

## **Appendix B**

### **TYPICAL EROSION & SEDIMENT CONTROL PLANS**

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# Erosion and Sediment Control Plan

## Pennsylvania Pipeline Project



*U.S. Army Corps Properties*

March 2016

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**TEMPORARY EROSION AND SEDIMENT CONTROLS  
INSPECTION AND MAINTENANCE SCHEDULE**

BMP	INSPECTION FREQUENCY	MAINTENANCE TO BE PERFORMED
COMPOST FILTER SOCK	WEEKLY AND AFTER RUNOFF EVENTS	MAINTENANCE SHALL BE PERFORMED AS NEEDED, SEDIMENT SHALL BE REMOVED ONCE IT HAS ACCUMULATED TO ONE THIRD THE ORIGINAL HEIGHT OF THE BARRIER. COMPOST FILTER SOCK SHALL BE REPLACED WHENEVER IT HAS DETERIORATED TO SUCH AN EXTENT THAT THE EFFECTIVENESS OF COMPOST FILTER SOCK IS REDUCED. COMPOST FILTER SOCKS SHALL REMAIN IN PLACE UNTIL DISTURBED AREAS HAVE BEEN PERMANENTLY STABILIZED. ALL SEDIMENT ACCUMULATION AT THE COMPOST FILTER SOCK SHALL BE REMOVED AND PROPERLY DISPOSED OF BEFORE THE COMPOST FILTER SOCK IS REMOVED.
ROCK CONSTRUCTION ENTRANCE	DAILY	CONTRACTOR SHALL MAINTAIN/REPLACE MATERIAL AS NEEDED THROUGHOUT CONSTRUCTION TO MAINTAIN SPECIFIED MINIMUM THICKNESS DURING USE OF ACCESS ROAD. A STOCKPILE OF ROCK WILL BE MAINTAINED ON SITE FOR THIS PURPOSE
MULCH STABILIZATION	WEEKLY AND AFTER RUNOFF EVENTS	REPLACE MULCH AS REQUIRED. RESTORE SEEDING IN AFFECTED AREA IF NECESSARY.
TIMBER MAT	WEEKLY AND AFTER RUNOFF EVENTS	INSPECT THE TIMBER MAT FOR EROSION AND MAKE ANY NECESSARY REPAIRS.
WATERBARS	WEEKLY AND AFTER RUNOFF EVENTS	WATERBARS SHALL BE INSPECTED WEEKLY (DAILY ON ACTIVE ROADS) AND AFTER EACH RUNOFF EVENT. DAMAGED OR ERODED WATERBARS SHALL BE RESTORED TO ORIGINAL DIMENSIONS WITHIN 24 HOURS OF INSPECTION.
PUMPED WATER FILTER BAGS	DAILY	FILTER BAGS SHALL BE REPLACED WHEN THEY BECOME 1/2 FULL OF SEDIMENT. IF ANY PROBLEM IS DETECTED, PUMPING SHALL CEASE IMMEDIATELY AND NOT RESUME UNTIL THE PROBLEM IS CORRECTED.
SILT FENCE	WEEKLY AND AFTER RUNOFF EVENTS	MAINTENANCE SHALL BE PERFORMED AS NEEDED, SEDIMENT SHALL BE REMOVED ONCE IT HAS ACCUMULATED TO ONE THIRD THE ORIGINAL HEIGHT OF THE BARRIER. SILT FENCE SHALL BE REPLACED WHENEVER IT HAS DETERIORATED TO SUCH AN EXTENT THAT THE EFFECTIVENESS OF SILT FENCE IS REDUCED. SILT FENCE SHALL REMAIN IN PLACE UNTIL DISTURBED AREAS HAVE BEEN PERMANENTLY STABILIZED. ALL SEDIMENT ACCUMULATION AT THE SILT FENCE SHALL BE REMOVED AND PROPERLY DISPOSED OF BEFORE THE SILT FENCE IS REMOVED.

- UNTIL THE SITE IS STABILIZED, ALL EROSION AND SEDIMENT BMPS SHALL BE MAINTAINED PROPERLY. MAINTENANCE SHALL INCLUDE INSPECTIONS OF ALL EROSION AND SEDIMENT BMPS AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN OUT, REPAIR, REPLACEMENT, REGRADING, RESEEDING, REMULCHING AND RENETTING MUST BE PERFORMED IMMEDIATELY. IF THE E&S BMPS FAIL TO PERFORM AS EXPECTED, REPLACEMENT BMPS, OR MODIFICATIONS OF THOSE INSTALLED WILL BE REQUIRED.
- A LOG SHOWING DATES THAT E&S BMPS WERE INSPECTED AS WELL AS ANY DEFICIENCIES FOUND AND THE DATE THEY WERE CORRECTED SHALL BE MAINTAINED ON THE SITE AND BE MADE AVAILABLE TO REGULATORY AGENCY OFFICIALS AT THE TIME OF INSPECTION.
- SEDIMENT TRACKED ONTO ANY PUBLIC ROADWAY OR SIDEWALK SHALL BE RETURNED TO THE CONSTRUCTION SITE BY THE END OF EACH WORK DAY AND DISPOSED IN THE MANNER DESCRIBED IN THIS PLAN. IN NO CASE SHALL THE SEDIMENT BE WASHED, SHOVELED, OR SWEEPED INTO ANY ROADSIDE DITCH, STORM SEWER, OR SURFACE WATER.
- ALL SEDIMENT REMOVED FROM BMPS SHALL BE DISPOSED OF IN THE MANNER DESCRIBED ON THE PLAN DRAWINGS.
- AREAS WHICH ARE TO BE TOPSOILED SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 3 TO 5 INCHES — 6 TO 12 INCHES ON COMPACTED SOILS — PRIOR TO PLACEMENT OF TOPSOIL. AREAS TO BE VEGETATED SHALL HAVE A MINIMUM 4 INCHES OF TOPSOIL IN PLACE PRIOR TO SEEDING AND MULCHING. FILL OUTSLOPES SHALL HAVE A MINIMUM OF 2 INCHES OF TOPSOIL.
- ALL FILLS SHALL BE COMPACTED AS REQUIRED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE OR OTHER RELATED PROBLEMS. FILL INTENDED TO SUPPORT BUILDINGS, STRUCTURES AND CONDUITS, ETC. SHALL BE COMPACTED IN ACCORDANCE WITH LOCAL REQUIREMENTS OR CODES.
- ALL EARTHEN FILLS SHALL BE PLACED IN COMPACTED LAYERS NOT TO EXCEED 9 INCHES IN THICKNESS.
- FILL MATERIALS SHALL BE FREE OF FROZEN PARTICLES, BRUSH, ROOTS, SOD, OR OTHER FOREIGN OR OBJECTIONABLE MATERIALS THAT WOULD INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY FILLS.
- FROZEN MATERIALS OR SOFT, MUCKY, OR HIGHLY COMPRESSIBLE MATERIALS SHALL NOT BE INCORPORATED INTO FILLS.
- FILL SHALL NOT BE PLACED ON SATURATED OR FROZEN SURFACES.
- SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION SHALL BE HANDLED IN ACCORDANCE WITH THE STANDARD AND SPECIFICATION FOR SUBSURFACE DRAIN OR OTHER APPROVED METHOD.
- ALL GRADED AREAS SHALL BE PERMANENTLY STABILIZED IMMEDIATELY UPON REACHING FINISHED GRADE. CUT SLOPES IN COMPETENT BEDROCK AND ROCK FILLS NEED NOT BE VEGETATED. SEEDED AREAS WITHIN 50 FEET OF A SURFACE WATER, OR AS OTHERWISE SHOWN ON THE PLAN DRAWINGS, SHALL BE BLANKETED ACCORDING TO THE STANDARDS OF THIS PLAN.
- IMMEDIATELY AFTER EARTH DISTURBANCE ACTIVITIES CEASE IN ANY AREA OR SUBAREA OF THE PROJECT, THE OPERATOR SHALL STABILIZE ALL DISTURBED AREAS. DURING NON-GERMINATING MONTHS, MULCH OR PROTECTIVE BLANKETING SHALL BE APPLIED AS DESCRIBED IN THE PLAN. AREAS NOT AT FINISHED GRADE, WHICH WILL BE REACTIVATED WITHIN 1 YEAR, MAY BE STABILIZED IN ACCORDANCE WITH THE TEMPORARY STABILIZATION SPECIFICATIONS. THOSE AREAS WHICH WILL NOT BE REACTIVATED WITHIN 1 YEAR SHALL BE STABILIZED IN ACCORDANCE WITH THE PERMANENT STABILIZATION SPECIFICATIONS.
- PERMANENT STABILIZATION IS DEFINED AS A MINIMUM UNIFORM, PERENNIAL 70% VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED EROSION. CUT AND FILL SLOPES SHALL BE CAPABLE OF RESISTING FAILURE DUE TO SLUMPING, SLIDING, OR OTHER MOVEMENTS.
- E&S BMPS SHALL REMAIN FUNCTIONAL AS SUCH UNTIL ALL AREAS TRIBUTARY TO THEM ARE PERMANENTLY STABILIZED OR UNTIL THEY ARE REPLACED BY ANOTHER BMP APPROVED BY THE LOCAL CONSERVATION DISTRICT OR THE DEPARTMENT.
- UPON COMPLETION OF ALL EARTH DISTURBANCE ACTIVITIES AND PERMANENT STABILIZATION OF ALL DISTURBED AREAS, THE OWNER AND/OR OPERATOR SHALL CONTACT THE LOCAL CONSERVATION DISTRICT FOR AN INSPECTION PRIOR TO REMOVAL/CONVERSION OF THE E&S BMPS.
- AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED, TEMPORARY EROSION AND SEDIMENT BMPS MUST BE REMOVED OR CONVERTED TO PERMANENT POST CONSTRUCTION STORMWATER MANAGEMENT BMPS. AREAS DISTURBED DURING REMOVAL OR CONVERSION OF THE BMPS SHALL BE STABILIZED IMMEDIATELY. IN ORDER TO ENSURE RAPID REVEGETATION OF DISTURBED AREAS, SUCH REMOVAL/CONVERSIONS ARE TO BE DONE ONLY DURING THE GERMINATING SEASON.
- UPON COMPLETION OF ALL EARTH DISTURBANCE ACTIVITIES AND PERMANENT STABILIZATION OF ALL DISTURBED AREAS, THE OWNER AND/OR OPERATOR SHALL CONTACT THE LOCAL CONSERVATION DISTRICT TO SCHEDULE A FINAL INSPECTION.
- FAILURE TO CORRECTLY INSTALL E&S BMPS, FAILURE TO PREVENT SEDIMENT-LADEN RUNOFF FROM LEAVING THE CONSTRUCTION SITE, OR FAILURE TO TAKE IMMEDIATE CORRECTIVE ACTION TO RESOLVE FAILURE OF E&S BMPS MAY RESULT IN ADMINISTRATIVE, CIVIL, AND/OR CRIMINAL PENALTIES BEING INSTITUTED BY THE DEPARTMENT AS DEFINED IN SECTION 602 OF THE PENNSYLVANIA CLEAN STREAMS LAW. THE CLEAN STREAMS LAW PROVIDES FOR UP TO \$10,000 PER DAY IN CIVIL PENALTIES, UP TO \$10,000 IN SUMMARY CRIMINAL PENALTIES, AND UP TO \$25,000 IN MISDEMEANOR CRIMINAL PENALTIES FOR EACH VIOLATION.
- ALL CHANNELS SHALL BE KEPT FREE OF OBSTRUCTIONS INCLUDING BUT NOT LIMITED TO FILL, ROCKS, LEAVES, WOODYDEBRIS, ACCUMULATED SEDIMENT, EXCESS VEGETATION, AND CONSTRUCTION MATERIAL/WASTES.
- UNDERGROUND UTILITIES CUTTING THROUGH ANY ACTIVE CHANNEL SHALL BE IMMEDIATELY BACKFILLED AND THE CHANNEL RESTORED TO ITS ORIGINAL CROSS-SECTION AND PROTECTIVE LINING. ANY BASE FLOW WITHIN THE CHANNEL SHALL BE CONVEYED PAST THE WORK AREA IN THE MANNER DESCRIBED IN THIS PLAN UNTIL SUCH RESTORATION IS COMPLETE.
- EROSION CONTROL BLANKETING SHALL BE INSTALLED ON ALL SLOPES 3H:1V OR STEEPER WITHIN 50 FEET OF A SURFACE WATER AND ON ALL OTHER DISTURBED AREAS SPECIFIED ON THE PLAN MAPS AND/OR DETAIL SHEETS.
- UPON COMPLETION OR TEMPORARY CESSATION OF THE EARTH DISTURBANCE ACTIVITY IN A SPECIAL PROTECTION WATERSHED, THAT PORTION OF THE PROJECT SITE TRIBUTARY TO THE SPECIAL PROTECTION WATERSHED MUST BE IMMEDIATELY STABILIZED.
- IF COAL OR OTHER ACID-PRODUCING ROCK IS ENCOUNTERED AT THE PROJECT SITE, THE ACID PRODUCING ROCK WILL EITHER BE REMOVED FROM THE SITE OR HANDLED ONSITE. IF COAL OR OTHER ACID-PRODUCING ROCK MUST BE HANDLED ON SITE IT SHOULD BE SAMPLED AND ANALYZED FOR TOTAL PERCENT SULFUR IN ACCORDANCE WITH PADEP'S GUIDANCE. ON-SITE HANDLING METHODS SHOULD BE BASED ON TESTING AND PADEP GUIDANCE.
- IF A SINKHOLE IS ENCOUNTERED, REPAIR SHOULD BE DONE UNDER THE DIRECT OBSERVATION AND SUPERVISION OF A PROFESSIONAL GEOLOGIST OR LICENSED GEOTECHNICAL ENGINEER. SITE SPECIFIC SINKHOLE REPAIRS SHOULD BE DEVELOPED ON A CASE BY CASE BASIS.

**CONSTRUCTION SEQUENCE:**

REFER TO THE E&S PLAN DRAWINGS FOR THE LOCATION OF THE PROPOSED WORK AND THE ASSOCIATED BMPS. A GENERALIZED CONSTRUCTION SEQUENCE IS PROVIDED BELOW. THE CONSTRUCTION SEQUENCE IS INTENDED TO PROVIDE A GENERAL COURSE OF ACTION IN ORDER TO CONFORM TO THE APPLICABLE REGULATORY AGENCY REQUIREMENTS FOR TEMPORARY AND PERMANENT SOIL EROSION AND SEDIMENTATION CONTROLS. NECESSARY PARTS FOR PROPER AND COMPLETE EXECUTION OF WORK PERTAINING TO THIS PLAN, WHETHER SPECIFICALLY MENTIONED OR NOT, ARE TO BE PERFORMED BY THE CONTRACTOR. IT IS NOT INTENDED THAT THE DRAWINGS AND THIS REPORT SHOW DETAILED INFORMATION ON METHODS AND MATERIALS. THE CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS LISTED IN THIS SECTION. THE CONTRACTOR MAY BE REQUIRED TO ALTER CONTROLS BASED ON EFFECTIVENESS OF CONTROLS OR DIFFERING CONDITIONS ENCOUNTERED IN THE FIELD.

A PRECONSTRUCTION MEETING IS REQUIRED PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITY. THE OWNER AND/OR OPERATOR SHALL INVITE ALL CONTRACTORS, THE LANDOWNER, APPROPRIATE MUNICIPAL OFFICIALS, THE E&S PLAN PREPARER, AND A REPRESENTATIVE FROM THE LOCAL PADEP OR CONSERVATION DISTRICT TO AN ON-SITE PRECONSTRUCTION MEETING AT LEAST SEVEN DAYS IN ADVANCE.

- LOCATE STAGING AREAS AND ACCESS POINTS INCLUDING CONSTRUCTION ENTRANCES. INSTALL COMPOST FILTER SOCKS DOWN SLOPE OF THESE AREAS. APPROPRIATELY SIZED SILT FENCE IS AN APPROVED ALTERNATIVE IN AREAS THAT ARE NOT SPECIAL PROTECTION WATERSHEDS.
- INSTALL ROCK CONSTRUCTION ENTRANCES AS NEEDED. REFER TO THE ROCK CONSTRUCTION ENTRANCE DETAIL ON DRAWINGS FOR SUGGESTED DIMENSIONS.
- CONSTRUCT THE PROPOSED ACCESS ROAD AND IMPLEMENT TEMPORARY IMPROVEMENTS TO ACCESS ROADS AS IDENTIFIED IN ACCESS ROAD SUMMARY TABLE AND DETAILED ON THE PLAN SHEETS.
- FLAG PROJECT LIMITS OF DISTURBANCE AND CLEAR VEGETATION ALONG THE PIPELINE ROUTE.
- WATERBARS OR APPROVED INTERCEPTOR DYKES WILL BE INSTALLED ALONG THE ALIGNMENT PRIOR TO PIPE INSTALLATION AS NEEDED BASED ON INSTALLATION RATE AND WEATHER CONDITIONS.
- INSTALL COMPOST FILTER SOCKS ALONG THE PERIMETERS OF THE SITE AS SHOWN ON THE CONSTRUCTION DRAWINGS. INSTALLATIONS SIZING, AND SPACING MUST CONFORM TO THE CHART AND DETAILS PROVIDED ON PLAN SHEET ES-0.07.
- STRIP TOPSOIL FROM TRENCH AREA (WHERE REQUIRED) AND STOCKPILE WITHIN THE RIGHT-OF-WAY IN ACCORDANCE WITH THE DETAILS PROVIDED. IN WETLANDS, AGRICULTURAL AREAS AND RESIDENTIAL AREAS ADDITIONAL TOPSOIL STRIPPING AND STOCKPILING MIGHT BE REQUIRED.
- MINIMIZE TOTAL AREA OF DISTURBANCE. MAINTAIN TEMPORARY SOIL STOCKPILES WITHIN EXISTING SOIL EROSION AND SEDIMENT CONTROLS. SHOULD EXCAVATION ENTER STREAMS, FOLLOW SPECIFIC DETAILS FOR THESE AREAS SHOWN ON THE DRAWINGS AND INCLUDE THE STEPS DETAILED IN THE SPECIFIC SECTIONS BELOW.
- INSTALL PIPE, BACKFILL, AND COVER WITH TOPSOIL (WHERE TOPSOIL WAS SEGREGATED).
- INSTALL TRENCH PLUGS IN ACCORDANCE WITH THE DETAIL ON DRAWING ES-0.08.
- GRADE SURFACE TO FINISHED GRADE ELEVATIONS AS SOON AS PRACTICABLE FOLLOWING COMPLETION OF PIPE INSTALLATION. REPAIR OR INSTALL WATERBARS IN ACCORDANCE WITH THE DETAIL FOR PERMANENT WATERBARS ON PLAN SHEET ES-0.07. IMMEDIATELY SEED AND MULCH DISTURBED AREAS OR PREPARE FOR PAVING IN ROADWAY AREAS.
- INSTALL EROSION CONTROL BLANKET ON ALL SLOPES 3:1 OR STEEPER AND WITHIN 100 FEET OF SPECIAL PROTECTION WATERS OR 50 FEET OF NON SPECIAL PROTECTION SURFACE WATERS. LOCATIONS ARE SHOWN ON PLAN SHEETS.
- MAINTAIN EROSION AND SEDIMENTATION CONTROL DEVICES UNTIL SITE WORK IS COMPLETE AND A UNIFORM 70% PERENNIAL VEGETATIVE COVER IS ESTABLISHED.
- REMOVE SOIL AND EROSION SEDIMENT CONTROL MEASURES UPON ESTABLISHMENT OF A UNIFORM 70% VEGETATIVE COVER OVER THE DISTURBED AREA. RE-GRADE AND REVEGETATE AREAS DISTURBED DURING THE REMOVAL OF THE SOIL EROSION AND SEDIMENT CONTROLS.

**FOR STREAM CROSSINGS THAT WILL BE OPEN CUT, THE FOLLOWING STEPS SHALL BE INSERTED IN THE GENERAL CONSTRUCTION SEQUENCE ABOVE, BASED ON THE NUMBERING PROVIDED:**

- FOR DRY CROSSINGS INSTALL BYPASS HOSE, PUMP, OR COFFERDAM AS DESCRIBED IN STREAM CROSSING DETAILS AROUND THE WORK AREA.
- 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, WHERE TECHNICALLY FEASIBLE.
- STABILIZE CHANNEL EXCAVATION AND STREAM BANKS PRIOR TO REDIRECTING STREAM FLOW
- REMOVE BYPASS HOSE, PUMP, AND TEMPORARY DAM AS NEEDED. REPEAT STEPS 3-10 FOR EACH WORK AREA.

**FOR STREAM CROSSINGS THAT WILL BE BORED, THE FOLLOWING STEPS SHALL BE INSERTED IN THE GENERAL CONSTRUCTION SEQUENCE ABOVE, BASED ON THE NUMBERING PROVIDED:**

- INSTALL COMPOST FILTER SOCKS DOWNGRADIENT OF THE BORE PIT.
- EXCAVATE BORE PITS AS SHOWN IN THE TEMPORARY STREAM CROSSING DETAIL ON PLAN SHEET ES-0.11. BORE PITS WILL BE LOCATED A MINIMUM OF 50' FROM THE NEAREST TOP OF BANK, WHERE TECHNICALLY FEASIBLE.
- BORE BENEATH STREAMS WHERE INDICATED ON THE CONSTRUCTION DRAWINGS USING A HORIZONTAL DIRECTIONAL BORING MACHINE.
- BACKFILL BORE PITS.

**IF WORKING WITHIN A WETLAND AREA, FOLLOW THE GENERALIZED CONSTRUCTION SEQUENCE BELOW:**

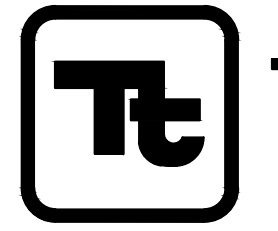
- LOCATE STAGING AREAS AND ACCESS POINTS. STAGING AREAS SHOULD BE LOCATED AT LEAST 50 FEET FROM THE EDGE OF THE WETLAND. INSTALL SEDIMENT BARRIERS DOWN SLOPE OF THESE AREAS.
- INSTALL ROCK CONSTRUCTION ENTRANCE AS NEEDED. REFER TO THE ROCK CONSTRUCTION ENTRANCE DETAIL ON DRAWINGS FOR SUGGESTED DIMENSIONS.
- INSTALL ORANGE FLAGGING AROUND PERIMETER OF WETLAND AND SEDIMENT BARRIERS ALONG THE PERIMETERS OF THE SITE AS SHOWN ON THE CONSTRUCTION DRAWINGS.
- 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.
- 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.
- DEWATER WORK AREA; WATER FROM THE EXCAVATION SHALL BE PUMPED TO A SEDIMENT TRAP OR A FILTER BAG.
- INSTALL PIPE.
- INSTALL TRENCH PLUGS IN WETLAND AREAS TO PREVENT THE TRENCH FROM DRAINING THE WETLAND OR CHANGING ITS HYDROLOGY.
- BACKFILL PIPE TRENCH. BACKFILL THE TOP 12-INCHES OF THE EXCAVATED TRENCH WITH THE STOCKPILED WETLAND SOIL TO MATCH ORIGINAL SURFACE GRADES.
- COMPACT BACKFILL AND GRADE THE SURFACE OF THE TRENCH AREA TO ALLOW FOR POSITIVE DRAINAGE TO SOIL EROSION AND SEDIMENT CONTROLS AND TO PREPARE DISTURBED AREAS FOR PERMANENT TRENCH RESTORATION.
- MAINTAIN ALL EROSION AND SEDIMENTATION CONTROL DEVICES UNTIL SITE WORK IS COMPLETE AND A UNIFORM 70% PERENNIAL VEGETATIVE COVER IS ESTABLISHED.
- REMOVE ALL SOIL AND EROSION SEDIMENT CONTROL MEASURES UPON ESTABLISHMENT OF A UNIFORM 70% VEGETATIVE COVER OVER THE DISTURBED AREA. RE-GRADE AND REVEGETATE AREAS DISTURBED DURING THE REMOVAL OF THE SOIL EROSION AND SEDIMENT CONTROLS.

**FOR TEMPORARY EQUIPMENT STREAM AND WETLAND CROSSINGS, FOLLOW THE GENERALIZED CONSTRUCTION SEQUENCE BELOW:**

- INSTALL TEMPORARY CROSSINGS OF WETLANDS AND STREAMS IN ACCORDANCE E&S DETAILS ON SHEETS ES-0.08 AND ES-0.10. ACCESS INTO WETLANDS WITH KNOWN BOG TURTLE HABITAT IS NOT PERMITTED.
- TEMPORARY STREAM CROSSINGS SHALL BE INSPECTED ON A DAILY BASIS. DAMAGED CROSSINGS SHALL BE REPAIRED WITHIN 24 HOURS OF THE INSPECTION AND BEFORE ANY SUBSEQUENT USE. SEDIMENT DEPOSITS ON THE CROSSING OR ITS APPROACHES SHALL BE REMOVED WITHIN 24 HOURS OF THE INSPECTION.
- AS SOON AS THE TEMPORARY CROSSING IS NO LONGER NEEDED, REMOVE TEMPORARY EQUIPMENT CROSSING. ALL MATERIALS SHALL BE DISPOSED OF PROPERLY AND DISTURBED AREAS STABILIZED. REMOVE ALL SOIL AND EROSION SEDIMENT CONTROL MEASURES UPON ESTABLISHMENT OF A UNIFORM 70% VEGETATIVE COVER OVER THE DISTURBED AREA.

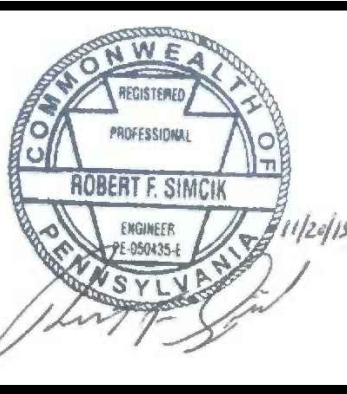
**STANDARD EROSION AND SEDIMENT CONTROL PLAN NOTES**

- ALL EARTH DISTURBANCES, INCLUDING CLEARING AND GRUBBING AS WELL AS CUTS AND FILLS SHALL BE DONE IN ACCORDANCE WITH THE APPROVED E&S PLAN. A COPY OF THE APPROVED DRAWINGS (STAMPED, SIGNED AND DATED BY THE REVIEWING AGENCY) MUST BE AVAILABLE AT THE PROJECT SITE AT ALL TIMES. THE REVIEWING AGENCY SHALL BE NOTIFIED OF ANY CHANGES TO THE APPROVED PLAN PRIOR TO IMPLEMENTATION OF THOSE CHANGES. THE REVIEWING AGENCY MAY REQUIRE A WRITTEN SUBMITTAL OF THOSE CHANGES FOR REVIEW AND APPROVAL AT ITS DISCRETION.
- AT LEAST 7 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, INCLUDING CLEARING AND GRUBBING, THE OWNER AND/OR OPERATOR SHALL INVITE ALL CONTRACTORS, 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.
- ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE SEQUENCE PROVIDED ON THE PLAN DRAWINGS. DEVIATION FROM THAT SEQUENCE MUST BE APPROVED IN WRITING FROM THE LOCAL CONSERVATION DISTRICT OR BY THE DEPARTMENT PRIOR TO IMPLEMENTATION.
- AREAS TO BE FILLED ARE TO BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS AND OTHER OBJECTIONABLE MATERIAL.
- CLEARING, GRUBBING, AND TOPSOIL STRIPPING SHALL BE LIMITED TO THOSE AREAS DESCRIBED IN EACH STAGE OF THE CONSTRUCTION SEQUENCE. GENERAL SITE CLEARING, GRUBBING AND TOPSOIL STRIPPING MAY NOT COMMENCE IN ANY STAGE OR PHASE OF THE PROJECT UNTIL THE E&S BMPS SPECIFIED BY THE BMP SEQUENCE FOR THAT STAGE OR PHASE HAVE BEEN INSTALLED AND ARE FUNCTIONING AS DESCRIBED IN THIS E&S PLAN.
- AT NO TIME SHALL CONSTRUCTION VEHICLES BE ALLOWED TO ENTER AREAS OUTSIDE THE LIMIT OF DISTURBANCE BOUNDARIES SHOWN ON THE PLAN MAPS. THESE AREAS MUST BE CLEARLY MARKED AND FENCED OFF BEFORE CLEARING AND GRUBBING OPERATIONS BEGIN.
- TOPSOIL REQUIRED FOR THE ESTABLISHMENT OF VEGETATION SHALL BE STOCKPILED AT THE LOCATION(S) SHOWN ON THE PLAN MAPS(S) IN THE AMOUNT NECESSARY TO COMPLETE THE FINISH GRADING OF ALL EXPOSED AREAS THAT ARE TO BE STABILIZED BY VEGETATION. EACH STOCKPILE SHALL BE PROTECTED IN THE MANNER SHOWN ON THE PLAN DRAWINGS. STOCKPILE HEIGHTS SHALL NOT EXCEED 35 FEET. STOCKPILE SLOPES SHALL BE 2H:1V OR FLATTER.
- IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES TO MINIMIZE THE POTENTIAL FOR EROSION AND SEDIMENT POLLUTION AND NOTIFY THE LOCAL CONSERVATION DISTRICT AND/OR THE REGIONAL OFFICE OF THE DEPARTMENT.
- ALL BUILDING MATERIALS AND WASTES SHALL BE REMOVED FROM THE SITE AND RECYCLED OR DISPOSED OF IN ACCORDANCE WITH THE DEPARTMENT'S SOLID WASTE MANAGEMENT REGULATIONS AT 25 PA. CODE 260.1 ET SEQ., 271.1, AND 287.1 ET. SEQ. NO BUILDING MATERIALS OR WASTES OR UNUSED BUILDING MATERIALS SHALL BE BURNED, BURIED, DUMPED, OR DISCHARGED AT THE SITE.
- ALL OFF-SITE WASTE AND BORROW AREAS MUST HAVE AN E&S PLAN APPROVED BY THE LOCAL CONSERVATION DISTRICT OR THE DEPARTMENT FULLY IMPLEMENTED PRIOR TO BEING ACTIVATED.
- THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ANY MATERIAL BROUGHT ON SITE IS CLEAN FILL. FORM FP-001 MUST BE RETAINED BY THE PROPERTY OWNER FOR ANY FILL MATERIAL AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE BUT QUALIFYING AS CLEAN FILL DUE TO ANALYTICAL TESTING.
- ALL PUMPING OF WATER FROM ANY WORK AREA SHALL BE DONE ACCORDING TO THE PROCEDURE DESCRIBED IN THIS PLAN, OVER UNDISTURBED VEGETATED AREAS.



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REVISIONS			
NO.	BY	DATE	REMARKS



**SUNOCO PIPELINE L.P.**  
PHILADELPHIA, PENNSYLVANIA  
**PENNSYLVANIA PIPELINE PROJECT**

2-20" PROPOSED WELDED STEEL NATURAL GAS LIQUIDS PIPELINES

DATE:	11/20/15
PROJECT NO.:	112IC05958
DESIGNED BY:	JB
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CHECKED BY:	RS
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<b>ES-0.06</b>	

**TEMPORARY SEEDING**

TEMPORARY GRASS COVER SHALL BE ESTABLISHED IN THE FOLLOWING AREAS:

- WHERE SOIL STOCKPILES ARE TO BE EXPOSED FOR A PERIOD GREATER THAN FOUR (4) DAYS, THE STOCKPILE SHALL BE SEEDED.
- WHERE VEGETATIVE FILTERS MUST BE ESTABLISHED BELOW FILTER BAGS, A MINIMUM DISTANCE OF 10 FT SHALL BE SEEDED DOWN SLOPE OF THE TRAP OUTLET.

**TEMPORARY COVER**

SEED MIXTURE FOR TEMPORARY COVER SHALL CONSIST OF 100% ANNUAL RYEGRASS. SEED SHALL BE APPLIED AT THE RATE OF 40 LB/ACRE OR AS RECOMMENDED BY A LOCAL RECOGNIZED SEED SUPPLIER APPROVED BY THE OWNER'S REPRESENTATIVE. PRIOR TO SEEDING, APPLY 1 TON OF AGRICULTURAL GRADE LIMESTONE PER ACRE PLUS 10-10-10 FERTILIZER AT THE RATE OF 500 LB. PER ACRE AND WORK INTO SOIL.

**MULCHING**

THE PURPOSE OF MULCH IS TO REDUCE RUNOFF AND EROSION, PREVENT SURFACE COMPACTION OR CRUSTING, CONSERVE MOISTURE, AID IN ESTABLISHING PLANT COVER, AND CONTROL WEEDS. MULCH SHALL BE APPLIED ON ANY AREA SUBJECT TO EROSION, OR WHICH HAS UNFAVORABLE CONDITIONS FOR PLANT ESTABLISHMENT AND GROWTH. THE PRACTICE MAY BE USED ALONE OR IN CONJUNCTION WITH OTHER STRUCTURAL AND VEGETATIVE CONSERVATION PRACTICES, SUCH AS WATERWAYS, PONDS, SEDIMENTATION TRAPS OR CRITICAL AREA PLANTING. ON SEDIMENT PRODUCING AREAS WHERE THE PERIOD OF EXPOSURE IS LESS THAN TWO (2) MONTHS, MULCH MATERIALS SHALL BE APPLIED ACCORDING TO THE FOLLOWING GUIDELINES:

- STRAW MULCH SHALL BE APPLIED AT THE RATE OF THREE TONS PER ACRE. CHEMICALLY TREATED OR SALTED STRAW IS NOT ACCEPTABLE AS MULCH.
  - "CRIMPED" INTO THE SOIL USING TRACTOR DRAWN EQUIPMENT (STRAIGHT BLADED COULTER OR SIMILAR). THIS METHOD IS LIMITED TO SLOPES NO STEEPER THAN 3:1. MACHINERY SHOULD BE OPERATED ON THE CONTOUR. (CRIMPING OF HAY OR STRAW BY RUNNING IT OVER WITH TRACKED MACHINERY IS NOT RECOMMENDED)
  - ASPHALT, EITHER EMULSIFIED OR CUT-BACK, CONTAINING NO SOLVENTS OR OTHER DILUTING AGENTS TOXIC TO PLANT OR ANIMAL LIFE, UNIFORMLY APPLIED AT THE RATE OF 31 GALLONS PER 1000 FT<sup>2</sup>.
- SYNTHETIC BINDERS (CHEMICAL BINDERS) MAY BE USED AS RECOMMENDED BY THE MANUFACTURER TO ANCHOR MULCH PROVIDED SUFFICIENT DOCUMENTATION IS PROVIDED TO SHOW THAT IT IS NON-TOXIC TO NATIVE PLANT AND ANIMAL SPECIES.
- LIGHTWEIGHT PLASTIC, FIBER, OR PAPER NETS MAY BE STAPLED OVER THE MULCH ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.

MULCHED AREAS SHALL BE CHECKED PERIODICALLY AND AFTER EACH RUNOFF EVENT (E.G. RAIN, SNOWMELT, ETC) FOR DAMAGE UNTIL THE DESIRED PURPOSE OF THE MULCHING IS ACHIEVED. DAMAGED PORTIONS OF THE MULCH OR TIE-DOWN MATERIAL SHALL BE REPAIRED UPON DISCOVERY.

**REVEGETATION**

**LIMING RATES**

MINIMUM 6 TONS PER ACRE AT 100% EFFECTIVE NEUTRALIZING VALUE (% ENV), UNLESS THE SOIL TEST DETERMINES THAT A LESSER AMOUNT IS NEEDED. TO DETERMINE THE ACTUAL AMOUNT OF REGULAR LIME TO APPLY, DIVIDE THE AMOUNT CALLED FOR BY THE SOIL TEST BY THE % ENV FOR THE PRODUCT USED. FOR EXAMPLE, IF 6 TONS PER ACRE IS NEEDED AND THE ENV FOR THE LIME USED IS 88%, DIVIDE 6 BY 0.88 RESULTING IN 6.8 TONS NEEDED TO BE APPLIED. FOR DOLOMITIC LIME, WHICH HAS A SIGNIFICANT AMOUNT OF MAGNESIUM IN IT, DIVIDE THE AMOUNT CALLED FOR BY THE SOIL TEST BY THE % CALCIUM CARBONATE EQUIVALENT (% CCE) LISTED FOR THE PRODUCT INSTEAD OF THE % ENV. THE % CCE MAY BE ABOVE 100% WHICH ACCOUNTS FOR THE FACT THAT MAGNESIUM HAS A GREATER EFFECT PER POUND THAN THE CALCIUM IN REGULAR LIME. NOTE: WHEN A SOIL TEST REQUIRES MORE THAN 8,000 POUNDS OF LIME PER ACRE, THE LIME MUST BE MIXED INTO THE TOP 6 INCHES OF SOIL.

**FERTILIZATION RATES**

APPLY 10-20-20 AT 600 POUNDS/ACRE, IF TOP DRESSED OR 1,000 POUNDS/AC, IF INCORPORATED, UNLESS THE SOIL TEST DETERMINES THAT THE RATE CAN BE LESS THAN THESE MINIMUMS.

SOIL AMENDMENT APPLICATION RATE EQUIVALENTS				
SOIL AMENDMENT	PER ACRE	PER 1,000 SQ. FT.	PER 1,000 SQ. YDS.	NOTES
PERMANENT SEEDING APPLICATION RATE				
AGRICULTURAL LIME	6 TONS	240 LBS.	2,480 LBS.	OR AS PER SOIL TEST; MAY NOT BE REQUIRED IN AGRICULTURAL FIELDS
10-20-20 FERTILIZER	1,000 LBS.	25 LBS.	210 LBS.	OR AS PER SOIL TEST; MAY NOT BE REQUIRED IN AGRICULTURAL FIELDS

RECOMMENDED SEED MIXTURES				
MIXTURE NO.	SPECIES	SEEDING RATES - PLS(1)		
		MOST SITES	ADVERSE SITES	
1 (2)	SPRING OATS (SPRING), OR 64 96	64	96	
	ANNUAL RYEGRASS (SPRING OR FALL), OR	10	15	
	WINTER WHEAT (FALL), OR	90	120	
	WINTER RYE (FALL)	56	112	
2 (3)	TALL FESCUE, OR 75	60	75	
	FINE FESCUE, OR 40	35	40	
	KENTUCKY BLUEGRASS, PLUS 25 30	25	30	
	REDDTOP(4), OR	3	3	
3	PERENNIAL RYEGRASS	15	20	
	BIRDSFOOT TREFOIL, PLUS 6 10	6	10	
4	TALL FESCUE	30	35	
	BIRDSFOOT TREFOIL, PLUS	6	10	
5 (5)	REED CANARYGRASS	10	15	
	CROWNVELTCH, PLUS	20	25	
6 (5,6)	TALL FESCUE, OR	20	25	
	PERENNIAL RYEGRASS	20	25	
7 (5)	CROWNVELTCH, PLUS	10	15	
	ANNUAL RYEGRASS	20	25	
8	BIRDSFOOT TREFOIL, PLUS	20	30	
	CROWNVELTCH, PLUS	20	30	
9 (7)	TALL FESCUE	20	25	
	TALL FESCUE, PLUS	20	25	
10	REDDTOP(4)	3	3	
	TALL FESCUE, PLUS	40	60	
11	FINE FESCUE	10	15	
	DEERTONGUE, PLUS	15	20	
12(8)	BIRDSFOOT TREFOIL	6	10	
	SWITCHGRASS, OR	15	20	
13	BIG BLUESTEM, PLUS	15	20	
	BIRDSFOOT TREFOIL	6	10	
13	ORCHARDGRASS, OR	20	30	
	SMOOTH BROMEGRASS, PLUS	25	35	
	BIRDSFOOT TREFOIL	6	10	

**NOTES:**



- PURE LIVE SEED (PLS) IS THE PRODUCT OF THE PERCENTAGE OF PURE SEED TIMES PERCENTAGE GERMINATION DIVIDED BY 100. FOR EXAMPLE, TO SECURE THE ACTUAL PLANTING RATE FOR SWITCHGRASS, DIVIDE 12 POUNDS PLS SHOWN ON THE SEED TAG. THUS, IF THE PLS CONTENT OF A GIVEN SEED LOT IS 35 PERCENT, DIVIDE 12 PLS BY 0.35 TO OBTAIN 34.3 POUNDS OF SEED REQUIRED TO PLANT ONE-ACRE. ALL MIXTURES IN THIS TABLE ARE SHOWN IN TERMS OF PLS.
- IF HIGH-QUALITY SEED IS USED, FOR MOST SITES SEED SPRING OATS AT A RATE OF TWO BUSHELS PER ACRE, WINTER WHEAT AT 11.5 BUSHELS PER ACRE, AND WINTER RYE AT ONE BUSHEL PER ACRE. IF GERMINATION IS BELOW 90 PERCENT, INCREASE THESE SUGGESTED SEEDING RATES BY 0.5 BUSHEL PER ACRE.
- THIS MIXTURE IS SUITABLE FOR FREQUENT MOWING. DO NOT CUT SHORTER THAN FOUR INCHES.
- KEEP SEEDING RATE TO THAT RECOMMENDED IN TABLE. THESE SPECIES HAVE MANY SEEDS PER POUND AND ARE VERY COMPETITIVE. TO SEED SMALL QUANTITIES OF SMALL SEEDS SUCH AS WEEPING LOVEGRASS AND REDTOP, DILUTE WITH DRY SAWDUST, SAND, RICE HULLS, BUCKWHEAT HULLS, ETC.
- SEED MIXTURES CONTAINING CROWN VETCH SHOULD NOT BE USED IN AREAS ADJACENT TO WETLANDS OR STREAM CHANNELS DUE TO THE INVASIVE NATURE OF THIS SPECIES.
- USE FOR HIGHWAY SLOPES AND SIMILAR SITES WHERE THE DESIRED SPECIES AFTER ESTABLISHMENT IS CROWNVELTCH.
- USE ONLY IN EXTREME SOUTHEASTERN OR EXTREME SOUTHWESTERN PA. SERECIA LESPEDEZA IS NOT WELL ADAPTED TO MOST OF PA.
- DO NOT MOW SHORTER THAN NINE TO 10 INCHES.

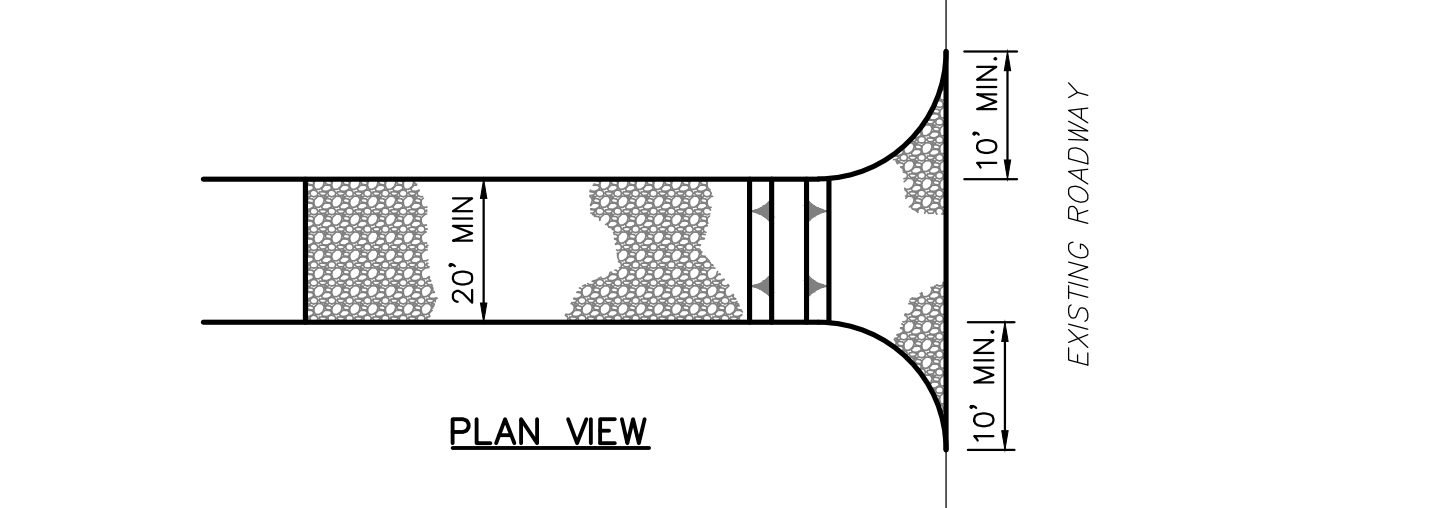
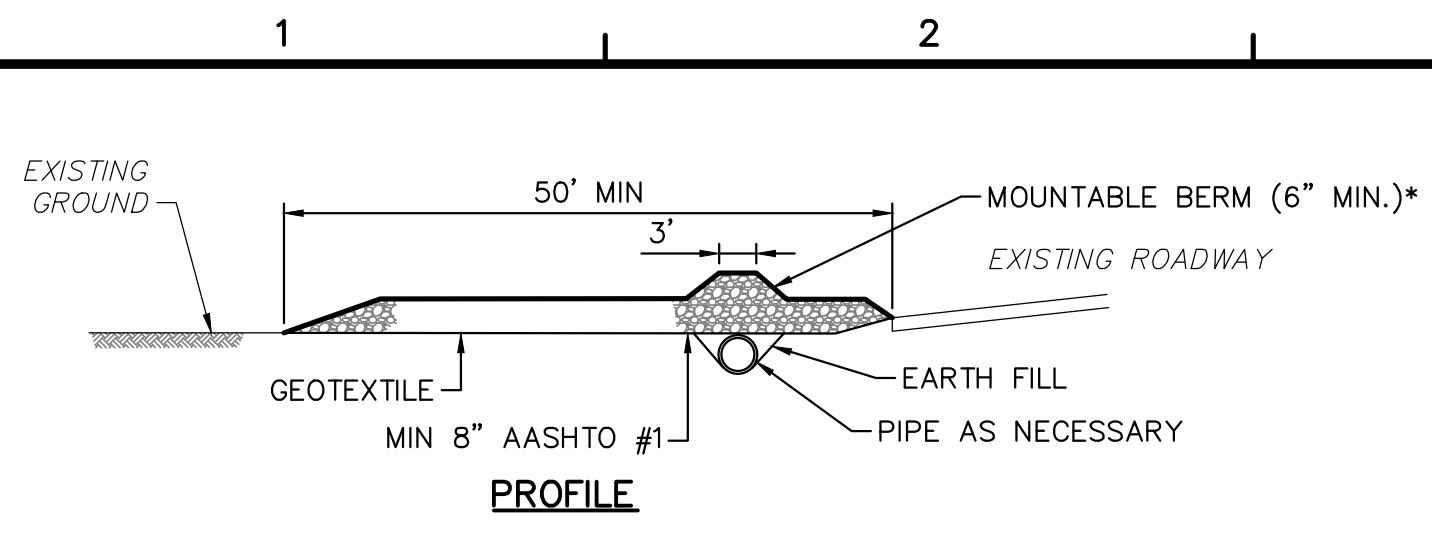
SITE CONDITIONS	NURSE CROP	SEED MIXTURE (SELECT ONE MIXTURE)
SLOPES AND BANKS (NOT MOWED)		
WELL-DRAINED	1 PLUS	3, 5, 8, OR 12 (1)
VARIABLE DRAINAGE	1 PLUS	3 OR 7
SLOPES AND BANKS (MOWED)		
WELL-DRAINED	1 PLUS	2 OR 10
SLOPES AND BANKS (GRAZED/HAY)		
WELL-DRAINED	1 PLUS	2,3, OR 13
GULLIES AND ERODED AREAS	1 PLUS	3, 5, 7, OR 12 (1)
EROSION CONTROL FACILITIES (BMPS)		
SOD WATERWAYS, SPILLWAYS, FREQUENT WATER FLOW AREAS	1 PLUS	2, 3, OR 4
DRAINAGE DITCHES		
SHALLOW, LESS THAN THREE FEET DEEP	1 PLUS	2, 3, OR 4
DEEP, NOT MOWED	1 PLUS	5 OR 7
POND BANKS, DIKES, LEVEES, DAMS, DIVERSION CHANNELS, AND OCCASIONAL WATER FLOW AREAS		
MOWED AREAS	1 PLUS	2 OR 3
NON-MOWED AREAS	1 PLUS	5 OR 7
FOR HAY OR SILAGE ON DIVERSION CHANNELS AND OCCASIONAL WATER FLOW AREAS	1 PLUS	3 OR 13
HIGHWAYS (2)		
NON-MOWED AREAS		
PURE CROWNVELTCH3	1 PLUS	5 OR 6
WELL-DRAINED	1 PLUS	5, 7, 8, 9, OR 10
VARIABLE DRAINAGE	1 PLUS	3 OR 7
POORLY DRAINAGE	1 PLUS	3 OR 9
AREAS MOWED SEVERAL TIMES PER YEAR	1 PLUS	2, 3, OR 10
UTILITY ROW		
WELL-DRAINED	1 PLUS	5, 8, OR 12 (1)
VARIABLE DRAINAGE	1 PLUS	3 OR 7
WELL-DRAINED AREAS FOR GRAZING/HAY	1 PLUS	2, 3, OR 13
EFFLUENT DISPOSAL AREAS	1 PLUS	3 OR 4
SANITARY LANDFILLS	1 PLUS	3, 5, 7, 11 (1), OR 12 (1)
SURFACE MINES		
SPOILS, MINE WASTES, FLY ASH, SLAG, SETTLING BASIN	1 PLUS	3, 4, 5, 7, 8, 9,11 (1) OR 12(1)
RESIDUES AND OTHER SEVERELY DISTURBED AREAS (LIME TO SOIL TEST)		
SEVERELY DISTURBED AREAS FOR GRAZING/HAY	1 PLUS	3 OR 13

**NOTES:**

- FOR SEED MIXTURES 11 AND 12, ONLY USE SPRING OATS OR WEEPING LOVEGRASS (INCLUDED IN MIX) AS NURSE CROP.
- CONTACT THE PA DEPARTMENT OF TRANSPORTATION DISTRICT ROADSIDE SPECIALIST FOR SPECIFIC SUGGESTIONS ON TREATMENT TECHNIQUES AND MANAGEMENT PRACTICES.
- SEED MIXTURES CONTAINING CROWN VETCH SHOULD NOT BE USED IN AREAS ADJACENT TO WETLANDS OR STREAM CHANNELS DUE TO THE INVASIVE NATURE OF THIS SPECIES.

MULCH TABLE	APPLICATION RATE (MINIMUM)			NOTES
	PER ACRE	PER 1,000 SQ. FT.	PER 1,000 SQ. YDS.	
STRAW	3 TONS	140 LBS.	1,240 LBS.	EITHER WHEAT OR OAT STRAW, FREE OF WEEDS, NOT CHOPPED OR FINELY BROKEN
HAY	3 TONS	140 LBS.	1,240 LBS.	TIMOTHY, MIXED CLOVER AND TIMOTHY OR OTHER NATIVE FORAGE GRASSES
WOODCHIPS	4 TO 6 TONS	185 TO 275 LBS.	1,650 TO 2,500 LBS.	MAY PREVENT GERMINATION OF GRASSES AND LEGUMES
HYDROMULCH	1 TON	47 LBS.	415 LS.	SEE LIMITATIONS ABOVE

 <p>www.tetrattech.com</p> <p>661 ANDERSEN DRIVE - FOSTER PLAZA 7 PITTSBURGH, PA 15220 T: (412) 921-7090   F: (412) 921-4040</p>	<p style="text-align:center">REVISIONS</p> <table border="1"> <thead> <tr> <th>NO.</th> <th>BY</th> <th>DATE</th> <th>REMARKS</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>		NO.	BY	DATE	REMARKS													 <p style="text-align:center">SUNOCO PIPELINE L.P. PHILADELPHIA, PENNSYLVANIA</p> <p style="text-align:center">PENNSYLVANIA PIPELINE PROJECT</p>	<p style="text-align:center">2-20" PROPOSED WELDED STEEL NATURAL GAS LIQUIDS PIPELINES</p>	<p>DATE: 11/20/15</p> <p>PROJECT NO.: 112IC05958</p> <p>DESIGNED BY: JB</p> <p>DRAWN BY: BH</p> <p>CHECKED BY: RS</p> <p>COPYRIGHT TETRA TECH INC.</p> <p style="text-align:center"><b>ES-0.07</b></p>
	NO.	BY	DATE	REMARKS																	
<p><b>SEEDING SPECIFICATIONS</b></p>																					



\* MOUNTABLE BERM USED TO PROVIDE PROPER COVER FOR PIPE

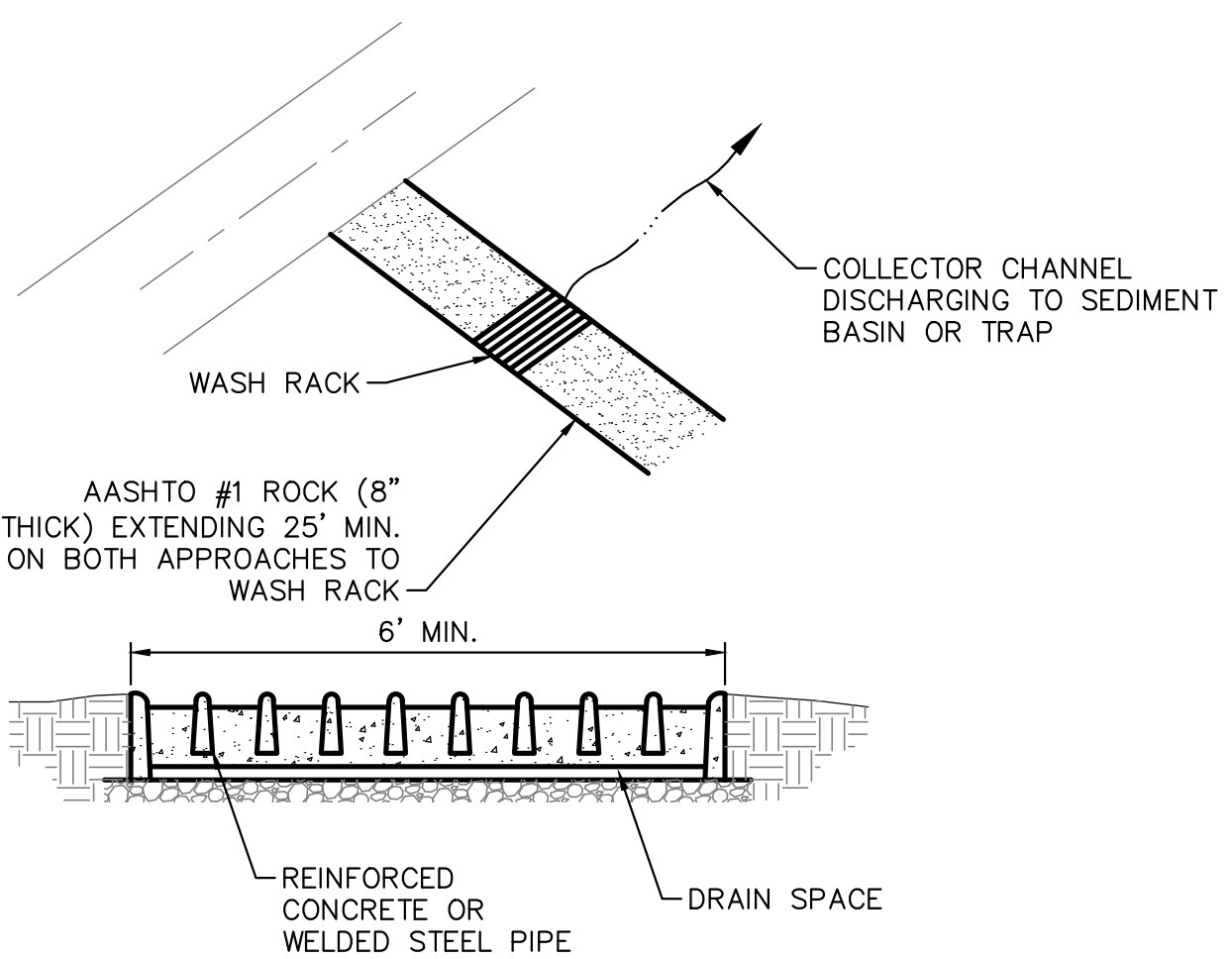
**NOTES:**

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 OPTION 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 SHALL BE MAINTAINED ON SITE FOR THE 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.



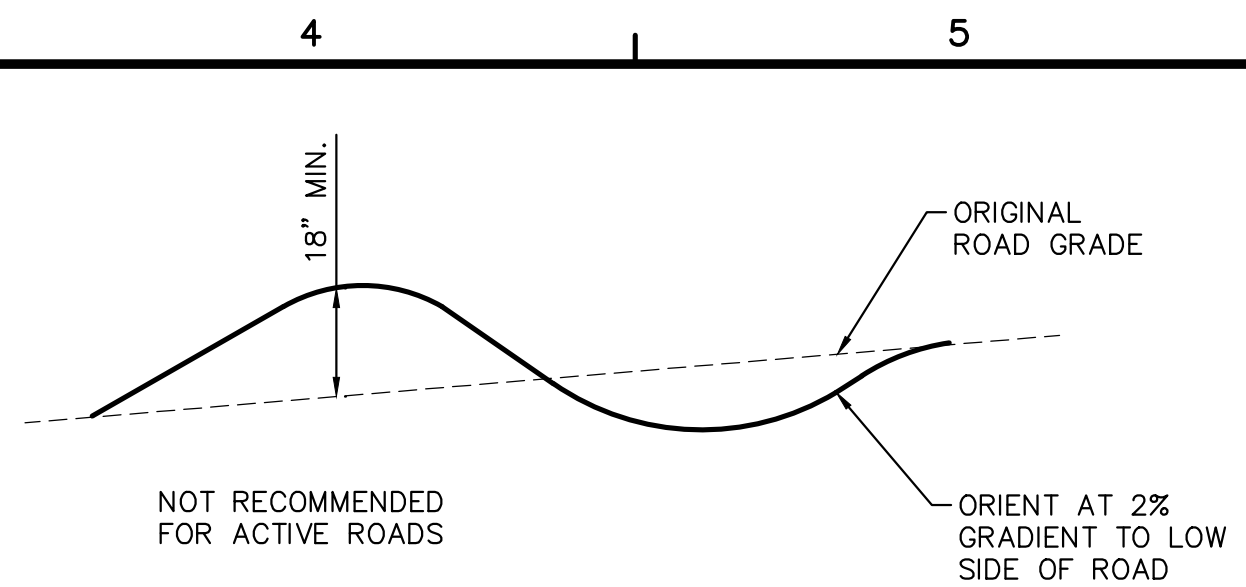
**NOTES:**

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.



**NOTES:**

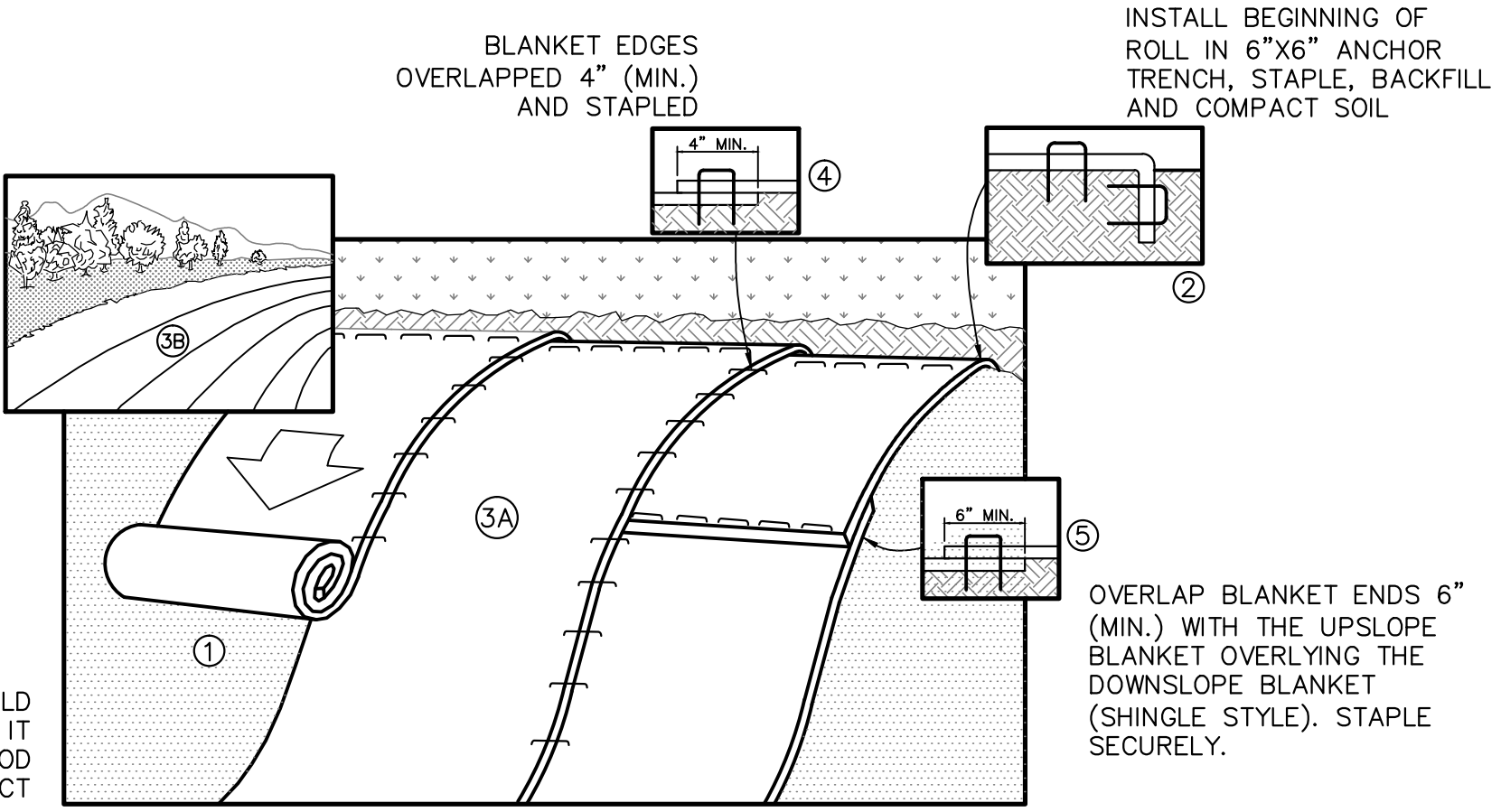
WATERBARS SHALL DISCHARGE TO A STABLE AREA.

WATERBARS SHALL BE INSPECTED WEEKLY (DAILY ON ACTIVE ROADS) AND AFTER EACH RUNOFF EVENT. DAMAGED OR ERODED WATERBARS SHALL BE RESTORED TO ORIGINAL DIMENSIONS WITHIN 24 HOURS OF INSPECTION.

MAINTENANCE OF WATERBARS SHALL BE PROVIDED UNTIL ROADWAY, SKIDTRAIL, OR RIGHT-OF-WAY HAS ACHIEVED PERMANENT STABILIZATION.

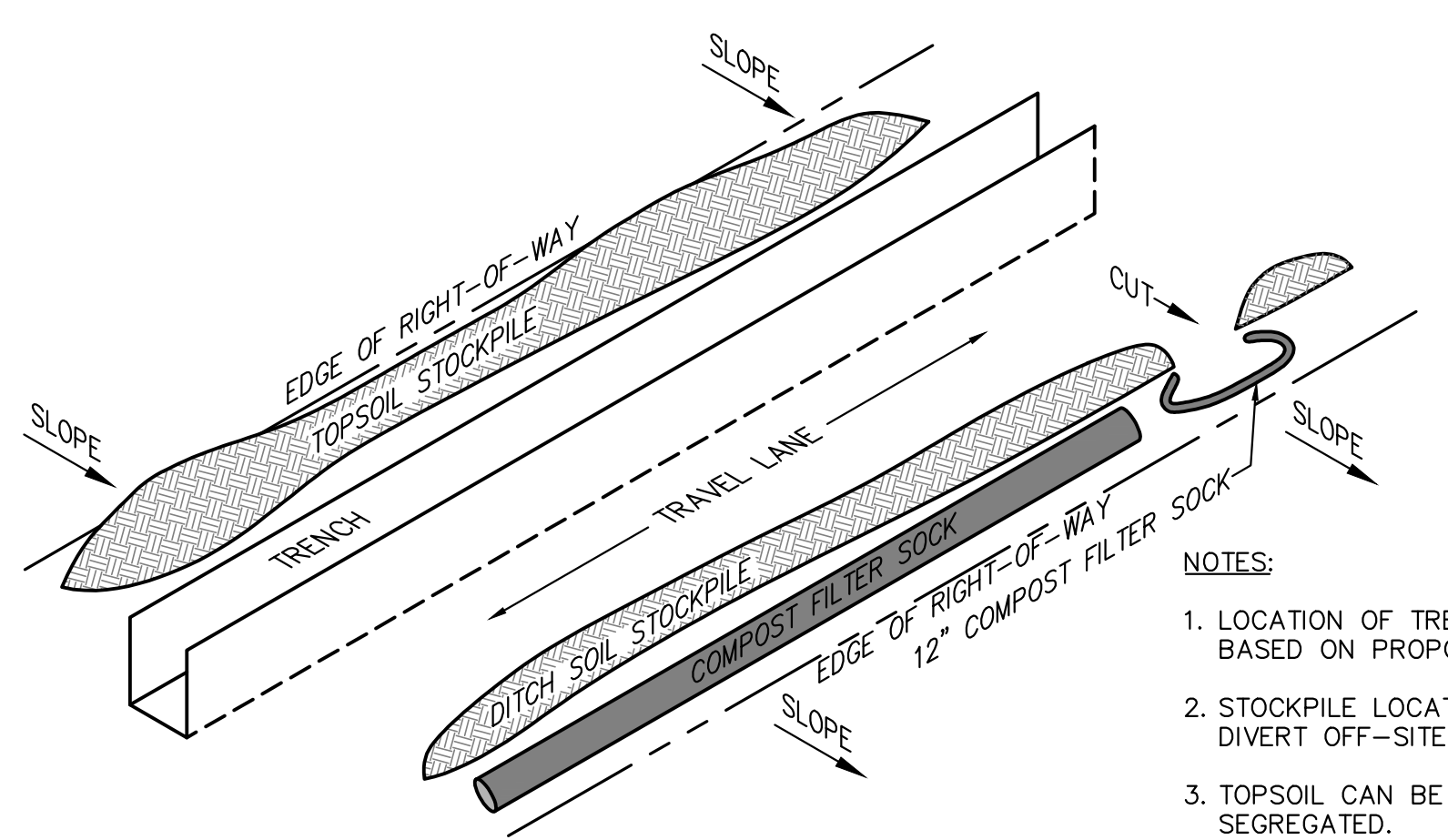
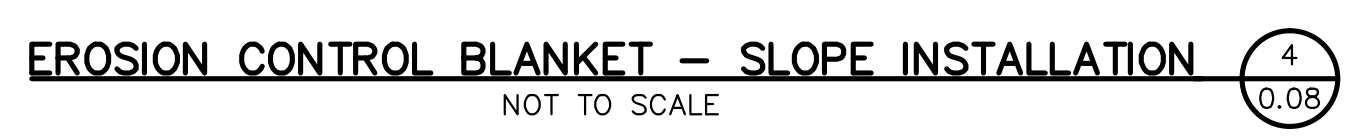
WATERBARS ON RETIRED ROADWAYS, SKIDTRAILS, AND RIGHT-OF-WAYS SHALL BE LEFT IN PLACE AFTER PERMANENT STABILIZATION HAS BEEN ACHIEVED.

MAXIMUM SPACING FOR WATERBARS	
% SLOPE	SPACING (FT)
<5	250
5-15	150
15-30	100
>30	50



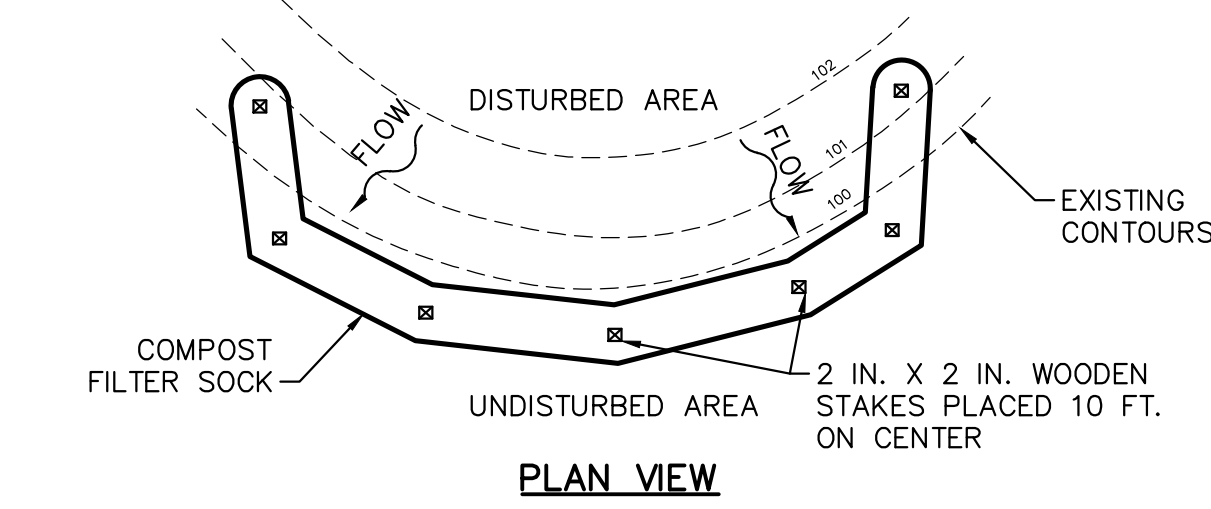
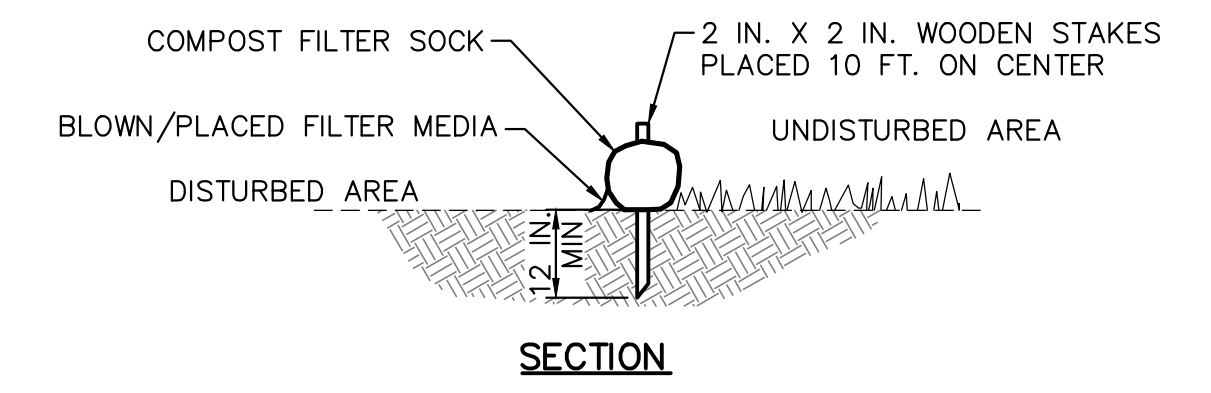
**NOTES:**

- 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 PROJECT LENGTH. LAY BLANKET LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH SOIL. DO NOT STRETCH BLANKET.
- THE BLANKET SHALL BE STAPLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- BLANKETED AREAS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT UNTIL PERENNIAL VEGETATION IS ESTABLISHED TO A MINIMUM UNIFORM 70% COVERAGE THROUGHOUT THE BLANKETED AREA. DAMAGED OR DISPLACED BLANKETS SHALL BE RESTORED OR REPLACED WITHIN 4 CALENDAR DAYS.



**NOTES:**

- LOCATION OF TRENCH AND TRAVEL LANE WILL VARY BASED ON PROPOSED PIPE LOCATIONS.
- STOCKPILE LOCATION PLACED UPSLOPE OF TRENCH TO DIVERT OFF-SITE DRAINAGE AWAY FROM RIGHT-OF-WAY.
- TOPSOIL CAN BE PLACED WITH DITCH SPOIL IF PROPERLY SEGREGATED.



MAXIMUM SLOPE LENGTHS FOR COMPOST FILTER SOCK			
% SLOPE	12" DIAMETER	18" DIAMETER	24" DIAMETER
2 (OR LESS)	520	700	1000
5	250	340	500
10	150	250	300
15	100	200	250
20	70	140	200
25	50	100	140
30	45	70	100
35	40	60	90
40	35	45	60
45	30	40	50
50	20	30	40

**NOTES:**

SOCK FABRIC SHALL MEET STANDARDS OF TABLE 4.1 OF THE PA DEP EROSION CONTROL MANUAL. COMPOST SHALL MEET THE STANDARDS OF TABLE 4.2 OF THE EPA DEP EROSION CONTROL MANUAL.

COMPOST FILTER SOCK SHALL BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE BARRIER SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN BARRIER ALIGNMENT. MAXIMUM SLOPE LENGTH ABOVE ANY BARRIER SHALL NOT EXCEED THAT SPECIFIED FOR THE SIZE OF THE SOCK AND THE SLOPE OF ITS TRIBUTARY AREA.

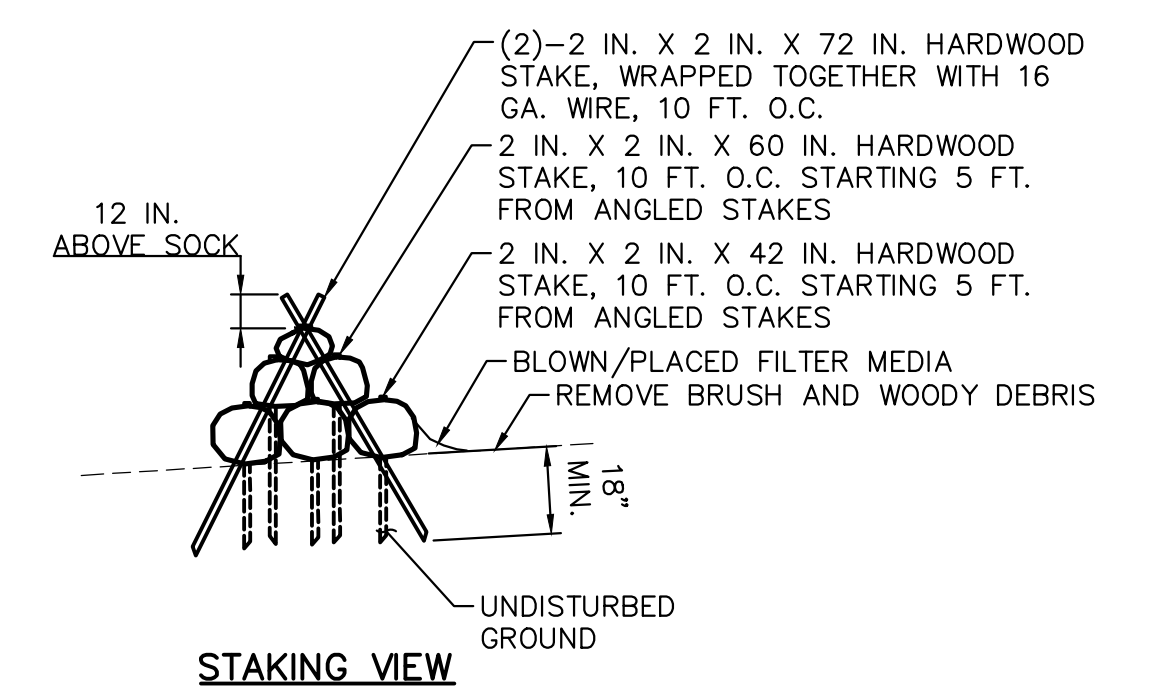
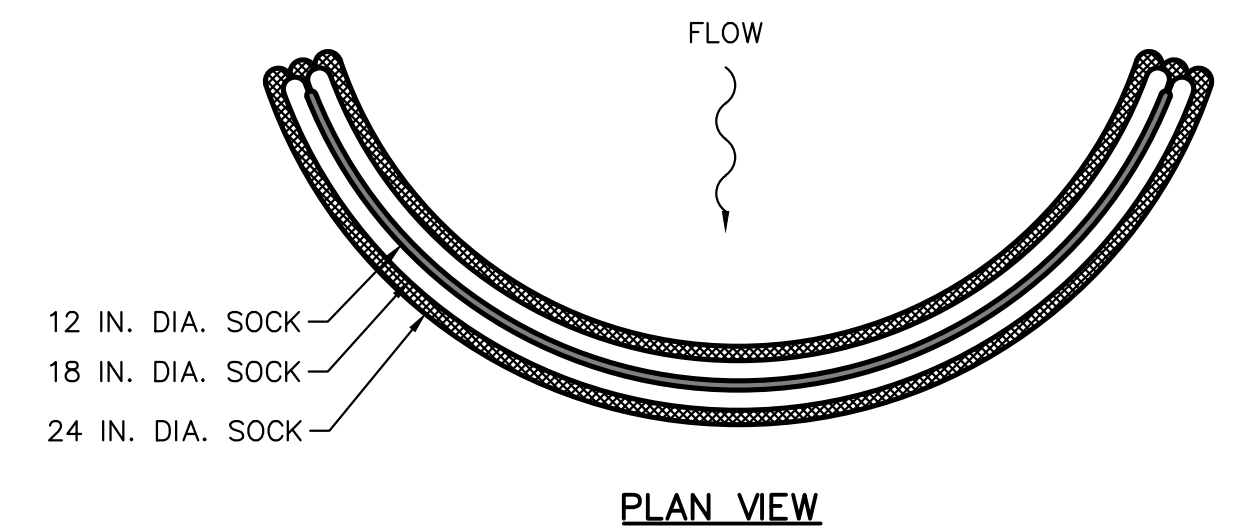
TRAFFIC SHALL NOT BE PERMITTED TO CROSS COMPOST FILTER SOCKS.

ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES 1/2 THE ABOVE GROUND HEIGHT OF THE BARRIER AND DISPOSED IN THE MANNER DESCRIBED ELSEWHERE IN THE PLAN.

COMPOST FILTER SOCK 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 COMPOST 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 VEGETATION OR REMOVED. IN THE LATTER CASE, THE MESH SHALL BE CUT OPEN AND THE MULCH SPREAD AS A SOIL SUPPLEMENT.



**DESIGN NOTES:**

- COMPOST SEDIMENT TRAP SHALL BE SIZED TO PROVIDE 2000 CUBIC FEET OF STORAGE CAPACITY FOR EACH ACRE TRIBUTARY TO THE TRAP.
- MINIMUM BASE WIDTH IS EQUAL TO THE HEIGHT.
- SEDIMENT ACCUMULATION SHALL NOT EXCEED 1/2 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 SHOWN ON THE PLAN VIEW.
- 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.

**NOTES:**

SOCK MATERIAL SHALL MEET THE STANDARDS OF TABLE 4.1 OF THE PA DEP EROSION CONTROL MANUAL. COMPOST SHALL MEET THE STANDARDS OF TABLE 4.2 OF THE PA DEP EROSION CONTROL MANUAL.

COMPOST SOCK SEDIMENT TRAPS SHALL NOT EXCEED THREE SOCKS IN HEIGHT AND SHALL BE STACKED IN PYRAMIDAL FORM AS SHOWN ABOVE. MINIMUM TRAP HEIGHT IS ONE 24" DIAMETER SOCK. ADDITIONAL STORAGE MAY BE PROVIDED BY MEANS OF AN EXCAVATED SUMP 12" DEEP EXTENDING 1 TO 3 FEET UPSLOPE OF THE SOCKS ALONG THE LOWER SIDE OF THE TRAP.

COMPOST SOCK SEDIMENT TRAPS SHALL PROVIDE 2,000 CUBIC FEET STORAGE CAPACITY WITH 12" FREEBOARD FOR EACH TRIBUTARY DRAINAGE ACRE. (SEE MANUFACTURER FOR ANTICIPATED SETTLEMENT.)

THE MAXIMUM TRIBUTARY DRAINAGE AREA IS 5.0 ACRES. SINCE COMPOST SOCKS ARE "FLOW-THROUGH," NO SPILLWAY IS REQUIRED.

COMPOST SOCK SEDIMENT TRAPS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. SEDIMENT SHALL BE REMOVED WHEN IT REACHES 1/2 THE HEIGHT OF THE SOCKS.

PHOTODEGRADABLE AND BIODEGRADABLE SOCKS SHALL NOT BE USED FOR MORE THAN 1 YEAR.



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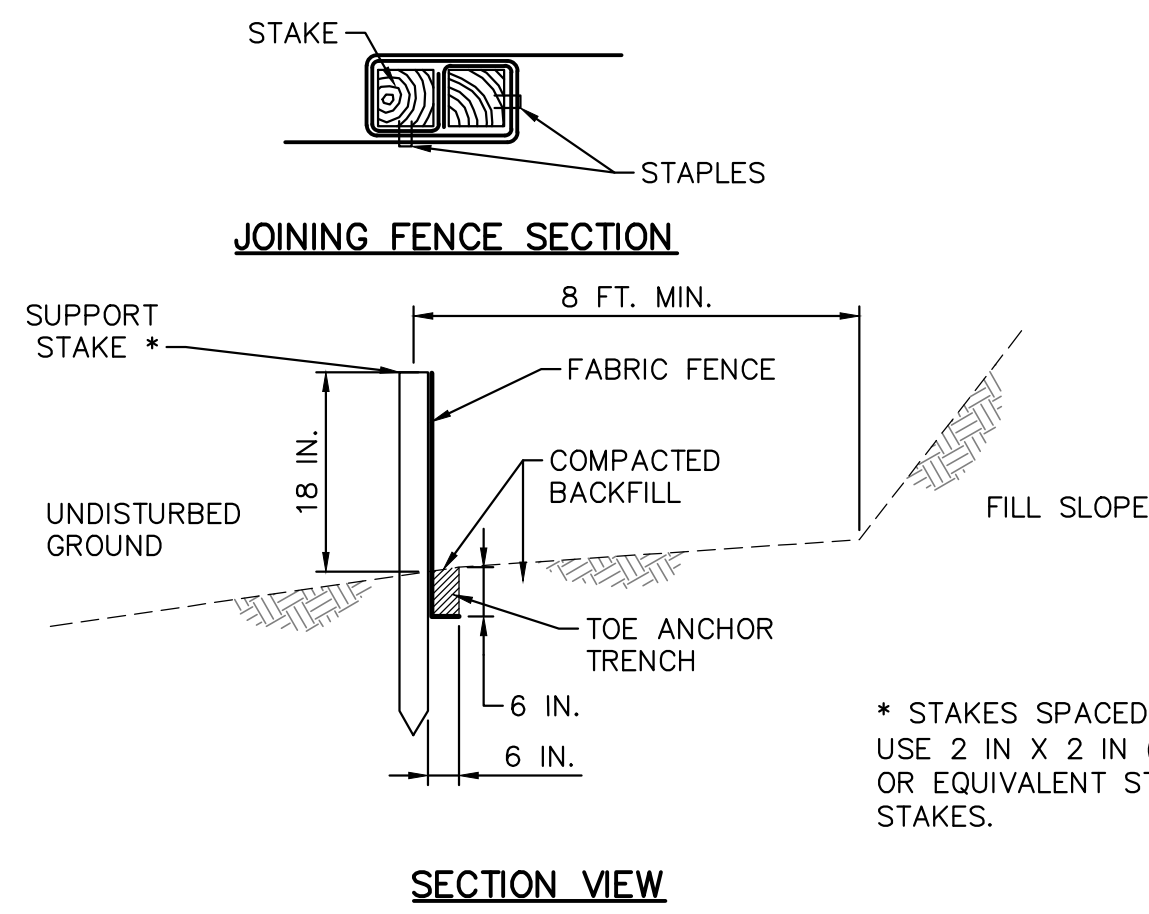
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NO.	BY	DATE	REMARKS

COMMONWEALTH OF PENNSYLVANIA  
REGISTERED PROFESSIONAL ENGINEER  
ROBERT F. SHIMICK  
P.E. NO. 150924

SUNOCO PIPELINE L.P.  
PHILADELPHIA, PENNSYLVANIA  
**PENNSYLVANIA PIPELINE PROJECT**

2-20" PROPOSED WELDED STEEL NATURAL GAS LIQUIDS PIPELINES  
**EROSION & SEDIMENT CONTROL & SITE RESTORATION DETAILS**  
SHEET 1 OF 3

DATE: 11/20/15  
PROJECT NO.: 1121C05958  
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\* STAKES SPACED AT 8 FT. MAX. USE 2 IN X 2 IN (± 3/8 IN.) WOOD OR EQUIVALENT STEEL (U OR T) STAKES.

**NOTES:**

FABRIC SHALL HAVE THE MINIMUM PROPERTIES AS SHOWN IN TABLE 4.3 OF THE PA DEP EROSION CONTROL MANUAL.

FABRIC WIDTH SHALL BE 30 IN. MINIMUM. STAKES SHALL BE HARDWOOD OR EQUIVALENT STEEL (U OR T) STAKES.

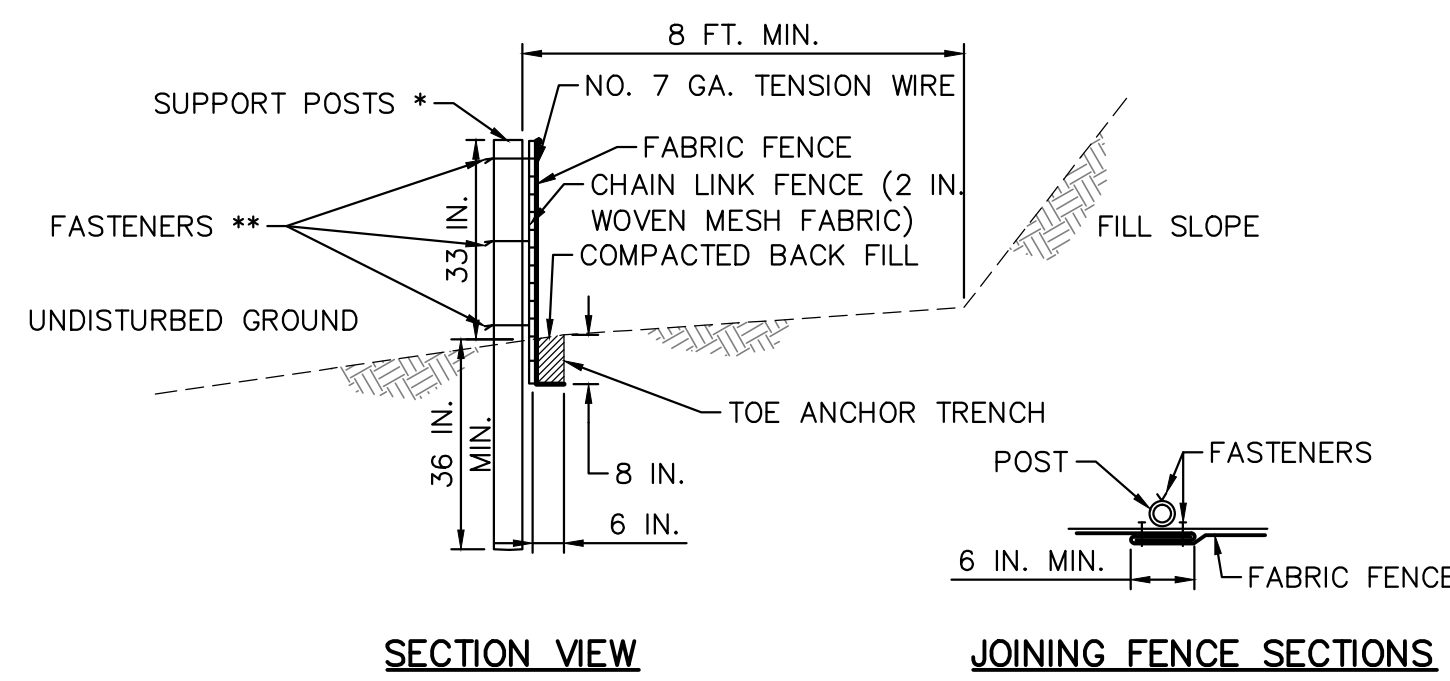
SILT FENCE SHALL BE PLACED AT LEVEL EXISTING GRADE. BOTH ENDS OF THE FENCE SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT.

SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH HALF 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 (STANDARD CONSTRUCTION DETAIL # 4-6).

FENCE SHALL BE REMOVED AND PROPERLY DISPOSED OF WHEN TRIBUTARY AREA IS PERMANENTLY STABILIZED.

SILT FENCE IS NOT TO BE USED IN HQ, EV, OR SILTATION IMPAIRED WATERSHEDS.



\* POSTS SPACED AT 10 FT. MAX. USE 2-1/2 IN. DIA HEAVY DUTY GALVANIZED OR ALUMINUM POSTS.  
 \*\* CHAIN LINK TO POST FASTENERS SPACED AT 14 IN. MAX. USE NO. 9 GA. ALUMINUM WIRE OR NO. 9 GALVANIZED STEEL WIRE. FABRIC TO SHAIN FASTENERS SPACED AT 24 IN. MAX. ON CENTER.

**NOTES:**

FABRIC SHALL HAVE THE MINIMUM PROPERTIES AS SHOWN IN TABLE 4.3 OF THE PA DEP EROSION CONTROL MANUAL.

FABRIC WIDTH SHALL BE 42. IN. MINIMUM.

POSTS SHALL BE INSTALLED USING A POSTHOLE DRILL.

CHAIN LINK SHALL BE GALVANIZED NO. 11.5 GA. STEEL WIRE WITH 2-1/4 IN. OPENING, NO. 11 GA. ALUMINUM COATED STEEL WIRE IN ACCORDANCE WITH ASTM-A-491, OR GALVANIZED NO. 9 GA. STEEL WIRE TOP AND BOTTOM WITH GALVANIZED NO. 11 GA. STEEL INTERMEDIATE WIRES. NO. 7 GAGE TENSION WIRE TO BE INSTALLED HORIZONTALLY THROUGH HOLES AT TOP AND BOTTOM OF CHAIN-LINK FENCE OR ATTACHED WITH HOG RINGS AT 5 FT MAX. CENTERS.

SILT FENCE SHALL BE PLACED AT LEVEL EXISTING GRADE. BOTH ENDS OF THE FENCE SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT.

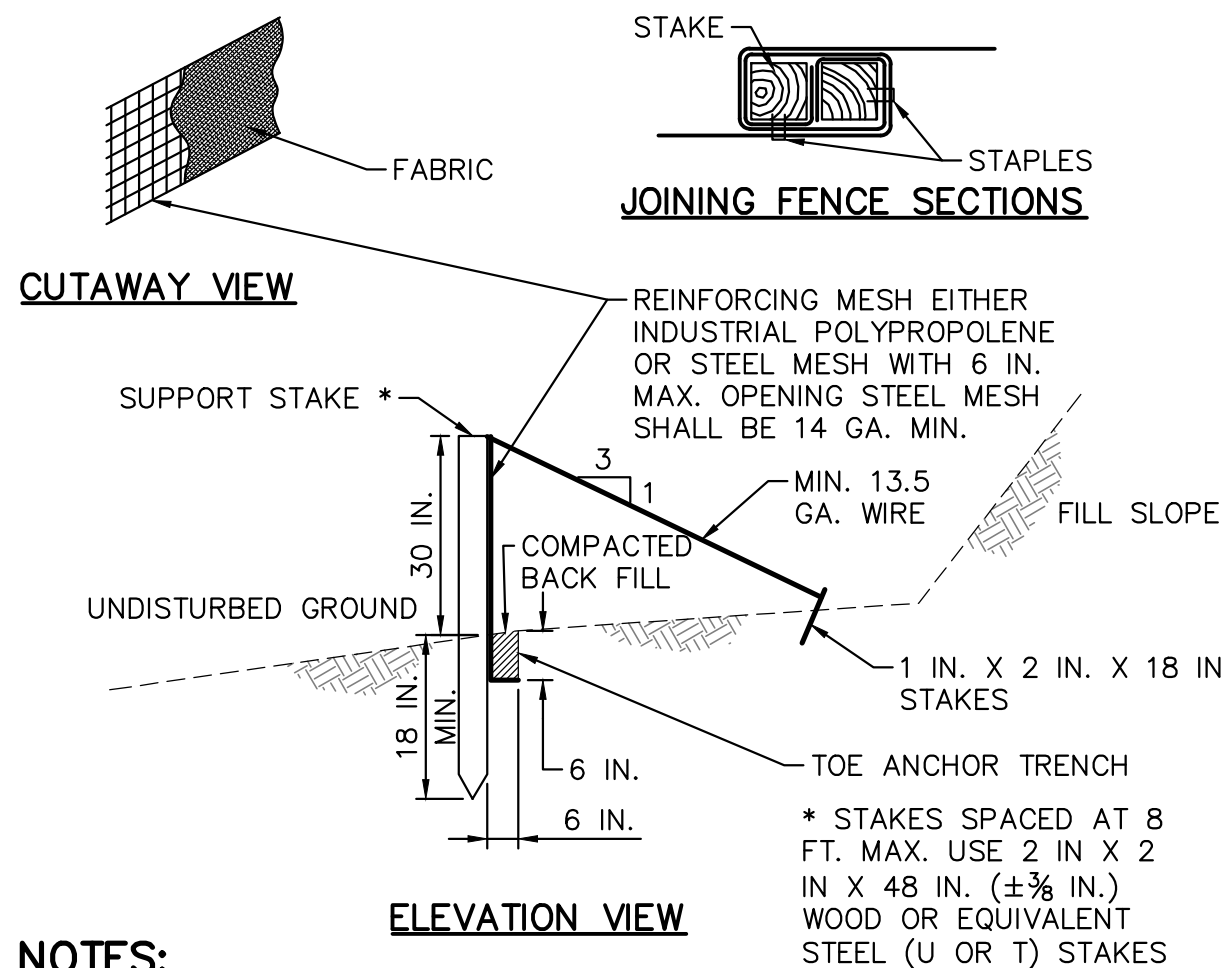
SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH HALF THE ABOVE GROUND HEIGHT OF THE FENCE.

FENCE SHALL BE REMOVED AND PROPERLY DISPOSED OF WHEN TRIBUTARY AREA IS PERMANENTLY STABILIZED.

SILT FENCE IS NOT TO BE USED IN HQ, EV, OR SILTATION IMPAIRED WATERSHEDS.

**STANDARD SILT FENCE (18" HIGH)** 7  
NOT TO SCALE 0.09

**SUPER SILT FENCE** 8  
NOT TO SCALE 0.09



**NOTES:**

FABRIC SHALL HAVE THE MINIMUM PROPERTIES AS SHOWN IN TABLE 4.3 OF THE PA DEP EROSION CONTROL MANUAL.

FABRIC WIDTH SHALL BE 42 IN. MINIMUM. STAKES SHALL BE HARDWOOD OR EQUIVALENT STEEL (U OR T) STAKES. AN 18 IN. SUPPORT STAKE SHALL BE DRIVEN 12 IN. MINIMUM INTO UNDISTURBED GROUND.

SILT FENCE SHALL BE PLACED AT LEVEL EXISTING GRADE. BOTH ENDS OF THE FENCE SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT.

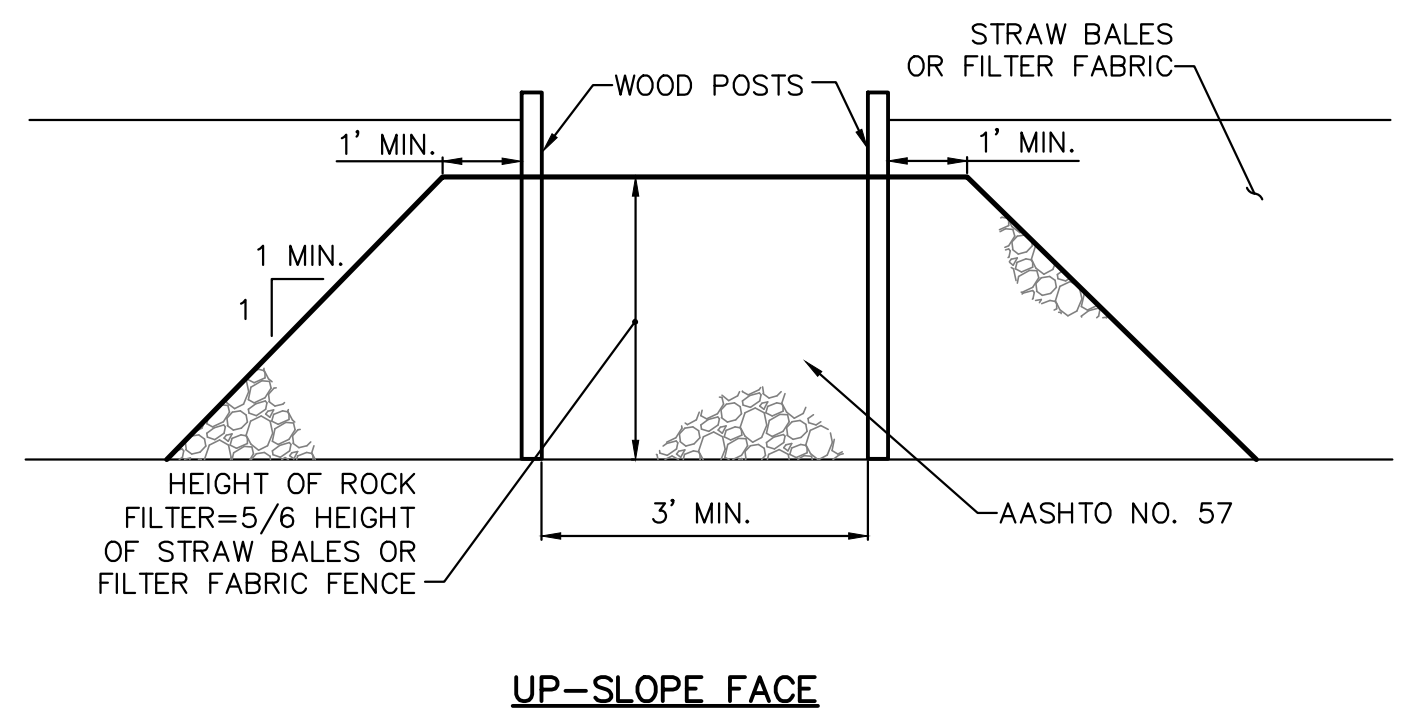
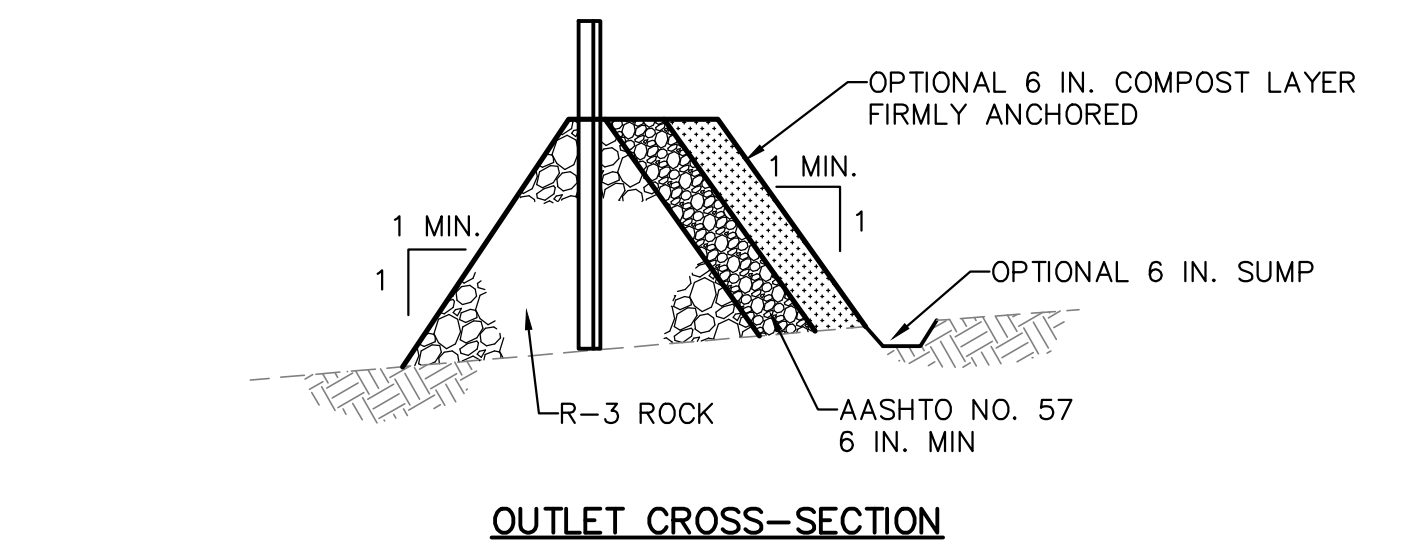
SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH HALF THE ABOVE GROUND HEIGHT OF THE FENCE.

ANY SECTION OF SILT FENCE WHICH HAS BEEN UNDERMINED OR TOPPED SHALL BE IMMEDIATELY REPLACED WITH A ROCK FILTER OUTLET (STANDARD CONSTRUCTION DETAIL # 4-6).

FENCE SHALL BE REMOVED AND PROPERLY DISPOSED OF WHEN TRIBUTARY AREA IS PERMANENTLY STABILIZED.

SILT FENCE IS NOT TO BE USED IN HQ, EV, OR SILTATION IMPAIRED WATERSHEDS.

**REINFORCED SILT FENCE (30" HIGH)** 9  
NOT TO SCALE 0.09

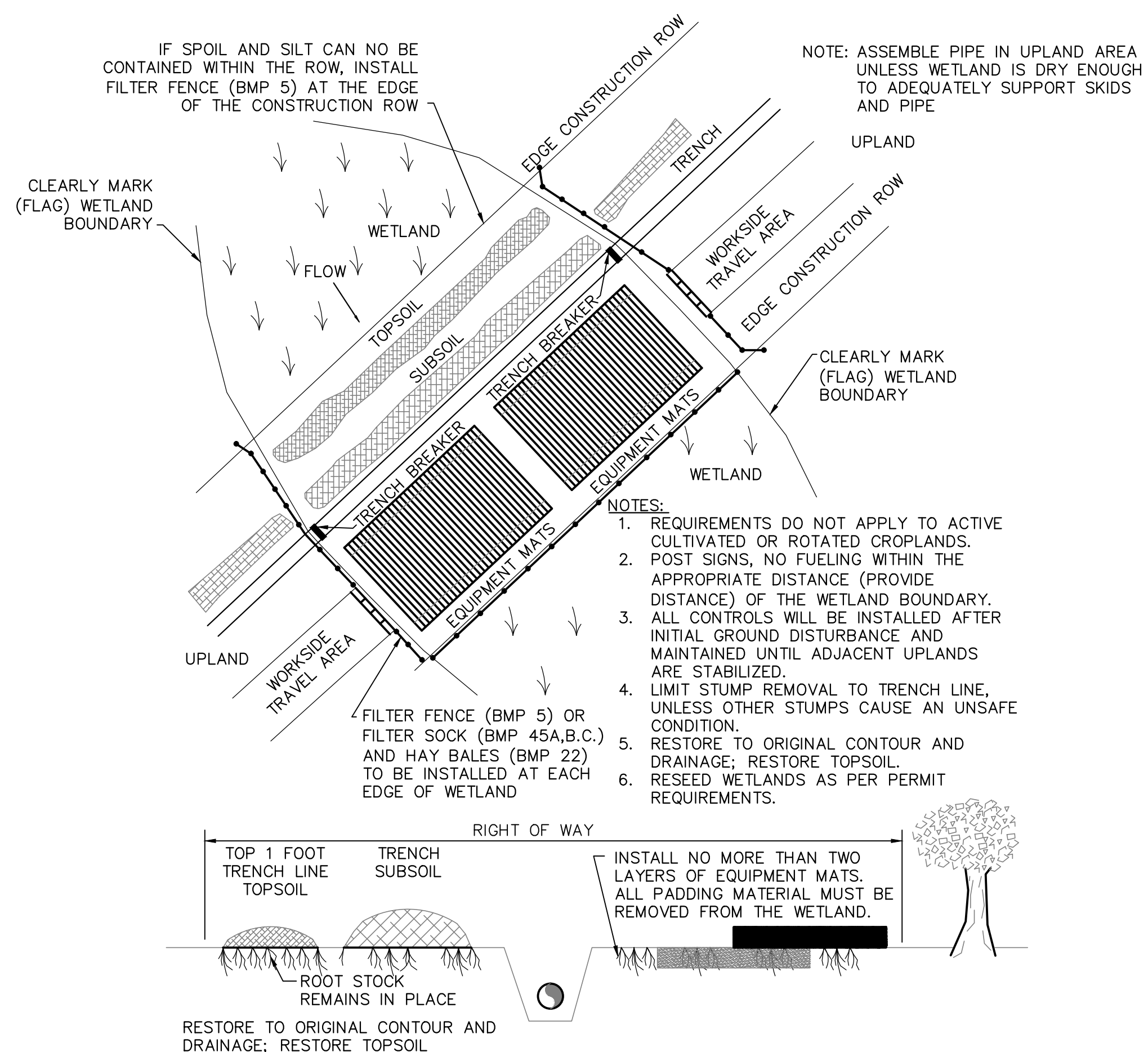


**NOTES:**

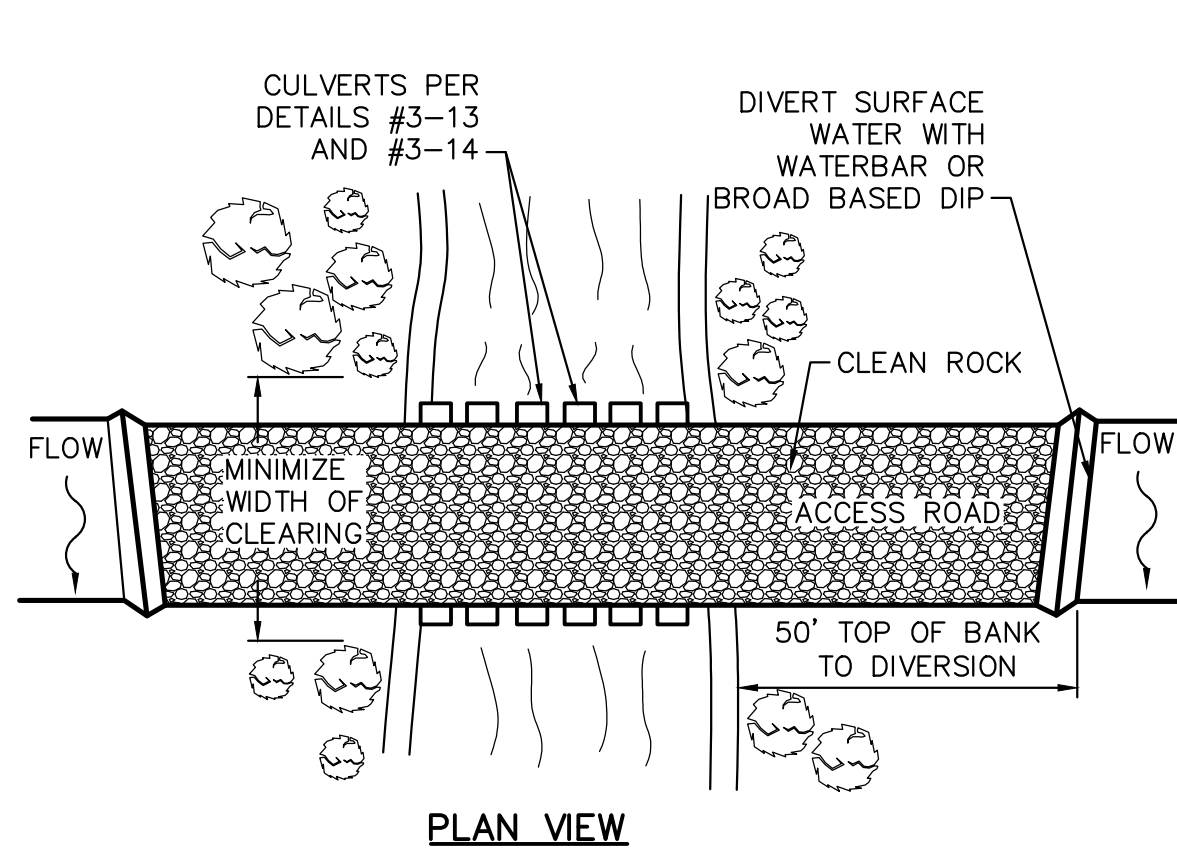
A ROCK FILTER OUTLET SHALL BE INSTALLED WHERE FAILURE OF A SILT FENCE OR STRAW BALE BARRIER HAS OCCURRED DUE TO CONCENTRATED FLOW. ANCHORED COMPOST LAYER SHALL BE USED ON UPSLOPE FACE IN HQ AND EV WATERSHEDS.

SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH 1/3 THE HEIGHT OF THE OUTLET.

**ROCK FILTER OUTLET**  
NOT TO SCALE



- NOTES:**
1. REQUIREMENTS DO NOT APPLY TO ACTIVE CULTIVATED OR ROTATED CROPLANDS.
  2. POST SIGNS, NO FUELING WITHIN THE APPROPRIATE DISTANCE (PROVIDE DISTANCE) OF THE WETLAND BOUNDARY.
  3. ALL CONTROLS WILL BE INSTALLED AFTER INITIAL GROUND DISTURBANCE AND MAINTAINED UNTIL ADJACENT UPLANDS ARE STABILIZED.
  4. LIMIT STUMP REMOVAL TO TRENCH LINE, UNLESS OTHER STUMPS CAUSE AN UNSAFE CONDITION.
  5. RESTORE TO ORIGINAL CONTOUR AND DRAINAGE; RESTORE TOPSOIL.
  6. RESEED WETLANDS AS PER PERMIT REQUIREMENTS.



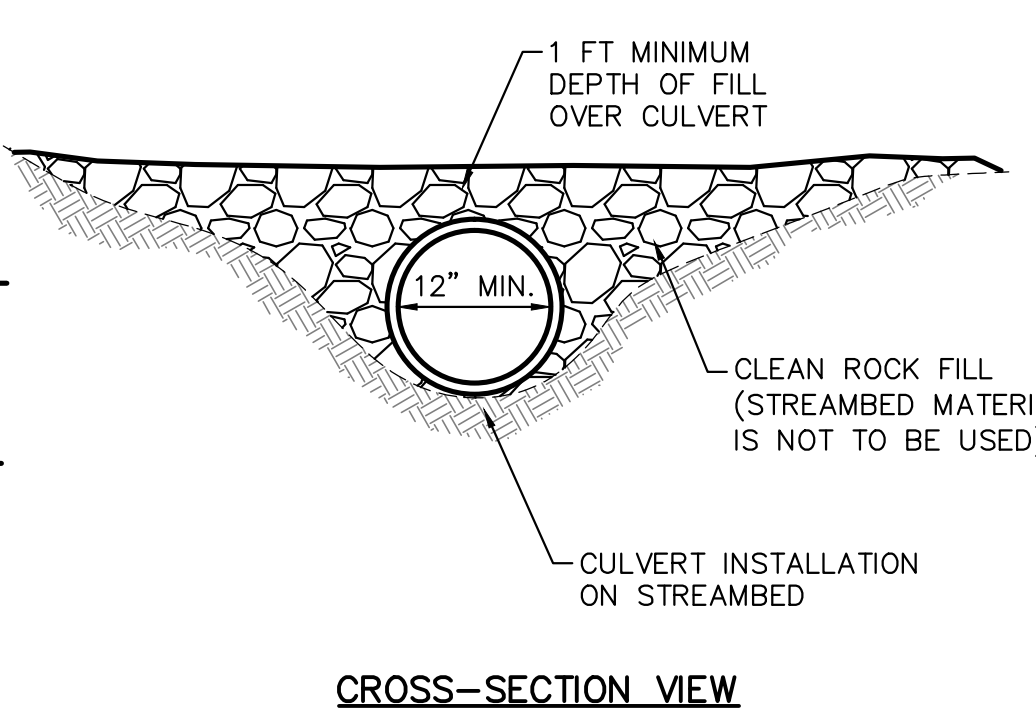
**NOTES:**

WATERBARS AND BROAD-BASED DIPS SHALL DISCHARGE TO SEDIMENT REMOVAL FACILITY.

CLEAN ROCK SHALL CONFORM TO CHAPTER 105 PERMITTING REQUIREMENTS.

FOLLOW PERMIT CONDITIONS REGARDING REMOVAL OF CROSSING

**TEMPORARY STREAM CROSSING - CULVERT** 10  
NOT TO SCALE 0.09



**NOTES:**

PROVIDE 50' STABILIZED ACCESS TO CROSSING ON BOTH SIDES OF STREAM CHANNEL (SEE STANDARD CONSTRUCTION DETAIL #3-12).

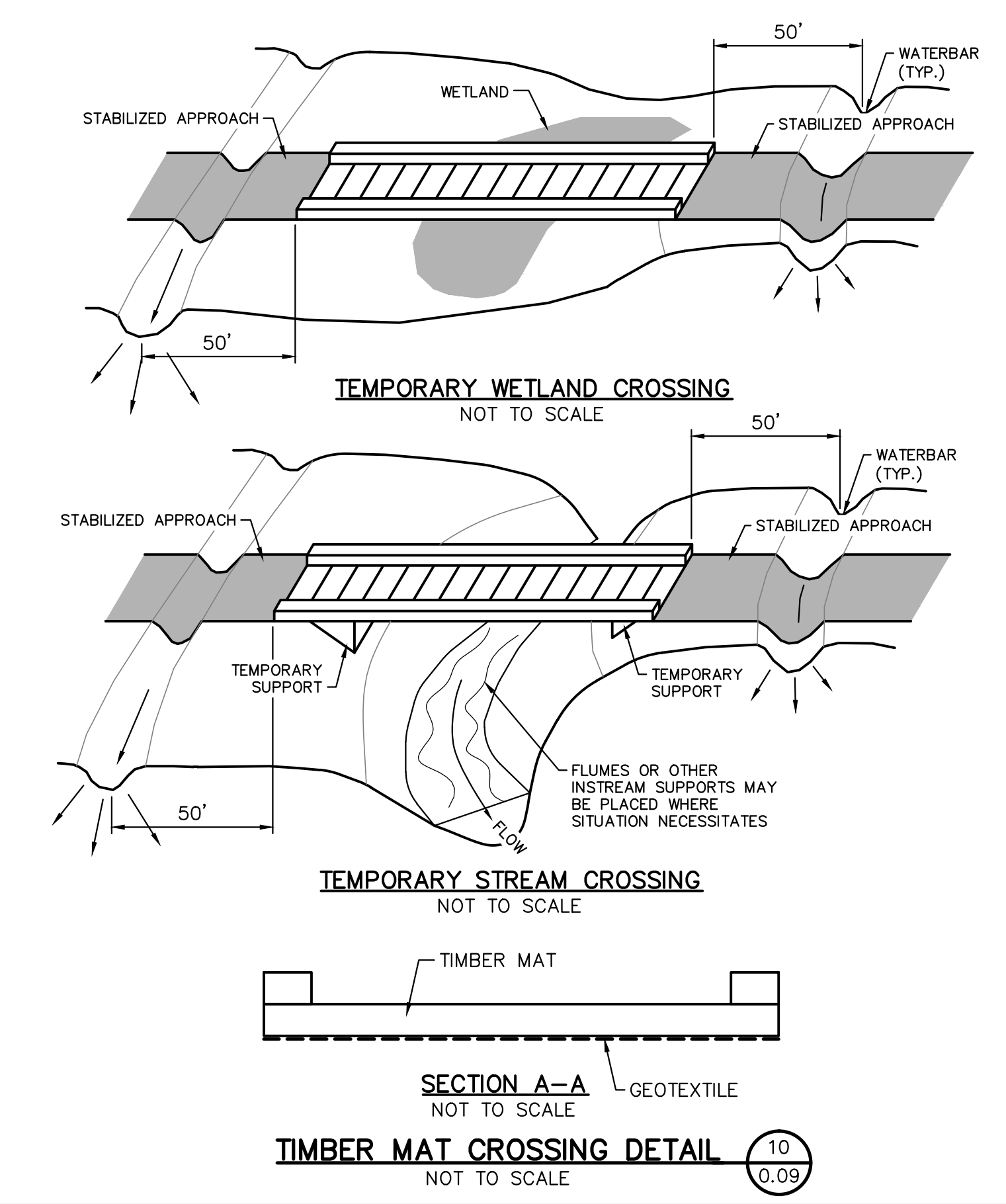
PIPES SHALL EXTEND BEYOND THE TOE OF THE ROADWAY.

RUNOFF FROM THE ROADWAY SHALL BE DIVERTED OFF THE ROADWAY AND INTO A SEDIMENT REMOVAL BMP BEFORE IT REACHES THE ROCK APPROACH TO THE CROSSING.

**MAINTENANCE:**

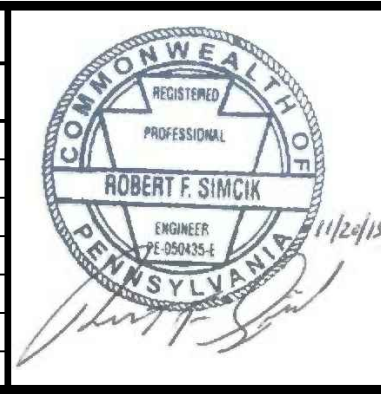
1. TEMPORARY STREAM CROSSINGS SHALL BE INSPECTED ON A DAILY BASIS.
2. DAMAGED CROSSINGS SHALL BE REPAIRED WITHIN 24 HOURS OF THE INSPECTION AND BEFORE ANY SUBSEQUENT USE.
3. SEDIMENT DEPOSITS ON THE CROSSING OR ITS APPROACHES SHALL BE REMOVED WITHIN 24 HOURS OF THE INSPECTION.

AS SOON AS THE TEMPORARY CROSSING IS NO LONGER NEEDED, IT SHALL BE REMOVED. ALL MATERIALS SHALL BE DISPOSED OF PROPERLY AND DISTURBED AREAS STABILIZED.



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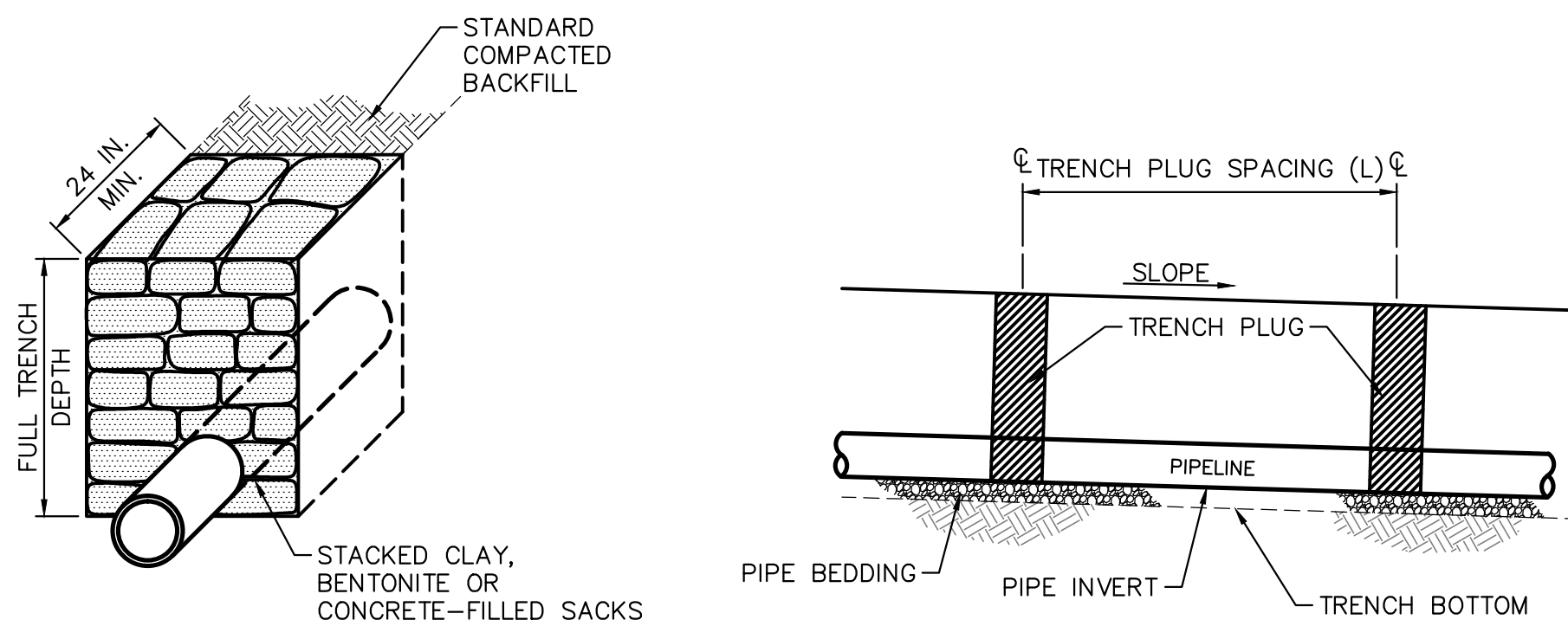


SUNOCO PIPELINE L.P.  
PHILADELPHIA, PENNSYLVANIA  
**PENNSYLVANIA PIPELINE PROJECT**

2-20" PROPOSED WELDED STEEL NATURAL GAS LIQUIDS PIPELINES  
**EROSION & SEDIMENT CONTROL & SITE RESTORATION DETAILS**  
**SHEET 2 OF 3**

DATE:	11/20/15
PROJECT NO.:	1121C05958
DESIGNED BY:	JB
DRAWN BY:	BH
CHECKED BY:	RS
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<b>ES-0.09</b>	





SECTION VIEW

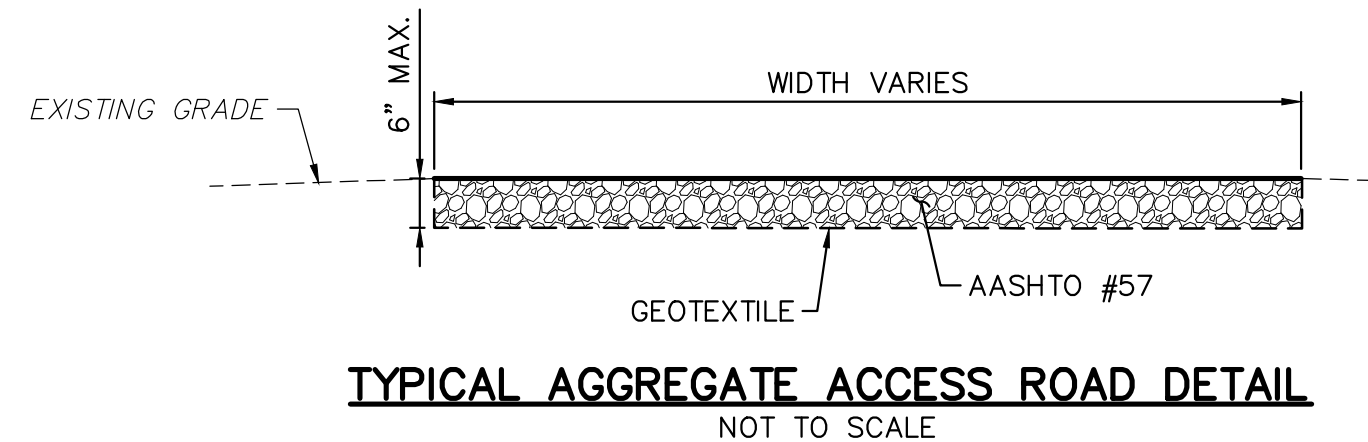
PROFILE VIEW

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

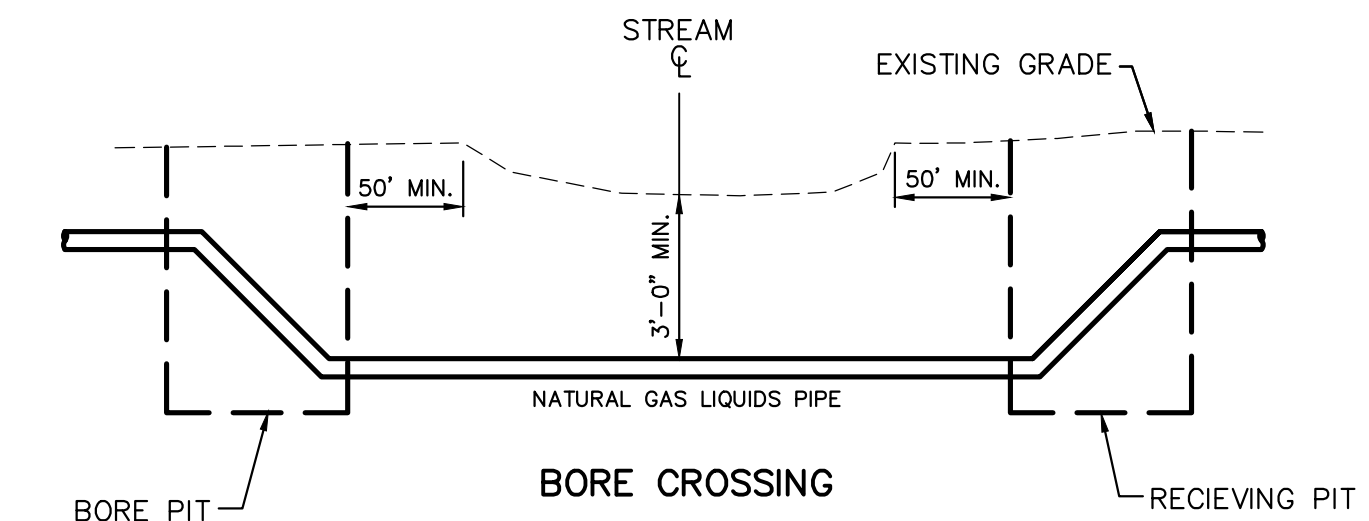
\* TOP SOIL MAY NOT BE USED TO FILL SACKS

**NOTES:**

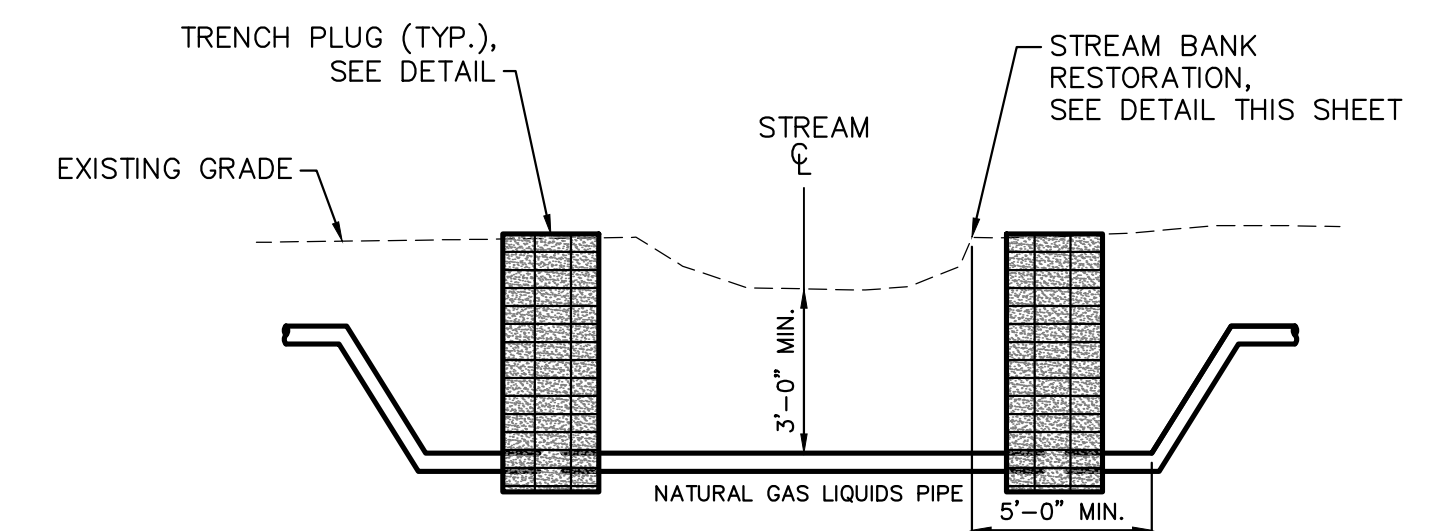
IMPERVIOUS TRENCH PLUGS ARE REQUIRED FOR ALL STREAM, RIVER, WETLAND, OR OTHER WATERBODY CROSSINGS.



TYPICAL AGGREGATE ACCESS ROAD DETAIL  
NOT TO SCALE

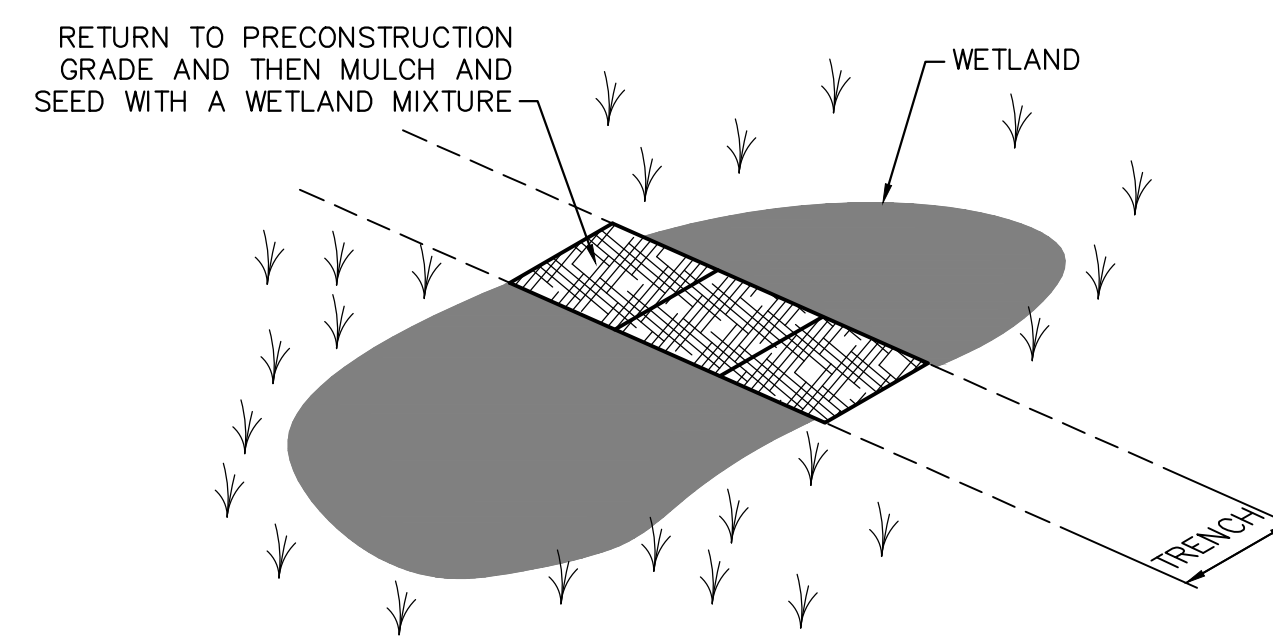


BORE CROSSING



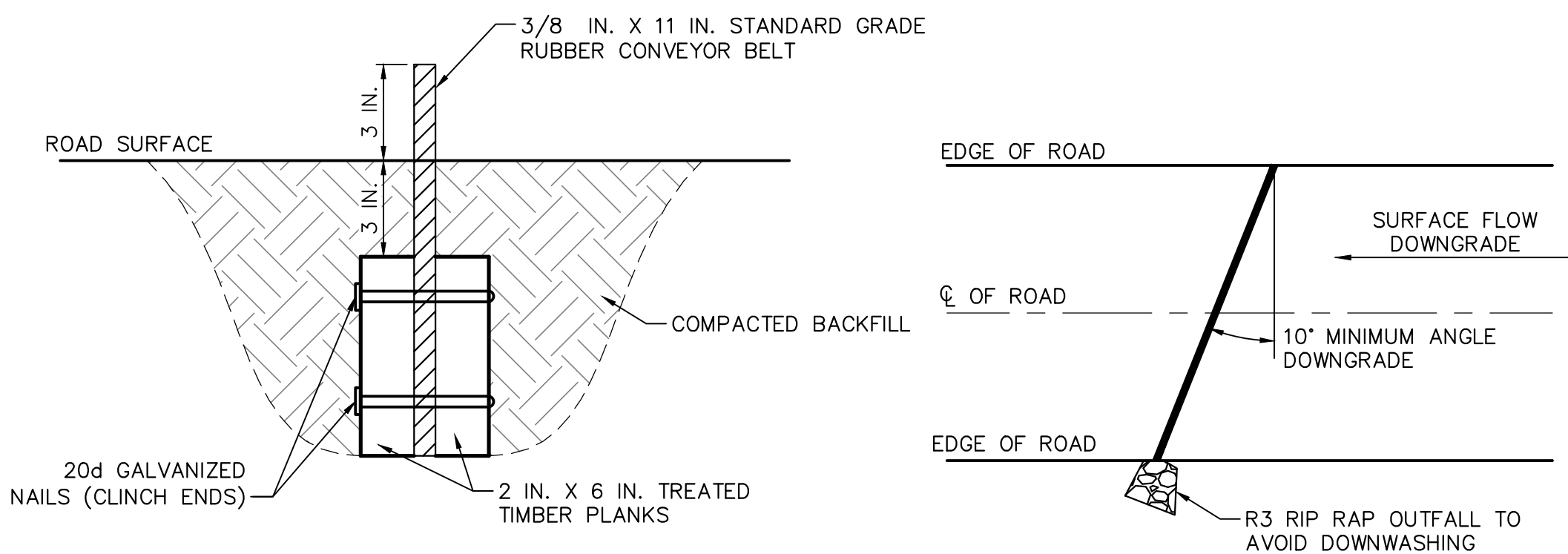
OPEN CUT

TYPICAL STREAM CROSSING  
NOT TO SCALE



TYPICAL WETLAND RESTORATION  
SCALE: NOT TO SCALE

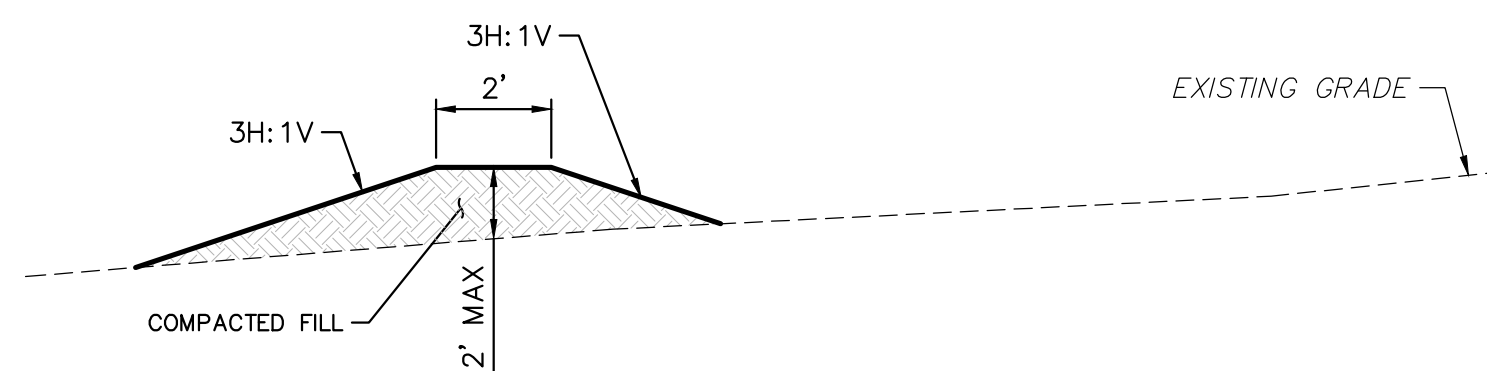
TRENCH PLUG INSTALLATION 11  
NOT TO SCALE 0.10



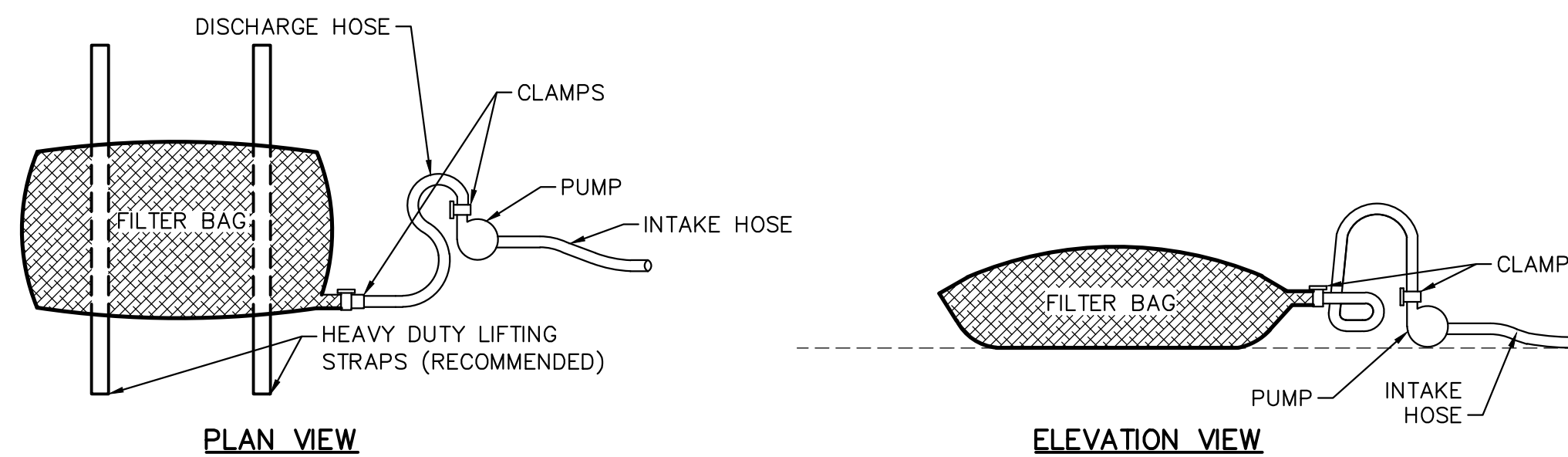
- NOTE:
- DEFLECTOR SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT.
  - ACCUMULATED SEDIMENT SHALL BE REMOVED FROM DEFLECTOR WITHIN 24 HOURS OF INSPECTION.
  - BELT SHALL BE REPLACED WHEN WORN AND NO LONGER EFFECTIVE.
  - MAXIMUM SPACING OF DEFLECTORS SHALL BE AS SHOWN IN TABLE.

ROAD GRADE (PERCENT)	SPACING BETWEEN DIPS, CULVERTS, OR DEFLECTORS (FEET)
<2	300
3	235
4	200
5	180
6	165
7	155
8	150
9	145
10	140

WATER DEFLECTOR 12  
NOT TO SCALE 0.10



INFILTRATION BERM DETAIL 13  
NOT TO SCALE 0.10



**NOTES:**

LOW VOLUME FILTER BAGS SHALL BE MADE FROM NON-WOVEN GEOTEXTILE MATERIAL SEWN WITH HIGH STRENGTH, DOUBLE STITCHED "J" TYPE SEAMS. THEY SHALL BE CAPABLE OF TRAPPING PARTICLES LARGER THAN 150 MICRONS. HIGH VOLUME FILTER BAGS SHALL 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-4632	205 LB
PUNCTURE	ASTM D-4833	110 LB
MULLEN BURST	ASTM D-3786	350 PSI
UV RESISTANCE	ASTM D-4355	70%
AOS % RETAINED	ASTM D-3751	80 SIEVE

A SUITABLE MEANS OF ACCESSING THE BAG WITH MACHINERY REQUIRED FOR DISPOSAL PURPOSES SHALL 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 SHALL 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.

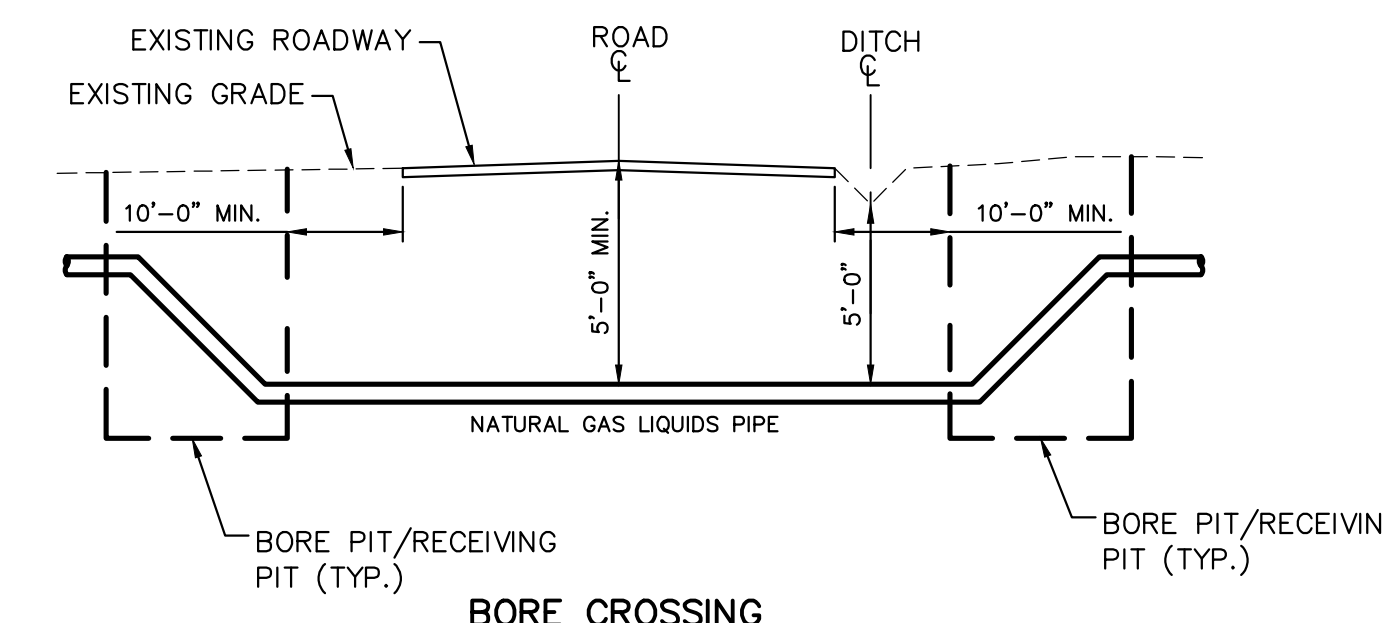
NO DOWNSLOPE SEDIMENT BARRIER IS REQUIRED FOR MOST INSTALLATIONS. COMPOST BERM OR COMPOST FILTER SOCK SHALL BE INSTALLED BELOW BAG LOCATED IN HQ OR EV WATERSHEDS, WITHIN 50 FEET OF ANY RECEIVING SURFACE WATER OR WHERE GRASSY AREA IS NOT AVAILABLE.

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.

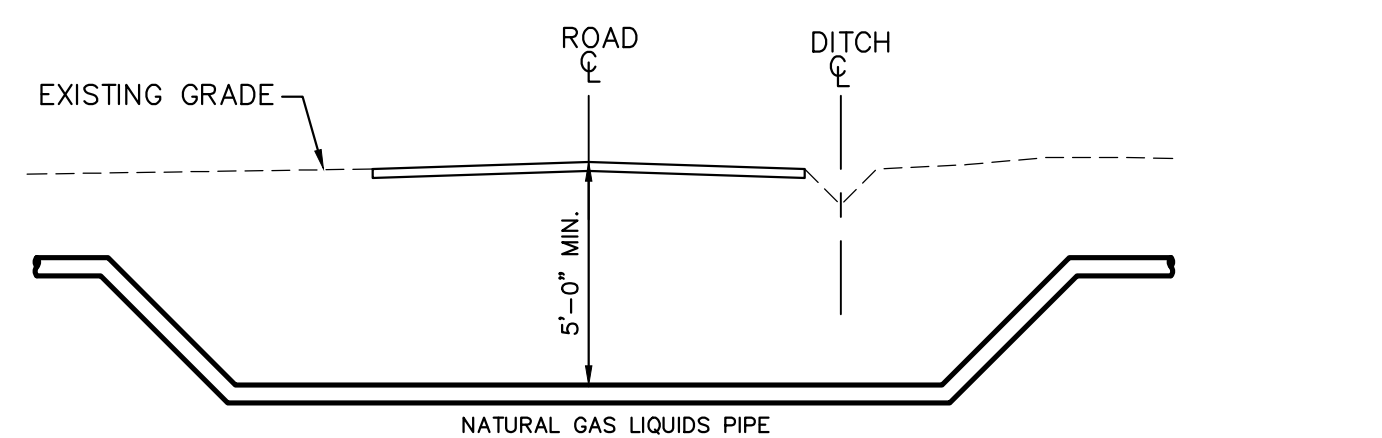
THE PUMPING RATE SHALL BE NO GREATER THAN 750 GPM OR 1/2 THE MAXIMUM SPECIFIED BY THE MANUFACTURER, WHICHEVER IS LESS. PUMP INTAKES SHALL BE FLOATING AND SCREENED.

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

PUMPED WATER FILTER BAG  
NOT TO SCALE

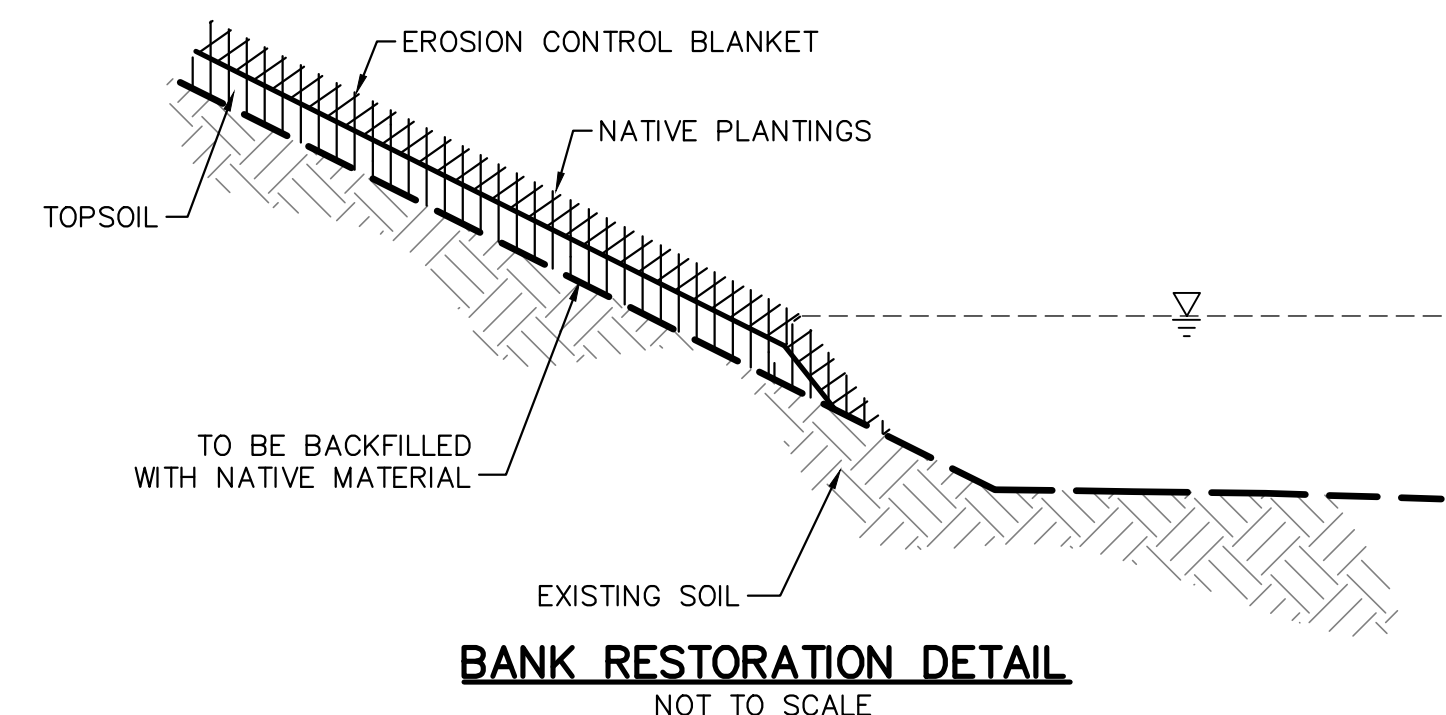


BORE CROSSING



OPEN CUT

TYPICAL ROADWAY CROSSING  
NOT TO SCALE

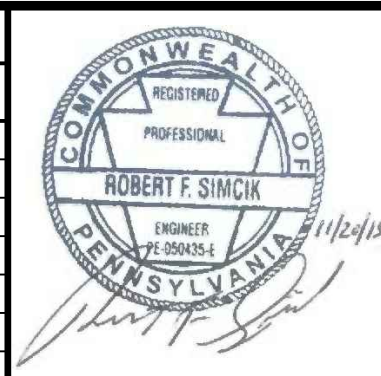


BANK RESTORATION DETAIL  
NOT TO SCALE



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PHILADELPHIA, PENNSYLVANIA  
PENNSYLVANIA PIPELINE PROJECT

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EROSION & SEDIMENT CONTROL &  
SITE RESTORATION DETAILS  
SHEET 3 OF 3

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