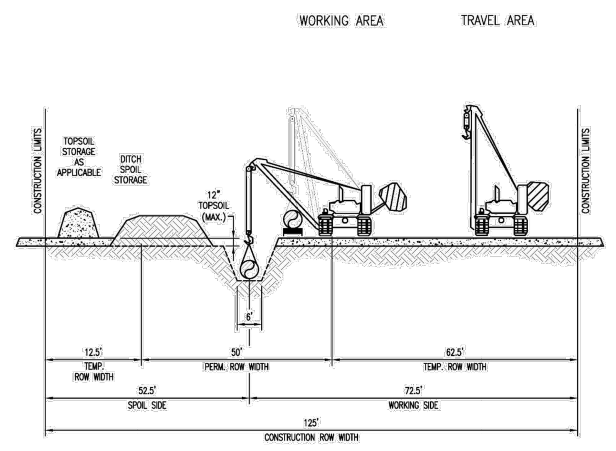
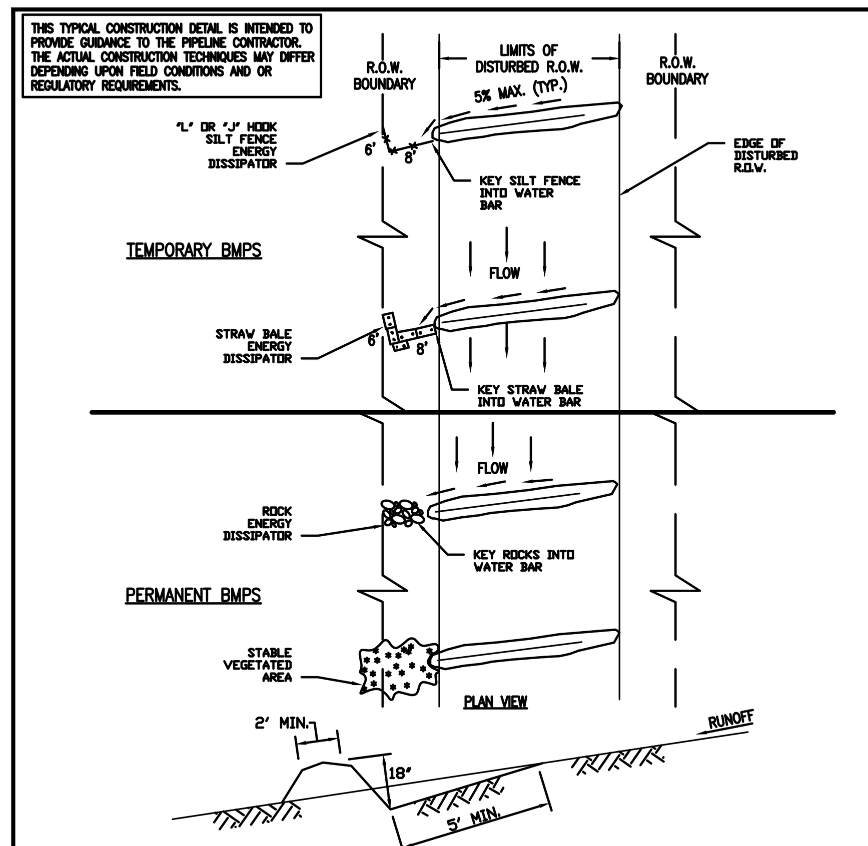


THIS TYPICAL CONSTRUCTION DETAIL IS INTENDED TO PROVIDE GUIDANCE TO THE PIPELINE CONTRACTOR. THE ACTUAL CONSTRUCTION TECHNIQUES MAY DIFFER DEPENDING UPON FIELD CONDITIONS AND OR REGULATORY REQUIREMENTS.

DRAWN JIL	DATE 10/6/2016	Mountain Valley PIPELINE	TYPICAL CONSTRUCTION DETAIL	
CHECKED MMF	DATE 10/6/2016		MAINLINE CONSTRUCTION NON-PARALLEL CONSTRUCTION WITH TOPSOIL SEGREGATION	
APP'D XXX	DATE 08/11/17			
SCALE N.T.S.	SHEET 1 OF 1			
JOB NO.				
PROJECT ID: MVP – VA PORTION		DESIGN ENGINEERING	DRAWING NO. MVP-2	REV. 0

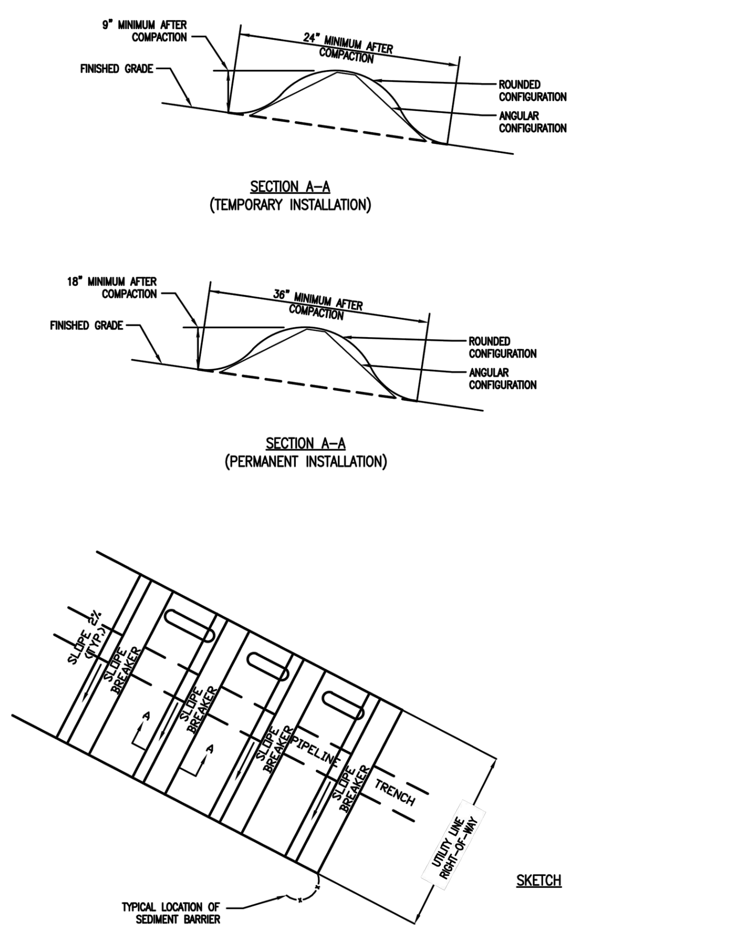
THIS TYPICAL CONSTRUCTION DETAIL IS INTENDED TO PROVIDE GUIDANCE TO THE PIPELINE CONTRACTOR. THE ACTUAL CONSTRUCTION TECHNIQUES MAY DIFFER DEPENDING UPON FIELD CONDITIONS AND OR REGULATORY REQUIREMENTS.



NOTES:

1. SLOPE BREAKERS SHALL BE CONSTRUCTED OF COMPACTED NATIVE SOIL AND INSTALLED AT LOCATIONS AS SHOWN ON THE CONSTRUCTION DRAWINGS OR AS DIRECTED BY THE COMPANY'S INSPECTOR.
2. SLOPE BREAKERS SHALL BE ORIENTED AS SHOWN OR OTHER PATTERN AS DIRECTED BY THE COMPANY'S INSPECTOR TO DIRECT THE WATER OFF THE R.O.W.
3. SLOPE BREAKERS SHALL BE CONSTRUCTED AT A 5% MAXIMUM GRADIENT ACROSS THE SLOPE.
4. THE SLOPE BREAKERS SHALL BE 18" DEEP (AS MEASURED FROM THE TROUGH TO THE TOP OF THE SLOPE BREAKER). THE TROUGH WILL BE A MINIMUM OF 5' WIDE ACROSS THE WIDTH OF THE RIGHT-OF-WAY.
5. THE OUTLET OF THE SLOPE BREAKER MUST FREELY DISCHARGE RUNOFF OFF FROM THE DISTURBED RIGHT-OF-WAY INTO A STABLE, WELL VEGETATED AREA OR INTO AN ENERGY DISSIPATER.
6. WHERE SLOPE BREAKERS EXTEND BEYOND THE EDGE OF THE CONSTRUCTION R.O.W. DIRECT RUNOFF INTO STABLE, WELL VEGETATED AREAS, THESE LOCATIONS MUST BE APPROVED BY THE COMPANY'S INSPECTOR.

DRAWN JIL	DATE 10/6/2016	Mountain Valley PIPELINE	TYPICAL CONSTRUCTION DETAIL	
CHECKED MMF	DATE 10/6/2016		SLOPE BREAKER/RIGHT-OF-WAY DIVERSION/WATERBAR	
APP'D XXX	DATE 08/11/17			
SCALE N.T.S.	SHEET 1 OF 1			
JOB NO.				
PROJECT ID: MVP – VA PORTION		DESIGN ENGINEERING	DRAWING NO. MVP-17	REV. 0



THIS TYPICAL CONSTRUCTION DETAIL IS INTENDED TO PROVIDE GUIDANCE TO THE PIPELINE CONTRACTOR. THE ACTUAL CONSTRUCTION TECHNIQUES MAY DIFFER DEPENDING UPON FIELD CONDITIONS AND OR REGULATORY REQUIREMENTS.

DRAWN JIL	DATE 10/6/2016	Mountain Valley PIPELINE	TYPICAL CONSTRUCTION DETAIL	
CHECKED MMF	DATE 10/6/2016		SLOPE BREAKER/RIGHT-OF-WAY DIVERSION/WATERBAR	
APP'D XXX	DATE 08/11/17			
SCALE N.T.S.	SHEET 1 OF 1			
JOB NO.				
PROJECT ID: MVP – VA PORTION		DESIGN ENGINEERING	DRAWING NO. MVP-17.1	REV. 0

RECOMMENDED MAXIMUM SPACING FOR PERMANENT SLOPE BREAKERS	
PIPELINE GRADE	DISTANCE (FEET)
<2%	- 1, 2
2-5%	400
6-15%	200
16-30%	100
>31%	50 [3]

[1] PERMANENT SLOPE BREAKERS WILL BE INSTALLED AS NEEDED BASED ON FIELD CONDITIONS.

[2] PERMANENT SLOPE BREAKERS WILL BE INSTALLED 25 FEET FROM EACH WATERBODY BOUNDARY REGARDLESS OF SLOPE CONDITIONS.

[3] SLOPES GREATER THAN 65% MAY REQUIRE SITE SPECIFIC STABILIZATION MEASURES BASED ON FIELD CONDITIONS AS APPROVED BY MVP DESIGN ENGINEERING AND MVP ENVIRONMENTAL INSPECTOR.

NOTES:

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

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

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

SUMP FILTERS TO BE INSTALLED AT END OF WATERBARS. REFER TO SUMP FILTER DETAIL ON SHEET 0.09 FOR MORE DETAIL.

OUTLET PROTECTION/COMPOST FILTER SOCK SHOULD BE INSTALLED AT THE OUTLET OF ALL WATERBARS.

THIS TYPICAL CONSTRUCTION DETAIL IS INTENDED TO PROVIDE GUIDANCE TO THE PIPELINE CONTRACTOR. THE ACTUAL CONSTRUCTION TECHNIQUES MAY DIFFER DEPENDING UPON FIELD CONDITIONS AND OR REGULATORY REQUIREMENTS.

DRAWN JIL	DATE 10/6/2016	Mountain Valley PIPELINE	TYPICAL CONSTRUCTION DETAIL	
CHECKED MMF	DATE 10/6/2016		SLOPE BREAKER/RIGHT-OF-WAY DIVERSION/WATERBAR	
APP'D XXX	DATE 08/11/17			
SCALE N.T.S.	SHEET 1 OF 1			
JOB NO.				
PROJECT ID: MVP – VA PORTION		DESIGN ENGINEERING	DRAWING NO. MVP-17.2	REV. 0

SLOPE %	DISTANCE	PLUG MATERIAL
0% – 5%	SEE NOTE 6	CONCRETE FILLED SACKS
5% – 15%	500 FT	SANDBAGS OR CONCRETE FILLED SACKS
15% – 25%	300 FT	SANDBAGS OR CONCRETE FILLED SACKS
25% – 35%	200 FT	SANDBAGS OR CONCRETE FILLED SACKS
35% – 100%	100 FT	SANDBAGS OR CONCRETE FILLED SACKS
> 100%	50 FT	CONCRETE FILLED BAGS (WETTED)

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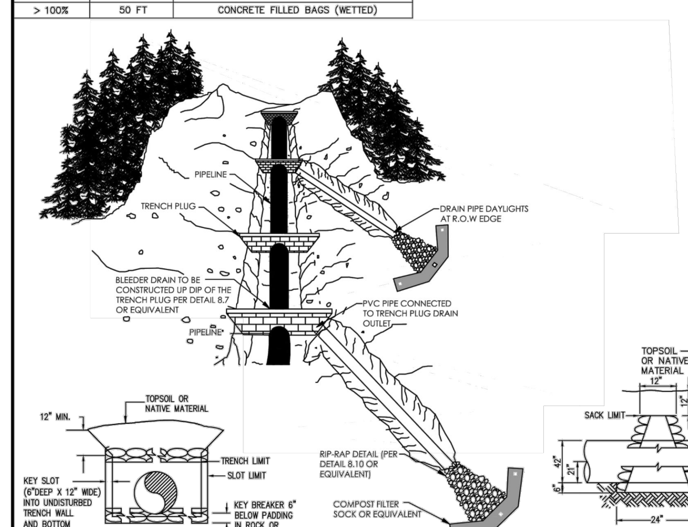

NOTES:

1. TRENCH BREAKERS SHALL BE INSTALLED:
   - ON SLOPES ALONG THE TRENCH LINE WHERE THE NATURAL DRAINAGE PATTERN, PROFILE, AND TYPE OF BACKFILL MATERIAL MAY RESULT IN LOSS OF BACKFILL MATERIAL OR ALTERATION OF THE NATURAL PATTERN;
   - AT THE BASE OF SLOPES ADJACENT TO WATERBODIES AND WETLANDS;
   - WHERE NEEDED TO AVOID DRAINING A WETLAND;
   - ON UPLAND SLOPES, AT THE SAME SPACING AS SLOPE BREAKERS AND UP SLOPE OF SLOPE BREAKERS;
   - IN CULTIVATED LAND AND RESIDENTIAL AREAS WHERE PERMANENT SLOPE BREAKERS ARE NOT TYPICALLY INSTALLED, AT THE SAME SPACING AS IF PERMANENT SLOPE BREAKERS WHERE REQUIRED.
2. MATERIALS APPROPRIATE FOR USE AS PERMANENT TRENCH BREAKERS INCLUDE SANDBAGS OR CONCRETE FILLED SACKS. TOPSOIL SHALL NOT BE USED FOR TRENCH BREAKERS.
3. TRENCH BREAKERS INSTALLED AT WATERBODY AND WETLAND CROSSINGS SHALL BE CONSTRUCTED OF IMPERVIOUS MATERIALS (CONCRETE FILLED SACKS).
4. BREAKER SPACING AND CONFIGURATION MAY BE CHANGED AS DIRECTED BY MVP. DEPTH OF DITCH MAY VARY WITH SITE CONDITIONS.
5. ALL MATERIALS SHALL BE SUPPLIED BY CONTRACTOR.
6. TRENCH BREAKERS ARE REQUIRED AT ALL WATERBODY CROSSINGS REGARDLESS OF TRENCH SLOPE. OTHERWISE NOTE REQUIRED AT SLOPES < 5%.
7. SINGLE TRENCH BREAKERS WILL BE A MINIMUM WIDTH OF 24" AND DOUBLE TRENCH BREAKERS WILL BE A MINIMUM WIDTH OF 36".
8. FOR SUBSURFACE AND TRENCH BREAKER DRAINAGE DETAILS INCLUDING THOSE FOR STEEP SLOPES, SEE LANDSLIDE MITIGATION TYPICAL DETAILS.
9. FOR SLOPES EXCEEDING 50%, CONCRETE FILLED SACKS ARE REQUIRED UNLESS OTHERWISE APPROVED BY MVP.

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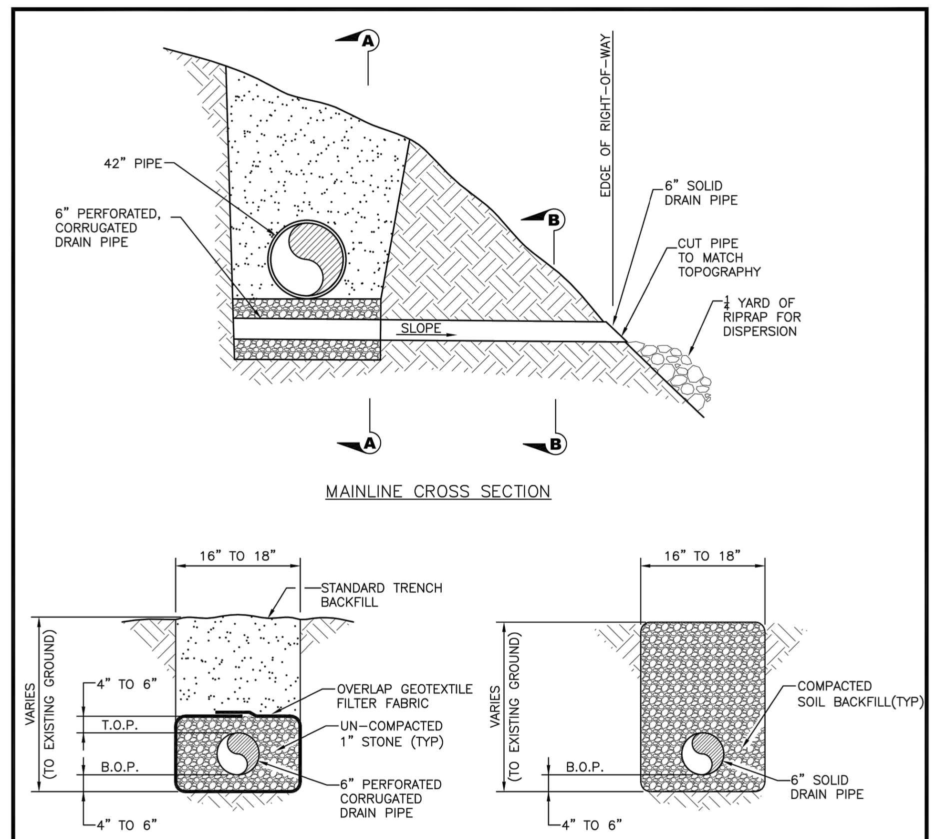
DRAWN JIL	DATE 10/6/2016	Mountain Valley PIPELINE	TYPICAL CONSTRUCTION DETAIL	
CHECKED MMF	DATE 10/6/2016		TYPICAL TRENCH BREAKER REQUIREMENTS	
APP'D XXX	DATE 08/11/17			
SCALE N.T.S.	SHEET 1 OF 1			
JOB NO.				
PROJECT ID: MVP – VA PORTION		DESIGN ENGINEERING	DRAWING NO. MVP-20	REV. 0

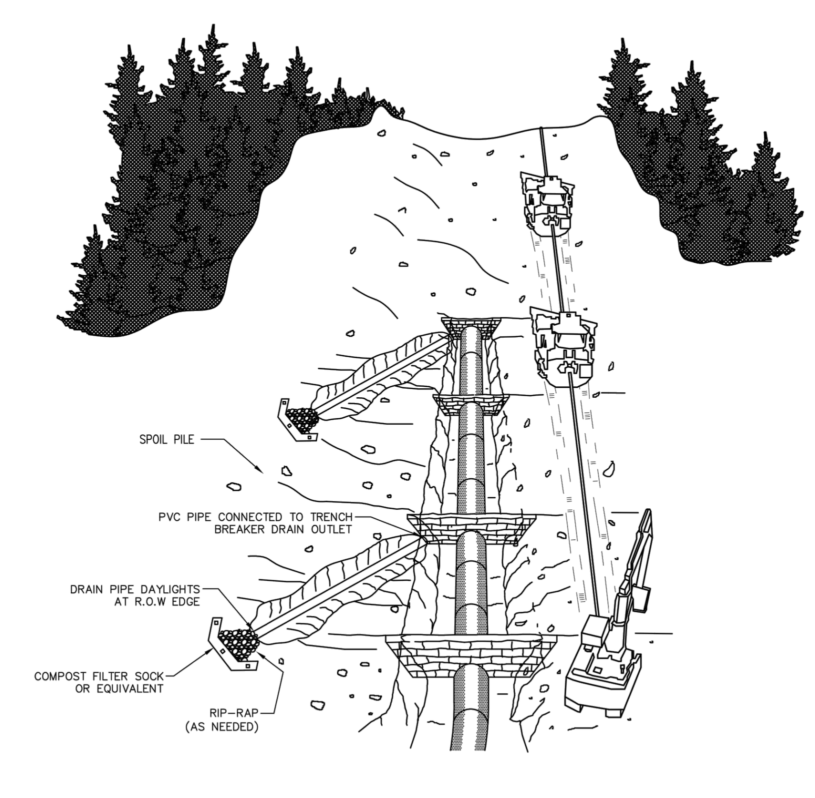


NOTES

1. LOW POINT DITCH DRAINS SHALL BE INSTALLED AT LOCATIONS SPECIFIED IN THE APPROVED EROSION & SEDIMENTATION CONTROL PLAN, AND AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.
2. FILL STONE SHOULD BE 1" AGGREGATE WITHOUT FINES, CRUSHER RUN WITHOUT FINES, OR EQUIVALENT.
3. DRAIN PIPE TO BE CONNECTED USING STANDARD PIPE COLLARS.

THIS TYPICAL CONSTRUCTION DETAIL IS INTENDED TO PROVIDE GUIDANCE TO THE PIPELINE CONTRACTOR. THE ACTUAL CONSTRUCTION TECHNIQUES MAY DIFFER DEPENDING UPON FIELD CONDITIONS AND OR REGULATORY REQUIREMENTS.

DRAWN JIL	DATE 10/6/2016	Mountain Valley PIPELINE	TYPICAL CONSTRUCTION DETAIL	
CHECKED MMF	DATE 10/6/2016		SIDEHILL LOW-POINT DRAIN TYPICAL	
APP'D XXX	DATE 08/11/17			
SCALE N.T.S.	SHEET 1 OF 1			
JOB NO.				
PROJECT ID: MVP – VA PORTION		DESIGN ENGINEERING	DRAWING NO. MVP-24	REV. 0



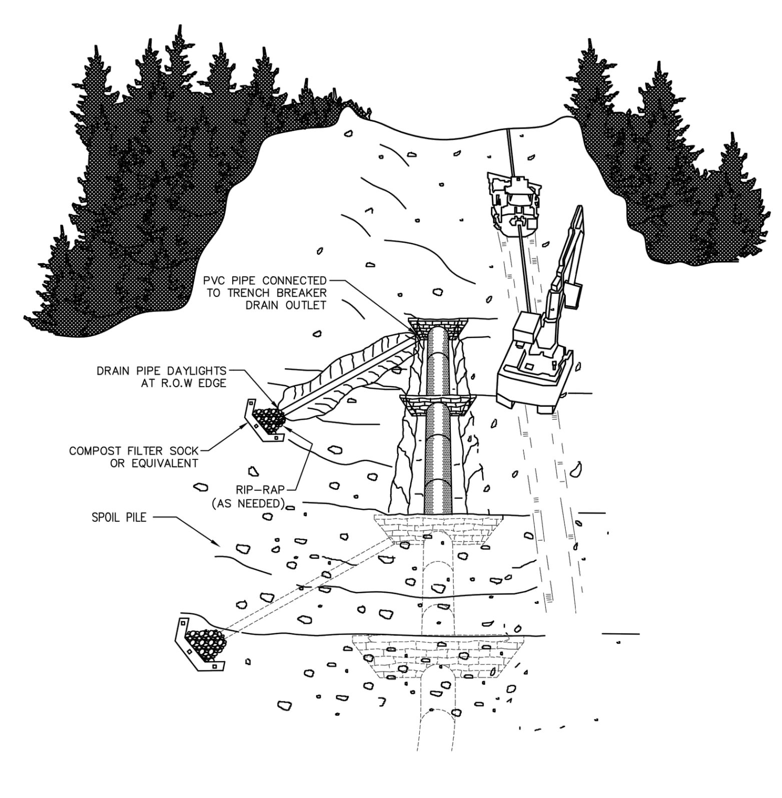
NOTES:

1. WINCHES MAY BE REQUIRED FOR MOVING EQUIPMENT AND MATERIAL, AND DURING CONSTRUCTION ON STEEP LONGITUDINAL SLOPES.
2. WINCHES WILL EITHER BE FIXED WINCHES OR TRACKED EQUIPMENT WITH WINCHES.
3. WINCHES WILL TYPICALLY BE REQUIRED FOR SLOPES OF 30% (17°) AND UP.

THIS TYPICAL CONSTRUCTION DETAIL IS INTENDED TO PROVIDE GUIDANCE TO THE PIPELINE CONTRACTOR. THE ACTUAL CONSTRUCTION TECHNIQUES MAY DIFFER DEPENDING UPON FIELD CONDITIONS AND OR REGULATORY REQUIREMENTS.

DRAWING ASSUMES TYPE "B" SOIL

DRAWN JDM	DATE 03/28/16	Mountain Valley PIPELINE	TYPICAL CONSTRUCTION DETAIL	
CHECKED RRR	DATE 04/06/16		MAINLINE CONSTRUCTION STEEP HILL PARALLEL CONSTRUCTION NO TOP SOIL SEGREGATION	
APP'D RLM	DATE 08/11/17			
SCALE N.T.S.	SHEET 1 OF 1			
JOB NO.				
PROJECT ID: MVP – VA PORTION		DESIGN ENGINEERING	DRAWING NO. MVP-31	REV. 0



NOTES:

1. WINCHES MAY BE REQUIRED FOR MOVING EQUIPMENT AND MATERIAL, AND DURING CONSTRUCTION ON STEEP LONGITUDINAL SLOPES.
2. WINCHES WILL EITHER BE FIXED WINCHES OR TRACKED EQUIPMENT WITH WINCHES.
3. WINCHES WILL TYPICALLY BE REQUIRED FOR SLOPES OF 30% (17°) AND UP.

THIS TYPICAL CONSTRUCTION DETAIL IS INTENDED TO PROVIDE GUIDANCE TO THE PIPELINE CONTRACTOR. THE ACTUAL CONSTRUCTION TECHNIQUES MAY DIFFER DEPENDING UPON FIELD CONDITIONS AND OR REGULATORY REQUIREMENTS.

DRAWING ASSUMES TYPE "B" SOIL

DRAWN JIL	DATE 06/23/16	Mountain Valley PIPELINE	TYPICAL CONSTRUCTION DETAIL	
CHECKED RRR	DATE 06/23/16		MAINLINE CONSTRUCTION STEEP HILL STOVE PIPE CONSTRUCTION JEFFERSON NATIONAL FOREST NO TOP SOIL SEGREGATION	
APP'D RLM	DATE 08/11/17			
SCALE N.T.S.	SHEET 1 OF 1			
JOB NO.				
PROJECT ID: MVP – VA PORTION		DESIGN ENGINEERING	DRAWING NO. MVP-32	REV. 0

NO.:	DATE:	DWN.:	CHKD.:	APPD.:	DESCRIPTION:

REVISIONS:

Mountain Valley PIPELINE

JEFFERSON NATIONAL FOREST – E&S DETAILS

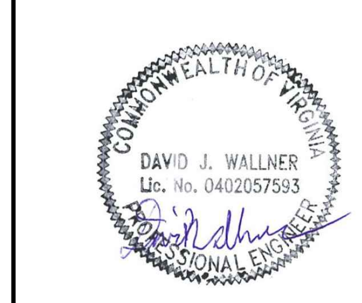
MOUNTAIN VALLEY PIPELINE PROJECT – H600 LINE

GILES COUNTY THROUGH MONTGOMERY COUNTY, VIRGINIA

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

TETRA TECH
complex world | CLEAR SOLUTIONS™
661 ANDERSEN DRIVE
FOSTER PLAZA 7
PITTSBURGH, PA 15220

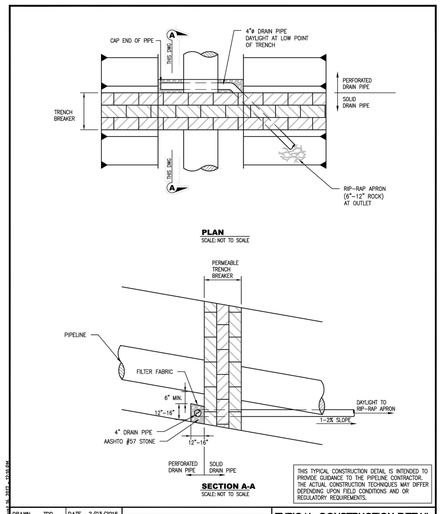
GENERAL DETAIL SET



DRAWN BY:	KAL
CHECKED BY:	HT
APPROVED BY:	RE
DATE:	10/26/2017
SCALE:	AS SHOWN
SHT. NO.	0.11JNF OF 13.06JNF

REVISION

TETRA TECH CAD FILE PATH: X:\CADD_Pittsburgh\EQT\7157 – MVP\00 – General\JNF\7157ES011.dwg PLOTTED ON: 10/26/2017 7:50 AM PLOTTED BY: Rickabough, Greg PLOT FILE: ENVIRONMENTAL_COLOR.ctb



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DRAWN TDD	DATE 2/03/2016	Mountain Valley PIPELINE	TYPICAL CONSTRUCTION DETAIL
CHECKED MMF	DATE 2/03/2016		
APP'D	DATE 08/11/17		TRENCH BREAKER DAYLIGHT DRAIN
SCALE N.T.S.	SHEET 1 OF 1		
JOB NO.			
PROJECT ID:			
MVP – VA PORTION		DESIGN ENGINEERING	DRAWING NO. MVP–35 / REV. 0

Plotted by: Kozlowski, Jim on August 16, 2017 - 03:28 PM
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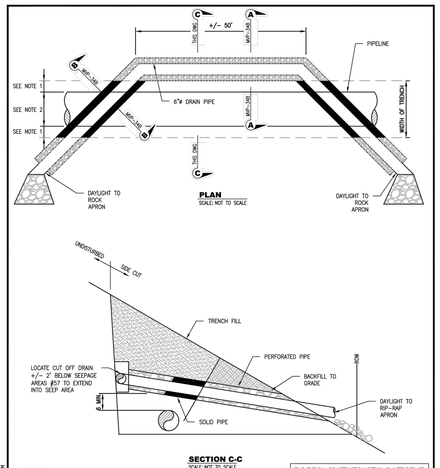

NOTES:
1. PERFORATED PIPE SURROUNDED BY #57 STONE.
2. SOLID PIPE (IN TRENCH) SURROUNDED BY TRENCH BACKFILL.

THIS TYPICAL CONSTRUCTION DETAIL IS INTENDED TO PROVIDE GUIDANCE TO THE PIPELINE CONTRACTOR. THE ACTUAL CONSTRUCTION TECHNIQUES MAY DIFFER DEPENDING UPON FIELD CONDITIONS AND OR REGULATORY REQUIREMENTS.

DRAWN TDD	DATE 2/03/2016	Mountain Valley PIPELINE	TYPICAL CONSTRUCTION DETAIL
CHECKED MMF	DATE 2/03/2016		
APP'D	DATE 08/11/17		CUTOFF DRAIN–SIDEHILL
SCALE N.T.S.	SHEET 1 OF 2		
JOB NO.			
PROJECT ID:			
MVP – VA PORTION		DESIGN ENGINEERING	DRAWING NO. MVP–36A / REV. 0

Plotted by: Kozlowski, Jim on August 16, 2017 - 03:19 PM
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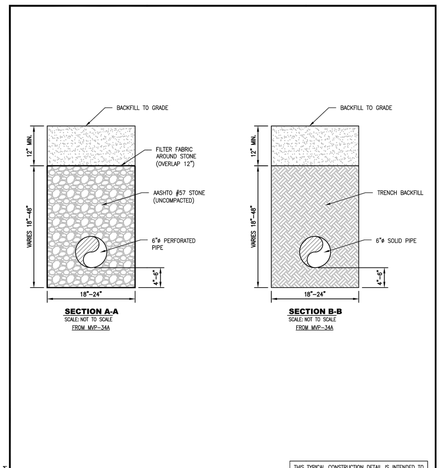

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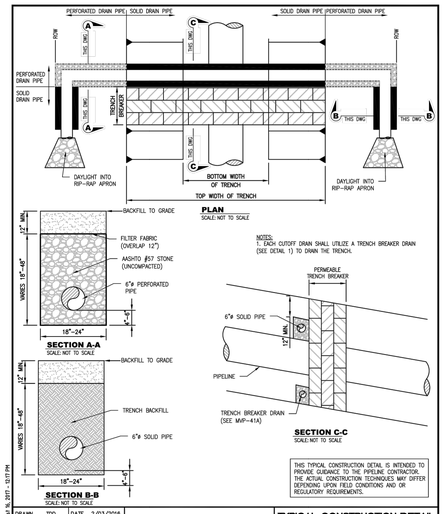
DRAWN TDD	DATE 2/03/2016	Mountain Valley PIPELINE	TYPICAL CONSTRUCTION DETAIL
CHECKED MMF	DATE 2/03/2016		
APP'D	DATE 08/11/17		CUTOFF DRAIN–SIDEHILL
SCALE N.T.S.	SHEET 2 OF 2		
JOB NO.			
PROJECT ID:			
MVP – VA PORTION		DESIGN ENGINEERING	DRAWING NO. MVP–36B / REV. 0

Plotted by: Kozlowski, Jim on August 16, 2017 - 03:17 PM
File Path: X:\CADD_Pittsburgh\EQT\7157 - MVP\00 - General\EQT Details\MVP-36b.dwg



NOTES:
1. EACH CUTOFF DRAIN SHALL UTILIZE A TRENCH BREAKER DRAIN (SEE DETAIL 1) TO DRAIN THE TRENCH.

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DRAWN TDD	DATE 2/03/2016	Mountain Valley PIPELINE	TYPICAL CONSTRUCTION DETAIL
CHECKED MMF	DATE 2/03/2016		
APP'D	DATE 08/11/17		CUTOFF DRAIN–PLANAR
SCALE N.T.S.	SHEET 1 OF 1		
JOB NO.			
PROJECT ID:			
MVP – VA PORTION		DESIGN ENGINEERING	DRAWING NO. MVP–37 / REV. 0

Plotted by: Kozlowski, Jim on August 16, 2017 - 03:17 PM
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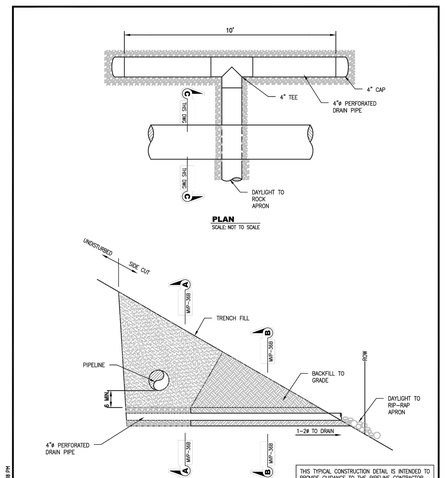

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DRAWN TDD	DATE 2/03/2016	Mountain Valley PIPELINE	TYPICAL CONSTRUCTION DETAIL
CHECKED MMF	DATE 2/03/2016		
APP'D	DATE 08/11/17		TRANSVERSE TRENCH DRAIN
SCALE N.T.S.	SHEET 1 OF 2		
JOB NO.			
PROJECT ID:			
MVP – VA PORTION		DESIGN ENGINEERING	DRAWING NO. MVP–38A / REV. 0

Plotted by: Kozlowski, Jim on August 16, 2017 - 12:18 PM
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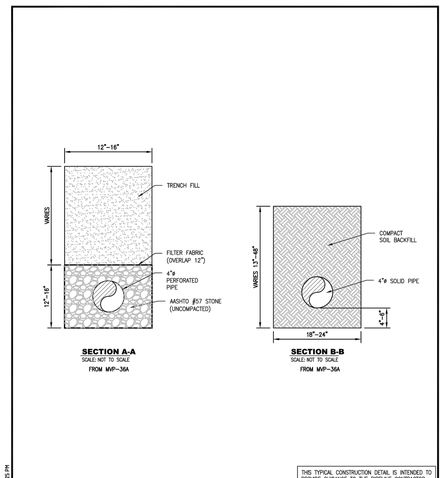

THIS TYPICAL CONSTRUCTION DETAIL IS INTENDED TO PROVIDE GUIDANCE TO THE PIPELINE CONTRACTOR. THE ACTUAL CONSTRUCTION TECHNIQUES MAY DIFFER DEPENDING UPON FIELD CONDITIONS AND OR REGULATORY REQUIREMENTS.

DRAWN TDD	DATE 2/03/2016	Mountain Valley PIPELINE	TYPICAL CONSTRUCTION DETAIL
CHECKED MMF	DATE 2/03/2016		
APP'D	DATE 08/11/17		TRANSVERSE TRENCH DRAIN
SCALE N.T.S.	SHEET 2 OF 2		
JOB NO.			
PROJECT ID:			
MVP – VA PORTION		DESIGN ENGINEERING	DRAWING NO. MVP–38B / REV. 0

Plotted by: Kozlowski, Jim on August 16, 2017 - 12:20 PM
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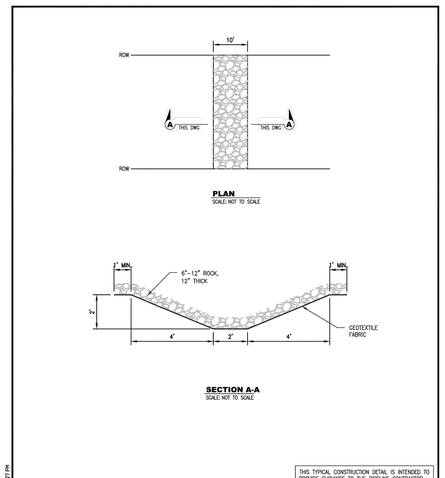

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DRAWN TDD	DATE 2/03/2016	Mountain Valley PIPELINE	TYPICAL CONSTRUCTION DETAIL
CHECKED MMF	DATE 2/03/2016		
APP'D	DATE 08/11/17		ROCK LINED SWALE
SCALE N.T.S.	SHEET 1 OF 1		
JOB NO.			
PROJECT ID:			
MVP – VA PORTION		DESIGN ENGINEERING	DRAWING NO. MVP–39 / REV. 0

Plotted by: Kozlowski, Jim on August 16, 2017 - 12:21 PM
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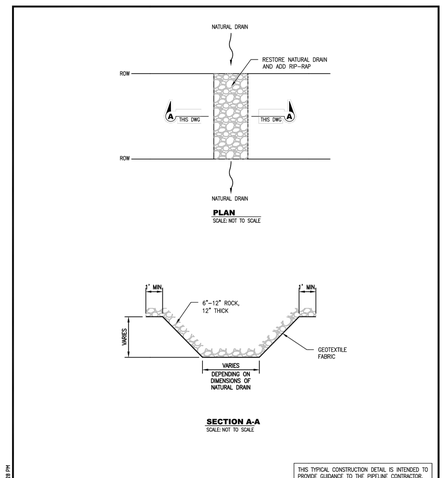

THIS TYPICAL CONSTRUCTION DETAIL IS INTENDED TO PROVIDE GUIDANCE TO THE PIPELINE CONTRACTOR. THE ACTUAL CONSTRUCTION TECHNIQUES MAY DIFFER DEPENDING UPON FIELD CONDITIONS AND OR REGULATORY REQUIREMENTS.

DRAWN TDD	DATE 2/03/2016	Mountain Valley PIPELINE	TYPICAL CONSTRUCTION DETAIL
CHECKED MMF	DATE 2/03/2016		
APP'D	DATE 08/11/17		RIP–RAP NATURAL DRAIN
SCALE N.T.S.	SHEET 1 OF 1		
JOB NO.			
PROJECT ID:			
MVP – VA PORTION		DESIGN ENGINEERING	DRAWING NO. MVP–40 / REV. 0

Plotted by: Kozlowski, Jim on August 16, 2017 - 12:28 PM
File Path: X:\CADD_Pittsburgh\EQT\7157 - MVP\00 - General\References\15-12-16 Added to Set - Copy\MVP-40.dwg

NO.:	DATE:	DWN.:	CHKD.:	APPD.:	DESCRIPTION:
					REVISIONS:

Mountain Valley PIPELINE

JEFFERSON NATIONAL FOREST – E&S DETAILS
MOUNTAIN VALLEY PIPELINE PROJECT – H600 LINE
GILES COUNTY THROUGH MONTGOMERY COUNTY, VIRGINIA

MOUNTAIN VALLEY PIPELINE, LLC
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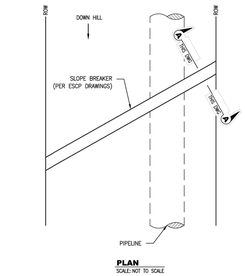
FOSTER PLAZA 7
PITTSBURGH, PA 15220

GENERAL DETAIL SET

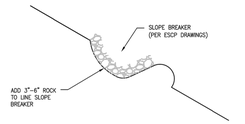
COMMONWEALTH OF VIRGINIA
DAVID J. WALLNER
Lic. No. 0402057593
PROFESSIONAL ENGINEER

DRAWN BY:	KAL
CHECKED BY:	HT
APPROVED BY:	RE
DATE:	10/26/2017
SCALE:	AS SHOWN
REVISION	
SHT. NO.	0.12JNF OF 13.06JNF

TETRA TECH CAD FILE PATH: X:\CADD_Pittsburgh\EQT\7157 – MVP\00 – General\JNF\7157ES012.dwg PLOTTED ON: 10/26/2017 7:50 AM PLOTTED BY: Rickabough, Greg PLOT FILE: ENVIRONMENTAL_COLOR.ctb



PLAN
SCALE: NOT TO SCALE



SECTION A-A
SCALE: NOT TO SCALE

THIS TYPICAL CONSTRUCTION DETAIL IS INTENDED TO PROVIDE GUIDANCE TO THE PIPELINE CONTRACTOR. THE ACTUAL CONSTRUCTION TECHNIQUES MAY DIFFER DEPENDING UPON FIELD CONDITIONS AND OR REGULATORY REQUIREMENTS.

DRAWN TDO	DATE 2/03/2016	Mountain Valley PIPELINE	TYPICAL CONSTRUCTION DETAIL
CHECKED MMF	DATE 2/03/2016		
APP'D	DATE 08/11/17		RIP-RAP SLOPE BREAKERS
SCALE N.T.S.	SHEET 1 OF 1		
JOB NO.			
PROJECT ID:			
MVP – VA PORTION		DESIGN ENGINEERING	DRAWING NO. MVP-41 / REV. 0

Plotted by: Kozlowski, Jim on August 14, 2017 - 01:03 PM

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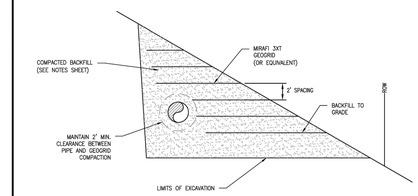

THIS TYPICAL CONSTRUCTION DETAIL IS INTENDED TO PROVIDE GUIDANCE TO THE PIPELINE CONTRACTOR. THE ACTUAL CONSTRUCTION TECHNIQUES MAY DIFFER DEPENDING UPON FIELD CONDITIONS AND OR REGULATORY REQUIREMENTS.

DRAWN TDO	DATE 2/03/2016	Mountain Valley PIPELINE	TYPICAL CONSTRUCTION DETAIL
CHECKED MMF	DATE 2/03/2016		
APP'D	DATE 08/11/17		GEOGRID–SIDEHILL
SCALE N.T.S.	SHEET 1 OF 3		
JOB NO.			
PROJECT ID:			
MVP – VA PORTION		DESIGN ENGINEERING	DRAWING NO. MVP-42A / REV. 0

Plotted by: Kozlowski, Jim on August 14, 2017 - 12:16 PM

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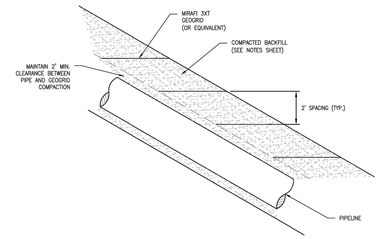

SECTION VIEW
SCALE: NOT TO SCALE

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DRAWN TDO	DATE 2/03/2016	Mountain Valley PIPELINE	SLIDE MITIGATION DETAIL
CHECKED MMF	DATE 2/03/2016		
APP'D	DATE 08/11/17		GEOGRID–PLANAR
SCALE N.T.S.	SHEET 2 OF 3		
JOB NO.			
PROJECT ID:			
MVP – VA PORTION		DESIGN ENGINEERING	DRAWING NO. MVP-42B / REV. 0

Plotted by: Kozlowski, Jim on August 14, 2017 - 12:41 PM

File Path: X:\CADD_Pittsburgh\EQT\7157 - MVP\00 - General\References\10-12-16 Added to Set - Copy\MVP-42B.dwg

COMPACTION NOTES

1) ALL ROCKS LARGER THAN 6 INCHES IN SIZE, AND MORE THAN 10 PERCENT BY VOLUME SHOULD BE REMOVED AND PROPERLY DISPOSED FROM THE BACKFILL MATERIAL.
2) THE SUBGRADE AT THE BASE OF THE EXCAVATION SHOULD BE PROOFROLLED WITH A PNEUMATIC TIRED ROLLER OR VEHICLE.
3) THE EXCAVATED AREA SHALL BE BACKFILLED WITH THE CLEANED EXCAVATED SOIL MATERIAL AND COMPACTED IN PLACE.
4) BACKFILL OPERATIONS SHALL BE PERFORMED WHEN SOIL IS SUITABLE FOR COMPACTION (I.E., NOT IMMEDIATELY FOLLOWING A LARGE RAIN, SNOW, OR ICE EVENT). FROZEN FILL SHALL NOT BE USED.
5) THE BACKFILL SHALL BE PLACED IN COMPACTED LIFTS NO GREATER THAN 12 INCHES.
6) MAINTAIN A MINIMUM 2FT CLEARANCE BETWEEN COMPACTION ACTIVITY AND THE GAS PIPELINE.

GRAVEL DRAIN NOTES

1) GEOTEXTILE FABRIC SHALL BE TENCATE MIRAFI 140N OR APPROVED EQUIVALENT.
2) THE GEOTEXTILE FABRIC SHALL BE STORED UNDAMAGED PURSUANT TO MANUFACTURERS RECOMMENDATIONS.
3) DO NOT OPERATE CONSTRUCTION EQUIPMENT DIRECTLY ON THE GEOTEXTILE FABRIC.
4) DRAINAGE AGGREGATE SHALL MEET THE REQUIREMENTS OF AASHTO NO. 57 STONE.
5) DRAINAGE AGGREGATE SHALL NOT BE COMPACTED.

GEOGRID NOTES

1) GEOGRID REINFORCEMENT SHALL BE TENCATE MIRAFI 3XT OR APPROVED EQUIVALENT.
2) THE GEOGRID MATERIAL SHALL BE STORED UNDAMAGED PURSUANT TO MANUFACTURERS RECOMMENDATIONS.
3) GEOGRID SHALL BE PLACED HORIZONTALLY ON THE BACKFILL WITH THE PRINCIPAL STRENGTH DIRECTION PERPENDICULAR TO THE FACE OF THE SLOPE. ADJACENT PIECES OF PRIMARY GEOGRID SHALL NOT OVERLAP BUT ARE TO BE BUTTED SIDE TO SIDE.
4) REMOVE ALL SLACK IN THE GEOGRID MATERIAL AND ANCHOR AS NECESSARY WITH PINS, OR BAGS TO PREVENT SLACK FROM DEVELOPMENT DURING FILL PLACEMENT AND COMPACTION.
5) FILL IS TO BE PLACED AND SPREAD DIRECTLY ON THE GEOGRID MATERIAL WITH RUBBER TIRED EQUIPMENT ONLY. SPEEDS ARE TO BE KEPT SLOW WITH AS FEW STOPS AND TURNS AS PRACTICAL.
6) DO NOT OPERATE TRACKED EQUIPMENT DIRECTLY ON THE GEOGRID MATERIAL.
7) MAINTAIN A MINIMUM 2FT CLEARANCE BETWEEN GEOGRID MATERIAL AND THE GAS PIPELINE.

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DRAWN TDO	DATE 2/03/2016	Mountain Valley PIPELINE	TYPICAL CONSTRUCTION DETAIL
CHECKED MMF	DATE 2/03/2016		
APP'D	DATE 08/11/17		GEOGRID NOTES
SCALE N.T.S.	SHEET 3 OF 3		
JOB NO.			
PROJECT ID:			
MVP – VA PORTION		DESIGN ENGINEERING	DRAWING NO. MVP-42C / REV. 0

Plotted by: Kozlowski, Jim on August 14, 2017 - 1:55 PM

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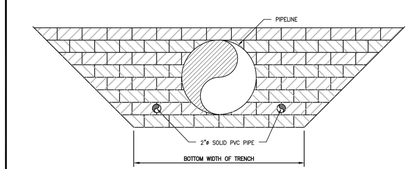
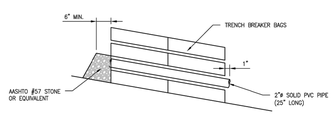


FRONT VIEW
SCALE: NOT TO SCALE



SECTION VIEW
SCALE: NOT TO SCALE

NOTES:
1. PLACE PVC DRAIN PIPE ON FIRST LAYER OF TRENCH BREAKER BAGS.
2. PLACE PVC DRAIN PIPE EQUIDISTANT FROM THE OUTSIDE EDGE OF THE 30" GAS PIPE AND THE BOTTOM LIMITS OF THE TRENCH.
3. EXTEND PVC PIPE THROUGH ENTIRE TRENCH BREAKER AND EXTEND APPROX. 1' PAST END OF BREAKER.
4. AASHTO#57 STONE SHALL BE PLACED TO A MINIMUM 6" THICKNESS UPSLOPE OF THE DRAIN PIPE.

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DRAWN TDO	DATE 4/14/2016	Mountain Valley PIPELINE	TYPICAL CONSTRUCTION DETAIL
CHECKED MMF	DATE 4/14/2016		
APP'D	DATE 08/11/17		TRENCH BREAKER PASS-THROUGH DRAIN
SCALE N.T.S.	SHEET 1 OF 2		
JOB NO.			
PROJECT ID:			
MVP – VA PORTION		DESIGN ENGINEERING	DRAWING NO. MVP-43A / REV. 0

Plotted by: Kozlowski, Jim on August 14, 2017 - 12:55 PM

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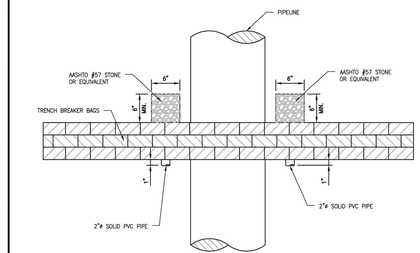

PLAN VIEW
SCALE: NOT TO SCALE

THIS TYPICAL CONSTRUCTION DETAIL IS INTENDED TO PROVIDE GUIDANCE TO THE PIPELINE CONTRACTOR. THE ACTUAL CONSTRUCTION TECHNIQUES MAY DIFFER DEPENDING UPON FIELD CONDITIONS AND OR REGULATORY REQUIREMENTS.

DRAWN TDO	DATE 4/14/2016	Mountain Valley PIPELINE	TYPICAL CONSTRUCTION DETAIL
CHECKED MMF	DATE 4/14/2016		
APP'D	DATE 08/11/17		TRENCH BREAKER PASS-THROUGH DRAIN
SCALE N.T.S.	SHEET 2 OF 2		
JOB NO.			
PROJECT ID:			
MVP – VA PORTION		DESIGN ENGINEERING	DRAWING NO. MVP-43B / REV. 0

Plotted by: Rickabaugh, Greg on August 17, 2017 - 8:05 AM

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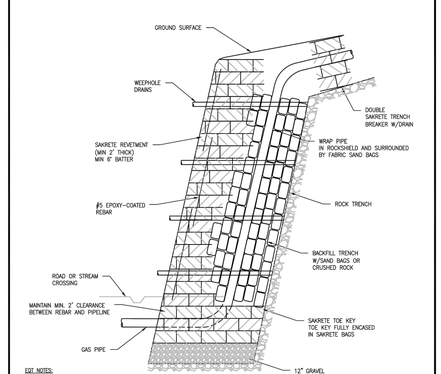

EQT NOTES:
1. SAKRETE BAGS SHOULD EXTEND 4 BAGS DEEP PIPE SHOULD BE COMPLETELY SURROUNDED BY SAND BAGS, OR CRUSHED ROCK (MIN 4").
2. SAKRETE BAGS SHOULD BE STAGGERED IN A MASONRY FASHION. THE FACE OF THE WELL SHALL BE INCLINED 8°-10° FROM VERTICAL.
3. #5 REBAR SHOULD BE DRIVEN THROUGH THE SAKRETE BAGS (SEE DETAIL 1).
4. 2"ø PVC WEEPHOLE DRAINS SHALL BE INSTALLED EVERY 15 FT.

SIDE VIEW
SCALE: NOT TO SCALE

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DRAWN OL	DATE 8/29/2016	Mountain Valley PIPELINE	TYPICAL CONSTRUCTION DETAIL
CHECKED MMF	DATE –		
APP'D	DATE 08/11/17		SLIDE MITIGATION HIGHWALL REVETMENT SIDE VIEW
SCALE N.T.S.	SHEET 1 OF 2		
JOB NO.			
PROJECT ID:			
MVP – VA PORTION		DESIGN ENGINEERING	DRAWING NO. MVP-44A / REV. 0

Plotted by: Kozlowski, Jim on August 14, 2017 - 1:23 PM

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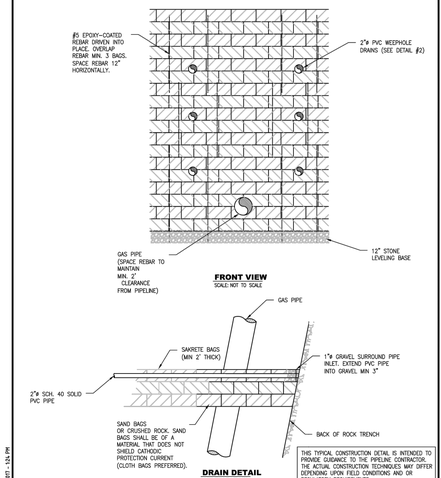

FRONT VIEW
SCALE: NOT TO SCALE

DRAIN DETAIL
SCALE: NOT TO SCALE

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DRAWN OL	DATE 8/29/2016	Mountain Valley PIPELINE	TYPICAL CONSTRUCTION DETAIL
CHECKED MMF	DATE –		
APP'D	DATE 08/11/17		SLIDE MITIGATION HIGHWALL REVETMENT FRONT VIEW AND DRAIN DETAIL
SCALE N.T.S.	SHEET 2 OF 2		
JOB NO.			
PROJECT ID:			
MVP – VA PORTION		DESIGN ENGINEERING	DRAWING NO. MVP-44B / REV. 0

Plotted by: Kozlowski, Jim on August 14, 2017 - 1:24 PM

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NO.:	DATE:	DWN.:	CHKD:	APPD.:	DESCRIPTION:
					REVISIONS:

Mountain Valley PIPELINE

JEFFERSON NATIONAL FOREST – E&S DETAILS

MOUNTAIN VALLEY PIPELINE PROJECT – H600 LINE

GILES COUNTY THROUGH MONTGOMERY COUNTY, VIRGINIA

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

TETRA TECH
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661 ANDERSEN DRIVE
FOSTER PLAZA 7
PITTSBURGH, PA 15220

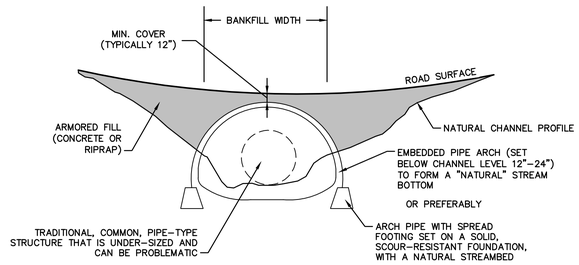
GENERAL DETAIL SET

COMMONWEALTH OF VIRGINIA
DAVID J. WALLNER
Lic. No. 0402057593
PROFESSIONAL ENGINEER

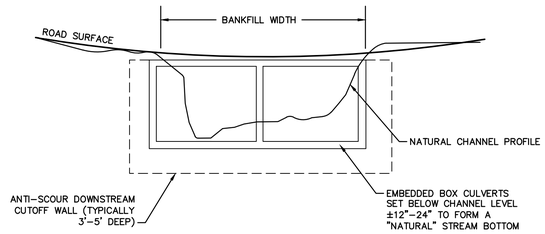
DRAWN BY:	KAL
CHECKED BY:	HT
APPROVED BY:	RE
DATE:	10/26/2017
SCALE:	AS SHOWN
REVISION	
SHT. NO.	0.13JNF OF 13.06JNF

TETRA TECH CAD FILE PATH: X:\CADD_Pittsburgh\EQT\7157 – MVP\00 – General\JNF\7157ES013.dwg PLOTTED ON: 10/26/2017 7:50 AM PLOTTED BY: Rickabaugh, Greg PLOT FILE: ENVIRONMENTAL_COLOR.ctb

Fish Friendly Culvert Schedule				
Stream ID	**Pocahontas Road Station**	**Culvert Type**	**Replacement Culvert Material after Construction**	**Replacement Diameter after Construction**
S-SS2	4+20	Arch - Open Bottom	Corrugated Aluminum	6'/1.79'
S-HH12	13+32	Box Culvert	Precast concrete	3'/3'
S-HH13	18+56	Arch - Open Bottom	Corrugated Aluminum	8'/3.33'
S-HH14	50+36	Box Culvert	Precast concrete	3'/3'
S-HH15	52+77	Arch - Open Bottom	Corrugated Aluminum	6'/1.79'
S-MN20	77+51	Box Culvert	Precast concrete	3'/3'
S-UU11	114+90	Pipe Culvert	Aluminum	2'
S-UU9	130+00	Box Culvert	Precast concrete	12'/6'
S-PP19	152+60	Box Culvert	Precast concrete	8'/4'
S-PP18	178+59	Box Culvert	Precast concrete	9'/4'
S-PP17	222+21	Box Culvert	Precast concrete	3'/3'
S-PP14	264+47	Box Culvert	Precast concrete	10'/4'



"STREAM SIMULATION" EMBEDDED ARCH OR PIPE–ARCH CULVERTS



FISH PASSABLE EMBEDDED BOX CULVERT

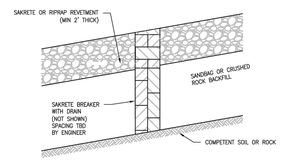
"FISH FRIENDLY" CULVERT STRUCTURES

NOT TO SCALE

NOTE:
LOW–WATER CROSSINGS THAT PROVIDE PASSAGE FOR FISH AND OTHER AQUATIC SPECIES. THE EMBEDDED CULVERTS WOULD HAVE A LAYER OF STREAMBED MATERIAL AT LEAST 1– TO 2–FOOT THICK COVERING THE CULVERT FLOOR.

Ditch Relief Culvert Schedule				
Pocahontas Road Station	**Status: Existing/Proposed**	**comments**	**Replacement Culvert Material after Construction**	**Replacement Diameter after Construction**
3+13	Existing		Aluminum	2'
9+35	Existing		Aluminum	2'
15+68	Existing	During construction, culvert to be crossed with timber mat, refer to detail	Aluminum	2'
17+97	Existing		Aluminum	2'
26+59	Existing		Aluminum	2'
28+77	Existing		Aluminum	2'
32+32	Existing		Aluminum	2'
36+78	Existing		Aluminum	2'
56+62	Existing	During construction, culvert to be crossed with timber mat, refer to detail	Aluminum	2'
59+85	Existing		Aluminum	2'
63+15	Existing		Aluminum	2'
93+33	Existing		Aluminum	2'
94+24	Existing	During construction, culvert to be crossed with timber mat, refer to detail	Aluminum	2'
96+05	Existing		Aluminum	2'
98+00	Existing		Aluminum	2'
103+20	Existing	During construction, culvert to be crossed with timber mat, refer to detail	Aluminum	2'
105+22	Existing		Aluminum	2'
109+26	Existing		Aluminum	2'
110+40	Existing		Aluminum	2'
112+19	Existing		Aluminum	2'
118+19	Existing		Aluminum	2'
121+29	Existing		Aluminum	2'
124+11	Existing		Aluminum	2'
126+55	Existing		Aluminum	2'
133+12	Existing	During construction, culvert to be crossed with timber mat, refer to detail	Aluminum	2'
135+45	Existing		Aluminum	2'
138+27	Existing		Aluminum	2'
140+97	Existing		Aluminum	2'
157+10	Existing	During construction, culvert to be crossed with timber mat, refer to detail	Aluminum	2'
183+91	Existing		Aluminum	2'
187+88	Proposed after construction		Aluminum	2'
191+64	Proposed after construction		Aluminum	2'
194+89	Proposed after construction		Aluminum	2'
198+14	Existing		Aluminum	2'

Ditch Relief Culvert Schedule				
Pocahontas Road Station	**Status: Existing/Proposed**	**comments**	**Replacement Culvert Material after Construction**	**Replacement Diameter after Construction**
200+24	Existing		Aluminum	2'
204+02	Proposed after construction		Aluminum	2'
205+99	Proposed after construction		Aluminum	2'
212+05	Existing		Aluminum	2'
216+27	Existing		Aluminum	2'
218+79	Proposed after construction		Aluminum	2'
221+16	Existing		Aluminum	2'
225+31	Existing		Aluminum	2'
228+52	Proposed after construction		Aluminum	2'
231+84	Proposed after construction		Aluminum	2'
234+78	Existing		Aluminum	2'
237+74	Proposed after construction		Aluminum	2'
240+52	Proposed after construction		Aluminum	2'
243+54	Existing		Aluminum	2'
247+83	Proposed after construction		Aluminum	2'
251+68	Proposed after construction		Aluminum	2'
254+30	Existing	During construction, culvert to be crossed with timber mat, refer to detail	Aluminum	2'
255+64	Existing		Aluminum	2'
259+64	Existing		Aluminum	2'
268+19	Proposed after construction		Aluminum	2'
271+75	Proposed after construction		Aluminum	2'
275+44	Proposed after construction		Aluminum	2'
281+32	Proposed after construction		Aluminum	2'
284+33	Proposed after construction		Aluminum	2'
287+43	Proposed after construction		Aluminum	2'
290+47	Existing		Aluminum	2'
293+40	Existing		Aluminum	2'
297+24	Existing		Aluminum	2'
297+78	Existing		Aluminum	2'
300+26	Existing		Aluminum	2'
301+52	Existing		Aluminum	2'
302+62	Existing		Aluminum	2'
306+63	Proposed after construction		Aluminum	2'



SIDE VIEW
SCALE: NOT TO SCALE

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DRAWN TDD	DATE 2/03/2016
CHECKED MWF	DATE 2/03/2016
APP'D	DATE 08/11/17
SCALE N.T.S.	SHEET 1 OF 1
JOB NO.	
PROJECT ID:	
MVP – VA PORTION	

Mountain Valley PIPELINE — DESIGN ENGINEERING

TYPICAL CONSTRUCTION DETAIL

STEEP SLOPE REVETMENT

DRAWING NO. MVP–45 | REV. 0

Plotted by: Kozlowski, Jim on August 14, 2017 - 1:37 PM
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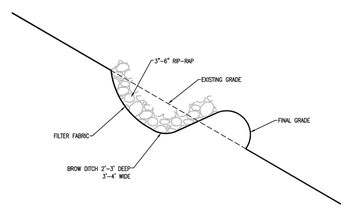

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DRAWN TDD	DATE 7/12/2016
CHECKED MWF	DATE 7/12/2016
APP'D	DATE 08/11/17
SCALE N.T.S.	SHEET 1 OF 1
JOB NO.	
PROJECT ID:	
MVP – VA PORTION	

Mountain Valley PIPELINE — DESIGN ENGINEERING

TYPICAL CONSTRUCTION DETAIL

BROW DITCH DETAIL

DRAWING NO. MVP–46 | REV. 0

Plotted by: Kozlowski, Jim on August 14, 2017 - 1:28 PM
File Path: X:\CADD_Pittsburgh\EQT\7157 - MVP\00 - General\EQT Details\MVP-46.dwg

REVISIONS:

NO.:	DATE:	DWN.:	CHK'D:	APP'D.:	DESCRIPTION:

Mountain Valley PIPELINE

JEFFERSON NATIONAL FOREST – E&S DETAILS
MOUNTAIN VALLEY PIPELINE PROJECT – H600 LINE
GILES COUNTY THROUGH MONTGOMERY COUNTY, VIRGINIA

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

TETRA TECH
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661 ANDERSEN DRIVE
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GENERAL DETAIL SET

COMMONWEALTH OF VIRGINIA
DAVID J. WALLNER
Lic. No. 0402057593
PROFESSIONAL ENGINEER

DRAWN BY:	KAL
CHECKED BY:	HT
APPROVED BY:	RE
DATE:	10/26/2017
SCALE:	AS SHOWN
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SHT. NO.	0.14JNF OF 13.06JNF

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GENERAL CONSTRUCTION SEQUENCE

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

1. INSTALL TEMPORARY EROSION AND SEDIMENT CONTROLS PRIOR TO EARTH DISTURBANCE. REFER TO BEST MANAGEMENT PRACTICES (BMP) INSTALLATION AND REMOVAL NOTES. APPROPRIATE BMPS SHOULD BE PLACED AROUND SENSITIVE AREAS PRIOR TO EARTH DISTURBANCE. STONE CONSTRUCTION ENTRANCES (SCE) ARE TO BE PROVIDED AT ALL LOCATIONS WHERE ACCESS ROADS AND PIPELINES WILL BE ACCESSING OR CROSSING A PUBLIC ROADWAY.

2. INSTALL TEMPORARY E&S CONTROLS FOR STREAM CROSSINGS AT LOCATIONS SHOWN ON THE E&S PLAN SHEETS. NO EARTH DISTURBANCE ACTIVITIES WITHIN 50 FEET OF STREAM CHANNELS WILL BE PERFORMED UNTIL MATERIALS NEEDED TO COMPLETE THE CROSSING ARE AT THE NEAREST AVAILABLE LOCATION.

3. GENERAL CLEARING AND GRUBBING OF THE TREES AND BRUSH ALONG THE RIGHT-OF-WAY (ROW) FOR PIPELINE TRENCHING MAY COMMENCE TO THE WIDTH SPECIFIED IN THE ROW AGREEMENTS OR CONSTRUCTION ALIGNMENT SHEETS, WHICHEVER IS LESS. SMALLER DEBRIS, SUCH AS SHRUBS OR LIMBS, ARE TO BE CHIPPED AND UTILIZED ON-SITE AS PART OF THE SOIL STABILIZATION. WHERE CHIPPED MATERIAL IS USED AS MULCH, SPREAD AT A RATE NOT TO EXCEED 1 TON/ACRE. UNLESS OTHERWISE DIRECTED BY THE LANDOWNER, LOGS WILL EITHER BE 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. INSTALL TEMPORARY RIGHT-OF-WAY DIVERSIONS/WATERBARS IMMEDIATELY AFTER INITIAL DISTURBANCE OF THE SOIL IN ACCORDANCE WITH THE WATERBAR SPACING AND SIZING REQUIREMENTS SHOWN ON THE PLAN AND DETAIL SHEETS (SEE DETAILS VADEQ STD & SPEC 3.11 AND MVP-17). RIGHT-OF-WAY DIVERSIONS/WATERBARS WILL BE CONSTRUCTED OF SOIL, AND USED TO REDUCE RUNOFF VELOCITY AND DIVERT WATER OFF THE PIPELINE ROW. WATERBARS WILL BE INSTALLED WITH SUMP FILTERS (DETAIL MVP-ES42) AT THE DISCHARGE END.

5. EXCAVATE PIPELINE TRENCH AND BEGIN GRADING OF PROPOSED METER AND RECTIFIER ANODE BED SITES. THE PROPOSED CONSTRUCTION ROW AND EXTRA WORKSPACES ARE TO BE USED AS A WORK AREA FOR TRENCH EXCAVATION, EQUIPMENT MOVEMENT AND THE TEMPORARY STORAGE OF SOIL STOCKPILES, AS NEEDED. EQUIPMENT, SOIL STOCKPILES, AND OTHER MATERIALS ARE TO REMAIN UPSLOPE OF BMPS DURING CONSTRUCTION ACTIVITIES. REFER TO BMP INSTALLATION AND REMOVAL SEQUENCE FOR THE BMPS TO BE USED FOR PROTECTION DURING TRENCH EXCAVATION AND AROUND TEMPORARY SOIL STOCKPILES. SEGREGATION OF TOPSOIL AND SUBSOIL WILL BE PERFORMED WHERE TRENCH EXCAVATION TAKES PLACE IN AN AGRICULTURAL, WETLAND, OR RESIDENTIAL AREA.

6. PIPELINE SECTIONS WILL BE TRANSPORTED TO THE WORK AREA AND STRUNG ALONG THE WORKING SIDE OF THE ROW PARALLEL TO THE TRENCH LINE. WELDING CAN OCCUR IN OR OUT OF THE TRENCH. THE PIPELINE WILL BE BENT TO CONFORM TO THE TRENCH CONTOUR, ALIGNED WELDED AND PLACED ON TEMPORARY SUPPORTS ALONGSIDE THE TRENCH. WELDS WILL BE VISUALLY AND RADIO-GRAPHICALLY INSPECTED AND REPAIRED AS NECESSARY. THE PIPE SECTION WILL BE LOWERED INTO THE TRENCH AND PLACED ON PADDING PER MVP CONSTRUCTION STANDARDS. ANY WETNESS ENCOUNTERED DURING CONSTRUCTION WORK WILL BE DEWATERED BY USING PUMPS, HOSES, AND PUMPED BAGS (DETAIL MVP-ES2), AND WILL BE DISCHARGED TO A WELL VEGETATED, UPLAND AREA.

7. STREAM PIPELINE CROSSING CONSTRUCTION METHODS WILL BE INSTALLED AT LOCATIONS SHOWN ON THE E&S PLAN SHEETS AND AS SPECIFIED ON DETAIL SHEET. STREAM BANK STABILIZATION WILL BE INSTALLED IMMEDIATELY FOLLOWING COMPLETION OF PIPELINE INSTALLATION AS SHOWN ON THE DETAIL SHEET.

8. INSTALL TRENCH BREAKERS AT LOCATIONS SHOWN ON THE DRAWINGS OR AS DIRECTED BY MVP AND AS SPECIFIED ON THE DETAIL SHEET (DETAIL MVP-20).

9. THE TRENCH WILL SUBSEQUENTLY BE BACKFILLED WITH SUITABLE EXCAVATED MATERIAL. THE BACKFILL MATERIAL WILL BE SLIGHTLY CROWNED IN UPLAND AREAS TO ALLOW FOR SETTLEMENT THAT MAY OCCUR. CROWNING THE SOIL SLIGHTLY OVER THE PIPELINE WILL HELP PREVENT FUTURE STORM WATER-RELATED PROBLEMS FROM SETTLING OF THE BACKFILLED AREA. NO CROWNING OF SOILS WILL TAKE PLACE IN WETLANDS, STREAMS, OR FLOOD PLAINS. IN AREAS WHERE TOPSOIL HAS BEEN SEGREGATED, THE SUBSOIL WILL BE REPLACED FIRST, AND THEN THE TOPSOIL WILL BE SPREAD OVER THE AREA FROM WHICH IT WAS REMOVED. DISTURBED AREAS WILL BE RESTORED TO THEIR APPROXIMATE ORIGINAL TOPOGRAPHIC CONTOURS.

10. STABILIZE EXPOSED AND UNWORKED SOILS BY APPLICATION OF EFFECTIVE BMPS THAT PROTECT THE SOIL FROM THE EROSIVE FORCES OF RAINDROPS, FLOWING WATER, AND WIND. PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. WHERE A DENUDED AREA WILL REMAIN IDLE FOR MORE THAN 14 CALENDAR DAYS, TEMPORARY SEEDING (VA STD & SPEC 3.31, TABLE 3.31-B) WILL BE APPLIED TO THE ROUGH GRADED AREA. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE YEAR.

11. IN THE UNLIKELY EVENT THAT THERE ARE EXCESS EXCAVATED MATERIALS REMAINING AFTER THE TRENCH HAS BEEN BACKFILLED, THE MATERIAL IS TO BE DISPOSED OF WITHIN THE EXISTING ROW IN AN UPLAND AREA OUTSIDE OF THE 100-YEAR FLOOD PLAIN. MATERIAL WILL BE SPREAD IN A THIN LAYER AND TIED INTO EXISTING CONTOURS TO CREATE POSITIVE DRAINAGE FOR STORMWATER RUNOFF.

12. CONSTRUCT PERMANENT RIGHT-OF-WAY DIVERSION/WATERBARS AFTER COMPLETION OF GRADING IN ACCORDANCE WITH THE WATERBAR SPACING AND SIZING REQUIREMENTS SHOWN ON PLAN AND DETAIL SHEETS (DETAIL MVP-17).

13. REVEGETATE DISTURBED AREA PER TABLES ON THIS SHEET OR PER LANDOWNER REQUEST. FOR 3:1 OR STEEPER SLOPES THE DISTURBED AREA WILL HAVE EROSION CONTROL FABRIC (BLANKETING, HYDROSEEDING, FLEXTERRA, OR APPROVED EQUAL) INSTALLED AS SHOWN ON DETAIL SHEET (DETAILS VA STD & SPEC 3.36, MVP-ES40 AND MVP ES-40.1).

14. RE-ESTABLISH APPROPRIATE DRAINAGE IN EXISTING ROAD CHANNELS PRIOR TO SEEDING AND MULCHING.

15. CONDUCTING INSPECTIONS OF TEMPORARY ESC CONTROLS AND SWM BMPS ON AT LEAST THE FOLLOWING FREQUENCIES:

A. IN NON-TMDL WATERSHEDS
- AT LEAST ONCE EVERY FIVE BUSINESS DAYS, OR
- AT LEAST ONCE EVERY 10 BUSINESS DAYS AND NO LATER THAN 48 HOURS FOLLOWING A MEASURABLE STORM EVENT (OR ON THE NEXT BUSINESS DAY IF THE STORM EVENT OCCURS WHEN THERE ARE MORE THAN 48 HOURS BETWEEN BUSINESS DAYS.

B. IN TMDL WATERSHEDS:
- AT LEAST ONCE EVERY FOUR BUSINESS DAYS, OR
- AT LEAST ONCE EVERY 10 BUSINESS DAYS AND NO LATER THAN 48 HOURS FOLLOWING A MEASURABLE STORM EVENT (OR ON THE NEXT BUSINESS DAY IF THE STORM EVENT OCCURS WHEN THERE ARE MORE THAN 48 HOURS BETWEEN BUSINESS DAYS.

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 RESEEDED AS NEEDED UNTIL THE ENDPOINT IS ACHIEVED.

16. 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.

FOR STREAM CROSSINGS, REFER TO THE FOLLOWING STEPS:

1. INSTALL TEMPORARY EQUIPMENT BRIDGE, BYPASS HOSE, FLUME, PUMP, OR COFFERDAM AS DESCRIBED IN STREAM CROSSING DETAILS AROUND THE WORK AREA.

2. DEWATER WORK AREA UTILIZING PUMP WATER FILTER BAGS. WHERE POSSIBLE, EXCAVATION WILL BE FROM THE TOP OF THE STREAM BANK.

3. INSTALL TRENCH PLUGS, PIPE, AND BACKFILL.

4. STABILIZE CHANNEL EXCAVATION AND STREAM BANKS PRIOR TO REDIRECTING STREAM FLOW.

5. REMOVE BYPASS HOSE, FLUME, PUMP, AND TEMPORARY DAM AS NEEDED.

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

1 INSTALL EITHER SUPER SILT FENCE, ORANGE CONSTRUCTION FENCE, OR COMPOST FILTER SOCKS ALONG THE PERIMETERS OF THE SITE AS SHOWN ON THE CONSTRUCTION DRAWINGS.

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

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

4. DEWATER WORK AREA UTILIZING PUMPED WATER FILTER BAGS.

5. INSTALL PIPE.

6. INSTALL TRENCH PLUGS IN WETLAND AREAS TO PREVENT THE TRENCH FROM DRAINING THE WETLAND OR CHANGING ITS HYDROLOGY.

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

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

9. MAINTAIN ALL E&SCS DEVICES UNTIL SITE WORK IS COMPLETE AND A GROUND COVER IS ACHIEVED THAT IS UNIFORM AND MATURE ENOUGH TO SURVIVE AND INHIBIT EROSION.

10. REMOVE ALL SOIL AND E&SC MEASURES UPON ESTABLISHMENT OF A GROUND COVER THAT IS UNIFORM AND MATURE ENOUGH TO SURVIVE AND INHIBIT EROSION. RE-GRADE AND REVEGETATE AREAS DISTURBED DURING THE REMOVAL OF THE SOIL E&SCS.

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.

- CONDUCTING INSPECTIONS OF TEMPORARY ESC CONTROLS AND SWM BMPS ON AT LEAST THE FOLLOWING FREQUENCIES:

A. IN NON-TMDL WATERSHEDS
- AT LEAST ONCE EVERY FIVE BUSINESS DAYS, OR
- AT LEAST ONCE EVERY 10 BUSINESS DAYS AND NO LATER THAN 48 HOURS FOLLOWING A MEASURABLE STORM EVENT (OR ON THE NEXT BUSINESS DAY IF THE STORM EVENT OCCURS WHEN THERE ARE MORE THAN 48 HOURS BETWEEN BUSINESS DAYS.

B. IN TMDL WATERSHEDS:
- AT LEAST ONCE EVERY FOUR BUSINESS DAYS, OR
- AT LEAST ONCE EVERY 10 BUSINESS DAYS AND NO LATER THAN 48 HOURS FOLLOWING A MEASURABLE STORM EVENT (OR ON THE NEXT BUSINESS DAY IF THE STORM EVENT OCCURS WHEN THERE ARE MORE THAN 48 HOURS BETWEEN BUSINESS DAYS.

TEMPORARY BMPS 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 RESEEDED 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.

NO.:	DATE:	DWN.:	CHKD.:	APPD.:	DESCRIPTION:

REVISIONS:

Mountain Valley PIPELINE

JEFFERSON NATIONAL FOREST - E&S DETAILS

MOUNTAIN VALLEY PIPELINE PROJECT - H600 LINE

GILES COUNTY THROUGH MONTGOMERY COUNTY, VIRGINIA

MOUNTAIN VALLEY PIPELINE, LLC
555 SOUTHPOINTE BOULEVARD, SUITE 200
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BEST MANAGEMENT PRACTICES (BMP) INSTALLATION & REMOVAL NOTES

TEMPORARY AND PERMANENT BMPS WILL BE USED DURING CONSTRUCTION ACTIVITIES TO AVOID AND/OR MINIMIZE ADVERSE ENVIRONMENTAL EFFECTS OF CONSTRUCTION ACTIVITIES.

THE FOLLOWING ARE GENERAL BMP INSTALLATION NOTES FOR PIPELINE CONSTRUCTION ACTIVITIES.

- A STONE CONSTRUCTION ENTRANCE, SHOWN ON DETAIL SHEET, SHALL BE PROVIDED AT ALL LOCATIONS WHERE CONSTRUCTION TRAFFIC WILL BE ACCESSING A PAVED ROAD DIRECTLY FROM A DISTURBED AREA.
- TEMPORARY SEDIMENT BARRIERS, INCLUDING APPROPRIATELY SIZED SILT FENCE OR COMPOST FILTER SOCK WILL BE PLACED AROUND SOIL STOCKPILES, AS NEEDED.
- APPROPRIATELY SIZED COMPOST FILTER SOCK WILL BE PLACED AROUND WETLANDS AND WATERBODIES IN AND ADJACENT TO THE WORK AREA PRIOR TO ANY TRENCHING ACTIVITIES.
- STOCKPILE SLOPES WILL BE 2:1 OR FLATTER, AND STOCKPILES WILL NOT EXCEED 35 FEET IN HEIGHT.
- TEMPORARY STREAM CROSSINGS SHALL BE INSTALLED AS INDICATED ON THE E&S PLAN SHEETS AND AS PER THE E&S DETAIL SHEETS.
- EXCAVATED TRENCH SPOIL MATERIAL WILL BE USED FOR TEMPORARY RIGHT OF WAY DIVERSIONS AS SHOWN IN THE DETAIL AT THE LOCATIONS INDICATED ON THE PLAN SHEETS.
- WATERBARS WILL BE INSTALLED IMMEDIATELY AFTER INITIAL DISTURBANCE OF THE SOIL IN ACCORDANCE WITH THE SPACING AND SIZING REQUIREMENTS SHOWN ON PLAN AND DETAIL SHEET. WATERBARS WILL BE CONSTRUCTED OF SOIL TO REDUCE RUNOFF VELOCITY AND DIVERT WATER OFF THE PIPELINE ROW.
- TRENCH DEWATERING, IF NEEDED, WILL BE CONDUCTED USING A PUMP AND HOSE. WATER WILL BE RELEASED INTO A FILTER BAG THAT WILL BE LOCATED IN A WELL-VEGETATED UPLAND AREA.
- TRENCH BREAKERS WILL BE INSTALLED ON SLOPES ADJACENT TO STREAMS, WETLANDS, AND ROAD CROSSINGS TO PREVENT SUBSURFACE EROSION. TRENCH BREAKERS WILL BE INSTALLED AS SHOWN ON THE DETAILS.
- THE WORK AREA WILL BE BACKFILLED FOLLOWING PIPELINE INSTALLATION OR OTHER EXCAVATION WORK. IN AREAS WHERE TOPSOIL HAS BEEN SEGREGATED, THE SUBSOIL WILL BE REPLACED FIRST, AND THEN THE TOPSOIL WILL BE SPREAD OVER THE AREA FROM WHICH IT WAS REMOVED. DISTURBED AREAS WILL BE RESTORED TO THEIR ORIGINAL TOPOGRAPHIC CONTOURS.
- PERMANENT WATERBARS, WILL BE CONSTRUCTED WITH A TWO PERCENT (TYPICAL) OUTSLOPE TO DIVERT SURFACE FLOW TO A WELL VEGETATED STABLE AREA.
- IMMEDIATELY FOLLOWING BACKFILLING ALL DISTURBED AREAS WILL BE GRADED IN PREPARATION FOR SEEDING AND MULCHING. THE CONSTRUCTION SITE SHOULD BE STABILIZED AS SOON AS POSSIBLE AFTER COMPLETION. ESTABLISHMENT OF FINAL COVER MUST BE INITIATED NO LATER THAN 7 DAYS AFTER REACHING FINAL GRADE. REFER TO TABLES ON THIS SHEET FOR TEMPORARY AND PERMANENT SEEDING SPECIFICATIONS.
- FOR 3:1 OR STEEPER SLOPES THE DISTURBED AREA WILL HAVE EROSION CONTROL BLANKETING INSTALLED AS INDICATED ON DETAIL SHEET.
- TEMPORARY SEDIMENT BARRIERS WILL BE MAINTAINED UNTIL VEGETATION HAS BECOME ESTABLISHED WITH A GROUND COVER THAT IS UNIFORM, MATURE ENOUGH TO SURVIVE AND WILL INHIBIT EROSION. ONCE THIS COVERAGE HAS BEEN OBTAINED, APPROPRIATE CONTROLS WILL BE REMOVED FROM THE WORK AREA. AREAS DISTURBED DURING THE REMOVAL OF THE EROSION CONTROLS WILL BE STABILIZED IMMEDIATELY.
- ALL WASTE MATERIAL WILL BE TRANSPORTED OFFSITE FOR RECYCLING AND/OR DISPOSAL AT A FACILITY APPROVED TO RECEIVE THE MATERIAL..
- 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.

STREAM CROSSING PROCEDURES

GENERAL:
PROCEDURES THAT WILL BE FOLLOWED AT STREAM CROSSING LOCATIONS INCLUDE THE FOLLOWING:

- MINIMIZE CLEARING AND GRUBBING OF VEGETATION UP TO STREAMS, AS POSSIBLE, UNTIL THE TIME OF THE PIPELINE INSTALLATION;
- ONLY THAT AREA WHICH IS REQUIRED FOR PIPELINE INSTALLATION SHALL BE DISTURBED WITHIN THE PROPOSED LIMIT OF DISTURBANCE OR RIGHT-OF-WAY AT STREAM CROSSINGS; LOCATING STAGING AREAS 50 FEET AWAY FROM THE STREAM, WHERE POSSIBLE;
- STORING CHEMICALS, STORING EQUIPMENT, WASHING EQUIPMENT, OR REFUELING EQUIPMENT MUST BE DONE IN AREAS THAT ARE GREATER THAN 100 FEET AWAY FROM THE STREAM;
- SPOIL PILE PLACEMENT AND BMPS WILL BE MONITORED AT ALL TIMES DURING STREAM CROSSING PROCEDURES; ONCE WORK WITHIN A STREAM AREA IS STARTED, IT WILL BE CONDUCTED CONTINUOUSLY TO COMPLETION; EMPHASIS WILL BE PLACED ON MINIMIZING TIME OF DISTURBANCE;
- SPOILS FROM STREAM CROSSINGS MUST BE PLACED AT LEAST 10 FEET FROM THE WATER'S EDGE; AND
- CONSTRUCTION EQUIPMENT WILL NOT BE ALLOWED IN THE STREAM CHANNEL WHEN EXCAVATION CAN BE DONE FROM EITHER SIDE OR A TEMPORARY CROSSING WHILE WORKING AT THE STREAM CROSSING.

THE FOLLOWING SECTIONS DESCRIBE STREAM CROSSING TECHNIQUES THAT MAY BE USED DURING PIPELINE RELOCATION/INSTALLATION ACTIVITIES. REFER TO THE DETAIL SHEETS AND APPROVED STANDARDS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.

DRY CROSSING TECHNIQUES:
THESE TECHNIQUES WILL BE USED TO PERFORM PIPELINE WORK IN A RELATIVELY DRY WORKING CONDITION OR AROUND THE OPEN EXCAVATION. THESE TECHNIQUES INCLUDE PUMP AROUND AND FLUME PIPE CROSSING METHODS. THE LIMITING FACTORS FOR THESE TECHNIQUES ARE USUALLY STREAM SIZE, FLOW, AND WATER DEPTH.

DIRECTIONAL BORING IS ALSO A TECHNIQUE THAT CAN BE UTILIZED AS IT WILL LESSEN THE IMPACTS ON THE WATERBODIES.

E&S CONTROL MEASURES WILL BE INSTALLED PRIOR TO ANY EARTH DISTURBANCE AND ADDRESSED IF NECESSARY IMMEDIATELY AFTER DISTURBANCE OF THE WATERBODY.

FLUME PIPE METHOD: PLEASE SEE DETAIL SHEETS AND SWPPP FOR MORE INFORMATION ON THE FLUME PIPE METHOD. THIS PROCEDURE INVOLVES CONSTRUCTING TWO BULKHEADS, EITHER SANDBAGS OR PLASTIC DAMS, TO DIRECT THE STREAM FLOW THROUGH A FLUME PIPE PLACED OVER THE TRENCH PRIOR TO EXCAVATION. THE FLUME SHALL BE ALIGNED AS TO PREVENT BANK EROSION AND BED SCOUR. THE FLUME WILL NOT BE REMOVED DURING TRENCHING, PIPE LAYING OR BACKFILLING.

PUMP AROUND METHOD: PLEASE SEE THE DETAIL SHEETS AND APPROVED STANDARDS AND SPECIFICATIONS FOR MORE INFORMATION ON THE PUMP AROUND METHOD. THIS PROCEDURE INVOLVES CONSTRUCTING TWO BULKHEADS, EITHER SANDBAGS OR PLASTIC DAMS. THE UPSTREAM DAM WILL CAUSE THE WATER TO POND WHERE IT CAN BE PUMPED AROUND THE WORK AREA AND BE DISCHARGED BEHIND THE DOWNSTREAM BULKHEAD. PUMPS OF SUFFICIENT SIZE TO TRANSMIT THE FLOW DOWNSTREAM WILL BE USED. BACKUP PUMPS MUST BE ON-SITE. PUMP INTAKES MUST BE SCREENED. PUMP DISCHARGES MUST NOT CAUSE SCOUR.

TEMPORARY ROAD CROSSINGS:
TEMPORARY ROAD CROSSINGS, CONSISTING OF BRIDGES OF TIMBER MATS OR CLEAN ROCK FILL AND FLUME(S), WILL BE INSTALLED TO CROSS MINOR OR INTERMEDIATE STREAMS. TIMBER MATS SHALL BE USED TO CROSS SMALLER STREAMS WHERE THE SPAN OF THE MAT WILL STRETCH FROM BANK TO BANK. CLEAN ROCK FILL AND FLUMED CROSSINGS WILL BE UTILIZED WHERE IT IS NOT FEASIBLE TO UTILIZE TIMBER MATS. AS AN ALTERNATIVE, PORTABLE BRIDGES MAY BE USED INSTEAD FOR SMALL CROSSINGS. EQUIPMENT WILL NOT BE ALLOWED TO FORD FLOWING STREAMS DURING CONSTRUCTION ACTIVITIES. TEMPORARY ROAD CROSSINGS OF STREAMS MUST MAINTAIN FOR ADEQUATE FLOW DOWNSTREAM.

STREAM BANK STABILIZATION:
PERMANENT STABILIZATION SHALL OCCUR IMMEDIATELY UPON INSTALLATION, BACKFILLING, AND GRADING AT EACH STREAM CROSSING.

LEGEND

- EXISTING CULVERT
- STREAM
- US FOREST SERVICE (NATIONAL FOREST) LANDS
- AMST — AMST — APPALACHIAN NATIONAL SCENIC TRAIL
- EXISTING ROAD/TRAIL
- EXISTING PROPERTY LINE
- EXISTING STATE LINE
- OCSF — OCSF — EXISTING COUNTY LINE
- POND
- WETLAND
- PROPOSED LIMIT OF DISTURBANCE
- DOMN — DOMN — PROPOSED ACCESS ROAD CENTERLINE
- PROPOSED PIPELINE
- SF — SF — PROPOSED SILT FENCE (SEE NOTE 5)
- PROPOSED SUPER SILT FENCE (SEE DETAIL MVP-ES9.2)
- RFD — RFD — PROPOSED REINFORCED FILTRATION DEVICE (SEE DETAILS MVP-ES9, 9.1, 9.2, 9.3)
- EQT — ORANGE CONSTRUCTION SAFETY FENCE
- 12 — 12 — 12 — 12 — PROPOSED COMPOST FILTER SOCK (SEE DETAILS MVP-ES3, 3.1, 3.2)
- 18 — 18 — 18 — 18 — PROPOSED COMPOST FILTER SOCK (SEE DETAILS MVP-ES3, 3.1, 3.2)
- 24 — 24 — 24 — 24 — PROPOSED COMPOST FILTER SOCK (SEE DETAILS MVP-ES3, 3.1, 3.2)
- GRASS-LINED CHANNEL (SEE DETAIL MVP-ES39)
- PROPOSED CULVERT WITH OUTLET PROTECTION (SEE DETAILS MVP-ES7, 7.1)
- TIMBER MAT (SEE DETAIL MVP-ES37)
- STEEP SLOPE EROSION CONTROL (SEE NOTE 2)
- STEEP SLOPE AREAS (SEE NOTE 4)
- PROPOSED ROCK CONSTRUCTION ENTRANCE
- PROPOSED TRENCH BREAKER (SEE DETAIL MVP-20)
- PROPOSED BROAD BASED DIP (SEE DETAIL MVP-ES5)
- TEMPORARY ROW DIVERSION/WATER BAR (VADEQ STD & SPEC 3.11)
- PERMANENT SLOPE BREAKER/ROW DIVERSION/WATER BAR (SEE DETAILS MVP-17, ES38, AND SCHEDULE)

ACCESS ROAD LEGEND

1. ROCK CONSTRUCTION ENTRANCE (VADEQ STD & SPEC 3.02)
2. WETLAND CROSSING (DETAIL MVP-ES37)
3. STREAM CROSSING (VADEQ STD & SPEC 3.24)

NOTES:

1. TOPSOIL SEGREGATION TO BE CONDUCTED THROUGHOUT THE JEFFERSON NATIONAL FOREST.
2. FLEXTERRA, EARTHGUARD OR EQUIVALENT MAY BE USED AS A SUBSTITUTE TO EROSION CONTROL BLANKET AS DIRECTED BY MVP.
3. 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.
4. SLOPES OF 30° OR GREATER EXIST. CONSTRUCTION FOR STEEP SLOPES TO BE PERFORMED USING STEEP SLOPE TECHNIQUES IDENTIFIED IN THE DETAIL SHEETS. ALSO REFER TO THE SITE-SPECIFIC DESIGN OF STABILIZATION MEASURES IN SELECTED HIGH-HAZARD PORTIONS OF THE ROUTE OF THE PROPOSED MOUNTAIN VALLEY PIPLELINE PROJECT.
5. WHERE CONSTRUCTION CONDITIONS PRECLUDE THE USE OF DIVERSION DITCHES DUE TO SITE CONDITIONS THE CONTRACTOR WILL INSTALL SILT FENCE AT THE DIRECTION OF MVP.
6. IMPROVEMENTS TO PERMANENT AND TEMPORARY ACCESS ROADS WILL BE PERFORMED PER THE SITE SPECIFIC ACCESS ROAD DETAILS.
7. TEMPORARY ACCESS ROAD CROSSING OF STREAMS AND WETLANDS WILL UTILIZE TIMBERMATS. ANY PERMANENT ROAD CROSSINGS WILL BE CONDUCTED VIA CULVERTS.
8. ALL NON VMRC STREAM CROSSINGS WILL BE PERFORMED AS DESCRIBED IN THE STREAM CROSSING TABLE INCLUDED IN THIS PACKAGE.

REVISIONS:

NO.:	DATE:	DWN.:	CHK'D:	APP'D.:	DESCRIPTION:

Mountain Valley PIPELINE

JEFFERSON NATIONAL FOREST - E&S DETAILS
MOUNTAIN VALLEY PIPELINE PROJECT - H600 LINE
GILES COUNTY THROUGH MONTGOMERY COUNTY, VIRGINIA

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

TETRA TECH
complex world | CLEAR SOLUTIONS™
661 ANDERSEN DRIVE
FOSTER PLAZA 7
PITTSBURGH, PA 15220

GENERAL DETAIL SET

COMMONWEALTH OF VIRGINIA
DAVID J. WALLNER
Lic. No. 0402057593
PROFESSIONAL ENGINEER

DRAWN BY:	KAL
CHECKED BY:	HT
APPROVED BY:	RE
DATE:	10/26/2017
SCALE:	AS SHOWN
REVISION	
SHT. NO.	0.16JNF OF 13.06JNF

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