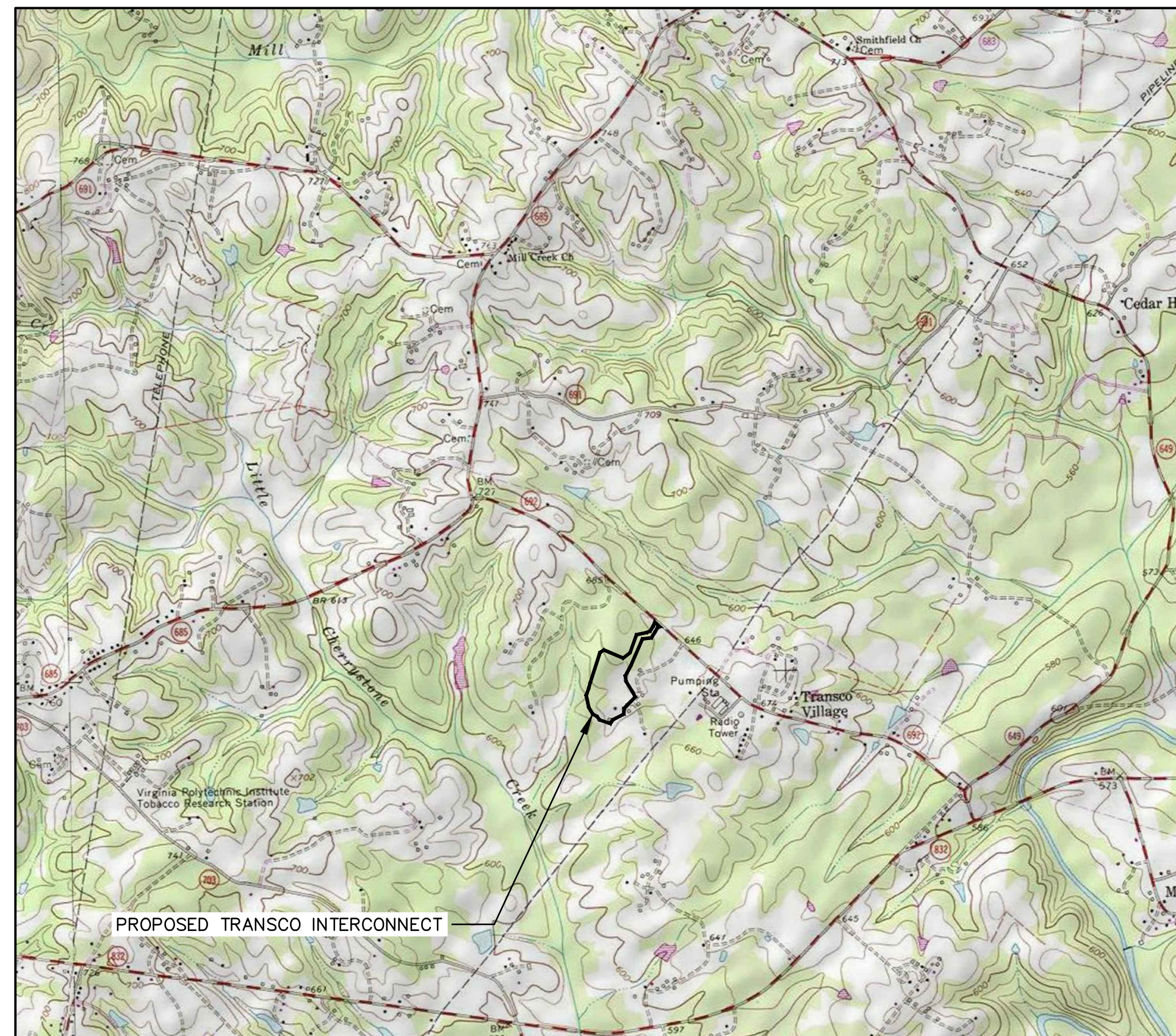


MOUNTAIN VALLEY PIPELINE

EROSION AND SEDIMENT CONTROL PLAN

MOUNTAIN VALLEY PIPELINE - TRANSCO INTERCONNECT PROJECT

SEPTEMBER 2017



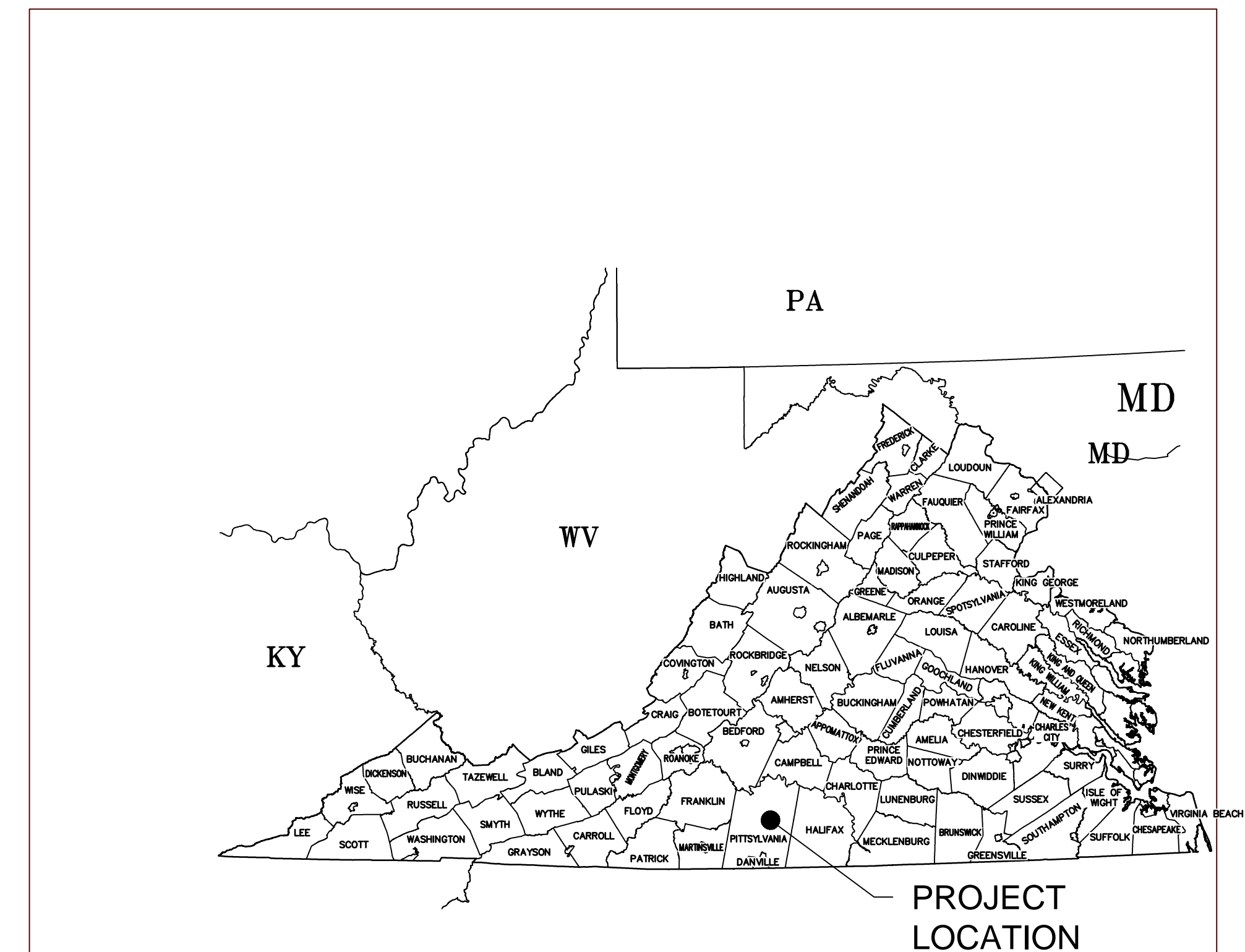
DRAWING INDEX	
SHEET No.	DRAWING TITLE
TRA-1	COVER SHEET
TRA-2	EROSION AND SEDIMENT CONTROL DETAILS
TRA-3	EROSION AND SEDIMENT CONTROL DETAILS
TRA-4	EROSION AND SEDIMENT CONTROL DETAILS
TRA-5	EROSION AND SEDIMENT CONTROL DETAILS
TRA-6	EROSION AND SEDIMENT CONTROL DETAILS
TRA-7	CONSTRUCTION DETAILS
TRA-8	CONSTRUCTION SEQUENCE AND NOTES
TRA-9	CONSTRUCTION SEQUENCE AND NOTES
TRA-10	EXISTING CONDITIONS PLAN
TRA-11	EROSION AND SEDIMENT CONTROL PLAN
TRA-12	PROFILES
TRA-13	FINAL SITE RESTORATION PLAN



THREE DAYS BEFORE YOU DIG

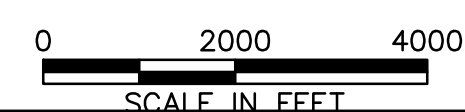
CALL VA ONE CALL
SYSTEM TOLL FREE
811
OR
1-800-552-7001


CONTRACTOR IS RESPONSIBLE TO
IDENTIFY ALL UTILITIES. THE UTILITY
LINES SHOWN ON THE PLAN ARE FOR
INFORMATIONAL PURPOSES ONLY
AND DO NOT REPRESENT SURVEYED
LINE INFORMATION.

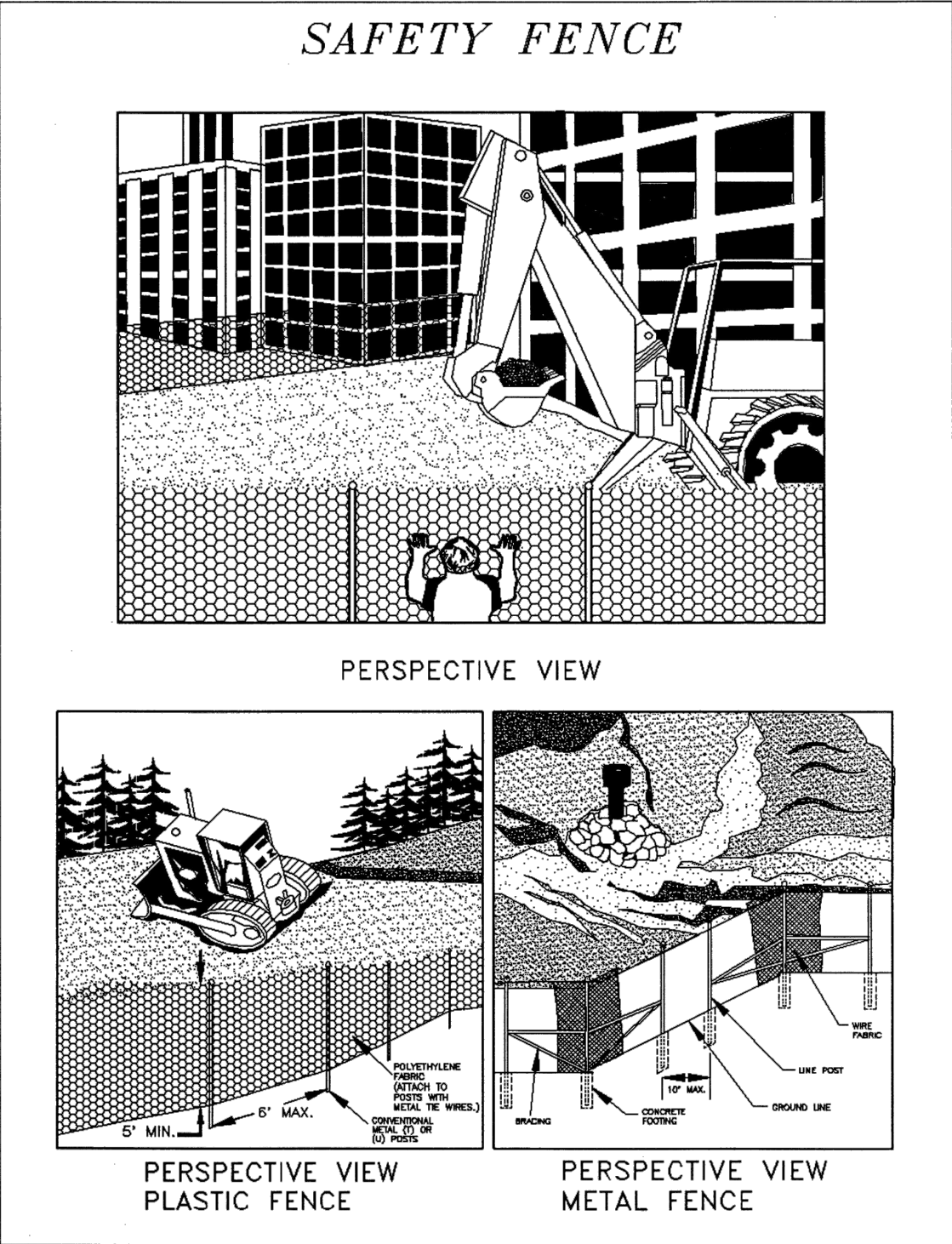


VICINITY MAP
NOT TO SCALE

LOCATION MAP



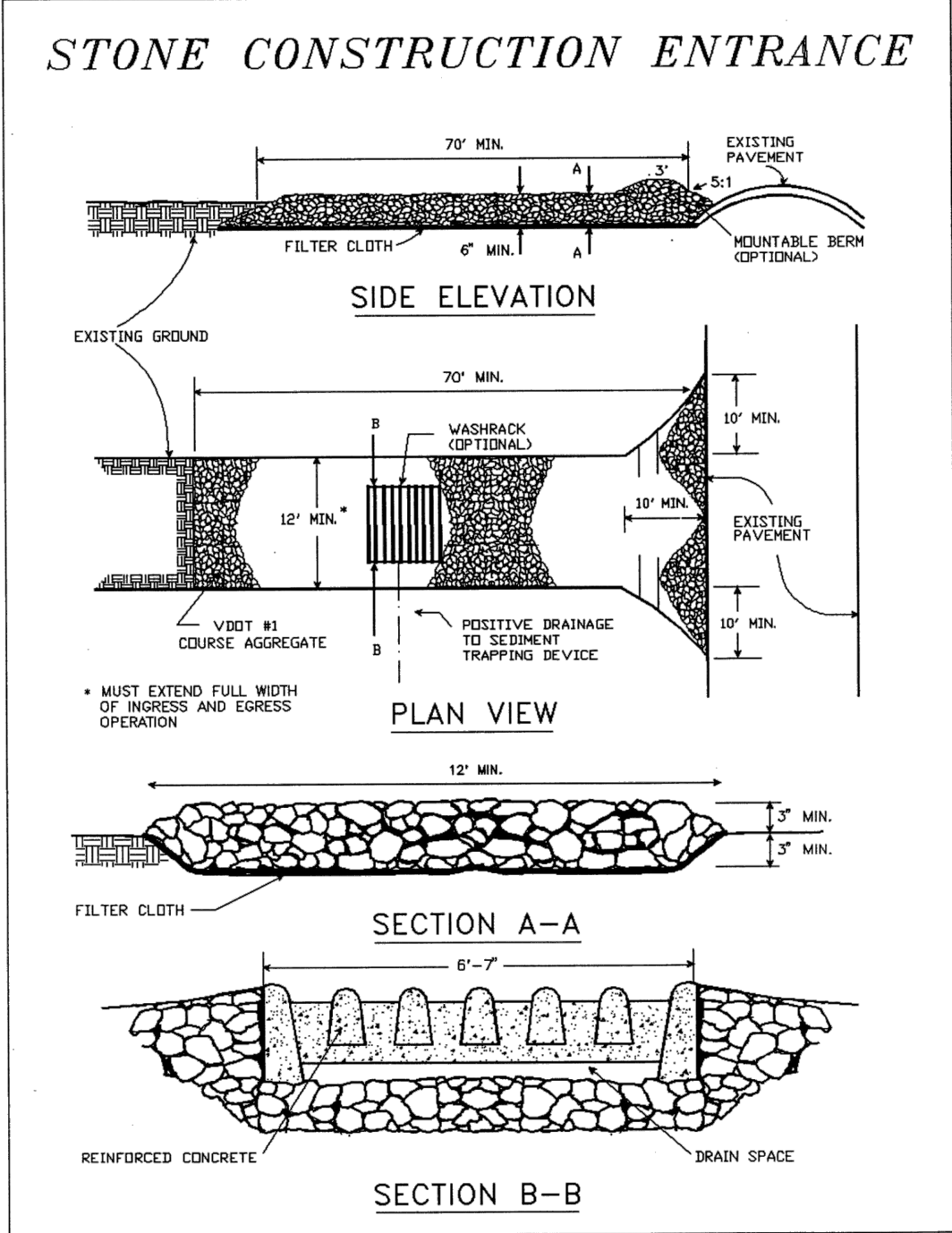
<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: left;">  <p>COVER SHEET</p> <p>MOUNTAIN VALLEY PIPELINE PROJECT – TRANSCO INTERCONNECT</p> <p>PITTSYLVANIA COUNTY, VIRGINIA</p> </div> <div style="text-align: center;"> <p>MOUNTAIN VALLEY PIPELINE, LLC</p> <p>555 SOUTHPOINTE BLVD, SUITE 200</p> <p>CANONSBURG, PA 15317</p> </div> </div>									
 <p>TETRATECH</p> <p>complex world CLEAR SOLUTIONS™</p> <p>661 ANDERSEN DRIVE FOSTER PLAZA 7 PITTSBURGH, PA 15220</p>									
<div style="border: 2px solid red; padding: 10px; color: red; font-weight: bold; text-align: center;"> EROSION AND SEDIMENT CONTROL PLANS </div>									
<div style="display: flex; justify-content: space-between;"> <div> <p>DATE: 6/2/2017</p> <p>SCALE: AS SHOWN</p> </div> <div style="text-align: right;"> <p>13</p> </div> </div>									
<div style="display: flex; justify-content: space-between;"> <div> <p>DRAWN BY: DZ</p> <p>CHECKED BY: HT</p> <p>APPROVED BY: RE</p> </div> <div style="text-align: right;"> <p>REVISION</p> </div> </div>									



Source: Adapted from Conwed Plastics and VDOT Road and Bridge Standards

Plate 3.01-1

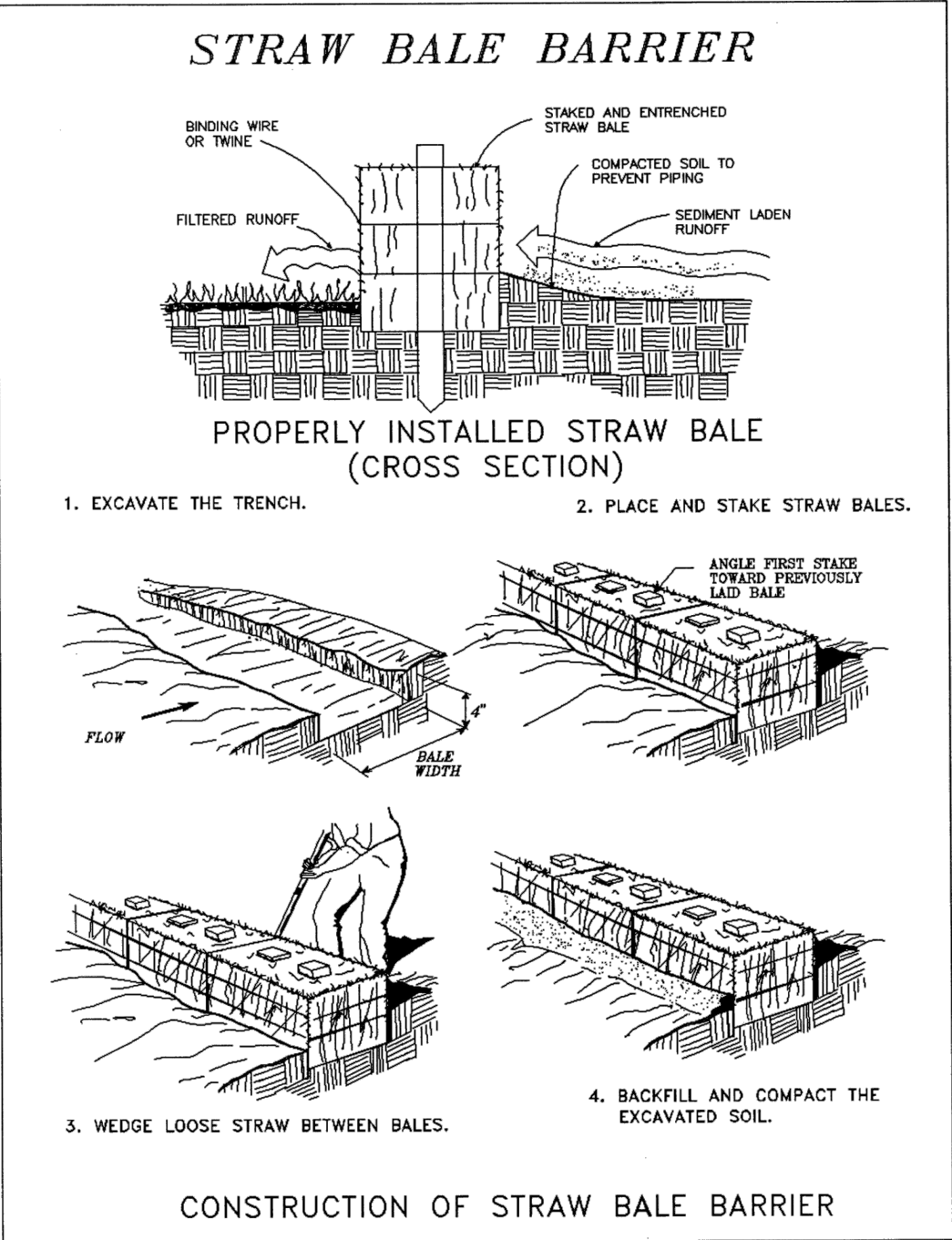
SAFETY FENCE
TAKEN FROM VADEQ 1992 MANUAL



Source: Adapted from 1983 Maryland Standards for Soil Erosion and Sediment Control, and Va. DSWC

Plate 3.02-1

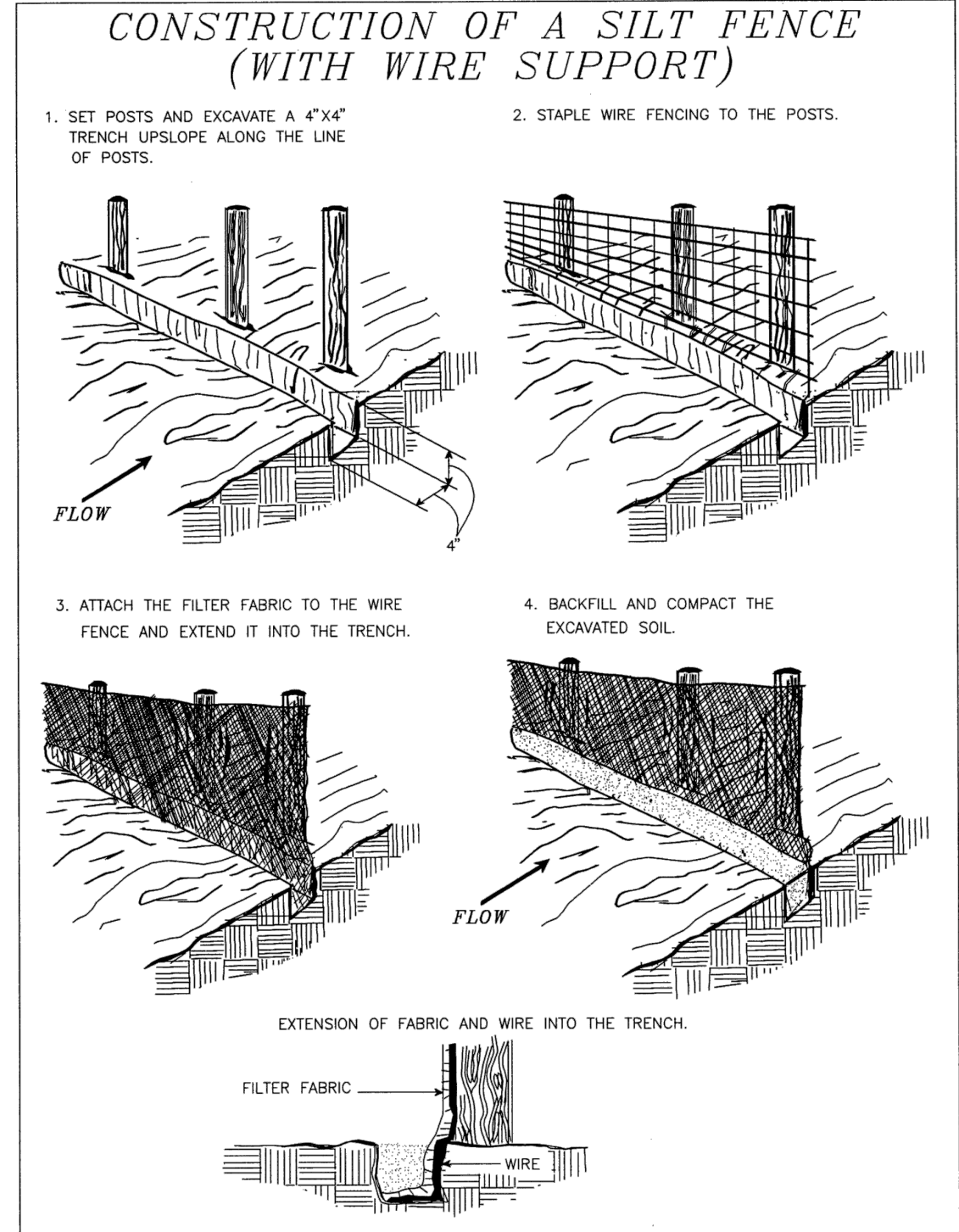
STONE CONSTRUCTION ENTRANCE
TAKEN FROM VADEQ 1992 MANUAL



Source: Va. DSWC

Plate 3.04-1

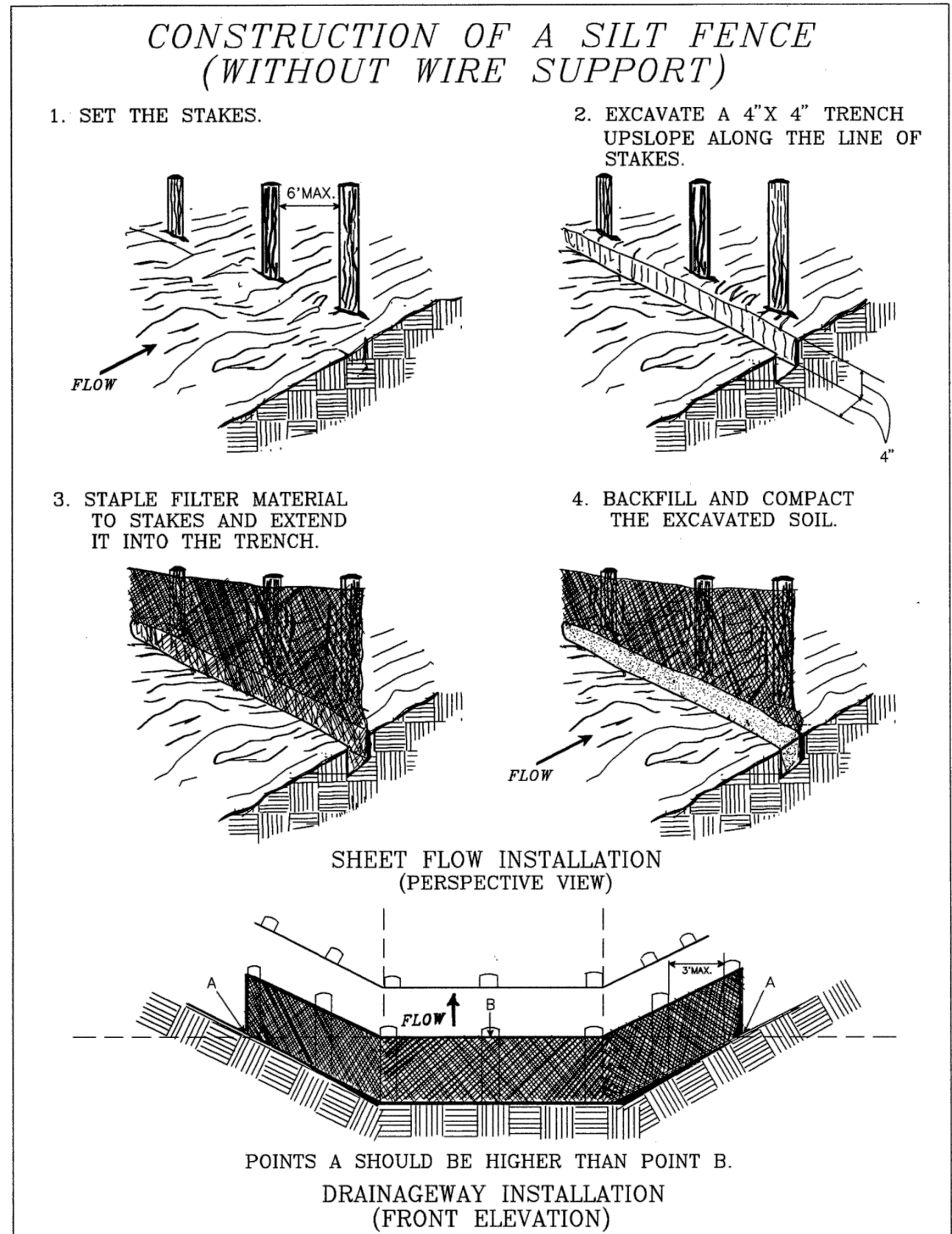
STRAW BALE BARRIER
TAKEN FROM VADEQ 1992 MANUAL



Source: Adapted from Installation of Straw and Fabric Filter Barriers for Sediment Control, Sherwood and Wyant

Plate 3.05-1

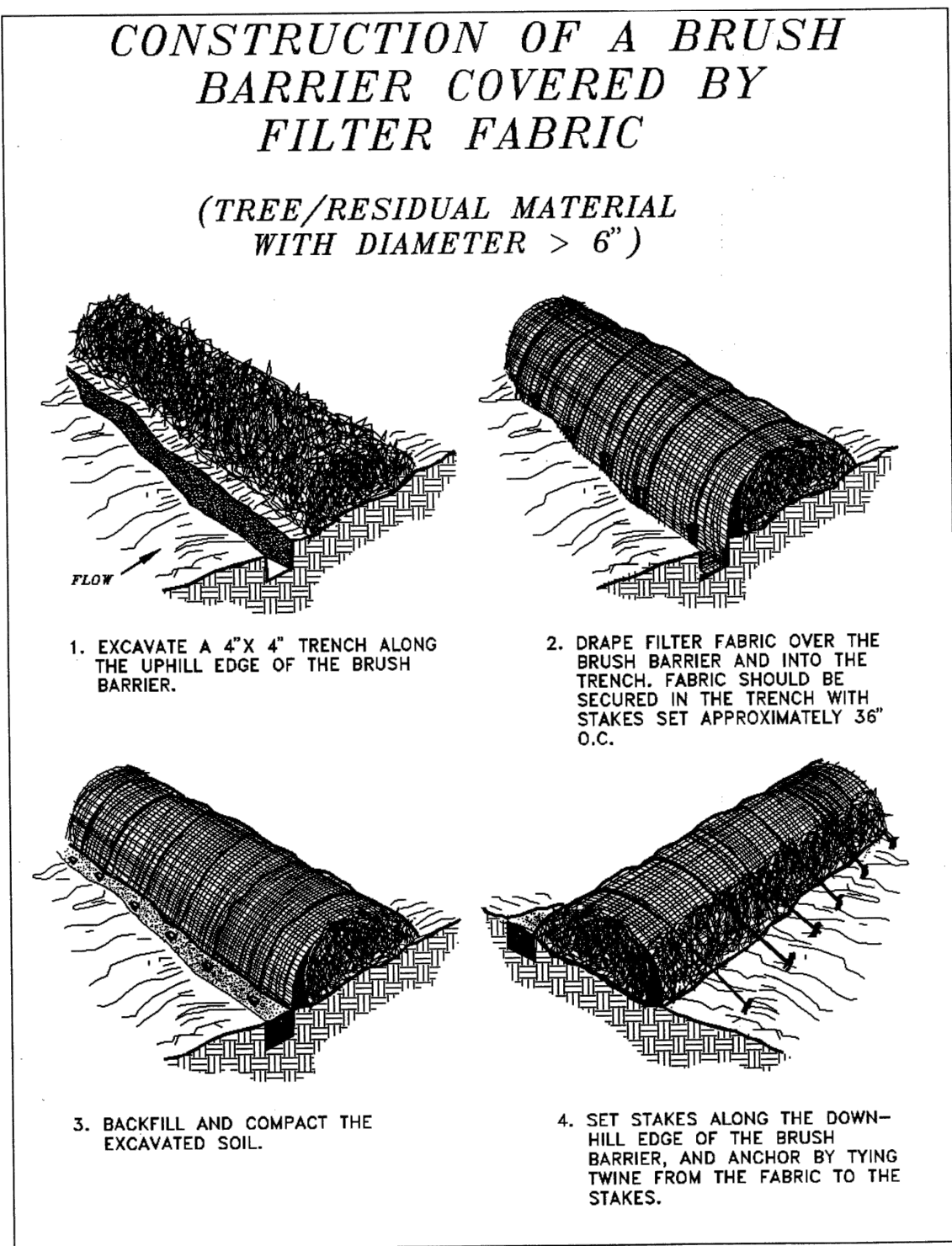
CONSTRUCTION OF SILT FENCE
(WITH WIRE SUPPORT)
TAKEN FROM VADEQ 1992 MANUAL



Source: Adapted from Installation of Straw and Fabric Filter Barriers for Sediment Control, Sherwood and Wyant

Plate 3.05-2

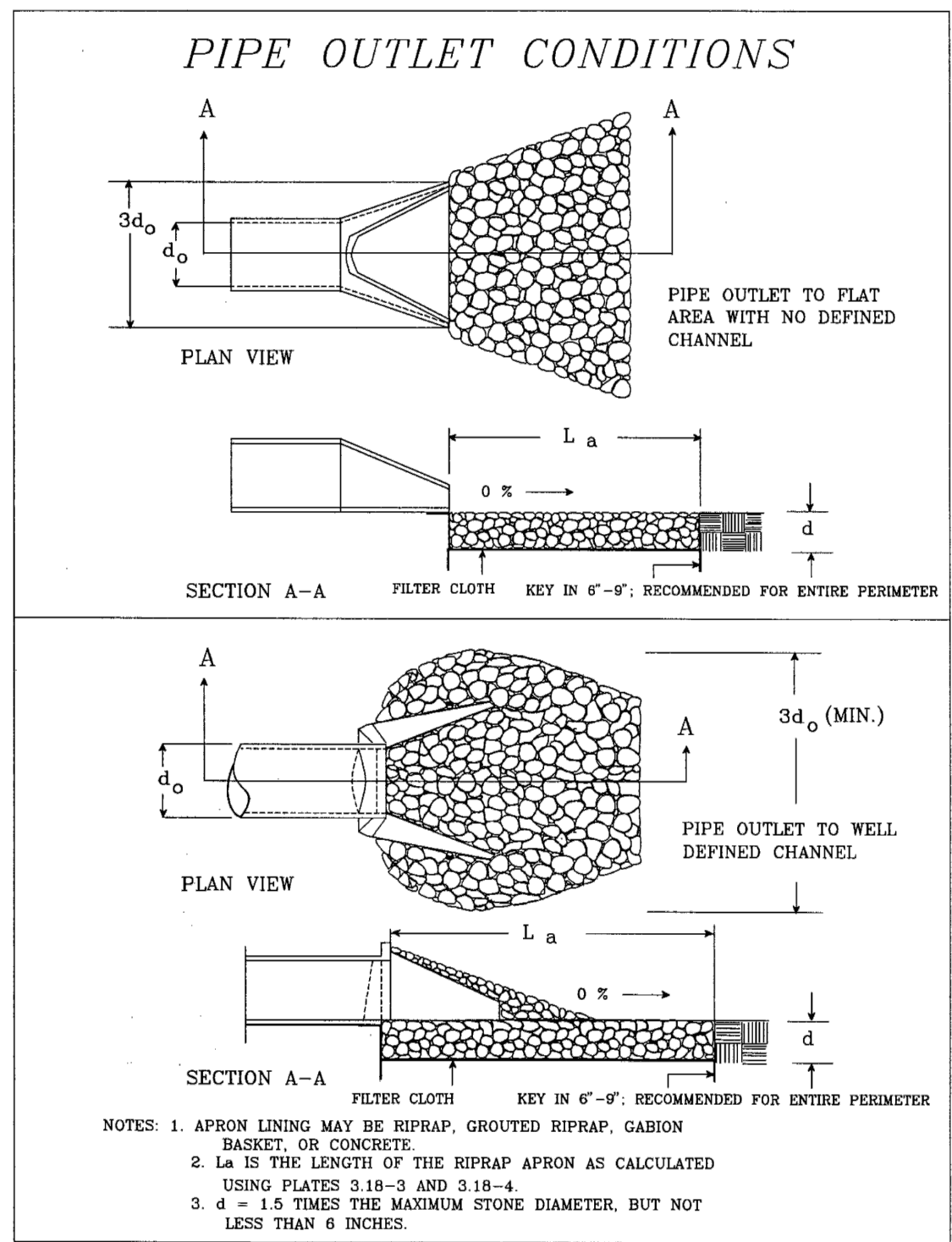
CONSTRUCTION OF SILT FENCE
(WITHOUT WIRE SUPPORT)
TAKEN FROM VADEQ 1992 MANUAL



Source: Va. DSWC

Plate 3.06-1

CONSTRUCTION OF A BRUSH BARRIER
TAKEN FROM VADEQ 1992 MANUAL



Source: Va. DSWC

Plate 3.18-1

PIPE OUTLET CONDITIONS
TAKEN FROM VADEQ 1992 MANUAL

PIPE OUTLET SCHEDULE
TAKEN FROM VADEQ 1992 MANUAL

OUTLET NO.	Q (CFS)	d50RIPRAP SIZE (IN)	AASHTO RIPRAP CLASS	RIPRAP PLACEMENT THICKNESS (FT)	MINIMUM LENGTH (FT)	WIDTH AT START (FT)	WIDTH AT END (FT)
OUTLET CC-1	10.13	6	A	1.95	10	6.00	12.00
OUTLET CC-2	3.74	6	A	1.95	6	11.20	11.20
OUTLET CC-3	1.49	6	A	1.95	6	4.50	7.50
OUTLET CC-4 (TEMPORARY)	5.23	6	A	1.95	9	4.50	10.50
OUTLET CC-5	1.43	6	A	1.95	6	4.50	7.50
OUTLET CH-G	5.23	6	A	1.95	9	4.80	4.80

Mountain Valley Pipeline

EROSION AND SEDIMENT CONTROL DETAILS

MOUNTAIN VALLEY PIPELINE PROJECT - TRANSCO INTERCONNECT

PITTSBURGH COUNTY, VIRGINIA

NO:

DATE:

CHKD:

APPD:

DESCRIPTION:

REVISIONS:

TETRA TECH

complex world | CLEAR SOLUTIONS™

661 ANDERSEN DRIVE
FOSTER PLAZA 7
PITTSBURGH, PA 15220

EROSION AND SEDIMENT CONTROL PLANS

DRAWN BY: DZ

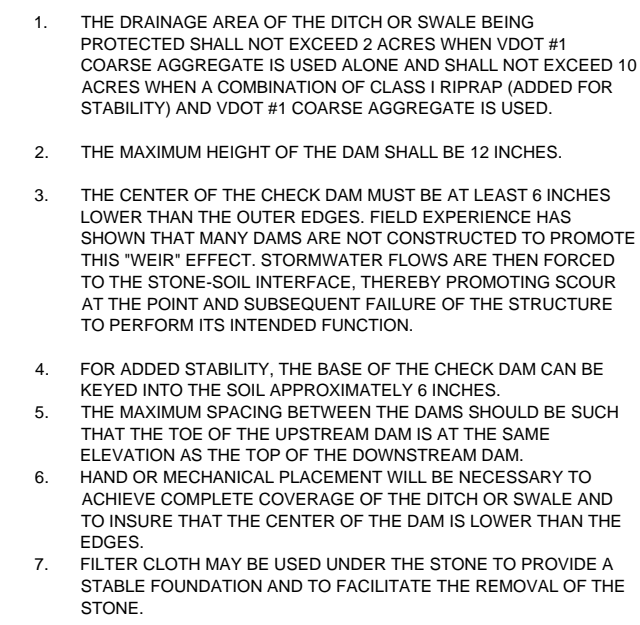
CHECKED BY: HT

APPROVED BY: RE

DATE: 6/2/2017

SCALE: AS SHOWN

SHT. NO. TRA-2 OF 13



Source: Va. DSWC

C ROCK CHECK DAM
DEVELOPED FROM VADEQ 1992 MANUAL

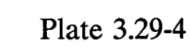
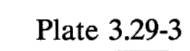
Plate 3.20-1

Drainage Area (Acres)	Average Slope of Watershed			
	1%	4%	8%	16%
1 - 25	24	24	30	30
26 - 50	24	30	36	36
51 - 100	30	36	42	48
101 - 150	30	42	48	48
151 - 200	36	42	48	54
301 - 350	42	48	60	60
351 - 400	42	54	60	60
451 - 500	42	54	60	72
501 - 550	48	60	60	72
551 - 600	48	60	60	72
601 - 640	48	60	72	72

^a Note: Table is based on USDA-SCS Graphical Peak Discharge Method for 2-year frequency storm event, CN = 65; Rainfall depth = 3.5 inches (average for Virginia).

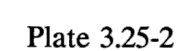
Source: Va. DSWC

PIPE DIAMETER CHART
TAKEN FROM VADEQ 1992 MANUAL



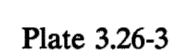
Source: Michigan Soil Erosion and Sedimentation Guide

FILL SLOPE TREATMENT & TRACKING
TAKEN FROM VADEQ 1992 MANUAL



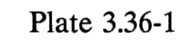
Source: Adapted from VDOT Standard Sheets

DIVERSION CHANNEL CROSSING DEVELOPED FROM VADEQ 1992 MANUAL



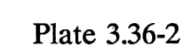
Source: Va. DSWC

STRAW BALE/SILT FENCE PIT
DEVELOPED FROM VADEQ 1992 MANUAL



Source: Adapted from Ludlow Products Brochure

TYPICAL ORIENTATION OF TREATMENT
SOIL STABILIZATION BLANKET
DEVELOPED FROM VADEQ 1992 MANUAL

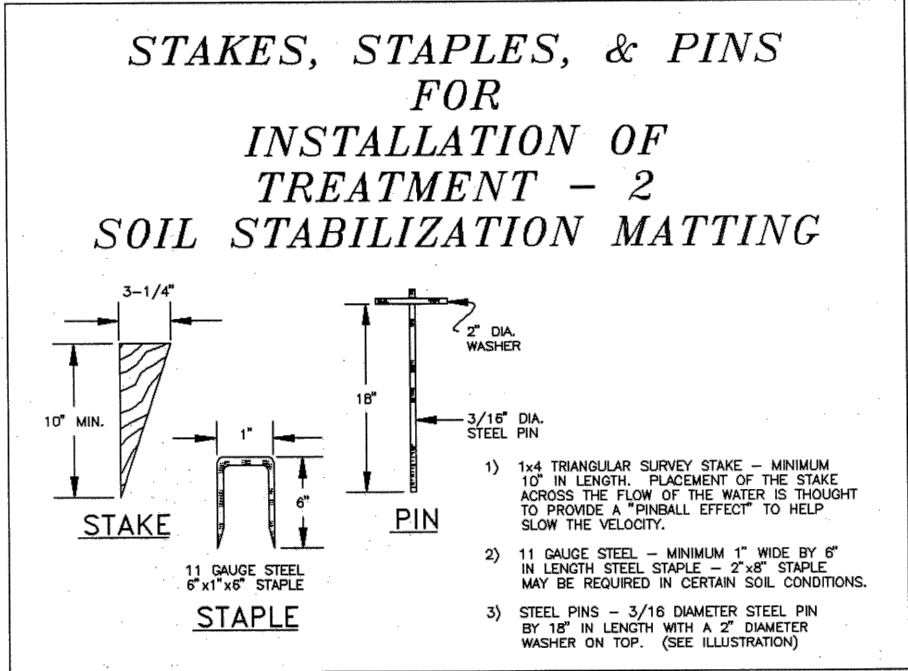


Source: VDOT Road and Bridge Standards

SOIL STABILIZATION BLANKET INSTALLATION CRITERIA DEVELOPED FROM VADEQ 1992 MANUAL

evaluation of performance data to ensure proper selection of a soil stabilization matting are also essential. Although many manufacturers claim their products may inhibit erosion associated with channel velocities of up to 20 ft./sec., it is recommended that any velocities that exceed 10 ft./sec. be properly protected with some form of structural lining (see Std. & Spec. 3.17, STORMWATER CONVEYANCE CHANNEL).

Staples - Staples or anchoring methods and recommendations vary by manufacturers. The expectation of high velocities should dictate the use of more substantial anchoring. Some of the typically recommended stakes, staples and pins are depicted in Plate 3.36-3



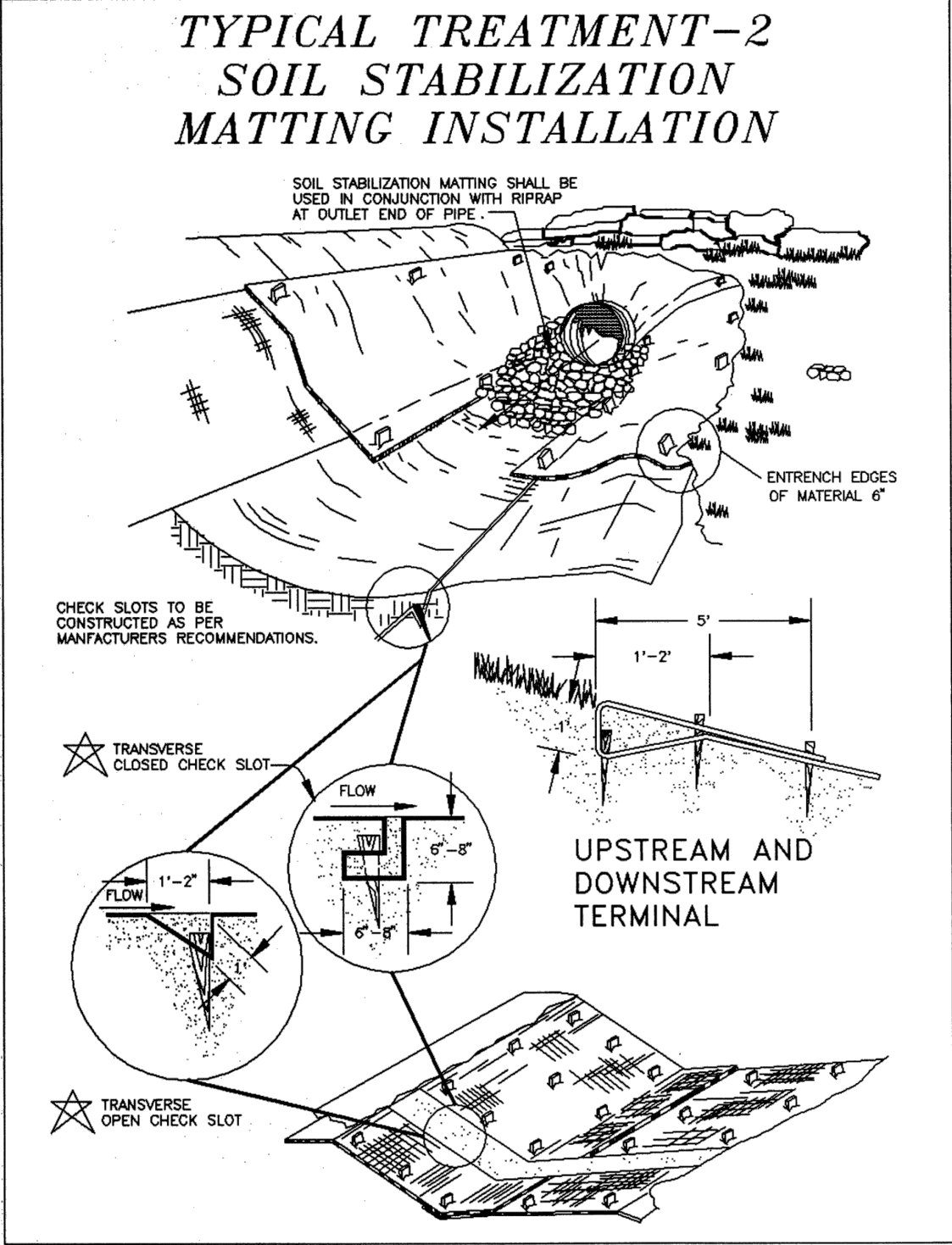
Source: Product literature from Greenstreak, Inc.

Plate 3.36-3

Installation Requirements

Site Preparation - After site has been shaped and graded to approved design, prepare a friable seedbed relatively free from clods and rocks more than 1 inch in diameter, and any foreign material that will prevent contact of the soil stabilization mat with the soil surface. If necessary, redirect any runoff away from the ditch or slope during installation.

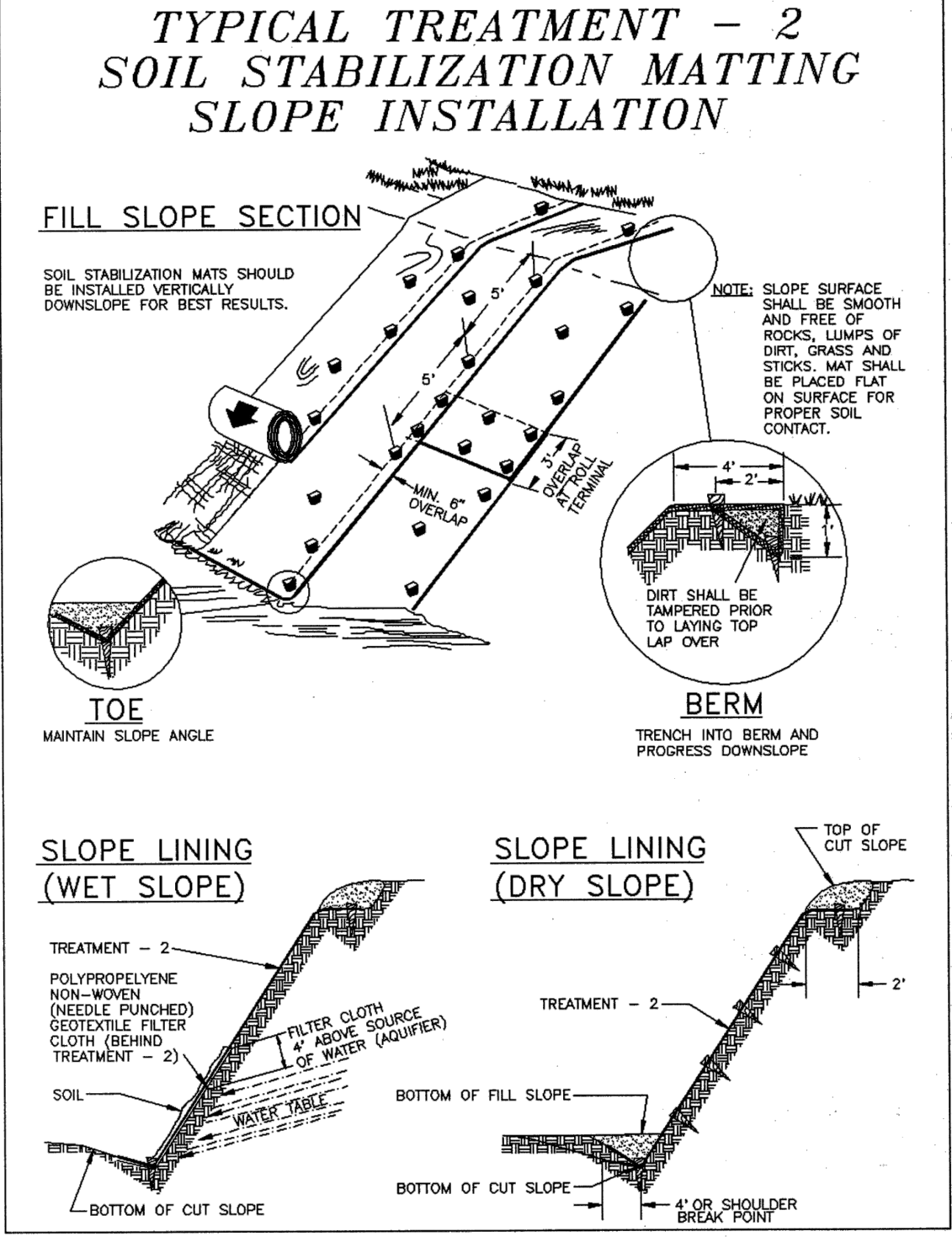
STAKES, STAPLES, & PINS FOR INSTALLATION OF SOIL STABILIZATION MATTING DEVELOPED FROM VADEQ 1992 MANUAL



Source: VDOT Road and Bridge Standards

Plate 3.36-4

TYPICAL TREATMENT SOIL STABILIZATION MATTING INSTALLATION DEVELOPED FROM VADEQ 1992 MANUAL



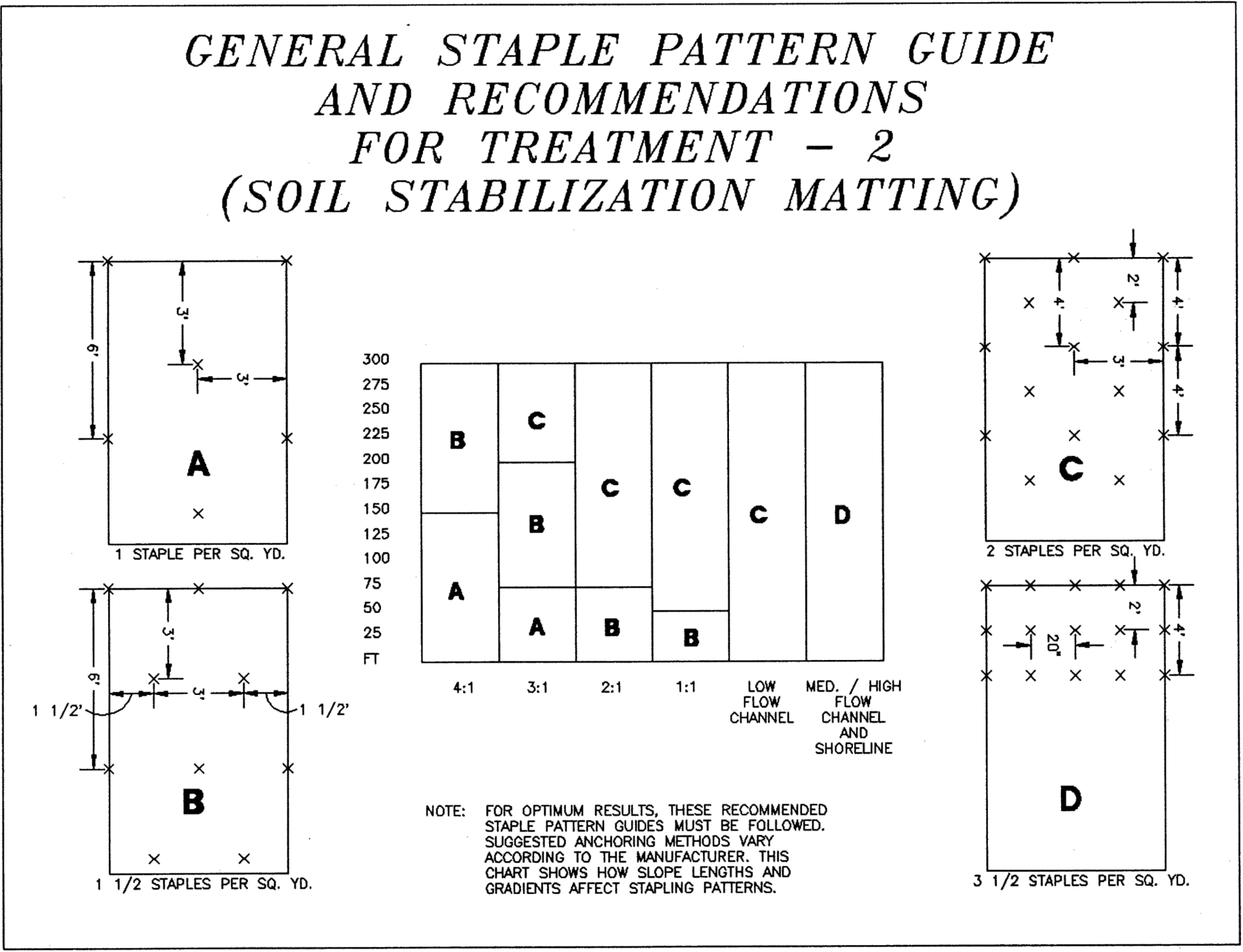
Source: VDOT Road and Bridge Standards

Plate 3.36-5

SOIL STABILIZATION MATTING SLOPE INSTALLATION DEVELOPED FROM VADEQ 1992 MANUAL

Source: Product literature from North American Green


Plate 3.36-6



GENERAL STAPLE PATTERN GUIDE & RECOMMENDATIONS FOR TREATMENT DEVELOPED FROM VADEQ 1992 MANUAL


REFERENCES:
VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, DATED 1992

Mountain Valley Pipeline		EROSION AND SEDIMENT CONTROL DETAILS		MOUNTAIN VALLEY PIPELINE PROJECT - TRANSCO INTERCONNECT		PITTSBURGH COUNTY, VIRGINIA		MOUNTAIN VALLEY PIPELINE, LLC		555 SOUTHPOINTE BLVD, SUITE 200		CANONSBURG, PA 15317	
NO.		DATE:		DWN.:		CHKD.:		APPD.:		DESCRIPTION:		REVISIONS:	
DRAWN BY:		DZ		CHECKED BY:		HT		APPROVED BY:		RE		DATE:	
SCALE:		AS SHOWN		SCALE:		AS SHOWN		SCALE:		AS SHOWN		SCALE:	
SHT. NO.		TRA-4		OF		13		SHT. NO.		TRA-4		OF 13	

DRAWN	DATE	 Mountain Valley PIPELINE	ENVIRONMENTAL DETAIL	
CHECKED			COMPOST FILTER SOCK	
APP'D	DATE			
SCALE	SHEET 1 OF 1			
JOB NO.				
PROJECT ID: PXXXX		DESIGN ENGINEERING	DRAWING NO. MVP-ES3	REV. 0

Material Type	3mil HDPE	5 mil HDPE	5 mil HDPE	Multi-Filament Polypropylene (MFPF)	Heavy Duty Multi-Filament Polypropylene (HD-MFPF)
Material Characteristics	Photo-degradable	Photo-degradable	Bio-degradable	Photo-degradable	Photo-degradable
Sock Diameters	12" 18"	12" 18" 24"	12" 18" 24"	12" 18" 24"	12" 18" 24"
Mesh Opening	3/8"	3/8"	3/8"	3/8"	1/8"
Tensile Strength		26 psi	25 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				
Dutier Filtration Mesh	3/4" X 3/4" max. aperture size				
	Composite Polypropylene fabric				
	(Woven fabric and non woven fleece mechanically fused via needle punch)				
3/16" Max. aperture size					
Sock fabrics composed of burfap may be used on projects lasting 6 months or less.					


Compost Standards	
Organic Matter Content	80% - 100% (dry weight basis)
Organic Portion	Fibrous and elongated
pH	5.5 - 8.0
Moisture Content	35% - 55%
Particle Size	98% pass through 1" screen
Soluble Salt Concentration	5.0 dS/m (mmhos/cm) Maximum

DRAWN		DATE		 <div> <div>ENVIRONMENTAL DETAIL</div> <div>COMPOST FILTER SOCK TABLES</div> <div> <div>DRAWING NO.</div> <div>MVP-ES3.1</div> <div>REV.</div> <div>0</div> </div> </div>	
CHECKED		DATE			
APP'D		DATE			
SCALE	N.T.A.	SHEET 1 OF 1			
JOB NO.					
PROJECT ID:					
PXXXX					
DESIGN ENGINEERING					

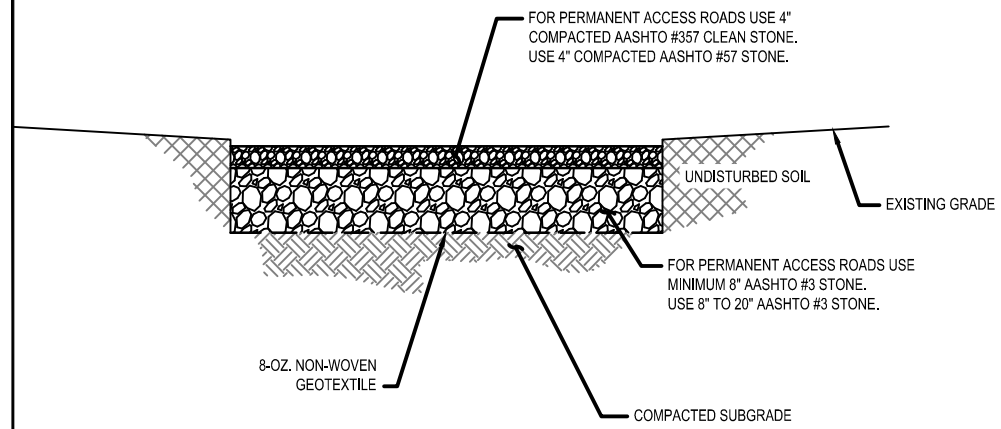
Maximum Slope Length for Composite Filter Sock in Feet					
Slope Percent	Note: Table developed from FilterX Sediment Control product cut sheet by FilterX International, LLC. As a general reference. Refer to manufacturers specifications for brand of Composite Filter Sock used.				
	8 in	12 in	16 in	24 in	32 in
2 (or less)	800	750	1000	1300	1650
5	400	500	550	650	750
10	200	250	300	400	500
15	140	170	200	250	320
20	100	125	140	200	250
25	80	100	110	200	275
30	60	75	90	130	200
35	60	75	80	115	150
40	60	75	80	100	125
45	40	50	60	80	100
50	40	50	55	65	75

MAXIMUM SLOPE LENGTH ABOVE COMPOST FILTER
SOCK AND RECOMMENDED DIAMETER

DRAWN		DATE	
CHECKED			
APP'D		DATE	
SCALE		SHEET 1 OF 1	
JOB NO.			
PROJECT ID:			
PXXXX			


	
DESIGN ENGINEERING	

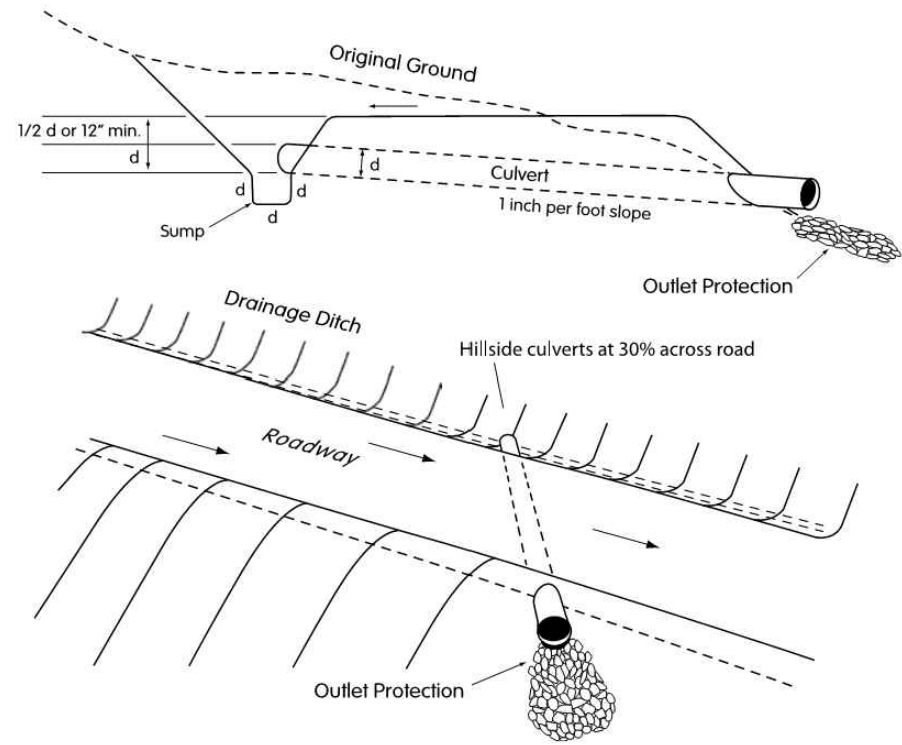
ENVIRONMENTAL DETAIL	
COMPOST FILTER SOCK TABLES	
DRAWING NO.	REV.
MVP-ES3.2	0




NOTES:

1. THICKNESS OF AASHTO #3 STONE/AGGREGATE LAYER TO BE BETWEEN 8" AND 20" DEPENDING ON THE STORAGE VOLUME NEEDED TO MEET STORMWATER QUANTITY REQUIREMENTS.
2. THICKNESS OF AASHTO #3 STONE/AGGREGATE LAYER FOR ACCESS ROADS TO BE A MINIMUM OF 8" OR MORE AS DIRECTED.
3. COMPACT SUBGRADE PRIOR TO BACKFILL PLACEMENT. FOR BACKFILL, A MIN. 95% COMPACTION (ASTM D 698) IS REQUIRED.
4. UNSUITABLE MATERIAL SHALL BE REMOVED PRIOR TO SUBGRADE COMPACTION AND BACKFILL PLACEMENT. ADDITIONAL SUBGRADE COMPACTION NOT REQUIRED.

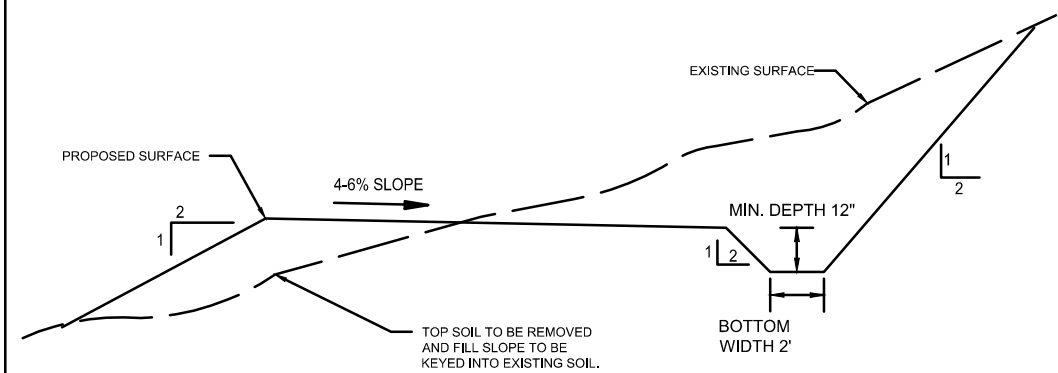
DESIGN	DATE	 Mountain Valley PIPELINE	ENVIRONMENTAL DETAIL	
CHECKED			GAP GRADED GRAVEL DETAIL	
APP'D			FOR MAINLINE VALVE PADS &	
SCALE	N.T.S.		PERMANENT ACCESS ROADS	
JOB NO.	SHEET 1 OF 1			
PROJECT ID			DRAWING NO.	MVP-ES33
PXXXX		DESIGN ENGINEERING		REV.



DRAWN		DATE	 DESIGN ENGINEERING		ENVIRONMENTAL DETAIL	
CHECKED		DATE			DITCH RELIEF CULVERT	
APP'D		DATE			DRAWING NO.	
SCALE		N.T.S.			MVP-ES7	
SHEET 1 OF 1			JOB NO.		REV.	
PROJECT ID:			PXXXX		0	


CULVERT SCHEDULE

CULVERT NO.	DIA (IN)	SLOPE (%)	INVERT IN ELEV (FT)	INVERT OUT ELEV (FT)	MATERIAL
CC-1	24	0.77	655.00	654.00	CPP OR APPROVED EQUAL
CC-2	18	0.99	657.40	656.10	CPP OR APPROVED EQUAL
CC-3	18	2.41	657.40	653.90	CPP OR APPROVED EQUAL
CC-4 (TEMPORARY)	18	2.12	653.80	650.00	CPP OR APPROVED EQUAL
CC-5	18	1.7	664.00	662.50	CPP OR APPROVED EQUAL



NOTE:

1. INSLOPE WITH DITCH SECTION FOR USE ON STEEP SLOPE AND AREAS WITH POOR SOILS.
2. EROSION CONTROL MATTING TO BE INSTALLED ON CUT AND FILL SLOPES STEEPER THAN 3H:1V.

DRAWN	DATE	 DESIGN ENGINEERING	ENVIRONMENTAL DETAIL	
CHECKED	DATE			
APP'D	DATE			
SCALE	N.T.S.		ACCESS ROAD TYPICAL SECTION	
JOB NO.	SHEET 1 OF 1			
PROJECT ID:	PXXXX		DRAWING NO. MVP-ES34	
		REV. P		

REFERENCES:
VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, DATED 1992

Mountain Valley Pipeline
EROSION AND SEDIMENT CONTROL DETAILS


MOUNTAIN VALLEY PIPELINE PROJECT – TRANSCO INTERCONNECT
PITTSBURGH COUNTY, VIRGINIA

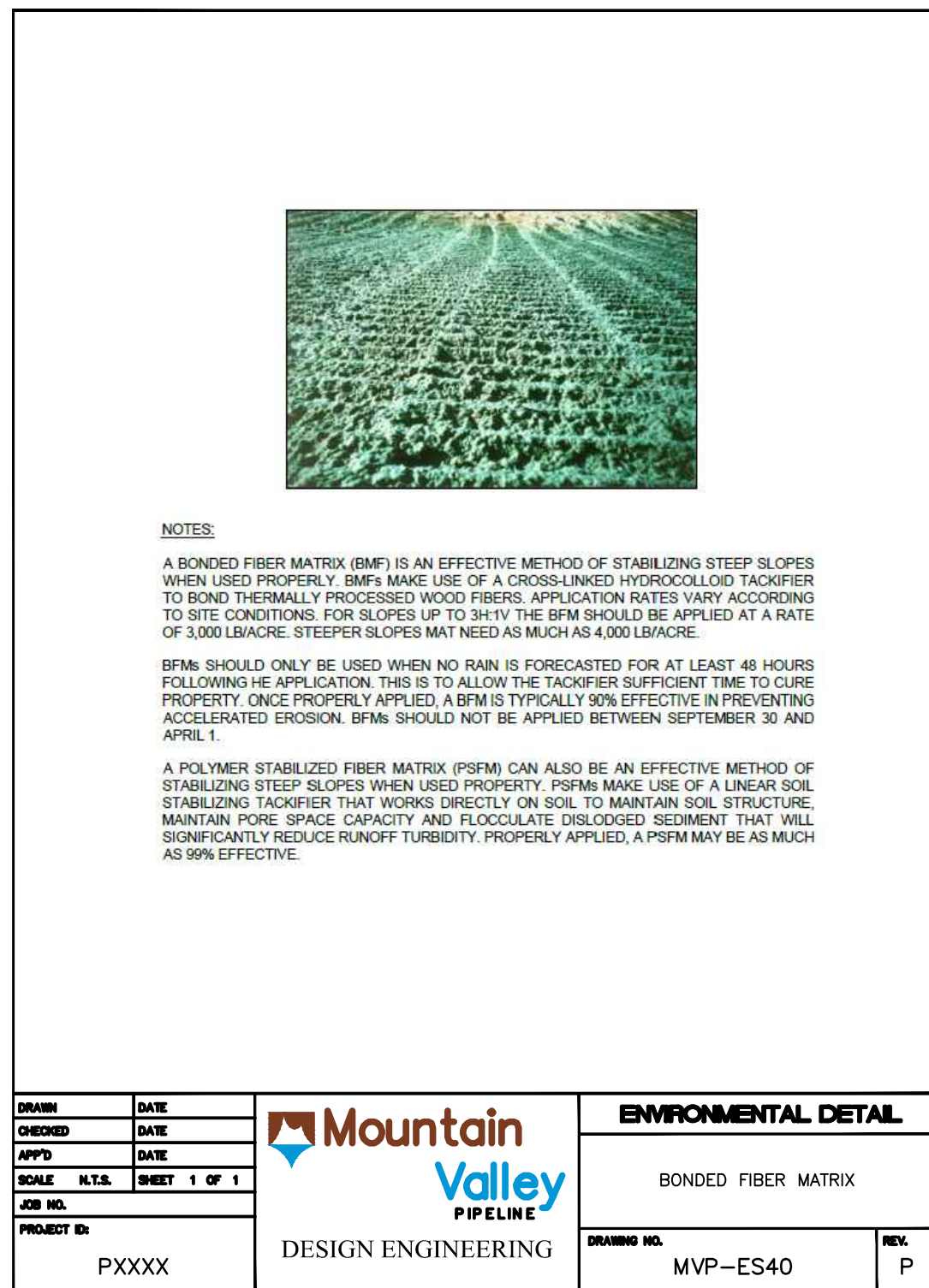
MOUNTAIN VALLEY PIPELINE, LLC
555 SOUTHPOINTE BLVD, SUITE 200
CANONSBURG, PA 15317

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661 ANDERSEN DRIVE
FOSTER PLAZA 7
PITTSBURGH, PA 15220

EROSION AND SEDIMENT CONTROL PLANS

DRAWN BY:		DZ
CHECKED BY:		HT
APPROVED BY:		RE
DATE:	6/2/2017	
SCALE:	AS SHOWN	
SHT. NO.	TRA-5	OF 13




NOTE: CHANNELS CH-A THROUGH CH-E WERE DESIGNED IN ACCORDANCE WITH SPECIFICATION NO. 3 OF VIRGINIA STORMWATER BMP CLEARINGHOUSE. CHANNELS CH-F AND CH-G WERE ONLY DESIGNED FOR CONVEYANCE.


NOTE: CHANNELS CH-A THROUGH CH-E WERE DESIGNED IN ACCORDANCE WITH SPECIFICATION NO. 3 OF VIRGINIA STORMWATER BMP CLEARINGHOUSE. CHANNELS CH-F AND CH-G WERE ONLY DESIGNED FOR CONVEYANCE.

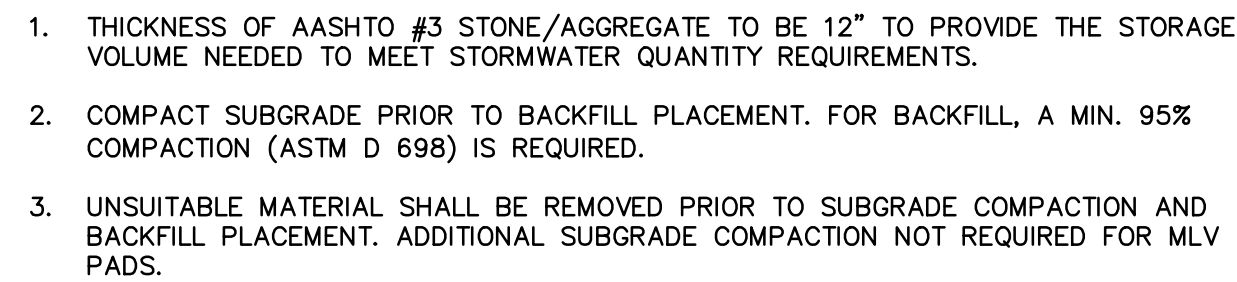
Typical Polymer Stabilized Fiber Matrix Application Rates									
Maximum Rainfall of 5.20"									
SLOPE	5:1	4:1	4:1	3:1	2:1	1.5:1	1:1		
Soil Stabilizer (gal/lacre)	4	5	6	7	8	9	10		
Fiber (lbs/acre)	1,500	1,500	1,500	1,800	2,000	2,500	3,000		
Maximum Rainfall of > 20" and for Site Winterization									
SLOPE	5:1		4:1		>3:1				
Soil Stabilizer (gal/lacre)	6		8		10				
Fiber (lb/acre)	2,000		2,500		3,000				

NOTES:

- 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 STEEP 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 BPM, FGM, OR PRSM SHOULD BE SPRAYED OVER THE AREA AT THE REQUIRED APPLICATION RATE. (SEE ABOVE TABLES)
- HYDRAULIC EROSION CONTROL PRODUCTS (HEPC USED ON JNF LANDS MUST BE SUITABLE FOR WILDLIFE.

DRAWN	DATE		ENVIRONMENTAL DETAIL
CHECKED	DATE		
APP'D	DATE		
SHEET	N.T.A.		BONDED FIBER MATRIX
SHEET NO.	SHEET 1 OF 1		
PROJECT ID:		DRAWING NO.	MVP-ES40.1
DESIGN ENGINEERING			REV. C

DRAWN BY:		DZ
CHECKED BY:		HT
APPROVED BY:		RE
DATE:	6/2/2017	
SCALE:	AS SHOWN	
SHT. NO.	TRA-6	OF 13

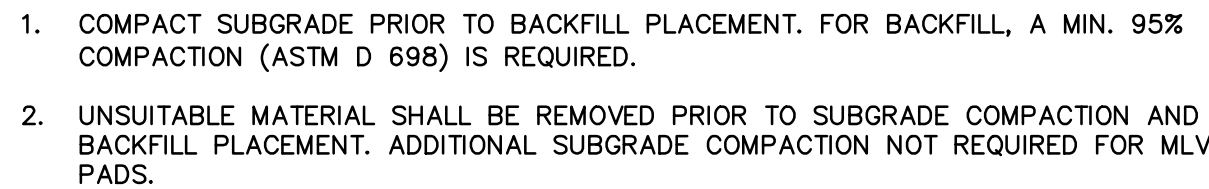


N.T.S.

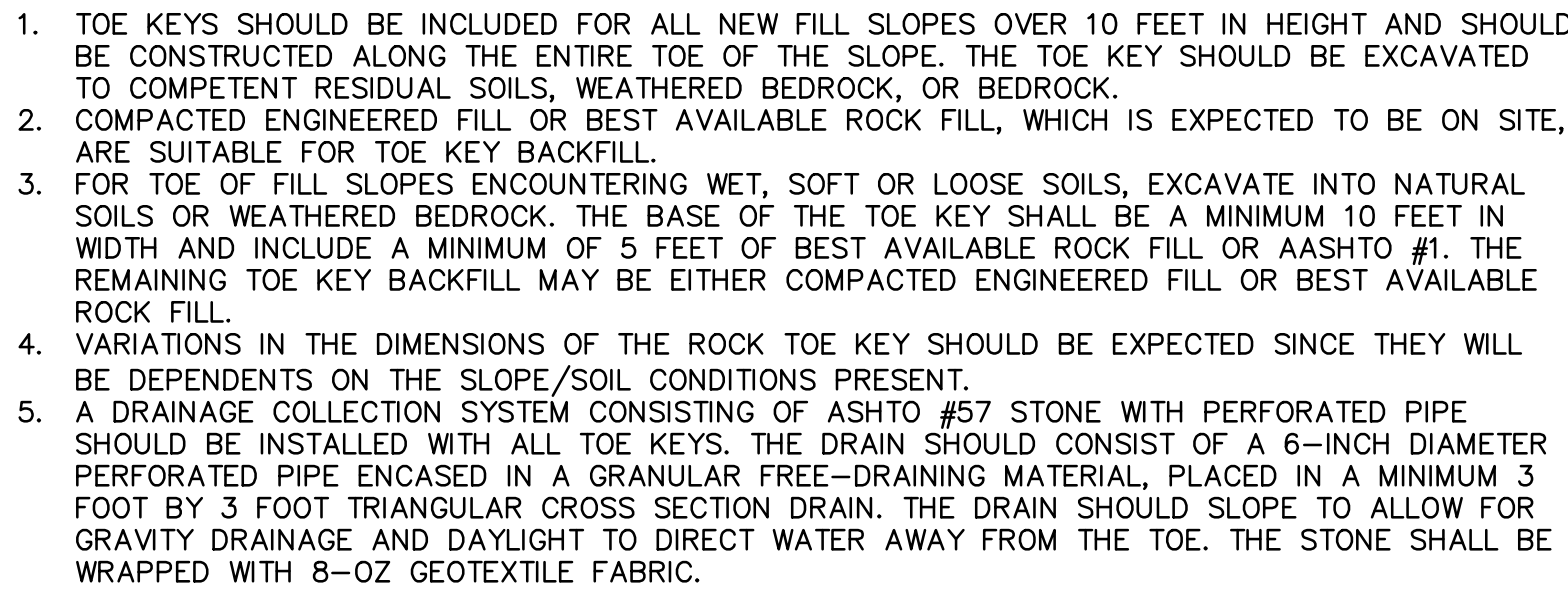


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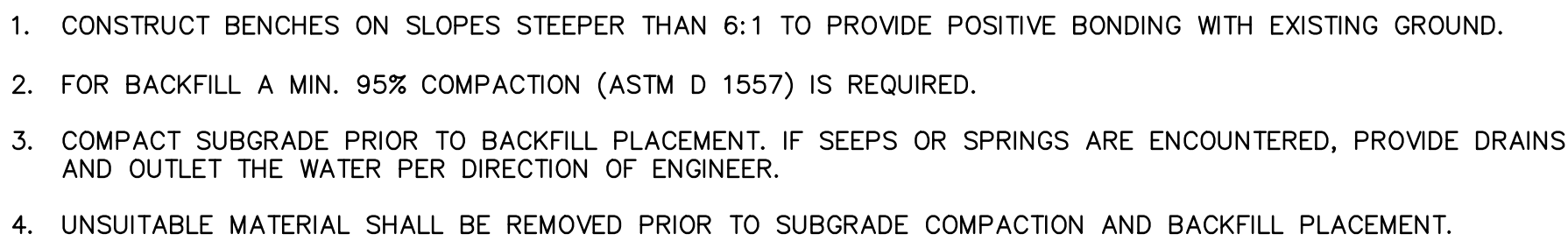
REFERENCES:
VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, DATED 1992



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GENERAL CONSTRUCTION SEQUENCE

THE FOLLOWING IS A GENERAL SEQUENCE FOR EARTHMOVING ACTIVITIES ASSOCIATED WITH CONSTRUCTION OF THE STATION:

- AT LEAST 3 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, ALL CONTRACTORS INVOLVED WILL NOTIFY A811.COM CALL BY CALLING 811 OR 1-800-552-7001 OR VISIT VA811.COM
2. INSTALL TEMPORARY EROSION AND SEDIMENT (E&S) CONTROLS PRIOR TO EARTH DISTURBANCE. REFER TO BEST MANAGEMENT PRACTICES (BMP) ON THE PLAN AND DETAIL SHEETS. ORANGE CONSTRUCTION FENCE SHOULD BE PLACED AROUND SENSITIVE AREAS WHERE SHOWN PRIOR TO EARTH DISTURBANCE. STONE CONSTRUCTION ENTRANCES ARE TO BE PROVIDED AT ALL LOCATIONS WHERE TEMPORARY ACCESS ROADS WILL BE ACCESSING A PUBLIC ROADWAY AND UNTIL PERMANENT ACCESS DRIVES ARE COMPLETED. HAND CLEARING IS PERMISSIBLE PRIOR TO E&S CONTROL INSTALLATION.
3. GENERAL CLEARING AND GRUBBING OF THE TREES AND BRUSH MAY COMMENCE NECESSARY FOR ACCESS ROAD AND PAD CONSTRUCTION WITHIN THE LIMITS OF DISTURBANCE OR AS DIRECTED BY AN MVP DESIGNEE, WHICHEVER IS LESS. SMALLER DEBRIS SUCH AS SHRUBS AND LIMBS CAN BE CHIPPED AND UTILIZED ON-SITE AS PART OF THE SOIL STABILIZATION. UNLESS OTHERWISE DIRECTED BY THE LANDOWNER, LOGS WILL BE EITHER HAULED OFF-SITE OR GIVEN TO THE LANDOWNER UPON THEIR REQUEST; STUMPS AND/OR LOGS WILL BE GROUND, CHIPPED, WINDROWED, OR HAULED OFF-SITE.
4. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REMOVE AND DISPOSE, TO AN APPROVED VADEQ WASTE DISPOSAL SITE, EXISTING STRUCTURES WITHIN THE LOD AS DIRECTED BY AN MVP DESIGNEE. THE HOUSE IS TO REMAIN ONSITE.
5. STRIP TOPSOIL AND CONSTRUCT PROPOSED ACCESS ROAD WITH ROADSIDE DITCHES. INSTALL CROSS DRAIN CULVERTS WITH OUTLET PROTECTION AS SHOWN ON THE PLAN SHEETS.
6. STRIP AND STOCKPILE TOPSOIL WITHIN THE LIMITS OF DISTURBANCE THE AREAS NEEDED TO CONSTRUCT PAD AND STOCKPILE AREAS.
7. MINIMIZE TOTAL AREA OF DISTURBANCE TO THE EXTENT PRACTICAL. MAINTAIN TEMPORARY TOPSOIL STOCKPILES WITHIN EXISTING SOIL EROSION AND SEDIMENT CONTROLS.
8. PROOF-ROLL ALL AREAS RECEIVING NEW FILL AND THE BOTTOM OF THE EXCAVATION (IF IN SOIL OR WEATHERED BEDROCK) WITH A 12-TON ROLLER COMPACTOR TO NON-VISIBLE MOVEMENT CRITERIA FOR THE PERMANENT PAD. PROOF-ROLLING SHOULD NOT BE PERFORMED WHEN THE SUBGRADE IS WET OR FROZEN. IF ANY SOFT OR WET AREAS ARE ENCOUNTERED OR SOIL PUMPING IS OBSERVED, OVER-EXCAVATE THE AREA OR SINK-IN RIPRAP MATERIAL OF A MINIMUM 6 INCH SIZE AND COMPACT TO NO MOVEMENT. RIPRAP SHOULD BE COMPOSED OF LIMESTONE OR SANDSTONE.
10. UPON COMPLETION OF SATISFACTORY PROOF-ROLLING, THE AREA CAN BE BACKFILLED WITH WELL-COMPACTED FILL, WITH THE EXCEPTION OF TOPSOIL, ORGANIC MATERIAL, OR CARBONACEOUS MATERIAL. ON-SITE EXCAVATED MATERIALS, SOIL OR SOIL/ROCK MIXTURE ARE SUITABLE FOR USE AS FILL. THE SIZE OF ROCK SHOULD BE LIMITED TO 2/3 OF THE LIFT THICKNESS (SEQUENCE #12). SCARIFY EACH LIFT PRIOR TO THE PLACEMENT OF OVERLYING LIFT.
11. CREATE RIP RAP TOE KEY AND BONDING BENCHES PRIOR TO THE PLACEMENT OF BACKFILL ON EXISTING SLOPES PER 'RIPRAP TOE KEY DETAIL AND TYPICAL FILL BONDING BENCH DETAIL'. COMMON FILL FROM THE SITE IS ACCEPTABLE FOR PLACEMENT ABOVE THE TOE KEY AND BONDING BENCHES.
12. PLACE AND COMPACT FILL IN 9-INCH THICK LOOSE HORIZONTAL LIFTS IF PLACING SOIL OR UP TO 18 INCHES LOOSE LIFT THICKNESS IF PLACING SOIL/ROCK; COMPACT EACH LIFT TO 95 PERCENT OF THE MAXIMUM DRY DENSITY AT +/- 2% OF THE OPTIMUM MOISTURE CONTENT AS DETERMINED BY THE STANDARD COMPACTION TEST (ASTM: D698). SEAL/COMPACT FINAL LIFT OF THE DAY TO PREVENT PRECIPITATION FROM INFILTRATING INTO THE FILL PLACED ON THE SITE.
13. AN MVP DESIGNEE IS REQUIRED AT THE SITE DURING CONSTRUCTION TO MONITOR SITE DEVELOPMENT ACTIVITIES PER TETRA TECH'S RECOMMENDATIONS. THE DESIGNEE IS TO OBSERVE THE UNDERCUT, PROOF-ROLLING OF THE EXPOSED SUBGRADE/UNDERCUT PRIOR TO PLACING FILL AND TO MONITOR THE GRADATION, PLACEMENT AND COMPACTION OF FILL MATERIALS TO ENSURE THAT THE SPECIFIED GRADATION AND DENSITY REQUIREMENTS ARE BEING ACHIEVED. IN-PLACE NUCLEAR DENSOMETER TESTING SHOULD BE COMPLETED PER ASTM D 6938 EVERY 5,000 SQUARE FEET OR AT A MINIMUM OF ONE TEST PER LIFT. BASED UPON THE COMPLETION OF THE FIRST FEW LIFTS, THE CONTRACTOR AND THE ENGINEER MAY DEVELOP A CRITERION FOR FIELD COMPACTION OF SOILS. THE COMPACTION CRITERIA WOULD BE BASED ON NUMBER OF PASSES OF COMPACTION EQUIPMENT AND TYPE OF SOIL, USING THE SAME EQUIPMENT TO COMPACT THIS PARTICULAR SOIL TO THE REQUIRED DENSITY. IN THAT EVENT THE TESTING FREQUENCY FOR THE DENSITY MAY BE REDUCED PER RECOMMENDATION OF THE ENGINEER.
14. CONSTRUCT REMAINING PERMANENT PAD WITH 2:1 FILL SLOPES AND RIPRAP SLOPE LINING AS SHOWN ON THE PLAN SHEETS AND ON THE DETAIL SHEET.
15. STABILIZE EXPOSED AND UNWORKED SOILS AND STOCKPILES BY APPLICATION OF EFFECTIVE BMPs THAT PROTECT THE SOIL FROM THE EROSIIVE FORCES OF RAINDROPS, FLOWING WATER, AND WIND. PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO AREAS WITHIN 7 DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN 7 DAYS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT FOR LONGER THAN 14 DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE YEAR.
16. REVEGETATE DISTURBED AREA PER SEEDING CHART OR PER LANDOWNER REQUEST. FOR 3:1 OR STEEPER SLOPES THE DISTURBED AREA WILL HAVE EROSION CONTROL FABRIC (BLANKETING OR FLEX TERRA) INSTALLED AS SHOWN ON THE DETAIL SHEET.
17. FINAL AGGREGATE ON PAD TO BE INSTALLED DURING TOP DRESSING (BY MECHANICAL CONTRACTOR).
18. TEMPORARY BMP'S WILL BE REMOVED UPON ACHIEVING VEGETATIVE STABILIZATION, WHICH IS DEFINED AS A GROUND COVER IS ACHIEVED THAT IS UNIFORM, MATURE ENOUGH TO SURVIVE AND WILL INHIBIT EROSION. DISTURBED AREAS NOT ATTAINING AN ACCEPTABLE VEGETATIVE COVER SHALL BE RESEEDD AS NEEDED UNTIL THE ENDPOINT IS ACHIEVED.
19. ALL POLLUTANTS, INCLUDING WASTE MATERIALS AND DEMOLITION DEBRIS THAT OCCUR ON SITE DURING CONSTRUCTION SHALL BE HANDLED AND LEGALLY DISPOSED OF IN A MANNER THAT DOES NOT CAUSE CONTAMINATION OF SURFACE WATERS. WOODY DEBRIS MAY BE CHOPPED AND SPREAD ON-SITE.

SITE RESTORATION CONSTRUCTION SEQUENCE

1. RESTORE TEMPORARY CONSTRUCTION PAD AND TEMPORARY STOCKPILES TO EXISTING GRADE AS SHOWN ON THE PLAN. REMOVE CROSS CULVERT CC-4 AND CORRESPONDING OUTLET PROTECTION.
2. TEMPORARY E&S CONTROLS SUCH AS DIKES, SILT FENCES AND OTHER EROSION CONTROL MEASURES SHOULD BE INTEGRATED INTO THE SWALE DESIGN THROUGHOUT THE CONSTRUCTION SEQUENCE. SPECIFICALLY, BARRIERS SHOULD BE INSTALLED AT KEY CHECK DAM LOCATIONS, AND EROSION CONTROL FABRIC SHOULD BE USED TO PROTECT THE CHANNEL.
3. GRASS CHANNEL INSTALLATION MAY ONLY BEGIN AFTER THE ENTIRE CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED WITH VEGETATION. ANY ACCUMULATION OF SEDIMENTS THAT DOES OCCUR WITHIN THE CHANNEL MUST BE REMOVED DURING THE FINAL STAGES OF GRADING TO ACHIEVE THE DESIGN CROSS-SECTION. EROSION AND SEDIMENT CONTROLS FOR CONSTRUCTION OF THE GRASS CHANNEL SHOULD BE INSTALLED AS SPECIFIED IN THE EROSION AND SEDIMENT CONTROL PLAN. STORMWATER FLOWS MUST NOT BE PERMITTED INTO THE GRASS CHANNEL UNTIL THE BOTTOM AND SIDE SLOPES ARE FULLY STABILIZED.
4. GRADE THE GRASS CHANNEL TO THE FINAL DIMENSIONS SHOWN ON THE PLAN.
5. INSTALL CHECK DAMS, DRIVEWAY CULVERTS AND INTERNAL PRE-TREATMENT FEATURES AS SHOWN ON THE PLAN. FILL MATERIAL USED TO CONSTRUCT CHECK DAMS SHOULD BE PLACED IN 8 TO 12 INCH LIFTS AND COMPACTED TO PREVENT SETTLEMENT. THE TOP OF EACH CHECK DAM SHOULD BE CONSTRUCTED LEVEL AT THE DESIGN ELEVATION.
6. TILL THE BOTTOM OF THE CHANNEL TO A DEPTH OF 1 FOOT AND INCORPORATE COMPOST AMENDMENTS ACCORDING TO STORMWATER DESIGN SPECIFICATIONS NO. 4.
7. ADD SOIL AMENDMENTS AS NEEDED, HYDRO-SEED THE BOTTOM AND BANKS OF THE GRASS CHANNEL, AND PEG IN EROSION CONTROL FABRIC OR BLANKET WHERE NEEDED. AFTER INITIAL PLANTING, A BIODEGRADABLE EROSION CONTROL FABRIC SHOULD BE USED, CONFORMING TO STANDARD AND SPECIFICATION 3.36 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK.
8. PREPARE PLANTING HOLES FOR ANY BERMUDA GRASS OR EQUIVALENT, THEN PLANT MATERIALS AND WATER THEM WEEKLY IN THE FIRST TWO MONTHS. THE CONSTRUCTION CONTRACT SHOULD INCLUDE A CARE AND REPLACEMENT WARRANTY TO ENSURE VEGETATION IS PROPERLY ESTABLISHED AND SURVIVES DURING THE FIRST GROWING SEASON FOLLOWING CONSTRUCTION.
9. CONDUCT THE FINAL CONSTRUCTION INSPECTION AND DEVELOP A PUNCHLIST FOR FACILITY ACCEPTANCE.

EROSION AND SEDIMENT CONTROL BMP MAINTENANCE

- TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL BMPs SHALL BE MAINTAINED AND REPAIRED AS NEEDED TO ASSURE CONTINUED PERFORMANCE OF THEIR INTENDED FUNCTION. MAINTENANCE AND REPAIR SHALL BE CONDUCTED IN ACCORDANCE WITH THE APPROVED STANDARDS AND SPECIFICATIONS.
- IN NON-AGRICULTURAL AREAS THE VISUAL SURVEY SHALL BE COMPARED TO THE DENSITY AND COVER OF ADJACENT UNDISTURBED LANDS. IN AGRICULTURAL AREAS, THE VISUAL SURVEY SHALL BE COMPARED TO THE ADJACENT UNDISTURBED PORTIONS OF THE SAME FIELD, UNLESS THE EASEMENT AGREEMENT SPECIFIES OTHERWISE.
- WETLANDS ALONG THE PROPOSED PIPELINE ARE EXPECTED TO EXHIBIT VARYING DEGREES OF SATURATION AND WATER ELEVATION, REQUIRING A VARIETY OF PLANT SPECIES TO BE RE-ESTABLISHED. IN UNSATURATED WETLANDS, MOST VEGETATION WILL BE REPLACED BY SEEDING. SATURATED WETLANDS WILL TYPICALLY BE ALLOWED TO RE-VEGETATE NATURALLY. WETLAND REVEGETATION WILL BE CONSIDERED SUCCESSFUL WHEN THE COVER OF HERBACEOUS AND/OR WOODY SPECIES IS AT LEAST 80 PERCENT OF THE TYPE, DENSITY, AND DISTRIBUTION OF THE VEGETATION IN ADJACENT WETLAND AREAS THAT WERE NOT DISTURBED BY CONSTRUCTION. REVEGETATION EFFORTS WILL CONTINUE UNTIL WETLAND REVEGETATION IS SUCCESSFUL.
- INSPECTION OF ALL EROSION AND SEDIMENTATION CONTROLS WITHIN DISTURBED AREAS WILL BE PERFORMED AS FOLLOWS:
 - IMMEDIATELY FOLLOWING INITIAL INSTALLATION OF EROSION AND SEDIMENT CONTROLS;
 - AT LEAST ONCE IN EVERY 2 WEEK PERIOD;
 - WITHIN 48 HOURS IF ANY RUNOFF PRODUCING STORM EVENT;
 - AT THE COMPLETION OF THE PROJECT, PRIOR TO THE RELEASE OF ANY PERFORMANCE BONDS;
 - OR MORE FREQUENTLY IF REQUIRED BY THE SWPPP.TEMPORARY BMP'S WILL BE REMOVED UPON ACHIEVING VEGETATIVE STABILIZATION, WHICH IS DEFINED AS "A GROUND COVER IS ACHIEVED THAT IS UNIFORM, MATURE ENOUGH TO SURVIVE AND WILL INHIBIT EROSION". DISTURBED AREAS NOT ATTAINING AN ACCEPTABLE VEGETATIVE COVER SHALL BE RESEED AS NEEDED UNTIL THE ENDPOINT IS ACHIEVED.
- TEMPORARY EROSION AND SEDIMENT CONTROL BMPs SHOULD BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION IS ACHIEVED OR AFTER THE TEMPORARY BMPs ARE NO LONGER NEEDED. TRAPPED SEDIMENT SHALL BE REMOVED OR STABILIZED ON SITE. DISTURBED SOIL RESULTING FROM REMOVAL OF BMPs OR VEGETATION SHALL BE PERMANENTLY STABILIZED.

STORMWATER BMP MAINTENANCE

GRASS CHANNELS

1. ONCE ESTABLISHED, GRASS CHANNELS HAVE MINIMAL MAINTENANCE NEEDS OUTSIDE OF THE SPRING CLEAN UP, REGULAR MOWING, REPAIR OF CHECK DAMS AND OTHER MEASURES TO MAINTAIN THE HYDRAULIC EFFICIENCY OF THE CHANNEL AND A DENSE, HEALTHY GRASS COVER.
2. IDEALLY, INSPECTIONS SHOULD BE CONDUCTED IN THE SPRING EACH YEAR. KEY MAINTENANCE INSPECTION POINTS ARE DETAILED BELOW:
 - ADD REINFORCEMENT PLANTING TO MAINTAIN 90% TURF COVER. RESEED ANY SALT-KILLED VEGETATION.
 - REMOVE ANY ACCUMULATED SAND OR SEDIMENT DEPOSITS BEHIND CHECK DAMS.
 - INSPECT UPSTREAM AND DOWNSTREAM OF CHECK DAMS FOR EVIDENCE OF UNDERCUTTING OR EROSION, AND REMOVE ALL TRASH OR BLOCKAGES AT WEEPHOLES.
 - EXAMINE CHANNEL BOTTOM FOR EVIDENCE OF EROSION, BRAIDING, EXCESSIVE PONDING OR DEAD GRASS.
 - CHECK INFLOW POINTS FOR CLOGGING AND REMOVE ANY SEDIMENT.
 - INSPECT SIDE SLOPES AND GRASS FILTER STRIPS FOR EVIDENCE OF ANY RILL OR GULLY EROSION AND REPAIR
 - LOOK FOR ANY BARE SOIL OR SEDIMENT SOURCES IN THE CONTRIBUTING DRAINAGE AREA AND STABILIZE IMMEDIATELY.
3. EXAMPLE MAINTENANCE INSPECTION CHECKLISTS FOR GRASS CHANNELS CAN BE ACCESSED IN APPENDIX C OF CHAPTER 9 OF THE VIRGINIA SORMWATER MANAGEMENT HANDBOOK (2010)

MINIMUM STANDARDS NARRATIVE

MS-1 (SOIL STABILIZATION): SOIL SHALL BE STABILIZED PURSUANT TO THE EROSION AND SEDIMENT CONTROL NARRATIVE, SECTIONS H AND I.

MS-2 (SOIL STOCKPILE STABILIZATION): PURSUANT TO THE EROSION AND SEDIMENT CONTROL NARRATIVE, SECTION G, AND GENERAL CONSTRUCTION SEQUENCE NOTE 5 STOCKPILES WILL BE PLACED AND REMAIN UPSLOPE OF BMPs.

MS-3 (PERMANENT STABILIZATION): PERMANENT STABILIZATION SHALL BE APPLIED PURSUANT TO THE EROSION AND SEDIMENT CONTROL NARRATIVE. SPECIFICS REGARDING THE PLANTINGS INCLUDED IN THE GENERAL CONSTRUCTION SEQUENCE AND TABLE 3.32C OF THESE GENERAL DETAILS.

MS-4 (SEDIMENT BASINS & TRAPS): NOT APPLICABLE, NO SEDIMENT BASINS OR TRAPS ARE PROPOSED TO BE CONSTRUCTED AS PART OF THIS PROJECT.

MS-5 (STABILIZATION OF EARTHEN STRUCTURES): PURSUANT TO THE EROSION AND SEDIMENT CONTROL NARRATIVE AND GENERAL CONSTRUCTION SEQUENCE NOTE 4; ALL EARTHEN STRUCTURES SHALL BE STABILIZED IMMEDIATELY AFTER INSTALLATION.

MS-6 (SEDIMENT TRAPS & SEDIMENT BASINS): NOT APPLICABLE, NO SEDIMENT BASINS OR TRAPS ARE PROPOSED TO BE CONSTRUCTED AS PART OF THIS PROJECT.

MS-7 (CUT/FILL SLOPES DESIGN & CONSTRUCTION): SLOPES WILL BE RETURNED TO PRE-CONSTRUCTION CONTOURS AND CONDITIONS, WHERE ESTABLISHMENT OF PRE-CONSTRUCTION CONTOURS AND CONDITIONS IS NOT FEASIBLE (I.E. MAINLINE VALVE SITES) SITE SPECIFIC PLANS WILL BE PREPARED FOR REVIEW AND APPROVAL BY VADEQ.

MS-8 (CONCENTRATED RUNOFF DOWN SLOPES): SHOULD AREAS OF CONCENTRATED RUNOFF (NOT ALREADY ACCOUNTED FOR ON THE PLAN SET) BE ENCOUNTERED DURING CONSTRUCTION, THESE AREAS SHALL BE STABILIZED WITH SOIL STABILIZATION BLANKETS AND MATTING (VADEQ STD & SPEC 3.36), AND SEEDED WITH THE PERMANENT SEED MIX AS APPROPRIATE.

MS-9 (SLOPE MAINTENANCE): SLOPE FACES ALONG STREAM BANKS WILL BE PROTECTED WITH SOIL STABILIZATION BLANKETS AND MATTING (VADEQ STD & SPEC 3.36) ALONG THE TOP OF BANK AND MULCH (VA STD & SPEC 3.3.5) IN OTHER AREAS. IN THE EVENT A SEEP IS ENCOUNTERED, IT WILL BE STABILIZED WITH MATTING AND REINFORCED BED MATERIAL AS NEEDED.

MS-10 (STORM SEWER INLET PROTECTION): NOT APPLICABLE, NO STORMWATER INLETS ARE PROPOSED TO BE CONSTRUCTED AS PART OF THIS PROJECT.

MS-11 (STORMWATER CONVEYANCE PROTECTION): SHOULD A DRAINAGE DITCH BE ENCOUNTERED THAT WAS NOT ACCOUNTED FOR IN THE DESIGN, IT WILL BE STABILIZED AS NEEDED TO PROTECT THE CHANNEL.

MS-12 (WORK IN LIVE WATERCOURSE): PURSUANT TO THE EROSION AND SEDIMENT CONTROL NARRATIVE AND THE GENERAL CONSTRUCTION SEQUENCE FOR STREAM CROSSINGS; INSTALL A BYPASS HOSE, FLUME OR COFFERDAM AROUND THE WORK AREA TO ISOLATE THE WORK AREA AND PROTECT DOWNSTREAM RECEIVING WATERS.

MS-13 (CROSSING LIVE WATERCOURSE): PURSUANT TO THE EROSION AND SEDIMENT CONTROL NARRATIVE AND THE GENERAL CONSTRUCTION SEQUENCE FOR STREAM CROSSINGS; "INSTALL A TEMPORARY EQUIPMENT BRIDGE FOR ACCESS ACROSS THE STREAM"

MS-14 (REGULATION OF WATERCOURSE CROSSING): THE PROPOSED PROJECT IS BEING REGULATED BY NATIONWIDE PERMIT 12.



MS-15 (STABILIZATION OF WATERCOURSE): THIS MINIMUM STANDARD IS ADDRESSED IN THE EROSION AND SEDIMENT CONTROL NARRATIVE AND GENERAL CONSTRUCTION SEQUENCE NOTES 13 AND 14.

MS-16 (UNDERGROUND UTILITY LINE CONSTRUCTION): MYP HAS REQUESTED A VARIANCE TO THE 500-FOOT OF OPEN TRENCH FOR THIS PROJECT. ALL WATERS GENERATED BY DEWATERING OF THE TRENCH WILL BE FILTERED THROUGH BMPS INCLUDING PUMPED FILTER BAGS, COMPOST FILTER SOCK AND SILT FENCE

MS-17 (VEHICULAR SEDIMENT TRAPPING): A STONE CONSTRUCTION ENTRANCE WITH A WASH RACK AND TEMPORARY SEDIMENT TRAP SHALL BE PLACED AT THE ENTRANCE TO THE PROJECT SITE AS SHOWN ON THE GENERAL DETAILS (VADEQ DETAIL 3.02). THE LOCATION OF THE CONSTRUCTION ENTRANCE WITH APPURTENANCES ARE SHOWN ON THE PROJECT PLANS.

MS-18 (REMOVAL OF TEMPORARY MEASURES): THIS MINIMUM STANDARD IS ADDRESSED IN THE EROSION AND SEDIMENT CONTROL GENERAL CONSTRUCTION SEQUENCE NOTE 15.

MS-19 (STORMWATER MANAGEMENT): THE PROPOSED PROJECT COMPLIES WITH GUIDANCE MEMO NO. 15-2003 (9VAC25-870-63 THROUGH 65) AND GUIDANCE MEMO 16-2001 (9VAC25-870-66) TO DEMONSTRATE COMPLIANCE WITH STORMWATER QUALITY AND QUANTITY.

<div><div>Mountain Valley PIPELINE</div><div>CONSTRUCTION SEQUENCE AND NOTES</div><div>MOUNTAIN VALLEY PIPELINE PROJECT – TRANSOCO INTERCONNECT</div><div>PITTSYLVANIA COUNTY, VIRGINIA</div></div>										<div><div>NO.:</div><div>DATE:</div><div>DWN.:</div><div>CHKD.:</div><div>APPD.:</div><div>DESCRIPTION:</div></div>																													
<div><div>TETRA TECH</div><div>complex world CLEAR SOLUTIONS™</div><div>661 ANDERSEN DRIVE FOSTER PLAZA 7 PITTSBURGH, PA 15220</div></div>										REVISIONS:																													
<div>EROSION AND SEDIMENT CONTROL PLANS</div>																																							
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Forest Regeneration Woody Seed Mix and Application Rates.

Species	Common Name	Seeding Rate (lbs/acre)
Oak-Hickory Forest a)		
<i>Fagus grandifolia</i>	American Beech	0.3
<i>Liriodendron tulipifera</i>	Tulip Poplar	0.3
<i>Pinus strobus</i>	White Pine	0.3
<i>Pinus virginiana</i>	Virginia Pine	0.3
<i>Prunus serotina</i>	Black Cherry	0.3
<i>Amelanchier canadensis</i>	Canadian Serviceberry	0.3
<i>Cornus canadensis</i>	Eastern Redbud	0.3
<i>Cornus florida</i>	Flowering Dogwood	0.3
<i>Disopyros virginiana</i>	Penstemon	0.3
<i>Ilex opaca</i>	American Holly	0.3
<i>Nyssa sylvatica</i>	Black Gum	0.3
<i>Sassafras albidum</i>	Sassafras	0.3
<i>Hamelis virginiana</i>	Witch Hazel	0.3
<i>Lindera benzoin</i>	Spicebush	0.3
<i>Vaccinium angustifolium</i>	Lowbush Blueberry	0.3
<i>Viburnum acerifolium</i>	Mapleleaf Viburnum	0.3
<i>Vitis aestivalis</i>	Grape	0.3

at Oak and hickory species to be planted as bare root seedlings in addition to this mix. Refer to Section 5.9 Bare Root Seedling Planting for more information. At minimum, 3 of the 5 overstory, 4 of the 7 understory, and 2 of the 4 shrub species will comprise the woody seed mix for Oak-Hickory Forests.

NOTE:
WOODY SEED MIX TO BE USED IN COMBINATION WITH MVP-ES11.2 UPLAND MEADOW SEED MIX.


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PROJECT ID:
MVP – VA PORTION



DESIGN ENGINEERING

ENVIRONMENTAL DETAIL

FOREST REGENERATION WOODY SEED MIX AND APPLICATION RATES

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Upland Meadow Seed Mix and Application Rates in Virginia.

Species	Common Name	Seeding Rate (lbs/acre)	pH	Bloom Period (if applicable)
<i>Elymus virginicus</i>	Virginia Wildrye	4.00	5.0 - 7.4	June to October
<i>Schizachyrium scoparium</i>	Little Bluestem	11.68	5.0 - 8.4	July to October
<i>Sorghastrum nutans</i>	Indiangrass	1.00	5.0 - 7.8	August to October
<i>Asclepias syriaca</i>	Common Milkweed	0.10		June to August
<i>Asclepias tuberosa</i>	Butterfly Milkweed	0.10	4.8 - 6.8	June to August
<i>Chamaecrista fasciculata</i>	Partridge Pea	0.60	5.5 - 7.5	July to September
<i>Chamaecrista nictitans</i>	Sensitive Partridge Pea	0.06		June to October
<i>Coreopsis lanceolata</i>	Lanceleaf Coreopsis	0.44	6.0 - 7.0	April to July
<i>Eupatorium coelestinum</i>	Mistflower	0.04	5.5 - 7.5	July to October
<i>Helopsis helianthoides</i>	Oxeye Sunflower	0.40		July to August
<i>Lespedeza virginica</i>	Slender Bushclover	0.10		July to September
<i>Liatris graminifolia</i>	Grassleaf Blazing Star	0.10	5.8 - 6.8	August to October
<i>Monarda fistulosa</i>	Wild Bergamot	0.10	6.0 - 8.0	June to September
<i>Penstemon laevisgatus</i>	Appalachian Beardtongue	0.10		late May to late August
<i>Pycnanthemum incanum</i>	Hoary Mountainmint	0.20		May to June
<i>Rudbeckia fulgida</i> var. <i>fulgida</i>	Orange Coneflower	0.02	< 6.8	summer
<i>Rudbeckia hirta</i>	Blackeyed Susan	0.04		July to October

Species	Common Name	Seeding Rate (lbs/acre)	pH	Bloom Period (if applicable)
<i>Senna hebecarpa</i>	Wild Senna	0.60	6.0 - 7.0	May to July
<i>Solidago juncea</i>	Early Goldenrod	0.10		July to August
<i>Solidago nemoralis</i>	Gray Goldenrod	0.04		June to July
<i>Tradescantia ohiensis</i>	Ohio Spiderwort	0.04	6.5 - 7.5	August to September
<i>Tradescantia virginiana</i>	Virginia Spiderwort	0.10		late April to mid-July
		20.00		

TEMPORARY SEED MIX:
9/1 - 2/15: 50/50 MIX ANNUAL RYEGRASS (LOLIUM MULTI-FLORUM) AND WINTER RYE (SECALE CEREALE) (50-100 LBS/AC)
2/16 - 4/30: ANNUAL RYEGRASS (LOLIUM MULTI-FLORUM) (60-100 LBS/AC)
5/1 - 8/31: GERMAN MILLET (SETARIA ITALICA) (50 LBS/AC)


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PROJECT ID:
MVP – VA PORTION



DESIGN ENGINEERING

ENVIRONMENTAL DETAIL

UPLAND MEADOW SEED MIX AND APPLICATION RATES

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MVP–ES11.2

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Upland Steep Slope Seed Mix and Application Rates in Virginia.

Species	Common Name	Seeding Rate (lbs/acre)	pH	Bloom Period (if applicable)
<i>Agrostis perennans</i>	Autumn Bentgrass	3.15	5.5 - 7.5	Midsummer
<i>Elymus virginicus</i>	Virginia Wildrye	9.05	5.0 - 7.4	June to October
<i>Panicum clandestinum</i>	Deertongue	4.50	4.0 - 7.5	May to September
<i>Schizachyrium scoparium</i>	Little Bluestem	11.25	5.0 - 7.4	July to October
<i>Sorghastrum nutans</i>	Indiangrass	14.40	5.0 - 7.8	August to October
<i>Asclepias syriaca</i>	Common Milkweed	0.09		June to August
<i>Aster pilosus</i>	Heath Aster	0.05	5.4 - 7.0	After fall frost
<i>Chamaecrista fasciculata</i>	Partridge Pea	0.45	5.5 - 7.5	April to July
<i>Coreopsis lanceolata</i>	Lanceleaf Coreopsis	0.45	6.0 - 7.0	April to July
<i>Eupatorium coelestinum</i>	Mistflower	0.05	5.5 - 7.5	July to October
<i>Helopsis helianthoides</i>	Oxeye Sunflower	0.45		July to August
<i>Liatris graminifolia</i>	Grassleaf Blazing Star	0.09	5.8 - 6.8	August to October
<i>Monarda fistulosa</i>	Wild Bergamot	0.23	6.0 - 8.0	June to September
<i>Pycnanthemum incanum</i>	Hoary Mountainmint	0.05	< 6.8	summer
<i>Rudbeckia hirta</i>	Blackeyed Susan	0.45	6.0 - 7.0	May to July
<i>Senna hebecarpa</i>	Wild Senna	0.05	6.5 - 7.5	August to September
<i>Solidago nemoralis</i>	Gray Goldenrod	0.05		late April to mid-July
<i>Tradescantia ohiensis</i>	Ohio Spiderwort	45.00		

NOTE:
1. ANNUAL RYEGRASS WILL BE USED AT A RATE OF 40 LBS/AC FOR STABILIZATION OF WETLANDS DISTURBED BY THE PROJECT.
2. FOLLOWING RESTORATION AND TEMPORARY STABILIZATION WITH ANNUAL RYEGRASS, SHOULD THE NATIVE SEEDBANK PRESENT IN THE TOPSOIL NOT REESTABLISH THE WETLAND, MVP WILL APPLY THIS SEED MIX TO SUPPLEMENT AND PERMANENTLY STABILIZE THE WETLAND.


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DESIGN ENGINEERING

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UPLAND STEEP SLOPE SEED MIX AND APPLICATION RATES

DRAWING NO.
MVP–ES11.3

REV.
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Wetlands Seed Mix and Application Rates in Virginia.

Species	Common Name	Seeding Rate (lbs/acre)	pH	Bloom Period (if applicable)
<i>Alisma subcordatum</i>	Mud Plantain	0.04		Midsummer
<i>Carex gynandra</i>	Fringed Sedge	0.10	5.0 - 7.0	May to June
<i>Carex lupulina</i>	Hop Sedge	1.00		June to October
<i>Carex lurida</i>	Shallow Sedge	3.00	6.2 - 7.0	June to October
<i>Carex scoparia</i>	Blunt Sedge	1.00	4.9 - 6.8	June to July
<i>Carex vulpinoidea</i>	Fox Sedge	6.90	4.6 - 6.9	July to August
<i>Cinna arundinacea</i>	Wood Reedgrass	4.00	6.8 - 8.9	June to August
<i>Elymus virginicus</i>	Virginia Wildrye	4.00	4.0 - 8.5	August to September
<i>Juncus effusus</i>	Soft Rush	0.60	5.0 - 7.4	June to October
<i>Oenocetes sensibilis</i>	Sensitive Fern	0.20	5.5 - 7.0	May to June
<i>Scirpus cyperinus</i>	Woolgrass	0.20		June to October

Species	Common Name	Seeding Rate (lbs/acre)	pH	Bloom Period (if applicable)
<i>Scirpus polyphyllus</i>	Marys Leaved Burrush	0.20	4.8 - 7.2	July to September
<i>Asclepias incarnata</i>	Swamp Milkweed	0.40		July to August
<i>Eupatorium coelestinum</i>	Mistflower	0.10	5.0 - 8.0	June to July
<i>Eupatorium fistulosum</i>	Joe Pye Weed	0.14	5.5 - 7.5	July to October
<i>Eupatorium perfoliatum</i>	Boneset	0.20	4.5 - 7.0	July to September
<i>Helianthus autumnale</i>	Common Sneezeweed	0.10		July to October
<i>Helopsis helianthoides</i>	Oxeye Sunflower	0.40	4.0 - 7.5	August to September
<i>Ludwigia alternifolia</i>	Seedbox	0.10		July to August
<i>Mimulus ringens</i>	Square Stemmed Monkeyflower	0.10		August to September
<i>Verbena hastata</i>	Blue Vervain	0.72		June to September
<i>Vernonia noveboracensis</i>	New York Ironweed	0.10		June to October
		20.00		

NOTE:
1. ANNUAL RYEGRASS WILL BE USED AT A RATE OF 40 LBS/AC FOR STABILIZATION OF WETLANDS DISTURBED BY THE PROJECT.
2. FOLLOWING RESTORATION AND TEMPORARY STABILIZATION WITH ANNUAL RYEGRASS, SHOULD THE NATIVE SEEDBANK PRESENT IN THE TOPSOIL NOT REESTABLISH THE WETLAND, MVP WILL APPLY THIS SEED MIX TO SUPPLEMENT AND PERMANENTLY STABILIZE THE WETLAND.


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DESIGN ENGINEERING

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WETLAND SEED MIX AND APPLICATION RATES

DRAWING NO.
MVP–ES11.4

REV.
0

Riparian Seed Mix and Application Rates in Virginia.

Species	Common Name	Seeding Rate (lbs/acre)	pH	Bloom Period (if applicable)
<i>Alisma subcordatum</i>	Autumn Bentgrass	0.04	5.0 - 7.0	Midsummer
<i>Carex gynandra</i>	Big Bluestem	0.10		May to June
<i>Carex lupulina</i>	Virginia Wildrye	1.00	6.2 - 7.0	June to October
<i>Carex lurida</i>	Soft Rush	3.00	4.9 - 6.8	June to July
<i>Carex scoparia</i>	Path Rush	1.00	4.6 - 6.9	July to August
<i>Carex vulpinoidea</i>	Deertongue	6.90	5.8 - 6.9	June to August
<i>Cinna arundinacea</i>	Indiangrass	0.40	4.0 - 8.5	August to September
<i>Elymus virginicus</i>	Swamp Milkweed	4.00	5.0 - 7.4	June to October
<i>Juncus effusus</i>	Partridge Pea	0.60	5.5 - 7.0	May to June
<i>Oenocetes sensibilis</i>	Mistflower	0.20		June to October
<i>Scirpus cyperinus</i>	Joe Pye Weed	0.20	4.8 - 7.2	July to September
<i>Scirpus polyphyllus</i>	Boneset	0.20		July to August
<i>Asclepias incarnata</i>	White Avena	0.40	5.0 - 8.0	June to July
<i>Eupatorium coelestinum</i>	Common Sneezeweed	0.10	5.5 - 7.5	July to October
<i>Eupatorium fistulosum</i>	Oxeye Sunflower	0.14	4.5 - 7.0	July to September
<i>Eupatorium perfoliatum</i>	Wild Bergamot	0.20		July to October
<i>Helianthus autumnale</i>	Slender Mountainmint	0.10	4.0 - 7.5	August to September
<i>Helopsis helianthoides</i>	Blackeyed Susan	0.40		July to August
<i>Ludwigia alternifolia</i>	Wild Senna	0.10		August to September
<i>Mimulus ringens</i>	Blue Vervain	0.10		June to September
<i>Verbena hastata</i>	New York Ironweed	0.72		June to October
		20.00		

TEMPORARY SEED MIX:
9/1 - 2/15: 50/50 MIX ANNUAL RYEGRASS (LOLIUM MULTI-FLORUM) AND WINTER RYE (SECALE CEREALE) (50-100 LBS/AC)
2/16 - 4/30: ANNUAL RYEGRASS (LOLIUM MULTI-FLORUM) (60-100 LBS/AC)
5/1 - 8/31: GERMAN MILLET (SETARIA ITALICA) (50 LBS/AC)


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RIPARIAN SEED MIX AND APPLICATION RATES

DRAWING NO.
MVP–ES11.5

REV.
0

Native tree and shrub species for bare root plantings within riparian areas and forested wetlands.

Species	Common Name	Indicator Status	Riparian Planting ¹	Forested Wetland Planting ²
Native Trees				
<i>Acer rubrum</i>	Red Maple	FAC	X	X
<i>Acer saccharinum</i>	Silver Maple	FACW	X	X
<i>Betula nigra</i>	River Birch	FACW	X	X
<i>Carpinus caroliniana</i>	American Hornbeam	FAC	X	X
<i>Carya glabra</i>	Pignut Hickory	FACU	X	
<i>Carya ovata</i>	Shagbark Hickory	FACU	X	
<i>Chionanthus virginicus</i>	White Fringe Tree	FAC*	X	
<i>Disopyros virginiana</i>	Common Penstemon	FAC-	X	

Species	Common Name	Indicator Status	Riparian Planting ¹	Forested Wetland Planting ²
<i>Fraxinus pennsylvanica</i>	Green Ash	FACW	X	X
<i>Juniperus virginiana</i>	Eastern Red Cedar	FACU	X	X
<i>Liquidambar styraciflua</i>	Sweet Gum	FAC	X	X
<i>Liriodendron tulipifera</i>	Tuliptree	FACU	X	X
<i>Nyssa sylvatica</i>	Black Gum	FAC	X	
<i>Platanus occidentalis</i>	American Sycamore	FACW-	X	X
<i>Populus deltoides</i>	Eastern Cottonwood	FAC	X	
<i>Quercus bicolor</i>	Swamp White Oak	FACW*	X	X
<i>Quercus falcata</i>	Cherrybark Red Oak	FACW	X	X
<i>Quercus phellos</i>	Willow Oak	FAC*	X	X
<i>Quercus nigra</i>	Water Oak	FAC	X	
<i>Quercus palustris</i>	Pin Oak	FACW	X	X
<i>Salix nigra</i>	Black Willow	FACW	X	X
<i>Ulmus americana</i>	American Elm	FACW-	X	X

NOTE:
1. REFER TO MVP-ES11.6 AND MVP-ES11.9 FOR LOCATIONS OF BARE ROOT PLANTINGS.


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ENVIRONMENTAL DETAIL

NATIVE TREE AND SHRUB SPECIES FOR BARE ROOT PLANTINGS WITHIN RIPARIAN AREAS AND FORESTED WETLANDS

DRAWING NO.
MVP–ES11.6

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0

Native Shrubs

Species	Common Name	Indicator Status	Riparian Planting ¹	Forested Wetland Planting ²
<i>Alnus serrulata</i>	Brook-side Alder	OBL		X
<i>Amelanchier canadensis</i>	Canada Serviceberry	FAC	X	
<i>Aronia arbutifolia</i>	Red Chokecherry	FACW	X	X
<i>Baccharis helminthifolia</i>	Groundsel Bush	FACW-	X	X
<i>Cephaelis occidentalis</i>	Butterbush	OBL	X	X
<i>Cornus amomum</i>	Silky Dogwood	FACW	X	X
<i>Cornus stolonifera</i>	Red-osier Dogwood	FAC	X	X
<i>Hamelis virginiana</i>	American Witchhazel	FAC-	X	
<i>Ilex verticillata</i>	Common Winterberry	FACW+	X	X
<i>Ilex virginica</i>	Virginia Willow	OBL	X	X
<i>Iva frutescens</i>	Marsh Elder	FACW+	X	X
<i>Laurochloa racemosa</i>	Fatleaf-bush	FACW	X	X
<i>Lindera benzoin</i>	Spicebush	FACW-	X	X
<i>Lyonia ligustrina</i>	Maleberry	FACW	X	X
<i>Magnolia virginiana</i>	Sweetbay Magnolia	FACW+	X	X
<i>Physocarpus opulifolius</i>	Eastern Ninebark	FACW-	X	X
<i>Sambucus racemosa</i>	American Elder	FACW-	X	X
<i>Vaccinium corymbosum</i>	Highbush Blueberry	FACW-	X	X
<i>Viburnum dentatum</i>	Arrow-wood	FAC	X	
<i>Viburnum prunifolium</i>	Black-haw	FACU	X	


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NATIVE TREE AND SHRUB SPECIES FOR BARE ROOT PLANTINGS WITHIN RIPARIAN AREAS AND FORESTED WETLANDS

DRAWING NO.
MVP–ES11.7

REV.
0

Stream crossings proposed for bare-root seeding plantings.

Waterbody Name	MP	County	State	Valuable Resource
Kimbalton Branch	199.1, 199.4	Giles	VA	headwaters of wild trout stream, coldwater stream

Waterbody Name	MP	County	State	Valuable Resource
Story Creek	200.4	Giles	VA	candy darter, green floater, coldwater stream, wild trout stream
Little Story Creek	204.4	Giles	VA	coldwater stream, wild trout stream
Sinking Creek	211.2	Giles	VA	candy darter, green floater, coldwater stream, wild trout stream, non-listed mussels
UNT Craig Creek	219.2	Montgomery	VA	Headwaters of James spiny mussel occurrences, USFS lands area
UNT Craig Creek	219.3	Montgomery	VA	Headwaters of James spiny mussel occurrences, USFS lands area
Craig Creek	219.7	Montgomery	VA	Headwaters of James spiny mussel occurrences, USFS lands area
Craig Creek	219.7	Montgomery	VA	Headwaters of James spiny mussel occurrences, USFS lands area
UNT Craig Creek	219.8	Montgomery	VA	Headwaters of James spiny mussel occurrences, USFS lands area
UNT Craig Creek	220.0	Montgomery	VA	Headwaters of James spiny mussel occurrences, USFS lands area
Mill Creek	222.2	Montgomery	VA	upstream of Roanoke logperch suitable habitat, orangefin madtom, coldwater stream, wild trout
North Fork Roanoke River	227.2	Montgomery	VA	Roanoke logperch present, non-listed mussels present, orangefin madtom, coldwater stream, wild trout
North Fork Roanoke River	227.4	Montgomery	VA	Roanoke logperch present, non-listed mussels present, orangefin madtom, coldwater stream, wild trout
Bradshaw Creek	230.7	Montgomery	VA	Roanoke logperch suitable habitat, orangefin madtom, coldwater stream, wild trout
Bradshaw Creek	231.5	Montgomery	VA	Roanoke logperch suitable habitat, orangefin madtom, coldwater stream, wild trout
Roanoke River	235.4	Montgomery	VA	Roanoke logperch present, orangefin madtom, non-listed mussels present
Bottom Creek	241.1	Roanoke	VA	upstream of Bottom Creek Gorge, orangefin madtom, coldwater stream, wild trout
Bottom Creek	242.5	Roanoke	VA	upstream of Bottom Creek Gorge, orangefin madtom, coldwater stream, wild trout

NOTE:
1. REFER TO MVP-ES11.6 AND MVP-ES11.9 FOR LOCATIONS OF BARE ROOT PLANTINGS.


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DESIGN ENGINEERING

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STREAM CROSSINGS PROPOSED FOR BARE ROOT SEEDING PLANTINGS

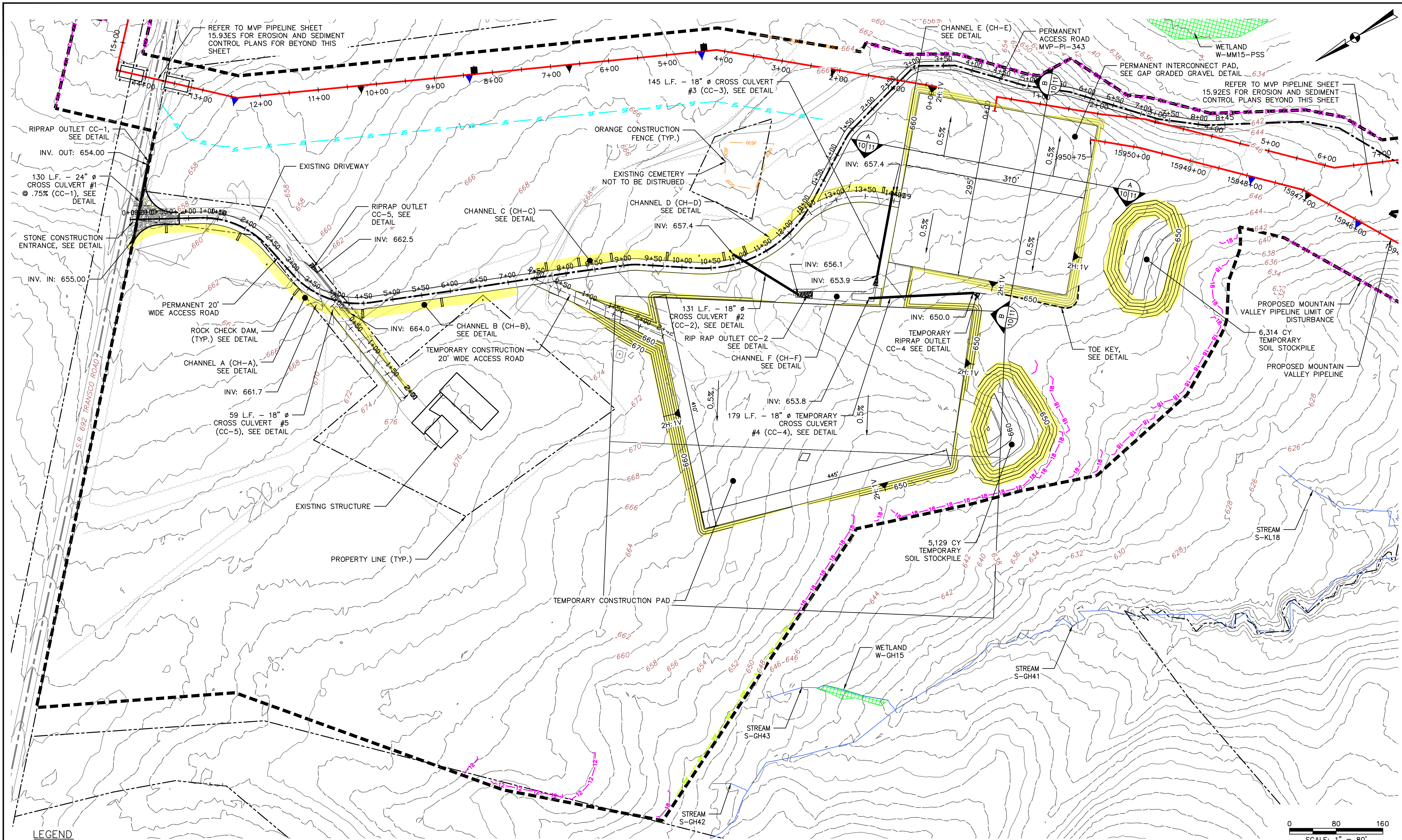
DRAWING NO.
MVP–ES11.8

REV.
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Stream crossings proposed for bare-root seeding plantings.

Waterbody Name	MP	County	State	Valuable Resource
Mill Creek	245.1	Roanoke	VA	upstream of Bottom Creek Gorge, orangefin madtom, coldwater stream, wild trout
Green Creek	247.1	Franklin	VA	upstream of Bottom Creek Gorge, orangefin madtom, coldwater stream, wild trout
Green Creek	247.4	Franklin	VA	upstream of Bottom Creek Gorge, orangefin madtom, coldwater stream, wild trout
North Fork Blackwater River	249.7	Franklin	VA	Roanoke logperch suitable habitat, coldwater stream wild trout stream

Waterbody Name	MP	County	State	Valuable Resource
Teels Creek	258.2	Franklin	VA	upstream of Roanoke logperch suitable habitat, one of numerous project crossings of Teels Creek
Teels Creek	260.3	Franklin	VA	upstream of Roanoke logperch suitable habitat, one of numerous project crossings of Teels Creek
Teels Creek	261.0	Franklin	VA	upstream of Roanoke logperch suitable habitat, one of numerous project crossings of Teels Creek
Teels Creek	261.8	Franklin	VA	upstream of Roanoke logperch suitable habitat, one of numerous project crossings of Teels Creek
Teels Creek	262.3	Franklin	VA	Roanoke logperch suitable habitat, one of numerous project crossings of Teels Creek contributing sediment impacts
Little Creek	262.6	Franklin	VA	Roanoke logperch suitable habitat, numerous crossings upstream contributing sediment impacts
Little Creek	263.3	Franklin	VA	Roanoke logperch suitable habitat, non-listed mussels present, numerous crossings upstream contributing sediment impacts
Maggdoe Creek	269.4	Franklin	VA	Roanoke logperch suitable habitat
Blackwater River	269.7	Franklin	VA	Roanoke logperch present, non-listed mussels present
UNT to Jacks Creek	278.8	Franklin	VA	orangefin madtom
Turkey Creek	280.5	Franklin	VA	



LEGEND

- | | | | | | | | |
|------|--------------------------------|----------|--------------------------------------|----------|----------------------------------|-----|--------------------------------------|
| 1160 | EXISTING CONTOUR (MAJOR) | REX | EXISTING REX GAS PIPELINE | --- | PROPOSED ACCESS ROAD CENTERLINE | --- | EROSION CONTROL BLANKET (SEE NOTE 1) |
| --- | EXISTING CONTOUR (MINOR) | EQT | EXISTING EQT GAS PIPELINE | --- | PROPOSED PIPELINE | --- | PROPOSED STONE CONSTRUCTION ENTRANCE |
| --- | EXISTING PROPERTY LINE | ER-ER-ER | EXISTING EAST RESOURCES GAS PIPELINE | --- | PROPOSED PIPELINE RIGHT-OF-WAY | --- | ROCK CHECK DAM |
| --- | EXISTING ROAD CENTERLINE | DOWN | EXISTING DOMINION GAS PIPELINE | OCSE | ORANGE CONSTRUCTION SAFETY FENCE | --- | TOE KEY |
| ○ | EXISTING UTILITY POLE | UNK | EXISTING UNKNOWN GAS PIPELINE | 12-12-12 | PROPOSED 12" COMPOST FILTER SOCK | --- | |
| --- | EXISTING TREELINE | OHE | EXISTING OVERHEAD ELECTRIC | 18-18-18 | PROPOSED 18" COMPOST FILTER SOCK | --- | |
| --- | EXISTING STREAM | 1160 | PROPOSED CONTOUR (MAJOR) | 24-24-24 | PROPOSED 24" COMPOST FILTER SOCK | --- | |
| --- | EXISTING WETLAND | --- | PROPOSED CONTOUR (MINOR) | SF | PROPOSED SILT FENCE | --- | |
| COL | EXISTING COLUMBIA GAS PIPELINE | --- | PROPOSED LIMIT OF DISTURBANCE | SS | PROPOSED SUPER SILT FENCE | --- | |

0 80 160
SCALE: 1" = 80'

NOTES:

1. FLEXTERRA OR HYDRAULICALLY APPLIED BLANKETS OR EQUIVALENT MAY BE USED AS A SUBSTITUTE TO EROSION CONTROL BLANKET AS DIRECTED BY MVP.
2. CONTRACTOR IS RESPONSIBLE TO IDENTIFY ALL UTILITIES. THE UTILITY LINES SHOWN ON THE PLAN ARE FOR INFORMATIONAL PURPOSES ONLY AND DO NOT REPRESENT SURVEYED LINE INFORMATION.
3. REFER TO SHEET TRA-2 FOR PIPE OUTLET SCHEDULE.
4. REFER TO SHEET TRA-5 FOR CULVERT SCHEDULE.
5. REFER TO TRANSCO INTERCONNECT SITE STORMWATER MANAGEMENT CALCULATION PACKAGE, PROVIDED UNDER SEPARATE COVER, FOR WATER QUALITY AND QUANTITY CALCULATIONS.

Mountain Valley Pipeline EROSION AND SEDIMENT CONTROL PLAN		REVISIONS:	
MOUNTAIN VALLEY PIPELINE PROJECT - TRANSCO INTERCONNECT			
PITTSBURGH COUNTY, VIRGINIA			
MOUNTAIN VALLEY PIPELINE, LLC			
555 SOUTHPOINTE BLVD, SUITE 200			
CANONSBURG, PA 15317			
TETRA TECH complex world CLEAR SOLUTIONS™			
661 ANDERSEN DRIVE FOSTER PLAZA 7 PITTSBURGH, PA 15220			
EROSION AND SEDIMENT CONTROL PLANS			
DRAWN BY: DZ		DATE: 6/2/2017	
CHECKED BY: HT		SCALE: AS SHOWN	
APPROVED BY: RE		SHT. NO. TRA-11 OF 13	

