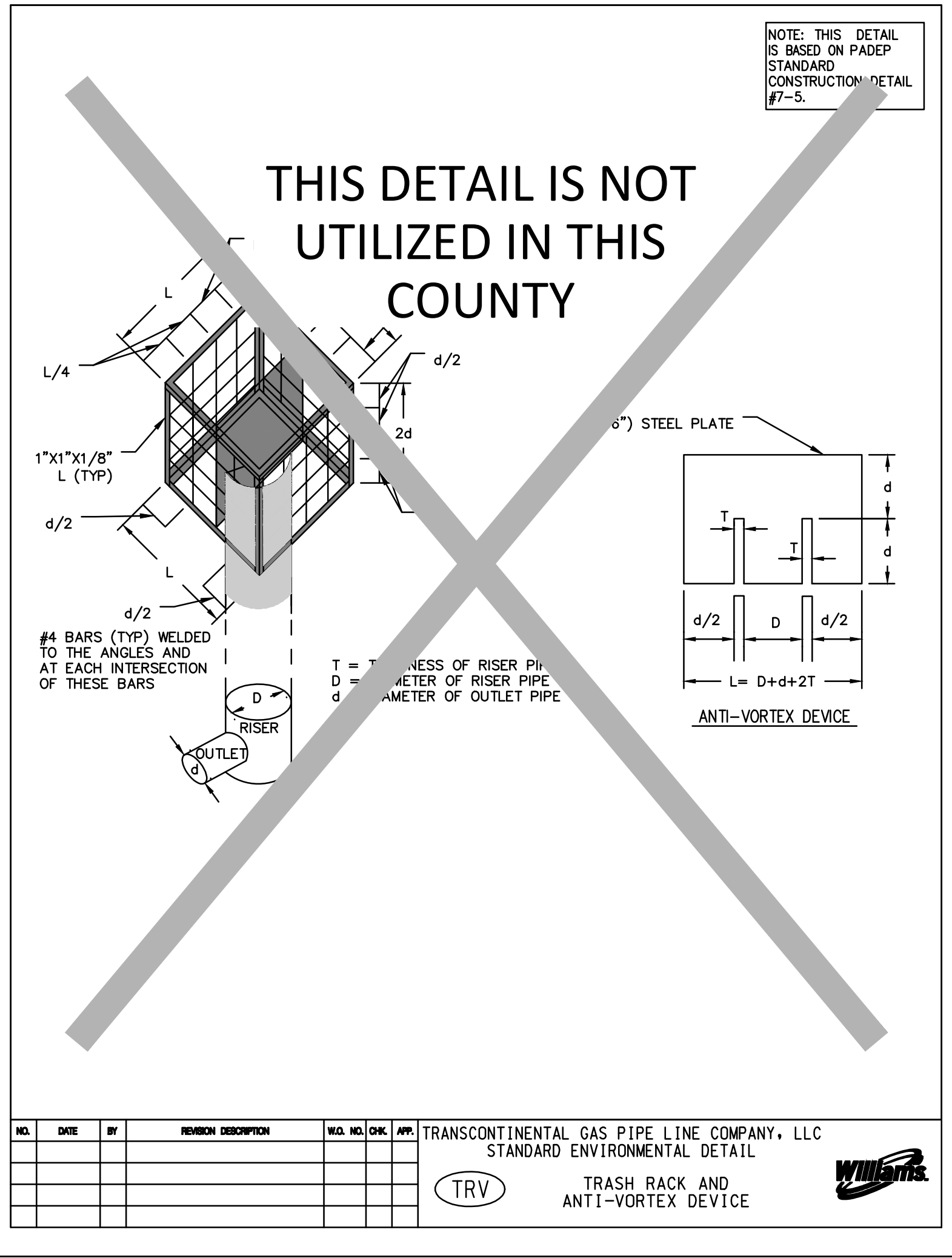
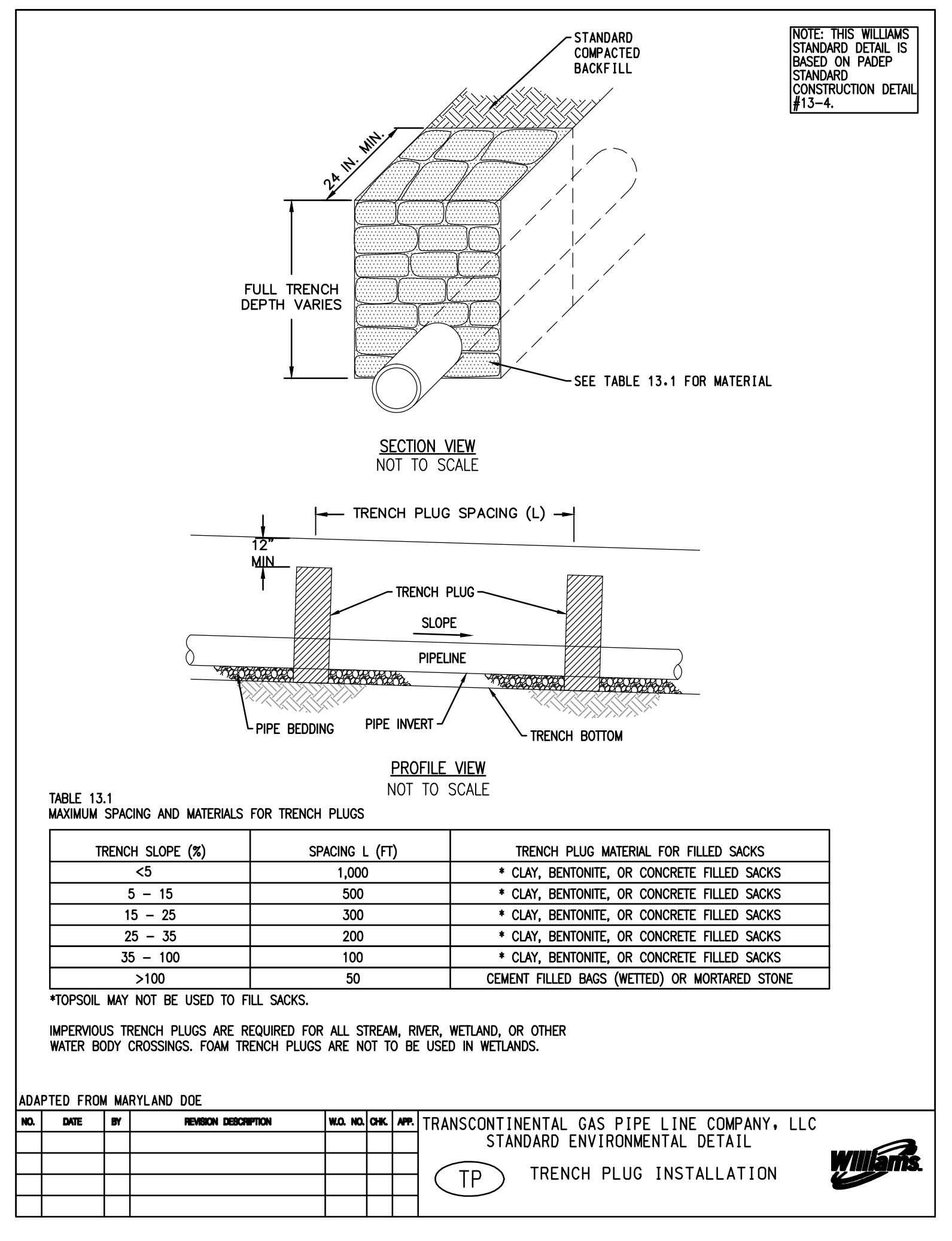
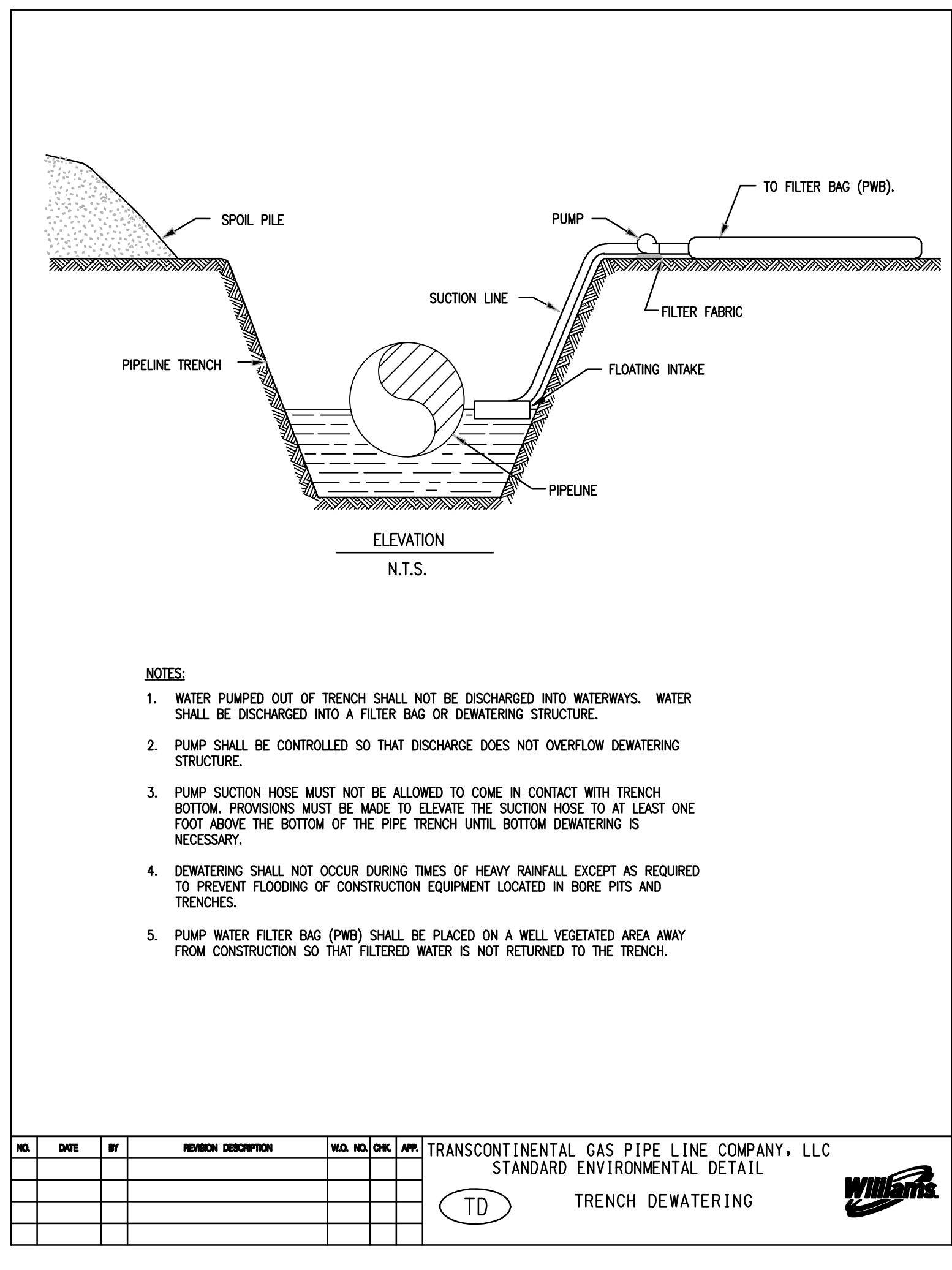
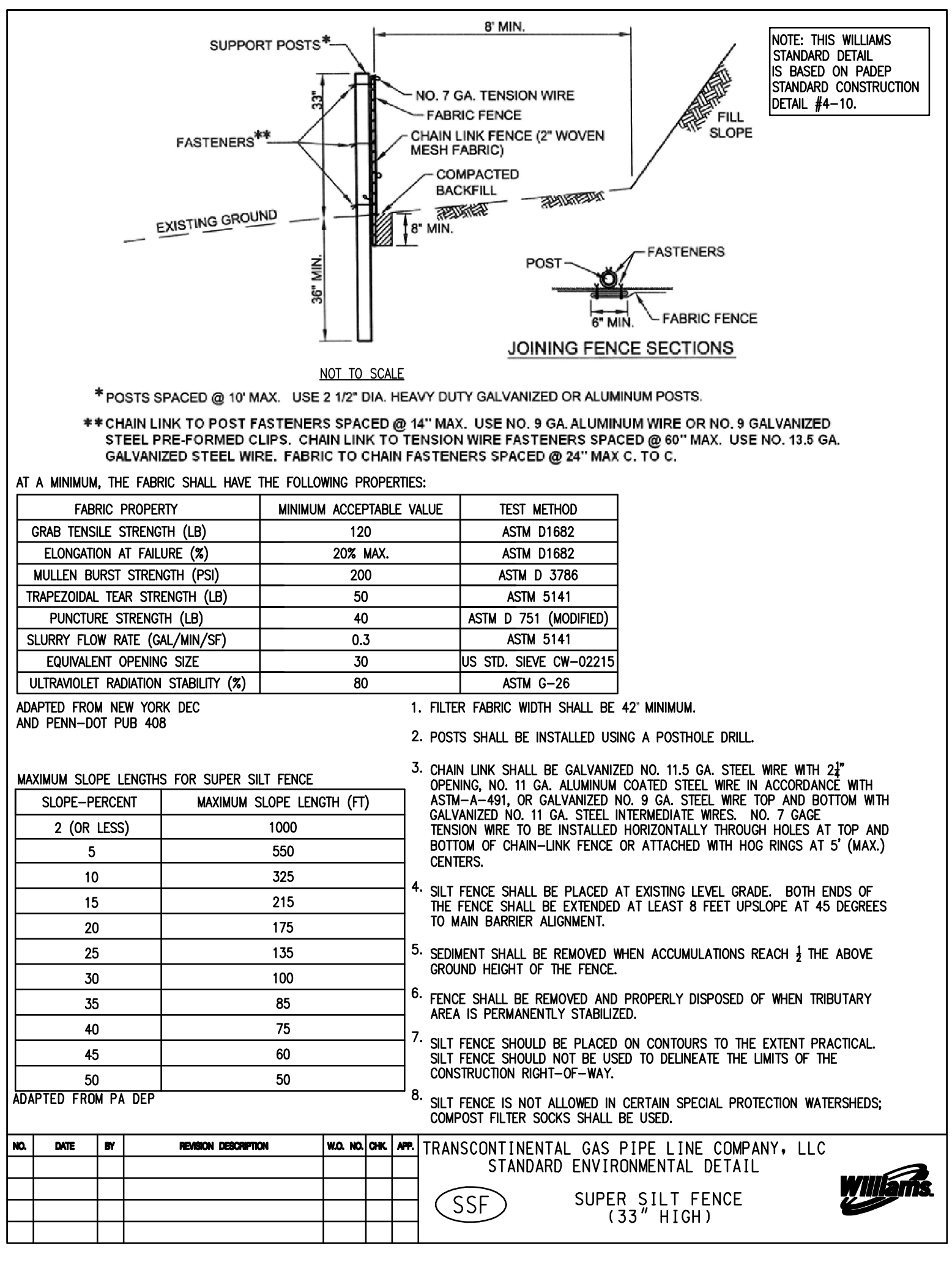
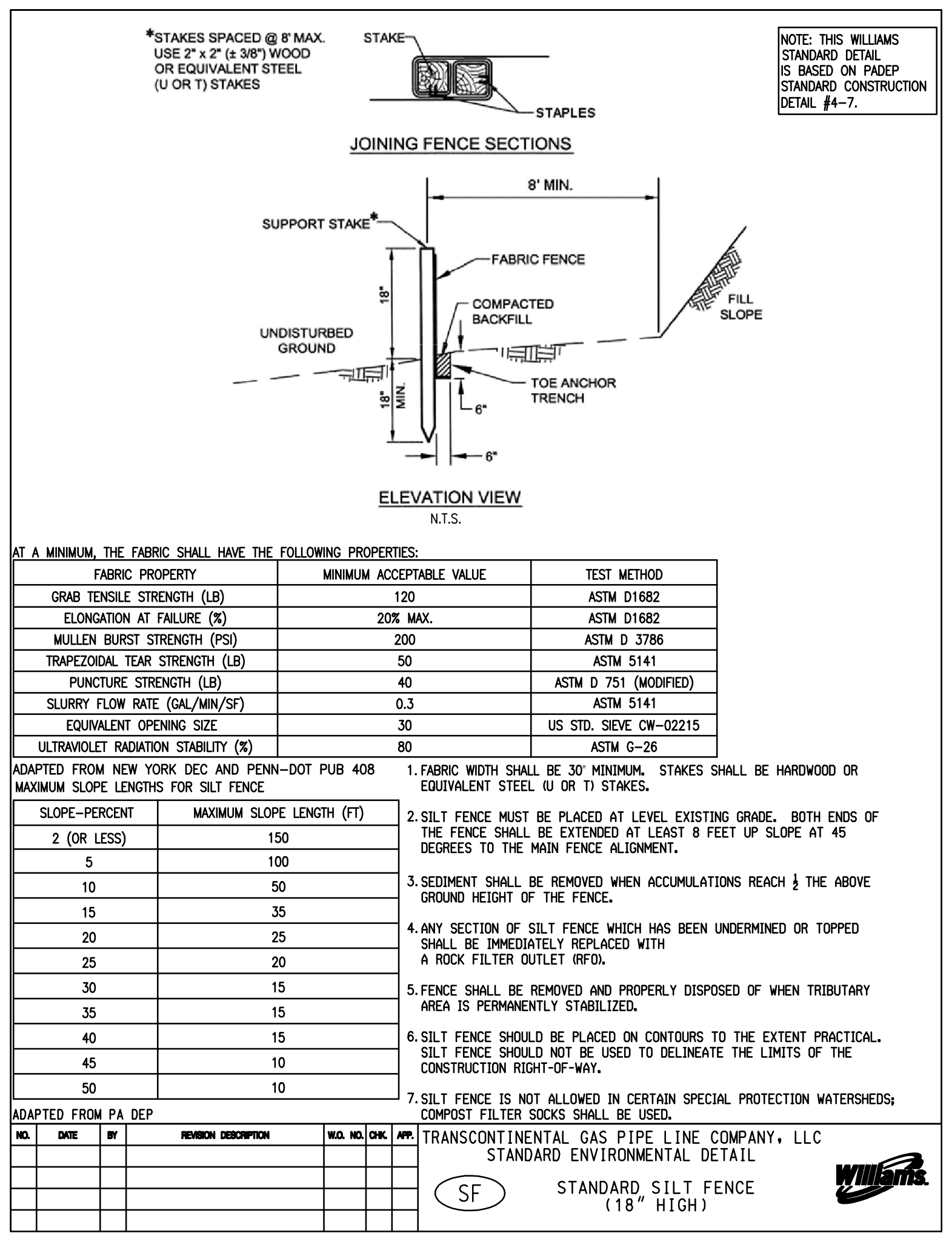
TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC  
STANDARD ENVIRONMENTAL DETAIL

(SBR) STREAM BANK STABILIZATION WITH REINFORCEMENT BLANKET

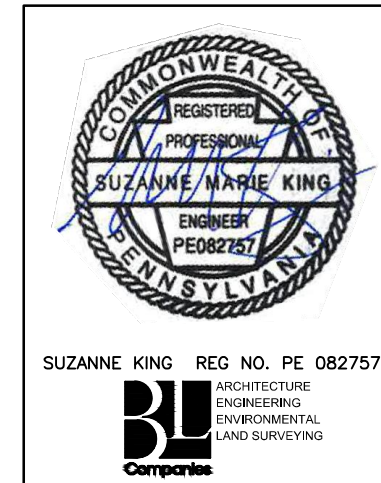


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1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK	
2	Oct. 2016	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1	W0572385	JLK	SMK	
3	April 2017	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #2	W0572385	JLK	SMK	

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC ATLANTIC SUNRISE PROJECT							
BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET							
BEST MANAGEMENT PRACTICES DETAILS							
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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
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1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK	
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3	April 2017	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #2	W0572385	JLK	SMK	

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC ATLANTIC SUNRISE PROJECT							
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BEST MANAGEMENT PRACTICES DETAILS							
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APPROVED BY:	SMK	DATE:	07/08/15	DRAWING NUMBER:	ASR-BMP	SHEET	8
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**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.

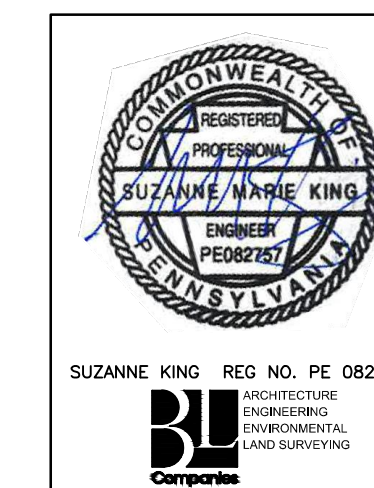
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			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL			
			(TS.3) TOPSOIL SEGREGATION (3)			

**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			



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3	April 2017	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #2	W0572385	JLK	SMK

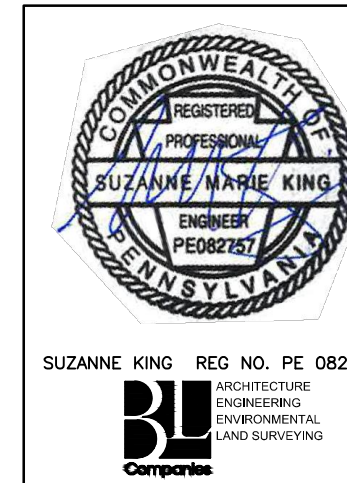
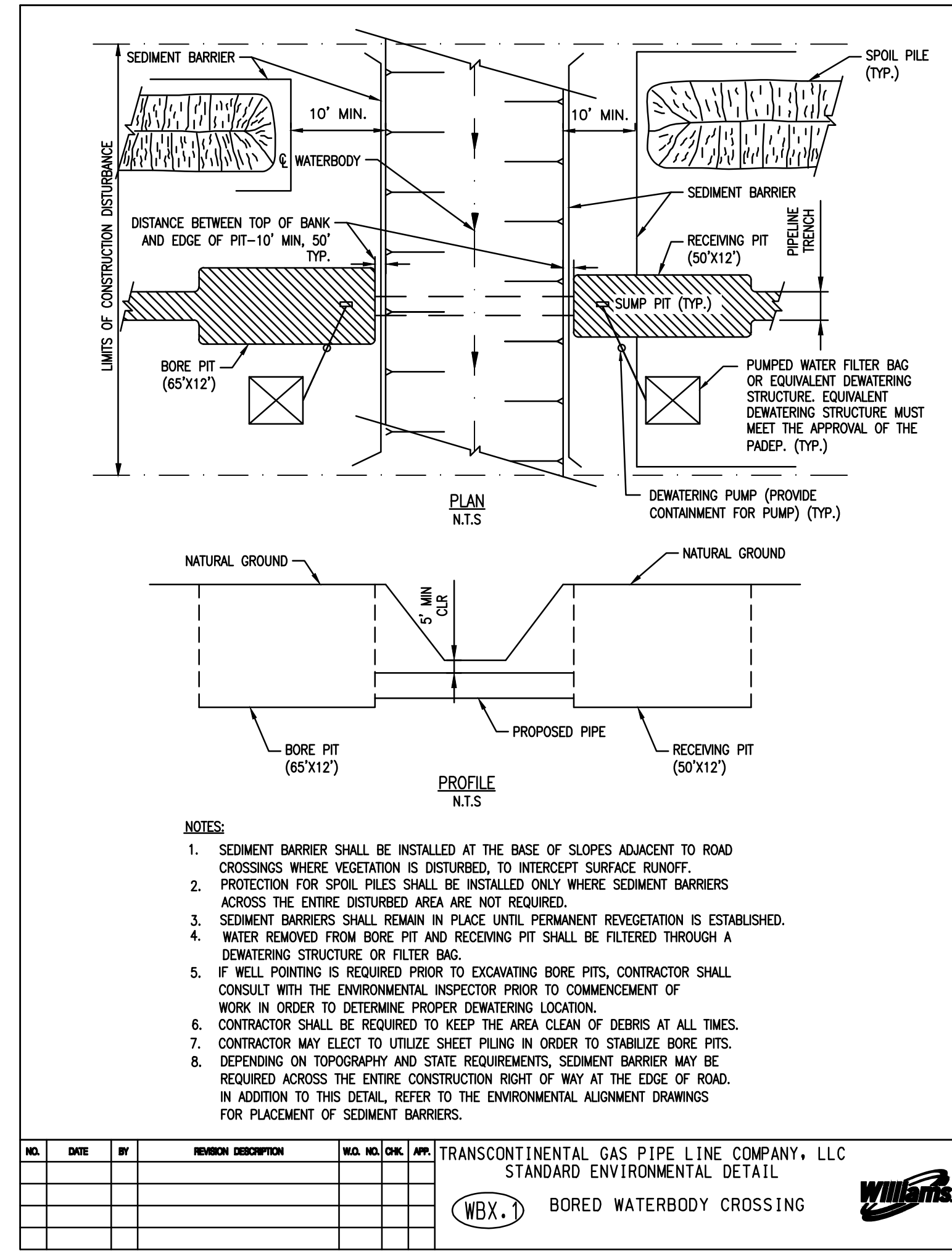
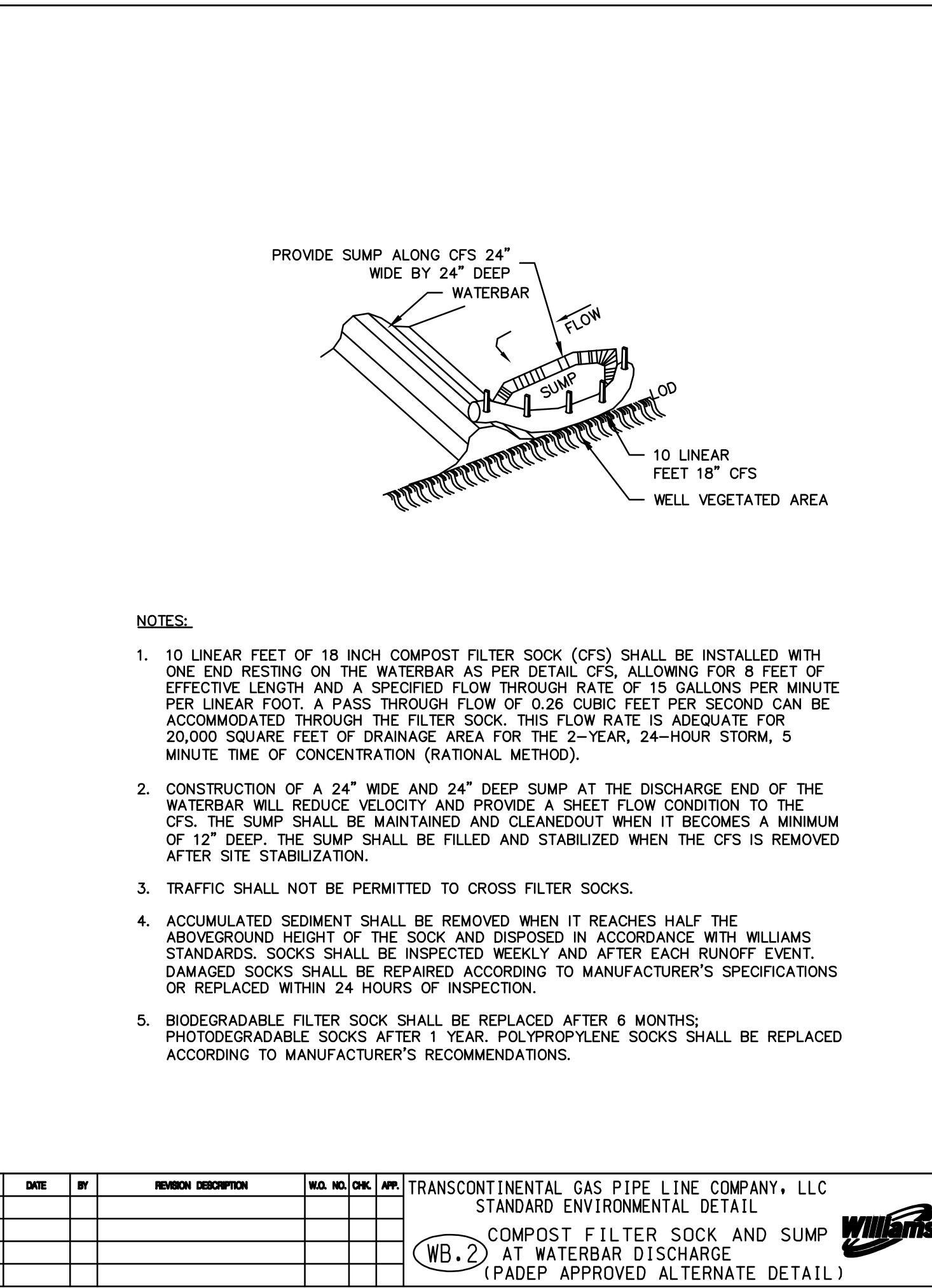
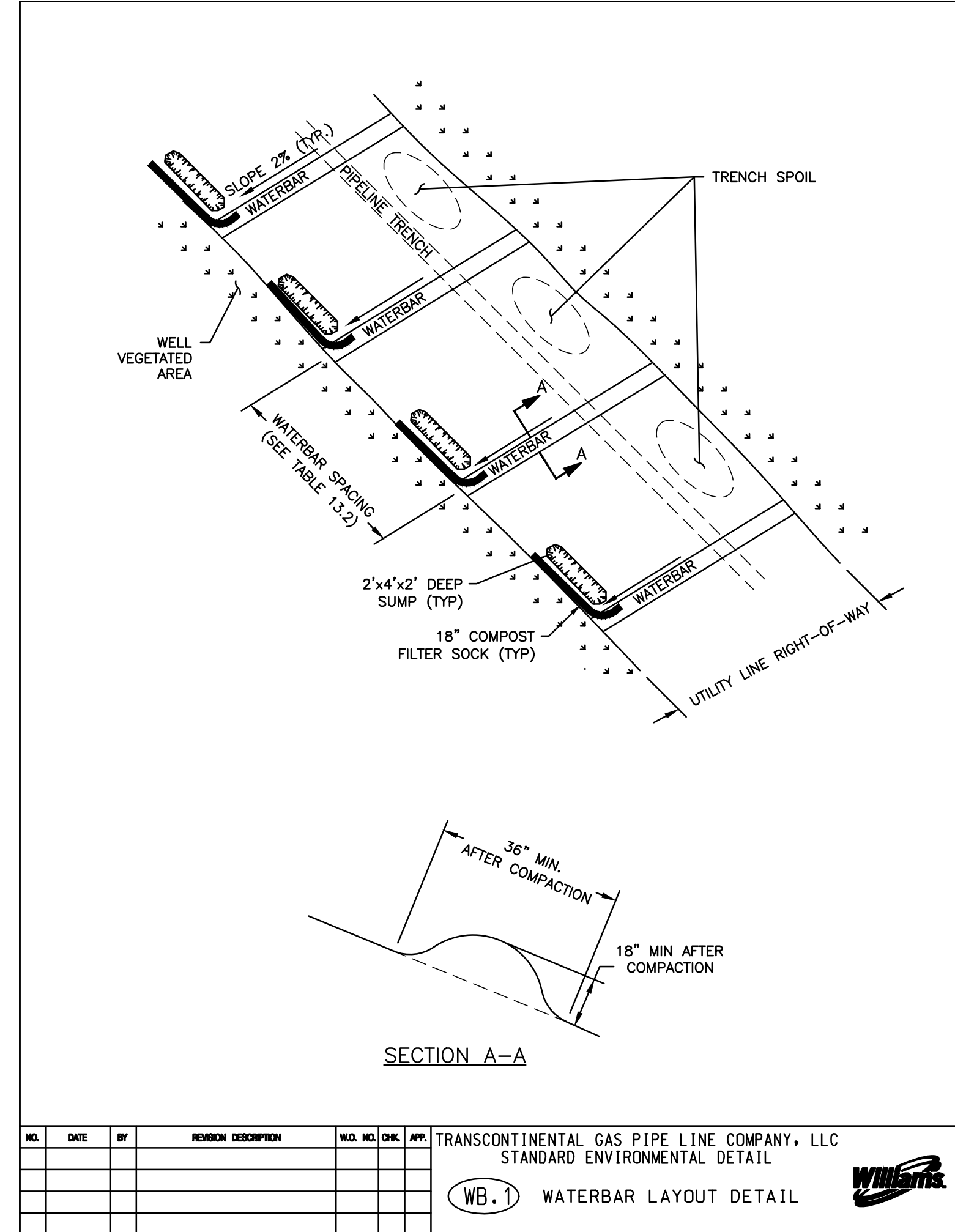
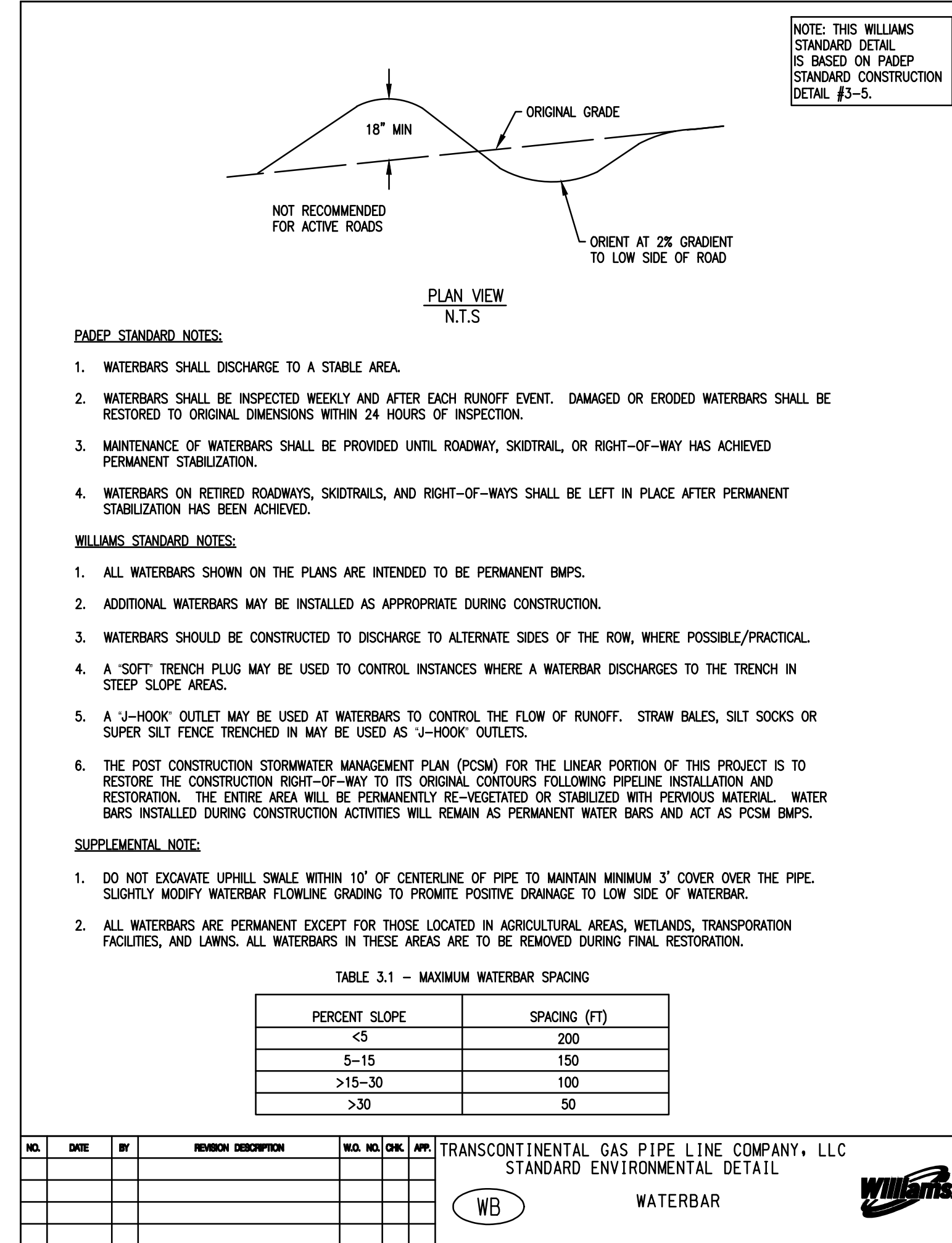
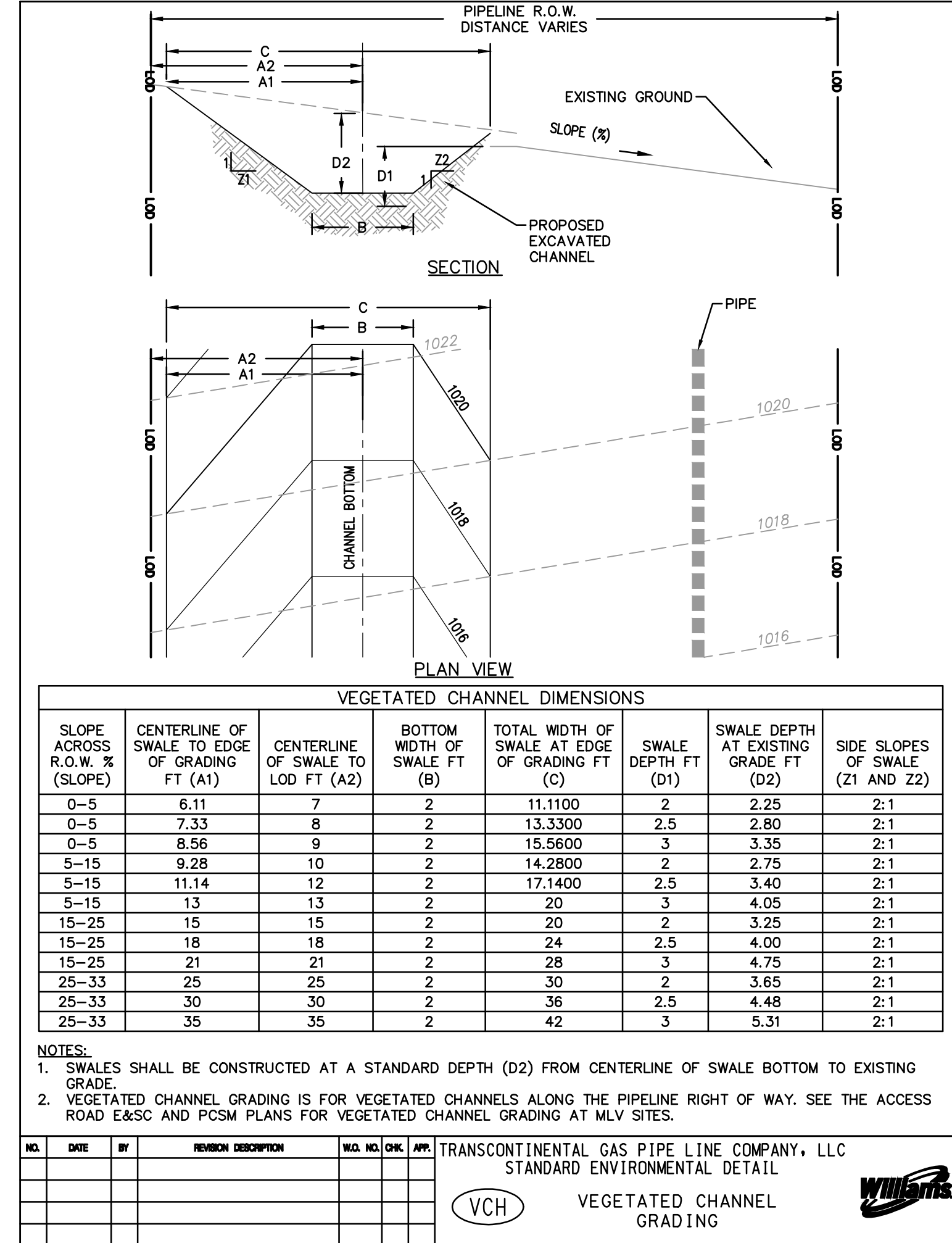
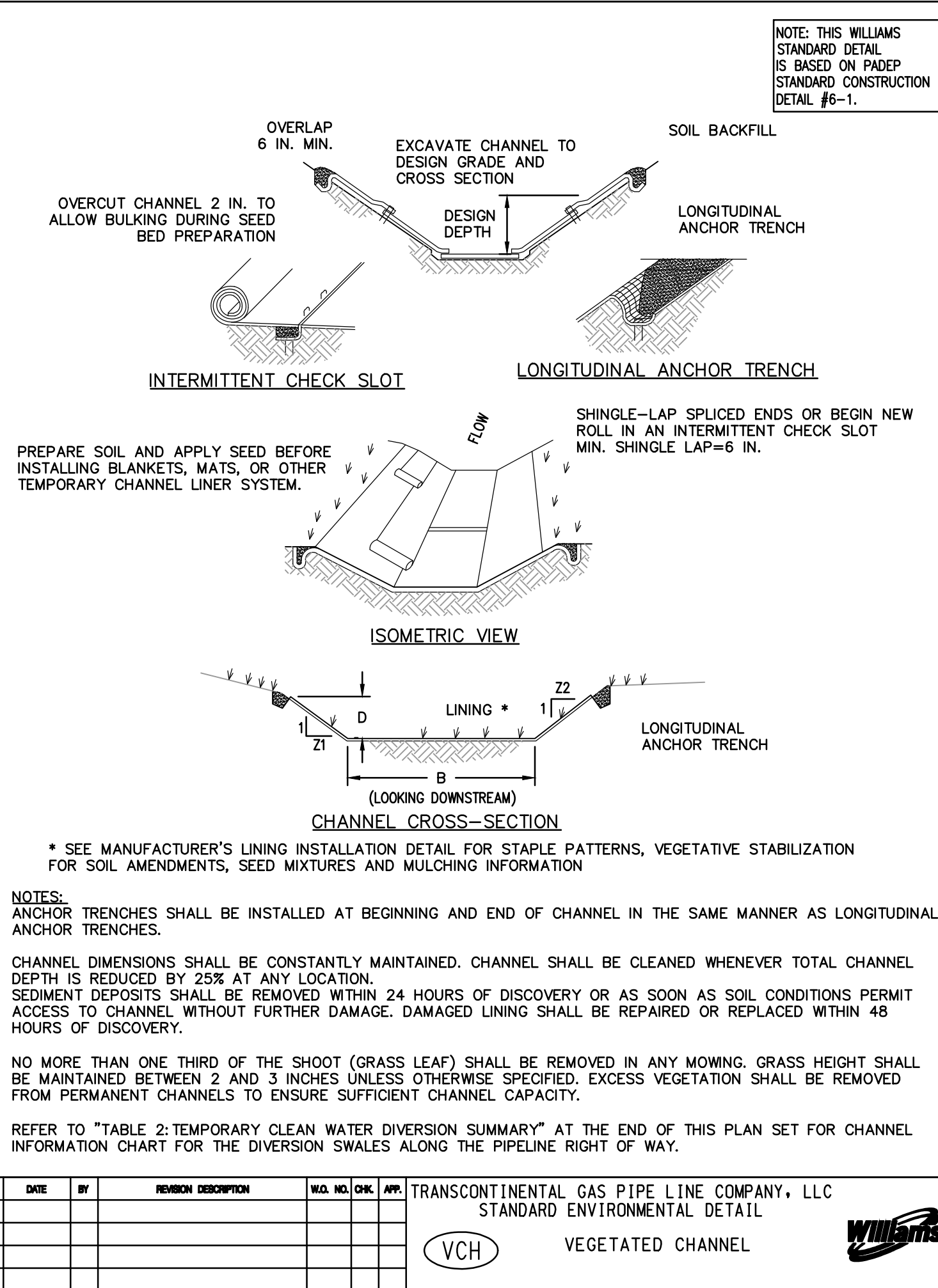
TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC  
ATLANTIC SUNRISE PROJECT

BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET

BEST MANAGEMENT PRACTICES DETAILS

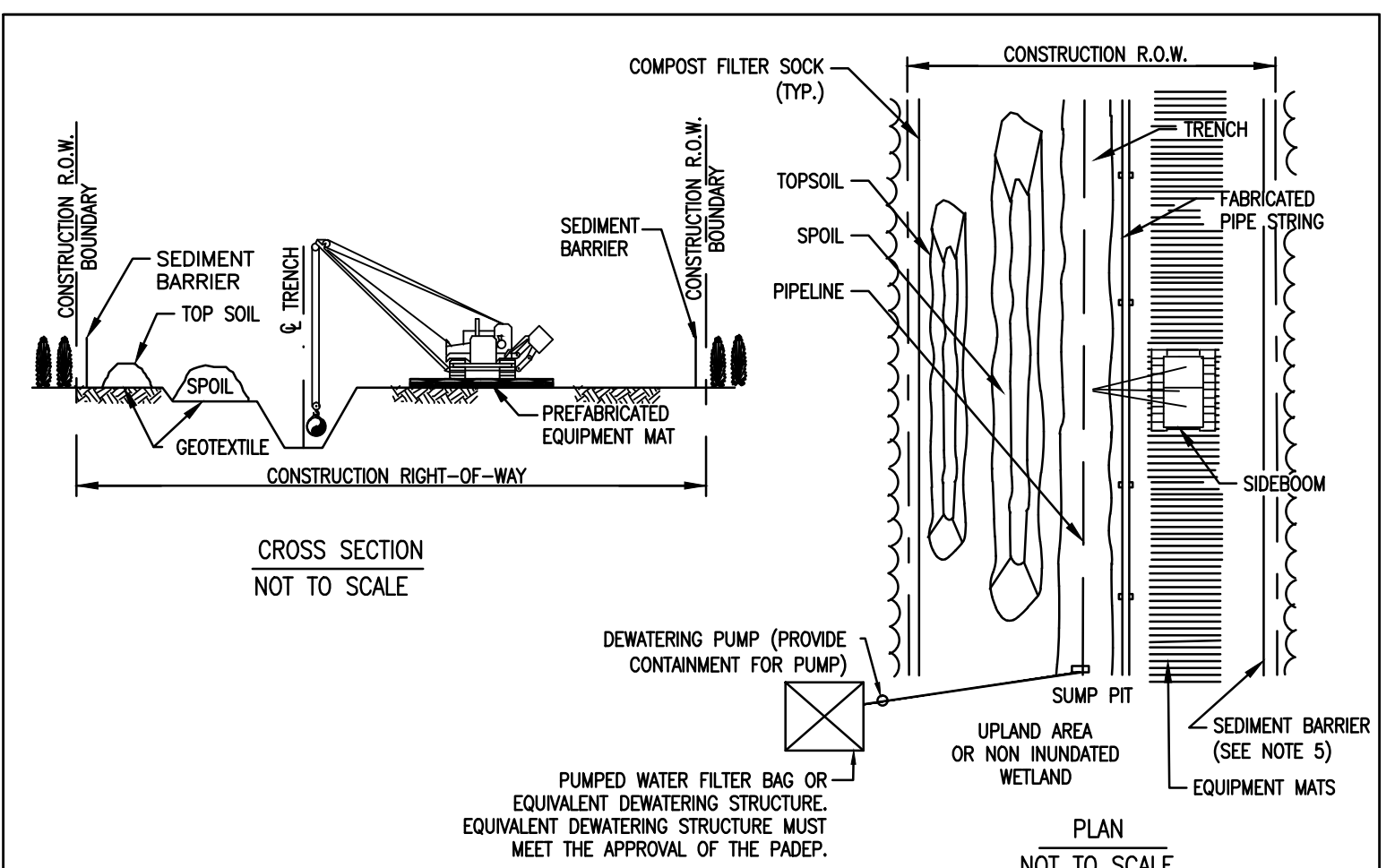
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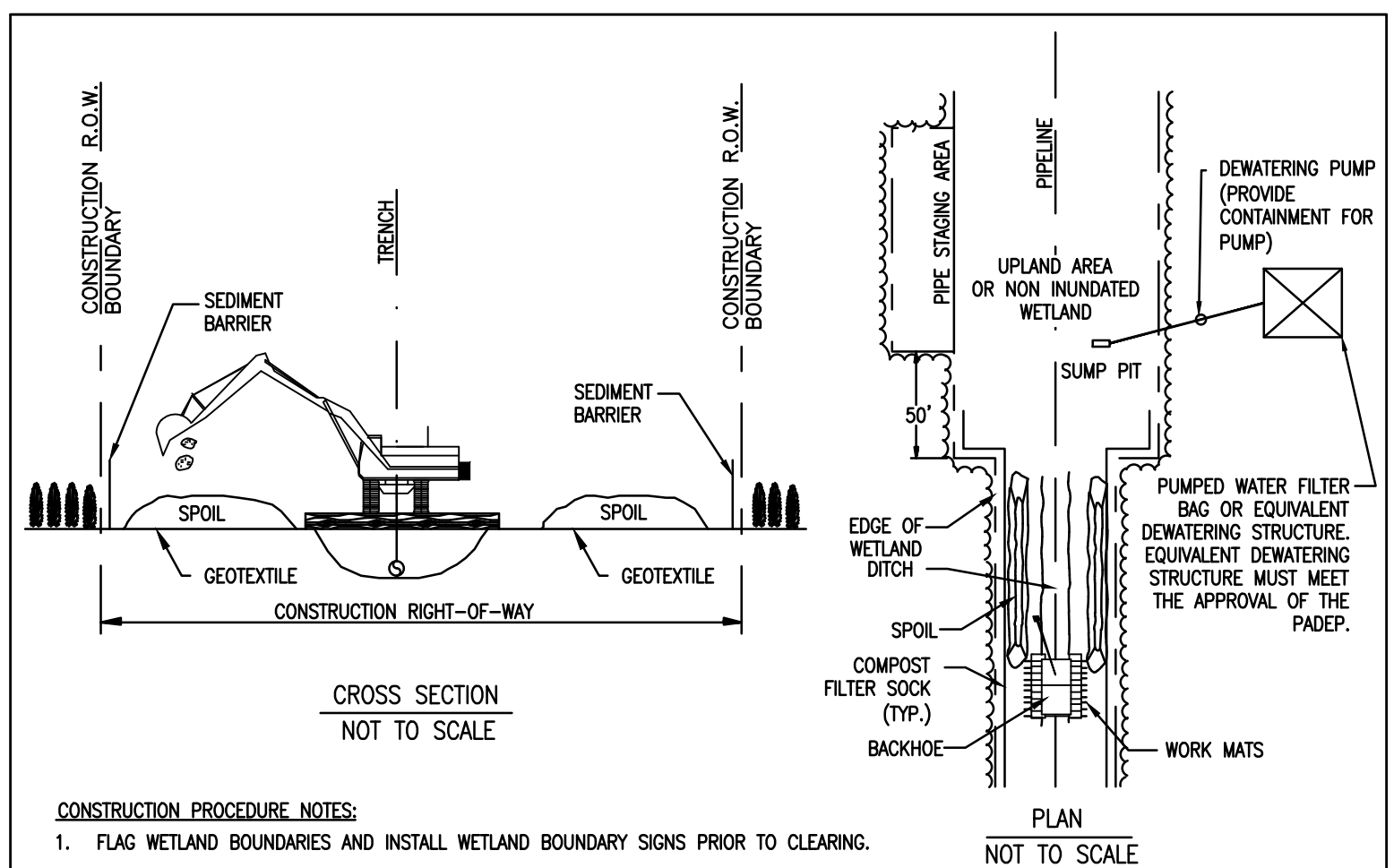
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ATLANTIC SUNRISE PROJECT			
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APPROVED BY:	SMK	DATE:	07/08/15
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DRAWING NUMBER:	ASR-BMP	REVISION:	J
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**CONSTRUCTION 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.

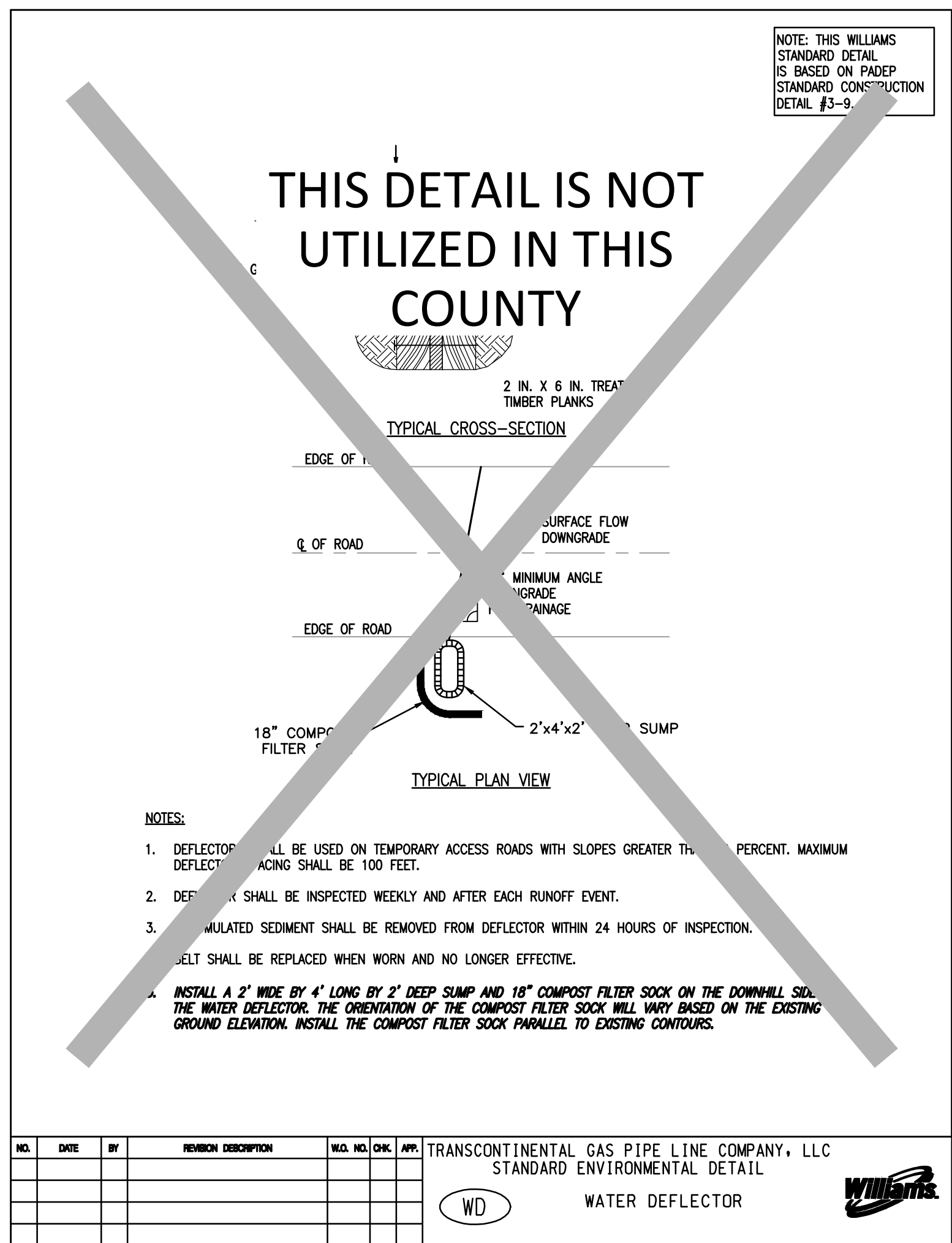
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			(WCC-1) WETLAND INSTALLATION PROCEDURE				



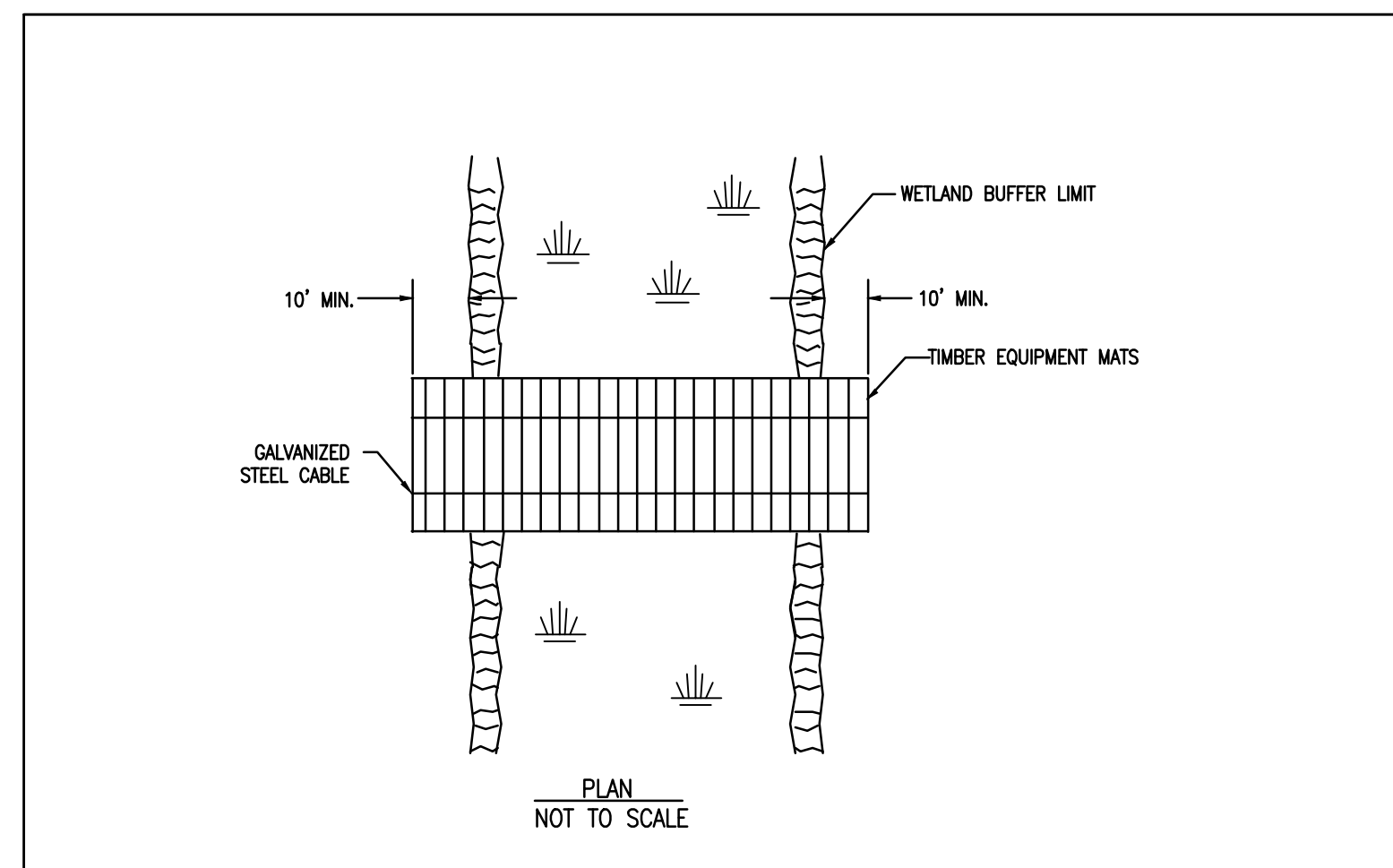
**CONSTRUCTION PROCEDURE NOTES:**

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				



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

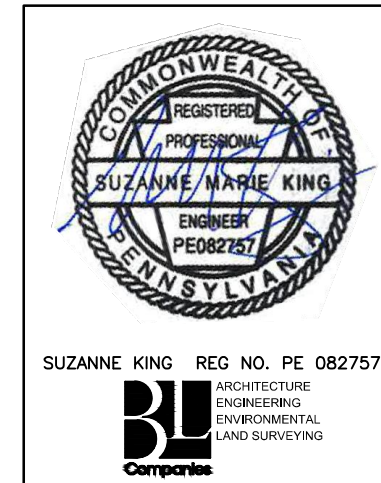


**NOTES:**

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: tdelo Apr 27, 2017 -- 9:02am  
 Drawing Location & Name: G:\08514\14C\14C4909\DWG\BMPs&DETAILS\PL\_DNT14C4909(10)\_LU-BMP-11.dwg



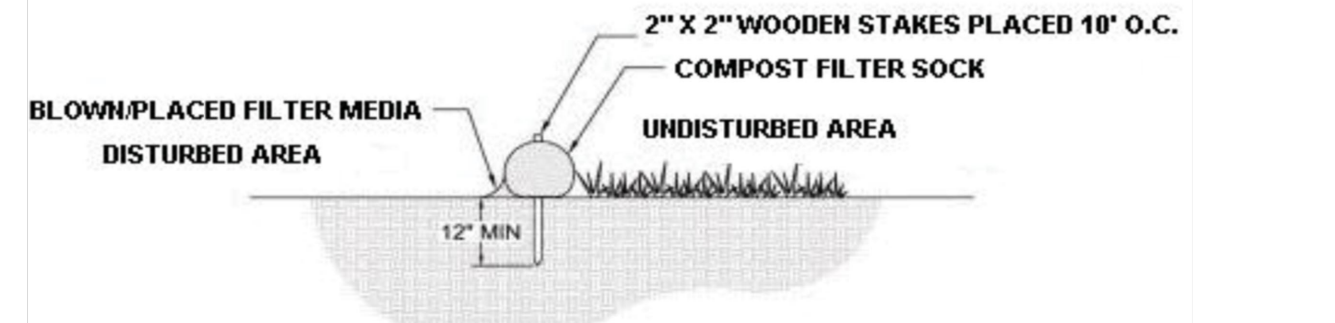
REVISIONS							
NO.	DATE	BY	DESCRIPTION	W.D.	NO.	CHK.	APP.
0	08/26/2015	BL	ISSUED FOR PADEP SUBMITTAL	W0572385	JLK	SMK	
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK	
2	Oct. 2016	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1	W0572385	JLK	SMK	
3	April 2017	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #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	REVISION:	J
DRAWING NUMBER:	ASR-BMP	SHEET:	11
		OF:	11



TABLE 1: SEDIMENT BARRIER SUMMARY

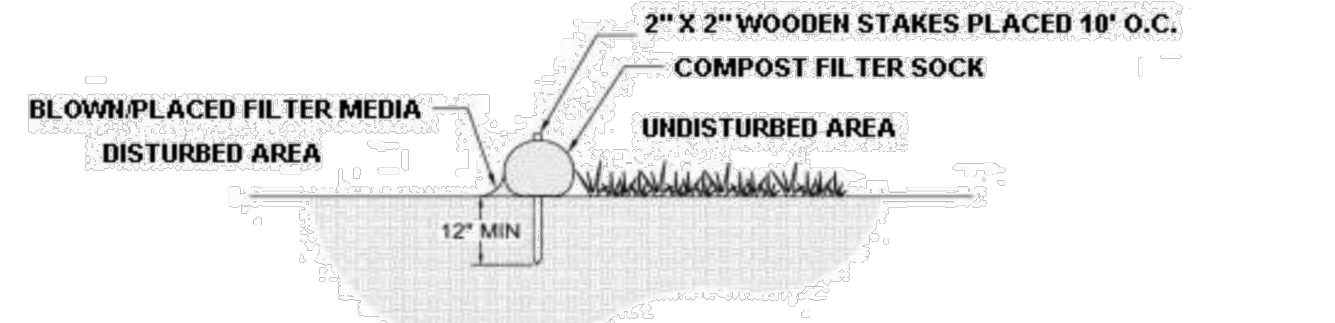
**E&S WORKSHEET #1**  
**Compost Filter Sock**  
 PROJECT NAME: ATLANTIC SUNRISE PROPOSED GAS PIPELINE  
 LOCATION: LUZERNE COUNTY  
 PREPARED BY: ESS DATE: 03/28/2017  
 CHECKED BY: AJB DATE: 04/03/2017



MILEPOST NO.	Dia. In.	LOCATION			SLOPE PERCENT	SLOPE LENGTH ABOVE BARRIER (FT)
		BEGIN STA.	END STA.	TYPE		
5	12	262+75	264+25	Road	5	120
	12	264+25	266+25		5	130
	24	266+50	267+00		6	171
	12	267+00	270+50	Wetland/Stream	2	205
	18	270+50	278+75		4	361
	32	279+00	289+25		7	417
	24	289+50	292+75		2	105
	12	292+25	293+50	Road	3	95
	24	293+75	300+25		2	626
	12	301+00	303+75		4	206
	18	304+25	306+00		2	628
	12	306+00	307+00	Road	5	55
	24	306+50	309+25		6	140
	12	309+25	320+25	Wetland/Stream	2	168
	12	320+50	325+25		2	188
	18	325+50	333+00		3	548
	24	333+00	337+00		8	325
	18	337+00	342+50	Wetland	2	663
	18	341+00	346+75		2	654
	24	346+75	349+75		7	140
	18	350+00	353+25		7	208
	12	353+25	353+75	Road	16	73
	12	353+75	358+25		10	91
	12	359+25	365+25		6	153
	12	362+25	370+75	Wetland	6	80
	24	370+75	372+50		3	86
	12	372+50	376+00		2	269
M-0163	12	31+50	34+00		8	100
M-0147	12	34+00	430+00		4	213
	12	407+75	409+75		4	288
	24	410+00	411+50		5	122
	12	411+75	417+25		4	303

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

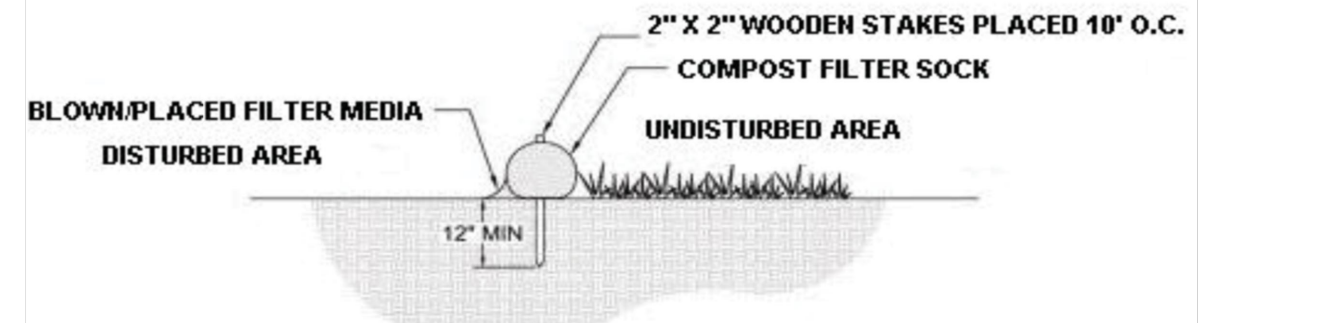
**E&S WORKSHEET #1**  
**Compost Filter Sock**  
 PROJECT NAME: ATLANTIC SUNRISE PROPOSED GAS PIPELINE  
 LOCATION: LUZERNE COUNTY  
 PREPARED BY: ESS DATE: 03/28/2017  
 CHECKED BY: AJB DATE: 04/03/2017



MILEPOST NO.	Dia. In.	LOCATION			SLOPE PERCENT	SLOPE LENGTH ABOVE BARRIER (FT)
		BEGIN STA.	END STA.	TYPE		
16	18	874+00	875+00	Road	23	95
	12	875+25	875+25	Road	14	11
	12	875+50	877+25	Wetland/Stream	24	11
	12	877+25	878+75		16	67
	12	878+00	880+00	Wetland/Stream	11	78
	24	880+25	887+25		12	101
	18	884+25	885+25	Road	28	71
	18	887+25	890+25		13	116
17	18	893+00	899+25		19	81
	24	901+00	901+75		18	50
	18	904+50	907+25		21	112
	24	907+50	907+50	Road	18	213
	12	908+00	908+50	Wetland/Stream	10	50
	24	908+75	910+00		5	133
	18	910+25	921+50		11	177
	12	921+50	922+50	Road	10	47
	18	929+00	931+00	Wetland/Stream	11	222
	24	931+00	938+25		4	303
	12	938+25	939+75		3	87
	24	939+75	941+50		10	64
	32	941+50	943+50		10	333
18	24	943+50	953+00		10	50
	32	953+00	957+00	Wetland/Stream	10	300
	24	957+25	964+75		30	91
	12	965+00	965+75	Road	15	82
	24	965+50	976+00		6	165
	12	975+50	982+25		4	100
	24	982+25	989+75		11	105
	12	990+00	994+00	Wetland/Stream	3	285
	24	993+00	996+50		3	450
	12	996+75	997+00	Road	5	200
19	12	999+00	1011+25		2	90

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

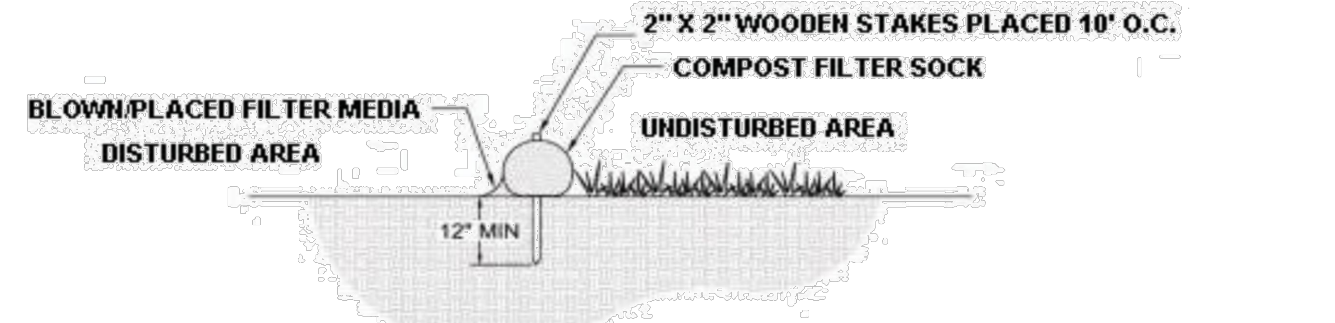
**E&S WORKSHEET #1**  
**Compost Filter Sock**  
 PROJECT NAME: ATLANTIC SUNRISE PROPOSED GAS PIPELINE  
 LOCATION: LUZERNE COUNTY  
 PREPARED BY: ESS DATE: 03/28/2017  
 CHECKED BY: AJB DATE: 04/03/2017



MILEPOST NO.	Dia. In.	LOCATION			SLOPE PERCENT	SLOPE LENGTH ABOVE BARRIER (FT)
		BEGIN STA.	END STA.	TYPE		
8	24	417+25	430+00		2	658
	12	430+50	431+00	Road	6	302
	32	430+50	441+25		6	302
	32	439+25	442+50	Wetland	5	527
M-0056	32	442+50	5+00		6	520
	18	5+25	49+75		12	80
	12	9+00	13+00		7	103
	24	13+00	16+00		7	125
	12	16+00	25+75	Wetland	5	500
	12	25+75	32+00	Road	1	51
	12	26+50	30+00		3	204
	24	32+50	33+00		7	130
	18	33+25	35+00		20	88
9	18	35+00	476+75		17	156
	32	477+00	477+25	Road	8	455
	24	477+50	481+75		40	40
	32	482+00	484+25	Stream/Wetland	42	71
	24	484+25	485+25		18	40
	24	485+50	489+25		10	230
	24	489+50	490+75	Stream	28	100
	24	490+75	502+25		28	100
	18	502+50	510+00		5	300
	24	510+00	513+50		4	208
	12	514+00	515+75	Road	4	65
	32	515+75	521+50		5	598
	12	519+50	521+50	Road	3	166
10	12	521+75	537+25		21	150
	32	536+00	545+00	Stream/Wetland	11	367
	32	544+25	545+25		11	367
	24	545+75	556+00		15	120
	12	558+25	560+75		23	170
	18	560+00	565+00		15	90

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

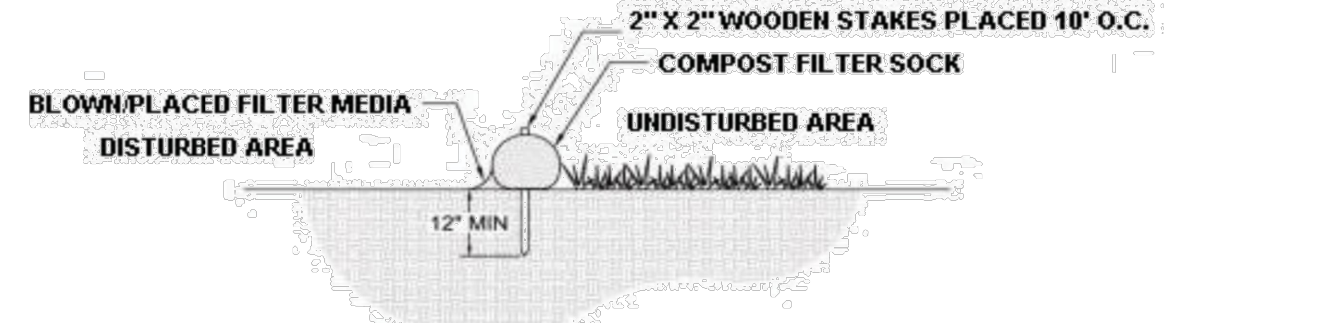
**E&S WORKSHEET #1**  
**Compost Filter Sock**  
 PROJECT NAME: ATLANTIC SUNRISE PROPOSED GAS PIPELINE  
 LOCATION: LUZERNE COUNTY  
 PREPARED BY: ESS DATE: 03/28/2017  
 CHECKED BY: AJB DATE: 04/03/2017



MILEPOST NO.	Dia. In.	LOCATION			SLOPE PERCENT	SLOPE LENGTH ABOVE BARRIER (FT)
		BEGIN STA.	END STA.	TYPE		
19	12	1006+00	1007+00	Wetland	2	228
	24	1011+25	1016+50		8	72
	24	1016+75	1017+50	Road	10	100
	24	1017+75	1023+50		6	140
	18	1023+50	1023+75	Stream	27	50
	24	1024+00	1030+00		15	90
	24	1030+00	1031+75	Wetland	6	350
	24	1032+25	1046+25		3	315
20	12	1045+25	1059+25	Wetland/Stream	10	140
	18	1059+25	1060+00	Road	13	134
	24	1060+00	1103+00		13	134
	12	1059+25	1105+25		15	54
	24	1104+00	1107+25		12	125
21	12	1107+25	1109+00	Wetland	8	80
	24	1109+00	1117+25		5	160
	12	1117+25	1120+00	Wetland	5	90
	24	1124+00	1128+50		4	97
	12	1128+50	1135+75	Wetland	3	200
	12	1147+75	1148+00	Wetland	6	211
	12	1148+50	1148+50	Road	1	50
	24	1148+50	1150+75		5	450
	12	1150+50	1151+00	Wetland/Stream	8	31
22	18	1151+00	1162+00		17	153
	24	1162+25	1164+25		4	200
M-0060	12	1165+00	8+25	Wetland/Stream	5	150
	12	8+00	12+25		5	120
	12	12+25	13+25	Road	1	55
	12	13+25	14+25		2	100
	12	14+50	15+00	Road	1	20
	12	15+00	16+75		2	100
	12	17+00	18+00	Road	2	90
	24	18+00	21+25		1	150

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

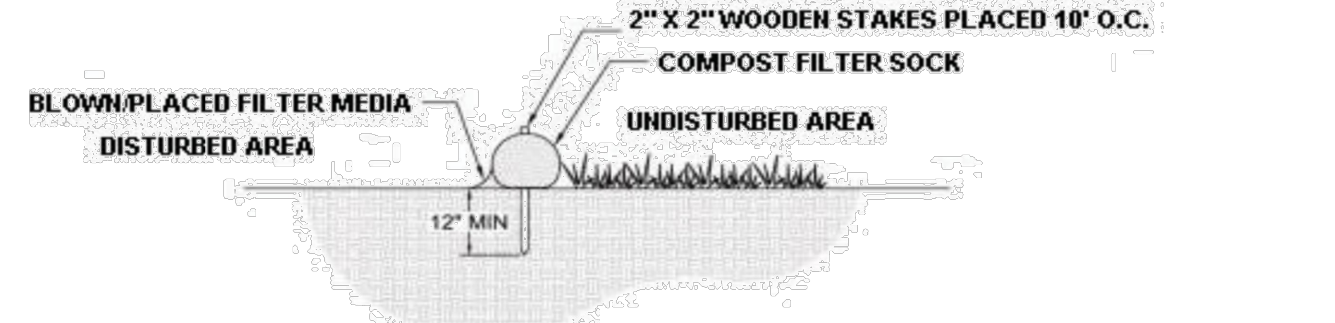
**E&S WORKSHEET #1**  
**Compost Filter Sock**  
 PROJECT NAME: ATLANTIC SUNRISE PROPOSED GAS PIPELINE  
 LOCATION: LUZERNE COUNTY  
 PREPARED BY: ESS DATE: 03/28/2017  
 CHECKED BY: AJB DATE: 04/03/2017



MILEPOST NO.	Dia. In.	LOCATION			SLOPE PERCENT	SLOPE LENGTH ABOVE BARRIER (FT)
		BEGIN STA.	END STA.	TYPE		
10	32	564+75	567+00	Wetland	15	330
	12	567+00	571+00		6	92
	24	571+50	573+75		6	150
	12	574+00	576+00	Road	10	47
	24	574+75	576+00		6	89
	12	576+25	581+75	Wetland	4	150
11	12	579+50	581+50		5	92
	12	582+00	583+00	Wetland	7	50
	24	583+00	590+25		11	208
	12	589+00	590+00	Road	7	38
	18	590+50	594+00	Stream/Wetland	12	138
	18	592+50	600+50	Road	20	86
	24	594+75	601+25		18	150
	12	600+50	602+00	Road	11	58
	12	602+00	603+25		7	108
	12	605+00	606+00	Road	5	206
	24	610+00	610+00	Wetland/Waterbody	5	77
	24	614+25	624+00		20	150
	12	624+00	625+00	Stream/Wetland	8	78
12	18	625+25	630+50		10	150
	24	634+25	642+00		4	200
	12	642+25	643+00	Stream	9	81
	24	643+00	655+25		20	100
	18	655+00	660+50	Road	10	176
	12	661+50	664+50	Road	14	28
	12	664+75	668+50		8	93
	18	668+75	673+00		18	90
	18	673+00	675+75	Road	16	97
	12	676+25	681+75		14	150
	24	681+00	682+00	Road	9	150

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

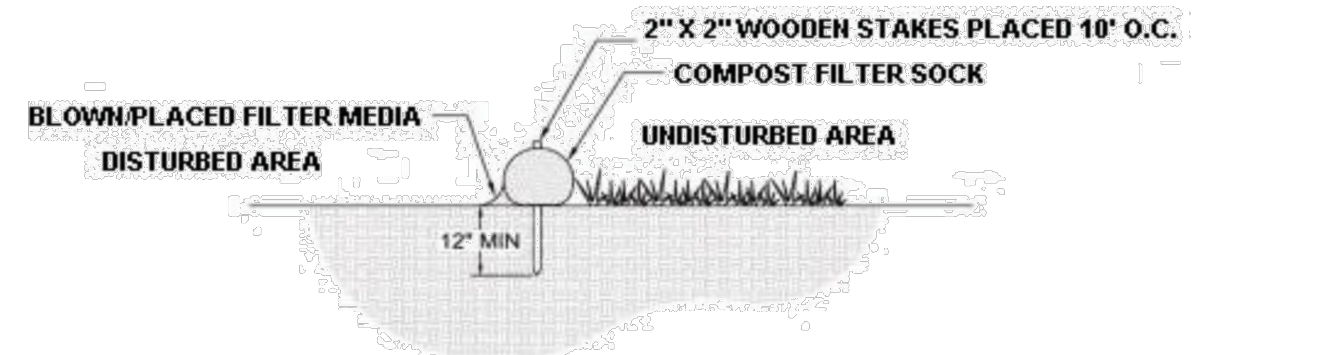
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 CHECKED BY: AJB DATE: 04/03/2017



MILEPOST NO.	Dia. In.	LOCATION			SLOPE PERCENT	SLOPE LENGTH ABOVE BARRIER (FT)
		BEGIN STA.	END STA.	TYPE		
22 M-0060	12	21+50	21+50	Stream	5	100
	24	21+75	25+00		20	120
	12	25+00	27+00	Wetland	5	142
	24	27+25	29+50		17	133
	12	29+75	30+00	Road	9	9
	18	30+00	34+50		16	109
	32	34+50	42+75		11	287
	18	43+00	46+00		11	142
	12	46+00	46+25	Stream	14	79
	18	46+25	48+00		12	198

TABLE 1: SEDIMENT BARRIER SUMMARY (CONTINUED)

E&S WORKSHEET #1  
Compost Filter Sock  
PROJECT NAME: ATLANTIC SUNRISE PROPOSED GAS PIPELINE  
LOCATION: LUZERNE COUNTY  
PREPARED BY: ESS DATE: 03/28/2017  
CHECKED BY: AJB DATE: 04/03/2017



MILEPOST NO.	Dia. In.	LOCATION		SLOPE PERCENT	SLOPE LENGTH ABOVE BARRIER (FT)
		BEGIN STA.	END STA.		
M-0179	18	31+00	to 35+25	34	51
	24	35+25	to 37+00	40	67
	18	37+00	to 40+50	20	104
	32	40+50	to 46+00	39	90
	18	37+00	to 40+50	20	104
	32	40+50	to 46+00	39	90

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

TABLE 2: TEMPORARY CLEAN WATER DIVERSION SUMMARY

MILE POST	TEMPORARY DIVERSION SUMMARY - LUZERNE COUNTY, PENNSYLVANIA										WATERBODY**				TEMPORARY PIPE		
	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***	RIP RAP THICKNESS (IN)	R.O.W. SLOPE (%)	Q (CFS)	# OF 12" DIAMETER PIPES
5	05.01	FILTER SOCK	0	1.6	7.9	0	5	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	13	5.28	1
8	08.01*	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	7	4.5	1
	08.02*	SWALE	2	3	14	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	1	12.38	2
	08.03*	FILTER SOCK	0	1	9	0	9	C125	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	15	3.6	1
9	9.01*	SWALE	2	2	1.2	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	15	3.6	1
	9.02*	SWALE	2	2	10	2	2	W3000	REINFORCED VEGETATION	WATERBODY	2	8	R-4	18	N/A	6.98	N/A
10	10.01*	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	5	6.98	1
	10.02A*	SWALE	2	3	14	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	6	16.43	2
	10.02B*	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	6	11.03	1
	10.02C*	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	5	11.03	2
12	12.01*	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	4	3.6	1
	12.02A*	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	6	5.85	1
	12.02B*	SWALE	2	2	10	2	2	SC250	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	9	10.35	1
	12.03*	SWALE	2	2	10	2	2	SC250	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	13	6.3	1
	12.04*	SWALE	2	2	10	2	2	SC250	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	38	3.8	1
13	13.01*	FILTER SOCK	0	1.6	8.7	0	5.5	P550	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	29	10.38	1
	13.02A*	SWALE	2	2	10	2	2	SC250	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	17	6.3	1
	13.02B*	FILTER SOCK	0	1.6	4.9	0	3.1	W3000	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	19	2.03	1
	13.03*	FILTER SOCK	0	1.6	5.5	0	3.5	P550	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	19	1.35	1
	13.04*	FILTER SOCK	0	1.6	5.5	0	3.5	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	18	0.68	1
	13.05A*	SWALE	2	2	10	2	2	P550	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	2	7.2	1
	13.05B*	FILTER SOCK	0	1.6	5.1	0	3.2	P550	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	28	5.18	1
	13.06*	SWALE	2	2	10	2	2	SC250	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	30	16.2	1
	13.07*	SWALE	2	2	10	2	2	SC250	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	35	10.35	1
	13.08*	FILTER SOCK	0	1.6	8.8	0	5.6	W3000	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	14	5.4	1
14	14.01*	FILTER SOCK	0	1.6	6.3	0	4	P550	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	28	0.9	1
	14.02*	FILTER SOCK	0	1.6	6.3	0	4	SC250	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	22	2.25	1
	14.03*	FILTER SOCK	0	1.6	6.3	0	4	SC250	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	11	1.8	1
	14.04*	FILTER SOCK	0	1.6	6.3	0	4	SC250	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	9	1.35	1
	14.05*	FILTER SOCK	0	1.6	6.3	0	4	SC250	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	7	5.85	1
	14.06*	FILTER SOCK	0	1.6	6.3	0	4	SC250	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	7	21.83	2
	14.07*	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	7	7.65	1
	14.08*	SWALE	2	2	10	2	2	SC250	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	10	6.98	1
	14.09*	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	3	8.1	1
	14.10*	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	2	9.23	1
15	15.01*	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	2	10.58	2
	15.02*	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	3	10.58	2
	15.02A*	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	4	5.85	1
	15.02B*	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	19	2.48	1
16	16.01*	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	11	2.03	1
	16.02*	SWALE	0	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	4	5.85	1
	16.03*	FILTER SOCK	0	1.6	9.5	0	6	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	11	2.03	1
17	17.01*	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	6	0.68	1
	17.02A*	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	4	7.65	1
	17.02B*	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	4	6.08	1
	17.03*	SWALE	2	2	10	2	2	C125	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	3	8.78	2
	17.04*	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	1	4.28	1
18	18.01*	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	4	8.78	2
	18.02*	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	1	4.28	1
21	21.01A	SWALE	2	2	10	2	2	SC250	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	13	6.72	1
	21.01B	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	16	8	1
	21.01C	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	16	8	1
	21.01D	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	13	8	1
	21.01E	SWALE	2	2	10	2	2	C125	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	14	7.52	1
	21.01F	SWALE	2	2	10	2	2	SC250	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	18	8	1
	21.02	SWALE	2	2	10	2	2	C125	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	14	7.52	1
	21.03	SWALE	2	2	10	2	2	C125	REINFORCED VEGETATION	WATERBODY	2	12	R-4	18	N/A	12	N/A
	21.04	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	3	7.04	1
	21.05	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	3	1.76	1
22	22.01	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	9	8	1
	22.02	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	10	7.36	1
	22.03	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	11	7.52	1
	22.04A	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	9	8	1
	22.04B	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	10	7.36	1
	22.04C	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	11	7.52	1
	22.05	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	0	2.24	1
	22.06	SWALE	2	2	10	2	2	SC250	REINFORCED VEGETATION	WATERBODY	2	12	R-4	18	N/A	14.4	N/A
	22.07	SWALE	2	2	10	2	2	SC250	REINFORCED VEGETATION	WATERBODY	2	18	R-4	18	N/A	25.12	N/A
	22.08	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	WATERBODY	2	8	R-4	18	N/A	4	N/A
23	23.01	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	4	9.96	1
	23.02	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	18	8.33	1
	23.03	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	13	9.68	1
	23.04	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	9	8.55	1
	23.05	FILTER SOCK	0	1.6	7.9	0	5	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	18	3.36	1
	23.06	FILTER SOCK	0	1.6	6.3	0	4	C125	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	20	3.84	1
	23.07	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	19	4.32	1
	23.08	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	12	1.92	1
	23.09	SWALE	2	2	10												

TABLE 4: WETLANDS CROSSED BY CPLN PIPELINE AND ACCESS ROADS IN LUZERNE COUNTY

Wetland ID	Milepost	County	Township	Wetland Classes Impacted
W-T51-17002	M-0060.0.99	Luzerne	Dallas	PFO
W-T71-18002B-1	M-0150.0.05	Luzerne	Dallas	PSS
W-T24-17001A-1	24.16	Luzerne	Dallas	PEM
W-T07-17006	25.37	Luzerne	Dallas	PEM
W-T65-18002	M-01420.26	Luzerne	Dallas	PFO
W-T65-18003	M-01420.30	Luzerne	Dallas	PEM
W-T76-18021-3	M-0179.0.26	Luzerne	Dallas	PEM
W-T61-18001	27.06	Luzerne	Dallas	PEM
W-T56-18001C-2 /				
W-T56-18001C-3 /				
W-T56-18001C-5 /	M-00881.08	Luzerne	Dallas	PFO
W-T56-18001C-6 /				
W-T56-18001C-8				
W-T02-15017	5.10	Luzerne	Fairmount	PEM
W-T02-15019C	5.96	Luzerne	Fairmount	PEM
W-T02-15019B	5.98	Luzerne	Fairmount	PSS
W-T02-15019A	6.03	Luzerne	Fairmount	PEM
W-T02-15020C	6.43	Luzerne	Fairmount	PFO
W-T02-15020G	6.43	Luzerne	Fairmount	PFO
W-T02-15022A	6.95	Luzerne	Fairmount	PEM
W-T02-15022C	6.96	Luzerne	Fairmount	PFO
W-T02-15023G	M-0163.0.09	Luzerne	Fairmount	PFO
W-T02-15023A	M-0163.0.09	Luzerne	Fairmount	PEM
W-T24-15001	7.47	Luzerne	Fairmount	PEM
W-T02-16001	8.36	Luzerne	Fairmount	PEM
W-T02-16003A /				
W-T02-16003A-1	M-0056.0.39	Luzerne	Fairmount	PEM
W-T02-16002	9.16	Luzerne	Fairmount	PEM
W-T05-16004	10.20	Luzerne	Fairmount	PEM
W-T56-18002	M-00881.57	Luzerne	Franklin	PEM
W-T56-18004	M-00881.67	Luzerne	Franklin	PEM
W-T56-18003B	M-00881.75	Luzerne	Franklin	PSS
W-T56-18005	M-00881.81	Luzerne	Franklin	PEM
W-T03-16001	15.79	Luzerne	Lake	PEM
W-T03-17012	16.60	Luzerne	Lake	PEM
W-T03-17011	16.64	Luzerne	Lake	PEM
W-T03-17010	17.20	Luzerne	Lake	PEM
W-T03-17009-1	17.62	Luzerne	Lake	PEM
W-T03-17008A	18.08	Luzerne	Lake	PEM
W-T03-17008C	18.08	Luzerne	Lake	PFO
W-T03-17007C	18.78	Luzerne	Lake	PFO
W-T03-17007A	18.81	Luzerne	Lake	PEM
W-T03-17006	19.06	Luzerne	Lake	PEM
W-T03-17005A	19.53	Luzerne	Lehman	PEM
W-T05-17001A	19.86	Luzerne	Lehman	PEM
W-T05-17001B	19.92	Luzerne	Lehman	PSS
W-T03-17003	20.99	Luzerne	Lehman	PEM
W-T03-17001	21.18	Luzerne	Lehman	PEM
W-T07-17001	21.45	Luzerne	Lehman	PFO
W-T49-17001	21.74	Luzerne	Lehman	PEM
W-T07-17003C /				
W-T07-17003C-1 /	22.08	Luzerne	Lehman	PFO
W-T07-17003C-2				
W-T07-17003A	22.51	Luzerne	Lehman	PEM
W-T07-17003B-1	MOC-0060.0.06	Luzerne	Lehman	PSS
W-T51-17001C	M-00600.48	Luzerne	Lehman	PFO
W-T05-16005	10.72	Luzerne	Ross	PEM
W-T11-16001A	10.94	Luzerne	Ross	PEM
W-T11-16001B	10.96	Luzerne	Ross	PSS
W-T11-16001C-1	11.03	Luzerne	Ross	PFO
W-T11-16002A /				
W-T11-16002A-1 /	11.20	Luzerne	Ross	PEM
W-T11-16002A-2 /				
W-T11-16002A-3				
W-T13-16002C	11.52	Luzerne	Ross	PFO
W-T13-16002A	11.54	Luzerne	Ross	PEM
W-T13-16001	11.83	Luzerne	Ross	PEM
W-T05-16003 / W-T05-16003-2	13.13	Luzerne	Ross	PEM
W-T05-16002	13.65	Luzerne	Ross	PEM
W-T05-16001	13.70	Luzerne	Ross	PEM
W-T03-16005 /	13.85	Luzerne	Ross	PEM
W-T03-16005-1				
W-T03-16004 / W-T03-16004-1	13.94	Luzerne	Ross	PEM
W-T03-16003	14.11	Luzerne	Ross	PEM
W-T03-16002A /				
W-T03-16002A-1 /	14.97	Luzerne	Ross	PEM
W-T03-16002A-2				
W-T03-16002B / W-T03-16002B-1	14.97	Luzerne	Ross	PSS
Access Roads				
W-T02-15023A-1	AR-LU-008	Luzerne	Fairmount	PEM

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

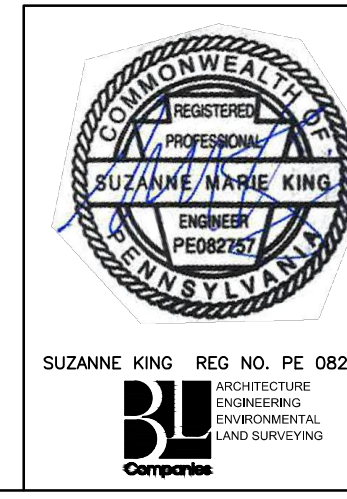
TABLE 5: LOCATIONS OF ACID SOILS ALONG CPLN PIPELINE IN LUZERNE COUNTY

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
4.98	5.07	Luzerne	Ld	4.90	12.57	12.63	Luzerne	WmB	4.80	19.44	19.53	Luzerne	MaB	5.50
5.07	5.18	Luzerne	MsB	5.70	12.63	12.77	Luzerne	OpD	4.80	19.53	19.57	Luzerne	VrB	6.00
5.18	5.37	Luzerne	OpD	4.80	12.77	12.87	Luzerne	Ld	4.90	19.57	19.68	Luzerne	WIB	5.30
5.37	5.44	Luzerne	MsB	5.70	12.87	12.90	Luzerne	Ld	4.90	19.68	19.73	Luzerne	LaC	4.90
5.44	5.48	Luzerne	MoB	5.20	12.90	13.04	Luzerne	WmB	4.80	19.73	19.81	Luzerne	Ld	4.90
5.48	5.50	Luzerne	OpD	4.80	13.04	13.12	Luzerne	WmD	4.80	19.81	19.85	Luzerne	VrB	6.00
5.50	5.59	Luzerne	WIB	5.30	13.12	13.13	Luzerne	OpD	4.80	19.85	19.92	Luzerne	ClA	5.90
5.59	5.81	Luzerne	LaB	5.00	13.13	13.30	Luzerne	OpD	4.90	19.92	19.97	Luzerne	Wa	6.50
5.81	5.83	Luzerne	OpD	4.80	13.30	13.44	Luzerne	Ld	4.90	19.97	20.02	Luzerne	CnB	5.90
5.83	5.86	Luzerne	MsB	5.70	13.44	13.52	Luzerne	Ld	4.90	20.02	20.07	Luzerne	WIC	4.90
5.86	6.04	Luzerne	Wa	6.50	13.52	13.84	Luzerne	OpD	4.80	20.07	20.13	Luzerne	BkD	5.30
6.04	6.07	Luzerne	Ld	4.90	13.84	13.95	Luzerne	Ho	6.50	20.13	20.19	Luzerne	OpD	4.80
6.07	6.29	Luzerne	Ld	4.90	13.95	14.00	Luzerne	Ld	4.90	20.19	20.37	Luzerne	OIC	4.80
6.29	6.32	Luzerne	Ld	4.90	14.00	14.03	Luzerne	Ho	6.50	20.37	20.48	Luzerne	OIC	4.80
6.32	6.34	Luzerne	CnB	5.70	14.03	14.15	Luzerne	Ld	4.90	20.48	20.57	Luzerne	OIC	4.80
6.34	6.44	Luzerne	CnB	5.70	14.15	14.38	Luzerne	Ld	4.90	20.57	20.64	Luzerne	OIC	4.80
6.44	6.47	Luzerne	MsB	5.70	14.38	14.39	Luzerne	Ld	4.90	20.64	20.69	Luzerne	OIC	4.80
6.47	6.60	Luzerne	WmB	4.80	14.39	14.50	Luzerne	Bf	5.50	20.69	20.80	Luzerne	OIC	4.80
6.60	6.74	Luzerne	Ld	4.90	14.50	14.63	Luzerne	OpD	4.80	20.80	20.85	Luzerne	WmB	4.80
6.74	6.78	Luzerne	OpD	4.80	14.63	14.86	Luzerne	OIC	4.80	20.85	20.92	Luzerne	WID	5.30
6.78	6.90	Luzerne	Ld	4.90	14.86	14.90	Luzerne	OpD	4.80	20.92	21.01	Luzerne	WIC	4.90
6.90	6.94	Luzerne	Ld	4.90	14.90	15.08	Luzerne	WmD	4.80	21.01	21.16	Luzerne	MoB	5.20
6.94	6.98	Luzerne	CnB	5.90	15.08	15.14	Luzerne	WIC	4.90	21.16	21.28	Luzerne	WIB	5.30
6.98	7.01	Luzerne	MsB	5.70	15.14	15.19	Luzerne	OpD	4.80	21.28	21.36	Luzerne	BvB	5.30
7.01	7.09	Luzerne	Ld	4.90	15.19	15.23	Luzerne	OpD	4.80	21.36	21.37	Luzerne	ClA	5.90
M-0163.0.00	M-0163.0.04	Luzerne	Ld	4.90	15.23	15.30	Luzerne	OIC	4.80	21.37	21.48	Luzerne	At	6.20
M-0163.0.04	M-0163.0.07	Luzerne	WmB	4.80	15.30	15.35	Luzerne	OpD	4.80	21.48	21.50	Luzerne	RdA	5.80
M-0163.0.07	M-0163.0.13	Luzerne	CnB	5.90	15.35	15.44	Luzerne	OpD	4.80	21.50	21.55	Luzerne	OpD	4.80
M-0163.0.13	M-0163.0.15	Luzerne	WmB	4.80	15.44	15.48	Luzerne	WIC	4.90	21.55	21.59	Luzerne	WIC	4.90
M-0163.0.15	M-0163.0.20	Luzerne	Ld	4.90	15.48	15.56	Luzerne	WIB	5.30	21.59	21.66	Luzerne	WIB	5.30
M-0163.0.20	M-0163.0.29	Luzerne	OpD	4.80	15.56	15.76	Luzerne	Ld	4.90	21.66	21.71	Luzerne	LaB	5.00
M-0163.0.29	M-0163.0.35	Luzerne	Ld	4.90	15.76	15.77	Luzerne	WvF	4.80	21.71	21.85	Luzerne	WIB	5.30
M-0163.0.35	M-0163.0.41	Luzerne	OpD	4.80	15.77	15.80	Luzerne	Bf	5.50	21.85	22.00	Luzerne	WIC	4.90
M-0163.0.41	M-0163.0.44	Luzerne	Ld	4.90	15.80	15.86	Luzerne	OpD	4.80	22.00	22.18	Luzerne	MoB	5.20
M-0163.0.44	M-0163.0.58	Luzerne	Ld	4.90	15.86	16.14	Luzerne	WIB	5.30	M-0060.0.00	M-0060.0.28	Luzerne	MoB	5.20
M-0163.0.58	M-0163.0.64	Luzerne	Ld	4.90	16.14	16.17	Luzerne	MoB	5.20	M-0060.0.28	M-0060.0.38	Luzerne	MoB	5.20
M-0163.0.64	M-0163.0.72	Luzerne	Ld	4.90	16.17	16.24	Luzerne	WIC	4.90	M-0060.0.38	M-0060.0.51	Luzerne	MoB	5.20
M-0163.0.72	M-0163.0.81	Luzerne	Ld	4.90	16.24	16.27	Luzerne	WmD	4.80	M-0060.0.51	M-0060.0.56	Luzerne	OpD	4.80
M-0163.0.81	M-0163.0.87	Luzerne	Ld	4.90	16.27	16.30	Luzerne	OpD	4.80	M-0060.0.56	M-0060.0.58	Luzerne	OpD	4.80
M-0163.0.87	M-0163.0.92	Luzerne	Ld	4.90	16.30	16.37	Luzerne	OpB	4.80	M-0060.0.58	M-0060.0.60	Luzerne	OIC	4.80
8.09	8.10	Luzerne	Ld	4.90	16.37	16.43	Luzerne	OIC	4.80	M-0060.0.60	M-0060.0.65	Luzerne	OIC	4.80
8.10	8.28	Luzerne	LaB	5.00	16.43	16.44	Luzerne	Ld	4.90	M-0060.0.65	M-0060.0.72	Luzerne	OIC	4.80
8.28	8.32	Luzerne	Ld	4.90	16.44	16.53	Luzerne	LaC	4.90	M-0060.0.72	M-0060.0.80	Luzerne	WIC	5.30
8.32	8.38	Luzerne	MsB	5.70	16.53	16.56	Luzerne	OIC	4.80	M-0060.0.80	M-0060.0.87	Luzerne	WIC	4.90
M-0056.0.00	M-0056.0.19	Luzerne	MsB	5.70	16.56	16.59	Luzerne	ChC	5.30	M-0060.0.87	M-0060.0.92	Luzerne	WmD	4.80
M-0056.0.19	M-0056.0.32	Luzerne	Ld	4.90	16.59	16.62	Luzerne	Ho	6.50	M-0060.0.92	M-0060.1.00	Luzerne	OpD	4.80
M-0056.0.32	M-0056.0.38	Luzerne	MsB	5.70	16.62	16.66	Luzerne	ChC	5.30	23.16	23.23	Luzerne	OpD	4.80
M-0056.0.38	M-0056.0.54	Luzerne	Ld	4.90	16.66	16.74	Luzerne	WmD	4.80	23.23	23.35	Luzerne	OpD	4.80
M-0056.0.54	M-0056.0.62	Luzerne	OpD	4.80	16.74	16.79	Luzerne	OpD	4.80	M-154.0.00	M-154.0.09	Luzerne	OpD	4.80
M-0056.0.62	M-0056.0.74	Luzerne	Ld	4.90	16.79	16.83	Luzerne	OpB	4.80	M-154.0.09	M-154.0.26	Luzerne	OpB	4.80
9.02	9.04	Luzerne	Ld	4.90	16.83	16.86	Luzerne	OpD	4.80	M-154.0.26	M-154.0.41	Luzerne	OpB	4.80
9.04	9.14	Luzerne	LaD	4.90	16.86	16.87	Luzerne	OpB	4.80	M-154.0.41	M-154.0.53	Luzerne	OpB	4.80
9.14	9.18	Luzerne	OpD	4.80	16.87	16.98	Luzerne	OpD	4.80	M-154.0.53	M-154.0.59	Luzerne	WIB	5.30
9.18	9.21	Luzerne	Ld	4.90	16.98	17.04	Luzerne	WIB	5.30	M-154.0.59	M-154.0.61	Luzerne	OIC	4.80
9.21	9.31	Luzerne	OpD	4.80	17.04	17.07	Luzerne	OIC	4.80	M-154.0.61	M-154.0.68	Luzerne	OIC	4.80
9.31	9.41	Luzerne	Ld	4.90	17.07	17.13	Luzerne	OIC	4.80	M-154.0.68	M-154.0.71	Luzerne	OIC	4.80
9.41	9.46	Luzerne	OpD	4.80	17.13	17.21	Luzerne	OpD	4.80	M-154.0.71	M-154.0.72	Luzerne	WIC	

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)	Wetland (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	Marsh Run	WW-T02-15016	5.07	CWF, MF	Perennial	Wild Trout Waters	R3	LOD has been reduced to 80' to minimize impacts to WW-T02-15016.	The pipeline was routed in this location to parallel existing ROW and provides a perpendicular crossing of this stream.	SBR with SC150 fabric	50
Wetland	N/A	W-T02-15017	5.10	EV	N/A	N/A	PEM	LOD has been reduced to 75' to minimize impacts to W-T02-15017.	The pipeline was routed in this location to parallel existing ROW and provides a perpendicular crossing of this stream. In addition, an LOD reduction at this location would only be possible in the adjacent upland area and would not result in minimization of wetland impacts.	N/A	N/A
Wetland	N/A	W-T02-15019A/ W-T02-15019B/ W-T02-15019C	5.96	EV	N/A	N/A	PEM, PSS, PFO	LOD has been reduced to 75' in portions of the crossing. Full LOD reduction to 75' was not possible due to the saturated nature of the wetlands with unconsolidated soils and presence of two complex stream crossings adjacent to the wetland. The stream crossings will require a minimum of 5 foot of cover over the proposed pipeline and will result in a larger and deeper trench excavation. The additional worksite will provide storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland.	The pipeline was routed in this location to parallel existing ROW and crosses the wetland at one of its narrowest points. Changes to improve this crossing were not considered as any modification would increase wetland impacts, tree clearing, and overall habitat fragmentation.	N/A	N/A
Stream	Maple Run	WW-T02-15017A/ WW-T02-15017B	6.00	HQ-CWF, MF	Perennial	Class A Wild Trout Waters	R3	LOD reduction not possible at this crossing (per justification provided for wetland W-T02-15019 crossing)	The pipeline was routed in this location to parallel existing ROW and cross the meandering stream at a roughly perpendicular angle.	SBR with SC150 fabric	100
Wetland	N/A	W-T02-15020C	6.43	None	N/A	N/A	PFO	LOD has been reduced to 75' to minimize impacts to W-T02-15020C.	The pipeline route was adjusted in this location to deviate from existing ROW in order to minimize impacts to this wetland system. The proposed route crosses closer to the margin of the wetland and reduces the crossing distance by approximately 300'. A more significant realignment to the south was considered but was not implemented due to increased habitat fragmentation and increased impacts to upland forest.	N/A	N/A
Wetland	N/A	W-T02-15022A/ W-T02-15022B	6.95	None	N/A	N/A	PEM, PFO	LOD has been reduced to 75' to minimize impacts to W-T02-15022.	The pipeline was routed in this location to parallel existing ROW and allows the foreland portion of this wetland to be crossed at a 90 degree angle at one of the narrowest points.	N/A	N/A
Wetland	N/A	W-T02-15023A/ W-T02-15023B	M-0163 0.09	None	N/A	N/A	PEM, PFO	W-T02-15023A/W-T02-15023B is being crossed via HDD.	The pipeline was routed in this location to facilitate an HDD crossing.	N/A	N/A
Stream	Kitchen Creek (WW-T02-15018)	WW-T02-15018	M-0163 0.2	HQ-CWF, MF	Perennial	Approved Trout Waters; Class A Wild Trout Waters	R3	WW-T02-15018 is being crossed via HDD.	The pipeline was routed in this location to facilitate an HDD crossing.	SBR with C125 fabric	100
Stream	Crooked Creek	WW-T24-15001	M-0163 0.38	HQ-CWF, MF	Perennial	Class A Wild Trout Waters	R3	WW-T24-15001 is being crossed via HDD.	The pipeline was routed in this location to facilitate an HDD crossing.	SBR with SC150 fabric	100
Wetland	N/A	W-T24-15001	7.47	EV	N/A	N/A	PEM	The LOD has been modified to eliminate impacts to W-T24-15001.	This feature is no longer impacted based on LOD reductions.	N/A	N/A
Wetland	N/A	W-T02-16001	8.36	EV	N/A	N/A	PEM	W-T24-16001 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, an LOD reduction at this location would only be possible in the adjacent upland area and would not result in minimization of wetland impacts.	The pipeline was routed in this location to parallel existing ROW; avoidance of this feature was not practicable as it is located entirely within the existing ROW.	N/A	N/A
Wetland	N/A	W-T02-16001A / W-T02-16001B / W-T02-16001C	M-0056 0.39	EV	N/A	N/A	PEM	W-T02-16001 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. However, the portion of the LOD within this wetland was reduced by 5' to minimize impacts.	The pipeline was routed in this location to deviate from existing ROW to avoid a known population of Northeastern Bluntnose Minnow that was identified during environmental surveys in W-T02-16001C. The realignment to avoid northeastern bluntnose shifted the pipeline ~400' south avoiding nearly all of the W-T02-16001 complex. The proposed route crosses the margin of the complex in previously disturbed area (old logging roads) and avoids the Northeastern Bluntnose habitat.	N/A	N/A
Stream	UNT to Phillips Creek	WW-T02-16001	9.14	HQ-CWF, MF	Intermittent	Class A Wild Trout Waters	R4	LOD has been reduced to 80' to minimize impacts to WW-T02-16001.	The pipeline was routed in this location to parallel existing ROW and provides a perpendicular crossing of this stream.	SBR with C125 fabric	100
Wetland	N/A	W-T02-16002	9.16	EV	N/A	N/A	PEM	W-T02-16002 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, an LOD reduction at this location would only be possible in the adjacent upland area and would not result in minimization of wetland impacts.	The pipeline was routed in this location to parallel existing ROW; avoidance of this feature was not practicable as it is located entirely within the existing ROW.	N/A	N/A
Stream	Phillips Creek	WW-T02-16002	9.28	HQ-CWF, MF	Perennial	Class A Wild Trout Waters	R3	LOD has been reduced to 80' to minimize impacts to WW-T02-16002.	The pipeline was routed in this location to parallel existing ROW and provides a perpendicular crossing of this stream.	SBR with SC150 fabric	100
Wetland	N/A	W-T05-16004	10.20	EV	N/A	N/A	PEM	LOD has been reduced to 75' to minimize impacts to W-T05-16004.	The pipeline was routed in this location to parallel existing ROW, and the route crosses the wetland in an area where there are several upland islands, reducing overall wetland impacts.	N/A	N/A
Stream	Lick Branch	WW-T05-16003	10.23	HQ-CWF, MF	Perennial	Class A Wild Trout Waters	R3	LOD has been reduced to 75' to minimize impacts to WW-T05-16003.	The pipeline was routed in this location to parallel existing ROW and provides a perpendicular crossing of this stream.	SBR with SC150 fabric	100
Wetland	N/A	W-T05-16005	10.72	None	N/A	N/A	PEM	W-T05-16005 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, an LOD reduction at this location would only be possible in the adjacent upland area and would not result in minimization of wetland impacts.	The pipeline was routed in this location to parallel existing ROW, and the route crosses only a small section of the wetland along its margin.	N/A	N/A
Wetland	N/A	W-T11-16001A / W-T11-16001B / W-T11-16001C-1	10.94	None	N/A	N/A	PEM, PSS, PFO	LOD has been reduced to 75' to minimize impacts to W-T11-16001.	The pipeline was routed in this location to parallel existing ROW, and the route crosses the wetland along its northern margin.	N/A	N/A
Stream	UNT to Arnold Creek	WW-T11-16001D	11.19	HQ-CWF, MF	Perennial	Class A Wild Trout Waters	R3	LOD has been reduced to 80' to minimize impacts to WW-T11-16001D.	The pipeline was routed in this location to parallel existing ROW and provides a perpendicular crossing of this stream.	SBR with SC150 fabric	100
Stream	Arnold Creek	WW-T11-16001	11.22	HQ-CWF, MF	Perennial	Class A Wild Trout Waters	R3	LOD has been reduced to 80' to minimize impacts to WW-T11-16001.	The pipeline was routed in this location to parallel existing ROW and provides a perpendicular crossing of this stream.	SBR with SC150 fabric	100
Stream	UNT to Arnold Creek	WW-T11-16001B	11.24	HQ-CWF, MF	Perennial	Class A Wild Trout Waters	R3	LOD has been reduced to 80' to minimize impacts to WW-T11-16001B.	The pipeline was routed in this location to parallel existing ROW. This is a small feeder stream to WW-T11-16001. Although this crossing occurs at an oblique angle, a route change was not considered in order to maintain collocation and perpendicular crossing angles for WW-T11-16001D and WW-T11-16001.	SBR with SC150 fabric	100
Wetland	N/A	W-T11-16002A	11.20	EV	N/A	N/A	PEM	LOD has been reduced to 75' to minimize impacts to W-T11-16002A.	The pipeline was routed in this location to parallel existing ROW; avoidance of this feature was not practicable as it is located entirely within the existing ROW.	N/A	N/A
Wetland	N/A	W-T13-16002A / W-T13-16002B	11.52	None	N/A	N/A	PEM, PFO	LOD has been reduced to 75' to minimize impacts to W-T13-16002C.	The pipeline was routed in this location to parallel existing ROW and provides a perpendicular crossing of this wetland.	N/A	N/A
Pond	N/A	WB-T13-16002	11.52	None	N/A	N/A	PUB	This feature is part of a larger wetland complex and the LOD has been reduced to 75' to minimize impacts to the entire complex.	The pipeline was routed in this location to parallel existing ROW. Only the fringe of this ponded area portion of wetland W-T13-16002 is crossed.	SBR with SC150 fabric	100
Stream	UNT to Shingle Run (WW-T13-16002)	WW-T13-16002	11.82	HQ-CWF, MF	Perennial	Class A Wild Trout Waters	R3	LOD has been reduced to 80' to minimize impacts to WW-T13-16002.	The pipeline was routed in this location to parallel existing ROW and provides a perpendicular crossing of this stream.	SBR with SC150 fabric	50
Wetland	N/A	W-T13-16001	11.83	EV	N/A	N/A	PEM	W-T13-16001 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, an LOD reduction at this location would only be possible in the adjacent upland area and would not result in minimization of wetland impacts.	The pipeline was routed in this location to parallel existing ROW and crosses the wetland at a perpendicular angle along its northern margin.	N/A	N/A
Stream	Shingle Run (WW-T13-16001)	WW-T13-16001	12.17	HQ-CWF, MF	Perennial	Class A Wild Trout Waters	R3	LOD has been reduced to 80' to minimize impacts to WW-T13-16001.	The pipeline was routed in this location to parallel existing ROW and provides a perpendicular crossing of this stream.	SBR with SC150 fabric	100
Stream	UNT to Mitchell Run (WW-T05-16002)	WW-T05-16002	12.92	HQ-CWF, MF	Perennial	Class A Wild Trout Waters	R3	LOD has been reduced to 80' to minimize impacts to WW-T05-16002.	The pipeline was routed in this location to parallel existing ROW and provides a perpendicular crossing of this stream.	SBR with SC150 fabric	100
Stream	UNT to Mitchell Run (WW-T05-16002)	WW-T05-16002	13.06	HQ-CWF, MF	Perennial	Class A Wild Trout Waters	R3	LOD was not reduced as the stream does not cross the full width of the LOD, and an LOD reduction at this location would only be possible in the adjacent upland area and would not result in minimization of stream impacts.	The pipeline was routed in this location to parallel existing ROW and provides a perpendicular crossing of this stream.	SBR with SC150 fabric	100
Stream	Mitchler Run (WW-T05-16003)	WW-T05-16003	13.09	HQ-CWF, MF	Perennial	Class A Wild Trout Waters	R3	LOD has been reduced to 80' to minimize impacts to WW-T05-16003.	The pipeline was routed in this location to parallel existing ROW and provides a perpendicular crossing of this stream.	SBR with SC150 fabric	100
Stream	UNT to Mitchell Run (WW-T05-16003A)	WW-T05-16003A	13.09	HQ-CWF, MF	Ephemeral	Class A Wild Trout Waters	R6	LOD has been reduced to 80' to minimize impacts to WW-T05-16003A.	The pipeline was routed in this location to parallel existing ROW and provides a perpendicular crossing of this stream.	SBR with SC150 fabric	100
Stream	UNT to Mitchell Run (WW-T05-16003)	WW-T05-16003	13.11	HQ-CWF, MF	Perennial	Class A Wild Trout Waters	R3	LOD was not reduced as the stream does not cross the full width of the LOD, and an LOD reduction at this location would only be possible in the adjacent upland area and would not result in minimization of stream impacts.	The pipeline was routed in this location to parallel existing ROW and provides a perpendicular crossing of this stream.	SBR with SC150 fabric	100
Wetland	N/A	W-T05-16003 / W-T05-16003-2	13.13	EV	N/A	N/A	PEM	LOD has been reduced to 75' for the portion of W-T05-16003 that crosses the full width of the LOD. Additional LOD reduction for the portion of the wetland encroaching on the southern end of the LOD would only be possible in the adjacent upland area and would not result in additional minimization of wetland impacts.	The pipeline was routed in this location to parallel existing ROW, and the impacted area is along the northern margin of the wetland.	N/A	N/A
Wetland	N/A	W-T05-16002	13.65	None	N/A	N/A	PEM	W-T05-16002 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, an LOD reduction at this location would only be possible in the adjacent upland area and would not result in minimization of wetland impacts.	The pipeline was routed in this location to parallel existing ROW, and the impacted area is confined to the existing cleared ROW.	N/A	N/A
Wetland	N/A	W-T05-16001	13.70	None	N/A	N/A	PEM	W-T05-16001 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, an LOD reduction at this location would only be possible in the adjacent upland area and would not result in minimization of wetland impacts.	The pipeline was routed in this location to parallel existing ROW, and the impacted area is confined to the existing cleared ROW.	N/A	N/A
Wetland	N/A	W-T03-16005 / W-T03-16005-1	13.85	EV	N/A	N/A	PEM	LOD has been reduced to 75' for the portion of W-T03-16005 that crosses the full width of the LOD. Additional LOD reduction for the portion of the wetland encroaching on the southern end of the LOD would only be possible in the adjacent upland area and would not result in additional minimization of wetland impacts.	The pipeline was routed in this location to parallel existing ROW, and the impacted area is along the northern margin of the wetland.	N/A	N/A
Stream	UNT to Huntington Creek	WW-T03-16003C	13.90	HQ-CWF, MF	Perennial	Wild Trout Waters	R3	LOD has been reduced to 80' to minimize impacts to WW-T03-16003C.	The pipeline was routed in this location to parallel existing ROW and provides a perpendicular crossing of this stream.	SBR with SC150 fabric	100
Stream	UNT to Huntington Creek	WW-T03-16004	13.93	HQ-CWF, MF	Intermittent	Wild Trout Waters	R4	The LOD has been modified to eliminate impacts to WW-T03-16004.	This feature is no longer impacted based on LOD reductions.	SBR with SC150 fabric	100
Wetland	N/A	W-T03-16004	13.94	EV	N/A	N/A	PEM	W-T03-16004 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, an LOD reduction at this location would only be possible in the adjacent upland area and would not result in minimization of wetland impacts.	The pipeline was routed in this location to parallel existing ROW, and the impacted area is along the northern margin of the wetland.	N/A	N/A

Drawn By & Date: Idelo Apr 29, 2017 - 12:44pm  
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REVISIONS			
NO.	DATE	BY	DESCRIPTION
0	08/26/2015	BL	ISSUED FOR PADEP SUBMITTAL
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL
2	Oct. 2016	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1
3	April 2017	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #2

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC  
ATLANTIC SUNRISE PROJECT  
PROPOSED 30" CENTRAL PENN LINE NORTH  
PENNSYLVANIA BEST MANAGEMENT PRACTICES AND  
QUANTITIES PLAN SET  
LUZERNE COUNTY, PENNSYLVANIA  
QUANTITY, CROSSING AND ACIDIC SOIL TABLES

DRAWN BY: ELZ	DATE: 05/15/15	ISSUED FOR BID:	SCALE:
CHECKED BY: JJK	DATE: 07/02/15	ISSUED FOR CONSTRUCTION:	REVISION: J
APPROVED BY: SMK	DATE: 07/08/15	DRAWING NUMBER: 24-1601-70-28-A/1683_3-BMP-LU-TB	SHEET 4 OF 6

TABLE 7: RESOURCE SPECIFIC AVOIDANCE AND MINIMIZATION MEASURES (CONTINUED)

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)	Wetland (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	W-T05-17001A	W-T05-17001A/ W-T05-17001B	19.86	EV	N/A	N/A	PEM, PSS	LOD has been reduced to 75' for the portion of W-T05-17001 that crosses the full width of the LOD. Additional LOD reduction for the portion of the wetland encroaching on the northern end of the LOD would only be possible in the adjacent upland area and would not result in additional minimization of wetland impacts.	This crossing was adjusted during field routing to crossover the existing pipeline to collocate on the south side of the existing ROW. The crossover and southern collocation reduces impacts to this wetland by crossing along its southern margin. This is a large system that cannot be avoided without adding significant distance/disturbance and habitat fragmentation to the route.	N/A	N/A
Stream	LNT to Harveys Creek (WW-T49-17003)	WW-T49-17003	19.93	HQ-CWF, MF	Perennial	Wild Trout Waters	R3	LOD has been reduced to 80' to minimize impacts to WW-T49-17003.	This crossing was adjusted during field routing to crossover the existing pipeline at MP 19.6 to collocate on the south side of the existing ROW. The crossover and southern collocation improves this stream crossing by eliminating parallel impacts along 100' of the stream reach and avoiding a 60' wide ponded area.	SBR with SC150 fabric	100
Wetland	N/A	W-T03-17003	20.99	None	N/A	N/A	PEM	W-T03-17003 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, an LOD reduction at this location would only be possible in the adjacent upland area and would not result in minimization of wetland impacts.	The pipeline was routed in this location to parallel existing ROW, and the impacted area is along the southern margin of the wetland.	N/A	N/A
Wetland	N/A	W-T03-17001	21.18	None	N/A	N/A	PEM	W-T03-17001 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, an LOD reduction at this location would only be possible in the adjacent upland area and would not result in minimization of wetland impacts.	This crossing was adjusted during field routing to crossover the existing pipeline at MP 19.6 to collocate on the south side of the existing ROW. The realignment increases the impact to this wetland, however, this impact is negligible compared to the overall reduction in impacts to wetland systems between MP 19.6 and 21.15. This is a small PEM entirely contained within the existing pipeline ROW. W-T03-17002 in this area is avoided entirely by the crossover.	N/A	N/A
Stream	LNT to Huntsville Creek	WW-T93-17001	21.38	CWF, MF	Perennial	Wild Trout Waters	R3	LOD reduction not possible at this crossing (per justification provided for wetland W-T07-17001 crossing). In addition, the stream only encroaches within a portion of the LOD.	The original alignment crossed this stream 250' northwest of the current location. This crossing location was adjusted to increase the distance from a residence and to avoid impacting stream WW-T07-17001. There is little difference in the stream crossing from the original alignment to the current - both alignments cross this stream at a roughly perpendicular angle in similar locations.	SBR with SC150 fabric	50
Stream	LNT to Huntsville Creek	WW-T93-16001	21.39	CWF, MF	Perennial	Wild Trout Waters	R3	LOD reduction not possible at this crossing (per justification provided for wetland W-T07-17001 crossing).	The original alignment crossed this stream 250' northwest of the current location. This crossing location was adjusted to increase the distance from a residence and to avoid impacting stream WW-T07-17001. There is little difference in the stream crossing from the original alignment to the current - both alignments cross this stream at a roughly perpendicular angle in similar locations.	SBR with SC150 fabric	50
Wetland	N/A	W-T07-17001	21.45	EV	N/A	N/A	PFO	LOD reduction to 75' was not possible due to the saturated nature of the wetland complex, unconsolidated soils in areas, and adjacent streams. The additional workspace will provide storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland.	The original alignment crossed this wetland 250' northwest of the current location. The crossing location was adjusted to increase distance from a residence and to avoid impacting stream WW-T07-17001. The wetland is also crossed at a roughly 90 degree angle along the current alignment.	N/A	N/A
Wetland	N/A	W-T49-17001	21.74	None	N/A	N/A	PEM	LOD reduction not possible at this crossing in order to safely enter and exit onto public road from ROW. In addition, the wetland only encroaches within a portion of the LOD.	The pipeline was routed in this location to cross the wetland at a perpendicular angle along its southern margin and at its narrowest point.	N/A	N/A
Wetland	N/A	W-T49-17002	21.79	EV	N/A	N/A	PEM	LOD has been modified to eliminate impacts to W-T49-17002	This feature is no longer impacted based on LOD reductions.	N/A	N/A
Stream	LNT to Huntsville Creek (WW-T49-17001)	WW-T49-17001	21.80	CWF, MF	Perennial	Wild Trout Waters	R3	LOD has been reduced to 80' to minimize impacts to WW-T49-17001.	The pipeline was routed in this location to provide a perpendicular crossing of this stream. Note that the pipeline was specifically routed in this area from MP 21.8 to 22.0 to entirely avoid a large wetland and stream system located east of the current LOD (W-T07-17000 and WW-T07-17000).	SBR with SC150 fabric	50
Stream	LNT to Huntsville Creek (WW-T51-17001)	WW-T51-17001	22.06	CWF, MF	Ephemeral	Wild Trout Waters	R6	LOD has been reduced to 85' to minimize impacts to WW-T51-17001.	This crossing was not significantly changed during field routing. The pipeline only dips this feature, crossing the stream at its origin in an area where it is poorly defined.	SBR with SC150 fabric	50
Wetland	N/A	W-T07-17003A/ W-T07-17003B-1/ W-T07-17003C-1/ W-T07-17003C-2	22.08	EV	N/A	N/A	PEM, PSS, PFO	LOD has been reduced to 75' for the portions of W-T07-17003 that crosses the full width of the LOD. Additional LOD reduction for the portion of the wetland complex encroaching on portions of the LOD would only be possible in the adjacent upland area and would not result in additional minimization of wetland impacts.	This crossing was adjusted during field routing to avoid an RV sales lot and several residences both east and west of the LOD. Impacts to the wetland complex were minimized by crossing the margins of the wetland wherever possible, and crossing all portions of the wetland at 90 degree angles.	N/A	50
Stream	LNT to Huntsville Creek	WW-T52-17002	22.10	CWF, MF	Intermittent	Wild Trout Waters	R4	LOD has been reduced to 85' to minimize impacts to WW-T52-17002.	This crossing was not significantly changed during field routing. Avoidance of this crossing was not possible due to several residences located immediately east and west of the LOD.	SBR with SC150 fabric	50
Stream	LNT to Huntsville Creek	WW-T52-17001	22.15	CWF, MF	Intermittent	Wild Trout Waters	R4	LOD has been reduced to 75' to minimize impacts to WW-T52-17001.	This crossing was not significantly changed during field routing. Avoidance of this crossing was not possible due to several residences located immediately east and west of the LOD.	SBR with SC150 fabric	50
Stream	LNT to Huntsville Creek (WW-T07-17002C)	WW-T07-17002C	MOC-0060 0.15	CWF, MF	Intermittent	Wild Trout Waters	R4	LOD has been reduced to 80' to minimize impacts to WW-T07-17002C.	This crossing was not significantly changed during field routing. Avoidance of this crossing was not possible due to several residences located immediately east and west of the LOD.	SBR with SC150 fabric	50
Stream	LNT to Huntsville Creek (WW-T08-17001)	WW-T08-17001	MOC 0060 0.41	CWF, MF	Intermittent	Wild Trout Waters	R4	LOD has been reduced to 80' to minimize impacts to WW-T08-17001.	The alignment in this area was changed during field routing to place the pipeline at the western edge of parcels LU-217,000 and LU-222,000 to avoid a large NWI and NHD wetland and stream system. The change improves this stream crossing by crossing at a perpendicular angle west of a small meander in the channel. The realignment in this area also avoids wetland W-T08-17001 entirely.	SBR with SC150 fabric	50
Wetland	N/A	W-T51-17001C	M-0060 0.48	None	N/A	N/A	PFO	LOD has been reduced to 75' to minimize impacts to W-T51-17001C	The alignment in this area was changed during field routing to place the pipeline at the western edge of parcels LU-217,000 and LU-222,000 to avoid a large NWI and NHD wetland and stream system. The pipeline was also routed to only impact the eastern portion of the wetland and to cross the wetland at a 90 degree angle.	N/A	N/A
Stream	LNT to Huntsville Creek (WW-T53-17002)	WW-T53-17002	M-0060 0.87	CWF, MF	Intermittent	Wild Trout Waters	R4	LOD has been reduced to 80' to minimize impacts to WW-T53-17002	The pipeline was routed in this location to provide a perpendicular crossing of this stream.	SBR with SC150 fabric	50
Stream	LNT to Huntsville Creek	WW-T53-17002A	M-0060 0.87	CWF, MF	Intermittent	Wild Trout Waters	R4	LOD has been modified to eliminate impacts to WW-T53-17002A	This feature is no longer impacted based on LOD reductions.	SBR with SC150 fabric	50
Stream	LNT to Huntsville Creek (WW-T53-17003)	WW-T53-17003	M-0060 0.89	CWF, MF	Perennial	Wild Trout Waters	R3	LOD has been reduced to 80' to minimize impacts to WW-T53-17003.	The pipeline was routed in this location to provide a perpendicular crossing of this stream.	SBR with SC150 fabric	50
Stream	LNT to Huntsville Creek (WW-T53-17003B)	WW-T53-17003B	M-0060 0.90	CWF, MF	Intermittent	Wild Trout Waters	R4	LOD has been reduced to 80' to minimize impacts to WW-T53-17003B.	The pipeline was routed in this location to provide a perpendicular crossing of this stream.	SBR with SC150 fabric	50
Stream	LNT to Huntsville Creek	WW-T53-17003A	M-0060 0.91	CWF, MF	Intermittent	Wild Trout Waters	R4	LOD has been modified to eliminate impacts to WW-T53-17003A	This feature is no longer impacted based on LOD reductions.	SBR with SC150 fabric	50
Stream	LNT to Huntsville Creek (WW-T53-17004)	WW-T53-17004	M-0060 0.94	CWF, MF	Intermittent	Wild Trout Waters	R4	LOD has been reduced to 85' to minimize impacts to WW-T53-17004.	The pipeline was routed in this location to provide a perpendicular crossing of this stream.	SBR with SC150 fabric	50
Stream	LNT to Huntsville Creek (WW-T90-17002)	WW-T90-17002	MOC-0060 0.98	CWF, MF	Intermittent	Wild Trout Waters	R4	LOD has been reduced to 85' to minimize impacts to WW-T90-17002.	The pipeline was routed in this location to provide a perpendicular crossing of this stream.	SBR with SC150 fabric	50
Wetland	N/A	W-T51-17002	M-0060 0.99	EV	N/A	N/A	PFO	W-T51-17002 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, an LOD reduction at this location would only be possible in the adjacent upland area and would not result in minimization of wetland impacts.	The pipeline was routed in this location to only impact the southern margin of the wetland.	N/A	N/A
Wetland	N/A	W-T07-17005	24.39	None	N/A	N/A	PEM	LOD has been modified to eliminate impacts to WW-T07-17005	This feature is no longer impacted based on LOD reductions.	N/A	N/A
Wetland	N/A	W-T24-17001A-1	M-0161 0.0	None	N/A	N/A	PEM	LOD reduction is not possible at this location due to the adjacent road crossing and PI.	The alignment in this area was modified during field routing to shift the pipeline roughly 400' to the west. This change allows overall habitat fragmentation to be reduced by collocating the pipeline with Lake Street for roughly 0.4 miles. In order to achieve collocation and to cross Lake Street at a perpendicular angle, a PI was placed within this wetland. The PI is located in an area of the wetland where it is relatively narrow, regularly disturbed and situated in an agricultural field. By placing the PI in this area of the wetland, overall habitat fragmentation is reduced through collocation and wetland impacts are limited to disturbed and relatively narrow areas near the southern boundary.	N/A	N/A

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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 30" CENTRAL PENN LINE NORTH			
PENNSYLVANIA BEST MANAGEMENT PRACTICES AND			
QUANTITIES PLAN SET			
LUZERNE COUNTY, PENNSYLVANIA			
QUANTITY, CROSSING AND ACIDIC SOIL TABLES			
DRAWN BY:	ELZ	DATE:	05/15/15
CHECKED BY:	JLK	DATE:	07/02/15
APPROVED BY:	SMK	DATE:	07/08/15
ISSUED FOR:	CONSTRUCTION	REVISION:	J
DRAWING NUMBER:	24-1601-70-28-A/1683_3-BMP-LU-TB SHEET 5		
OF:	6		



TABLE 7: RESOURCE SPECIFIC AVOIDANCE AND MINIMIZATION MEASURES (CONTINUED)

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)	Wetland (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 Leonard Creek (WW-T07-17003)	WW-T07-17003	M-0150-0.03	HQ-CWF, MF	Intermittent	Wild Trout Waters	R3	LOD has been reduced to 80' to minimize impacts to WW-T07-17003.	The pipeline was routed in this location to provide a perpendicular crossing of this stream.	SBR with SC150 fabric	100
Wetland	N/A	W-T71-18002B-1	M-0150-0.5	EV	N/A	N/A	P55	LOD has been reduced to 75' to minimize impacts to W-T71-18002B-1	The pipeline was routed in this location to cross the wetland at a 90 degree angle along its southern margin. The route was also placed in this location to avoid impacting several other nearby wetlands, including W-T71-18002B-2; W-T71-18002A-2; W-T71-18002A-1; W-T71-18001A and W-T71-18001B.	N/A	N/A
Stream	UNT to Leonard Creek (WW-T07-17004)	WW-T07-17004	M-0141-0.48	HQ-CWF, MF	Perennial	Wild Trout Waters	R3	LOD has been reduced to 80' to minimize impacts to WW-T07-17004.	The pipeline was routed in this location to provide a perpendicular crossing of this stream.	SBR with SC150 fabric	100
Wetland	N/A	W-T07-17006	25.37	None	N/A	N/A	PEM	LOD has been reduced to 75' to minimize impacts to W-T07-17006.	This crossing was not significantly changed during field routing. The wetland is crossed at a roughly perpendicular angle near its northern margin.	N/A	N/A
Stream	UNT to Leonard Creek (WW-T17-18001)	WW-T17-18001	25.55	HQ-CWF, MF	Perennial	Wild Trout Waters	R3	Full ROW width needed at this crossing to complete a safe and efficient road crossing (HWY 309).	This crossing was not significantly changed during field routing. The stream is crossed at a roughly perpendicular angle.	SBR with SC150 fabric	100
Wetland	N/A	W-T17-18001	25.74	None	N/A	N/A	PEM	LOD has been modified to eliminate impacts to W-T17-18001.	This feature is no longer impacted based on LOD reductions.	N/A	N/A
Stream	UNT to Leonard Creek (WW-T65-18001)	WW-T65-18001	M-0156-0.20	HQ-CWF, MF	Ephemeral	Wild Trout Waters	R6	LOD has been reduced to 80' to minimize impacts to WW-T65-18001.	The pipeline route across LU-250.000 and LU-256.000 was changed to move the pipeline to the east to avoid wetlands and improve a stream crossing angle. During field routing, the angle of this stream crossing was improved to a roughly perpendicular crossing angle roughly 100' west of the original crossing location.	SBR with SC150 fabric	100
Wetland	N/A	W-T65-18002	M-0142-0.26	EV	N/A	N/A	PFO	N/A	This feature is no longer impacted based on incorporation of MOC 166.	N/A	N/A
Wetland	N/A	W-T65-18003	M-0142-0.30	None	N/A	N/A	PEM	N/A	This feature is no longer impacted based on incorporation of MOC 166.	N/A	N/A
Stream	UNT to Leonard Creek (WW-T76-18009)	WW-T76-18009	M-0179-0.26	HQ-CWF, MF	Perennial	Wild Trout Waters	R3	LOD has been reduced to 80' to minimize impacts to WW-T76-18009.	The pipeline was field routed at this location to cross stream WW-T76-18009 and riparian wetland W-T76-18021-3 at a roughly perpendicular angle. Utilizing this crossing location and orientation avoids additional tree clearing associated with side slope construction in a forested area. This crossing location also allows several small wetlands, seeps, and feeder streams located to the east of the crossing to be avoided entirely. A large manmade pond located west of the crossing is also avoided.	SBR with SC150 fabric	100
Wetland	N/A	W-T76-18021-3	M-0179-0.26	EV	N/A	N/A	PEM	W-T76-18021-3 is a small PEM wetland contained entirely within the middle portion of the LOD. Therefore, LOD reduction to avoid or minimize impacts to this feature is not possible.	The pipeline was field routed at this location to cross stream WW-T76-18009 and riparian wetland W-T76-18021-3 at a roughly perpendicular angle. Utilizing this crossing location and orientation avoids additional tree clearing associated with side slope construction in a forested area. This crossing location also allows several small wetlands, seeps, and feeder streams located to the east of the crossing to be avoided entirely. A large manmade pond located west of the crossing is also avoided.	N/A	N/A
Stream	UNT to Leonard Creek (WW-T61-18001)	WW-T61-18001	26.66	HQ-CWF, MF	Intermittent	Wild Trout Waters	R4	N/A	This feature is no longer impacted based on incorporation of CPL North Alternative 13.	SBR with SC150 fabric	100
Wetland	N/A	W-T61-18001	27.06	EV	N/A	N/A	PEM	N/A	This feature is no longer impacted based on incorporation of CPL North Alternative 13.	N/A	N/A
Wetland	N/A	W-T56-18001C-2 / W-T56-18001C-3 / W-T56-18001C-5 / W-T56-18001C-6 / W-T56-18001C-8	M-0088-1.08	EV	N/A	N/A	PFO	N/A	This feature is no longer impacted based on incorporation of CPL North Alternative 13.	N/A	N/A
Stream	UNT to Leonard Creek (WW-T56-18002)	WW-T56-18002	M-0088-1.11	HQ-CWF, MF	Ephemeral	Wild Trout Waters	R6	N/A	This feature is no longer impacted based on incorporation of CPL North Alternative 13.	SBR with SC150 fabric	100
Wetland	N/A	W-T56-18002	M-0088-1.57	None	N/A	N/A	PEM	N/A	This feature is no longer impacted based on incorporation of CPL North Alternative 13.	N/A	N/A
Wetland	N/A	W-T56-18004	M-0088-1.67	None	N/A	N/A	PEM	N/A	This feature is no longer impacted based on incorporation of CPL North Alternative 13.	N/A	N/A
Stream	UNT to Leonard Creek (WW-T56-18004)	WW-T56-18004	M-0088-1.75	HQ-CWF, MF	Intermittent	Wild Trout Waters	R4	N/A	This feature is no longer impacted based on incorporation of CPL North Alternative 13.	SBR with CI25 fabric	100
Wetland	N/A	W-T56-18003B	M-0088-1.75	EV	N/A	N/A	P55	N/A	This feature is no longer impacted based on incorporation of CPL North Alternative 13.	N/A	N/A
Wetland	N/A	W-T56-18005	M-0088-1.81	None	N/A	N/A	PEM	N/A	This feature is no longer impacted based on incorporation of CPL North Alternative 13.	N/A	N/A

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.

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REVISIONS					
NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK. APP.
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**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:
APPROVED BY:	SMK	DATE:	07/08/15	DRAWING NUMBER:	24-1601-70-28-A/1683_3-BMP-LU-TB SHEET 6
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