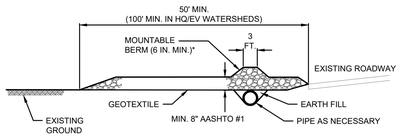
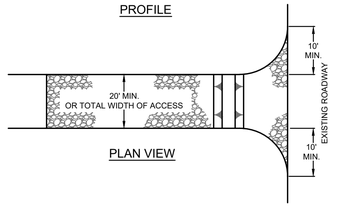


PROFILE



PLAN VIEW

* 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 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 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. WASHING THE ROADWAY OR SWEEPING THE DEPOSITS INTO ROADWAY DITCHES, SEWERS, CULVERTS, OR OTHER DRAINAGE COURSES IS NOT ACCEPTABLE.

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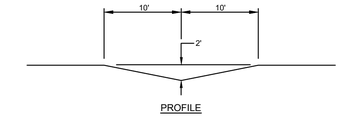
REV	DATE	REVISION DESCRIPTION	BY	CKD	APP

PennEast PIPELINE

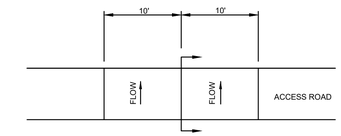
PENNEAST PIPELINE PROJECT

ROCK CONSTRUCTION ENTRANCE
STANDARD CONSTRUCTION DETAIL #3-1

FIGURE 1



PROFILE



PLAN

NOTES:

BROAD-BASED DIPS SHALL BE CONSTRUCTED TO THE DIMENSIONS SHOWN AND AT THE LOCATIONS SHOWN ON 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 BY THE END OF THE WORKDAY.

MAXIMUM SPACING OF BROAD-BASED DIPS SHALL BE AS SHOWN ON FIGURE 2B.

DISCHARGES SHOULD BE TO THE DOWN SLOPE SIDE OF ACCESS ROADS WITH A MAXIMUM GRADIENT OF 3% IN THE DIP.

ACCESS ROADS WITH GRADES STEEPER THAN 5% SHOULD USE FIGURE 2B.

THIS DEVICE BY ITSELF IS NOT AN ABACT FOR SPECIAL PROTECTION WATERSHEDS.

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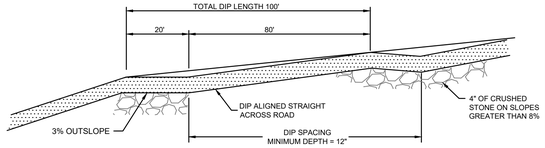
REV	DATE	REVISION DESCRIPTION	BY	CKD	APP

PennEast PIPELINE

PENNEAST PIPELINE PROJECT

BROAD-BASED DIP FOR LOW GRADIENT (≤5%) ROADWAYS
STANDARD CONSTRUCTION DETAIL #3-6

FIGURE 2A



NOTES:

BROAD-BASED DIPS SHALL BE CONSTRUCTED TO THE DIMENSIONS SHOWN AND AT THE LOCATIONS SHOWN ON 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 BY THE END OF THE WORKDAY.

MAXIMUM SPACING OF BROAD-BASED DIPS SHALL BE AS SHOWN IN THE TABLE BELOW.

DISCHARGES SHOULD BE TO THE DOWNSLOPE SIDE OF THE ACCESS ROADS WITH A MAXIMUM GRADIENT OF 3% IN THE DIP.

THIS DEVICE BY ITSELF IS NOT AN ABACT FOR SPECIAL PROTECTION WATERSHEDS.

MAXIMUM SPACING OF BROAD-BASED DIPS

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

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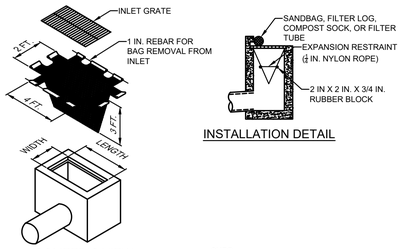
REV	DATE	REVISION DESCRIPTION	BY	CKD	APP

PennEast PIPELINE

PENNEAST PIPELINE PROJECT

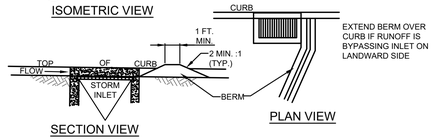
BROAD-BASED DIP FOR HIGH GRADIENT (5%-10% MAXIMUM) ROADWAYS
STANDARD CONSTRUCTION DETAIL #3-7

FIGURE 2B



ISOMETRIC VIEW

INSTALLATION DETAIL



SECTION VIEW

PLAN VIEW

NOTES:

MAXIMUM DRAINAGE AREA = 1/2 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 SHALL BE MAINTAINED UNTIL ROADWAY IS STONED. ROAD SUBBASE BERM SHALL BE MAINTAINED UNTIL ROADWAY IS PAVED. SIX INCH MINIMUM HEIGHT ASPHALT BERM SHALL BE MAINTAINED UNTIL ROADWAY SURFACE RECEIVES FINAL COAT.

AT A MINIMUM, THE 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 ALL PARTICLES NOT PASSING A NO. 40 SIEVE.

INLET FILTER BAGS SHALL BE INSPECTED ON A WEEKLY BASIS AND AFTER EACH RUNOFF EVENT. BAGS SHALL BE EMPTIED AND RINSED OR REPLACED WHEN HALF FULL OR WHEN FLOW CAPACITY HAS BEEN REDUCED SO AS TO CAUSE FLOODING OR BYPASSING OF THE INLET. DAMAGED OR CLOGGED BAGS SHALL BE REPLACED. A SUPPLY SHALL BE MAINTAINED ON SITE FOR REPLACEMENT 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.

Know what's below. Call before you dig.

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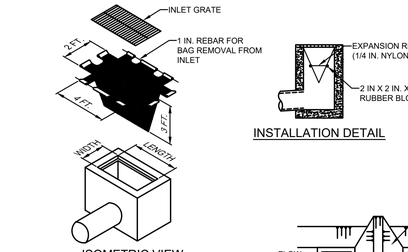
PennEast PIPELINE

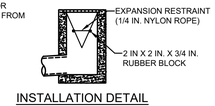
PENNEAST PIPELINE PROJECT

FILTER BAG INLET PROTECTION
TYPE C INLET
STANDARD CONSTRUCTION DETAIL
#4-15

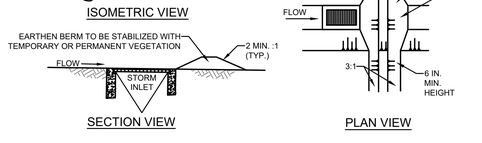
FIGURE 3A



ISOMETRIC VIEW



INSTALLATION DETAIL



SECTION VIEW

PLAN VIEW

NOTES:

MAXIMUM DRAINAGE AREA = 1/2 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 ON ROADWAY SHALL BE MAINTAINED UNTIL ROADWAY IS PAVED. EARTHEN BERM IN CHANNEL SHALL BE MAINTAINED UNTIL PERMANENT STABILIZATION IS COMPLETED OR REMAIN PERMANENTLY.

AT A MINIMUM, THE 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 ALL PARTICLES NOT PASSING A NO. 40 SIEVE.

INLET FILTER BAGS SHALL BE INSPECTED ON A WEEKLY BASIS AND AFTER EACH RUNOFF EVENT. BAGS SHALL BE EMPTIED AND RINSED OR REPLACED WHEN HALF FULL OR WHEN FLOW CAPACITY HAS BEEN REDUCED SO AS TO CAUSE FLOODING OR BYPASSING OF THE INLET. DAMAGED OR CLOGGED BAGS SHALL BE REPLACED. A SUPPLY SHALL BE MAINTAINED ON SITE FOR REPLACEMENT OF BAGS. ALL NEEDED REPAIRS SHALL BE INITIATED IMMEDIATELY AFTER THE INSPECTION. DISPOSE 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.

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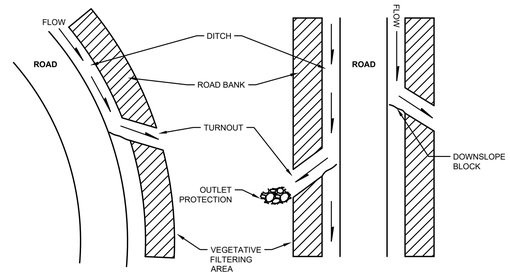
PennEast PIPELINE

PENNEAST PIPELINE PROJECT

FILTER BAG INLET PROTECTION
TYPE M INLET
STANDARD CONSTRUCTION DETAIL
#4-16

FIGURE 3B



TYPICAL TURNOUT DETAIL

FIGURE 3.3 OF THE PA DEP EROSION CONTROL MANUAL

NOTES:

TURNOUTS SHOULD BE LOCATED SO AS TO TAKE ADVANTAGE OF NATURAL DRAINAGE COURSES OR BUFFER AREAS WHEREVER POSSIBLE.

AN EXCAVATED SUMP AT THE END OF THE TURNOUT CAN BE EFFECTIVELY USED TO POND AND SETTLE OUT SEDIMENT PRIOR TO DISCHARGING TO A VEGETATED BUFFER.

WHERE A SUITABLE VEGETATIVE FILTER STRIP IS NOT AVAILABLE, A COMPOST FILTER SOCK, ROCK FILTER OR OTHER SEDIMENT REMOVAL BMP SHOULD BE INSTALLED AT THE OUTLET OF THE TURNOUT.

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REV	DATE	REVISION DESCRIPTION	BY	CKD	APP

PennEast PIPELINE

PENNEAST PIPELINE PROJECT

TYPICAL TURNOUT DETAIL

FIGURE 4

COMMONWEALTH OF
REGISTERED
PROFESSIONAL
MICHAEL DENICHILO
ENGINEER
PE068513
10/25/2019

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CLIENT APPROVAL

DATE

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A	ISSUED FOR PADEP	10/2018	AJD (MM)	MWF (MM)	MJD(MM)	AJD (MM)	10/15/2018
B	REVISED FOR PADEP	10/2019	AJD (MM)	MWF (MM)	MJD (MM)	CHECKED BY	DATE
						MWF (MM)	10/15/2018
						ENG. APPROVAL	DATE
						MJD (MM)	10/15/2018
						P.M. APPROVAL	DATE

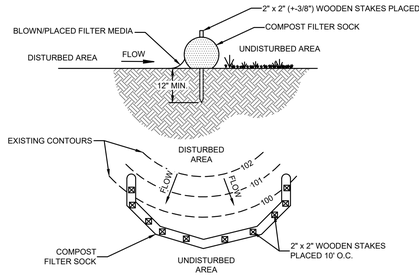
PREPARED FOR

PennEast PIPELINE

PENNEAST PIPELINE PROJECT

SOIL EROSION AND SEDIMENT CONTROL PLAN
TYPICAL E&S DETAILS

SCALE	DRAWING NO.	REVISION
AS SHOWN	000-03-09-001	B



SOCK FABRIC SHALL MEET MINIMUM SPECIFICATIONS OF TABLE 4.1 OF THE PA DEP EROSION CONTROL MANUAL. COMPOST SHALL MEET THE FOLLOWING 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" SCREEN
SOLUBLE SALT CONCENTRATION	5.0 dS/m MAXIMUM

NOTES:

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 IN FIGURE 4B. STAKES MAY BE INSTALLED IMMEDIATELY DOWNSLOPE OF THE SOCK IF SO SPECIFIED BY THE MANUFACTURER.

TRAFFIC SHALL NOT BE PERMITTED TO CROSS FILTER SOCKS.

ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES 1/2 THE ABOVE GROUND 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 SOCK 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 SOIL SUPPLEMENT.

THIS BMP IS AN APPROVED ABACT (ANTIDEGRADATION BEST AVAILABLE COMBINATION OF TECHNOLOGIES) FOR USE IN HQ/EV WATERSHEDS.

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REV	DATE	REVISION DESCRIPTION	BY	CKD	APP

PennEast PIPELINE

PENNEAST PIPELINE PROJECT

COMPOST FILTER SOCK
STANDARD CONSTRUCTION DETAIL #4-1

FIGURE 5A

TABLE 4.1
Compost Sock Fabric Minimum Specifications

Material Type	3 mil HDPE	5 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" 32"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"
Mesh Opening	3/8"	3/8"	3/8"	3/8"	1/8"
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	9 months	6 months	1 year	2 years
Two-ply systems					
Inner Containment Netting	**HDPE biaxial net**				
	Continuously wound				
	Fusion-welded junctures				
	3/4" X 3/4" Max. aperture size				
Outer Filtration Mesh	**Composite Polypropylene Fabric (Woven layer and non-woven fleece mechanically fused via needle punch)**				
	3/16" Max. aperture size				
Sock fabrics composed of burlap may be used on projects lasting 6 months or less.					

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PennEast PIPELINE

PENNEAST PIPELINE PROJECT

COMPOST SOCK FABRIC
MINIMUM SPECIFICATIONS

FIGURE 5B

Maximum Slope Length for Compost Filter Sock

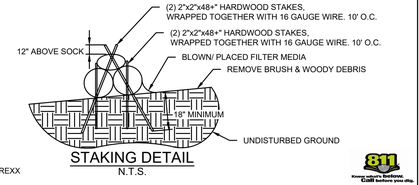
	Maximum Slope Length (ft) Above Sock			
	Filter Sock Diameter (inches)			
Slope - Percent	12	18	24	32
5	250	350	500	650
10	150	250	300	400
15	100	200	250	350
20	70	150	200	250
25	50	100	150	180
30	45	70	100	130
35	40	60	90	100
40	35	45	80	90
45	30	40	60	80
50	20	30	40	60

ADAPTED FROM PA DEP GRAPH (FIGURE 4.2)

SLOPES OVER 50% NEED A 32-INCH DURASOXX INDEPENDENT OF UPSLOPE LENGTH.

THREE COMPOST FILTER SOCKS MAY BE STACKED IN PYRAMIDAL FORM AND USED IN PLACE OF 24-INCH OR 32-INCH COMPOST FILTER SOCK WHERE NECESSARY. THE FOLLOWING EQUIVALENCY TABLE SHALL BE USED IN SUCH INSTANCES:

SINGLE COMPOST FILTER SOCK DIAMETER	ACCEPTABLE COMPOST FILTER SOCK PYRAMIDAL CONFIGURATION EQUIVALENT
24-INCH	12" 18" 18"
32-INCH	18" 18" 18"



STAKING DETAIL
N.T.S.

ADAPTED FROM FILTREXX

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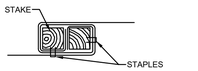
PennEast PIPELINE

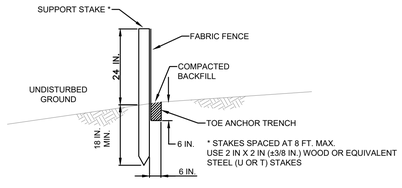
PENNEAST PIPELINE PROJECT

MAXIMUM SLOPE LENGTH
FOR COMPOST FILTER SOCK

FIGURE 5C



JOINING FENCE SECTIONS



SECTION VIEW

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.

FENCE SHALL BE INSTALLED MANUALLY UNDER THE SUPERVISION OF A RECOGNIZED QUALIFIED BOG TURTLE SURVEYOR.

FENCE SHALL BE REMOVED BY HAND IMMEDIATELY UPON COMPLETION OF ALL CONSTRUCTION ACTIVITIES.

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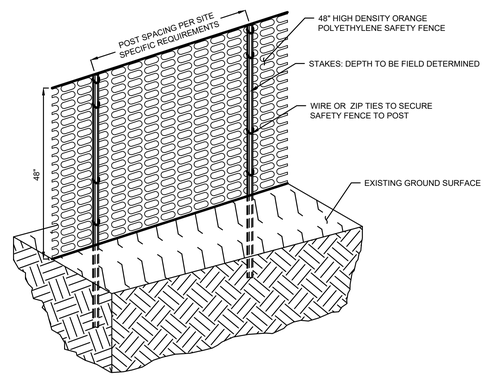
REV	DATE	REVISION DESCRIPTION	BY	CKD	APP

PennEast PIPELINE

PENNEAST PIPELINE PROJECT

STANDARD SILT FENCE (24" HIGH)
HABITAT EXCLUSION BARRIER

FIGURE 5D



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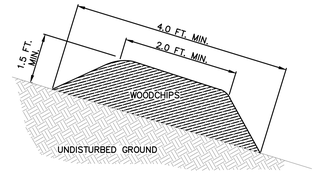
REV	DATE	REVISION DESCRIPTION	BY	CKD	APP

PennEast PIPELINE

PENNEAST PIPELINE PROJECT

SAFETY FENCE

FIGURE 5E



SECTION VIEW

NOTES:

PRIOR TO PLACEMENT OF THE BERM, OBSTRUCTIONS SUCH AS TREE LIMBS, LARGE ROCKS, ETC. SHALL BE REMOVED.

WOOD CHIP FILTER BERM SHALL BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE BERM SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN BERM ALIGNMENT. WOOD CHIP BERMS SHALL NOT BE LOCATED IN AREAS OF CONCENTRATED FLOW OR USED TO CONSTRUCT SEDIMENT TRAPS OR OTHER IMPOUNDMENTS.

A 6 IN. THICK LAYER OF COMPOST SHALL BE ADDED TO THE UPSLOPE SIDE OF ANY WOOD CHIP FILTER BERM LOCATED IN AN HQ WATERSHED. THIS BMP SHALL NOT BE ROUTINELY USED IN EV WATERSHEDS.

BERMS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH HALF THE HEIGHT OF THE BERM. DAMAGED OR DETERIORATED PORTIONS OF THE BERM SHALL BE REPLACED IMMEDIATELY UPON INSPECTION.

BERMS MAY BE LEVELED WHEN THE TRIBUTARY AREA HAS BEEN PERMANENTLY STABILIZED OR LEFT IN PLACE.

WOOD CHIP FILTER BERM MAY BE USED IN PLACE OF 12" COMPOST FILTER SOCK ONLY. WOOD CHIP FILTER BERM MAY NOT BE USED WITHIN 50' OF A RECEIVING WATER.

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REV	DATE	REVISION DESCRIPTION	BY	CKD	APP

PennEast PIPELINE

PENNEAST PIPELINE PROJECT

WOOD CHIP FILTER BERM
STANDARD CONSTRUCTION DETAIL #4-12

FIGURE 6

COMMONWEALTH OF
REGISTERED
PROFESSIONAL
MICHAEL DENICHILO
ENGINEER
PE088513
10/25/2019

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CLIENT APPROVAL

DATE

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A	ISSUED FOR PADEP	10/2018	AJD (MM)	MWF (MM)	MJD(MM)	AJD (MM)	10/15/2018
B	REVISED FOR PADEP	10/2019	AJD (MM)	MWF (MM)	MJD (MM)	CHECKED BY	DATE
						MWF (MM)	10/15/2018
						ENG. APPROVAL	DATE
						MJD (MM)	10/15/2018
						P.M. APPROVAL	DATE

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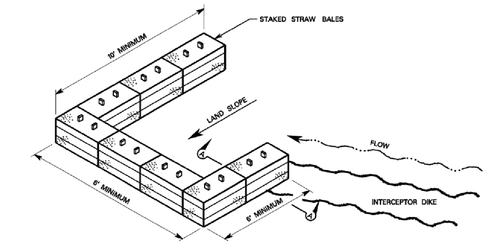
PennEast PIPELINE

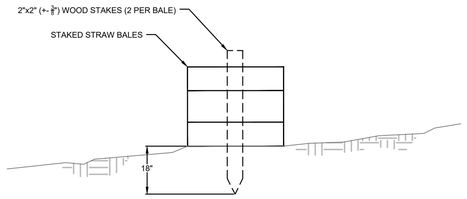
PENNEAST PIPELINE PROJECT

SOIL EROSION AND SEDIMENT CONTROL PLAN
TYPICAL E&S DETAILS

SCALE	DRAWING NO.	REVISION
AS SHOWN	000-03-09-002	B



PLAN VIEW



INSTALLATION REQUIRMENTS:

WHEN USING STRAW BALES PLACE THEM WITH THEIR ENDS TIGHTLY ABUTTING.

PLACE WITH BALING STRING/WIRE ON THE SIDE (NOT IN CONTACT WITH THE GROUND).

STANDARD 12" COMPOST FILTER SOCK MAY BE SUBSTITUTED FOR STRAW BALES.

MAINTENANCE REQUIREMENTS:

REMOVE ACCUMULATED SEDIMENTS TO AN UPLAND AREA WHEN SEDIMENT REACHES 1/3 THE HEIGHT OF STRAW BALES OR 1/2 THE HEIGHT OF 12" COMPOST FILTER SOCK.

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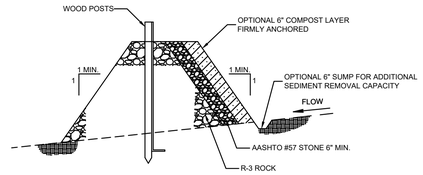
PennEast PIPELINE

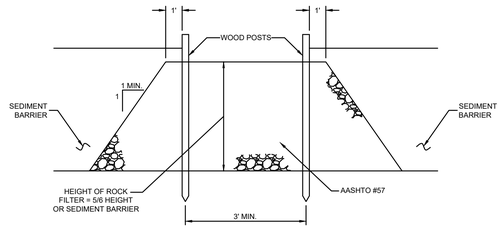
PENNEAST PIPELINE PROJECT

J-HOOK SEDIMENT BARRIER

FIGURE 7



OUTLET CROSS-SECTION



UP-SLOPE FACE

NOTES:

A ROCK FILTER OUTLET SHALL BE INSTALLED WHERE FAILURE OF A SEDIMENT BARRIER HAS OCCURRED DUE TO CONCENTRATED FLOW. ANCHORED COMPOST LAYER SHALL BE USED ON UP SLOPE FACE IN "HQ AND EV WATERSHEDS."

INSPECT WEEKLY AND AFTER EACH RUNOFF EVENT. SEDIMENT MUST BE REMOVED WHEN ACCUMULATIONS REACH 1/3 THE HEIGHT OF THE OUTLET.

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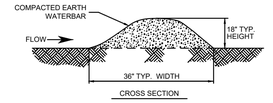
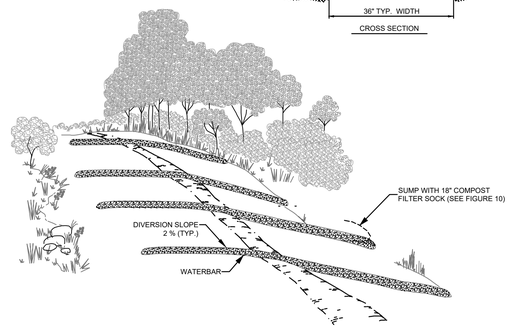
PENNEAST PIPELINE PROJECT

ROCK FILTER OUTLET
STANDARD CONSTRUCTION DETAIL #4-6

FIGURE 8





INSTALLATION REQUIREMENTS:

- PERMANENT WATERBARS ARE REQUIRED AT ALL STREAM, RIVER AND OTHER WATERBODY CROSSINGS AS WELL AS UPSLOPE FROM ROADWAY AND RAILROAD CUT SLOPES.
- INSTALL PERMANENT WATERBARS IN ALL AREAS EXCEPT RESIDENTIAL OR AGRICULTURAL AS NECESSARY TO AVOID EXCESSIVE EROSION

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

- INSTALL A PROTECTIVE LINER, WHEREVER ERODIBLE SOILS ARE PRESENT, OR WHERE THERE IS NOT SUFFICIENT VEGETATIVE GROWTH.
- INSTALL WITH A 2% (TYP.) OUTFALL ANGLE.
- POSITION OUTFALL TO PREVENT SEDIMENT DISCHARGE INTO WETLANDS, WATERBODIES, OR OTHER SENSITIVE RESOURCES.
- ON SLOPES GREATER THAN 30 PERCENT, INSTALL WATERBARS WITH EROSION CONTROL BLANKET ON THE SWALE SIDE.
- FILTER RUN-OFF WATER BY CONSTRUCTING THE SUMP WITH 18" COMPOST FILTER SOCK AT THE OUTLET END OF ALL WATERBARS.
- WATERBARS SHOULD BE FIELD ADJUSTED TO MAXIMIZE RUNOFF DISCHARGES TO NATURAL DRAINAGE COURSES.

MAINTENANCE REQUIREMENTS:

- INSPECT WATERBARS DURING AND FOLLOWING CONSTRUCTION AND MAKE REPAIRS AS NEEDED.
- KEEP THE CHANNEL FREE OF DEBRIS AND OBSTRUCTIONS.
- SEED AND MULCH PERMANENT WATERBARS FOLLOWING CONSTRUCTION.

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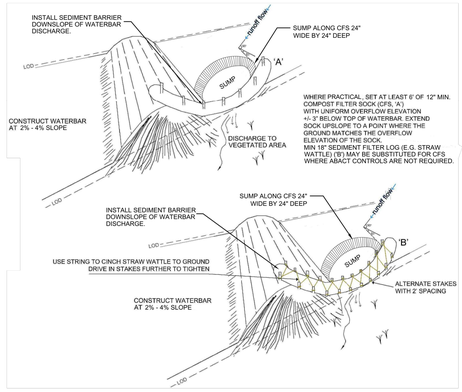
PENNEAST PIPELINE PROJECT

WATERBAR
INSTALLATION AND MAINTENANCE

FIGURE 9

WATERBAR SUMP NOTES
N.T.S



A SUMP SHALL BE INSTALLED AT THE DISCHARGE END OF ALL WATERBARS.

6 LINEAR FEET OF 12 INCH COMPOST FILTER SOCK (CFS) SHALL BE INSTALLED WITH ONE END RESTING ON THE WATERBAR. ALLOW 4 FEET OF EFFECTIVE LENGTH AND A SPECIFIED FLOW THROUGH RATE OF 15 GALLONS PER MINUTE PER LINEAR FOOT. A PASS THROUGH FLOW OF 0.26 CUBIC FEET PER SECOND CAN BE ACCOMMODATED THROUGH THE FILTER SOCK. THIS FLOW RATE IS ADEQUATE FOR THE MAXIMUM DRAINAGE AREA BETWEEN WATERBARS FOR A 2YR/24 HOUR STORM EVENT.

CONSTRUCTION OF A 24" WIDE 24" DEEP SUMP AT THE DISCHARGE END OF THE WATERBAR WILL REDUCE VELOCITY AND PROVIDE A SHEET FLOW CONDITION TO THE CFS. THE SUMP SHALL BE MAINTAINED AND CLEANED OUT WHEN IT BECOMES A MINIMUM OF 12" DEEP. THE SUMP SHALL BE FILLED AND STABILIZED WITH THE SPECIFIED GRASS SEED AND EROSION CONTROL MAT WHEN THE CFS IS REMOVED AFTER THE SITE STABILIZATION.

TRAFFIC SHALL NOT BE PERMITTED TO CROSS FILTER SOCKS.

SOCKS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED SOCKS SHALL BE REPAIRED RECORDING TO MANUFACTURER'S SPECIFICATIONS OR REPLACED WITH 24 HOURS OF INSPECTION.

CFS SHALL BE 12" 5 MIL HDPE BIODEGRADABLE FABRIC OR APPROVED EQUAL MEETING COMPOST SOCK FABRIC MINIMUM SPECIFICATIONS.

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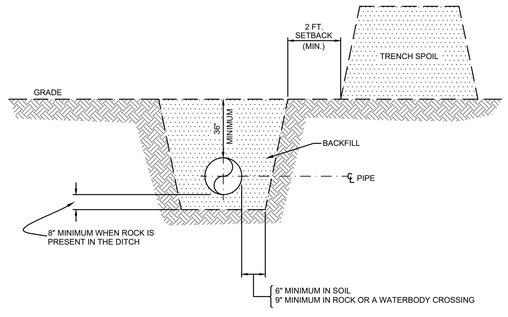
COMPOST FILTER SOCK
AND SUMP AT
WATERBAR DISCHARGE

FIGURE 10



CROSS-SECTION VIEW OF TYPICAL TRENCH

NOTES:

ALL ORIGINAL CONTOURS WILL BE RE-ESTABLISHED UPON COMPLETION OF PIPE INSTALLATION. EXCEPT IN WETLANDS, A CROWN MAY BE LEFT TO ACCOUNT FOR DITCH SETTLING, AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.

IN COLD WATER FISHERY STREAMS, THE TOP 12" OF THE TRENCH WILL BE BACKFILLED WITH CLEAN GRAVEL OR NATIVE COBBLES.

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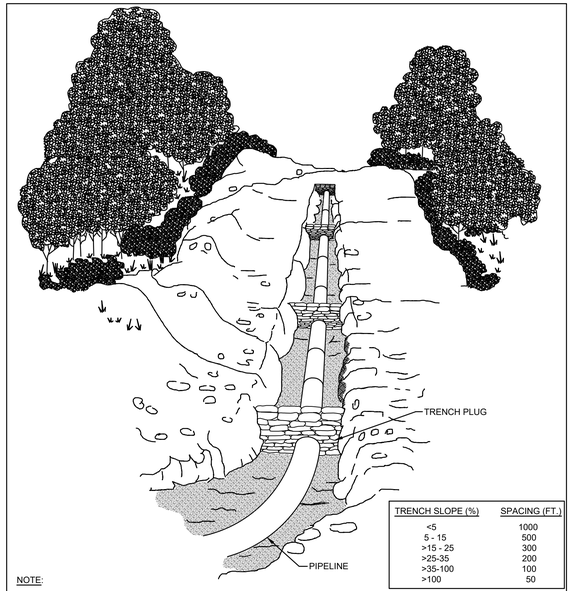
TYPICAL TRENCH DETAIL

FIGURE 11



TRENCH SLOPE (%)	SPACING (FT.)
<5	1000
5 - 15	500
>15 - 25	300
>25-35	200
>35-100	100
>100	50

NOTE:

PLUG MATERIAL SHALL CONSIST OF CLAY, BENTONITE, SYNTHETIC FOAM OR CONCRETE FILLED SACKS, EXCEPT WHERE TRENCH SLOPE IS GREATER THAN 100%, CEMENT FILLED BAGS SHALL BE USED.

TOPSOIL SHALL NOT BE USED TO FILL SACKS.

PERMANENT IMPERVIOUS TRENCH PLUGS ARE REQUIRED FOR ALL WATERBODY AND WETLAND CROSSINGS, AS WELL AS UP SLOPE FROM ROADWAY AND RAILROAD CUT SLOPES.

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TRENCH PLUGS
FOLLOWING PIPELINE INSTALLATION

FIGURE 12

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
MICHAEL DENICHILO
ENGINEER
PE068513
10/25/2019

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							MWF (MM)	10/15/2018
							ENG. APPROVAL	DATE
							MJD (MM)	10/15/2018
							P.M. APPROVAL	DATE

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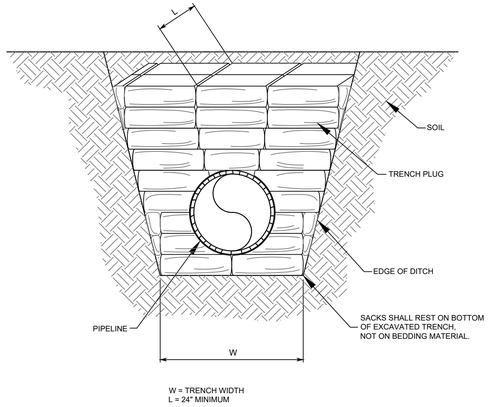
PENNEAST PIPELINE PROJECT

SOIL EROSION AND SEDIMENT CONTROL PLAN
TYPICAL E&S DETAILS

SCALE	DRAWING NO.	REVISION
AS SHOWN	000-03-09-003	B



W = TRENCH WIDTH
L = 24" MINIMUM

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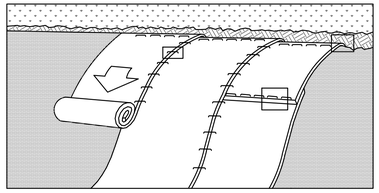
TRENCH PLUG DETAIL

FIGURE 13

BLANKET EDGES STAPLED AND OVERLAPPED (4 IN. MIN.)

INSTALL BEGINNING OF ROLL IN 6 IN. x 6 IN. ANCHOR TRENCH, STAPLE, BACKFILL AND COMPACT SOIL

STARTING AT TOP OF SLOPE, ROLL BLANKETS IN DIRECTION OF WATER FLOW



PREPARE SEED BED (INCLUDING APPLICATION OF LIME, FERTILIZER AND SEED) PRIOR TO BLANKET INSTALLATION

THE BLANKET SHOULD NOT BE STRETCHED; IT MUST MAINTAIN GOOD SOIL CONTACT

OVERLAP BLANKET ENDS 6 IN. MIN. WITH THE UPSLOPE BLANKED OVERLYING THE DOWNSLOPE BLANKET (SHINGLE STYLE). STAPLE SECURELY.

REFER TO MANUF. RECOMMENDED STAPLING PATTERN FOR STEEPNESS AND LENGTH OF SLOPE BEING BLANKETED

NOTES:

INSTALL EROSION CONTROL BLANKET ON ALL SLOPES 3H:1V OR STEEPER, WITHIN 50 FEET OF SURFACE WATERS, AND WITHIN 100 FEET OF SPECIAL PROTECTION WATERS.

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.

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.

AGRICULTURAL LAND NOTE:
EROSION CONTROL BLANKET IS A TRIPPING HAZARD WHEN USED IN HOOVED ANIMAL PASTURES AND IS NOT COMPATIBLE WITH MOST CROP LAND MANAGEMENT. IN SUCH CASES, HAY, STRAW, OR HYDRAULICALLY-APPLIED MULCH SHOULD BE APPLIED UNLESS THE LAND IS PLOWED AND REPLANTED FOR CROP GROWTH WITHIN 4 DAYS. MULCH IN ANIMAL PASTURES SHOULD BE LIMITED TO HAY OR STRAW.

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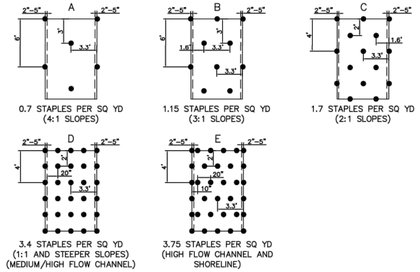
EROSION CONTROL BLANKET INSTALLATION STANDARD CONSTRUCTION DETAIL #11-1

FIGURE 14A

STAPLE PATTERN GUIDE



NOTES:

1. FOR SLOPES BETWEEN 3:1 AND 1:1, USE NORTH AMERICAN GREEN ERONET SC 150 OR OWNER APPROVED EQUAL MATERIAL/METHOD.
2. IN AREAS WHERE LIVESTOCK ARE KEPT, USE NORTH AMERICAN GREEN BIONET SC 150 BN OR OWNER APPROVED EQUAL MATERIAL/METHOD.
3. SEED AND SOIL AMENDMENTS SHALL BE APPLIED ACCORDING TO THE RATES IN THE PLAN DRAWINGS PRIOR TO INSTALLING THE BLANKET.
4. PROVIDE ANCHOR TRENCH AT TOE OF SLOPE IN SIMILAR FASHION AS AT TOP OF SLOPE
5. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS, AND GRASS.
6. 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.
7. THE BLANKET SHALL BE STAPLED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS,
8. 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.

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EROSION CONTROL BLANKET STAPLE PATTERN GUIDE

FIGURE 14B

HYDRAULICALLY APPLIED BLANKETS

Hydraulically applied blankets should not be used in areas of concentrated flow (e.g. channels).

A **Bonded Fiber Matrix (BFM)** can be an effective method of stabilizing steep slopes when used properly. BFMs make use of a cross-linked hydrocolloid tackifier to bond thermally processed wood fibers. Application rates vary according to site conditions. For slopes up to 3H:1V the BFM should be applied at a rate of 3,000 lb/acre. Steeper slopes may need as much as 4,000 lb/acre. In any case, manufa

BFMs should only be used when no rain is forecast for at least 48 hours following the application. This is to allow the tackifier sufficient time to cure properly. Once properly applied, a BFM is typically 90% effective in preventing accelerated erosion. **Bonded Fiber Matrix should not be applied between September 30 and April 1.**

Other fiber matrices that have been shown to be effective in preventing erosion on disturbed surfaces may be used in accordance with manufacturer's recommendations if sufficient supporting documentation is provided.

A **Flexible Growth Medium (FGM)** has the added component of ½ inch long, crimped organic or manmade fibers which add a mechanical bond to the chemical bond provided by BFMs. This increases the blanket's resistance to both raindrop impact and erosion due to runoff. Unlike BFMs, a flexible growth medium typically does not require a curing time to be effective. Properly applied, an FGM may be as much as 99% effective.

A **Polymer Stabilized Fiber Matrix (PSFM)** can also be an effective method of stabilizing steep slopes when used properly. PSFMs make use of a linear soil stabilizing tackifier that works directly on soil to maintain soil structure, maintain pore space capacity and flocculate dislodged sediment that will significantly reduce runoff turbidity. Properly applied, a PSFM may be as much as 99% effective.

PSFMs can be used in re-vegetation applications and for site winterization and/or dormant seeding — fall planting for spring germination — applications. Application rates vary according to site conditions

and the following application rates are suggested. In any case, manufacturer's recommendations should be followed. The following are typical application rates:

TABLE 11.7
Typical Polymer Stabilized Fiber Matrix Application Rates

Maximum Rainfall of ≤ 20"							
SLOPE	6:1	5:1	4:1	3:1	2:1	1.5:1	1:1
Soil Stabilizer (gals/acre)	4	5	6	7	8	9	10
Fiber (lb/acre)	1,500	1,500	1,500	1,800	2,000	2,500	3,000

Maximum Rainfall of > 20" and for Site Winterization			
SLOPE	≤5:1	4:1	≥3:1
Soil Stabilizer (gals/acre)	6	8	10
Fiber (lb/acre)	2,000	2,500	3,000

Unlike rolled blankets, there is no need to smooth the slope prior to application of hydraulically applied blankets. In fact some roughening of the surface, either natural or mechanically induced, is preferable. However, large rocks, those ≥ 9 inches, and existing rills should be removed prior to application. Tracking or grooving of slopes should be considered to slow water flows during a storm event. Slope interruption devices such as stair step grading or benching should be applied prior to the application. Mixing and application rates should follow manufacturer's recommendations.

Hydraulically applied blankets are typically applied in two stages. Unless specifically recommended to be applied in one application by the manufacturer, the seed mixture and soil amendments should be applied first. If the seed is applied at the same time as the hydraulically applied blanket, the bonded fibers may keep the seed from making sufficient contact with the soil to germinate. After the seed mixture is applied, the BFM, FGM, or PSFM should be sprayed over the area at the required application rate.

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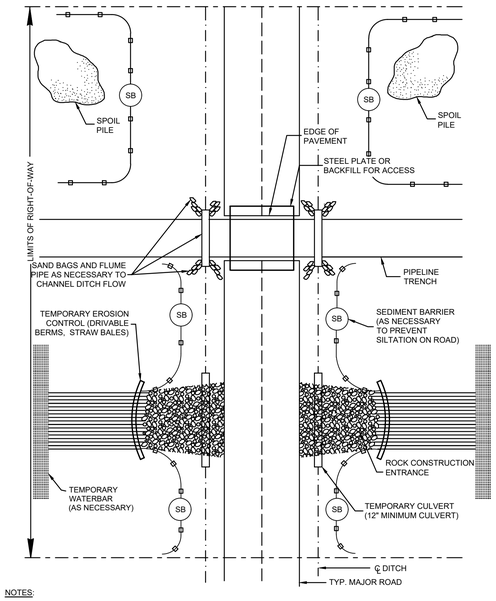
PennEast PIPELINE

PENNEAST PIPELINE PROJECT

HYDRAULICALLY APPLIED BLANKETS

FIGURE 15



NOTES:

(SB) TEMPORARY SEDIMENT BARRIER

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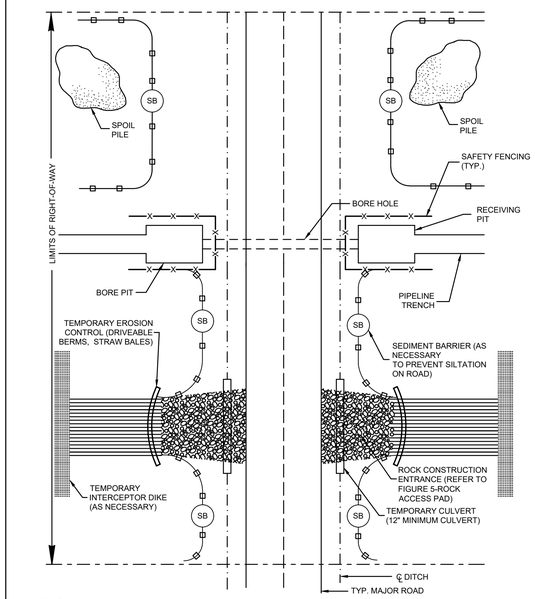
TYPICAL PAVED ROAD CROSSING CONTROL MEASURES (OPEN CUT)

FIGURE 17



NOTES:

(SB) TEMPORARY SEDIMENT BARRIER

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TYPICAL PAVED ROAD CROSSING CONTROL MEASURES (BORED CROSSING)

FIGURE 18

COMMONWEALTH OF
REGISTERED
PROFESSIONAL
MICHAEL DENICHILO
ENGINEER
PE068513
10/25/2019

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B	REVISED FOR PADEP	10/2019	AJD (MM)	MWF (MM)	MJD (MM)	CHECKED BY	DATE
						MWF (MM)	10/15/2018
						ENG. APPROVAL	DATE
						MJD (MM)	10/15/2018
						P.M. APPROVAL	DATE

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SOIL EROSION AND SEDIMENT CONTROL PLAN
TYPICAL E&S DETAILS

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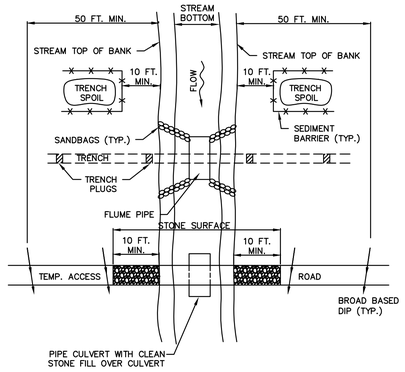
AS SHOWN	000-03-09-004	B



NOT TO SCALE

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.

PIPE CULVERT FOR ACCESS ROAD AND FLUME PIPE MAY BE ONE CONTINUOUS PIPE.

TRENCH PLUGS SHALL BE INSTALLED WITHIN THE TRENCH ON BOTH SIDES OF THE STREAM CHANNEL (STANDARD CONSTRUCTION DETAIL #13-4).

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 STREAMBANK.

ALL EXCESS EXCAVATED MATERIAL SHALL BE IMMEDIATELY REMOVED FROM THE STREAM CROSSING AREA.

ALL DISTURBED AREAS WITHIN 50 FEET (100 FEET FOR SPECIAL PROTECTION WATERS) 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 STREAMBANK PROTECTION SHALL BE PROVIDED WITHIN THE CHANNEL.

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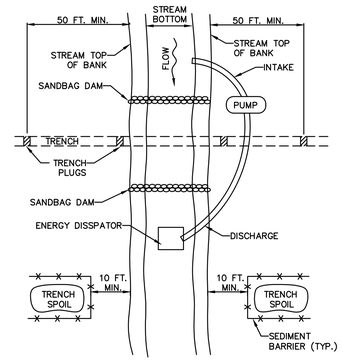
PennEast PIPELINE

PENNEAST PIPELINE PROJECT

TYPICAL FLUMED STREAM CROSSING WITH OPTIONAL ACCESS ROAD STANDARD CONSTRUCTION DETAIL #13-1

FIGURE 19 (FX)



NOT TO SCALE

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.

BYPASS PUMP INTAKE SHALL BE MAINTAINED A SUFFICIENT DISTANCE FROM THE BOTTOM TO PREVENT PUMPING OF CHANNEL BOTTOM MATERIALS.

TRENCH PLUGS SHALL BE INSTALLED WITHIN THE TRENCH ON BOTH SIDES OF THE STREAM CHANNEL (FIGURE 12).

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 STREAMBANK.

ALL EXCESS EXCAVATED MATERIAL SHALL BE IMMEDIATELY REMOVED FROM THE STREAM CROSSING AREA.

ALL DISTURBED AREAS WITHIN 50 FEET (100 FEET FOR SPECIAL PROTECTION WATERS) 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 STREAMBANK PROTECTION SHALL BE PROVIDED WITHIN THE CHANNEL.

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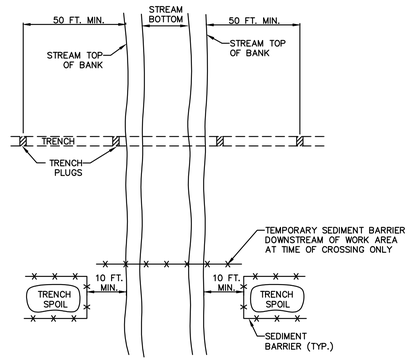
PennEast PIPELINE

PENNEAST PIPELINE PROJECT

TYPICAL STREAM CROSSING WITH PUMP BYPASS STANDARD CONSTRUCTION DETAIL #13-2

FIGURE 20 (DPX)



NOT TO SCALE

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 PLUGS SHALL BE INSTALLED WITHIN THE TRENCH ON BOTH SIDES OF THE STREAM CHANNEL (FIGURE 12).

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 STREAMBANK.

ALL EXCESS EXCAVATED MATERIAL SHALL BE IMMEDIATELY REMOVED FROM THE STREAM CROSSING AREA.

ALL DISTURBED AREAS WITHIN 50 FEET (100 FEET FOR SPECIAL PROTECTION WATERS) 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 STREAMBANK PROTECTION SHALL BE PROVIDED WITHIN THE CHANNEL.

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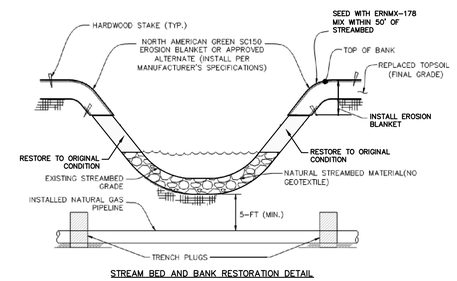
PennEast PIPELINE

PENNEAST PIPELINE PROJECT

TYPICAL STREAM DRY CROSSING IF NO FLOW

FIGURE 20A (DX-NF)



STREAM BED AND BANK RESTORATION DETAIL

NOTES:
1. REMOVE EXISTING STREAMBED MATERIAL AND STOCKPILE SEPARATELY.
2. ONCE PIPELINE IS INSTALLED, REPLACE SUBSTRATE BACK IN STREAMBED AND RESTORE TO EXISTING CONDITION.
3. SEE RECOMMENDED SEED MIXTURES TABLES FOR SEED MIXES.
4. 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.
5. THE USE OF EROSION CONTROL BLANKET IS NOT ALLOWED ON STATE GAME LANDS. HYDRAULICALLY APPLIED SLOPE STABILIZATION MUST BE USED.
6. REFER TO TRENCH PLUG INSTALLATION DETAIL (TP) FOR MORE INFORMATION.

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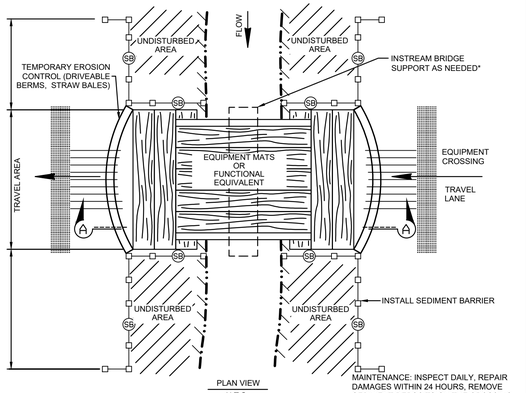
STREAM BED AND BANK STABILIZATION WITH REINFORCEMENT BLANKET

FIGURE 21



NOTES:

(SB) TEMPORARY SEDIMENT BARRIER OF COMPOST FILTER SOCK (ABACT) TO BE USED.

WOODEN SIDE BOARDS AND FILTER FABRIC WILL BE USED TO KEEP SEDIMENT FROM FALLING INTO CREEK.

EQUIPMENT MATS TYPICALLY CONSTRUCTED OF HARDWOOD OR OTHER SUITABLE MATERIAL TO ACCOMMODATE THE HEAVIEST EQUIPMENT USED.

TEMPORARY WATERBAR TO DISCHARGE TO SEDIMENT REMOVAL DEVICE.

*INSTREAM BRIDGE SUPPORT TO CONSIST OF A STEEL TEMPORARY CULVERT PIPE. DIAMETER WILL VARY DEPENDING ON BRIDGE HEIGHT AND STREAM INVERT.

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TEMPORARY EQUIPMENT BRIDGE (EQUIPMENT MATS)

FIGURE 22

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
MICHAEL DENICHILO
ENGINEER
PE088513
10/25/2019

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						MJD (MM)	10/15/2018
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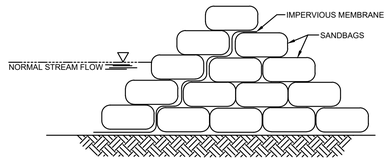
PENNEAST PIPELINE PROJECT

SOIL EROSION AND SEDIMENT CONTROL PLAN
TYPICAL E&S DETAILS

SCALE	DRAWING NO.	REVISION
AS SHOWN	000-03-09-005	B

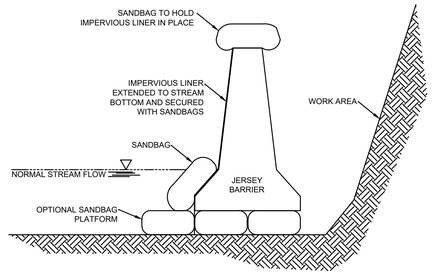
STANDARD CONSTRUCTION DETAIL #3-15
SANDBAG DIVERSION DAM OR COFFERDAM



NOTE:

2 BAG MIN. HEIGHT ABOVE NORMAL BASE FLOW

JERSEY BARRIER COFFERDAM - END VIEW



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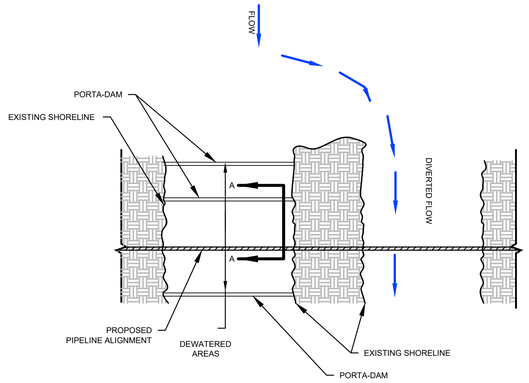
SANDBAG DIVERSION DAM OR COFFERDAM / JERSEY BARRIER COFFERDAM

FIGURE 24 CD



PORTA-DAM SYSTEM FOR STAGED RIVER CROSSING
PLAN VIEW (PHASE 1)
NOT TO SCALE

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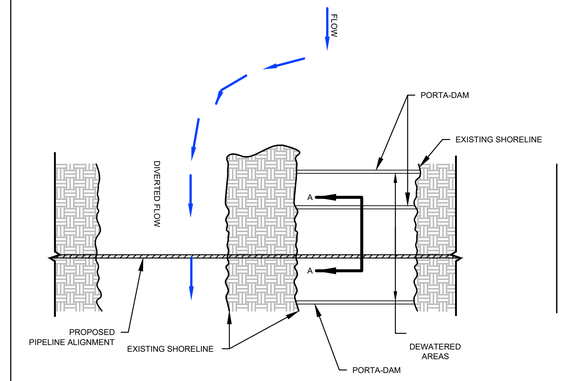
PENNEAST PIPELINE PROJECT

COFFERDAM
PLAN VIEW (PHASE 1)

FIGURE 24A CD



PORTA-DAM SYSTEM FOR STAGED RIVER CROSSING
PLAN VIEW (PHASE 2)
NOT TO SCALE

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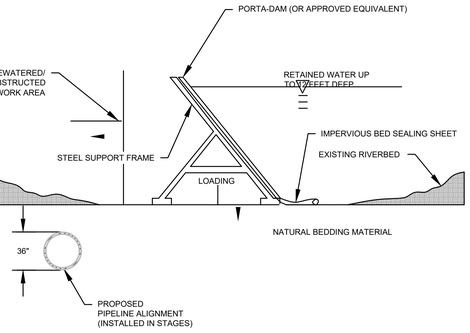
PENNEAST PIPELINE PROJECT

COFFERDAM
PLAN VIEW (PHASE 2)

FIGURE 24B CD



PORTA-DAM SYSTEM FOR STAGED RIVER CROSSING
SECTION VIEW
NOT TO SCALE

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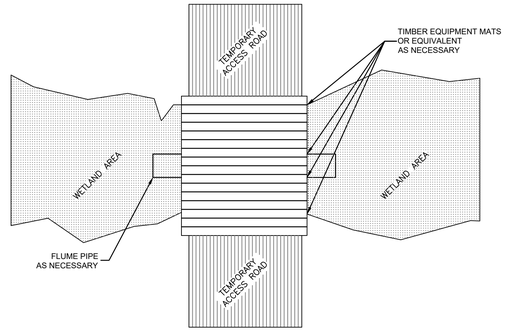
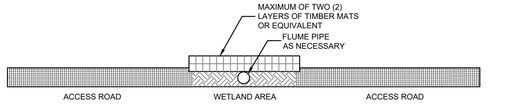
PENNEAST PIPELINE PROJECT

COFFERDAM
SECTION A-A

FIGURE 24C CD



PLAN VIEW
N.T.S.



CROSS SECTION
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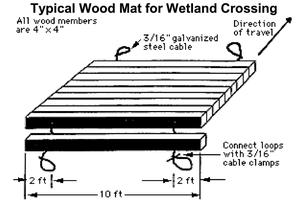
PENNEAST PIPELINE PROJECT

TYPICAL TEMPORARY ACCESS ROAD THROUGH WETLANDS

FIGURE 25

Typical Wood Mat for Wetland Crossing



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

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TIMBER MAT DETAIL

FIGURE 26

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REGISTERED PROFESSIONAL
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ENGINEER
PE088513
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						MJD (MM)	10/15/2018
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SOIL EROSION AND SEDIMENT CONTROL PLAN
TYPICAL E&S DETAILS

SCALE	DRAWING NO.	REVISION
AS SHOWN	000-03-09-006	B

WETLAND CROSSING GENERAL PROCEDURES

Clearing and Grading

1. Limit construction activity and ground disturbance in wetland areas to a construction ROW width of 75 feet or as shown on the construction plans. With written approval from the FERC for site-specific conditions, construction ROW width within the boundaries of federally delineated wetlands may be expanded beyond 75 feet.
2. Wetland boundaries and buffers must be clearly marked in the field with signs and/or highly visible flagging until construction-related ground disturbing activities are complete.
3. Restrict extra work areas (such as staging areas and additional spoil storage areas) to those shown only on the construction plans. All extra work areas must be located at least 50 feet away from wetland boundaries, except where the adjacent upland consists of actively cultivated or rotated cropland or other disturbed land. If site-specific conditions do not permit a 50-foot setback, the Company can receive written approval from the FERC to locate these extra work areas closer than 50 feet from the wetland.
4. Above ground facilities shall not be located in any wetland, except as permitted or where the location of such facilities outside of wetlands would prohibit compliance with DOT regulations.
5. Use timber riprap, prefabricated equipment mats or terra mats on the working side of the ROW during clearing operations. Do not use more than two layers of timber riprap to stabilize the ROW.
6. Cut vegetation just above ground level and grind stumps to ground level, leaving existing root systems in place. Immediately remove all cut trees, chips from grinding and branches from the wetland and stockpile in an upland area on ROW for disposal.
7. 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 ROW in wetlands unless the Chief Inspector and EI determine that safety-related construction constraints require removal of tree stumps from under the working side of the ROW.
8. Do not cut trees outside of the construction ROW to obtain timber for riprap or equipment mats.
9. Cleared materials (slash, logs, brush, wood chips) shall not be permanently placed within wetland areas.

Temporary Erosion and Sediment Control

1. Install sediment barriers immediately after clearing and prior to ground disturbance at the following locations:
   - A. Within the ROW at the edge of the boundary between wetland and upland;
   - B. Across the entire ROW immediately upslope of the wetland boundary to prevent sediment flow into the wetland;
   - C. Along the edge of the ROW, where the ROW slopes toward the wetland, to protect adjacent off ROW wetland; and
   - D. Along the edge of the ROW as necessary to contain spoil and sediment within the ROW through wetlands.
2. Maintain all sediment barriers throughout construction and reinstall as necessary (such as after backfilling of the trench) until replaced by permanent erosion controls or restoration of adjacent upland areas is complete.
3. Depth of topsoil segregation should be 12 inches, if present, unless otherwise indicated by the landowner if relating to agricultural land.

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WETLAND PIPELINE CONSTRUCTION REQUIREMENTS

FIGURE 26A

Crossing Procedure

1. Minimize the length of time that topsoil is segregated and the trench is open.
2. Do not use rock / soil imported from outside the wetland, tree stumps, or brush riprap to stabilize the ROW.
3. Perform topsoil segregation and trench dewatering.
4. Assemble the pipeline in an upland area unless the wetland is dry enough to adequately support skids and pipe.
5. Use "push-off" or "float" techniques to place the pipe in the trench where water and other site conditions allow.
6. Install trench plugs and/or seal the trench bottom as necessary to maintain the original wetland hydrology at locations where the pipeline trench may drain a wetland.
7. Install a permanent interceptor dike and a trench plug at the base of slopes near the boundary between the wetland and adjacent upland areas. In addition, install sediment barriers. Permanent interceptor dikes shall not be installed in agricultural areas.
8. Restore segregated topsoil to its original position after backfilling is complete. When required, additional material imported from off the ROW must be approved by the EI. The original wetland contours and flow regimes will be restored to the extent practical.

Cleanup and Restoration

1. Revegetate the ROW with annual ryegrass at 45 lbs / acre Pure Live Seed or with the recommended wetland seed mix, unless standing water is present.
2. **Do not use lime or fertilizer in wetland areas.**
3. Mulch the disturbed ROW. No mulch may be applied in wetlands.
4. In the event that final seeding and mulching is deferred more than 20 days after the trench is backfilled, all slopes adjacent to wetlands shall be mulched with 3 tons / acre of straw for a minimum of 100 feet on each side of the crossing.
5. Remove all equipment mats upon completion of construction.
6. Develop specific procedures in coordination with the appropriate land management or state agency, where necessary, to prevent the invasion or spread of undesirable exotic vegetation (such as purple loose strife and phragmites). Additionally, install matting at exceptional value wetland crossing.
7. Ensure that all disturbed areas permanently revegetate.
8. Remove temporary sediment barriers located at the boundary between wetland and adjacent upland areas after upland revegetation and stabilization of adjacent upland areas are successful.

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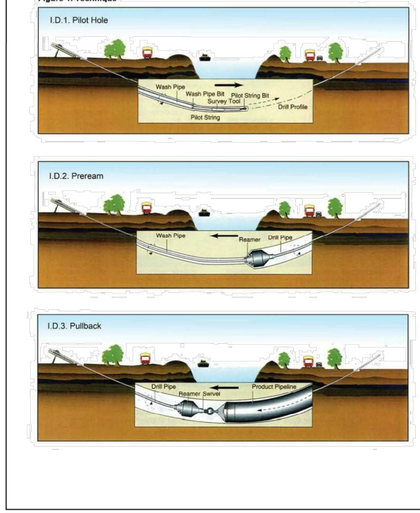
PENNEAST PIPELINE PROJECT

WETLAND PIPELINE CONSTRUCTION REQUIREMENTS

FIGURE 26B

Figure 1. Technique



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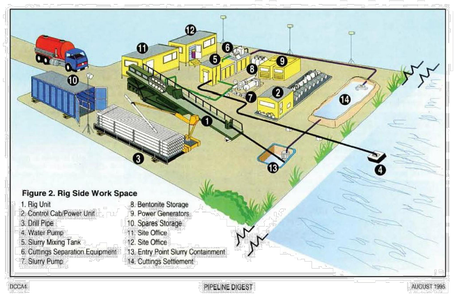
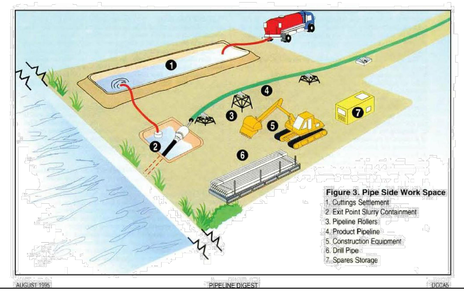
HORIZONTAL DIRECTION DRILL

FIGURE 27A (HDD)





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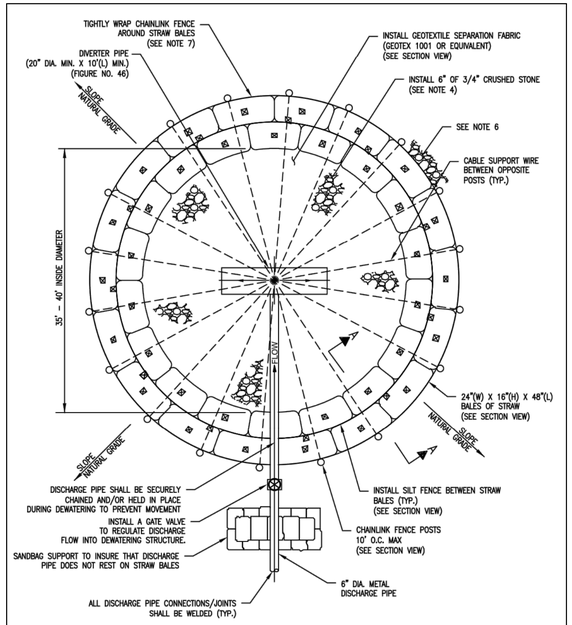
PENNEAST PIPELINE PROJECT

HORIZONTAL DIRECTION DRILL

FIGURE 27B (HDD)



PLAN VIEW
SCALE: N.T.S.

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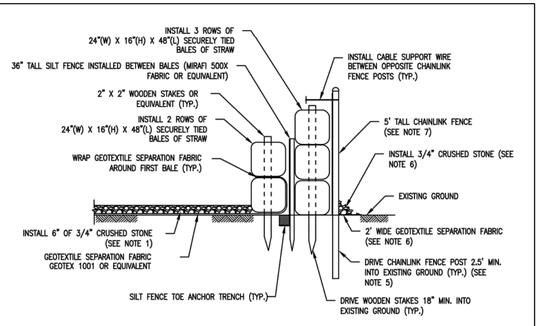
HYDROSTATIC DEWATERING STRUCTURE

FIGURE 28A



SECTION A–A
SCALE: N.T.S.

NOTES:

1. 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.
2. 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.
3. 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.
4. THE 3/4" CRUSHED STONE INSTALLED WITHIN THE BASIN SHALL BE WASHED TO REMOVE ALL DIRT/FINE PARTICLES PRIOR TO INSTALLATION.
5. 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.
6. 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.
7. CHAINLINK FENCE SHALL INSTALLED TIGHTLY AGAINST THE STRAW BALES AND SECURELY FASTENED TOGETHER AT ALL JOINTS WITH CABLE TENSION WIRE AND STRETCHER BARS.
8. THE ENVIRONMENTAL INSPECTOR SHALL HAVE THE AUTHORITY TO MODIFY THE DESIGN AS REQUIRED TO PREVENT EROSION AND SEDIMENTATION DOWNSTREAM OF THE STRUCTURE.
9. STRAW BALES SHALL BE STACKED SUCH THAT THE JOINTS ARE STAGGERED.

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HYDROSTATIC DEWATERING STRUCTURE

FIGURE 28B

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REGISTERED PROFESSIONAL
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ENGINEER
PE068513
10/25/2019

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SOIL EROSION AND SEDIMENT CONTROL PLAN
TYPICAL E&S DETAILS

SCALE	DRAWING NO.	REVISION
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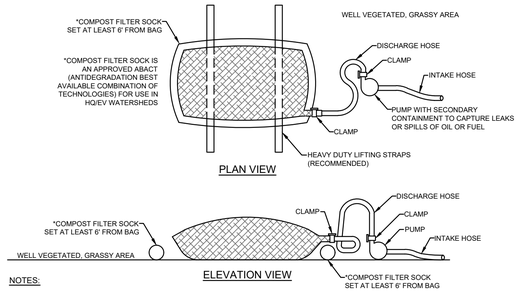


NOTES:

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-4751	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 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.

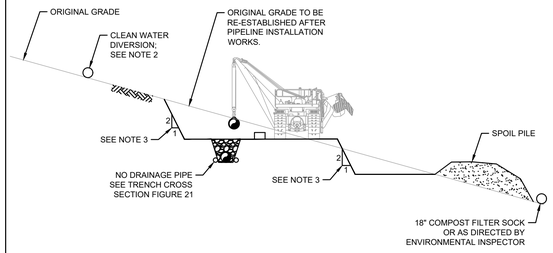
FILTER BAGS SHALL BE INSPECTED DAILY. IF ANY PROBLEM IS DETECTED, PUMPING SHALL CEASE IMMEDIATELY AND NOT RESUME UNTIL THE PROBLEM IS CORRECTED.

REV	REV	REVISION DESCRIPTION	BY	CKD	APP

PENNEAST PIPELINE PROJECT

PUMPED WATER FILTER BAG
STANDARD CONSTRUCTION DETAIL
#3-16

FIGURE 29



NOTES:

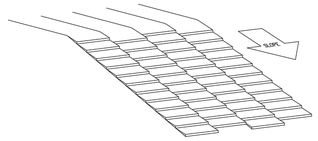
1. TRENCH PLUGS SPACING AS PER CRITERIA INDICATED ON FIGURE 12.
2. CLEAN WATER DIVERSION SOCK TO BE POSITIONED ON SITE AS GRADING OPERATIONS ADVANCE WITHIN THE LIMIT OF DISTURBANCE, SEE FIGURE 34A.
3. CUT / FILL SLOPES MAY VARY DEPENDING ON SITE CONDITIONS.
4. REFER TO EROSION AND SEDIMENT CONTROL PLAN ALIGNMENT SHEETS FOR PROPER PLACEMENT OF EROSION DEVICES.

REV	REV	REVISION DESCRIPTION	BY	CKD	APP

PENNEAST PIPELINE PROJECT

SIDE SLOPE DETAIL

FIGURE 30



NOTES:

1. DOZER TREADS CREATE GROOVES PERPENDICULAR TO SLOPE.

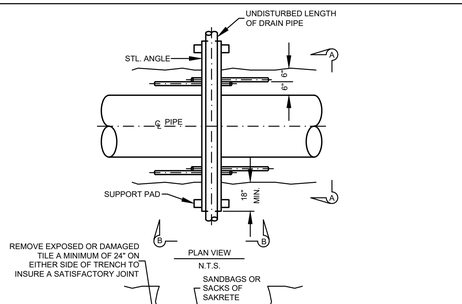
SURFACE ROUGHENING DETAIL
NOT TO SCALE

REV	REV	REVISION DESCRIPTION	BY	CKD	APP

PENNEAST PIPELINE PROJECT

SURFACE ROUGHENING DETAIL

FIGURE 31



NOTE:

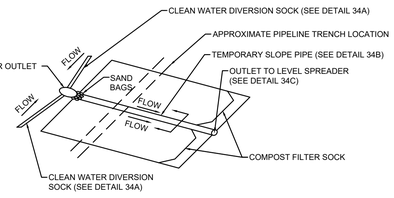
USE OF SAKRETE SHALL REQUIRE PRIOR COMPANY APPROVAL.

REV	REV	REVISION DESCRIPTION	BY	CKD	APP

PENNEAST PIPELINE PROJECT

DRAIN TILE REPAIR
PROCEDURE

FIGURE 32



NOTES:

THE LEVEL SPREADER AND DIVERSION SOCK WILL BE INSTALLED ALONG WITH THE PERIMETER CONTROLS.

THE SLOPE PIPE WILL CONNECT TO THE LEVEL SPREADER PERFORATED PIPE BY ZIPTIES. THE SLOPE PIPE WILL BE INSTALLED PRIOR TO WET WEATHER EVENTS AND AT THE END OF EACH WORK DAY.

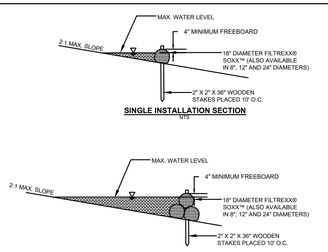
DURING TYPICAL DRY WEATHER CONSTRUCTION, SLOPE PIPES WILL BE DISCONNECTED AND STORED ON THE ROW TO ALLOW FOR EQUIPMENT TRAFFIC AND CONSTRUCTION ACTIVITIES.

REV	REV	REVISION DESCRIPTION	BY	CKD	APP

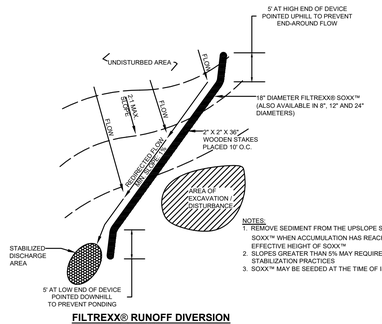
PENNEAST PIPELINE PROJECT

CLEAN WATER DIVERSION TYPICAL

FIGURE 33



FILTREXX® RUNOFF DIVERSION SECTIONS
NTS



FILTREXX® RUNOFF DIVERSION
NTS

REV	REV	REVISION DESCRIPTION	BY	CKD	APP

PENNEAST PIPELINE PROJECT

FILTREXX CLEAN WATER DIVERSION

FIGURE 34A

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
MICHAEL DENICHILO
ENGINEER
PE068513
10/25/2019

Know what's below. Call before you dig.

CLIENT APPROVAL

DATE

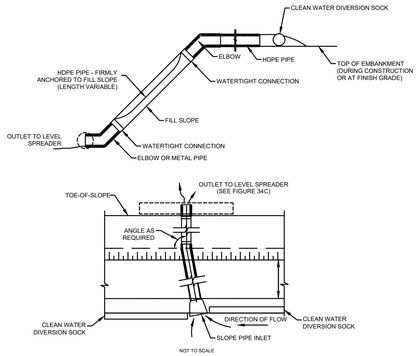
REVISIONS						APPROVALS	
NO.	DESCRIPTION	DATE	DRAWN	CK	APPR	DRAWN BY	DATE
A	ISSUED FOR PADEP	10/2018	AJD (MM)	MWF (MM)	MJD(MM)	AJD (MM)	10/15/2018
B	REVISED FOR PADEP	10/2019	AJD (MM)	MWF (MM)	MJD (MM)	CHECKED BY	DATE
						MWF (MM)	10/15/2018
						ENG. APPROVAL	DATE
						MJD (MM)	10/15/2018
						P.M. APPROVAL	DATE

PREPARED FOR

PENNEAST PIPELINE PROJECT

SOIL EROSION AND SEDIMENT CONTROL PLAN
TYPICAL E&S DETAILS

SCALE	DRAWING NO.	REVISION
AS SHOWN	000-03-09-008	B



NOTES:

1. THE MAXIMUM DISTANCE BETWEEN ANCHOR STAKES SHALL BE 10 FEET.
2. SLOPE PIPES SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. ANY ACCUMULATED SEDIMENT SHALL BE REMOVED FROM THE INLET IMMEDIATELY.
3. DAMAGED PIPE SECTIONS SHALL BE REPLACED WITHIN 24 HOURS. LEAKING CONNECTIONS SHALL BE REPAIRED IMMEDIATELY.
4. SLOPE PIPE WILL BE THE SAME DIAMETER AS THE LEVEL SPREADER REFER TO LEVEL SPREADER TABLE FOR SIZING.

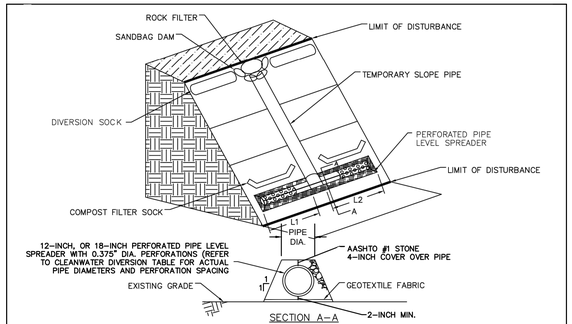
REV	REV	REVISION DESCRIPTION	BY	CKD	APP

PennEast PIPELINE

PENNEAST PIPELINE PROJECT

TEMPORARY SLOPE PIPE

FIGURE 34B



TEMPORARY SLOPE PIPE CROSSING
NO SCALE

NOTES:

1. LEVEL SPREADER PIPES TO BE 12-INCH OR 18-INCH JM EAGLE CORR PE PERFORATED PIPE (OR APPROVED EQUAL) AND SHALL BE CAPPED AT BOTH ENDS.
2. LEVEL SPREADER TO BE INSTALLED PARALLEL TO CONTOURS AT LEVEL ELEVATION.
3. PERFORATED PIPE TO BE UNDERLAIN WITH GEOTEXTILE FABRIC AND COVERED WITH AASHTO NO. 1 STONE. MINIMUM STONE COVER SHALL BE 4-INCHES OVER PERFORATED PIPE.
4. ALL LEVEL SPREADER STONE WILL BE REMOVED AND DISTURBED AREA TO BE RESTORED IN ACCORDANCE WITH E&S PLAN.
5. LEVEL SPREADERS TO BE INSTALLED AT ALL TEMPORARY SLOPE PIPE DISCHARGES AT LOW POINTS OF DIVERSION SOCK.
6. LEVEL SPREADERS TO BE INSPECTED WEEKLY OR AFTER MEASURABLE RAINFALL EVENT AND SHALL BE MAINTAINED IN GOOD CONDITION AT ALL TIMES.
7. TOTAL REQUIRED LEVEL SPREADER LENGTH TO BE L1 + L2.
8. **LEVEL SPREADERS SHOULD BE FIELD ADJUSTED TO MAXIMIZE RUNOFF DISCHARGES TO NATURAL DRAINAGE COURSES.**

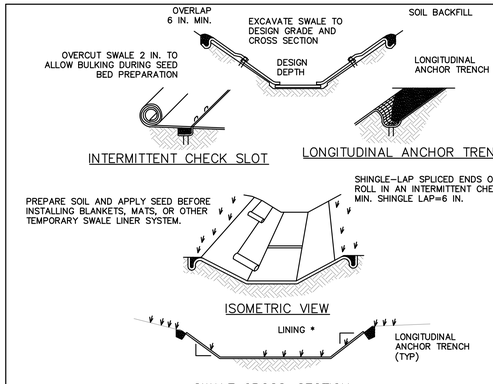
REV	REV	REVISION DESCRIPTION	BY	CKD	APP

PennEast PIPELINE

PENNEAST PIPELINE PROJECT

LEVEL SPREADER DETAIL

FIGURE 34C



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

NOTES:
ANCHOR TRENCHES SHALL BE INSTALLED AT BEGINNING AND END OF SWALE IN THE SAME MANNER AS LONGITUDINAL ANCHOR TRENCHES.

SWALE DIMENSIONS SHALL BE CONSTANTLY MAINTAINED. SWALE SHALL BE CLEANED WHENEVER TOTAL SWALE DEPTH IS REDUCED BY 25% AT ANY LOCATION.
SEDIMENT DEPOSITS SHALL BE REMOVED WITHIN 24 HOURS OF DISCOVERY OR AS SOON AS SOIL CONDITIONS PERMIT ACCESS TO SWALE WITHOUT FURTHER DAMAGE. DAMAGED LINING SHALL BE REPAIRED OR REPLACED WITHIN 48 HOURS OF DISCOVERY.

NO MORE THAN ONE THIRD OF THE SHOOT (GRASS LEAF) SHALL BE REMOVED IN ANY MOWING. GRASS HEIGHT SHALL BE MAINTAINED BETWEEN 2 AND 3 INCHES UNLESS OTHERWISE SPECIFIED. EXCESS VEGETATION SHALL BE REMOVED FROM PERMANENT SWALES TO ENSURE SUFFICIENT SWALE CAPACITY.

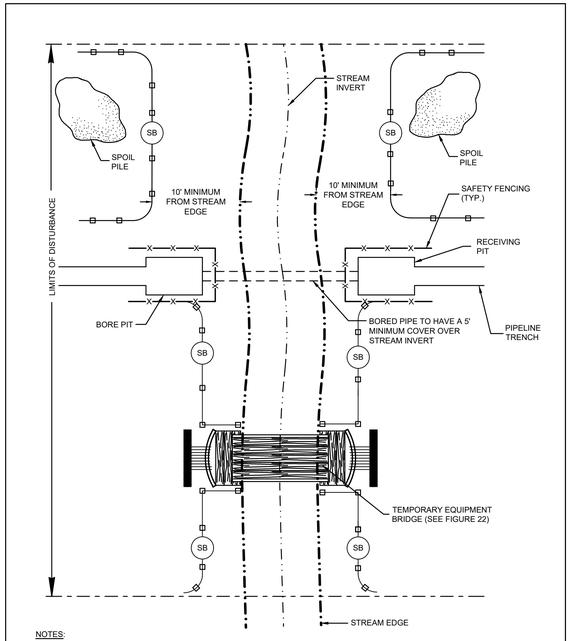
REV	REV	REVISION DESCRIPTION	BY	CKD	APP

PennEast PIPELINE

PENNEAST PIPELINE PROJECT

VEGETATED CHANNEL STANDARD CONSTRUCTION DETAIL #6-1

FIGURE 34D



NOTES:

(SB) TEMPORARY SEDIMENT BARRIER

REV	REV	REVISION DESCRIPTION	BY	CKD	APP

PennEast PIPELINE

PENNEAST PIPELINE PROJECT

TYPICAL BORED STREAM CROSSING

FIGURE 35 (BX)

COMMONWEALTH OF
REGISTERED
PROFESSIONAL
MICHAEL DENICHILO
ENGINEER
PE088513
10/25/2019

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CLIENT APPROVAL

DATE

REVISIONS						APPROVALS	
NO.	DESCRIPTION	DATE	DRAWN	CK	APPR	DRAWN BY	DATE
A	ISSUED FOR PADEP	10/2018	AJD (MM)	MWF (MM)	MJD(MM)	AJD (MM)	10/15/2018
B	REVISED FOR PADEP	10/2019	AJD (MM)	MWF (MM)	MJD (MM)	CHECKED BY	DATE
						MWF (MM)	10/15/2018
						ENG. APPROVAL	DATE
						MJD (MM)	10/15/2018
						P.M. APPROVAL	DATE

PREPARED FOR

PennEast PIPELINE

PENNEAST PIPELINE PROJECT

SOIL EROSION AND SEDIMENT CONTROL PLAN
TYPICAL E&S DETAILS

SCALE	DRAWING NO.	REVISION
AS SHOWN	000-03-09-009	B

LUZERNE COUNTY, PENNSYLVANIA

TEMPORARY DIVERSION SUMMARY														TEMPORARY PERFORATED PIPE LEVEL SPREADER CALCULATIONS									
DIVERSION SOCK (TEMPORARY CHANNEL)											TEMPORARY SLOPE PIPES												
DIVERSION ID[1]	APPROX. STATION[2]	BOTTOM WIDTH B (FT)	DEPTH D[7] (FT)	TOP WIDTH W (FT)	Z1 (FT)	Z2 (FT)	TEMPORARY LINING[3]	PERMANENT LINING[4]	DISCHARGE TYPE[5]	Q (CFS)	R.O.W. SLOPE (FT/FT)	SLOPE PIPE DIAMETER (IN)	NO. OF SLOPE PIPES (QTY)	Q / PIPE (CFS)	EFFECTIVE HEAD (FT)	LEVEL SPREADER PIPE DIAMETER (IN)	PERFORATION DIAMETER (IN)	NUMBER OF PERFORATIONS PER ROW	ROW SPACING (IN)	ORIFICE AREA PER FOOT (IN^2/FT)	ORIFICE COEFFICIENT (Cd)	LEVEL SPREADER CAPACITY PER FOOT OF LENGTH (CFS/FT)	REQUIRED LENGTH (FT)	NOMINAL LENGTH[6] (FT)	OVERALL LEVEL SPREADER CAPACITY (CFS)
DS_0.38_1	18+00	0	1.00	6.67	0	6.67	S75	-	TEMP. SLOPE PIPE	1.07	0.141	12	1	1.07	19.0	12	0.375	6	1.94	4.10	0.61	0.61	1.76	5	3.03
DS_0.38_2	21+00	0	1.00	5.29	0	5.29	-	P300	TEMP. SLOPE PIPE	1.47	0.146	12	1	1.47	17.7	12	0.375	6	1.94	4.10	0.61	0.59	2.51	5	2.93
DS_0.38_3	23+00	0	1.00	4.35	0	4.35	C125	-	TEMP. SLOPE PIPE	1.48	0.150	12	1	1.48	18.2	12	0.375	6	1.94	4.10	0.61	0.59	2.49	5	2.97
DS_1.61_1	85+00	0	1.00	8.33	0	8.33	C125	-	ROAD SIDE DITCH	1.65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DS_1.61_2	87+00	0	1.00	13.51	0	13.51	C125	-	TEMP. SLOPE PIPE	5.24	0.077	18	1	5.24	3.4	18	0.375	6	3.10	2.57	0.61	0.16	32.46	35	5.65
DS_2.59_1	137+00	0	1.00	12.20	0	12.20	GRASS	-	TEMP. SLOPE PIPE	0.44	0.067	12	1	0.44	5.1	12	0.375	6	1.94	4.10	0.61	0.32	1.39	5	1.58
DS_2.59_2	138+00	0	1.00	8.33	0	8.33	GRASS	-	TEMP. SLOPE PIPE	0.49	0.060	12	1	0.49	5.3	12	0.375	6	1.94	4.10	0.61	0.32	1.53	5	1.60
DS_2.59_3	140+00	0	1.00	5.08	0	5.08	C125	-	TEMP. SLOPE PIPE	2.25	0.057	18	1	2.25	5.3	18	0.375	6	3.10	2.57	0.61	0.20	11.18	15	3.02
DS_2.59_4	143+00	0	1.00	4.83	0	4.83	C125	-	TEMP. SLOPE PIPE	1.22	0.129	12	1	1.22	10.9	12	0.375	6	1.94	4.10	0.61	0.46	2.65	5	2.30
DS_2.59_5	145+00	0	1.00	5.10	0	5.10	GRASS	-	TEMP. SLOPE PIPE	0.36	0.136	12	1	0.36	13.5	12	0.375	6	1.94	4.10	0.61	0.51	0.70	5	2.56
DS_2.59_6	146+00	0	1.00	2.94	0	2.94	C125	-	TEMP. SLOPE PIPE	0.71	0.139	12	1	0.71	13.2	12	0.375	6	1.94	4.10	0.61	0.51	1.40	5	2.53
DS_2.59_7	147+00	0	1.00	3.64	0	3.64	GRASS	-	TEMP. SLOPE PIPE	0.48	0.281	12	1	0.48	28.9	12	0.375	6	1.94	4.10	0.61	0.75	0.64	5	3.75
DS_2.59_8	147+00	0	0.67	8.89	0	13.33	C125	-	TEMP. SLOPE PIPE	0.22	0.264	12	1	0.22	27.3	12	0.375	6	1.94	4.10	0.61	0.73	0.30	5	3.64
DS_2.59_9	147+00	0	1.00	5.95	0	5.95	S75	-	TEMP. SLOPE PIPE	0.69	0.202	12	1	0.69	20.1	12	0.375	6	1.94	4.10	0.61	0.62	1.10	5	3.12
DS_2.84_1	151+00	0	1.00	7.14	0	7.14	C125	-	TEMP. SLOPE PIPE	2.56	0.095	12	1	2.56	0.7	12	0.375	6	1.94	4.10	0.61	0.12	21.61	25	2.96
DS_2.84_2	155+00	0	0.67	10.75	0	16.13	C125	-	TEMP. SLOPE PIPE	0.46	0.081	12	1	0.46	7.8	12	0.375	6	1.94	4.10	0.61	0.39	1.18	5	1.95
DS_3.41_1	181+00	0	1.00	6.99	0	6.99	S150	-	TEMP. SLOPE PIPE	1.25	0.034	12	1	1.25	1.2	12	0.375	6	1.94	4.10	0.61	0.16	8.06	10	1.55
DS_3.41_2	182+00	0	0.67	3.33	0	5.00	C125	-	TEMP. SLOPE PIPE	0.23	0.236	12	1	0.23	24.3	12	0.375	6	1.94	4.10	0.61	0.69	0.33	5	3.43
DS_3.41_3	183+00	0	0.67	3.35	0	5.00	C125	-	ROADSIDE DITCH	0.30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DS_3.50	185+00	0	0.67	4.76	0	7.14	C125	-	TEMP. SLOPE PIPE	0.30	0.117	12	1	0.30	16.9	12	0.375	6	1.94	4.10	0.61	0.57	0.52	5	2.87
DS_4.07	215+00	0	0.67	16.67	0	25.00	C125	-	TEMP. SLOPE PIPE	0.34	0.048	12	1	0.34	4.6	12	0.375	6	1.94	4.10	0.61	0.30	1.14	5	1.49
DS_4.26_1	225+00	0	1.00	7.14	0	7.14	-	P300	TEMP. SLOPE PIPE	1.05	0.141	12	1	1.05	9.3	12	0.375	6	1.94	4.10	0.61	0.43	2.46	5	2.13
DS_4.26_2	226+00	0	1.00	4.76	0	4.76	C125	-	TEMP. SLOPE PIPE	1.66	0.085	12	1	1.66	4.5	12	0.375	6	1.94	4.10	0.61	0.30	5.59	10	2.97
DS_5.40	283+00	0	1.00	2.86	0	2.86	C125	-	TEMP. SLOPE PIPE	0.77	0.033	12	1	0.77	3.7	12	0.375	6	1.94	4.10	0.61	0.27	2.86	5	1.35
DS_7.67	401+00	0	1.00	4.55	0	4.55	S75	-	TEMP. SLOPE PIPE	0.80	0.154	12	1	0.80	21.0	12	0.375	6	1.94	4.10	0.61	0.64	1.25	5	3.19
DS_10.89	575+00	0	1.00	4.17	0	4.17	-	P300 (VEGETATED)	OVERLAND FLOW	0.40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DS_11.27_1	593+00	0	1.00	4.76	0	4.76	-	P300	TEMP. SLOPE PIPE	0.49	0.178	12	1	0.49	21.4	12	0.375	6	1.94	4.10	0.61	0.64	0.76	5	3.22
DS_11.27_2	595+00	0	1.00	4.00	0	4.00	-	P550	TEMP. SLOPE PIPE	0.31	0.165	12	1	0.31	13.6	12	0.375	6	1.94	4.10	0.61	0.51	0.60	5	2.57
DS_11.36_1	600+00	0	1.00	8.33	0	8.33	-	P300	TEMP. SLOPE PIPE	1.53	0.117	12	1	1.53	8.6	12	0.375	6	1.94	4.10	0.61	0.41	3.75	5	2.04
DS_11.36_2	601+00	0	1.00	5.00	0	5.00	-	SC250 (VEGETATED)	TEMP. SLOPE PIPE	0.69	0.064	12	1	0.69	6.4	12	0.375	6	1.94	4.10	0.61	0.35	1.95	5	1.77
DS_11.95	631+00	0	1.00	3.70	0	3.70	-	C350	TEMP. SLOPE PIPE	0.50	0.123	12	1	0.50	17.3	12	0.375	6	1.94	4.10	0.61	0.58	0.86	5	2.90
DS_12.23_1	646+00	0	1.00	5.56	0	5.56	C125	-	TEMP. SLOPE PIPE	2.22	0.182	12	1	2.22	12.0	12	0.375	6	1.94	4.10	0.61	0.48	4.59	5	2.42
DS_12.23_2	650+00	0	1.00	9.09	0	9.09	GRASS	-	TEMP. SLOPE PIPE	1.48	0.218	12	1	1.48	19.4	12	0.375	6	1.94	4.10	0.61	0.61	2.41	5	3.07
DS_12.86_1	679+00	0	1.00	5.88	0	5.88	S75	-	TEMP. SLOPE PIPE	0.35	0.200	12	1	0.35	20.2	12	0.375	6	1.94	4.10	0.61	0.63	0.56	5	3.13
DS_12.86_2	680+00	0	1.00	7.69	0	7.69	-	C350	TEMP. SLOPE PIPE	0.45	0.130	12	1	0.45	18.2	12	0.375	6	1.94	4.10	0.61	0.60	0.76	5	2.98
DS_12.86_3	682+00	0	1.00	5.75	0	5.75	S75	-	TEMP. SLOPE PIPE	0.50	0.153	12	1	0.50	15.3	12	0.375	6	1.94	4.10	0.61	0.55	0.92	5	2.73
DS_13.31_1	703+00	0	1.00	5.00	0	5.00	-	P300 (VEGETATED)	OVERLAND FLOW	0.44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DS_13.31_2	704+00	0	1.00	4.00	0	4.00	-	P300 (VEGETATED)	OVERLAND FLOW	0.66	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DS_13.51	713+00	0	0.67	8.33	0	12.50	GRASS	-	TEMP. SLOPE PIPE	0.08	0.120	12	1	0.08	12.1	12	0.375	6	1.94	4.10	0.61	0.49	0.16	5	2.43
DS_13.56	716+00	0	1.00	8.00	0	8.00	S75	-	WATERBODY	1.29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DS_13.81	729+00	0	0.67	14.81	0	22.22	C125	-	TEMP. SLOPE PIPE	0.81	0.056	12	1	0.81	3.5	12	0.375	6	1.94	4.10	0.61	0.26	3.11	5	1.30
DS_14.10	744+00	0	0.67	8.54	0	12.80	S75	-	TEMP. SLOPE PIPE	0.27	0.037	12	1	0.27	5.5	12	0.375	6	1.94	4.10	0.61	0.33	0.82	5	1.64
DS_14.82_1	782+00	0	1.00	35.09	0	35.09	GRASS	-	TEMP. SLOPE PIPE	1.73	0.041	18	1	1.73	5.1	18	0.375	6	3.10	2.57	0.61	0.20	8.78	10	1.97
DS_14.82_2	787+00	0	1.00	14.29	0	14.29	GRASS	-	TEMP. SLOPE PIPE	1.06	0.055	12	1	1.06	5.6	12	0.375	6	1.94	4.10	0.61	0.33	3.22	5	1.65
DS_14.82_3	790+00	0	1.00	14.93	0	14.93	GRASS	-	TEMP. SLOPE PIPE	0.50	0.019	12	1	0.50	1.3	12	0.375	6	1.94	4.10	0.61	0.16	3.09	5	0.81
DS_17.54	926+00	0	1.00	11.49	0	11.49	S75	-	TEMP. SLOPE PIPE	1.26	0.076	12	1	1.26	8.0	12	0.375	6	1.94	4.10	0.61	0.39	3.19	5	1.97
DS_18.62	983+00	0	1.00	19.61	0	19.61	GRASS	-	TEMP. SLOPE PIPE	1.28	0.016	18	1	1.28	2.2	18	0.375	6	3.10	2.57	0.61	0.13	9.94	10	1.29
DS_19.89_1	1050+00	0	1.00	22.73	0	22.73	S150	-	TEMP. SLOPE PIPE	1.71	0.031	18	1	1.71	3.6	18	0.375	6	3.10	2.57	0.61	0.16	10.37	15	2.47
DS_19.89_2	1052+00	0	1.00	15.15	0	15.15	GRASS	-	TEMP. SLOPE PIPE	1.78	0.146	12	1	1.78	10.5	12	0.375	6	1.94	4.10	0.61	0.45	3.94	5	2.26
DS_19.89_3	1054+00	0	1.00	5.99	0	5.99	C125	-	TEMP. SLOPE PIPE	2.16	0.207	12	1	2.16	15.1	12	0.375	6	1.94	4.10	0.61	0.54	3.99	5	2.71
DS_19.89_4	1056+00	0	1.00	7.69	0	7.69	S150	-	TEMP. SLOPE PIPE	1.17	0.175	12	1	1.17	12.3	12	0.375	6	1.94	4.10	0.61	0.49	2.39	5	2.45
DS_19.89_5	1057+00	0	1.00	9.09	0	9.09	S75	-	TEMP. SLOPE PIPE	1.82	0.159	12	1	1.82	9.0	12	0.375	6	1.94	4.10	0.61	0.42	4.35	5	2.09
DS_19.89_6	1058+00	0	1.00	10.00	0	10.00	S75	-	TEMP. SLOPE PIPE	1.98	0.172	12	1	1.98	9.6	12	0.375	6	1.94	4.10	0.61	0.43	4.59	5	2.16
DS_20.09	1061+00	0	0.67	15.87	0	23.81	C125	-	TEMP. SLOPE PIPE	0.38	0.047	12	1	0.38	3.4	12	0.375	6	1.94	4.10	0.61	0.26	1.49	5	1.28
DS_21.16_1	1117+00	0	1.00	17.54	0	17.54	GRASS	-	TEMP. SLOPE PIPE	0.66	0.052	12	1	0.66	3.4	12	0.375	6	1.94	4.10	0.61	0.26	2.56	5	1.29
DS_21.16_2	1118+00	0	1.00	24.39	0	24.39	GRASS	-	TEMP. SLOPE PIPE	1.03	0.057	12	1	1.03	3.2	12	0.375	6	1.94	4.10	0.61	0.25	4.16	5	1.24
DS_21.16_3	1120+00	0	1.00	14.71	0	14.71	GRASS	-	TEMP. SLOPE PIPE	0.74	0.066	12	1	0.74	8.7	12	0.375	6	1.94	4.10	0.61	0.41	1.80	5	2.06

1) DIVERSION IDS WITH A PREFIX "DS" ARE LOCATED ALONG THE MAINLINE, "BML" ALONG BLUE MOUNTAIN LATERAL, AND "HL" ALONG HELLERTOWN LATERAL.

2) APPROXIMATE STATION VALUES ARE ROUNDED TO THE NEAREST HUNDRED FOOT.

3) FOR TEMPORARY LINERS, IN CASES WHERE EXISTING GRASS IS LISTED AS A SUITABLE LINER, S75 ROLLMAX LINING OR PRODUCT EQUIVALENT CAN BE USED IN ITS PLACE.

4) FOR PERMANENT LINERS, CELLS CONTAINING "(VEGETATED)" WILL REQUIRE VEGETATION REINFORCEMENT.

5) TEMPORARY DIVERSIONS TYPICALLY DISCHARGE TO SLOPE PIPES THAT CONNECT TO LEVEL SPREADERS. IN SELECT AREAS, THE TEMPORARY DIVERSIONS DISCHARGE CLEAN WATER TO EITHER EXISTING WATERBODIES, ROADSIDE DITCHES OR OPEN LAND.

6) THE TEMPORARY LEVEL SPREADER NOMINAL LENGTH IS THE "REQUIRED LENGTH" ROUNDED UP TO THE NEAREST FIVE FEET.

7) RUNOFF DIVERSION SOCK HEIGHT.

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
MICHAEL DENICHILO
ENGINEER
PE088513
10/25/2019

Know what's below. Call before you dig.

CLIENT APPROVAL

DATE

REVISIONS					
NO.	DESCRIPTION	DATE	DRAWN	CK	APPR
A	ISSUED FOR PADEP	10/2018	AJD (MM)	MWF (MM)	MJD(MM)
B	REVISED FOR PADEP	10/2019	AJD (MM)	MWF (MM)	MJD(MM)

APPROVALS	
DRAWN BY	DATE
AJD (MM)	10/15/2018
CHECKED BY	DATE
MWF (MM)	10/15/2018
ENG. APPROVAL	DATE
MJD (MM)	10/15/2018
P.M. APPROVAL	DATE

PREPARED FOR

PennEast PIPELINE

PENNEAST PIPELINE PROJECT

SOIL EROSION AND SEDIMENT CONTROL PLAN
TYPICAL E&S DETAILS

SCALE	DRAWING NO.	REVISION
AS SHOWN	000-03-09-010A	B

CARBON COUNTY, PENNSYLVANIA

TEMPORARY DIVERSION SUMMARY

DIVERSION SOCK (TEMPORARY CHANNEL)											TEMPORARY SLOPE PIPES				TEMPORARY PERFORATED PIPE LEVEL SPREADER CALCULATIONS									
DIVERSION ID[1]	APPROX. STATION[2]	BOTTOM WIDTH B (FT)	DEPTH D[7] (FT)	TOP WIDTH W (FT)	Z1 (FT)	Z2 (FT)	TEMPORARY LINING[3]	PERMANENT LINING[4]	DISCHARGE TYPE[5]	Q (CFS)	R.O.W. SLOPE (FT/FT)	SLOPE PIPE DIAMETER (IN)	NO. OF SLOPE PIPES (QTY)	Q / PIPE (CFS)	EFFECTIVE HEAD (FT)	LEVEL SPREADER PIPE DIAMETER (IN)	PERFORATION DIAMETER (IN)	NUMBER OF PERFORATIONS PER ROW	ROW SPACING (IN)	ORIFICE AREA PER FOOT (IN^2/FT)	ORIFICE COEFFICIENT (Cd)	LEVEL SPREADER CAPACITY PER FOOT OF LENGTH (CFS/FT)	REQUIRED LENGTH (FT)	NOMINAL LENGTH[6] (FT)	OVERALL LEVEL SPREADER CAPACITY (CFS)
DS_23.40_1	1234+00	0	1.00	13.89	0	13.89	-	P300	TEMP. SLOPE PIPE	0.38	0.034	12	1	0.38	3.4	12	0.375	6	1.94	4.1	0.61	0.26	1.47	5	1.29
DS_23.40_2	1236+00	0	1.00	9.52	0	9.52	S75	-	TEMP. SLOPE PIPE	0.31	0.058	12	1	0.31	5.9	12	0.375	6	1.94	4.1	0.61	0.34	0.92	5	1.69
DS_23.46_1	1239+00	0	1.00	21.28	0	21.28	S150	-	TEMP. SLOPE PIPE	0.37	0.109	12	1	0.37	10.8	12	0.375	6	1.94	4.1	0.61	0.46	0.81	5	2.29
DS_23.46_2	1240+00	0	1.00	8.13	0	8.13	GRASS	-	TEMP. SLOPE PIPE	0.67	0.160	12	1	0.67	15.6	12	0.375	6	1.94	4.1	0.61	0.55	1.22	5	2.75
DS_23.46_3	1242+00	0	1.00	6.29	0	6.29	S75	-	TEMP. SLOPE PIPE	0.94	0.080	12	1	0.94	6.9	12	0.375	6	1.94	4.1	0.61	0.37	2.56	5	1.84
DS_23.70_1	1251+00	0	1.00	8.62	0	8.62	S150	-	TEMP. SLOPE PIPE	0.57	0.125	12	1	0.57	14.3	12	0.375	6	1.94	4.1	0.61	0.53	1.08	5	2.64
DS_23.70_2	1253+00	0	1.00	6.76	0	6.76	C125	-	TEMP. SLOPE PIPE	1.90	0.102	12	1	1.90	5.4	12	0.375	6	1.94	4.1	0.61	0.33	5.84	10	3.25
DS_23.83	1258+00	0	1.00	8.77	0	8.77	C125	-	TEMP. SLOPE PIPE	2.58	0.070	18	1	2.58	5.9	18	0.375	6	3.10	2.57	0.61	0.21	12.11	15	3.19
DS_24.13_1	1274+00	0	1.00	100.00	0	100.00	GRASS	-	TEMP. SLOPE PIPE	1.74	0.002	18	2	0.87	0.1	18	0.375	6	3.10	2.57	0.61	0.03	62.98	65	1.80
DS_24.13_2	1275+00	0	1.00	100.00	0	100.00	GRASS	-	TEMP. SLOPE PIPE	1.88	0.007	18	2	0.94	0.4	18	0.375	6	3.10	2.57	0.61	0.06	33.91	35	1.94
DS_24.13_3	1276+00	0	1.00	29.41	0	29.41	GRASS	-	TEMP. SLOPE PIPE	1.69	0.019	18	1	1.69	1.3	18	0.375	6	3.10	2.57	0.61	0.10	16.85	20	2.01
DS_24.13_4	1278+00	0	1.00	62.50	0	62.50	GRASS	-	OVERLAND FLOW	1.33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DS_28.81_1	1521+00	0	1.00	7.09	0	7.09	GRASS	-	TEMP. SLOPE PIPE	0.64	0.102	12	1	0.64	9.8	12	0.375	6	1.94	4.1	0.61	0.44	1.46	5	2.18
DS_28.81_2	1525+00	0	1.00	9.09	0	9.09	GRASS	-	TEMP. SLOPE PIPE	0.60	0.078	12	1	0.60	7.2	12	0.375	6	1.94	4.1	0.61	0.38	1.60	5	1.88
DS_28.81_3	1526+00	0	1.00	10.00	0	10.00	S75	-	TEMP. SLOPE PIPE	0.23	0.083	12	1	0.23	8.3	12	0.375	6	1.94	4.1	0.61	0.40	0.57	5	2.01
DS_28.81_4	1527+00	0	1.00	18.52	0	18.52	GRASS	-	TEMP. SLOPE PIPE	1.26	0.086	12	1	1.91	3.9	12	0.375	6	1.94	4.1	0.61	0.28	6.90	10	2.77
DS_28.81_5	1528+00	0	1.00	20.83	0	20.83	GRASS	-	TEMP. SLOPE PIPE	0.65															
DS_29.07_1	1536+00	0	1.00	12.35	0	12.35	S75	-	TEMP. SLOPE PIPE	1.29	0.103	12	1	1.29	8.0	12	0.375	6	1.94	4.1	0.61	0.40	3.26	5	1.98
DS_29.07_2	1537+00	0	1.00	12.35	0	12.35	S75	-	TEMP. SLOPE PIPE	0.49	0.080	12	1	0.49	11.5	12	0.375	6	1.94	4.1	0.61	0.47	1.04	5	2.36
DS_30.09_1	1589+00	0	1.00	22.73	0	22.73	GRASS	-	TEMP. SLOPE PIPE	1.14	0.030	12	1	1.14	0.9	12	0.375	6	1.94	4.1	0.61	0.13	8.65	10	1.32
DS_30.09_2	1590+00	0	1.00	37.04	0	37.04	GRASS	-	TEMP. SLOPE PIPE	2.38	0.026	18	1	2.38	1.2	18	0.375	6	3.10	2.57	0.61	0.10	24.41	25	2.44
DS_34.79_1	1837+00	0	1.00	11.49	0	11.49	S75	-	TEMP. SLOPE PIPE	1.83	0.050	12	1	1.83	0.6	12	0.375	6	1.94	4.1	0.61	0.11	16.89	20	2.17
DS_34.79_2	1838+00	0	1.00	9.26	0	9.26	S75	-	TEMP. SLOPE PIPE	1.35	0.059	12	1	1.35	5.6	12	0.375	6	1.94	4.1	0.61	0.33	4.11	5	1.64
DS_34.79_3	1839+00	0	1.00	13.51	0	13.51	S75	-	TEMP. SLOPE PIPE	1.24	0.063	12	1	1.24	4.1	12	0.375	6	1.94	4.1	0.61	0.28	4.39	5	1.41
DS_38.45_1	2030+00	0	1.00	11.36	0	11.36	S75	-	TEMP. SLOPE PIPE	1.97	0.088	12	1	1.97	3.5	12	0.375	6	1.94	4.1	0.61	0.26	7.54	10	2.61
DS_38.45_2	2031+00	0	1.00	10.87	0	10.87	S75	-	TEMP. SLOPE PIPE	1.53	0.084	12	1	1.53	5.0	12	0.375	6	1.94	4.1	0.61	0.31	4.93	5	1.55
DS_38.45_3	2032+00	0	1.50	17.65	0	11.76	S150	-	TEMP. SLOPE PIPE	2.06	0.080	12	1	2.06	2.4	12	0.375	6	1.94	4.1	0.61	0.21	9.63	10	2.14
DS_38.45_4	2034+00	0	1.00	12.50	0	12.50	S75	-	TEMP. SLOPE PIPE	2.10	0.067	12	1	2.10	0.9	12	0.375	6	1.94	4.1	0.61	0.13	15.84	20	2.65
DS_38.62_1	2039+00	0	1.00	13.16	0	13.16	SC150	-	TEMP. SLOPE PIPE	0.61	0.071	12	1	0.61	6.3	12	0.375	6	1.94	4.1	0.61	0.35	1.75	5	1.75
DS_38.62_2	2040+00	0	1.00	14.93	0	14.93	C125	-	TEMP. SLOPE PIPE	2.36	0.081	12	1	2.36	0.9	12	0.375	6	1.94	4.1	0.61	0.13	17.52	20	2.69
DS_38.62_3	2041+00	0	1.00	14.71	0	14.71	GRASS	-	TEMP. SLOPE PIPE	1.68	0.077	12	1	1.68	3.7	12	0.375	6	1.94	4.1	0.61	0.27	6.28	10	2.68
DS_38.62_4	2042+00	0	1.00	15.87	0	15.87	S75	-	TEMP. SLOPE PIPE	2.62	0.066	18	1	2.62	5.2	18	0.375	6	3.10	2.57	0.61	0.20	13.21	15	2.98
DS_38.62_5	2043+00	0	1.00	10.31	0	10.31	C125	-	TEMP. SLOPE PIPE	2.81	0.071	18	1	2.81	5.4	18	0.375	6	3.10	2.57	0.61	0.20	13.79	15	3.06
DS_38.62_6	2045+00	0	1.00	11.36	0	11.36	C125	-	TEMP. SLOPE PIPE	2.83	0.090	18	1	2.83	7.3	18	0.375	6	3.10	2.57	0.61	0.24	12.02	15	3.53
DS_38.62_7	2047+00	0	1.00	9.26	0	9.26	C125	-	TEMP. SLOPE PIPE	2.88	0.107	12	1	2.88	0.4	12	0.375	6	1.94	4.1	0.61	0.09	33.23	35	3.03
DS_38.62_8	2049+00	0	1.00	8.26	0	8.26	C125	-	TEMP. SLOPE PIPE	2.67	0.110	12	1	2.67	2.0	12	0.375	6	1.94	4.1	0.61	0.20	13.64	15	2.94
DS_38.62_9	2050+00	0	1.00	12.05	0	12.05	S75	-	TEMP. SLOPE PIPE	2.52	0.105	12	1	2.52	2.3	12	0.375	6	1.94	4.1	0.61	0.21	11.88	15	3.18
DS_38.62_10	2051+00	0	1.00	10.75	0	10.75	SC150	-	TEMP. SLOPE PIPE	2.65	0.100	12	1	2.65	1.1	12	0.375	6	1.94	4.1	0.61	0.15	17.91	20	2.96
DS_38.62_11	2053+00	0	1.00	9.35	0	9.35	SC150	-	TEMP. SLOPE PIPE	2.58	0.104	12	1	2.58	1.9	12	0.375	6	1.94	4.1	0.61	0.19	13.40	15	2.89
DS_38.62_12	2054+00	0	1.00	8.77	0	8.77	C125	-	TEMP. SLOPE PIPE	2.78	0.125	12	1	2.78	2.9	12	0.375	6	1.94	4.1	0.61	0.24	11.80	15	3.53
DS_39.45_1	2083+00	0	1.00	7.09	0	7.09	C125	-	TEMP. SLOPE PIPE	2.02	0.058	12	1	2.02	0.4	12	0.375	6	1.94	4.1	0.61	0.09	22.99	25	2.20
DS_39.45_2	2085+00	0	1.00	7.63	0	7.63	C125	-	TEMP. SLOPE PIPE	2.48	0.050	18	1	2.48	4.9	18	0.375	6	3.10	2.57	0.61	0.19	12.77	15	2.91
DS_39.77	2100+00	0	1.00	9.52	0	9.52	C125	-	TEMP. SLOPE PIPE	2.82	0.081	18	1	2.82	10.3	18	0.375	6	3.10	2.57	0.61	0.28	10.06	15	4.21
DS_40.21_1	2123+00	0	1.00	7.19	0	7.19	C125	-	TEMP. SLOPE PIPE	0.54	0.158	12	1	0.54	24.5	12	0.375	6	1.94	4.1	0.61	0.69	0.78	5	3.45
DS_40.21_2	2124+00	0	1.00	5.26	0	5.26	-	P300	TEMP. SLOPE PIPE	2.56	0.154	12	1	2.56	10.8	12	0.375	6	1.94	4.1	0.61	0.46	5.59	10	4.58
DS_40.21_3	2127+00	0	1.50	4.92	0	3.28	SC150	-	TEMP. SLOPE PIPE	2.67	0.227	12	1	2.67	21.1	12	0.375	6	1.94	4.1	0.61	0.64	4.17	5	3.20
DS_41.38_1	2185+00	0	1.00	22.73	0	22.73	GRASS	-	TEMP. SLOPE PIPE	0.95	0.031	12	1	0.95	1.8	12	0.375	6	1.94	4.1	0.61	0.19	5.07	10	1.87
DS_41.38_2	2187+00	0	1.00	12.20	0	12.20	GRASS	-	TEMP. SLOPE PIPE	0.56	0.031	12	1	0.56	2.6	12	0.375	6	1.94	4.1	0.61	0.22	2.50	5	1.12
DS_41.58	2196+00	0	1.00	31.25	0	31.25	GRASS	-	OVERLAND FLOW	1.35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DS_42.12_1	2224+00	0	1.00	15.63	0	15.63	-	P300	TEMP. SLOPE PIPE	2.52	0.035	18	1	2.52	1.8	18	0.375	6	3.10	2.57	0.61	0.12	21.39	25	2.95
DS_42.12_2	2225+00	0	1.00	14.71	0	14.71	SC150	-	TEMP. SLOPE PIPE	1.11	0.074	12	1	1.11	7.4	12	0.375	6	1.94	4.1	0.61	0.38	2.92	5	1.90
DS_42.12_3	2226+00	0	1.00	14.49	0	14.49	C125	-	TEMP. SLOPE PIPE	2.47	0.078	18	1	2.47	8.9	18	0.375	6	3.10	2.57	0.61	0.26	9.45	10	2.61
DS_42.12_4	2228+00	0	1.00	11.36	0	11.36	S75	-	TEMP. SLOPE PIPE	1.65	0.101	12	1	1.65	9.7	12	0.375	6	1.94	4.1	0.61	0.43	3.79	5	2.17
DS_43.01_1	2271+00	0	1.00	22.22	0	22.22	C125	-	TEMP. SLOPE PIPE	4.52	0.051	18	1	4.52	2.5	18	0.375	6	3.10	2.57	0.61	0.14	32.45	35	4.88
DS_43.01_2	2273+00	0	1.00	14.71	0	14.71	S75	-	TEMP. SLOPE PIPE	1.18	0.040	12	1	1.18	3.6	12	0.375	6	1.94	4.1	0.61	0.27	4.45	5	1.33
DS_44.91	2371+00	0	1.00	8.77	0	8.77	GRASS	-	TEMP. SLOPE PIPE	0.48	0.134	12	1	0.48	7.9	12	0.375	6	1.94	4.1	0.61	0.39	1.22	5	1.96
DS_46.23	2441+00	0	1.00	10.53	0	10.53	C125	-	TEMP. SLOPE PIPE	2.53	0.053	18	1	2.53	5.3	18	0.375	6	3.10	2.57	0.61	0.20	12.63	15	3.00
DS_46.34	2447+00	0	1.50	5.26	0	3.51	S150	-	TEMP. SLOPE PIPE	3.38	0.091	18	1	3.38	9.0	18	0.375	6	3.10	2.57	0.61	0.26	12.93	15	3.92
DS_47.00_1	2481+00	0	1.00	4.41	0	4.41	-	P550	TEMP. SLOPE PIPE	0.58	0.143	12	1	0.58	13.9	12	0.375	6	1.94	4.1	0.61	0.52	1.11	5	2.60
DS_47.00_2	2482+00	0	1.00	4.00	0	4.00	-	P300	TEMP. SLOPE PIPE	1.70	0.098	18	1	3.05	15.8	18	0.375	6	3.1	2.57	0.61	0.35	8.78	10	3.47
DS_47.00_3	2485+00	0	1.00	12.99	0	12.99	S75	-	TEMP. SLOPE PIPE	1.35															
DS_47.53_1	2510+00	0	1.00	4.03	0	4.03	C125	-	TEMP. SLOPE PIPE	0.24	0.070	12	1	0.24	7.0	12	0.375	6	1.94	4.1	0.61	0.37	0.65	5	1.84

1) DIVERSION IDS WITH A PREFIX "DS" ARE LOCATED ALONG THE MAINLINE, "BML" ALONG BLUE MOUNTAIN LATERAL, AND "HL" ALONG HELLERTOWN LATERAL.

2) APPROXIMATE STATION VALUES ARE ROUNDED TO THE NEAREST HUNDRED FOOT.

3) FOR TEMPORARY LINERS, IN CASES WHERE EXISTING GRASS IS LISTED AS A SUITABLE LINER, S75 ROLLMAX LINING OR PRODUCT EQUIVALENT CAN BE USED IN ITS PLACE.

4) FOR PERMANENT LINERS, CELLS CONTAINING "(VEGETATED)" WILL REQUIRE VEGETATION REINFORCEMENT.

5) TEMPORARY DIVERSIONS TYPICALLY DISCHARGE TO SLOPE PIPES THAT CONNECT TO LEVEL SPREADERS. IN SELECT AREAS, THE TEMPORARY DIVERSIONS DISCHARGE CLEAN WATER TO EITHER EXISTING WATERBODIES, ROADSIDE DITCHES OR OPEN LAND.

6) THE TEMPORARY LEVEL SPREADER NOMINAL LENGTH IS THE "REQUIRED LENGTH" ROUNDED UP TO THE NEAREST FIVE FEET.

7) RUNOFF DIVERSION SOCK HEIGHT.

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
MICHAEL DENICHILO
ENGINEER
PE068513
10/25/2019

Know what's below. Call before you dig.

CLIENT APPROVAL

DATE

REVISIONS						APPROVALS	
NO.	DESCRIPTION	DATE	DRAWN	CK	APPR	DRAWN BY	DATE
A	ISSUED FOR PADEP	10/2018	AJD (MM)	MWF (MM)	MJD(MM)	AJD (MM)	10/15/2018
B	REVISED FOR PADEP	10/2019	AJD (MM)	MWF (MM)	MJD(MM)	CHECKED BY	DATE
						MWF (MM)	10/15/2018
						ENG. APPROVAL	DATE
						MJD (MM)	10/15/2018
						P.M. APPROVAL	DATE

PREPARED FOR

PennEast PIPELINE

PENNEAST PIPELINE PROJECT

SOIL EROSION AND SEDIMENT CONTROL PLAN
TYPICAL E&S DETAILS

SCALE	DRAWING NO.	REVISION
AS SHOWN	000-03-09-010B.1	B

CARBON COUNTY, PENNSYLVANIA

TEMPORARY DIVERSION SUMMARY															TEMPORARY PERFORATED PIPE LEVEL SPREADER CALCULATIONS									
DIVERSION SOCK (TEMPORARY CHANNEL)											TEMPORARY SLOPE PIPES													
DIVERSION ID[1]	APPROX. STATION[2]	BOTTOM WIDTH B (FT)	DEPTH D[7] (FT)	TOP WIDTH W (FT)	Z1 (FT)	Z2 (FT)	TEMPORARY LINING[3]	PERMANENT LINING[4]	DISCHARGE TYPE[5]	Q (CFS)	R.O.W. SLOPE (FT/FT)	SLOPE PIPE DIAMETER (IN)	NO. OF SLOPE PIPES (QTY)	Q / PIPE (CFS)	EFFECTIVE HEAD (FT)	LEVEL SPREADER PIPE DIAMETER (IN)	PERFORATION DIAMETER (IN)	NUMBER OF PERFORATIONS PER ROW	ROW SPACING (IN)	ORIFICE AREA PER FOOT (IN^2/FT)	ORIFICE COEFFICIENT (Cd)	LEVEL SPREADER CAPACITY PER FOOT OF LENGTH (CFS/FT)	REQUIRED LENGTH (FT)	NOMINAL LENGTH[6] (FT)	OVERALL LEVEL SPREADER CAPACITY (CFS)
DS_47.53_2	2511+00	0	1.00	3.92	0	3.92	S150	-	TEMP. SLOPE PIPE	0.39	0.143	12	1	0.39	14.2	12	0.375	6	1.94	4.1	0.61	0.53	0.74	5	2.63
DS_48.60_1	2566+00	0	1.00	4.37	0	4.37	-	P300	TEMP. SLOPE PIPE	0.40	0.164	12	1	0.40	16.4	12	0.375	6	1.94	4.1	0.61	0.56	0.71	5	2.82
DS_48.60_2	2567+00	0	0.67	2.96	0	4.44	S75	-	OVERLAND FLOW	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DS_48.77	2575+00	0	1.00	23.81	0	23.81	SC150	-	OVERLAND FLOW	2.94	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DS_49.79_1	2629+00	0	1.00	5.56	0	5.56	C125	-	TEMP. SLOPE PIPE	1.51	0.154	12	1	1.51	11.5	12	0.375	6	1.94	4.1	0.61	0.47	3.20	5	2.36
DS_49.79_2	2629+00	0	1.00	6.10	0	6.10	C125	-	TEMP. SLOPE PIPE	1.64	0.147	12	1	1.64	10.6	12	0.375	6	1.94	4.1	0.61	0.45	3.62	5	2.27
DS_49.81_1	2630+00	0	1.00	6.41	0	6.41	C125	-	TEMP. SLOPE PIPE	1.67	0.145	12	1	1.67	10.3	12	0.375	6	1.94	4.1	0.61	0.45	3.73	5	2.24
DS_49.81_2	2631+00	0	1.00	5.88	0	5.88	C125	-	TEMP. SLOPE PIPE	1.86	0.138	12	1	1.86	8.8	12	0.375	6	1.94	4.1	0.61	0.41	4.50	5	2.07
DS_49.81_3	2632+00	0	1.00	6.25	0	6.25	S75	-	TEMP. SLOPE PIPE	0.98	0.142	12	1	0.98	12.2	12	0.375	6	1.94	4.1	0.61	0.49	2.01	5	2.44
DS_49.81_4	2632+00	0	1.00	6.10	0	6.10	C125	-	TEMP. SLOPE PIPE	1.44	0.158	12	1	1.44	12.4	12	0.375	6	1.94	4.1	0.61	0.49	2.94	5	2.45
DS_49.81_5	2632+00	0	1.00	5.99	0	5.99	C125	-	TEMP. SLOPE PIPE	2.00	0.156	12	1	2.00	10.0	12	0.375	6	1.94	4.1	0.61	0.44	4.55	5	2.20
DS_49.81_6	2633+00	0	1.00	6.21	0	6.21	C125	-	TEMP. SLOPE PIPE	1.73	0.144	12	1	1.73	10.0	12	0.375	6	1.94	4.1	0.61	0.44	3.93	5	2.20
DS_49.81_7	2634+00	0	1.00	7.14	0	7.14	SC150	-	TEMP. SLOPE PIPE	1.75	0.144	12	1	1.75	9.9	12	0.375	6	1.94	4.1	0.61	0.44	3.99	5	2.19
DS_49.81_8	2634+00	0	1.00	5.88	0	5.88	S75	-	TEMP. SLOPE PIPE	0.70	0.160	12	1	0.70	14.7	12	0.375	6	1.94	4.1	0.61	0.53	1.31	5	2.67
DS_49.81_9	2634+00	0	1.00	6.67	0	6.67	S75	-	TEMP. SLOPE PIPE	1.03	0.150	12	1	1.03	12.9	12	0.375	6	1.94	4.1	0.61	0.50	2.05	5	2.51
DS_49.91_1	2635+00	0	1.00	6.06	0	6.06	C125	-	TEMP. SLOPE PIPE	1.73	0.162	12	1	1.73	11.7	12	0.375	6	1.94	4.1	0.61	0.48	3.62	5	2.39
DS_49.91_2	2635+00	0	1.00	6.33	0	6.33	C125	-	TEMP. SLOPE PIPE	2.60	0.162	12	1	2.60	7.3	12	0.375	6	1.94	4.1	0.61	0.38	6.87	10	3.78
DS_49.91_3	2636+00	0	1.00	6.25	0	6.25	S75	-	TEMP. SLOPE PIPE	1.07	0.157	12	1	1.07	13.5	12	0.375	6	1.94	4.1	0.61	0.51	2.09	5	2.56
DS_49.91_4	2636+00	0	1.00	6.25	0	6.25	S75	-	TEMP. SLOPE PIPE	1.08	0.156	12	1	1.08	13.4	12	0.375	6	1.94	4.1	0.61	0.51	2.12	5	2.55
DS_49.91_5	2636+00	0	1.00	6.80	0	6.80	C125	-	TEMP. SLOPE PIPE	1.52	0.152	12	1	1.52	11.5	12	0.375	6	1.94	4.1	0.61	0.47	3.21	5	2.37
DS_49.91_6	2637+00	0	1.00	6.62	0	6.62	C125	-	TEMP. SLOPE PIPE	2.23	0.148	12	1	2.23	8.1	12	0.375	6	1.94	4.1	0.61	0.40	5.64	10	3.96
DS_49.91_7	2638+00	0	1.00	8.06	0	8.06	S75	-	TEMP. SLOPE PIPE	1.48	0.146	12	1	1.48	11.1	12	0.375	6	1.94	4.1	0.61	0.46	3.19	5	2.32
DS_49.91_8	2639+00	0	1.00	6.90	0	6.90	SC150	-	TEMP. SLOPE PIPE	1.68	0.148	12	1	1.68	10.7	12	0.375	6	1.94	4.1	0.61	0.46	3.68	5	2.28
DS_50.00_1	2640+00	0	1.00	6.76	0	6.76	C125	-	TEMP. SLOPE PIPE	2.48	0.137	12	1	2.48	5.6	12	0.375	6	1.94	4.1	0.61	0.33	7.51	10	3.30
DS_50.00_2	2641+00	0	1.00	7.04	0	7.04	C125	-	TEMP. SLOPE PIPE	1.91	0.162	12	1	1.91	11.0	12	0.375	6	1.94	4.1	0.61	0.46	4.13	5	2.31
DS_50.00_3	2642+00	0	1.00	7.52	0	7.52	C125	-	TEMP. SLOPE PIPE	2.18	0.152	12	1	2.18	8.7	12	0.375	6	1.94	4.1	0.61	0.41	5.31	10	4.10
DS_50.00_4	2642+00	0	1.00	7.30	0	7.30	GRASS	-	TEMP. SLOPE PIPE	0.26	0.159	12	1	0.26	15.2	12	0.375	6	1.94	4.1	0.61	0.54	0.48	5	2.72
DS_50.00_5	2643+00	0	1.00	7.75	0	7.75	C125	-	TEMP. SLOPE PIPE	1.88	0.167	12	1	1.88	11.6	12	0.375	6	1.94	4.1	0.61	0.47	3.96	5	2.37
DS_50.00_6	2643+00	0	1.00	7.58	0	7.58	S150	-	TEMP. SLOPE PIPE	1.14	0.178	12	1	1.14	15.3	12	0.375	6	1.94	4.1	0.61	0.55	2.09	5	2.73
DS_50.00_7	2644+00	0	1.00	6.29	0	6.29	C125	-	TEMP. SLOPE PIPE	1.95	0.159	12	1	1.95	10.4	12	0.375	6	1.94	4.1	0.61	0.45	4.33	5	2.25
DS_50.00_8	2644+00	0	1.00	6.85	0	6.85	C125	-	TEMP. SLOPE PIPE	1.88	0.153	12	1	1.88	10.1	12	0.375	6	1.94	4.1	0.61	0.44	4.24	5	2.22
DS_50.09_1	2645+00	0	1.50	10.34	0	6.90	S150	-	TEMP. SLOPE PIPE	5.52	0.153	18	1	5.52	10.0	18	0.375	6	3.10	2.57	0.61	0.28	19.93	20	5.54
DS_50.09_2	2645+00	0	1.00	6.76	0	6.76	C125	-	TEMP. SLOPE PIPE	1.97	0.155	12	1	1.97	9.9	12	0.375	6	1.94	4.1	0.61	0.44	4.49	5	2.19
DS_50.09_3	2646+00	0	1.00	7.04	0	7.04	C125	-	TEMP. SLOPE PIPE	1.90	0.156	12	1	1.90	10.3	12	0.375	6	1.94	4.1	0.61	0.45	4.25	5	2.24
DS_50.09_4	2646+00	0	1.00	6.49	0	6.49	C125	-	TEMP. SLOPE PIPE	1.92	0.147	12	1	1.92	9.4	12	0.375	6	1.94	4.1	0.61	0.43	4.50	5	2.13
DS_50.09_5	2647+00	0	1.00	6.99	0	6.99	C125	-	TEMP. SLOPE PIPE	1.99	0.139	12	1	1.99	8.3	12	0.375	6	1.94	4.1	0.61	0.40	4.97	5	2.00
DS_50.09_6	2648+00	0	1.00	6.67	0	6.67	S75	-	TEMP. SLOPE PIPE	0.97	0.146	12	1	0.97	12.5	12	0.375	6	1.94	4.1	0.61	0.49	1.97	5	2.47
DS_50.09_7	2648+00	0	1.00	6.67	0	6.67	C125	-	TEMP. SLOPE PIPE	1.32	0.167	12	1	1.32	13.7	12	0.375	6	1.94	4.1	0.61	0.52	2.56	5	2.58
DS_50.09_8	2649+00	0	1.00	6.80	0	6.80	C125	-	TEMP. SLOPE PIPE	1.71	0.156	12	1	1.71	11.2	12	0.375	6	1.94	4.1	0.61	0.47	3.67	5	2.33
DS_50.19_1	2649+00	0	1.00	6.58	0	6.58	C125	-	TEMP. SLOPE PIPE	1.99	0.154	12	1	1.99	9.9	12	0.375	6	1.94	4.1	0.61	0.44	4.55	5	2.19
DS_50.19_2	2650+00	0	1.00	6.29	0	6.29	S75	-	TEMP. SLOPE PIPE	1.14	0.158	12	1	1.14	13.4	12	0.375	6	1.94	4.1	0.61	0.51	2.23	5	2.55
DS_50.19_3	2651+00	0	1.00	5.99	0	5.99	C125	-	TEMP. SLOPE PIPE	1.92	0.166	12	1	1.92	11.3	12	0.375	6	1.94	4.1	0.61	0.47	4.09	5	2.35
DS_50.19_4	2651+00	0	1.00	6.33	0	6.33	C125	-	TEMP. SLOPE PIPE	1.09	0.167	12	1	1.09	14.5	12	0.375	6	1.94	4.1	0.61	0.53	2.06	5	2.65
DS_50.19_5	2652+00	0	1.00	6.10	0	6.10	C125	-	TEMP. SLOPE PIPE	1.80	0.153	12	1	1.80	10.5	12	0.375	6	1.94	4.1	0.61	0.45	3.98	5	2.26
DS_50.19_6	2653+00	0	1.00	6.76	0	6.76	C125	-	TEMP. SLOPE PIPE	2.04	0.166	12	1	2.04	10.8	12	0.375	6	1.94	4.1	0.61	0.46	4.45	5	2.29
DS_50.19_7	2654+00	0	1.00	6.37	0	6.37	S75	-	TEMP. SLOPE PIPE	1.26	0.167	12	1	1.26	13.9	12	0.375	6	1.94	4.1	0.61	0.52	2.42	5	2.60
DS_50.19_8	2654+00	0	1.00	5.68	0	5.68	C125	-	TEMP. SLOPE PIPE	1.85	0.167	12	1	1.85	11.7	12	0.375	6	1.94	4.1	0.61	0.48	3.88	5	2.39
DS_50.28_1	2655+00	0	1.00	5.56	0	5.56	C125	-	TEMP. SLOPE PIPE	1.44	0.177	12	1	1.44	14.3	12	0.375	6	1.94	4.1	0.61	0.53	2.73	5	2.64
DS_50.28_2	2656+00	0	1.50	8.11	0	5.41	GRASS	-	TEMP. SLOPE PIPE	1.96	0.174	12	1	1.96	11.9	12	0.375	6	1.94	4.1	0.61	0.48	4.08	5	2.40
DS_50.28_3	2656+00	0	1.00	6.02	0	6.02	C125	-	TEMP. SLOPE PIPE	2.13	0.197	12	1	2.13	13.3	12	0.375	6	1.94	4.1	0.61	0.51	4.19	5	2.54
DS_50.28_4	2657+00	0	1.00	5.75	0	5.75	C125	-	TEMP. SLOPE PIPE	1.97	0.172	12	1	1.97	11.7	12	0.375	6	1.94	4.1	0.61	0.48	4.14	5	2.38
DS_50.28_5	2658+00	0	1.50	8.67	0	5.78	GRASS	-	TEMP. SLOPE PIPE	2.01	0.163	12	1	2.01	10.6	12	0.375	6	1.94	4.1	0.61	0.45	4.43	5	2.27
DS_50.28_6	2659+00	0	1.00	5.41	0	5.41	S75	-	TEMP. SLOPE PIPE	1.08	0.153	12	1	1.08	13.1	12	0.375	6	1.94	4.1	0.61	0.50	2.14	5	2.52
DS_50.28_7	2659+00	0	1.00	5.59	0	5.59	S75	-	TEMP. SLOPE PIPE	0.36	0.164	12	1	0.36	15.6	12	0.375	6	1.94	4.1	0.61	0.55	0.65	5	2.75
DS_50.38_1	2660+00	0	1.00	5.15	0	5.15	C125	-	TEMP. SLOPE PIPE	1.84	0.166	12	1	1.84	11.7	12	0.375	6	1.94	4.1	0.61	0.48	3.86	5	2.38
DS_50.38_2	2660+00	0	1.00	5.99	0	5.99	C125	-	TEMP. SLOPE PIPE	1.79	0.153	12	1	1.79	10.6	12	0.375	6	1.94	4.1	0.61	0.45	3.95	5	2.26
DS_50.38_3	2660+00	0	1.00	6.99	0	6.99	C125	-	TEMP. SLOPE PIPE	2.11	0.153	12	1	2.11	9.1	12	0.375	6	1.94	4.1	0.61	0.42	5.01	10	4.21
DS_50.38_4	2661+00	0	1.00	6.02	0	6.02	C125	-	TEMP. SLOPE PIPE	2.10	0.159	12	1	2.10	9.8	12	0.375	6	1.94	4.1	0.61	0.44	4.82	5	2.18
DS_50.38_5	2662+00	0	1.00	5.65	0	5.65	C125	-	TEMP. SLOPE PIPE	1.37	0.162	12	1	1.37	13.1	12	0.375	6	1.94	4.1	0.61	0.50	2.71	5	2.52
DS_50.38_6	2663+00	0	1.00	4.76	0	4.76	C125	-	TEMP. SLOPE PIPE	2.24	0.153	12	1	2.24	8.5	12	0.375	6	1.94	4.1	0.61	0.41	5.52	10	4.06
DS_50.38_7	2663+00	0	1.00	4.76	0	4.76	C125	-	TEMP. SLOPE PIPE	1.46	0.161	12	1	1.46	12.7	12	0.375	6	1.94	4.1	0.61	0.50	2.93	5	2.49
DS_50.38_8	2664+00	0	1.00	5.05	0	5.05	C125	-	TEMP. SLOPE PIPE	1.66	0.173	12	1	1.66	13.2	12	0.375	6	1.94	4.1	0.61	0.51	3.28	5	2.53

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5) TEMPORARY DIVERSIONS TYPICALLY DISCHARGE TO SLOPE PIPES THAT CONNECT TO LEVEL SPREADERS. IN SELECT AREAS, THE TEMPORARY DIVERSIONS DISCHARGE CLEAN WATER TO EITHER EXISTING WATERBODIES, ROADSIDE DITCHES OR OPEN LAND.

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7) RUNOFF DIVERSION SOCK HEIGHT.

DRAINAGE AREA > 5 ACRES DUE TO BLUE MOUNTAIN TOPOGRAPHY

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
MICHAEL DENICHILO
ENGINEER
PE086513
10/25/2019

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CLIENT APPROVAL

DATE

REVISIONS					
NO.	DESCRIPTION	DATE	DRAWN	CK	APPR
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APPROVALS	
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PREPARED FOR

PennEast PIPELINE

PENNEAST PIPELINE PROJECT

SOIL EROSION AND SEDIMENT CONTROL PLAN
TYPICAL E&S DETAILS

SCALE	DRAWING NO.	REVISION
AS SHOWN	000-03-09-010B.2	B

CARBON COUNTY, PENNSYLVANIA

TEMPORARY DIVERSION SUMMARY

DIVERSION SOCK (TEMPORARY CHANNEL)											TEMPORARY SLOPE PIPES				TEMPORARY PERFORATED PIPE LEVEL SPREADER CALCULATIONS									
DIVERSION ID[1]	APPROX. STATION[2]	BOTTOM WIDTH B (FT)	DEPTH D[7] (FT)	TOP WIDTH W (FT)	Z1 (FT)	Z2 (FT)	TEMPORARY LINING[3]	PERMANENT LINING[4]	DISCHARGE TYPE[5]	Q (CFS)	R.O.W. SLOPE (FT/FT)	SLOPE PIPE DIAMETER (IN)	NO. OF SLOPE PIPES (QTY)	Q / PIPE (CFS)	EFFECTIVE HEAD (FT)	LEVEL SPREADER PIPE DIAMETER (IN)	PERFORATION DIAMETER (IN)	NUMBER OF PERFORATIONS PER ROW	ROW SPACING (IN)	ORIFICE AREA PER FOOT (IN^2/FT)	ORIFICE COEFFICIENT (Cd)	LEVEL SPREADER CAPACITY PER FOOT OF LENGTH (CFS/FT)	REQUIRED LENGTH (FT)	NOMINAL LENGTH[6] (FT)	OVERALL LEVEL SPREADER CAPACITY (CFS)
DS_50.47_1	2665+00	0	1.00	5.32	0	5.32	C125	-	TEMP. SLOPE PIPE	1.67	0.169	12	1	1.67	12.8	12	0.375	6	1.94	4.1	0.61	0.50	3.35	5	2.49
DS_50.47_2	2665+00	0	1.00	5.68	0	5.68	C125	-	TEMP. SLOPE PIPE	1.58	0.161	12	1	1.58	12.3	12	0.375	6	1.94	4.1	0.61	0.49	3.24	5	2.44
DS_50.47_3	2666+00	0	1.00	5.85	0	5.85	S75	-	TEMP. SLOPE PIPE	1.39	0.148	12	1	1.39	11.7	12	0.375	6	1.94	4.1	0.61	0.48	2.92	5	2.38
DS_50.47_4	2667+00	0	1.00	6.06	0	6.06	C125	-	TEMP. SLOPE PIPE	2.15	0.129	12	1	2.15	6.6	12	0.375	6	1.94	4.1	0.61	0.36	6.02	10	3.57
DS_50.47_5	2668+00	0	1.00	5.68	0	5.68	C125	-	TEMP. SLOPE PIPE	2.28	0.138	12	1	2.28	6.9	12	0.375	6	1.94	4.1	0.61	0.36	6.25	10	3.65
DS_50.47_6	2669+00	0	1.00	6.17	0	6.17	C125	-	TEMP. SLOPE PIPE	2.32	0.159	12	1	2.32	8.6	12	0.375	6	1.94	4.1	0.61	0.41	5.67	10	4.09
DS_50.57_1	2670+00	0	1.00	7.75	0	7.75	C125	-	TEMP. SLOPE PIPE	1.71	0.138	12	1	1.71	7.5	12	0.375	6	1.94	4.1	0.61	0.38	4.49	5	1.91
DS_50.57_2	2671+00	0	1.00	6.06	0	6.06	C125	-	WATERBODY	1.66	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DS_50.57_3	2671+00	0	1.00	7.30	0	7.30	S75	-	WATERBODY	0.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DS_50.57_4	2672+00	0	1.00	6.49	0	6.49	C125	-	TEMP. SLOPE PIPE	1.60	0.155	12	1	1.60	9.2	12	0.375	6	1.94	4.1	0.61	0.42	3.79	5	2.11
DS_50.57_5	2672+00	0	1.50	9.68	0	6.45	GRASS	-	WATERBODY	2.70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DS_50.57_6	2674+00	0	1.00	7.14	0	7.14	S75	-	TEMP. SLOPE PIPE	0.83	0.146	12	1	0.83	10.4	12	0.375	6	1.94	4.1	0.61	0.45	1.84	5	2.25
DS_50.57_7	2674+00	0	1.00	6.80	0	6.80	C125	-	TEMP. SLOPE PIPE	1.76	0.155	12	1	1.76	8.7	12	0.375	6	1.94	4.1	0.61	0.41	4.28	5	2.06
DS_50.66_1	2675+00	0	1.00	6.71	0	6.71	C125	-	WATERBODY	1.93	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DS_50.66_2	2675+00	0	1.00	6.99	0	6.99	SC150	-	WATERBODY	1.34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DS_50.66_3	2676+00	0	1.00	7.09	0	7.09	C125	-	TEMP. SLOPE PIPE	2.02	0.139	12	1	2.02	6.6	12	0.375	6	1.94	4.1	0.61	0.36	5.66	10	3.57
DS_50.66_4	2677+00	0	1.00	6.71	0	6.71	C125	-	TEMP. SLOPE PIPE	2.47	0.134	12	1	2.47	4.3	12	0.375	6	1.94	4.1	0.61	0.29	8.55	10	2.89
DS_50.66_5	2677+00	0	1.00	6.67	0	6.67	S75	-	TEMP. SLOPE PIPE	0.78	0.126	12	1	0.78	11.2	12	0.375	6	1.94	4.1	0.61	0.47	1.67	5	2.33
DS_50.66_6[8]	2678+00	0	1.00	7.52	0	7.52	C125	-	TEMP. SLOPE PIPE	1.41	0.155	12	1	1.41	12.3	12	0.375	6	1.94	4.1	0.61	0.49	2.89	5	2.44
BML_DS_0.06	3+00	0	1.00	5.88	0	5.88	S150	-	TEMP. SLOPE PIPE	0.92	0.141	12	1	0.92	12.3	12	0.375	6	1.94	4.1	0.61	0.49	1.88	5	2.45
BML_DS_0.076_1	4+00	0	1.00	5.88	0	5.88	C125	-	TEMP. SLOPE PIPE	1.68	0.133	12	1	1.68	9.1	12	0.375	6	1.94	4.1	0.61	0.42	4.00	5	2.10
BML_DS_0.076_2	4+00	0	1.50	9.38	0	6.25	GRASS	-	TEMP. SLOPE PIPE	1.79	0.131	12	1	1.79	8.5	12	0.375	6	1.94	4.1	0.61	0.41	4.41	5	2.03
BML_DS_0.095_1	5+00	0	1.00	5.88	0	5.88	C125	-	TEMP. SLOPE PIPE	1.84	0.133	12	1	1.84	8.4	12	0.375	6	1.94	4.1	0.61	0.40	4.56	5	2.02
BML_DS_0.095_2	6+00	0	1.00	5.88	0	5.88	C125	-	TEMP. SLOPE PIPE	1.80	0.144	12	1	1.80	9.7	12	0.375	6	1.94	4.1	0.61	0.43	4.15	5	2.17
BML_DS_0.095_3	6+00	0	1.00	7.69	0	7.69	S150	-	TEMP. SLOPE PIPE	1.96	0.151	12	1	1.96	9.7	12	0.375	6	1.94	4.1	0.61	0.43	4.52	5	2.17
BML_DS_0.095_4	7+00	0	1.00	6.25	0	6.25	C125	-	TEMP. SLOPE PIPE	1.31	0.156	12	1	1.31	12.7	12	0.375	6	1.94	4.1	0.61	0.50	2.64	5	2.48
BML_DS_0.095_5	7+00	0	1.00	5.88	0	5.88	C125	-	TEMP. SLOPE PIPE	1.95	0.148	12	1	1.95	9.6	12	0.375	6	1.94	4.1	0.61	0.43	4.52	5	2.16
BML_DS_0.095_6	8+00	0	1.00	5.56	0	5.56	S75	-	TEMP. SLOPE PIPE	0.91	0.142	12	1	0.91	12.1	12	0.375	6	1.94	4.1	0.61	0.48	1.88	5	2.42
BML_DS_0.095_7	9+00	0	1.00	5.56	0	5.56	C125	-	TEMP. SLOPE PIPE	1.15	0.150	12	1	1.15	12.5	12	0.375	6	1.94	4.1	0.61	0.49	2.33	5	2.47
BML_DS_0.19_1	10+00	0	1.00	5.56	0	5.56	C125	-	TEMP. SLOPE PIPE	1.81	0.148	12	1	1.81	10.0	12	0.375	6	1.94	4.1	0.61	0.44	4.11	5	2.20
BML_DS_0.19_2	10+00	0	1.00	6.25	0	6.25	SC150	-	TEMP. SLOPE PIPE	1.69	0.148	12	1	1.69	10.6	12	0.375	6	1.94	4.1	0.61	0.45	3.73	5	2.26
BML_DS_0.19_3	10+00	0	1.00	5.62	0	5.62	S150	-	TEMP. SLOPE PIPE	1.46	0.152	12	1	1.46	11.8	12	0.375	6	1.94	4.1	0.61	0.48	3.05	5	2.39
BML_DS_0.19_4	11+00	0	1.00	5.59	0	5.59	C125	-	TEMP. SLOPE PIPE	1.52	0.170	12	1	1.52	13.3	12	0.375	6	1.94	4.1	0.61	0.51	2.99	5	2.54
BML_DS_0.19_5	11+00	0	1.00	5.99	0	5.99	S150	-	TEMP. SLOPE PIPE	1.02	0.171	12	1	1.02	15.0	12	0.375	6	1.94	4.1	0.61	0.54	1.89	5	2.70
BML_DS_0.19_6	11+00	0	1.00	5.00	0	5.00	C125	-	TEMP. SLOPE PIPE	1.88	0.170	12	1	1.88	11.9	12	0.375	6	1.94	4.1	0.61	0.48	3.91	5	2.40
BML_DS_0.19_7	12+00	0	1.00	5.88	0	5.88	C125	-	TEMP. SLOPE PIPE	1.75	0.173	12	1	1.75	12.8	12	0.375	6	1.94	4.1	0.61	0.50	3.52	5	2.49
BML_DS_0.19_8	12+00	0	1.00	5.00	0	5.00	C125	-	TEMP. SLOPE PIPE	1.66	0.176	12	1	1.66	13.4	12	0.375	6	1.94	4.1	0.61	0.51	3.26	5	2.55
BML_DS_0.19_9	13+00	0	1.00	5.43	0	5.43	C125	-	TEMP. SLOPE PIPE	1.57	0.194	12	1	1.57	15.5	12	0.375	6	1.94	4.1	0.61	0.55	2.86	5	2.74
BML_DS_0.19_10	14+00	0	1.00	5.26	0	5.26	S150	-	TEMP. SLOPE PIPE	1.28	0.190	12	1	1.28	16.2	12	0.375	6	1.94	4.1	0.61	0.56	2.28	5	2.80
BML_DS_0.19_11	14+00	0	1.00	4.35	0	4.35	C125BN	-	TEMP. SLOPE PIPE	2.11	0.184	12	1	2.11	12.2	12	0.375	6	1.94	4.1	0.61	0.49	4.33	5	2.43
BML_DS_0.19_12	14+00	0	1.00	4.76	0	4.76	C125	-	TEMP. SLOPE PIPE	1.48	0.178	12	1	1.48	14.3	12	0.375	6	1.94	4.1	0.61	0.53	2.81	5	2.64
BML_DS_0.19_13	14+00	0	1.00	2.78	0	4.17	-	P300 (VEGETATED)	TEMP. SLOPE PIPE	1.49	0.175	12	1	1.49	14.0	12	0.375	6	1.94	4.1	0.61	0.52	2.86	5	2.60
BML_DS_0.28_1	15+00	0	1.00	4.00	0	4.00	-	P300 (VEGETATED)	TEMP. SLOPE PIPE	1.23	0.168	12	1	1.23	14.2	12	0.375	6	1.94	4.1	0.61	0.52	2.35	5	2.62
BML_DS_0.28_2	15+00	0	1.00	3.70	0	3.70	C125	-	TEMP. SLOPE PIPE	1.75	0.169	12	1	1.75	12.3	12	0.375	6	1.94	4.1	0.61	0.49	3.58	5	2.45
BML_DS_0.28_3	15+00	0	1.00	3.33	0	3.33	-	P300	TEMP. SLOPE PIPE	1.36	0.173	12	1	1.36	14.2	12	0.375	6	1.94	4.1	0.61	0.53	2.59	5	2.63
BML_DS_0.28_4	15+00	0	1.00	4.17	0	4.17	C125BN	-	TEMP. SLOPE PIPE	2.09	0.180	12	1	2.09	11.9	12	0.375	6	1.94	4.1	0.61	0.48	4.35	5	2.40
BML_DS_0.28_5	15+00	0	1.00	4.26	0	4.26	C125	-	TEMP. SLOPE PIPE	1.27	0.195	12	1	1.27	16.7	12	0.375	6	1.94	4.1	0.61	0.57	2.23	5	2.85
BML_DS_0.28_6	16+00	0	1.50	4.29	0	2.86	C125	-	TEMP. SLOPE PIPE	2.19	0.200	12	1	2.19	13.4	12	0.375	6	1.94	4.1	0.61	0.51	4.30	5	2.55
BML_DS_0.28_7	19+00	0	1.00	2.56	0	2.56	C125	-	TEMP. SLOPE PIPE	1.11	0.325	12	1	1.11	31.0	12	0.375	6	1.94	4.1	0.61	0.78	1.43	5	3.88
BML_DS_0.38_1	20+00	0	1.00	2.78	0	2.78	C125	-	TEMP. SLOPE PIPE	0.71	0.349	12	1	0.71	34.6	12	0.375	6	1.94	4.1	0.61	0.82	0.87	5	4.10
BML_DS_0.38_2	21+00	0	1.00	3.17	0	3.17	-	P300	TEMP. SLOPE PIPE	0.87	0.306	12	1	0.87	29.4	12	0.375	6	1.94	4.1	0.61	0.76	1.15	5	3.78
BML_DS_0.38_3	22+00	0	1.00	2.70	0	2.70	-	P300	TEMP. SLOPE PIPE	2.84	0.300	12	1	2.84	19.9	12	0.375	6	1.94	4.1	0.61	0.62	4.57	5	3.11
BML_DS_0.38_4	23+00	0	1.50	4.29	0	2.86	S75	-	TEMP. SLOPE PIPE	1.88	0.304	12	1	1.88	25.6	12	0.375	6	1.94	4.1	0.61	0.71	2.67	5	3.53
BML_DS_0.38_5	23+00	0	1.00	3.13	0	3.13	S75	-	TEMP. SLOPE PIPE	0.53	0.330	12	1	1.19	31.2	12	0.375	6	1.94	4.1	0.61	0.78	1.53	5	3.89
BML_DS_0.38_6	24+00	0	1.00	2.63	0	2.63	C125	-	TEMP. SLOPE PIPE	0.66															
BML_DS_0.47	25+00	0	1.00	3.45	0	3.45	-	P550	WATERBODY	1.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

1) DIVERSION IDS WITH A PREFIX "DS" ARE LOCATED ALONG THE MAINLINE, "BML" ALONG BLUE MOUNTAIN LATERAL, AND "HL" ALONG HELLERTOWN LATERAL.

2) APPROXIMATE STATION VALUES ARE ROUNDED TO THE NEAREST HUNDRED FOOT.

3) FOR TEMPORARY LINERS, IN CASES WHERE EXISTING GRASS IS LISTED AS A SUITABLE LINER, S75 ROLLMAX LINING OR PRODUCT EQUIVALENT CAN BE USED IN ITS PLACE.

4) FOR PERMANENT LINERS, CELLS CONTAINING "(VEGETATED)" WILL REQUIRE VEGETATION REINFORCEMENT.

5) TEMPORARY DIVERSIONS TYPICALLY DISCHARGE TO SLOPE PIPES THAT CONNECT TO LEVEL SPREADERS. IN SELECT AREAS, THE TEMPORARY DIVERSIONS DISCHARGE CLEAN WATER TO EITHER EXISTING WATERBODIES, ROADSIDE DITCHES OR OPEN LAND.

6) THE TEMPORARY LEVEL SPREADER NOMINAL LENGTH IS THE "REQUIRED LENGTH" ROUNDED UP TO THE NEAREST FIVE FEET.

7) RUNOFF DIVERSION SOCK HEIGHT.

8) DIVERSION ID "DS_50.66_6" CROSSES THE CARBON AND MONROE COUNTY LINES AND IS SHOWN ON BOTH COUNTY TABLES.

DRAINAGE AREA > 5 ACRES DUE TO BLUE MOUNTAIN TOPOGRAPHY

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL MICHAEL DENICHILO ENGINEER PE078513 10/25/2019

Know what's below. Call before you dig.

CLIENT APPROVAL

DATE

REVISIONS					
NO.	DESCRIPTION	DATE	DRAWN	CK	APPR
A	ISSUED FOR PADEP	10/2018	AJD (MM)	MWF (MM)	MJD(MM)
B	REVISED FOR PADEP	10/2019	AJD (MM)	MWF (MM)	MJD(MM)

APPROVALS	
DRAWN BY	DATE
AJD (MM)	10/15/2018
CHECKED BY	DATE
MWF (MM)	10/15/2018
ENG. APPROVAL	DATE
MJD (MM)	10/15/2018
P.M. APPROVAL	DATE

PREPARED FOR

PennEast PIPELINE

PENNEAST PIPELINE PROJECT

SOIL EROSION AND SEDIMENT CONTROL PLAN
TYPICAL E&S DETAILS

SCALE	DRAWING NO.	REVISION
AS SHOWN	000-03-09-010B.3	B

MONROE COUNTY, PENNSYLVANIA

TEMPORARY DIVERSION SUMMARY

DIVERSION SOCK (TEMPORARY CHANNEL)											TEMPORARY SLOPE PIPES				TEMPORARY PERFORATED PIPE LEVEL SPREADER CALCULATIONS									
DIVERSION ID[1]	APPROX. STATION[2]	BOTTOM WIDTH B (FT)	DEPTH D[7] (FT)	TOP WIDTH W (FT)	Z1 (FT)	Z2 (FT)	TEMPORARY LINING[3]	PERMANENT LINING[4]	DISCHARGE TYPE[5]	Q (CFS)	R.O.W. SLOPE (FT/FT)	SLOPE PIPE DIAMETER (IN)	NO. OF SLOPE PIPES (QTY)	Q / PIPE (CFS)	EFFECTIVE HEAD (FT)	LEVEL SPREADER PIPE DIAMETER (IN)	PERFORATION DIAMETER (IN)	NUMBER OF PERFORATIONS PER ROW	ROW SPACING (IN)	ORIFICE AREA PER FOOT (IN^2/FT)	ORIFICE COEFFICIENT (Cd)	LEVEL SPREADER CAPACITY PER FOOT OF LENGTH (CFS/FT)	REQUIRED LENGTH (FT)	NOMINAL LENGTH[6] (FT)	OVERALL LEVEL SPREADER CAPACITY (CFS)
DS_50.66_6[8]	2678+00	0	1.00	7.52	0	7.52	C125	-	TEMP. SLOPE PIPE	1.41	0.155	12	1	1.41	12.3	12	0.375	6	1.94	4.1	0.61	0.49	2.89	5	2.44
DS_50.66_7	2679+00	0	1.00	8.00	0	8.00	S75	-	TEMP. SLOPE PIPE	1.04	0.157	12	1	1.04	13.6	12	0.375	6	1.94	4.1	0.61	0.51	2.02	5	2.57
DS_50.76_1	2680+00	0	1.00	5.78	0	5.78	C125	-	TEMP. SLOPE PIPE	2.07	0.148	12	1	2.07	8.8	12	0.375	6	1.94	4.1	0.61	0.41	4.99	5	2.07
DS_50.76_2	2681+00	0	1.00	7.81	0	7.81	C125	-	TEMP. SLOPE PIPE	2.11	0.150	12	1	2.11	8.8	12	0.375	6	1.94	4.1	0.61	0.41	5.11	10	4.13
DS_50.76_3	2681+00	0	1.00	6.76	0	6.76	S75	-	TEMP. SLOPE PIPE	1.37	0.141	12	1	1.37	11.0	12	0.375	6	1.94	4.1	0.61	0.46	2.96	5	2.31
DS_50.76_4	2682+00	0	1.00	6.58	0	6.58	C125	-	TEMP. SLOPE PIPE	2.19	0.145	12	1	2.19	7.9	12	0.375	6	1.94	4.1	0.61	0.39	5.58	10	3.92
DS_50.76_5	2683+00	0	1.00	7.75	0	7.75	C125	-	TEMP. SLOPE PIPE	1.66	0.159	12	1	1.66	11.7	12	0.375	6	1.94	4.1	0.61	0.48	3.49	5	2.38
DS_50.76_6	2683+00	0	1.00	6.85	0	6.85	S75	-	TEMP. SLOPE PIPE	1.52	0.160	12	1	1.52	12.4	12	0.375	6	1.94	4.1	0.61	0.49	3.10	5	2.45
DS_50.76_7	2683+00	0	1.00	7.30	0	7.30	GRASS	-	TEMP. SLOPE PIPE	1.12	0.155	12	1	1.12	13.2	12	0.375	6	1.94	4.1	0.61	0.51	2.21	5	2.54
DS_50.76_8	2684+00	0	1.00	6.76	0	6.76	C125	-	TEMP. SLOPE PIPE	2.19	0.157	12	1	2.19	9.1	12	0.375	6	1.94	4.1	0.61	0.42	5.21	10	4.21
DS_50.76_9	2684+00	0	1.00	6.17	0	6.17	C125	-	TEMP. SLOPE PIPE	2.11	0.164	12	1	2.11	10.2	12	0.375	6	1.94	4.1	0.61	0.44	4.75	5	2.22
DS_50.85_1	2685+00	0	1.00	6.76	0	6.76	C125	-	TEMP. SLOPE PIPE	1.98	0.152	12	1	1.98	9.7	12	0.375	6	1.94	4.1	0.61	0.43	4.57	5	2.17
DS_50.85_2	2685+00	0	1.00	8.93	0	8.93	C125	-	TEMP. SLOPE PIPE	2.48	0.145	12	1	2.48	6.4	12	0.375	6	1.94	4.1	0.61	0.35	7.01	10	3.54
DS_50.85_3	2686+00	0	1.00	6.41	0	6.41	C125	-	TEMP. SLOPE PIPE	1.65	0.137	12	1	1.65	9.7	12	0.375	6	1.94	4.1	0.61	0.43	3.81	5	2.17
DS_50.85_4	2687+00	0	1.00	5.78	0	5.78	C125	-	TEMP. SLOPE PIPE	2.20	0.136	12	1	2.20	7.0	12	0.375	6	1.94	4.1	0.61	0.37	5.96	10	3.69
DS_50.85_5	2688+00	0	1.00	6.62	0	6.62	-	P300	TEMP. SLOPE PIPE	0.89	0.145	12	1	0.89	10.8	12	0.375	6	1.94	4.1	0.61	0.46	1.94	5	2.29
DS_50.85_6	2689+00	0	1.00	7.04	0	7.04	C125	-	TEMP. SLOPE PIPE	1.85	0.148	12	1	1.85	8.3	12	0.375	6	1.94	4.1	0.61	0.40	4.61	5	2.01
DS_50.85_7	2689+00	0	1.00	6.02	0	6.02	C125BN	-	TEMP. SLOPE PIPE	2.66	0.149	12	1	2.66	4.9	12	0.375	6	1.94	4.1	0.61	0.31	8.62	10	3.08
DS_50.85_8	2690+00	0	1.00	6.90	0	6.90	C125	-	TEMP. SLOPE PIPE	2.48	0.157	12	1	2.48	6.3	12	0.375	6	1.94	4.1	0.61	0.35	7.07	10	3.51
DS_50.95_1	2691+00	0	1.00	7.46	0	7.46	S75	-	TEMP. SLOPE PIPE	1.63	0.153	12	1	1.63	9.5	12	0.375	6	1.94	4.1	0.61	0.43	3.80	5	2.15
DS_50.95_2	2692+00	0	1.00	6.25	0	6.25	GRASS	-	TEMP. SLOPE PIPE	2.82	0.158	12	1	2.82	4.7	12	0.375	6	1.94	4.1	0.61	0.30	9.29	10	3.04
DS_50.95_3	2694+00	0	1.00	6.10	0	6.10	C125	-	TEMP. SLOPE PIPE	1.45	0.135	12	1	1.45	8.5	12	0.375	6	1.94	4.1	0.61	0.41	3.56	5	2.04
DS_51.02	2695+00	0	1.00	6.49	0	6.49	C125	-	TEMP. SLOPE PIPE	1.13	0.154	12	1	1.13	11.0	12	0.375	6	1.94	4.1	0.61	0.46	2.45	5	2.31
DS_51.04	2696+00	0	1.00	5.56	0	5.56	C125	-	TEMP. SLOPE PIPE	1.20	0.177	12	1	1.20	12.8	12	0.375	6	1.94	4.1	0.61	0.50	2.41	5	2.49

1) DIVERSION IDS WITH A PREFIX "DS" ARE LOCATED ALONG THE MAINLINE, "BML" ALONG BLUE MOUNTAIN LATERAL, AND "HL" ALONG HELLERTOWN LATERAL.

2) APPROXIMATE STATION VALUES ARE ROUNDED TO THE NEAREST HUNDRED FOOT.

3) FOR TEMPORARY LINERS, IN CASES WHERE EXISTING GRASS IS LISTED AS A SUITABLE LINER, S75 ROLLMAX LINING OR PRODUCT EQUIVALENT CAN BE USED IN ITS PLACE.

4) FOR PERMANENT LINERS, CELLS CONTAINING "(VEGETATED)" WILL REQUIRE VEGETATION REINFORCEMENT.

5) TEMPORARY DIVERSIONS TYPICALLY DISCHARGE TO SLOPE PIPES THAT CONNECT TO LEVEL SPREADERS. IN SELECT AREAS, THE TEMPORARY DIVERSIONS DISCHARGE CLEAN WATER TO EITHER EXISTING WATERBODIES, ROADSIDE DITCHES OR OPEN LAND.

6) THE TEMPORARY LEVEL SPREADER NOMINAL LENGTH IS THE "REQUIRED LENGTH" ROUNDED UP TO THE NEAREST FIVE FEET.

7) RUNOFF DIVERSION SOCK HEIGHT.

8) DIVERSION ID "DS_50.66_6" CROSSES THE CARBON AND MONROE COUNTY LINES AND IS SHOWN ON BOTH COUNTY TABLES.

DRAINAGE AREA > 5 ACRES DUE TO BLUE MOUNTAIN TOPOGRAPHY

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
MICHAEL DENICHILO
ENGINEER
PE086512
10/25/2019

Know what's below. Call before you dig.

CLIENT APPROVAL

DATE

REVISIONS					
NO.	DESCRIPTION	DATE	DRAWN	CK	APPR
A	ISSUED FOR PADEP	10/2018	AJD (MM)	MWF (MM)	MJD(MM)
B	REVISED FOR PADEP	10/2019	AJD (MM)	MWF (MM)	MJD(MM)

APPROVALS	
DRAWN BY	DATE
AJD (MM)	10/15/2018
CHECKED BY	DATE
MWF (MM)	10/15/2018
ENG. APPROVAL	DATE
MJD (MM)	10/15/2018
P.M. APPROVAL	DATE

PREPARED FOR

PennEast PIPELINE

PENNEAST PIPELINE PROJECT

SOIL EROSION AND SEDIMENT CONTROL PLAN
TYPICAL E&S DETAILS

SCALE	DRAWING NO.	REVISION
AS SHOWN	000-03-09-010C	B

NORTHAMPTON COUNTY, PENNSYLVANIA

TEMPORARY DIVERSION SUMMARY

DIVERSION SOCK (TEMPORARY CHANNEL)											TEMPORARY SLOPE PIPES				TEMPORARY PERFORATED PIPE LEVEL SPREADER CALCULATIONS									
DIVERSION ID[1]	APPROX. STATION[2]	BOTTOM WIDTH B (FT)	DEPTH D[7] (FT)	TOP WIDTH W (FT)	Z1 (FT)	Z2 (FT)	TEMPORARY LINING[3]	PERMANENT LINING[4]	DISCHARGE TYPE[5]	Q (CFS)	R.O.W. SLOPE (FT/FT)	SLOPE PIPE DIAMETER (IN)	NO. OF SLOPE PIPES (QTY)	Q / PIPE (CFS)	EFFECTIVE HEAD (FT)	LEVEL SPREADER PIPE DIAMETER (IN)	PERFORATION DIAMETER (IN)	NUMBER OF PERFORATIONS PER ROW	ROW SPACING (IN)	ORIFICE AREA PER FOOT (IN^2/FT)	ORIFICE COEFFICIENT (Cd)	LEVEL SPREADER CAPACITY PER FOOT OF LENGTH (CFS/FT)	REQUIRED LENGTH (FT)	NOMINAL LENGTH[6] (FT)	OVERALL LEVEL SPREADER CAPACITY (CFS)
DS_53.50_1	2824+00	0	1.50	22.06	0	14.71	GRASS	-	TEMP. SLOPE PIPE	4.53	0.053	18	1	4.53	3.0	18	0.375	6	3.10	2.57	0.61	0.15	30.18	35	5.25
DS_54.92	2900+00	0	1.00	4.18	0	4.18	C125	-	TEMP. SLOPE PIPE	2.14	0.184	12	1	2.14	12.7	12	0.375	6	1.94	4.1	0.61	0.50	4.31	5	2.48
DS_56.21_1	2968+00	0	1.00	21.28	0	21.28	GRASS	-	TEMP. SLOPE PIPE	0.36	0.042	12	1	0.36	4.0	12	0.375	6	1.94	4.1	0.61	0.28	1.30	5	1.39
DS_56.21_2	2969+00	0	1.00	12.35	0	12.35	S75	-	TEMP. SLOPE PIPE	2.23	0.063	18	1	2.23	5.6	18	0.375	6	3.10	2.57	0.61	0.21	10.79	15	3.10
DS_56.41_1	2978+00	0	1.00	11.49	0	11.49	S75	-	TEMP. SLOPE PIPE	2.68	0.075	18	1	2.68	8.3	18	0.375	6	3.10	2.57	0.61	0.25	10.66	15	3.77
DS_56.41_2	2979+00	0	1.00	12.82	0	12.82	C125	-	TEMP. SLOPE PIPE	6.71	0.093	18	1	6.71	3.0	18	0.375	6	3.10	2.57	0.61	0.15	44.03	45	6.86
DS_56.41_3	2980+00	0	1.00	13.16	0	13.16	S75	-	TEMP. SLOPE PIPE	2.44	0.105	12	1	2.44	3.7	12	0.375	6	1.94	4.1	0.61	0.27	9.13	10	2.67
DS_56.41_4	2981+00	0	1.00	12.50	0	12.50	GRASS	-	TEMP. SLOPE PIPE	1.43	0.105	12	1	1.43	9.7	12	0.375	6	1.94	4.1	0.61	0.43	3.30	5	2.17
DS_57.05_1	3012+00	0	1.00	14.93	0	14.93	S75	-	TEMP. SLOPE PIPE	1.68	0.070	12	1	1.68	4.0	12	0.375	6	1.94	4.1	0.61	0.28	6.06	10	2.77
DS_57.05_2	3014+00	0	1.50	14.29	0	9.52	S75	-	TEMP. SLOPE PIPE	3.77	0.089	18	1	3.77	8.4	18	0.375	6	3.10	2.57	0.61	0.25	14.87	15	3.80
DS_57.44	3033+00	0	1.00	16.95	0	16.95	S75	-	TEMP. SLOPE PIPE	2.51	0.042	18	1	2.51	3.1	18	0.375	6	3.10	2.57	0.61	0.15	16.21	20	3.10
DS_58.05	3065+00	0	1.00	20.83	0	20.83	SC150	-	TEMP. SLOPE PIPE	3.37	0.041	18	1	3.37	2.7	18	0.375	6	3.10	2.57	0.61	0.14	23.37	25	3.60
DS_58.27	3076+00	0	1.00	22.73	0	22.73	C125	-	TEMP. SLOPE PIPE	4.25	0.037	18	1	4.25	1.0	18	0.375	6	3.10	2.57	0.61	0.09	48.70	50	4.36
DS_58.54_1	3091+00	0	1.00	3.85	0	3.85	C125	-	TEMP. SLOPE PIPE	0.55	0.097	12	1	0.55	9.5	12	0.375	6	1.94	4.1	0.61	0.43	1.28	5	2.15
DS_58.54_2	3092+00	0	1.00	3.58	0	3.58	S75	-	TEMP. SLOPE PIPE	0.43	0.063	12	1	0.43	6.7	12	0.375	6	1.94	4.1	0.61	0.36	1.19	5	1.80
DS_58.64_1	3096+00	0	1.00	15.15	0	15.15	S75	-	TEMP. SLOPE PIPE	2.88	0.043	18	1	2.88	3.5	18	0.375	6	3.10	2.57	0.61	0.16	17.53	20	3.29
DS_58.64_2	3099+00	0	1.00	13.89	0	13.89	SC150	-	TEMP. SLOPE PIPE	3.34	0.110	18	1	3.34	11.5	18	0.375	6	3.10	2.57	0.61	0.30	11.28	15	4.44
DS_59.02	3116+00	0	1.00	26.32	0	26.32	S75	-	ROADSIDE DITCH	4.80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DS_59.28_1	3130+00	0	1.00	8.13	0	8.13	S75	-	TEMP. SLOPE PIPE	0.87	0.142	12	1	0.87	16.7	12	0.375	6	1.94	4.1	0.61	0.57	1.53	5	2.85
DS_59.28_2	3131+00	0	1.00	8.62	0	8.62	C125	-	TEMP. SLOPE PIPE	2.60	0.035	18	1	2.60	3.6	18	0.375	6	3.10	2.57	0.61	0.16	15.79	20	3.29
DS_59.38	3135+00	0	1.00	10.53	0	10.53	GRASS	-	TEMP. SLOPE PIPE	0.52	0.084	12	1	0.52	10.3	12	0.375	6	1.94	4.1	0.61	0.45	1.16	5	2.24
DS_59.49_1	3141+00	0	1.00	2.92	0	2.92	-	P300	TEMP. SLOPE PIPE	1.04	0.019	12	1	1.04	0.3	12	0.375	6	1.94	4.1	0.61	0.08	12.96	15	1.20
DS_59.49_2	3142+00	0	1.00	3.26	0	3.26	-	P300 (VEGETATED)	TEMP. SLOPE PIPE	0.41	0.298	12	1	0.41	31.0	12	0.375	6	1.94	4.1	0.61	0.78	0.53	5	3.88
DS_59.49_3	3144+00	0	1.00	5.15	0	5.15	S150	-	TEMP. SLOPE PIPE	1.02	0.280	12	1	1.02	41.4	12	0.375	6	1.94	4.1	0.61	0.90	1.14	5	4.48
DS_59.49_4	3145+00	0	1.50	5.30	0	3.53	C125	-	TEMP. SLOPE PIPE	3.85	0.275	12	1	3.85	15.4	12	0.375	6	1.94	4.1	0.61	0.55	7.05	10	5.46
DS_59.49_5	3146+00	0	1.50	4.08	0	2.72	-	P300 (VEGETATED)	TEMP. SLOPE PIPE	3.04	0.214	12	1	3.04	15.5	12	0.375	6	1.94	4.1	0.61	0.55	5.54	10	5.49
DS_59.49_6	3150+00	0	1.50	4.78	0	3.18	C125	-	TEMP. SLOPE PIPE	5.77	0.216	18	1	5.77	25.3	18	0.375	6	3.10	2.57	0.61	0.44	13.14	15	6.59
DS_59.49_7	3150+00	0	1.50	2.67	0	2.67	-	SC250 (VEGETATED)	TEMP. SLOPE PIPE	3.56	0.214	12	1	3.56	9.4	12	0.375	6	1.94	4.1	0.61	0.43	8.32	10	4.28
DS_59.49_8	3153+00	0	1.00	3.33	0	3.33	C125	-	TEMP. SLOPE PIPE	1.77	0.357	12	1	1.77	53.5	12	0.375	6	1.94	4.1	0.61	1.02	1.74	5	5.10
DS_59.49_9	3156+00	0	1.00	5.95	0	5.95	C125	-	TEMP. SLOPE PIPE	3.40	0.128	18	1	3.40	16.4	18	0.375	6	3.10	2.57	0.61	0.35	9.62	10	3.53
DS_59.49_10	3163+00	0	1.50	11.11	0	7.41	S75	-	TEMP. SLOPE PIPE	4.72	0.162	18	1	4.72	16.1	18	0.375	6	3.10	2.57	0.61	0.35	13.48	15	5.25
DS_59.49_11	3168+00	0	1.00	10.53	0	10.53	C125	-	TEMP. SLOPE PIPE	3.75	0.135	18	1	3.75	13.1	18	0.375	6	3.10	2.57	0.61	0.32	11.85	15	4.75
DS_62.00	3274+00	0	1.00	12.82	0	12.82	S75	-	OVERLAND FLOW	2.63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DS_62.06_1	3277+00	0	1.00	13.16	0	13.16	C125	-	TEMP. SLOPE PIPE	4.23	0.052	18	1	4.23	2.8	18	0.375	6	3.10	2.57	0.61	0.15	28.84	30	4.40
DS_62.06_2	3282+00	0	1.00	27.78	0	27.78	GRASS	-	TEMP. SLOPE PIPE	0.91	0.038	12	1	0.91	3.3	12	0.375	6	1.94	4.1	0.61	0.25	3.61	5	1.26
DS_72.25_1	3816+00	0	1.00	14.08	0	14.08	SC150	-	TEMP. SLOPE PIPE	2.17	0.047	18	1	2.17	4.3	18	0.375	6	3.10	2.57	0.61	0.18	11.96	15	2.72
DS_72.25_2	3819+00	0	1.00	11.90	0	11.90	GRASS	-	TEMP. SLOPE PIPE	0.90	0.089	12	1	0.90	5.8	12	0.375	6	1.94	4.1	0.61	0.34	2.68	5	1.68
DS_72.41	3823+00	0	1.00	15.63	0	15.63	GRASS	-	TEMP. SLOPE PIPE	0.81	0.079	12	1	0.81	5.3	12	0.375	6	1.94	4.1	0.61	0.32	2.52	5	1.61
DS_72.46	3826+00	0	1.00	17.86	0	17.86	SC150	-	TEMP. SLOPE PIPE	4.17	0.043	18	1	4.17	1.1	18	0.375	6	3.10	2.57	0.61	0.09	45.40	50	4.59
DS_72.59	3833+00	0	1.00	31.25	0	31.25	GRASS	-	TEMP. SLOPE PIPE	2.18	0.047	18	1	2.18	3.3	18	0.375	6	3.10	2.57	0.61	0.16	13.75	15	2.38
DS_72.73	3840+00	0	1.00	23.26	0	23.26	S75	-	WATERBODY	1.94	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DS_73.26_1	3868+00	0	1.00	23.26	0	23.26	GRASS	-	TEMP. SLOPE PIPE	1.28	0.024	12	1	1.28	0.1	12	0.375	6	1.94	4.1	0.61	0.05	26.21	30	1.47
DS_73.26_2	3869+00	0	1.00	11.76	0	11.76	C125	-	TEMP. SLOPE PIPE	2.92	0.087	18	1	2.92	7.3	18	0.375	6	3.10	2.57	0.61	0.24	12.37	15	3.54
DS_73.26_3	3872+00	0	1.00	11.24	0	11.24	GRASS	-	TEMP. SLOPE PIPE	1.29	0.112	12	1	1.29	9.0	12	0.375	6	1.94	4.1	0.61	0.42	3.09	5	2.09
DS_73.26_4	3873+00	0	1.00	13.16	0	13.16	S75	-	TEMP. SLOPE PIPE	1.07	0.046	12	1	1.07	3.1	12	0.375	6	1.94	4.1	0.61	0.25	4.33	5	1.24
DS_73.60	3886+00	0	1.00	28.57	0	28.57	GRASS	-	WATERBODY	3.54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DS_73.92	3903+00	0	1.00	8.47	0	8.47	S75	-	TEMP. SLOPE PIPE	1.07	0.149	12	1	1.07	13.4	12	0.375	6	1.94	4.1	0.61	0.51	2.10	5	2.55
DS_74.01_1	3908+00	0	1.00	8.47	0	8.47	S75	-	TEMP. SLOPE PIPE	1.49	0.027	18	1	1.49	2.4	18	0.375	6	3.10	2.57	0.61	0.14	11.00	15	2.03
DS_74.01_2	3910+00	0	1.00	10.42	0	10.42	SC150	-	TEMP. SLOPE PIPE	1.65	0.047	12	1	1.65	1.0	12	0.375	6	1.94	4.1	0.61	0.14	11.88	15	2.08
DS_74.89	3954+00	0	1.00	14.29	0	14.29	GRASS	-	WATERBODY	0.68	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DS_75.15	3968+00	0	1.00	13.51	0	13.51	C125	-	TEMP. SLOPE PIPE	3.83	0.074	18	1	3.83	4.0	18	0.375	6	3.10	2.57	0.61	0.17	21.90	25	4.37
DS_75.23_1	3972+00	0	1.00	9.52	0	9.52	C125	-	TEMP. SLOPE PIPE	2.63	0.106	12	1	2.63	1.8	12	0.375	6	1.94	4.1	0.61	0.19	13.92	15	2.83
DS_75.23_2	3974+00	0	1.00	8.77	0	8.77	C125	-	TEMP. SLOPE PIPE	3.33	0.095	18	1	3.33	9.6	18	0.375	6	3.10	2.57	0.61	0.27	12.32	15	4.05
DS_75.23_3	3976+00	0	1.00	9.26	0	9.26	C125	-	TEMP. SLOPE PIPE	5.22	0.065	18	1	5.22	2.8	18	0.375	6	3.10	2.57	0.61	0.15	35.41	40	5.90
DS_75.52	3987+00	0	1.50	10.34	0	6.90	S75	-	TEMP. SLOPE PIPE	3.45	0.071	18	1	3.45	5.4	18	0.375	6	3.10	2.57	0.61	0.20	17.04	20	4.05
DS_75.72	3998+00	0	1.00	9.52	0	9.52	C125	-	TEMP. SLOPE PIPE	2.92	0.088	18	1	2.92	5.5	18	0.375	6	3.10	2.57	0.61	0.21	14.23	15	3.08
DS_75.80_1	4002+00	0	1.00	11.76	0	11.76	S75	-	TEMP. SLOPE PIPE	1.17	0.144	12	1	1.17	16.0	12	0.375	6	1.94	4.1	0.61	0.56	2.10	5	2.78
DS_75.80_2	4004+00	0	0.67	7.58	0	11.36	S75	-	TEMP. SLOPE PIPE	0.42	0.170	12	1	0.42	21.2	12	0.375	6	1.94	4.1	0.61	0.64	0.66	5	3.20
HL_DS_0.04_1	2+00	0	1.00	5.56	0	5.56	C125	-	TEMP. SLOPE PIPE	2.10	0.079	12	1	2.10	3.2	12	0.375	6	1.94	4.1	0.61	0.25	8.46	10	2.48
HL_DS_0.04_2	7+00	0	0.67	8.44	0	12.66	C125	-	TEMP. SLOPE PIPE	0.27	0.091	12	1	0.27	10.9	12	0.375	6	1.94	4.1	0.61	0.46	0.59	5	2.31
HL_DS_0.66_1	35+00	0	1.00	0.07	0	0.07	GRASS	-	TEMP. SLOPE PIPE	0.35	0.102	12	1	0.35	9.2	12	0.375	6	1.94	4.1	0.61	0.42	0.83	5	2.12
HL_DS_0.66_2	36+00	0	1.00	13.16	0	13.16	S75	-	TEMP. SLOPE PIPE	1.33	0.074	12	1	1.33	4.7	12	0.375	6	1.94	4.1	0.61	0.30	4.42	5	1.51
HL_DS_1.10_1	58+00	0	1.00	4.10	0	4.10	-	P300	TEMP. SLOPE PIPE	0.20	0.126	12	1	0.20	17.4	12	0.375	6	1.94	4.1	0.61	0.58	0.34	5	2.91
HL_DS_1.10_2	60+00	0	1.00	3.33	0	3.33	-	P300	TEMP. SLOPE PIPE	2.00	0.290	12	1	2.00	33.6	12	0.375	6	1.94	4.1	0.61	0.81	2.48	5	4.04
HL_DS_1.10_3	65+00	0	1.00	2.87	0	2.87	-	C350 (VEGETATED)	OVERLAND FLOW	0.64	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HL_DS_1.78	94+00	0	1.00	4.63	0	4.63	S75	-	TEMP. SLOPE PIPE	0.35	0.162	12	1	0.35	22.7	12	0.375	6	1.94	4.1	0.61	0.66	0.53	5	3.32
HL_DS_1.89	100+00	0	1.00	4.72	0	4.72	S75	-	TEMP. SLOPE PIPE	0.67	0.092	12	1	0.67	14.3	12	0.375	6	1.94	4.1	0.61	0.53	1.27	5	2.64

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3) FOR TEMPORARY LINERS, IN CASES WHERE EXISTING GRASS IS LISTED AS A SUITABLE LINER, S75 ROLLMAX LINING OR PRODUCT EQUIVALENT CAN BE USED IN ITS PLACE.

4) FOR PERMANENT LINERS, CELLS CONTAINING "(VEGETATED)" WILL REQUIRE VEGETATION REINFORCEMENT.

5) TEMPORARY DIVERSIONS TYPICALLY DISCHARGE TO SLOPE PIPES THAT CONNECT TO LEVEL SPREADERS. IN SELECT AREAS, THE TEMPORARY DIVERSIONS DISCHARGE CLEAN WATER TO EITHER EXISTING WATERBODIES, ROADSIDE DITCHES OR OPEN LAND.

6) THE TEMPORARY LEVEL SPREADER NOMINAL LENGTH IS THE "REQUIRED LENGTH" ROUNDED UP TO THE NEAREST FIVE FEET.

7) RUNOFF DIVERSION SOCK HEIGHT.

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
MICHAEL DENICHILO
ENGINEER
PE088513
10/25/2019

Know what's below. Call before you dig.

CLIENT APPROVAL

DATE

REVISIONS						APPROVALS	
NO.	DESCRIPTION	DATE	DRAWN	CK	APPR	DRAWN BY	DATE
A	ISSUED FOR PADEP	10/2018	AJD (MM)	MWF (MM)	MJD(MM)	AJD (MM)	10/15/2018
B	REVISED FOR PADEP	10/2019	AJD (MM)	MWF (MM)	MJD(MM)	CHECKED BY	DATE
						MWF (MM)	10/15/2018
						ENG. APPROVAL	DATE
						MJD (MM)	10/15/2018
						P.M. APPROVAL	DATE

PREPARED FOR

PennEast PIPELINE

PENNEAST PIPELINE PROJECT

SOIL EROSION AND SEDIMENT CONTROL PLAN
TYPICAL E&S DETAILS

SCALE	DRAWING NO.	REVISION
AS SHOWN	000-03-09-010D	B

BUCKS COUNTY, PENNSYLVANIA

TEMPORARY DIVERSION SUMMARY															TEMPORARY PERFORATED PIPE LEVEL SPREADER CALCULATIONS									
DIVERSION SOCK (TEMPORARY CHANNEL)											TEMPORARY SLOPE PIPES												
DIVERSION ID[1]	APPROX. STATION[2]	BOTTOM WIDTH B (FT)	DEPTH D[7] (FT)	TOP WIDTH W (FT)	Z1 (FT)	Z2 (FT)	TEMPORARY LINING[3]	PERMANENT LINING[4]	DISCHARGE TYPE[5]	Q (CFS)	R.O.W. SLOPE (FT/FT)	SLOPE PIPE DIAMETER (IN)	NO. OF SLOPE PIPES (QTY)	Q / PIPE (CFS)	EFFECTIVE HEAD (FT)	LEVEL SPREADER PIPE DIAMETER (IN)	PERFORATION DIAMETER (IN)	NUMBER OF PERFORATIONS PER ROW	ROW SPACING (IN)	ORIFICE AREA PER FOOT (IN^2/FT)	ORIFICE COEFFICIENT (Cd)	LEVEL SPREADER CAPACITY PER FOOT OF LENGTH (CFS/FT)	REQUIRED LENGTH (FT)	NOMINAL LENGTH[6] (FT)	OVERALL LEVEL SPREADER CAPACITY (CFS)
DS_76.25_1	4026+00	0	1.00	26.32	0	26.32	C125	-	TEMP. SLOPE PIPE	3.14	0.093	18	1	3.14	5.9	18	0.375	6	3.10	2.57	0.61	0.21	14.74	15	3.19
DS_76.25_2	4027+00	0	1.50	13.64	0	9.09	SC150	-	TEMP. SLOPE PIPE	6.01	0.034	18	2	3.01	2.9	18	0.375	6	3.10	2.57	0.61	0.15	40.54	45	6.67
DS_76.70_1	4052+00	0	1.00	37.04	0	37.04	C125	-	TEMP. SLOPE PIPE	6.55	0.042	18	2	3.28	2.7	18	0.375	6	3.10	2.57	0.61	0.14	45.32	50	7.23
DS_76.70_2	4053+00	0	0.67	24.69	0	37.04	C125	-	TEMP. SLOPE PIPE	0.49	0.059	12	1	0.49	6.4	12	0.375	6	1.94	4.1	0.61	0.35	1.39	5	1.76
DS_76.86	4058+00	0	1.00	20.41	0	20.41	GRASS	-	TEMP. SLOPE PIPE	2.34	0.047	18	1	2.34	4.7	18	0.375	6	3.10	2.57	0.61	0.19	12.34	15	2.84

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