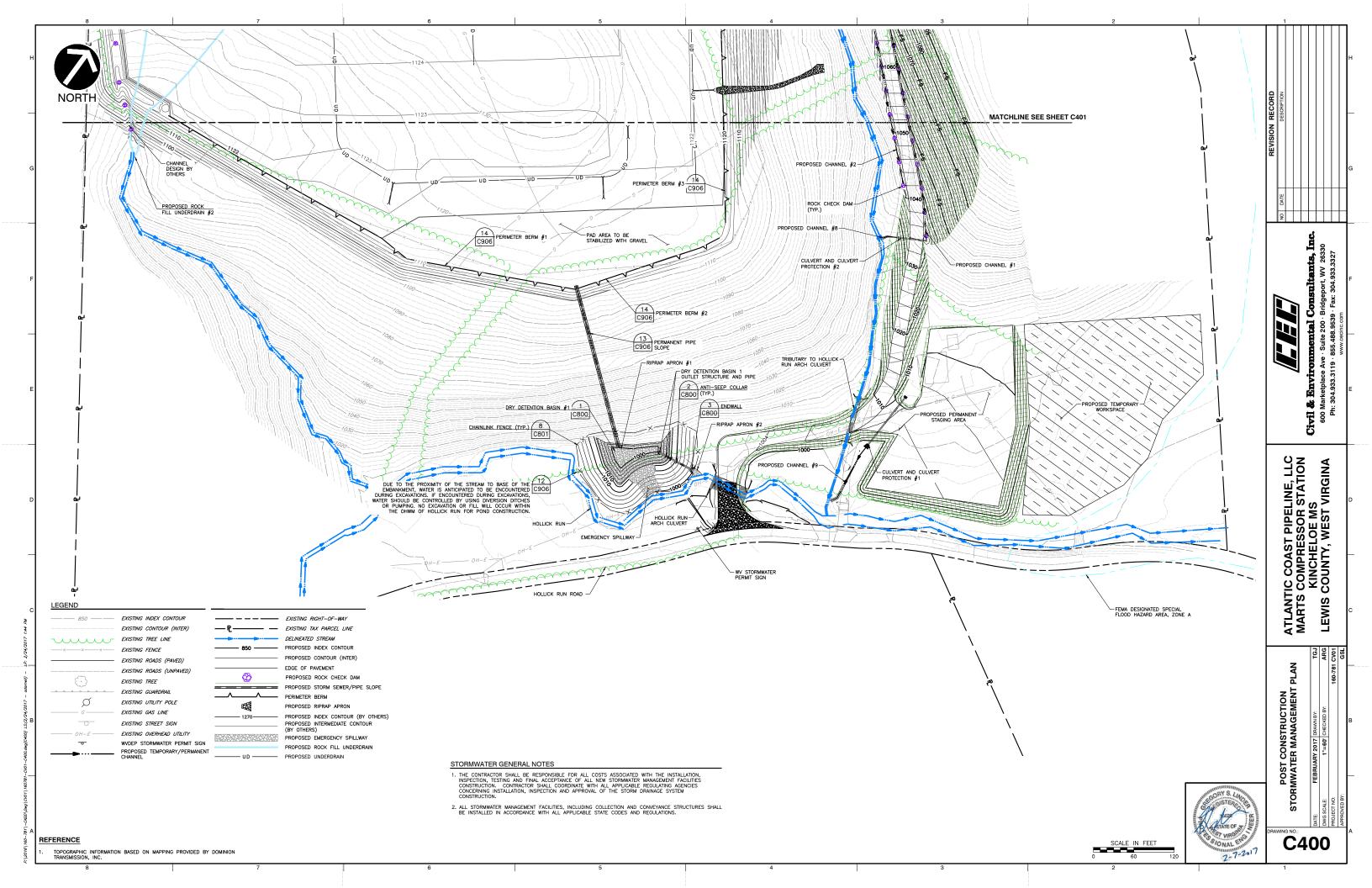
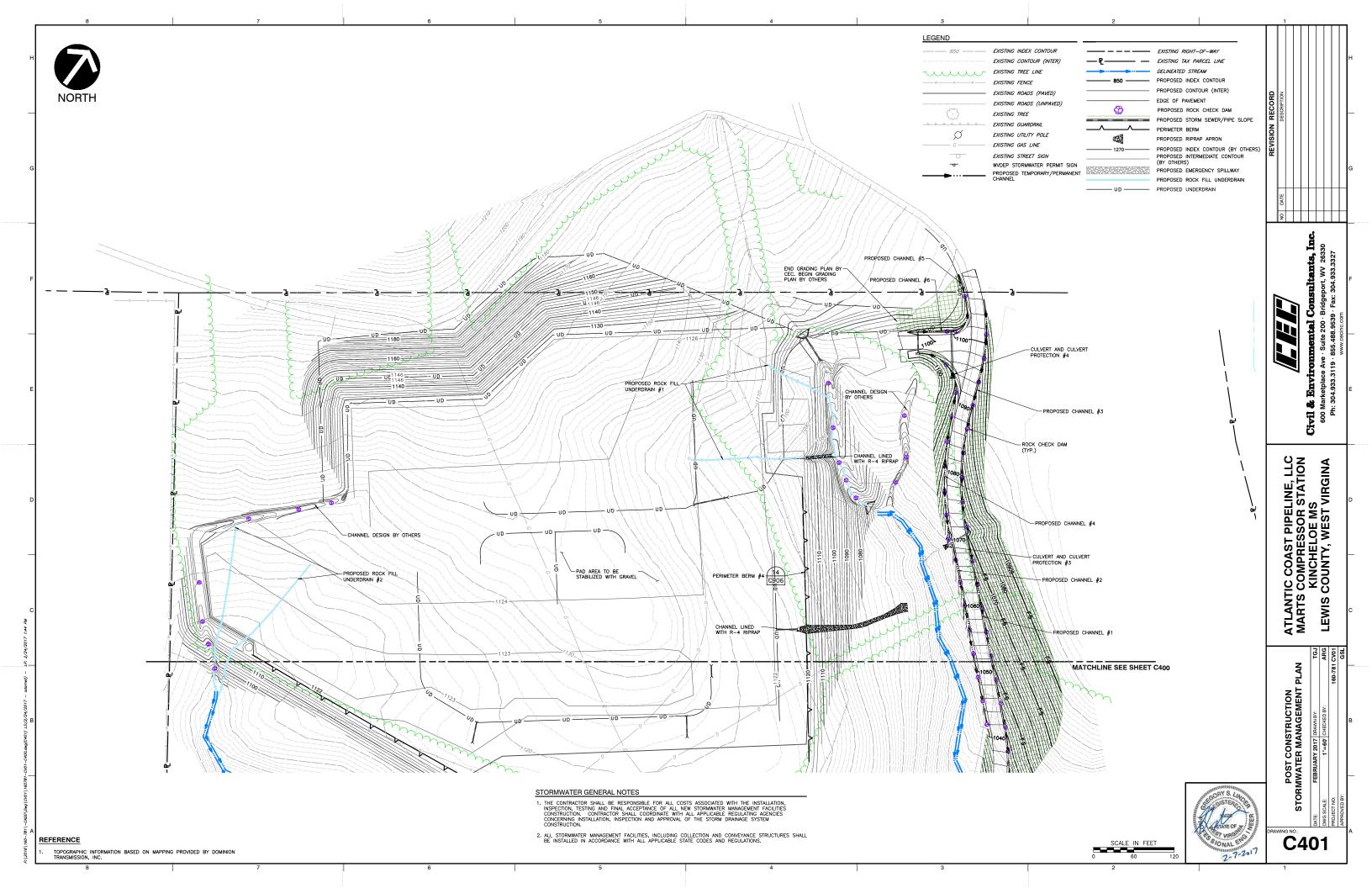
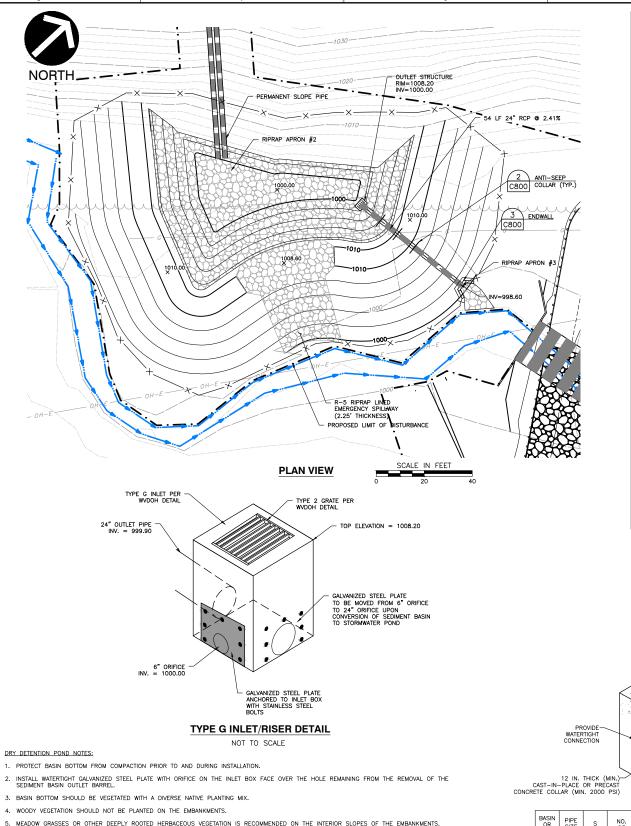
Drawing Set #2

Aboveground Facility Site Specific Plans

Combined M	arts CS and K	Kincheloe M&	&R Station	Plans



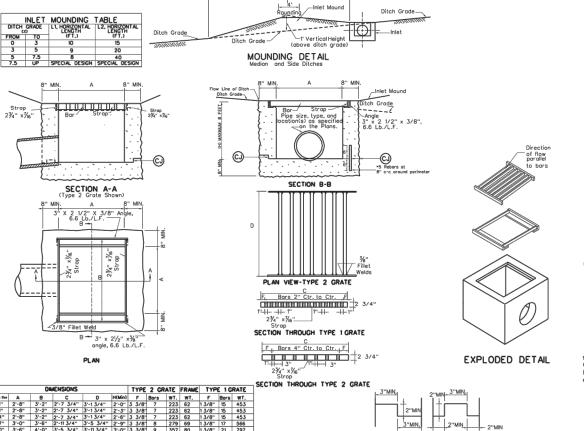




PIPE SIZE (IN) NO. TO FIRST COLLAR S (IN)

- 1. ALL COLLARS SHALL BE INSTALLED SO AS TO BE WATERTIGHT
- 2. COLLAR SIZE AND SPACING SHALL BE AS INDICATED WITHIN TABLE.

DETAIL 2 CONCRETE ANTI-SEEP COLLAR



arate and frame Bar Depth: 3"

PLAN VIEW

XXXXXIIII

W. Linkson

CONSTRUCTION DETAIL - SKEWED PIPE



The final installed top surface of inlet and grate shall be flush with adjacent finished surfaces such as povement, gutters, curbs, and sidewalks. Top of grate elevation, if shown on the plans, is for information only.

Construction may be cast-in place, precast in one or multiple sections, or any combination of cast-in-place and precast.

Type 2 Grate shall be used at all locations unless otherwise specified on the Plans. Type 1 Urban Grates shall be used only at specially designated locations as shown on the plans.

The Contractor, at his option, may omit use of the frame by forming a ledge in the concrete.

Special care shall be execised in forming the 2" wide concrete ledge to provide a smooth, even surface for supporting the grates if the shallow frame is not used no projections shall exist on the bearing surfaces of the ledge or the grates, and the grates shall seat on the ledge without rocking.

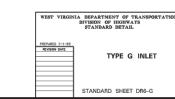
The Mounding Detail as shown is not required when an inlet is placed in a sag.

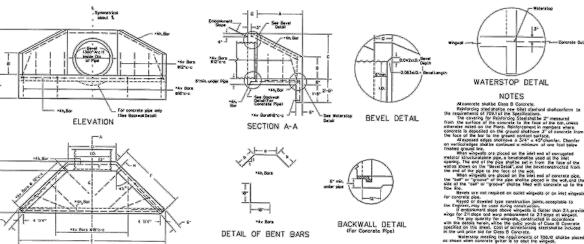
Optional construction joints labeled CJ"
may be roughened concrete, keyed or doweled as
per the typical details shown herein or as approved per the typical actains shown herein or as approved by the Engineer. Non shrink grout meeting the requirements of subsection 715.5 of the specifications may be used to a depth of 1/2" for leveling between precast sections. Thicker depths will be allowed as per the manufacturer's recommendations.

This inlet is to be installed in roadside or median ditches only. It is not to be placed adjacent to pavement or in the gutter pan of combination curb and gutter.

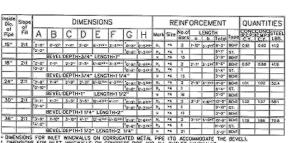
The minimum distance from the top of any pipe opening to any construction joint above the opening shall be four (4) inches.

The number and location of pipe openings shall be as shown in the plans. The contractor at no additional cost, shall be responsible for any temporary bracing required to transport precast inlet sections due to multiple openings.





CONSTRUCTION JOINT DETAILS



DETAIL 3 HEADWALL/ENDWALL DETAIL ALL MATERIALS, AND REINFORCEMENT FOR PIPE CULVERTS WITH WINGWALLS SHALL CONFORM TO WVDOH STANDARDS.



C800

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68 Civil

ARG VO1

CONSTRUCTION DETAILS

DRY DETENTION POND NOTES:

6. FERTILIZER AND PESTICIDES SHOULD NOT BE USED.

ALL BASIN STRUCTURES EXPECTED TO RECEIVE AND/OR TRAP DEBRIS AND SEDIMENT SHOULD BE INSPECTED FOR CLOGGING AND EXCESSIVE DEBRIS AND SEDIMENT ACCUMULATION AT LEAST FOUR TIMES PER YEAR, AS WELL AS AFTER EVERY STORM GREATER THAN 1 INCH.

SEDIMENT REMOVAL SHOULD BE CONDUCTED WHEN THE BASIN IS COMPLETELY DRY. SEDIMENT SHOULD BE DISPOSED OF PROPERLY AND ONCE SEDIMENT IS REMOVE, DISTURBED AREAS NEED TO BE IMMEDIATELY STABILIZED AND RE-VEGETATED.

3. MOWING AND/OR TRIMMING OF VEGETATION SHOULD BE PERFORMED AS NECESSARY TO SUSTAIN THE SYSTEM, BUT ALL DETRITUS SHOULD BE REMOVED FROM THE BASIN.

A. VEGETATED AREAS SHOULD BE INSPECTED ANNUALLY FOR EROSION.

B. VEGETATIOE AREAS SHOULD BE INSPECTED ANNUALLY FOR UNWANTED GROWTH OF EXOTIC/INVASIVE SPECIES.

C. VEGETATIVE COVER SHOULD BE MAINTAINED AT A MINIMUM OF 95%. IF VEGETATIVE

COVER HAS BEEN REDUCED BY 10%, VEGETATION SHOULD BE RE-ESTABLISHED.

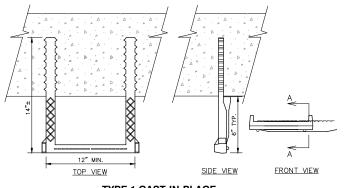
DETAIL 1 **DRY DETENTION POND NO. 1**

Table Note: Grate and frame weights are for information only and will increase if larger straps and bars are used The following substitutions in dimensions are acceptable for fabricating

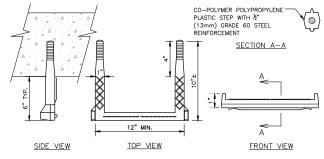
Strap Depth: 3"

Strap Thickness: 1/2"

(FT)



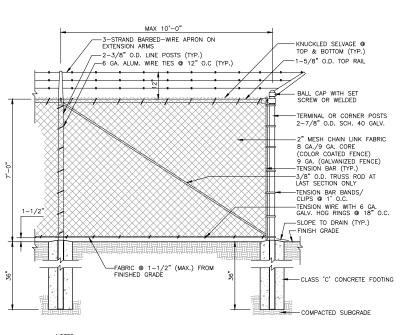
TYPE 1 CAST-IN-PLACE



TYPE 2 PRE-DRILLED HOLE

- 1. TYPICAL STEPS, SPACING AND MATERIAL AS PER ASTM DESIGNATION C-478, AASHTO M-199.
- 2. PLASTIC SHALL BE A CO-POLYMER POLYPROPYLENE MEETING THE REQUIREMENTS OUTLINED IN ASTM DESIGNATION D-4101 UNDER TYPE II, GRADE 49108.
- 3. STEEL REINFORCING BAR SHALL BE A ½" (13mm) DEFORMED BAR, GRADE 60 AND CONFORMING TO THE REQUIREMENTS OF ASTM DESIGNATION A-615.
- 4. USE TYPE 1 FOR CAST-IN-PLACE VAULTS. USE TYPE 2 FOR NEW PRECAST MANHOLES/INLETS OR WHEN ADDING STEPS TO EXISTING STRUCTURES.
- 5. ALL STEPS SHALL BE SET VERTICALLY AT 12" CENTER TO CENTER.

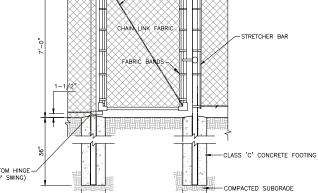
PLASTIC INLET STEP DETAIL NOT TO SCALE



1. FOOTING WIDTH TO BE (4)X POST WIDTH. MINIMUM DEPTH TO BE 36"

2. FENCE BY MASTER HALCO OR APPROVED EQUAL

DETAIL 6 CHAINLINK FENCE DETAIL



DETAIL 7 CHAINLINK FENCE MAN GATE DETAIL

PROPOSED PAVEMENT SECTION REFER TO PLANS PREPARED BY CEC FINAL GROUND SURFACE IN NON-PAVEMENT AREAS (ALLOW FOR MINIMUM 6" OF TOPSOIL) EXISTING PAVEMENT SECTION BACKFILL MATERIAL SHALL CONSIST OF APPROVED TRENCH SPOIL COMPACTED TO A MINIMUM OF 95% OF ITS MAXIMUM DRY DENSITY AND WITHIN ±3% OF ITS OPTIMUM MOISTURE CONTENT AS PER MODIFIED PROCTOR TEST PAVEMENT SUBBASE PREPARED SUBGRADE WYDOH CRUSHER RUN LIMESTONE AGGREGATE UNDER ALL PAVED AREAS HDPE STORM SEWER PIPE AASHTO NO. 57 STONE

- 1. ALL MATERIALS EXCAVATED DURING TRENCHING SHALL BE STOCKPILED A SUFFICIENT DISTANCE FROM ALL TRENCHES TO PREVENT SLIDES OR CAVE-INS.
- 2. ALL BACKFILL MATERIALS SHALL BE APPROVED BY THE OWNER'S ENGINEER OR THEIR REPRESENTATIVE BEFORE BEING PLACED. BACKFILL MATERIAL SHALL BE PLACED IN MAXIMUM 10" THICK LIFTS FOR FULL—SIZE COMPACTION EQUIPMENT OR 4"—6" THICK LIFTS IF USING WALK—BEHIND OR REMOTELY OPERATED COMPACTION EQUIPMENT.
- AASHTO NO. 57 CRUSHED LIMESTONE AGGREGATE SHALL SATISFY THE REQUIREMENTS OF AASHTO M43-05, STANDARD SPECIFICATION OF AGGREGATE FOR ROAD AND BRIDGE CONSTRUCTION. WYDOH CRUSHER RUN LIMESTONE AGGREGATE SHALL SATISFY THE REQUIREMENTS OF WYDOH DIVISION 400, STANDARD SPECIFICATIONS ROADS AND BRIDGES.
- 4. REFER TO TABLE 2 FOR TRENCH BACKFILL COMPACTION REQUIREMENTS.
- 5. THE CONTRACTOR SHALL CONSTRUCT TRENCHES AND PROVIDE ADEQUATE SHORING (WHERE NECESSARY) IN CONFORMANCE WITH THE LATEST OSHA REQUIREMENTS FOR CONSTRUCTION STANDARD FOR EXCAVATIONS (29 CFR PART 1926.650-.652 SUBPART P).
- 6. THE CONTRACTOR SHALL VERIFY THAT THE MINIMUM SPECIFIED PIPE COVER IS PROVIDED BETWEEN THE FINAL GROUND SURFACE AND TOP OF PIPE BEFORE LAYING PIPE. PROVIDE A MINIMUM OF 2 FEET OF COVER ABOVE ALL PIPES DURING CONSTRUCTION.
- 7. INCREASE TRENCH WIDTH AS NECESSARY TO ALLOW FOR PROPER COMPACTION OF BEDDING/BACKFILL.
- 8. RECOMMENDED MANUFACTURER: ADVANCED DRAINAGE SYSTEMS, INC. (ADS), OR APPROVED EQUAL.

DFTAIL 5 TYPICAL HDPE STORM SEWER TRENCH

-PAVEMENT SUBGRADE OR FINAL GROUND SURFACE. IN NON-PAVEMENT 2'-0" + O.D. MIN. AREAS ALLOW FOR MINIMUM 6" OF TOPSOIL. ALL TRENCHES UNDER BACKFILL MATERIAL SHALL CONSIST OF APPROVED TRENCH SPOIL PLACED IN MAXIMUM 8' THICK, LOOSE LIFTS AND COMPACTED TO A MINIMUM OF 98% OF ITS MAXIMUM DRY DENSITY AND WITHIN ±3% OF ITS OPTIMUM MOISTURE CONTENT. PAVEMENT/CONCRETE AREAS TO PROVIDE 100% AGGREGATE BACKFILL TO SUBBASE ELEVATION PIPE BEDDING MATERIAL SHALL CONSIST OF AASHTO #2A STONE PLACED IN MAXIMUM 6" THICK LOOSE LIFTS, AND COMPACTED TO AT LEAST 75% OF ITS STORM SEWER PIPE STORM SEWER PIPE

COVE	R REQUIREMENTS
UTILITY	MINIMUM COVER REQUIRED* *
STORM SEWER	2.0 FT.

AS MEASURED FROM TOP OF PIPE TO FINAL GROUND SURFACE

DETAIL 8

TYPICAL REINFORCED CONCRETE STORM SEWER TRENCH

NOT TO SCALE

TABLE 1: MINIMUM TRENCH WIDTHS PIPE DIAMETER (in.) TRENCH WIDTH (in.) 4-10 28 30 39 24 48 30 56 72 48 80 88

TABLE 2: BACKFILL MATERIAL AND

COMPACTION REQUIREMENTS					
	SOIL	CLASSIFICA	TIONS	MIN. MODIFIED	
DESCRIPTION	ASTM D2321	ASTM D487	AASHTO M43	PROCTOR DENSITY %	
GRADED OR CRUSHED STONE, GRAVEL	CLASS I	-	5 56	N/A SEE NOTES FOR VISUAL CRITERIA	
WELL-GRADED SAND, GRAVELS AND GRAVEL/SAND MIXTURES; POORLY GRADED SAND, GRAVELS AND GRAVEL/SAND MIXTURES; LITTLE TO NO FINES	CLASS II	GW GP SW SP	57 6	N/A SEE NOTES FOR VISUAL CRITERIA	
SILTY OR CLAYEY GRAVELS, GRAVEL/SAND/SILT OR GRAVEL AND CLAY MIXTURES; SILTY OR CLAYEY SANDS, SAND/CLAY OR SAND/SILT MIXTURES	CLASS III	GM, GC, SM, SC, ML, CL	N/A	95%	

- . ALL MATERIALS EXCAVATED FROM THE UTILITY TRENCH SHALL BE STOCKPILED A MINIMUM SUFFICIENT DISTANCE FROM ALL TRENCHES TO PREVENT SLIDES OR CAVE—INS.
- ALL BACKFILL MATERIALS SHALL BE APPROVED BY THE OWNER OR HIS REPRESENTATIVE BEFORE BEING PLACED.
- THE AASHTO NO. 2A STONE SHALL SATISFY THE REQUIREMENTS OF WVDOH STANDARD SPECIFICATIONS.
- THE MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENT FOR THE BACKFILL MATERIALS SHALL BE DETERMINED BY ASTM D698.
- THE GENERAL CONTRACTOR SHALL CONSTRUCT THE UTILITY TRENCHES AND PROVIDE ADEQUATE SHORING (WHERE NECESSARY) IN CONFORMANCE WITH THE LATEST REQUIREMENTS FOR CONSTRUCTION STANDARD FOR EXCAVATIONS (29 CFR PART 1926.650-.652 SUBPART P) PROMULGATED BY OSHA.
- 6. THE GENERAL CONTRACTOR SHALL VERIFY THAT THE MINIMUM SPECIFIED PIPE COVER IS PROVIDED BETWEEN THE FINAL GROUND SURFACE AND TOP OF PIPE BEFORE LAYING PIPE. PROVIDE A MINIMUM OF 2 FT. OF COVER ABOVE ALL PIPES DURING CONSTRUCTION.

DETAIL

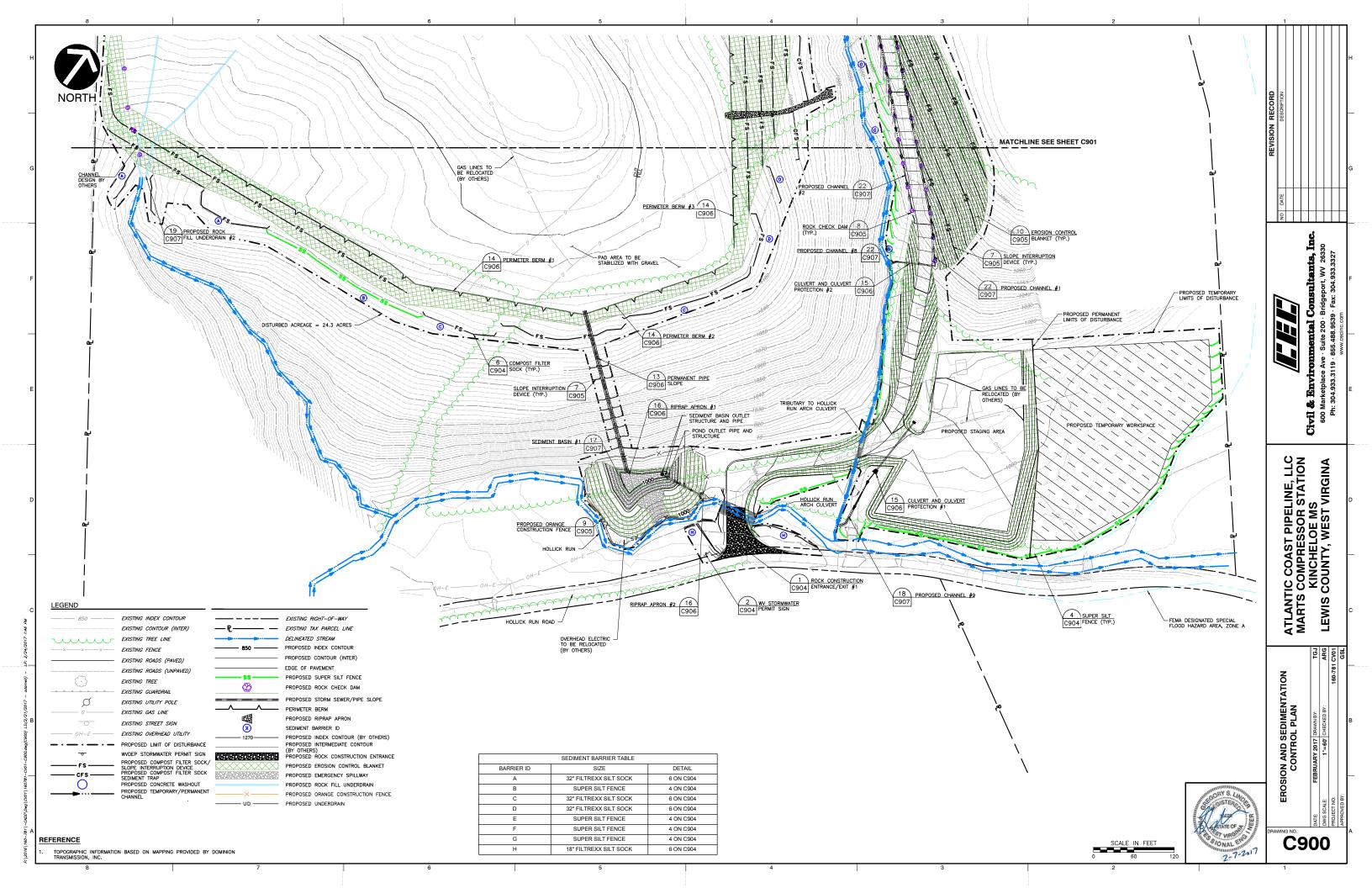
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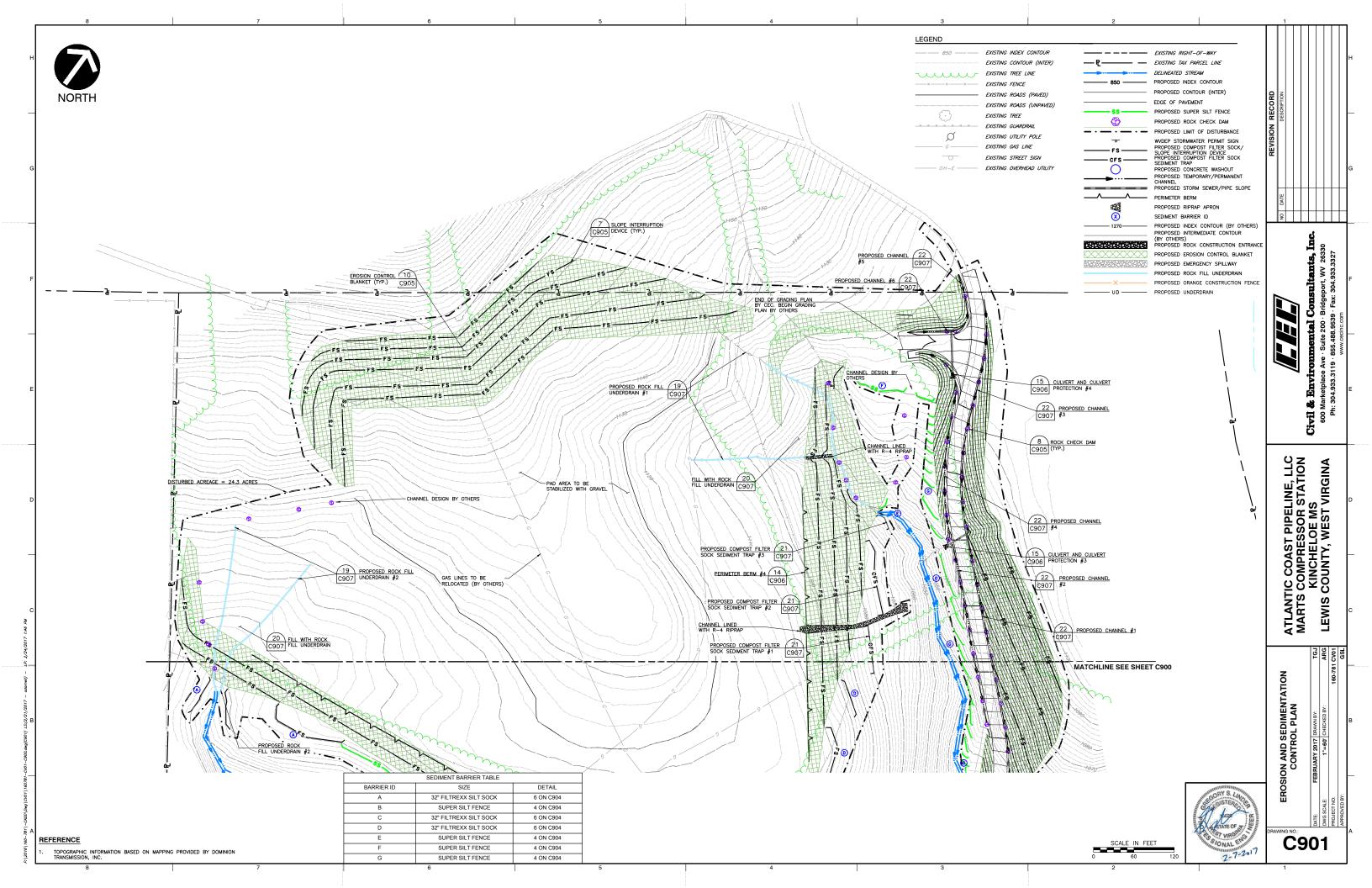
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CONSTRUCTION

ATLANTIC COAST PIPELINE, LLC MARTS COMPRESSOR STATION KINCHELOE MS LEWIS COUNTY, WEST VIRGINA

C801





GENERAL EROSION AND SEDIMENTATION CONTROL PLAN NOTES

- LOCATION OF EXISTING UTILITIES AND UNDERGROUND STRUCTURES SHOWN ARE APPROXIMATE AND THOSE SHOWN ARE NOT NECESSARILY ALL EXISTING UTILITIES AND STRUCTURES. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE THE EXACT LOCATION OF ALL ABOVE BELOW GROUND UTILITIES AND STRUCTURES PRIOR TO INITIATING CONSTRUCTION ACTIVITIES.
- A COPY OF THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) SHALL BE KEPT ON SITE AT ALL TIMES DURING WORKING HOURS AND
- ANY CHANGES TO THE SEDIMENT CONTROL PLAN SHALL BE APPROVED BY THE ENGINEER AND THE PROJECT OWNER. THE REVISED PLANS MUST MEET ALL CURRENT STATE SOIL EROSION AND SEDIMENTATION CONTROL STANDARDS.
- 4. ALL WORK SHALL BE DONE IN ACCORDANCE OF THE CURRENT ADDITION OF THE WYDEP EROSION AND SEDIMENT POLLUTION CONTROL STANDARDS BMP MANUAL.
- ADDITIONAL EROSION AND SEDIMENTATION CONTROL MEASURES MAY BE REQUIRED AS DEEMED NECESSARY BY THE WYDEP, OR THE OWNER, IN
 THE EVENT THAT ANY UNFORESEEN PROBLEMS ARISE DURING CONSTRUCTION.
- 6. THE CONTRACTOR SHALL INSTALL SOIL EROSION AND SEDIMENTATION CONTROL MEASURES PRIOR TO ANY SOIL DISTURBANCE, OR IN THEIR PROPER SEQUENCE, AND MAINTAIN THEM UNTIL PERMANENT STABILIZATION IS ESTABLISHED.
- THE CONTRACTOR SHALL VERIFY ALL EXISTING UTILITIES TO BE REMOVED, RELOCATED, AND/OR RAZED ARE DISCONNECTED PRIOR TO INITIATING EARTHMOVING ACTIVITIES.
- UPON TEMPORARY CESSATION OF AN EARTH DISTURBANCE ACTIVITY OR ANY STAGE OR PHASE OF AN ACTIVITY WHERE A CESSATION OF EARTH DISTURBANCE ACTIVITES WILL EXCEED 7 DAYS, THE SITE SHALL BE IMMEDIATELY SEEDED, MULCHED, OR OTHERWISE PROTECTED FROM ACCELERATED EROSION AND SEDIMENTATION PENDING FUTURE EARTH DISTURBANCE ACTIVITIES. IF THE SEASON PREVENTS THE ESTABLISHMENT OF A TEMPORARY COVER, STRAW SHALL BE APPLIED AT A RATE OF THREE (3) TONS PER ACRE OVER TOP EXPOSED AREAS.
- AT THE TIME WHEN THE SITE PREPARATION FOR PERMANENT VEGETATIVE STABILIZATION IS GOING TO BE ACCOMPLISHED, ANY SOIL THAT WILL NOT PROVIDE A SUITABLE ENVIRONMENT TO SUPPORT ADEQUATE VEGETATIVE GROUND COVER SHALL BE REMOVED OR TREATED BY THE CONTRACTOR TO MAKE IT SUITABLE TO SUPPORT VEGETATIVE GROUND COVER.
- 10. THE CONTRACTOR SHALL CONTROL DUST WITH WATER OR OTHER METHODS APPROVED BY THE WYDEP AND THE OWNER.
- 11. ALL BMPs SHALL BE INSPECTED AT LEAST ONCE EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5 INCHES PER 24-HOUR PERIOD. ANY REQUIRED REPAIRS OR MAINTENANCE SHOULD BE MADE IMMEDIATELY. INSPECTION REPORTS MUST BE READLY AVAILABLE FOR REVIEW BY WYDEP, AT THEIR REQUEST.
- 12. THE CONTRACTOR SHALL PROVIDE THE LOCATION AND ANY APPLICABLE PERMIT NUMBERS OF ALL THE OFF SITE DISPOSAL AND BORROW SITES THAT WILL BE UTILIZED DURING CONSTRUCTION TO THE WYDEP PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL ALSO IDENTIFY THE EROSION AND SEDIMENTATION CONTROL MEASURES, WHICH WILL BE IMPLEMENTED AT THE DISPOSAL AND/OR BORROW SITES. IF THE DISPOSAL AND/OR BORROW SITES ARE NOT PERMITTED, A SEDIMENT CONTROL PLAN MUST BE APPROVED BY THE OWNER PRIOR TO THEIR USE.
- 13. THE CONTRACTOR SHALL SUBMIT A PREPAREDNESS, PREVENTION AND CONTINGENCY (PPC) PLAN TO THE OWNER PRIOR TO CONSTRUCTION IF CHEMICALS, SOLVENTS OR OTHER HAZARDOUS WASTES OR MATERIALS WITH THE POTENTIAL TO CAUSE ACCIDENTAL POLLUTION DURING EARTHMOVING OR OTHER CONSTRUCTION ACTIVITIES ARE STORED OR USED. ON SITE.
- 14. THE CONTRACTOR SHALL CONSTRUCT A BERM AROUND AREAS WHERE HYDRAULIC FLUID AND DIESEL FUEL WILL BE STORED DURING CONSTRUCTION TO SERVE AS A CONTAINMENT AREA FOR THE CONTROL OF POSSIBLE SPILLS. ANY SPILL WITHIN THE CONTAINMENT AREA SHALL BE IMMEDIATELY CLEANED. TELEPHONE NUMBERS OF EMERGENCY RESPONSE TEAMS ARE TO BE KEPT ON SITE, AND THEY ARE TO BE NOTIFIED IN THE CASE OF A SPILL.
- 15. DIESEL FUEL STORAGE CONTAINERS SHALL BE LOCATED WITHIN AN IMPERVIOUS SECONDARY CONTAINMENT.
- 16. PETROLEUM PRODUCT STORAGE SHALL MAINTAIN A MINIMUM 100' SETBACK FROM STREAMS/WETLAND BOUNDARIES.
- 17. PROPERTIES AND WATERWAY DOWNSTREAM FROM DEVELOPMENT SITES SHALL BE PROTECTED FROM SEDIMENT DEPOSITION, EROSION AND DAMAGE DUE TO INCREASES IN VOLUM, VELOICTY AND PEAK FLOW RATE OF STORMWATER RUNOFF.
- 18. ALL MEASURES USED TO PROTECT PROPERTIES AND WATERWAYS SHALL BE EMPLOYED IN A MANNER WHICH MINIMIZES IMPACTS ON THE PHYSICAL, CHEMICAL, AND BIOLOGICAL INTEGRITY OF RIVERS, STREAMS AND OTHER WATERS OF THE STATE.

TEMPORARY CONTROL MEASURES

A. ROCK CONSTRUCTION ENTRANCE/EXIT

ROCK CONSTRUCTION ENTRANCES WILL BE PROVIDED AT THE LOCATIONS SHOWN ON THE PLANS AND IN ACCORDANCE WITH THE STANDARD DETAIL TO REMOVE SEDIMENT/MUD FROM VEHICLES BEFORE ENTERING ONTO STATE AND COUNTY ROADS.

- TALLATION:

 THE ROCK CONSTRUCTION ENTRANCE IS TO BE A MINIMUM OF SEVENTY FEET (70') IN LENGTH AND TWELVE FEET (12') IN WIDTH, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. EXCAVATE THE AREA OF THE ROCK CONSTRUCTION ENTRANCE A MINIMUM OF SIX INCHES (6').

 PLACE A LAYER OF SEPARATION GEOTEXTILE ALONG THE FULL LENGTH AND WIDTH OF THE ROCK CONSTRUCTION ENTRANCE.

 PLACE SIX INCHES (6') OF ASSITO #1 STONE ACROSS THE FULL LENGTH AND WIDTH OF THE ROCK CONSTRUCTION ENTRANCE. STONE DEPTH IS TO BE A MINIMUM OF SIX INCHES (6') THICK.

TOPSOIL REQUIRED FOR THE ESTABLISHMENT OF VEGETATION SHALL BE STOCKPILED IN THE AMOUNT NECESSARY TO COMPLETE THE FINISH GRADING OF ALL EXPOSED AREAS THAT ARE TO BE STABILIZED BY VEGETATION. THERE WILL BE A DESIGNATED TOPSOIL STOCKPILE LOCATION(S) ON THE PROPERTY. THE LOCATION(S) SHALL BE AS APPROXIMATELY SHOWN ON THE EXES SITE PLANS. LI TOPSOIL FROM THE SITE SHALL BE STOCKPILED IN THE LOCATION(S) UNTIL IT IS PLACED ON PERMANENT SLOPES OR REMOVED FROM THE SITE. STOCKPILE HEIGHTS SHALL NOT EXCEED 35 FEET. STOCKPILE SLOPES SHALL BE 31-1V OR FLATTER. SURROUND THE STOCKPILE WITH COMPOST FILTER SOCK TO PREVENT SEDIMENT—LADEN RUNOFF FROM ENTERINO NATURAL DRAINAGE PATHWAYS.

TOPSOIL STOCKPILES SHALL NOT EXCEED 35 FEET IN HEIGHT. SOIL STOCKPILE SLOPES SHALL NOT EXCEED 3H:1V. INSTALL COMPOST FILTER SOCK AS SHOWN ON THE PLANS.

BELTED SILT RETENTION FENCE IS USED TO CONTROL RUNOFF FROM DISTURBED AREAS WHEN IT IS IN THE FORM OF SHEET FLOW, AND THE DISCHARGE IS TO A STABLE AREA.

- INSTALLATION:

 1. EXCAVATE A 8-INCH TRENCH, MINIMIZING THE DISTURBANCE ON THE DOWNSLOPE SIDE. THE BOTTOM OF THE TRENCH SHOULD BE AT LEVEL GRADE. MAXIMUM DEVIATION FROM LEVEL GRADE SHOULD BE 5%, AND NOT EXTEND FOR MORE THAN 20 FEET.

 2. INSTALL POSTS AT 6-FOOT MAXIMUM SPACING. POLES SHOULD BE DRIVEN A MINIMUM OF 22 INCHES BELOW THE GROUND SURFACE AND EXTEND A MINIMUM OF 26 INCHES ABOVE THE GROUND SURFACE, AND COMPACTED.

 3. THE FABRIC TOW SHOULD BE PLACED IN THE BOTTOM OF THE TRENCH, BACKFILLED, AND COMPACTED.

 4. BOTH ENDS OF EACH FENCE SECTION SHOULD BE EXTENDED AT LEAST 8 FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO ALLOW FOR POOLING OF WATER.

D. SUPER SILT FENCE

SUPER SILT FENCE IS USED TO CONTROL RUNOFF FROM DISTURBED AREAS WHEN IT IS IN THE FORM OF SHEET FLOW, AND THE DISCHARGE IS TO A STABLE AREA.

- ALLATION:

 EXCAVATE A 12-INCH TRENCH, MINIMIZING THE DISTURBANCE ON THE DOWNSLOPE SIDE. THE BOTTOM OF THE TRENCH SHOULD BE AT LEVEL GRADE. MAXIMUM DEVIATION FROM LEVEL GRADE SHOULD BE 5%, AND NOT EXTEND FOR MORE THAN 20 FEET.

 INSTALL A CHAIN LINK FENCE ON THE DOWNSLOPE SIDE OF THE TRENCH WITH THE FENCE ON THE UPSLOPE SIDE OF THE POLES. POLES SHOULD BE 2.5-INCH DIAMETER GALVANIZED OR ALLMINUM POSTS, OR 4-INCH BY 1-INCH PRESSURE TREATED POSTS, SET AT 10-FOOT MAXIMUM SPACING. POLES SHOULD BE DRIVEN A MINIMUM OF 36 INCHES BELOW THE GROUND SURFACE AND EXTENDED AN EXTEND A MINIMUM OF 36 INCHES BELOW THE GROUND SURFACE, AND EXTENDED AN MINIMUM OF 36 INCHES BELOW THE GROUND SURFACE, AND SUBJECT AND SET AT 10-FOOT SHOULD BE EXTENDED A MINIMUM OF 36 INCHES BELOW THE GROUND SURFACE, AND BE FASTENED SECURELY TO THE CHAIN LINK FENCE WITH THE FASTENCE OF THE STANDARD SECURE TO THE FENCE WITH THE FASTENCE OF FA

COMPOST FILTER SOCK SHALL BE INSTALLED IN THE LOCATIONS SHOWN ON PLANS AND IN ACCORDANCE WITH THE STANDARD DETAIL PROVIDED.

- FILTER SOCK SHALL BE INSTALLED PARALLEL TO THE BASE OF THE SLOPE OR OTHER DISTURBED AREA AND PARALLEL TO THE
- STAKES SHALL BE INSTALLED THROUGH THE MIDDLE OF THE COMPOST FILTER SOCK ON 10 FOOT CENTERS, USING 2-INCH BY 2-INCH WOODEN
- 2. STAKES STAKES.

 3. STAKING DEPTH FOR SAND AND SIT LOAMS SHALL BE 12-INCH, AND 8-INCH FOR CLAY SOILS. REFER TO THE SOILS MAP PROVIDED IN APPENDIX GO IT THE SEDIMENT CONTROL PLAN.

 4. BACKFILL WITH LOOSE COMPOST ALONG THE UPSLOPE SIDE OF THE COMPOST FILTER SOCK, FILLING THE SEAM BETWEEN THE SOIL SURFACE AND THE DEVICE, IMPROVING FILTRATION AND SEDIMENT RETENTION.

F. ROCK CHECK DAMS:

ROCK CHECK DAMS ARE TO BE INSTALLED ACROSS A CHANNEL TO REDUCE THE VELOCITY OF STORMWATER FLOWS, THEREBY REDUCING EROSION OF THE CHANNEL AND TRAPPING SEDIMENT.

INSTALLATION: ROCK CHECK DAMS SHALL BE INSTALLED ACROSS THE CHANNELS IN THE LOCATIONS SHOWN ON THE PLANS AND PER THE STANDARD DETAIL.

G. TEMPORARY CONCRETE WASHOUT FACILITY

CONCRETE WASHOUTS ARE USED TO CONTAIN ALL WASHOUT WATER FROM CONCRETE CONSTRUCTION ACTIVITIES.

INSTALLATION:
INSTALL CONCRETE WASHOUTS IN ACCORDANCE WITH THE STANDARD DETAIL NEAR CONCRETE CONSTRUCTION ACTIVITIES AS DETERMINED IN THE FIELD.
CLEARLY MARK THE CONCRETE WASHOUT BY INSTALLING A SIGN LOCATED WITHIN 30' OF THE WASHOUT.

NORTH AMERICAN GREEN S150BN, OR EQUIVALENT, EROSION CONTROL BLANKET WILL BE USED TO PREVENT EROSION FROM THE GRADING OPERATIONS AND INSTALLED ON PERMANENT SLOPES. THE EROSION CONTROL BLANKETS WILL PROVIDE EROSION PROTECTION AND ASSIST WITH VEGETATION ESTABLISHMENT FOR UP TO 12 MONTHS. AFTER A 12 MONTH PERIOD THE BLANKETS WILL BIODEGRADE LEAVING A STABLE VEGETATED ROOT STRUCTURE.

- BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE EROSION CONTROL BLANKET IN A 6-INCH BY 6-INCH WIDE TRENCH WITH APPROXIMATELY 12 INCHES OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES APPROXIMATELY 12 INCHES APART IN THE BOTTOM OF THE TRENCH. BLACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12 INCH PORTION OF THE EROSION CONTROL BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES SPACED APPROXIMATELY 12 INCHES APART ACROSS THE WIDTH OF THE BLANKET.
- ROLL THE EROSION CONTROL BLANKET DOWN THE SLOPE. BLANKET WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES IN APPROPRIATE LOCATIONS AS RECOMMENDED BY THI
- 4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2 TO 5 INCH OVERLAP OR AS RECOMMENDED BY MANUFACTURER.

GEOTEXTILE FILTER BAGS SHALL BE USED TO FILTER SEDIMENT LADEN WATER PUMPED FROM DISTURBED AREAS, TRENCHES, ETC. PRIOR TO

INSTALLATION:
FILTER BAGS SHALL BE MADE FROM NON-WOVEN GEOTEXTILE MATERIAL SEWN WITH HIGH-STRENGTH, DOUBLE-STITCHED "J"-TYPE SEAMS. THEY
SHALL BE CAPABLE OF TRAPPING PARTICLES LARGER THAN 150 MICRONS.

BAGS SHALL BE LOCATED IN WELL VEGETATED (GRASSY) AREAS AND DISCHARGE ONTO STABLE EROSION RESISTANT AREAS. WHERE THIS IS NOT POSSIBLE, A GEOTEXTILE FLOW PATH SHALL BE PROVIDED. BAGS SHALL NOT BE PLACED ON SLOPES GREATER THAN 5%. THE PUMP DISCHARGE HOSE SHALL BE INSERTED INTO THE BAGS IN THE WANNER SPECIFIED BY THE MANUPACTURER AND SECURELY CLAMPED. THE PUMPING RATE SHALL BE NO GREATER THAN 750 GPM OR ONE—HALF THE MAXIMUM SPECIFIED BY THE MANUFACTURER, WHICHEVER IS LESS. PUMP INTAKES SHALL BE FLOATING AND SCREENED.

J. PERMANENT SLOPE PIPE: PERMANENT SLOPE PIPE SHALL BE INSTALLED IN THE LOCATIONS SHOWN ON THE PLANS AND IN ACCORDANCE WITH THE STANDARD OFTAIL

INSTALLATION:

1. THE PERMANENT SLOPE PIPE SHALL HAVE A SLOPE OF 3 PERCENT OR STEEPER.

2. THE TOP OF THE ACCESS ROAD SHALL BE AT LEAST 12" ABOVE THE TOP OF PIPE.

3. THE PERMANENT SLOPE PIPE SHALL BE SECURELY ANCHORED TO THE SLOPE BY STAKING AT THE GROMMETS PROVIDED OR WITH STRAPS MADE
SPECIFICALLY FOR THIS PURPOSE. SPACING FOR THE ANCHORS SHALL BE AS PROVIDED BY THE MANUFACTURER'S SPECIFICATION, BUT NO LESS

TEMPORARY CONTROL MEASURES (CONTINUED)

THAN 10 FEET. IN NO CASE SHALL LESS THAN TWO (2) ANCHORS BE PROVIDED EQUALLY SPACED ALONG THE LENGTH OF THE PIPE. TAMP SOIL UNDER AND AROUND THE ENTRANCE SECTION IN LIFTS NOT TO EXCEED 6 INCHES.

4. ALL PIPE CONNECTIONS SHALL BE WATERTICHT.

PERIMETER BERMS WERE DESIGNED IN ACCORDANCE WITH THE GENERAL DESIGN CRITERIA OF THE WYDEP MANUAL. PERIMETER BERMS ARE SHOWN ON THE E&S DRAWINGS AS GENERAL GUIDANCE AS TO THE APPROXIMATE LOCATION OF INSTALLATION.

INSTALLATION: THE PERIMETER BERMS SHALL BE INSTALLED AROUND THE TOP OF FILL SLOPES AFTER EACH DAYS CONSTRUCTION OR DURING CONSTRUCTION IF RUNOFF EVENT OF ONE-HALF INCH $(1/2^n)$ OR Greater is expected. Perimeter Berms Shall be directed to Permanent Slope Pipes.

INSTALLATION:
THE SEDIMENT BASINS MUST BE CONSTRUCTED IN ACCORDANCE WITH THE E&S PLAN GRADING, THE STANDARD DETAILS, AND PER THE GUIDANCE PROVIDED IN THE STAGING OF EARTHMOVING ACTIVITIES.

BASIN HAS BEEN DEWATERED, REMOVE ANY ACCUMULATED SEDIMENT, AND STABILIZE DISTURBED AREAS INSIDE THE BASIN. REMOVE THE TEMPORAR' RISER, AND INSTALL THE PROPOSED OUTLET HEADWALL.

M. COMPOST FILTER SOCK SEDIMENT TRAP: COMPOST FILTER SOCK SEDIMENT TRAPS SHALL BE INSTALLED IN THE LOCATIONS SHOW ON THE PLAN AND IN ACCORDANCE WITH THE STANDARD DETAIL PROVIDED.

INSTALLATION:

- COMPOST FILTER SOCK SEDIMENT TRAP SHALL BE INSTALLED PARALLEL TO THE BASE OF THE SLOPE OR OTHER DISTURBED AREA AND PARALLEL TO THE CONTOUR.
 STAKES SHALL BE INSTALLED ON 10 FOOT CENTER, USING 2-INCH BY 2-INCH BY 3-FOOT WOODEN STAKES.
 STAKES IN THE TWO BOTTOM FILTER SOCKS SHALL BE INSTALLED PERPENDICULAR TO THE GROUND AND AT A MINIMUM DEPTH OF 18 INCH INTO THE CROUND.

- THE GROUND.

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 THE GROUND.

 THE STAKES SHALL BE INSTALLED THROUGH TOP FILTER SOCKS AT AN ANGLE THAT ALLOWS EACH STAKE TO GO THROUGH ONE OF THE BOTTOM SOCKS AND INTO THE GROUND A MINIMUM DEPTH OF 18 INCHES.

 LOOSE COMPOST MAY BE BACKFILLED ALONG THE UPSLOPE SIDE OF THE SILT SOCK, FILLING THE SEAM BETWEEN THE SOIL SURFACE AND THE DEVICE, IMPROVING FILTRATION AND SEDIMENT RETENTION.

FERTILIZING, SEEDING, AND MULCHING WILL BE USED AS A TEMPORARY E&S CONTROL MEASURE ON ALL DISTURBED AREAS AS NEEDED. EXPC SOILS NOT SUBJECT TO CONSTRUCTION TRAFFIC SHALL NOT REMAIN UNSEEDED OR COVERED BY MULCH FOR MORE THAN 14 DAYS, INCLUDING STOCKPILE SOIL MATERIALS. REFER TO THE SEEDING MIXTURES PROVIDED ON THE DRAWINGS FOR TEMPORARY MIXTURES.

INSTALLATION:
THE CONTRACTOR SHALL VEGETATE ALL DISTURBED AREAS AT THE EARLIEST APPROPRIATE TIMES FOR ESTABLISHMENT OF TEMPORARY OR PERMANENT
SEED MIXTURES, RESPECTIVELY. WHEN SITE DEVELOPMENT STAGING OR SEASON WILL NOT PERMIT TIMELY SOWING OF THE PERMANENT SEED
MIXTURE(S), PREPARE SOILS (FERTILIZERS AND LIME) AS FOR PERMANENT SEEDING, SEED WITH TEMPORARY SEED MIXTURE AND MULCH, AND THEN
OVERSOW THE PERENNIAL SEED MIXTURE INTO THE STUBBLE OF TEMPORARY VEGETATION AT THE NEXT APPROPRIATE SEEDING SEASON PER ITEM 6 BELOW. UNLESS DIRECTED OTHERWISE, VEGETATION SHALL BE ESTABLISHED AS FOLLOWS:

- SOIL PLACEMENT: SOIL TO RECEIVE SEED SHALL BE PLACED TO THE DESIGN THICKNESS AND GRADE AND TRACKED AND ROLLED INTO PLACE IN A MANNER THAT WILL NOT CAUSE EXCESSIVE COMPACTION. IF SOIL DENSITY IS VERIFIED IN THE FIELD, SOIL SHALL BE COMPACTED TO A DRY DENSITY BETWEEN 75 AND 100 POUNDS PER CUBIC FOOT, AFTER CORRECTION TO ZERO PERCENT COARSE FRAGMENT (PARTICLES LARGER THAN 2 MILLIMETERS) CONTENT.
- TEMPORARY SEEDING THAT WILL NOT BE FOLLOWED BY PERMANENT SEEDING, SUCH AS TOPSOIL STOCKPILES OR INTERIM GRADING PATTERNS DO NOT REQUIRE THE APPLICATION OF LIME OR FERTILIZER.
- SEEDING: EVENLY APPLY THE TEMPORARY SEED MIXTURE USING A BROADCAST SEEDER, DRILL, CULTI-PACKER SEEDER, OR HYDROSEEDER
- SEEDING: EVENLY APPLY THE TEMPORARY SEED MIXTURE USING A BROADCAST SEEDER, DRILL, CULTI-PACKER SEEDER, OR HYDROSEEDER.
 SMALL GRAINS SHALL BE PLANTED NO MORE THAN 1.5" DEEP. SMALL SEEDS, SUCH AS ANNUAL RYE, SHALL BE PLANTED NO MORE THAN
 0.25° DEEP. OTHER GRASSES AND LEGUMES SHALL BE PLANTED NO MORE THAN 0.50° DEEP.
 MULCHING AND TACKING: AFTER SEEDING, PROMPTLY MULCH USING STRAW APPLIED AT A RATE OF 6,000 LBS/ACRE OR 90LBS/1,000 SQUARE
 FEET OR AS NECESSARY TO OBTAIN 70% MULCH GROUND COVER. DO NOT USE HAY AS A STRAW SUBSTITUTE. STRAW SHALL BE ADDED WHEN
 TEMPORARY SEEDING IS CONDUCTED IN FALL FOR WINTER COVER AND DURING HOT AND DRY SUMMER MONTHS.

IN SOME LOCATIONS SHOWN ON THE DRAWINGS, SUCH AS SLOPES STEEPER THAN 3:1 (H:V), EROSION CONTROL BLANKET OR TURF REINFORCEMENT MAT (TRM) MAY BE THE ONLY PERMISSIBLE MULCHING OPTION. INSTALL EROSION CONTROL BLANKETS/TRM PER MANUFACTURER'S INSTRUCTIONS. STAPLE BLANKET/TRM IN PLACE USING 6—INCH (MINIMUM) SOD STAPLES IN ROWS AT THE EDGES AND CENTERLINE OF THE BLANKET AND ON 24—INCH OR CLOSER CENTERS.

OVER-SEEDING AND RE-SEEDING: WHEN THE SITE DEVELOPMENT STAGING OR SEASON WILL NOT PERMIT TIMELY SOWING OF THE PERMANENT SEED MIXTURE(S), PREPARE SOILS (FERTILIZERS AND LIME) AS FOR PERMANENT SEEDING, THEN SEED WITH TEMPORARY SEED MIXTURE AND MULCH. OVERSOW THE PERENNIAL SEED MIXTURE INTO THE STUBBLE OF TEMPORARY VEGETATION AT THE NEXT APPROPRIATE SEEDING SEASON.

IF PERENNIAL SEED IS BEING SOWN INTO THE STUBBLE OF ACTIVELY GROWING TEMPORARY VEGETATION, MOW THE TEMPORARY VEGETATION TO REDUCE COMPETITION EITHER BEFORE OR IMMEDIATELY AFTER SOWING THE PERMANENT SEED.

- STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OF PERMANENTLY CEASED, BUT IN NO CASE MORE THAN SEVEN DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS PERMANENTLY CEASED.
- WHERE THE INITIATION OF STABILIZATION MEASURES BY THE SEVENTH DAY AFTER CONSTRUCTION ACTIVITY TEMPORARILY OR PERMANENTLY CEASES IS PRECLUDED BY SNOW COVER, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS CONDITIONS ALLOW.
- WHERE CONSTRUCTION ACTIVITY WILL RESUME ON A PORTION OF THE SITE WITHIN 14 DAYS FROM WHEN ACTIVITIES CEASED, (E.G., THE TOTAL WHERE CONSTRUCTION ACTIVITY WILL RESUME ON A PORTION OF THE STITE STHEM 14 DAYS FROM WHEN ACTIVITIES CEASED, (E.G., THE TOTAL TIME PERIOD THAT CONSTRUCTION ACTIVITIES DO NOT HAVE TO BE INITIATED ON THAT PORTION OF THE SITE BY THE SEVENTH DAY AFTER CONSTRUCTION ACTIVITIES HAVE TEMPORARYLY CEASED. APPLY TEMPORARY SEEDING TO EXPOSED SOIL SURFACES WITHIN 7 DAYS IF SOILS ARE NOT TO BE FINE—GRADED FOR A PERIOD OF 14 DAYS. SUCH AREAS INCLUDE DENUDED AREAS, SOIL STOCKPILES, TEMPORARY ROAD BANKS, ETC. REFER TO THE SEEDING MIXTURES PROVIDED ON THE DRAWINGS FOR TEMPORARY MIXTURES.

CONSTRUCTION WASTES ARE REFUSE MATERIALS THAT ARE EXISTING ON—SITE OR GENERATED DURING THE COURSE OF CONSTRUCTION AND INCLUDE, BUT ARE NOT LIMITED TO PAPER. PLASTIC, RUBBER, WOOD, TEXTILE, AND METAL PRODUCTS.

INSTALLATION:
THE CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING WASTE RECYCLING/DISPOSAL AREAS ON THE PLANS, ONCE THEY HAVE BEEN DETERMINED.
WASTE DISPOSAL STOCKPILES SHALL BE PLACED UPSTREAM OF TEMPORARY E&S CONTROL MEASURES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR
OBTAINING ALL WASTE RECYCLING/DISPOSAL PERMITS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES.

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ROCK APRONS WILL BE USED AT STORM SEWER OUTFALLS TO DISSIPATE THE VELOCITY AND HELP PREVENT EROSION/SCOUR OF EXISTING DRAINAGE WAYS AND FEATURES

- INSTALLATION:
 1. EXCAVATE A TRENCH THE FULL LENGTH, WIDTH, AND THICKNESS OF THE APRON DIMENSIONS AS SHOWN ON THE
- DETAIL.
 PLACE A LAYER OF SEPARATION GEOTEXTILE WITHIN THE EXCAVATED AREA, TRENCHING IN ALL SIDES.
 PLACE RIPRAP THE APPROPRIATE THICKNESS AS SHOWN ON THE DETAIL.

CHANNELS WILL BE USED TO CONVEY STORMWATER RUNOFF IN A STABLE MANNER. THE CHANNEL WILL BE LINED WITH THE SPECIFIED RIPRAP OR NORTH AMERICAN GREEN (NAG) EROSION CONTROL BLANKET, OR EQUIVALENT, AS SHOWN ON THE PLANS.

C. PERMANENT VEGETATIVE STABILIZATION

FERTILIZING, SEEDING AND MULCHING, WILL BE USED AS A PERMANENT E&S CONTROL MEASURE ON ALL DISTURBED AREAS. REFER TO THE PERMANENT SEED MIXTURES PROVIDED ON THE DRAWINGS.

INSTALLATION:
FERTILIZING, SEEDING, AND MULCHING WILL BE USED AS TEMPORARY/PERMANENT E&S CONTROL MEASURE ON ALL NON-PAVED DISTURBED AREAS. EXPOSED SOILS, NOT SUBJECT TO CONSTRUCTION TREFFIC, SHALL NOT REMAIN UNSECURE OF UNCOVERED BY MULCH FOR MORE THAN 14 DAYS. SEED AND MULCH TOPSOL STOCKPILES WITHIN 7 DAYS IF THE STOCKPILE IS TO REMAIN IN PLACE FOR LONGER THAN 14 DAYS. REPER TO THE SEEDING MIXTURE TRABLES PROVIDED FOR TEMPORARY/PERMANENT SEED MIKES, UNLESS THE OWNER'S REPRESENTATIVE DIRECTS OTHERWISE, VEGETATION SHALL

- SOIL PLACEMENT: SOIL TO RECEIVE SEED SHALL BE PLACED TO THE DESIGN THICKNESS AND GRADE AND TRACKED AND ROLLED INTO PLACE IN A MANNER THAT WILL NOT CAUSE EXCESSIVE COMPACTION. IF SOIL DENSITY IS VERIFIED IN THE FIELD, SOIL SHALL BE COMPACTED TO A DRY DENSITY BETWEEN 75 AND 100 POUNDS PER CUBIC FOOT, AFTER CORRECTION TO ZERO PERCENT COARSE FRAGMENT (PARTICLES LARGER THAN 2 MILLIMETERS) CONTENT.
- 2. FOR PERMANENT SEEDING, SOIL TESTING AND SOIL AMENDMENT (LIME AND FERTILIZER) RATES ARE AS FOLLOWS: UNILESS SOIL TEST RESULTS AND RECOMMENDATIONS FROM WVU EXTENSION SERVICE SOIL TESTING LABORATORY (OR EQUIVALENT SOIL TESTING LABORATORY (INDICATE OTHERWISE, EVENLY APPLY: 1) AGRICULTURAL GRADE GROUND LIMESTONE AT A RATE OF 2 TONS PER ACRE (CALCIUM CARBONATE EQUIVALENT BASIS); AND 2) 1,000 LBS./ACRE OF FERTILIZER AT A RATE OF: 10-20-20 (N-P205-K20) FOR MIXED GRASSES AND LEGUMES; 5-10-10 (N-P205-K20) FOR GRASSES ONLY. LIME AND FERTILIZER SHALL BE INCORPORATED INTO THE TOP 4'-6" BY DISKING OR OTHER MEANS. IF LIME REQUIREMENTS ARE LESS THAN 4 TONS PER ACRE OR SLOPES ARE TOO STEEP TO PERMIT SAFE TILLAGE, THE SOIL AMENDMENTS CAN BE MIXED INTO A HYDROMULOH SILURRY OR CAN BE TRACKED IN WITH A DOZER, THAS OF INCORPORATION. IF TRACKING THE SITE WITH A DOZER, TRACK IN A MANNER THAT LEAVES CLEAT MARKS PARALLEL TO SITE CONTOURS.
- SEEDBED PREPARATION: JUST BEFORE SEEDING, PREPARE SEEDBED BY TRACKING, RAKING, OR OTHER AF METHOD AS NECESSARY TO BERCAK UP SOIL CRUSTS. IF TRACKING THE SITE WITH A DOZER, TRACK IN THAT LEAVES CLEAT MARKS PARALLEL TO SITE CONTOURS.
- 4. SEEDING: EVENLY APPLY THE SEED MIXTURE USING A BROADCAST SEEDER, DRILL, CULTI-PACKER SEEDER, OR HTDROSEDER. SMALL GRAINS SHALL BE PLANTED NO MORE THAN 1.5" DEEP. SMALL SEEDS, SUCH AS ANNUAL RYE, SHALL BE PLANTED NO MORE THAN 0.25" DEEP. OTHER GRASSES AND LECUMES SHALL BE PLANTED NO MORE THAN 0.25" DEEP. OTHER GRASSES AND LECUMES SHALL BE PLANTED NO MORE THAN 0.50" DEEP. FOR PERMANENT SEEDING, SEED DEPTH SHOULD BE 0.25" TO 0.50" DEEP.
- 5. MULCHING AND TACKING: AFTER SEEDING, PROMPTLY MULCH USING STRAW APPLIED AT A RATE OF 6,000 LBS/ACRE OR 90LBS/1,000 SQUARE FEET OR AS NECESSARY TO OBTAIN 70% MULCH GROUND COVER. DO NOT USE HAY AS A STRAW SUBSTITUTE. STRAW SHALL BE ADDED WHEN TEMPORARY SEEDING IS CONDUCTED IN FALL FOR WINTER COVER AND DURING HOT AND DRY SUMMER MONTHS.
- IN SOME LOCATIONS SHOWN ON THE DRAWINGS, SUCH AS SLOPES STEEPER THAN 3:1 (H:V), EROSION CONTROL BLANKET OR TURF REINFORCEMENT MAT (TRW) MAY BE THE ONLY PERMISSIBLE MULCHING OPTION. INSTALL EROSION CONTROL BLANKETS/TRM PER MANUFACTURER'S INSTRUCTIONS. STAPLE BLANKET/TRM IN PLACE USING 6-INCH (MINIMUM) SOD STAPLES IN ROWS AT THE EDGES AND CENTERLINE OF THE BLANKET AND ON 24-INCH OR CLOSER CENTERS.
- 6 OVER-SEEDING AND RE-SEEDING: WHEN THE SITE DEVELOPMENT STAGING OR SEASON WILL NOT PERMIT TIMELY OVER-SELDING AND RE-SEEDING: WHEN THE SHE DEVELOPMENT STAGING OF SEASON WILL NOT PERMIT INNEL. SOWING OF THE PERMANENT SEED MIXTURE(S), PEFRARE SOILS (FERTILIZERS AND LIME). AS FOR PERMANENT SEEDING, THEN SEED WITH TEMPORARY SEED MIXTURE AND MULCH. OVERSOW THE PERENNIAL SEED MIXTURE INTO THE STUBBLE OF TEMPORARY VEGETATION AT THE NEXT APPROPRIATE SEEDING SEASON.
- IF PERENNIAL SEED IS BEING SOWN INTO THE STUBBLE OF ACTIVELY GROWING TEMPORARY VEGETATION, MOW THE TEMPORARY VEGETATION TO REDUCE COMPETITION EITHER BEFORE OR IMMEDIATELY AFTER SOWING THE PERMANENT
- STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE
 CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN SEVEN DAYS
 AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS PERMANENTLY CEASED.
- 8. WHERE THE INITIATION OF STABILIZATION MEASURES BY THE SEVENTH DAY AFTER CONSTRUCTION ACTIVITY TEMPORARILY OR PERMANENTLY CEASES IS PRECLUDED BY SNOW COVER, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS CONDITIONS ALLOW.

CONSTRUCTION SEQUENCE

- THE CONTRACTOR SHALL CONFIRM WITH ATLANTIC COAST PIPELINE, LLC (ACP) THAT THE EXISTING GAS AND OVERHEAD ELECTRICAL LINES HAVE BEEN ABANDONED AND/OR RELOCATED AS NECESSARY PRIOR TO

- 1. THE CONTRACTOR SHALL CONFIRM WITH ATLANTIC COAST PIPELINE, LLC (ACP) THAT THE EXISTING CAS AND OVERHEAD ELECTRICAL LINES HAVE BEEN ARAMDONED AND/OR RELOCATED AS NECESSARY PRIOR TO PART OF THE CONTRACTOR SHALL CLEARLY DEURATE SENSITIVE AREAS, AND STREAMS THAT ARE TO BE CONSERVED WITHIN THE PROJECT SITE WITH TEMPORARY ORANGE CONSTRUCTION FENCE. CONFIRM THE WY STORMWATER PERMIT SIGN HAS BEEN INSTALLED.

 3. STAKE OUT THE LIMITS TO BE DISTURBED.

 4. STAKE OUT THE LIMITS TO BE DISTURBED.

 5. STAKE OUT THE LIMITS TO BE DISTURBED.

 5. STAKE OUT THE LIMITS TO BE DISTURBED.

 6. ACCORDANCE WITH THE STANDARD DETAILS. CLEAR AND ORDER AS NECESSARY TO INSTALL SILL FENCE ALONG HOLLICK RUN IN THE LOCATIONS SHOWN ON THE PLANS AND IN ACCORDANCE WITH THE STANDARD DETAIL.

 5. INSTALL THE HOLLICK RUN ARCH CULVERT IN THE LOCATION SHOWN ON THE PLANS AND IN ACCORDANCE WITH THE PLANS PREPARED BY CE AND FEDERAL ENERGY REGULATORY COMMISSION (FERC) REQUIREMENTS. NO DISTURBANCE IS ALLOWED IN THE LOCATION SHOWN ON THE PLANS AND IN ACCORDANCE WITH THE PLANS PREPARED BY CE AND FEDERAL ENERGY REGULATORY COMMISSION (FERC) REQUIREMENTS. NO DISTURBANCE IS ALLOWED IN THE JUDICATE ON THE PLANS AND IN ACCORDANCE WITH THE PLANS PREPARED BY CE. NO DISTURBANCE IS ALLOWED IN THE FIRIBITARY TO HOLLICK RUN ARCH CULVERT IS DESIGNED TO SPAN THE TOP OF BANK/OHM WITH SUFFICIENT OFFSET TO SET THE FOOTINGS.

 6. INSTALL THE PLANS PREPARED BY CE AND DAY THE TOP OF BANK/OHM WITH SUFFICIENT OFFSET TO SET THE FOOTINGS.

 7. CLEAR AND GRUB AS NECESSARY TO INSTALL SILT FENCE ALONG THE PROPOSED DRIVEWAY, DOWN SLOPE OF THE PROPOSED WESTER ARCA, AND DOWN SLOPE OF THE PROPOSED EDITION WITH SUBJECT OF THE PROPOSED WESTER ARCA, AND DOWN SLOPE OF THE PROPOSED SEDMENT BASIN.

 5. EEGIN CONSTRUCTION OF THE PROPOSED DRIVEWAY DOWN SLOPE OF THE PROPOSED WESTER ARCA, AND DOWN SLOPE OF THE PROPOSED SEDMENT BASIN.

 5. EEGIN CONSTRUCTION OF THE PROPOSED DRIVEWAY OF THE CONTROLL TO SHAUL INSTALL THE SHEET AND SLOPE OF THE PROPOSED SEDMENT BASIN.

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MAINTENANCE SCHEDULE

ALL EROSION AND SEDIMENTATION CONTROLS WILL BE MAINTAINED IN GOOD WORKING ORDER (CLEANED, REPAIRED, ETC.) UNTIL ALL DISTURBED AREAS ARE STABILIZED AND A UNIFORM 70% PERENNIAL VEGETATIVE COVER HAS BEEN ESTABILISHED. IF ANY REPAIRS TO THE EAST CONTROL MEASURES AND RECESSARY IN THE CONTRACTOR SHALL MAKE THE NECESSARY REPAIRS AS OUTLINED BELOW FOLLOWING AN INSPECTION TO ENSURE EFFECTIVE AND

- INSPECTIONS ARE TO BE PERFORMED AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5 INCHES PER 24 HOUR PERIOD. ANY REQUIRED REPAIRS OR MAINTENANCE SHOULD BE MADE IMMEDIATELY. A COPY OF THE BMP INSPECTION CHECKLIST IS INCLUDED IN THE SWIPP FOR THE CONTRACTOR TO USE AS A QUIDELINE FOR INSPECTION REQUIREMENTS.
- 2. ROCK CONSTRUCTION ENTRANCE/EXIT: THE ROCK CONSTRUCTION ENTRANCES THICKNESS SHALL BE CONSTANTLY MAINTAINED TO THE SPECIFIED DIMENSIONS SHOWN ON THE DETAIL. A STOCKPILE SHALL BE MAINTAINED ONSITE FOR THIS PURPOSE. AT THE END OF EACH CONSTRUCTION DAY, ALL SEDIMENT DEPOSITED ON PAWED ROADWAYS SHALL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE. IF THE CRUSHED STONE DOES NOT ADEQUATELY REMOVE THE MUD FROM THE VEHICLE TIRES, THE TIRES SHOULD BE HOSED OFF BEFORE THE VEHICLE ENTERS A PUBLIC STREET. THE WASHING SHOULD BE DONE ON AN AREA COVERED WITH CRUSHED STONE, AND THE WASH WATER SHOULD BRIN TO A SEDIMENT CONTROL
- 3. TOPSOIL STOCKPILE AREA: REPAIR THE COMPOST FILTER SOCK AS NECESSARY TO ENSURE THAT THE INTEGRITY OF THE SOCK CAN WITHSTAND AND HOLD THE SOIL IN ITS STOCKPILE LOCATION. SEED AND MULCH STOCKPILES WITHIN 7 DAYS OF FORMATION IF THE STOCKPILE IS TO REMAIN IN PLACE FOR LONGER THAN 14 DAYS
- 4. BELTED SILT RETENTION FENCE:ACCUMULATED SEDIMENTS SHALL BE REMOVED IN ALL CASES WHERE ACCUMULATIONS HAVE REACHED HALF THE ABOVE—GROUND HEIGHT OF THE FENCE. IF THE FENCE HAS BEEN DAMAGED, IT SHALL BE REPAIRED, OR REPLACED IF BEYOND REPAIR.
- 5. SUPER SILT FENCE: ACCUMULATED SEDIMENTS SHALL BE REMOVED IN ALL CASES WHERE ACCUMULATIONS HAVE REACHED HALF THE ABOVE—GROUND HEIGHT OF THE FENCE. IF THE FENCE HAS BEEN DAMAGED, IT SHALL BE REPAIRED, OR REPLACED IF BEYOND REPAIR.
- 6. COMPOST FILTER SOCK: ACCUMULATED SEDIMENTS SHALL BE REMOVED IN ALL CASES WHERE ACCUMULATIONS HAVE REACHED HALF THE ABOVE—ORDIND HEIGHT OF THE SOCK. IF THE SOCK HAS BEEN DAMAGED, IT SHALL BE REPAIRED, OR REPLACED IF BEYOND REPAIR. THE FILTER MEDIA WILL BE DISPERSED ON SITE ONCE THE DISTURBED AREA HAS BEEN PERMANENTLY STABILIZED. ADHERE TO ANY MANUFACTURER'S RECOMMENDATIONS. THE SOCK SHALL BE MAINTAINED UNTIL A DISTURBED AREA ABOVE THE DEVICE HAS BEEN PERMANENTLY STABILIZED AND A UNIFORM 70% PERENNIAL VEGETATION HAS BEEN ESTABLISHED.
- 7. ROCK CHECK DAMS: INSPECT ROCK CHECK DAMS TO SEE IF WATER HAS FLOWED AROUND THE EDGES OF THE STRUCTURE. IF WATER HAS FLOWED AROUND THE EDGES OF THE STRUCTURE, REPLACE STONE AND REPAIR DAMS AS NECESSARY TO MAINTAIN THE CORRECT HEIGHT AND CONFIGURATION.
- 8. TEMPORARY CONCRETE WASHOUT FACILITY: REMOVE SEDIMENT AND CONCRETE MATERIALS COLLECTED IN THE TEMPORARY CONCRETE WASHOUT FACILITY AND MAKE ANY REPAIRS TO THE CONTAINMENT FACILITY AS NEEDED.
- SLOPE EROSION CONTROL BLANKET: ANY SCOURED AREAS SHALL BE REPAIRED IMMEDIATELY BY COMPACTING SOIL IN THE WASHOUT AREA AND PLACING SEED. ANY DAMAGED EROSION CONTROL BLANKETS SHALL BE REPLACED IMMEDIATELY. BLANKETS SHALL BE MAINTAINED UNTIL A UNIFORM 70% PERENNIAL VEGETATION HAS BEEN ESTABLISHED.
- 10. GEOTEXTILE FILTER BAGS: PUMP AND FILTER BAGS SHALL BE INSPECTED DAILY. IF ANY PROBLEM IS DETECTED, PUMPING SHALL CEASE IMMEDIATELY, AND SHALL NOT RESUME UNTIL THE PROBLEM IS CORRECTED. SEDIMENT REMOVED FROM THE FILTER BAG SHALL BE SPREAD ONSITE UPSTREAM FROM ESTABLISHED SEDIMENT CONTROLS AND ALLOWED TO DRY. ONCE DRY, THE SEDIMENT MAY BE INCORPORATED ONSITE AS PART OF THE FILL.
- 11. PIPE SLOPE: REMOVE DEBRIS AND KEEP THE INLET OPEN AT ALL TIMES.
- 12. PERIMETER BERM: INSPECT THE DIKE, FLOW CHANNEL AND OUTLET FOR DEFICIENCIES OR SIGNS OF EROSION. RESEED OR OTHERWISE. STABILIZE THE DIKE AS NEEDED TO MAINTAIN ITS STABILITY. INSPECT FOR SEDIMENT DEPOSITS, CONSTRICTIONS AND BLOCKAGES. REMOVE ANY BLOCKAGE IMMEDIATELY.
- 13. CONSTRUCTION/WASTE DISPOSAL: ALL CONSTRUCTION WASTE SHALL BE REMOVED BY THE CONTRACTOR AND DISPOSED OF AT A STATE-APROVED WASTE SITE AND IN ACCORDANCE WITH ALL LOCAL AND STATE CODES AND PERMIT REQUIREMENTS. THE BURNING OF WASTE MATERIALS SHALL NOT BE PERMITTED.
- 14. RIPRAP APRON: ANY VISIBLE DAMAGE INCLUDING SCOUR SHALL BE FIXED BY THE END OF THE WORKING DAY BY PLACING ADDITIONAL RIPRAP IN THE SCOUR AREA WITH A LAYER OF GEOTEXTILE. PLACE ADDITIONAL STONE AS NECESSARY TO PREVENT EROSION AND SCOUR.
- 15. SEDIMENT BASIN: REMOVE SEDIMENT AND RESTORE THE BASIN TO ITS ORIGINAL DIMENSIONS WHEN IT ACCUMULATES TO ONE-HALF THE WET STORAGE DEPTH. PLACE REMOVED SEDIMENT WHERE THERE IS NO POSSIBILITY OF ITS REENTRY INTO A WATERWAY. CHECK THE EMBANKMENT, SPILLWAYS, AND OUTLET FOR EROSION DAMAGE, AND INSPECT THE EMBANKMENT FOR PIPING AND SETTLEMENT. MAKE ALL NECESSARY REPAIRS IMMEDIATELY. REMOVE ALL TRASH AND OTHER DEBRIS FROM THE RISER AND POOL AREA.
- 16. PERMANENT CHANNELS: ANY DAMAGE TO THE CHANNEL OR EROSION CONTROL BLANKET SHALL BE FIXED IMMEDIATELY. THE CONTRACTOR IS TO PLACE SEED ON ALL BARE SPOTS AND AREAS NOT ESTABLISHING ROUND COVER. FOR RIPRAP CHANNELS, ANY VISIBLE DAMAGE INCLUDING SCOUR SHALL BE FIXED BY PLACING ADDITIONAL RIPRAP IN THE DAMAGED AREA.
- 17. COMPOST FILTER SOCK SEDIMENT TRAP: THE COMPOST FILTER SOCK SEDIMENT TRAP SHALL BE INSPECTED AT A MINIMUM OF ONCE EVERY SEVEN OMMOST FILER SOCK SEDMENT IRAP. THE COMPOST FILER SOCK SEDMENT IRAP SHALL BE INSPECTED AT A MINIMUM OF ORCE EVERT SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY RUNOFF EVENT TO CHECK THE INTEGRITY OF THE TRAP. ACCUMULATED SEDIMENTS SHALL BE REMOVED IN ALL CASES WHERE ACCUMULATIONS HAVE REACHED HALF THE ABOVE—GROUND HEIGHT OF THE SOCK. DISTRIBUTE THE DRIED SEDIMENT SHALL BE PLACED UPSTREAM OF THE SOL SOCK TRAP AND ALLOWED TO DRY. IF THE SOCK ARE SEEN DAMAGED, IT SHALL BE REPAIRED, OR REPLACED IF BEYOND REPAIR. THE FILTER MEDIA WILL BE SPERSED ON SITE ONCE THE DISTURBED AREA HAS BEEN PERMANENTLY STABILIZED. ADDREST TO ANY MANUFACTURER'S RECOMMENDATIONS. THE COMPOST FILTER SOCK SEDMENT TRAP SHALL BE MAINTAINED UNTIL A DISTURBED AREA ASOVE THE DEVICE HAS BEEN PERMANENTLY STABILIZED AND A UNIFORM 70 PERCENT FERENMAL VEGETATION HAS BEEN ESTABLISHED.
- 18. ALL SLOPES SHALL BE CHECKED WEEKLY FOR SIGNS OF EROSION AND/OR SEDIMENTATION. IF EROSION AND/OR SEDIMENTATION EXISTS REPAIR ERODED AREAS AND SEED AND MULCH IMMEDIATELY.
- 19. DURING CONSTRUCTION, SEDIMENT REMOVED FROM THE EROSION CONTROL DEVICES SHALL BE DISPOSED OF BY SPREADING IT ONSITE. ONCE A UNIFORM 70 PERCENT PERENNIAL VEGETATIVE COVER IS ESTABLISHED AND THE TEMPORARY E&S CONTROLS ARE REMOVED, ALL ACCUMULATED SEDIMENT SHALL BE DISPOSED OF OFFSITE AT A WUDER APPROVED FACILITY.
- 20. THE CONTRACTOR IS RESPONSIBLE FOR ALL MAINTENANCE AND INSPECTIONS AND SHALL MAINTAIN RECORDS OF ALL SUCH ACTIVITIES AT THE SITE.
- 21. DISTURBED AREAS SHALL BE SEEDED AND MULCHED AS SOON AS POSSIBLE TO OBTAIN OPTIMUM SEED GERMINATION AND SEEDLING GROWTH BUT AT A MINIMUM WITHIN 7 DAYS OF REACHING FINAL GRADE OR WITHIN 7 DAYS IF NO ADDITIONAL ACTIVITY IS ANTICIPATED FOR 14 DAYS OR MORE. IF, AT THE END OF A 30-DAY MONITORING AND MAINTENANCE PERIOD, A SATISFACTORY STAND OF VEGETATION HAS NOT BEEN PRODUCED, THE CONTRACTOR SHALL PROMPTLY RENOVATE AND RESEED THE UNSATISFACTORY AREAS. RENOVATION AND RESEEDING SHALL CONTINUE UNTIL A SATISFACTORY STAND OF VEGETATION HAS BEEN PRODUCED.
- 22. ALL TEMPORARY EROSION AND SEDIMENTATION CONTROLS WILL REMAIN IN PLACE UNTIL A UNIFORM 70 PERCENT PERENNIAL UPLAND VEGETATIVE COVER IS ESTABLISHED.

PERMANENT SEEDING					
SPECIES	PLANTING DATES	APPLICATION RATE LBS/ACRE			
SWITCHGRASS	3/1-6/5 8/15-9/15	15			
PERENNIAL RYEGRASS	3/1-6/5 8/15-9/15	20			
REDTOP	3/1-6/15	5			
BIRDSFOOT TREFOIL	3/1-6/5 8/15-9/15	15			
WINTER RYE	09/16-08/28	85			

TEMI	PORARY SEE	DING
KIND OF SEED	PLANTING DATES	APPLICATION RATE LBS/ACRE
ANNUAL RYEGRASS	2/16-5/15 8/1-11/1	40
FIELD BROMEGRASS	3/1-6/15 8/1-9/5	40
SPRING OATS	3/1-6/15	100
WINTER RYE	8/15-2/28	170
WINTER WHEAT	8/15-2/28	180
REDTOP	3/1-6/15	10
ANNUAL RYEGRASS AND SPRING OATS	3/1-6/15	30 70
GERMAN/FOXT AIL MILLET	5/1-8/1	40

NOTE: SEED MIXES SHALL NOT BE MODIFIED WITHOUT APPROVAL OF ENGINEER



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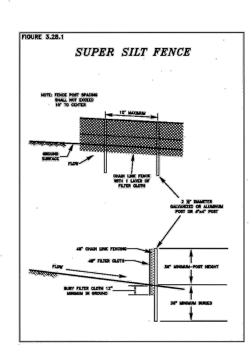
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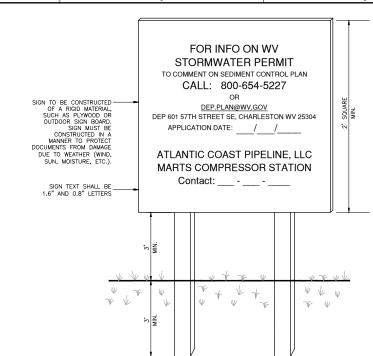
SEDIMENT EROSION AND S CONTROL N

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DETAIL 1 ROCK CONSTRUCTION ENTRANCE/EXIT

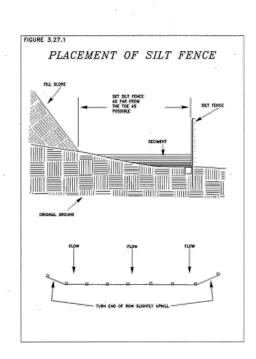


3.28-3 **DETAIL 4** SUPER SILT FENCE

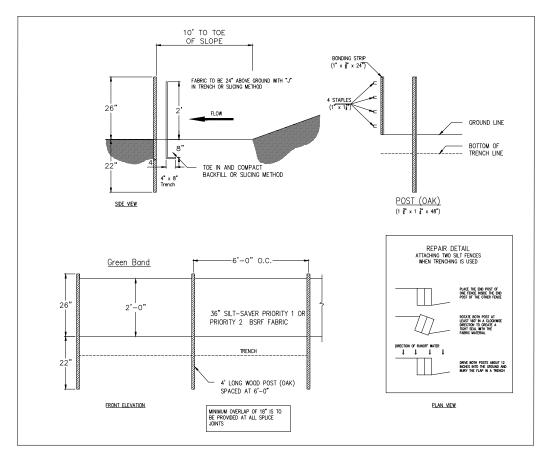


- THE WY STORMWATER PERMIT SIGN MUST BE LOCATED NEAR THE CONSTRUCTION ENTRANCE OF THE SITE, SUCH THAT IT IS ACCESSIBLE AND WIEWARLE BY THE GENERAL PUBLIC, BUT NOT OBSTRUCTING VIEWS AS TO CAUSE A SAFETY HAZARD.
- ALL POSTED DOCUMENTS MUST BE MAINTAINED IN A CLEARLY READABLE CONDITION AT ALL TIMES THROUGHOUT CONSTRUCTION AND UNTIL THE NOTICE—OF—TERMINATION (N.O.T.) IS FILED FOR THE PERMIT.
- 3. CONTRACTOR SHALL POST OTHER STORMWATER AND/OR EROSION AND SEDIMENTATION CONTROL RELATED PERMITS ON THE SIGN AS REQUIRED BY THE GOVERNING AGENCY.
- 5. CONTRACTOR IS RESPONSIBLE FOR ENSURING STABILITY OF THE WV STORMWATER PERMIT SIGN

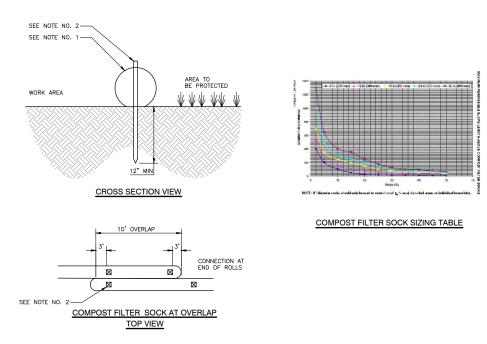
DETAIL 2 WV STORMWATER PERMIT SIGN



3.27.5 **DETAIL 5** SUPER SILT FENCE PLACEMENT



DETAIL 3 BELTED SILT RETENTION FENCE



NOTES:

- 1. ALL MATERIAL TO MEET WYDEP SPECIFICATIONS.
- STAKES SHALL BE INSTALLED THROUGH THE MIDDLE OF THE COMPOST FILTER SOCK ON 10 FOOT CENTERS, USING 2-INCH BY 2-INCH WOODEN STAKES.
- 3. COMPOST MATERIAL TO BE DISPERSED ON SITE AS DETERMINED BY ENGINEER.

DETAIL 6 COMPOST FILTER SOCK



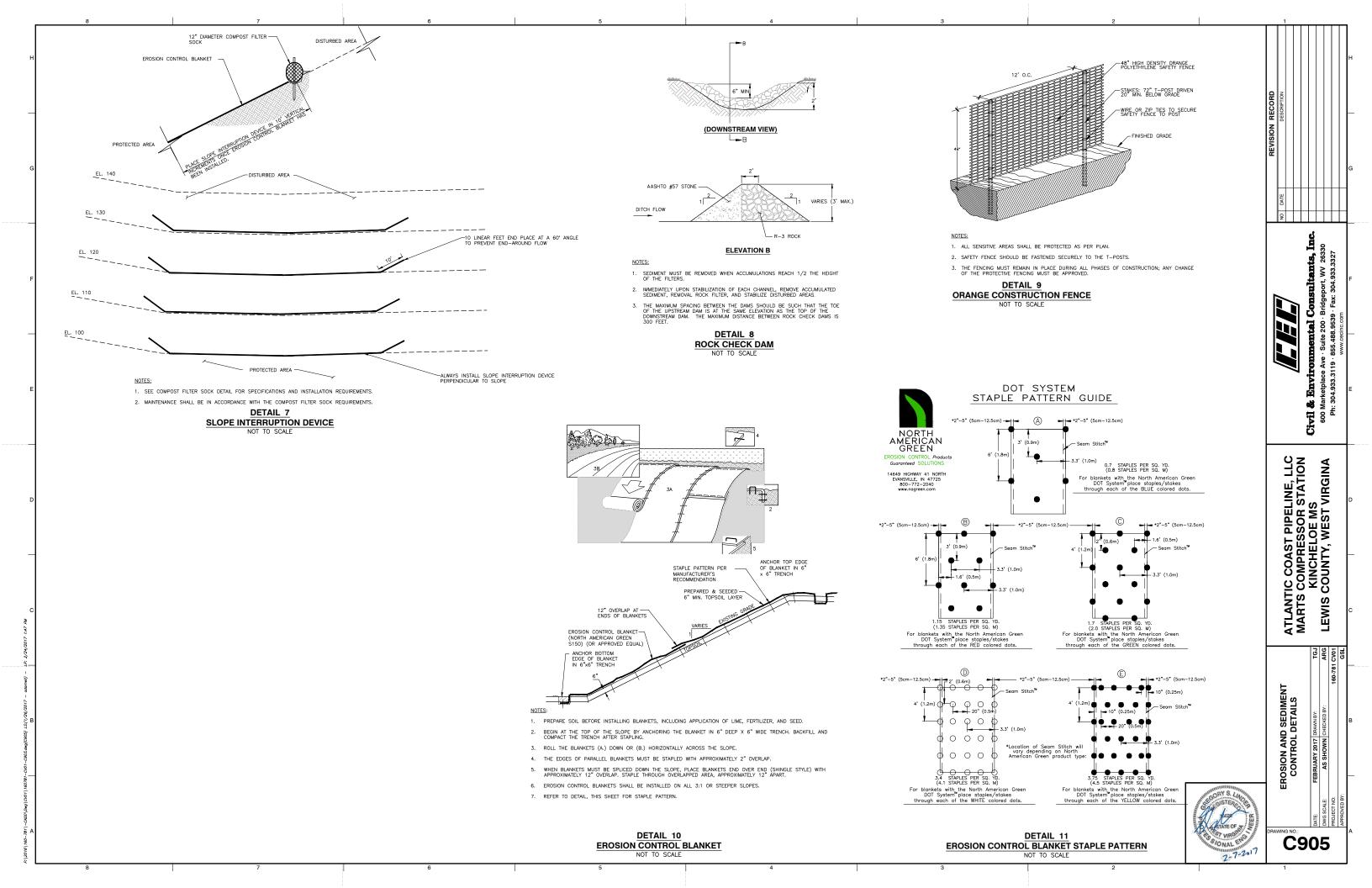
EROSION AND SEDIMENT CONTROL DETAILS

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ARG Wort

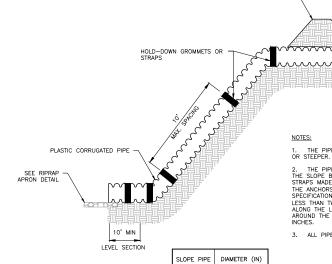


PLAN VIEW

NOTES:

- FILTER BAGS MAY BE USED TO FILTER WATER PUMPED FROM DISTURBED AREAS SUCH AS UTILITY TRENCHES AND FOOTERS.
- FILTER BAGS SHALL BE MADE FROM NON-WOVEN GEOTEXTILE MATERIAL SEWN WITH HIGH STRENGTH DOUBLE STITCHED "J" TYPE SEEMS. THEY SHALL BE CAPABLE OF TRAPPING PARTICLES LARGER THAN 150 MICRONS
- FILTER BAGS SHALL BE REPLACED WHEN THEY BECOME 1/2 FULL. SPARE BAGS SHALL BE KEPT AVAILABLE FOR REPLACEMENT OF THOSE FILLED OR FALLED. FILTER BAGS WILL BE DISPOSED OF AT A WYDEP APPROVED FACILITY.
- 4. BAGS SHALL BE LOCATED IN WELL VEGETATED (GRASSY) AREAS, AND DISCHARGE ONTO STABLE, EROSION RESISTANT AREAS. WHERE THIS IS NOT POSSIBLE, A GEOTEXTILE LINED FLOW PATH SHALL BE PROVIDED. BAGS SHALL NOT BE PLACED ON SLOPES GREATER THAN 5 PERCENT.
- 5. THE PUMP RATE SHALL BE NO GREATER THAN 750 GPM OR 1/2 THE MAXIMUM SPECIFIED BY THE MANUFACTURER, WHICHEVER IS LESS. PUMP INTAKES SHOULD BE FLOATING AND SCREENED.

DETAIL 12 **GEOTEXTILE FILTER BAG** NOT TO SCALE



PERIMETER BERM

(2) 24

DETAIL 13 PERMANENT SLOPE PIPE

NOT TO SCALE

PROPOSED GRAVEL PAD

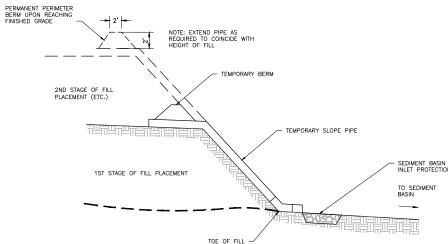
2. THE PIPE SLOPE DRAIN SHALL BE SECURELY ANCHORED TO THE SLOPE BY STAKING AT THE GROWMETS PROVIDED OR WITH STRAPS MADE SPECIFICALLY FOR THIS PURPOSE. SPACING FOR THE ANCHORS SHALL BE AS PROVIDED BY THE MANUFACTURER'S SPECIFICATION, BUT NO LESS THAN 10 FEET. IN NO CASE SHALL LESS THAN THO (2) ANCHORS BE PROVIDED EQUALLY SPACED ALONG THE LENGTH OF THE PIPE. HAND TAMP SOIL UNDER AND AROUND THE ENTRANCE SECTION IN LIFTS NOT TO EXCEED 6 INCHES.

3. ALL PIPE CONNECTIONS SHALL BE WATERTIGHT.

TEMPORARY BERM *SEED AND MULCH FILL SLOPE EVERY 10 FEET OF FILL OR EVERY 7 DAYS, WHICHEVER COMES FIRST BUILD FILL SO RUNOFF IS DIRECTED TO TEMPORARY SLOPE PIPE OR OTHER CONVEYANCE CONTINUALLY SLOPE BACK AS FILL IS CONSTRUCTED FILL SLOPE* GRADING

FILL SLOPE* -

TEMPORARY BERM	CHANNEL TOP WIDTH (FT)	CHANNEL DEPTH (FT)
1	6	1.50
2	4	1.00
3	4	1.00
4	4	1.00



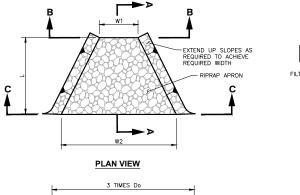
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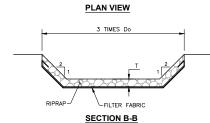
DETAIL 14 PERIMETER BERM NOT TO SCALE

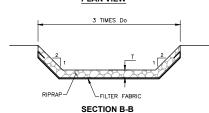
CULVERT DIA. CUNDERT DIA. CULVERT DIA. CULVERT DIA.	ROADWAY GRADE SECTION A-A TWO DIRECTIONAL FLOW	SE	TCH LINE EARTH BERM ROADWAY GRADE BOTTOM OF DITCH LINE CTION A-A IRECTIONAL FLOW
B T Culvert	RIP-RAP W2		$T = 1.5 \times D_{MX}$ RIP-RAP TYPICAL
	‡	BER ENS	NTRACTOR SHALL INSTALL A MOUNTABLE RM ON ANY CULVERT NECESSARY TO SURE A MINIMUM COVER OF AT LEAST 2'. NTRACTOR TO FIELD ADJUST DITCH
V		INVI	ERTS TO ENSURE POSITIVE DRAINAGE AT LVERT INLETS.

	MAIN DRIVEWAY CULVERTS								
PIPE NAME	STATION	CULVERT SIZE	LENGTH (LF)	W1 (FT)	W2 (FT)	L (FT)	D50 (IN)	D _{MAX} (IN)	T (IN)
1	13+50	18" DIA.	88	4.5	10.5	9	6	12	18
2	16+04	18" DIA.	32	4.5	10.5	9	9	18	27
3	19+68	18" DIA.	37	4.5	10.5	9	9	18	27
4	23+00	24" DIA.	65	6	15.0	13	9	18	27

CONTRACTOR SHALL INSTALL PIPE PER MANUFACTURER SPECIFICATIONS.







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SECTION C-C	

SECTION A-A

RIPRAP APRON L* (FT) W1 (FT) W2 (FT) D50(IN) T (FT) RIPRAP 1 N/A** N/A** N/A** 9 2.25 R-5 2 13 6 13 6 15 R-4		-					
	RIPRAP APRON	L* (FT)	W1 (FT)	W2 (FT)	D50(IN)	T (FT)	RIPRAP
2 13 6 13 6 15 R-4	1	N/A**	N/A**	N/A**	9	2.25	R-5
	2	13	6	13	6	1.5	R-4

EXTEND FABRIC 6" MINIMUM

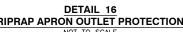
EXISTING STABILIZED AREA

* RIPRAP APRON LENGTHS REPRINTED IN THIS TABLE ARE MINIMUM REQUIRED BY DEP. REFER TO PLAN DRAWING FOR ACTUAL LENGTHS TO BE CONSTRUCTED WITH THIS PROJECT.

** SEE SHEET C900 FOR LAYOUT OF RIPRAP

RIPRAP APRON OUTLET PROTECTION

DETAIL 15 TYPICAL CULVERT AND CULVERT PROTECTION NOT TO SCALE





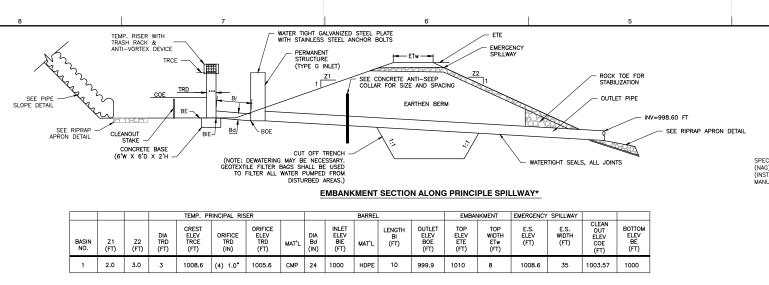
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ARG Wort

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EROSION AND SEDIMENT CONTROL DETAILS



PREPARED SUBGRADE SPECIFIED NORTH AMERICAN GREEN—
(NAG) LINER OR APPROVED EQUAL
(INSTALL IN ACCORDANCE WITH
MANUFACTURER'S RECOMMENDATIONS)

(LOOKING DOWNSTREAM) CHANNEL CROSS-SECTION

CHANNEL NO.	DEPTH D (FT)	W (FT)	D50 (IN)	TYPE
1	1.0	4.0	12	GROUTED R-4 RIPRAP
2	1.0	4.0	12	R-4 RIPRAP
3	1.0	4.0	12	R-4 RIPRAP
4	2.0	8.0	12	GROUTED R-4 RIPRAP
5	2.5	10.0	12	R-4 RIPRAP
6	2.5	10.0	12	R-4 RIPRAP
8	1.0	4.0	12	R-4 RIPRAP

NOTES:

FABRIC FOR SEPARATION

- 1. FILTER STONE UNDERLAYMENT FOR BED SLOPES ≥ 0.10 FT/FT (10 %) SHALL BE USED.
- 2. CHANNEL DIMENSIONS ARE FOR THE COMPLETED CHANNEL AFTER ROCK PLACEMENT. CHANNEL MUST BE OVER-EXCAVATED A SUFFICIENT AMOUNT TO ALLOW FOR THE VOLUME OF ROCK PLACED WITHIN THE CHANNEL WHILE PROVIDING THE SPECIFIED FINISHED DIMENSIONS.
- 3. CHANNEL DIMENSIONS SHALL BE CONSTANTLY MAINTAINED. CHANNEL SHALL BE CLEANED WHENEVER TOTAL CHANNEL DEPTH IS REDUCED BY 25% AT ANY LOCATION. SEDIMENT DEPOSITS SHALL BE REMOVED WITHIN 24 HOURS OF DISCOVERY OR AS SOON AS SOIL CONDITIONS PERMIT ACCESS TO CHANNEL WITHOUT FURTHER DAMAGE.
- 4. DAMAGED LINING SHALL BE REPAIRED OR REPLACED WITHIN 48 HOURS OF DISCOVERY.

DETAIL 22 RIPRAP CHANNEL NOT TO SCALE

DETAIL 18

DRY VOLLUME (cf) 12,780 12,780

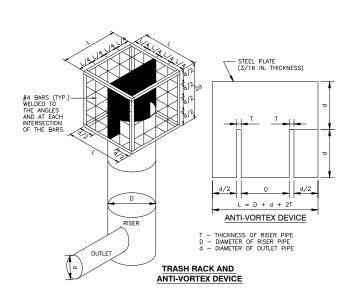
CONTRIBUTING DRAINAGE AREA = 7.1 ACRES

WET VOLUME (cf)

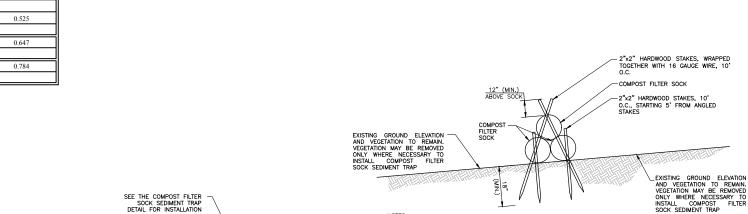
TEMPORARY/PERMANENT CHANNELS NOT TO SCALE

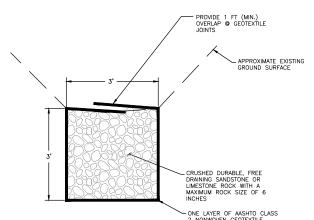
A CLEAN OUT STAKE SHALL BE PLACED NEAR THE CENTER OF EACH BASIN. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT HAS REACHED THE CLEAN OUT LEVEL MARKED ON THE STAKE.

DETAIL 17 SEDIMENT BASIN



Area		Volume
(SF)	(CF)	(ACRE-FT)
1066	0	0.000
1438	1252	0.029
1844	2893	0.066
	H	
2283	4957	0.114
2766	7481	0.172
	1	*****
3279	10504	0.241
3823	14055	0.323
4396	18164	0.417
4009	22961	0.525
4770	22001	0.323
5631	28176	0.647
6292	34137	0.784
	(SF) 1066 1438 1844 2283 2766 3279 3823 4396 4998	(SF) (CF) 1066 0 1438 1252 1844 2893 2283 4957 2766 7481 3279 10504 3823 14055 4396 18164 4998 22861 5631 28176



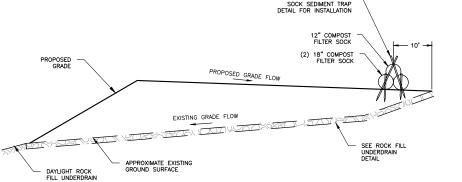


DETAIL 19

ROCK FILL UNDERDRAIN

NOT TO SCALE

DETAIL 20 FILL WITH ROCK FILL UNDERDRAIN NOT TO SCALE



- CONTRACTOR TO CLEAR ONLY THE VEGETATION REQUIRED TO PLACE THE FILTER SOCKS. ALL OTHER VEGETATION TO REMAIN.
- 2. SEE COMPOST FILTER SOCK DETAIL FOR SPECIFICATIONS.
- SEDIMENT TRAP SHALL BE CONSTRUCTED SO THAT THE MINIMUM BASE WIDTH IS EQUIVALENT TO THE HEIGHT (1H:1V).
- SOCKS SHALL BE A LARGER DIAMETER AT THE BASE OF THE SEDIMENT TRAP AND DECREASE IN DIAMETER FOR SUCCESSIVE LAYERS.
- 5. ENDS OF THE SEDIMENT TRAP SHALL BE A MINIMUM 1 FT. HIGHER IN ELEVATION THAN THE MID-SECTION, WHICH SHALL BE AT THE LOWEST ELEVATION.
- 6. COMPOST SHALL MEET THE COMPOST STANDARDS TABLE PROVIDED IN THE COMPOST FILTER SOCK DETAIL.
- COMPOST SOCK SEDIMENT TRAPS SHALL NOT EXCEED THREE SOCKS IN HEIGHT AND SHALL BE STACKED IN PYRAMIDAL FORM AS SHOWN ABOVE. MINIMUM TRAP HEIGHT IS ONE 24* DIAMETER SOCK. ADDITIONAL STORAGE MAY BE PROVIDED BY MEANS OF AN EXCAVATED SUMP 12" DEEP EXTENDIG 1 TO 3 FEET UPSLOPE OF THE SOCKS ALONG THE LOWER SIDE OF THE TRAP.
- 8. COMPOST SOCK SEDIMENT TRAPS SHALL PROVIDE 2,000 CUBIC FEET STORAGE CAPACITY WITH 12" FREEBOARD FOR EACH TRIBUTARY DRAINAGE ACRE.
- THE MAXIMUM TRIBUTARY DRAINAGE AREA IS 5.0 ACRES. SINCE COMPOST SOCKS ARE "FLOW THROUGH", NO SPILLWAY IS REQUIRED.

2-7-2.17

LAYER 2 LAYER 3

(2) 18"

(1) 12"

(1) 12"

	EROSION ANI CONTROL	FEBRUARY 2017	MOLIPAN
GS GISTERS	I	DATE:	- I W CO COM
OT VIRGING	DRAWING NO.:	n	_
WAL WHITE	U3	U	1

SEDIMENT DETAILS

sultants, Ineport, WV 26330
:: 304.933.3327

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ARG 3V01

DETAIL 21 COMPOST FILTER SOCK SEDIMENT TRAP

TRAP LAYER 1 (BOTTOM)

(3) 32"

(2) 32"

- 54'-0" (OUT TO OUT) -S FLOW **BRIDGE PLAN**

NOTES:

- 1. CULVERT DETAILS PROVIDED ARE FOR BIDDING PURPOSES ONLY. CONTECH TO PROVIDE FINAL CONSTRUCTION DRAWINGS AND FOUNDATION DETAILS.
- 2. CONTRACTOR SHALL CONTACT ENGINEER OF RECORD TO HAVE A GEOTECHNICAL ENGINEER EVALUATE THE FOUNDATION SUBGRADE TO ASSURE A 4,000 PSF NET ALLOWABLE SOIL BEARING CAPACITY BEFORE PLACING THE

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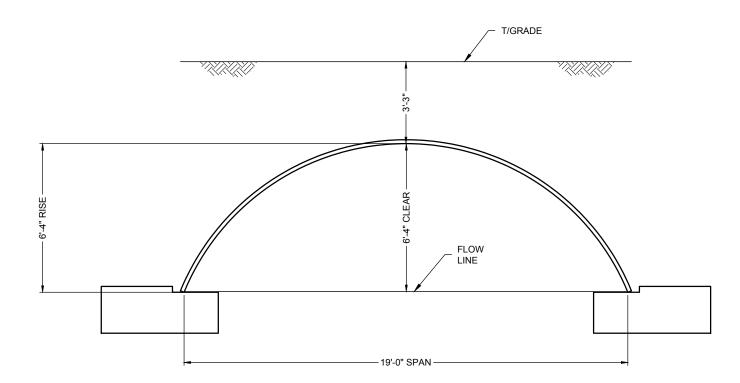
STRUCTURAL PLATE

MULTIPLATE SINGLE RADIUS ARCH 19'-0" X 6'-4" MARTS COMPRESSOR STATION LEWIS COUNTY, WV

PROJECT No.:	SEQ. I	No.:	DAT	E:	
548650	0.	10	8/	26/20	16
DESIGNED:		DRAW	/N:		
MJD			М	JD	
CHECKED:		APPR	OVE	D:	
SHEET NO.:					
	<u>1</u>	O	=	<u>11</u>	

MARK DATE REVISION DESCRIPTION

PROPOSAL DRAWING 800-338-1122 513-645-7000 513-645-7993 FAX



CROSS SECTION A-A

Approximate Area: 86 sq. ft. used, 87 sq. ft. total

NOTES

- •MEASUREMENTS ARE TO THE INSIDE CRESTS OF THE CORRUGATION
- •DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES
- •MAXIMUM COVER HEIGHT FOR THIS APPLICATION is 3.2 FT.

9					
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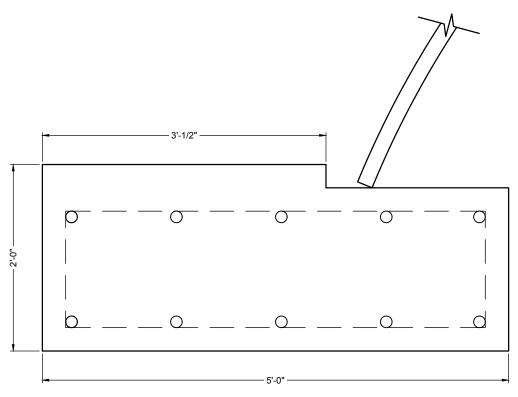
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STRUCTURAL PLATE

PROPOSAL DRAWING MULTIPLATE SINGLE RADIUS ARCH 19'-0" X 6'-4"
MARTS COMPRESSOR STATION

PROJECT No.:	SEQ. I	No.:	DATE:
548650	01	10	8/26/2016
DESIGNED:		DRAW	/N:
MJD			MJD
CHECKED:		APPR	OVED:
SHEET NO.:	2	OI	11



TYPICAL FOOTING DETAIL

NOTES

- FOOTING DIMENSIONS AND DETAILS SHOWN ARE CONCEPTUAL ONLY
- FINAL DIMENSIONS & DETAILS TO BE FURNISHED BY THE PROJECT ENGINEERS
- FOUNDATION REINFORCING TO BE DETERMINED

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MULTIPLATE SINGLE RADIUS ARCH 19'-0" X 6'-4"
MARTS COMPRESSOR STATION

LEWIS COUNTY, WV

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PROJECT No.:	SEQ. I	No.:	DAT	E:
548650	0	10	8/	26/2016
DESIGNED:		DRAW	/N:	
MJD			М	JD
CHECKED:		APPR	OVE):
SHEET NO.:				
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PROPOSAL DRAWING

INLET END ELEVATION

ALUMINUM HEADWALL TO BE FIELD CUT AT TIME OF INSTALLATION (BY OTHERS)

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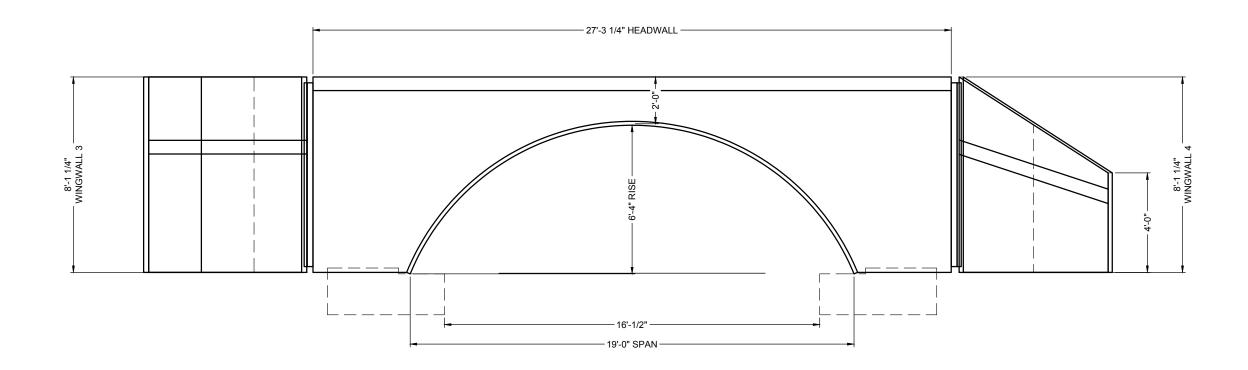


PROPOSAL DRAWING MARTS COMPRESSOR STATION

LEWIS COUNTY, WV

MULTIPLATE SINGLE RADIUS ARCH 19'-0" X 6'-4"

PROJECT No.:	SEQ. I	No.:	DATE:
548650	01	10	8/26/2016
DESIGNED:		DRAW	VN:
MJD			MJD
CHECKED:		APPR	OVED:
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OUTLET END ELEVATION

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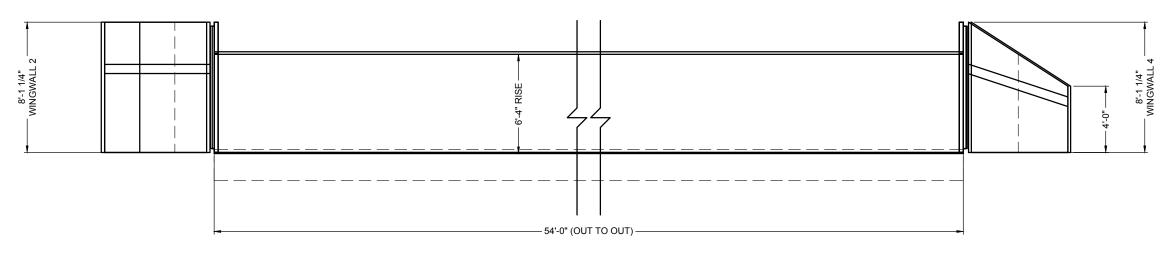


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PROPOSAL DRAWING

PROJECT No.: 548650	SEQ.		DATE: 8/26/2016		
DESIGNED: MJD		DRAWN: MJD			
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SHEET NO.:	5	Ol	=	11	



PROFILE SECTION B-B

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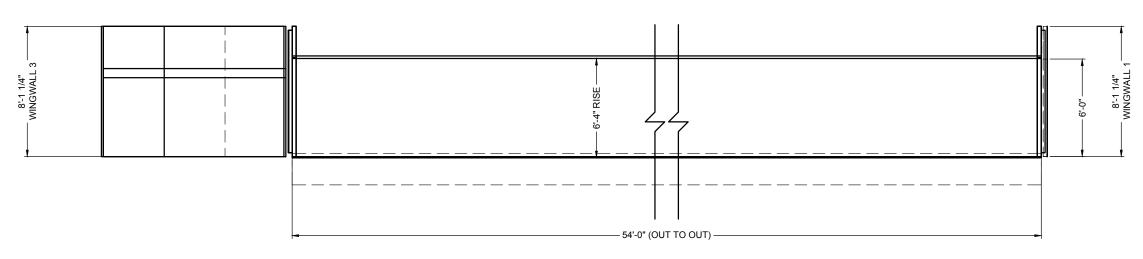
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PROPOSAL DRAWING

MULTIPLATE SINGLE RADIUS ARCH 19'-0" X 6'-4" MARTS COMPRESSOR STATION

PROJECT No.:	SEQ. I	No.:	DAT	E:
548650	010		8/26/2016	
DESIGNED:		DRAW	/N:	
MJD			M	JD
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PROFILE SECTION C-C

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PROPOSAL DRAWING

MULTIPLATE SINGLE RADIUS ARCH 19'-0" X 6'-4" MARTS COMPRESSOR STATION

PROJECT No.:	SEQ. I	SEQ. No.:		E:
548650	0.	10	8/	26/2016
DESIGNED:		DRAW	/N:	
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NOTES:

- 1. ALL SELECT GRANULAR BACKFILL TO BE PLACED IN A BALANCED FASHION IN THIN LIFTS (6"-8" LOOSE TYPICALLY) AND COMPACTED TO 90 PERCENT DENSITY PER AASHTO T-180.
- 2. COMPLETE AND REGULAR MONITORING OF THE ARCH IS NECESSARY DURING ALL BACKFILLING STEPS.

WITH HAND OPERATED EQUIPMENT OR WITH SMALL TRACTOR

(D-4 OR SMALLER) DRAWN EQUIPMENT.

- 3. PREVENT EXCESSIVE DISTORTION OF SHAPE AS NECESSARY BY VARYING COMPACTION METHODS AND EQUIPMENT.
- 4. TRENCH WIDTH AND / OR SELECT FILL ENVELOPE WIDTH SHALL BE BY DIRECTION OF THE ENGINEER OF RECORD. A TYPICAL WIDTH OF4 FEET IS DEPICTED, BUT GREATER OR LESSER DISTANCE MAY BE REQUIRED DEPENDING UPON SITE-SPECIFIC CONDITIONS. THIS WIDTH DEPENDS ON FACTORS SUCH AS THE LATERAL PRESSURES EXERTED BY THE STRUCTURE ONTO THE ADJACENT SOIL FOR THE GIVEN LOADING CONDITIONS, THE STRUCTURE SHAPE, THE QUALITY OF THE SELECT FILL MATERIAL AND THE STRENGTH OF THE IN SITU EMBANKMENT / TRENCH MATERIAL. THESE FACTORS MUST BE EVALUATED BY THE PROJECT ENGINEER FOR EACH SPECIFIC SITUATION.
- 5. H = STRUCTURE RISE + COVER.

SATISFACTORY BACKFILL MATERIAL, PROPER PLACEMENT, AND COMPACTION ARE KEY FACTORS IN OBTAINING MAXIMUM STRENGTH AND STABILITY.

THE BACKFILL MATERIAL SHOULD BE FREE OF ROCKS, FROZEN LUMPS, AND FOREIGN MATERIAL THAT COULD CAUSE HARD SPOTS OR DECOMPOSE TO CREATE VOIDS. BACKFILL MATERIAL SHOULD BE WELL GRADED GRANULAR MATERIAL THAT MEETS THE REQUIREMENTS OF AASHTO M-145 FOR SOIL CLASSIFICATIONS A-1, A-2, A-3. BACKFILL MUST BE REPLACED SYMMETRICALLY ON EACH SIDE OF THE STRUCTURE IN 6" LOOSE LIFTS. EACH LIFT IS TO BE COMPACTED TO A MINIMUM OF 90% DENSITY PER AASHTO T-180.

A HIGH PERCENTAGE OF SILT OR FINE SAND IN THE NATIVE SOILS SUGGESTS THE NEED FOR A WELL GRADED GRANULAR BACKFILL MATERIAL TO PREVENT SOIL MIGRATION.

DURING BACKFILL, ONLY SMALL TRACKED VEHICLES (D-4 OR SMALLER) SHOULD BE NEAR THE STRUCTURE AS FILL PROGRESSES ABOVE THE CROWN AND TO THE FINISHED GRADE.

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STRUCTURAL PLATE

PROPOSAL DRAWING

MULTIPLATE SINGLE RADIUS ARCH 19'-0" X 6'-4" MARTS COMPRESSOR STATION

PROJECT No.:	SEQ. I	No.:	DAT	E:
548650	0.	10	8/	26/2016
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SPECIFICATIONS FOR MANUFACTURE AND INSTALLATION OF CONTECH MULTI-PLATE® SINGLE RADIUS ARCH

I - GENERAL

1.0 STANDARDS AND DEFINITIONS

- 1.1 STANDARDS All standards refer to latest edition unless otherwise noted
- ASTM A-761 "Corrugated Steel Structural Plate, Zinc Coated for Field-Bolted Pipe, Pipe-Arches and Arches" (AASHTO Designation M-167).
- 1.1.2 AASHTO Standard Specification for Highway Bridges - Section 12.
- 1.1.3 AASHTO Standard Specification for Highway Bridges - Section 26.
- 1.2 DEFINITIONS
- Owner In these specifications the word "Owner" shall mean 1.2.1 Atlantic Coast Pipeline LLC.
- 1.2.2 Engineer - In these specifications the word "Engineer" shall mean the Engineer of Record or Owner's designated engineering
- 1.2.3 Manufacturer - In these specifications the word "Manufacturer" shall mean CONTECH Construction Products Inc. 800-338-1122 Michael D'Agostino.
- Contractor In these specifications the word "Contractor" shall mean the firm or corporation undertaking the execution of any installation work under the terms of these specifications.
- 1.2.5 Approved - In these specifications the word "approved" shall refer to the approval of the Engineer or his designated
- As Directed In these specifications the words "as directed" shall refer to the directions to the Contractor from the Owner or his designated representative.

2.0 GENERAL CONDITIONS

- 2.1 The Contractor shall furnish all labor, material and equipment and perform all work and services except those set out and furnished by the Owner, necessary to complete in a satisfactory manner the site preparation, excavation, filling, compaction, grading as shown on the plans and as described therein. This work shall consist of all mobilization clearing and grading, grubbing, stripping, removal of existing material unless otherwise stated, preparation of the land to be filled, filling of the land, spreading and compaction of the fill, and all subsidiary work necessary to complete the grading of the cut and fill areas to conform with the lines, grades, slopes, and specifications. This work is to be accomplished under the observation of the Owner or his designated
- 2.2 Prior to bidding the work, the Contractor shall examine, investigate and inspect the construction site as to the nature and location of the work, and the general and local conditions at the construction site, including without limitation, the character of surface or subsurface conditions and obstacles to be encountered on and around the construction site and shall make such additional investigation as he may deem necessary for the planning and proper execution of the work.

If conditions other than those indicated are discovered by the Contractor, the Owner shall be notified immediately. The material which the Contractor believes to be a changed condition shall not be disturbed so that the owner can investigate the condition

- 2.3 The construction shall be performed under the direction of the Engineer.
- All aspects of the structure design and site layout including foundations, backfill, end treatments and necessary scour consideration shall be performed by the Engineer

Any installation guidance provided herein shall be endorsed by the Engineer or superceded by the Engineer's plans and specifications II - MULTI-PLATE SINGLE RADIUS ARCH.

1.0 GENERAL

1.1 Manufacturer shall fabricate the MP Single Radius Arch culvert as shown on the plans. Fabrication shall conform to the requirements of ASTM A-761 and shall consist of plates, fasteners, and appurtenant items.

Plate thickness, end treatment and type of invert and foundation shall be as indicated on the plans. All manufacturing processes including corrugating, punching, curving and required galvanizing shall be performed within the United States of America.

The contractor shall verify all field dimensions and conditions prior to ordering materials.

DIMENSIONS

2.1 The proposed structure shall be a MP Single Radius Arch with the following dimensions:

Span: 19'-0' Gage: 12

Rise: 6'-4"

2.2 All plan dimensions on the contract drawings are measured in a true horizontal plan

3.0 ASSEMBLY AND INSTALLATION

3.1 Bolts and nuts shall conform to the requirements of ASTM A-449. The structure shall be assembled in accordance with the plate layout drawings provided by the manufacturer and per the manufacturer's recommendations

Bolts shall be tightened using an applied torque of between 100 and 300 ft.-lbs

- 3.2 The structure shall be installed in accordance with the plans and specifications, the manufacturer's recommendations, and AASHTO Standard Specification for Highway Bridges - Section 26.
- 3.3 Trench excavation shall be made in embankment material that is structurally adequate. The trench width shall be shown on the plans. Poor quality in situ embankment material must be removed and replaced with suitable backfill as directed by the
- 3.4 Bedding preparation is critical to both structure performance and service life. The bed should be constructed to uniform line and grade to avoid distortions that may create undesirable stresses in the structure and/or rapid deterioration of the roadway. The bed should be free of rock formations, protruding stones, frozen lumps, roots, and other foreign matter that may cause unequal settlement.
- 3.5 Bedding shall provide a minimum of 4,000 psf bearing capacity. Foundation details for bearing capacity less than 4,000 psf shall be approved by the Engineer
- 3.6 The structure shall be assembled in accordance with the Manufacturer's instructions. All plates shall be unloading and handled with reasonable care. Plates shall not be rolled or dragged over gravel rock and shall be prevented from striking rock or other hard objects during placement in trench or on bedding.

When assembled on a cast in place spread footing, the structure shall be assembled in the footing starting at the upstream end. When assembled on a full invert or on flexible footing pads, the invert or footing pad shall be placed starting at the downstream end. The structure shell shall be assembled on the invert or footing pad starting at the inlet end. Circumferential seams shall be installed with the plate laps shingled downstream as viewed from the inside of the structure.

The structure shall be backfilled using clean well graded granular material that meets the requirements of AASHTO M-145 for soil classifications A-1, A-2 or A-3.

Backfill must be placed symmetrically on each side of the structure in 6 to 8 inch loose lifts. Each lift shall be compacted to a minimum of 90 percent density per

Construction loads that exceed highway load limits are not allowed to cross the structure without approval from the Engineer.

Normal highway traffic is not allowed to cross the structure until the structure has been backfilled and paved. If the road is unpaved, cover allowance to accommodate rutting shall be as directed by the Engineer

GROUP CLASSIFICATION	A-1	A-2	A-3*
Sieve Analysis Percent Passing			
No. 10 (2.000 mm)			
No. 40 (0.425 mm)	50 max.		51 max.
No. 200 (0.075 mm)	25 max.	35 max.	10 max.
Characteristics of Fraction			
Passing No. 40 (0.425 mm)			
Liquid Limits		40 max.	
Plasticity Index	6 max.	10 max.	Non Plastic
Usual Materials	Stone Fragment, Gravel and Sand	Gravel or Sand With Silt or clay	Sand
Adopted from AACLITO M 145			

Adapted from AASHTO M-145

* Fine beach sands, windblown sands, stream deposited sands, etc., exhibiting fine, rounded particles and typically classified by AASHTO M-145 as A-3 material should be avoided

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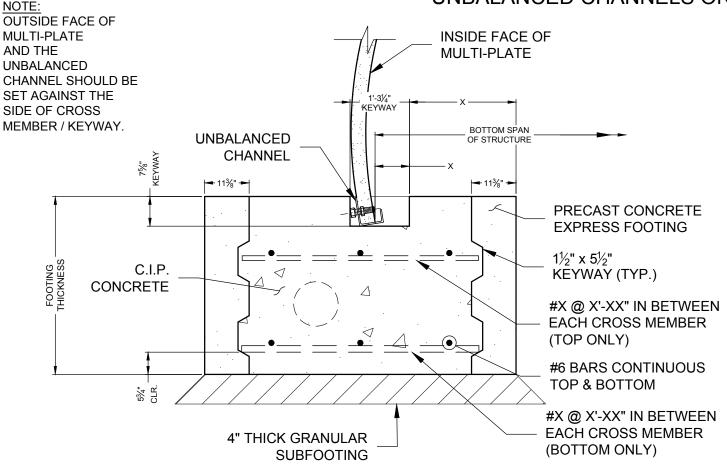
STRUCTURAL PLATE

PROPOSAL

MULTIPLATE SINGLE RADIUS ARCH 19'-0" X 6'-4" MARTS COMPRESSOR STATION

PROJECT No.:	SEQ.	No.:	DAT	E:	
548650	010		8/	/26/2016	ŝ
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MULTI-PLATE OR SUPER SPAN STRUCTURE, W/ UNBALANCED CHANNELS ON EXPRESS FOOTINGS.



OPTION 1 (PREFERRED):

- 1. SET PRECAST EXPRESS FOOTINGS.
- 2. TIE REBAR INTO EXPRESS FOOTINGS.
- 3. ASSEMBLE PLATE STRUCTURE ON CROSS-MEMBERS OF EXPRESS FOOTINGS. (OR ASSEMBLE PLATE STRUCTURE TO THE SIDE AND LIFT IT AND SET IT ON THE PRECAST.) THE UNBALANCED CHANNEL SHOULD BE ATTACHED TO THE MULTI-PLATE.
- 4. POUR CAST-IN-PLACE CONCRETE IN EXPRESS FOOTINGS. THE CAST-IN-PLACE CONCRETE WILL COVER THE BOTTOM 4" OF PLATE STRUCTURE.

OPTION 2:

- 1. SET PRECAST EXPRESS FOOTINGS.
- 2. TIE REBAR INTO EXPRESS FOOTINGS.
- 3. POUR CAST-IN-PLACE CONCRETE IN EXPRESS FOOTING. FORM A KEYWAY IN THE FOOTING MATCHING THE KEYWAY NOTCHES IN THE EXPRESS FOOTINGS.
- 4. ASSEMBLE PLATE STRUCTURE IN THE KEYWAYS OF THE FOOTING. (OR ASSEMBLE PLATE STRUCTURE TO THE SIDE AND SET IT ON THE FOOTING.)

PRECAST REINFORCED CONCRETE EXPRESS™ FOUNDATION NOTES:

- PRECAST FOUNDATION UNITS SHALL BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH SPECIFICATIONS FOR MANUFACTURE AND INSTALLATION OF EXPRESS FOOTINGS.
- PRECAST AND CAST-IN-PLACE CONCRETE FOR EXPRESS FOUNDATIONS SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4000 PSI. REINFORCING STEEL FOR FOUNDATIONS SHALL CONFORM TO ASTM A615 OR A996, GRADE 60.
- 3. PRECAST FOUNDATION UNITS SHALL BE SET ON A MINIMUM 4-INCH THICK BASE LAYER OF COMPACTED GRANULAR MATERIAL THE FULL WIDTH OF THE FOUNDATION.
- COMPACTED BACKFILL MATERIAL MUST BE PLACED UP TO THE TOP OF THE PRECAST FOUNDATION UNITS ON BOTH SIDES PRIOR TO PLACING CAST-IN-PLACE CONCRETE PORTION OF FOUNDATIONS.
- 5. CONCRETE SURFACES WHICH CAST-IN-PLACE CONCRETE WILL BE PLACED AGAINST SHALL BE CLEAN, FREE OF LAITANCE, DIRT, STANDING WATER AND ANY OTHER MATERIAL THAT MAY IMPAIR THE BOND BETWEEN THE PRECAST CONCRETE AND CAST-IN-PLACE CONCRETE.
- 6. CAST-IN-PLACE CONCRETE MIX USED TO FILL FOUNDATION SHALL BE ABLE TO FLOW INTO ARCH SHIM SPACE OR NON-SHRINK GROUT SHALL BE PLACED UNDER ARCH UNIT LEG AT FOUNDATION CROSS MEMBERS PRIOR TO PLACEMENT OF CAST-IN-PLACE PORTION OF FOUNDATION.
- 7. IF THE AMBIENT TEMPERATURE AT THE TIME OF PLACEMENT OF CAST-IN-PLACE CONCRETE IS ABOVE 90°F OR EXPECTED TO GO BELOW 35°F DURING THE CURE PERIOD, THE CONTRACTOR SHALL FOLLOW THE REQUIREMENTS OF THE LATEST EDITION OF THE AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS, SECTION 8.6.2 HOT WEATHER PROTECTION OR SECTION 8.6.4 COLD WEATHER PROTECTION.
- 8. IF CAST-IN-PLACE CONCRETE PORTION OF FOUNDATION IS TO BE PLACED PRIOR TO SETTING OF MULTI-PLATE ARCH, CAST-IN-PLACE CONCRETE SHALL REACH A MINIMUM COMPRESSIVE STRENGTH OF 2000 PSI BEFORE PLACEMENT OF MULTI-PLATE ARCH.
- 9. FOUNDATION CONCRETE SHALL REACH ITS FULL DESIGN STRENGTH BEFORE BACKFILLING OF MULTI-PLATE ARCH.

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PROPOSAL

PROJECT No.:	SEQ.	No.:	DAT	E:	
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MULTIPLATE SINGLE RADIUS ARCH 19'-0" X	6'-4"
MARTS COMPRESSOR STATION	

SAMPL



ARMORFLEX FULL INVERT



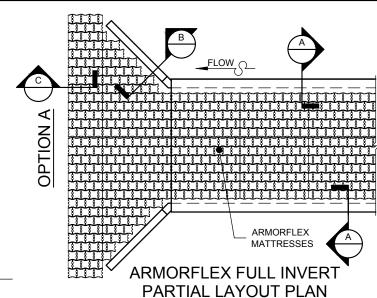
ARMORFLEX PARTIAL INVERT

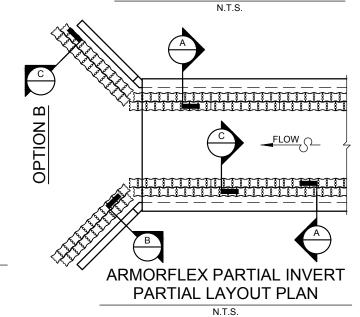
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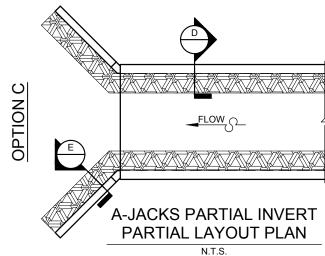


A-JACKS PARTIAL INVERT

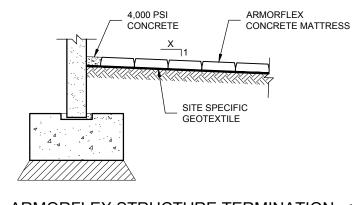
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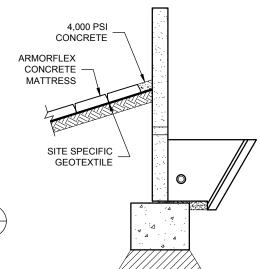




CONSIDER A COMPLETE SYSTEM WITH ARMORTEC REVETMENT

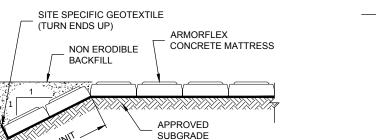




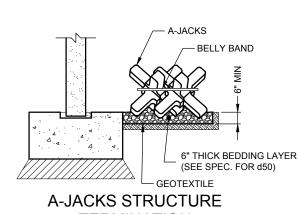


ARMORFLEX WINGWALL **TERMINATION**

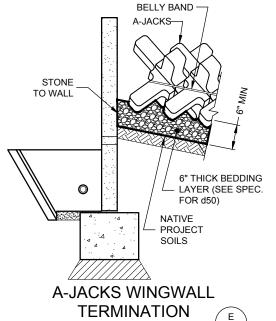
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STANDARD TERMINATION N.T.S.







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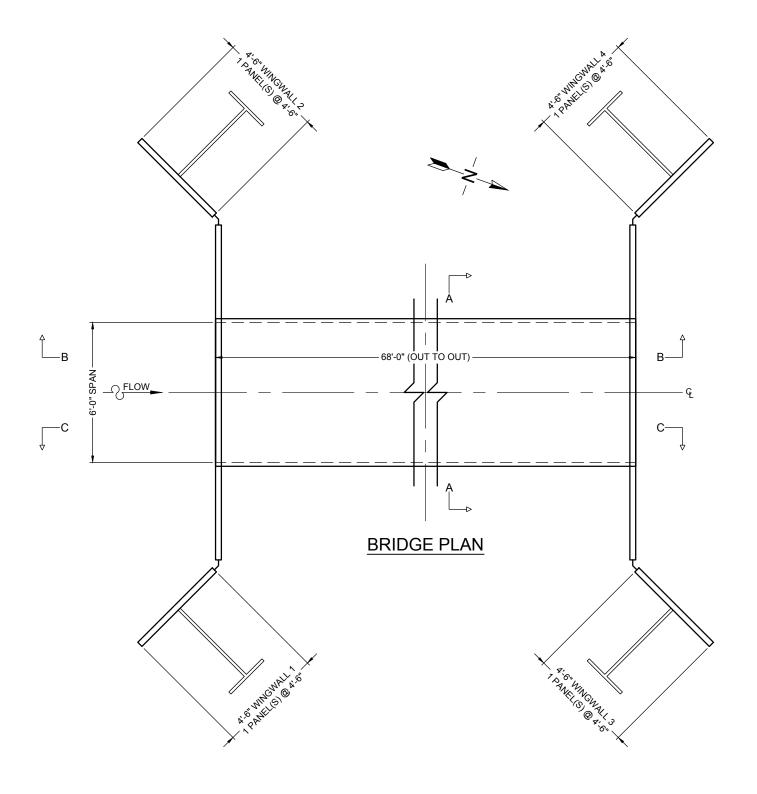
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STRUCTURAL PLATE

PROPOSAL

MULTIPLATE SINGLE RADIUS ARCH 19'-0" X 6'-4" MARTS COMPRESSOR STATION

PROJECT No.:	SEQ.	No.:	DATE:
548650	0.	10	8/26/2016
DESIGNED:		DRAW	/N:
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SHEET NO.:	11	OI	11



NOTES:

- 1. CULVERT DETAILS PROVIDED ARE FOR BIDDING PURPOSES ONLY. CONTECH TO PROVIDE FINAL CONSTRUCTION DRAWINGS AND FOUNDATION DETAILS.
- 2. CONTRACTOR SHALL CONTACT ENGINEER OF RECORD TO HAVE A GEOTECHNICAL ENGINEER EVALUATE THE FOUNDATION SUBGRADE TO ASSURE A 4,000 PSF NET ALLOWABLE SOIL BEARING CAPACITY BEFORE PLACING THE FOOTINGS.

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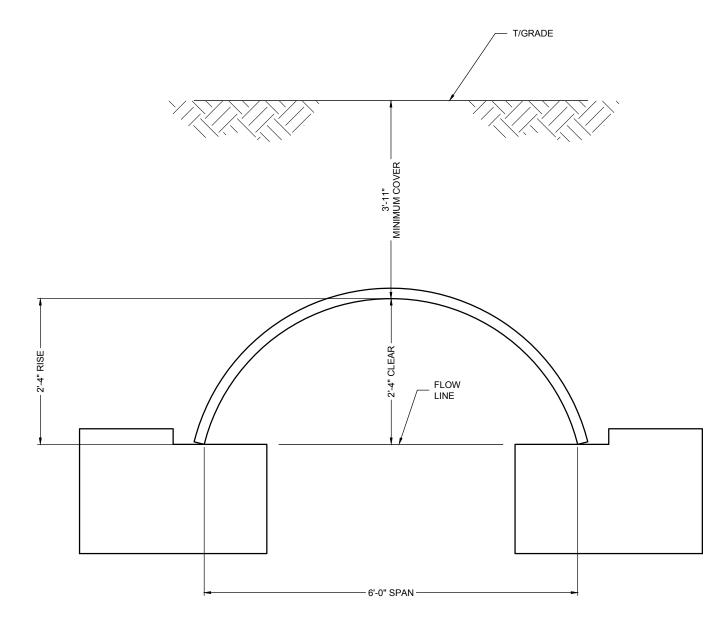
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CENTECH STRUCTURAL PLATE

PROPOSAL DRAWING

	PROJECT No.:	SEQ. N	lo.:	DATE:	
MULTIPLATE SINGLE RADIUS ARCH 6'-0" X 2'-4"	548650	020		8/26	3/201
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LEWIS COUNTY, WV	SHEET NO.:				
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8/26/2016



CROSS SECTION A-A

Approximate Area: 10 sq. ft. used, 10 sq. ft. total

NOTES

- •MEASUREMENTS ARE TO THE INSIDE CRESTS OF THE CORRUGATION
- •DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES
- •MAXIMUM HEIGHT OF COVER FOR THIS APPLICATION IS 5.2 FT.

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PROPOSAL DRAWING MULTIPLATE SINGLE RADIUS ARCH 6'-0" X 2'-4"
MARTS COMPRESSOR STATION

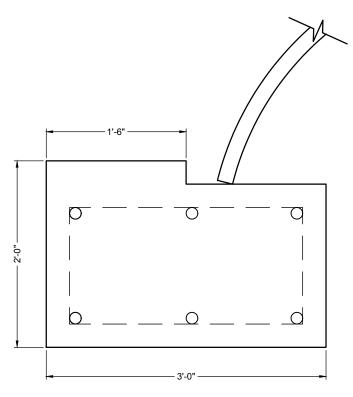
LEWIS COUNTY, WV

PROJECT No.:	SEQ. I	No.:	DAT	E:	_
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TYPICAL FOOTING DETAIL

NOTES

- FOOTING DIMENSIONS AND DETAILS SHOWN ARE CONCEPTUAL ONLY
- FINAL DIMENSIONS & DETAILS TO BE FURNISHED BY THE PROJECT ENGINEERS
- FOUNDATION REINFORCING TO BE DETERMINED

707					
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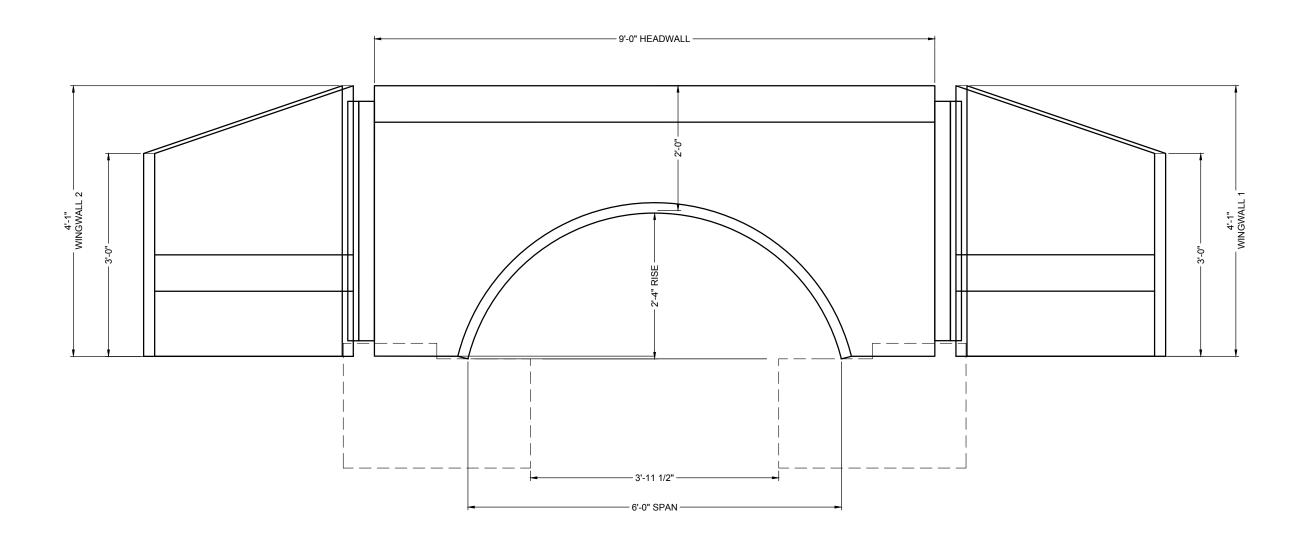
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800-338-1122 513-645-7000 513-645-7993 FAX

CENTECH STRUCTURAL PLATE

PROPOSAL DRAWING

PROJECT No.:	SEQ. I	No.:	DAT	E:	
548650	02	20	8/	26/2016	
DESIGNED:		DRAW	/N:		
MJD			M	JD	
CHECKED:		APPR	OVE	D:	
SHEET NO.:					
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INLET END ELEVATION

ALUMINUM HEADWALL TO BE FIELD CUT AT TIME OF INSTALLATION (BY OTHERS)

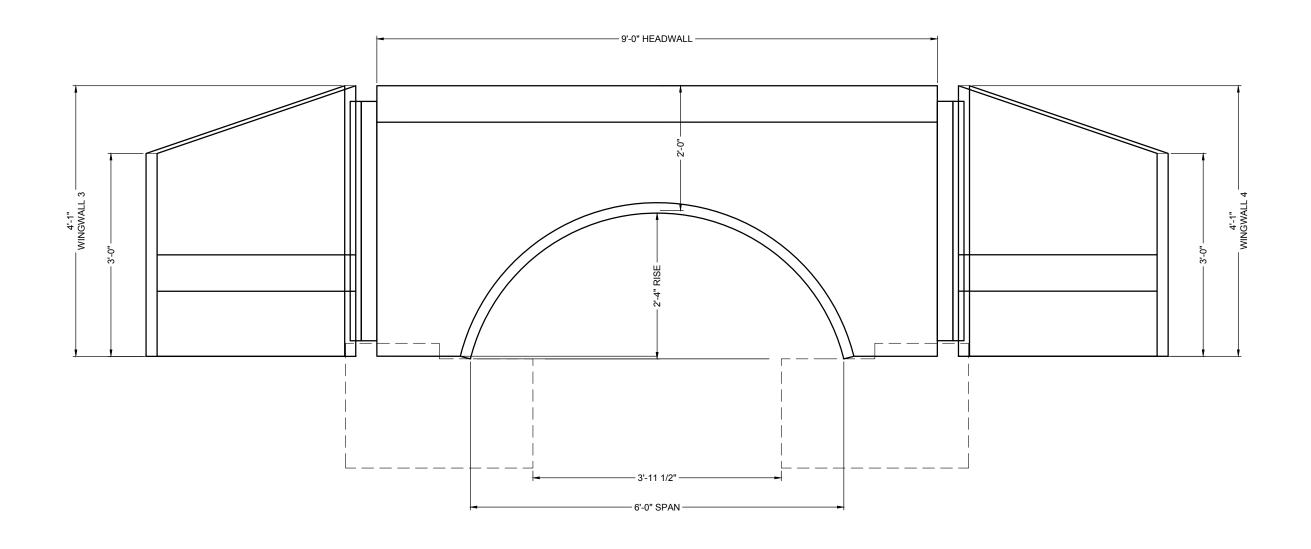
REVISION DESCRIPTION MARK DATE



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CENTECH STRUCTURAL PLATE PROPOSAL DRAWING

PROJECT No.:	SEQ. I	No.:	DAT	E:
548650	020		8/	26/2016
DESIGNED:	DRAW		/N:	
MJD			M	JD
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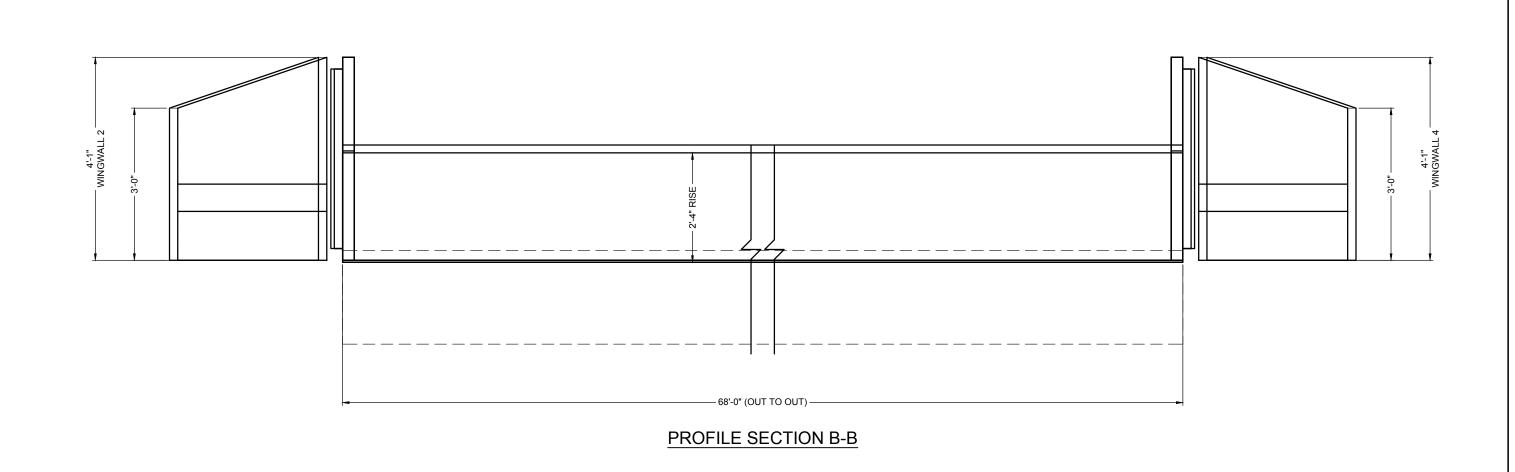
OUTLET END ELEVATION

800-338-1122 513-645-7000 513-645-7993 FAX REVISION DESCRIPTION MARK DATE

ENGINEERED SOLUTIONS LLC www.ContechES.com 9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069 CENTECH STRUCTURAL PLATE

PROPOSAL DRAWING

PROJECT No.:	SEQ. No.:		DAT	E:								
548650	020		020		020		020		020		8/	26/2016
DESIGNED:	DRAW		/N:									
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MARK DATE

REVISION DESCRIPTION

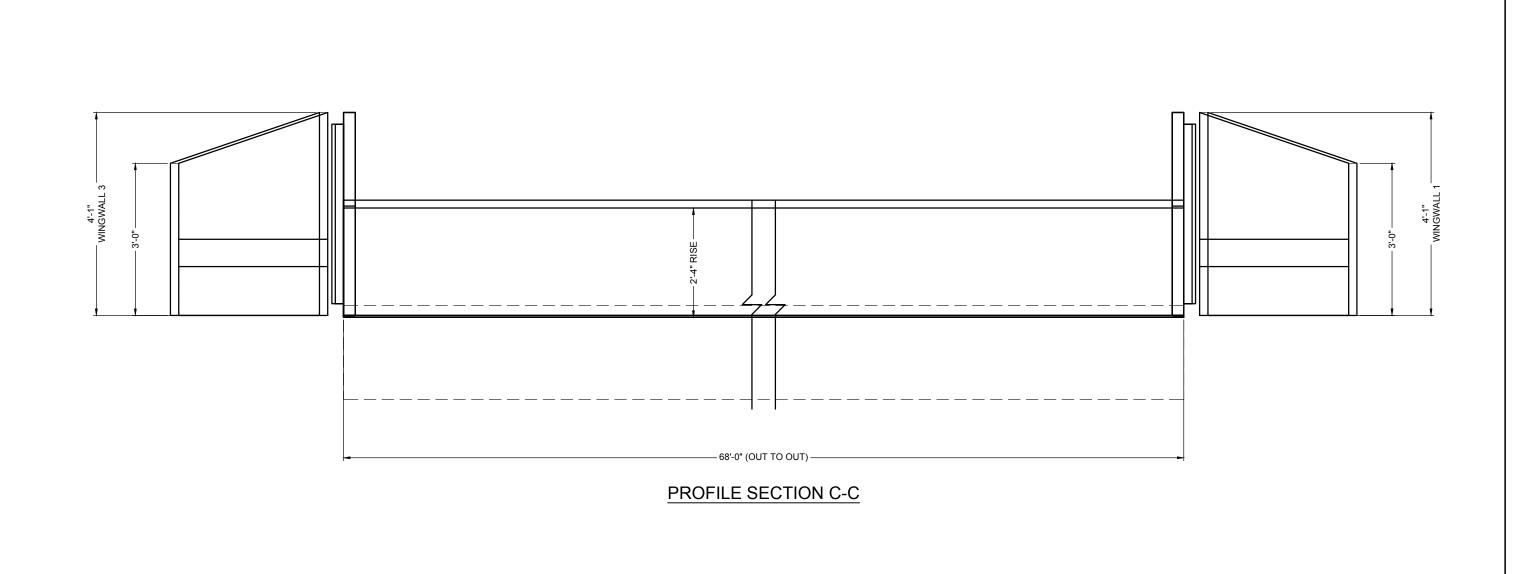
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PROPOSAL DRAWING

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548650	020		8/26/201	
DESIGNED:	DRAW		/N:	
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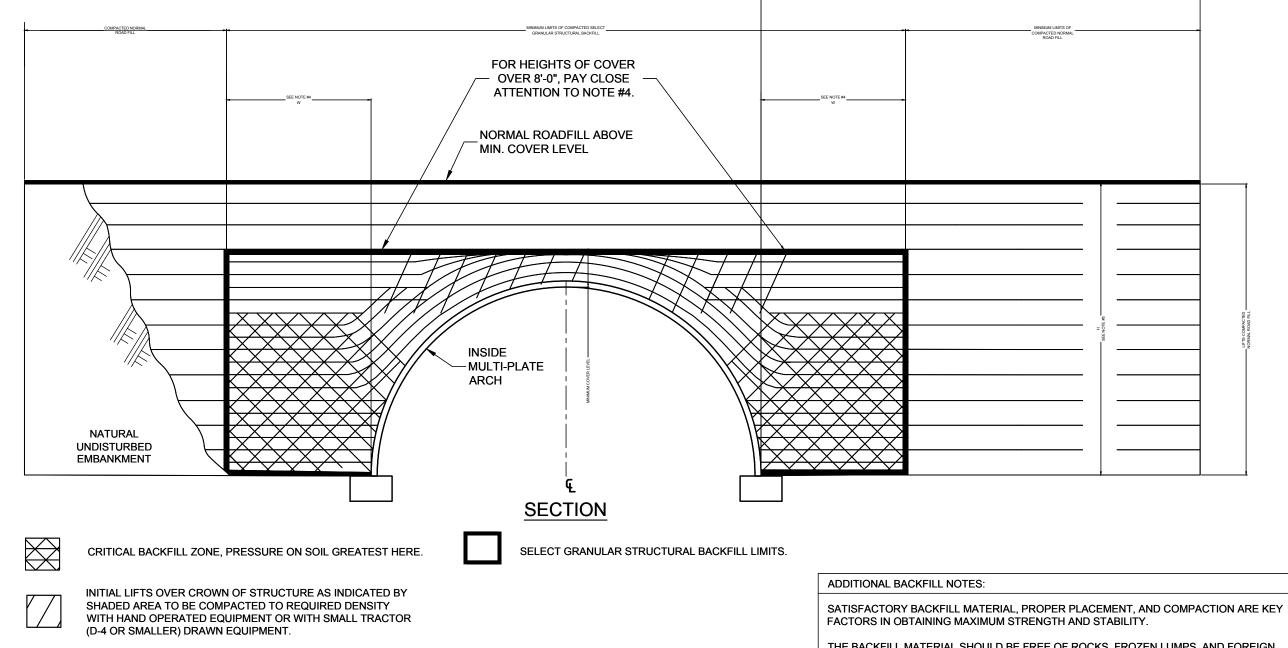
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PROPOSAL DRAWING

PROJECT No.:	SEQ. I	No.:	DATE:
548650	020		8/26/2016
DESIGNED:	DRAW		/N:
MJD			MJD
CHECKED:		APPR	OVED:
SHEET NO.:			
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NOTES:

- 1. ALL SELECT GRANULAR BACKFILL TO BE PLACED IN A BALANCED FASHION IN THIN LIFTS (6"-8" LOOSE TYPICALLY) AND COMPACTED TO 90 PERCENT DENSITY PER AASHTO T-180.
- 2. COMPLETE AND REGULAR MONITORING OF THE ARCH IS NECESSARY DURING ALL BACKFILLING STEPS.
- 3. PREVENT EXCESSIVE DISTORTION OF SHAPE AS NECESSARY BY VARYING COMPACTION METHODS AND EQUIPMENT.
- 4. TRENCH WIDTH AND / OR SELECT FILL ENVELOPE WIDTH SHALL BE BY DIRECTION OF THE ENGINEER OF RECORD. A TYPICAL WIDTH OF4 FEET IS DEPICTED, BUT GREATER OR LESSER DISTANCE MAY BE REQUIRED DEPENDING UPON SITE-SPECIFIC CONDITIONS. THIS WIDTH DEPENDS ON FACTORS SUCH AS THE LATERAL PRESSURES EXERTED BY THE STRUCTURE ONTO THE ADJACENT SOIL FOR THE GIVEN LOADING CONDITIONS, THE STRUCTURE SHAPE, THE QUALITY OF THE SELECT FILL MATERIAL AND THE STRENGTH OF THE IN SITU EMBANKMENT / TRENCH MATERIAL. THESE FACTORS MUST BE EVALUATED BY THE PROJECT ENGINEER FOR EACH SPECIFIC SITUATION.
- 5. H = STRUCTURE RISE + COVER.

THE BACKFILL MATERIAL SHOULD BE FREE OF ROCKS, FROZEN LUMPS, AND FOREIGN MATERIAL THAT COULD CAUSE HARD SPOTS OR DECOMPOSE TO CREATE VOIDS. BACKFILL MATERIAL SHOULD BE WELL GRADED GRANULAR MATERIAL THAT MEETS THE REQUIREMENTS OF AASHTO M-145 FOR SOIL CLASSIFICATIONS A-1, A-2, A-3. BACKFILL MUST BE REPLACED SYMMETRICALLY ON EACH SIDE OF THE STRUCTURE IN 6" LOOSE LIFTS. EACH LIFT IS TO BE COMPACTED TO A MINIMUM OF 90% DENSITY PER AASHTO T-180.

A HIGH PERCENTAGE OF SILT OR FINE SAND IN THE NATIVE SOILS SUGGESTS THE NEED FOR A WELL GRADED GRANULAR BACKFILL MATERIAL TO PREVENT SOIL MIGRATION.

DURING BACKFILL, ONLY SMALL TRACKED VEHICLES (D-4 OR SMALLER) SHOULD BE NEAR THE STRUCTURE AS FILL PROGRESSES ABOVE THE CROWN AND TO THE FINISHED GRADE.

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PROPOSAL DRAWING

MULTIPLATE SINGLE RADIUS ARCH 6'-0" X 2'-4" MARTS COMPRESSOR STATION

PROJECT No.:	SEQ. I	No.:	DAT	E:	
548650	020		8/26/201		6
DESIGNED:		DRAW	DRAWN:		
MJD			M	JD	
CHECKED:		APPR	OVED):	
SHEET NO.:					
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SPECIFICATIONS FOR MANUFACTURE AND INSTALLATION OF CONTECH MULTI-PLATE® SINGLE RADIUS ARCH

I - GENERAL

1.0 STANDARDS AND DEFINITIONS

- 1.1 STANDARDS All standards refer to latest edition unless otherwise noted
- ASTM A-761 "Corrugated Steel Structural Plate, Zinc Coated for Field-Bolted Pipe, Pipe-Arches and Arches" (AASHTO Designation M-167).
- 1.1.2 AASHTO Standard Specification for Highway Bridges - Section 12.
- 1.1.3 AASHTO Standard Specification for Highway Bridges - Section 26.
- 1.2 DEFINITIONS
- Owner In these specifications the word "Owner" shall mean 1.2.1 Atlantic Coast Pipeline LLC.
- 1.2.2 Engineer - In these specifications the word "Engineer" shall mean the Engineer of Record or Owner's designated engineering
- 1.2.3 Manufacturer - In these specifications the word "Manufacturer" shall mean CONTECH Construction Products Inc. 800-338-1122 Michael D'Agostino.
- Contractor In these specifications the word "Contractor" shall mean the firm or corporation undertaking the execution of any installation work under the terms of these specifications.
- 1.2.5 Approved - In these specifications the word "approved" shall refer to the approval of the Engineer or his designated
- As Directed In these specifications the words "as directed" shall refer to the directions to the Contractor from the Owner or his designated representative.

2.0 GENERAL CONDITIONS

- 2.1 The Contractor shall furnish all labor, material and equipment and perform all work and services except those set out and furnished by the Owner, necessary to complete in a satisfactory manner the site preparation, excavation, filling, compaction, grading as shown on the plans and as described therein. This work shall consist of all mobilization clearing and grading, grubbing, stripping, removal of existing material unless otherwise stated, preparation of the land to be filled, filling of the land, spreading and compaction of the fill, and all subsidiary work necessary to complete the grading of the cut and fill areas to conform with the lines, grades, slopes, and specifications. This work is to be accomplished under the observation of the Owner or his designated
- 2.2 Prior to bidding the work, the Contractor shall examine, investigate and inspect the construction site as to the nature and location of the work, and the general and local conditions at the construction site, including without limitation, the character of surface or subsurface conditions and obstacles to be encountered on and around the construction site and shall make such additional investigation as he may deem necessary for the planning and proper execution of the work.

If conditions other than those indicated are discovered by the Contractor. the Owner shall be notified immediately. The material which the Contractor believes to be a changed condition shall not be disturbed so that the owner can investigate the condition

- 2.3 The construction shall be performed under the direction of the Engineer.
- All aspects of the structure design and site layout including foundations, backfill, end treatments and necessary scour consideration shall be performed by the Engineer

Any installation guidance provided herein shall be endorsed by the Engineer or superceded by the Engineer's plans and specifications II - MULTI-PLATE SINGLE RADIUS ARCH.

1.0 GENERAL

1.1 Manufacturer shall fabricate the MP Single Radius Arch culvert as shown on the plans. Fabrication shall conform to the requirements of ASTM A-761 and shall consist of plates, fasteners, and appurtenant items.

Plate thickness, end treatment and type of invert and foundation shall be as indicated on the plans. All manufacturing processes including corrugating, punching, curving and required galvanizing shall be performed within the United States of America.

The contractor shall verify all field dimensions and conditions prior to ordering materials.

DIMENSIONS

2.1 The proposed structure shall be a MP Single Radius Arch with the following dimensions:

Span: 6'-0" Gage: 12

Rise: 2'-4"

2.2 All plan dimensions on the contract drawings are measured in a true horizontal plan

3.0 ASSEMBLY AND INSTALLATION

3.1 Bolts and nuts shall conform to the requirements of ASTM A-449. The structure shall be assembled in accordance with the plate layout drawings provided by the manufacturer and per the manufacturer's recommendations

Bolts shall be tightened using an applied torque of between 100 and 300 ft.-lbs

- 3.2 The structure shall be installed in accordance with the plans and specifications, the manufacturer's recommendations, and AASHTO Standard Specification for Highway Bridges - Section 26.
- 3.3 Trench excavation shall be made in embankment material that is structurally adequate. The trench width shall be shown on the plans. Poor quality in situ embankment material must be removed and replaced with suitable backfill as directed by the
- 3.4 Bedding preparation is critical to both structure performance and service life. The bed should be constructed to uniform line and grade to avoid distortions that may create undesirable stresses in the structure and/or rapid deterioration of the roadway. The bed should be free of rock formations, protruding stones, frozen lumps, roots, and other foreign matter that may cause unequal settlement.
- 3.5 Bedding shall provide a minimum of 4,000 psf bearing capacity. Foundation details for bearing capacity less than 4,000 psf shall be approved by the Engineer
- 3.6 The structure shall be assembled in accordance with the Manufacturer's instructions. All plates shall be unloading and handled with reasonable care. Plates shall not be rolled or dragged over gravel rock and shall be prevented from striking rock or other hard objects during placement in trench or on bedding

When assembled on a cast in place spread footing, the structure shall be assembled in the footing starting at the upstream end. When assembled on a full invert or on flexible footing pads, the invert or footing pad shall be placed starting at the downstream end. The structure shell shall be assembled on the invert or footing pad starting at the inlet end. Circumferential seams shall be installed with the plate laps shingled downstream as viewed from the inside of the structure.

The structure shall be backfilled using clean well graded granular material that meets the requirements of AASHTO M-145 for soil classifications A-1, A-2 or A-3.

Backfill must be placed symmetrically on each side of the structure in 6 to 8 inch loose lifts. Each lift shall be compacted to a minimum of 90 percent density per

Construction loads that exceed highway load limits are not allowed to cross the structure without approval from the Engineer.

Normal highway traffic is not allowed to cross the structure until the structure has been backfilled and paved. If the road is unpaved, cover allowance to accommodate rutting shall be as directed by the Engineer

GROUP CLASSIFICATION	A-1	A-2	A-3*
Sieve Analysis Percent Passing			
No. 10 (2.000 mm)			
No. 40 (0.425 mm)	50 max.		51 max.
No. 200 (0.075 mm)	25 max.	35 max.	10 max.
Characteristics of Fraction			
Passing No. 40 (0.425 mm)			
Liquid Limits		40 max.	
Plasticity Index	6 max.	10 max.	Non Plastic
Usual Materials	Stone Fragment, Gravel and Sand	Gravel or Sand With Silt or clay	Sand
Adopted from AACLITO M 145			

Adapted from AASHTO M-145

* Fine beach sands, windblown sands, stream deposited sands, etc., exhibiting fine, rounded particles and typically classified by AASHTO M-145 as A-3 material should be avoided

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	MARK	DATE	REVISION DESCRIPTION	BY	l

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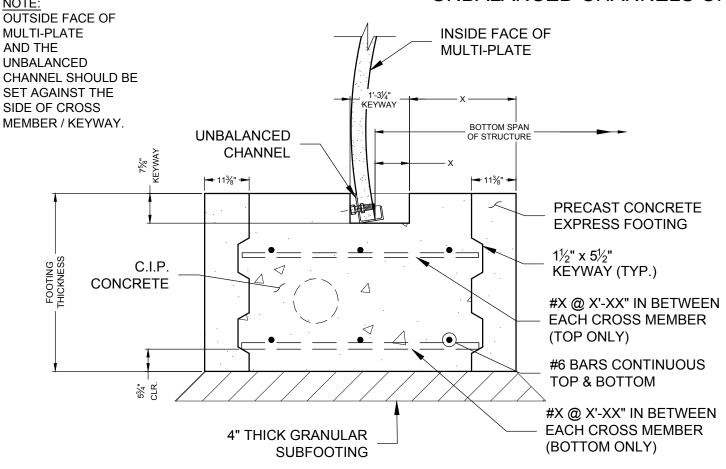
MULTIPLATE SINGLE RADIUS ARCH 6'-0" X 2'-4" MARTS COMPRESSOR STATION LEWIS COUNTY, WV

PROJECT No.:	SEQ. I	No.:	DATE:		
548650	020		8/26/2016		
DESIGNED:		DRAW	/N:		
MJD			MJD		
CHECKED:		APPR	OVED:		
SHEET NO.:	9	OI	± 11		

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PROPOSAL

MULTI-PLATE OR SUPER SPAN STRUCTURE, W/ UNBALANCED CHANNELS ON EXPRESS FOOTINGS.



OPTION 1 (PREFERRED):

- 1. SET PRECAST EXPRESS FOOTINGS.
- 2. TIE REBAR INTO EXPRESS FOOTINGS.
- 3. ASSEMBLE PLATE STRUCTURE ON CROSS-MEMBERS OF EXPRESS FOOTINGS. (OR ASSEMBLE PLATE STRUCTURE TO THE SIDE AND LIFT IT AND SET IT ON THE PRECAST.) THE UNBALANCED CHANNEL SHOULD BE ATTACHED TO THE MULTI-PLATE.
- 4. POUR CAST-IN-PLACE CONCRETE IN EXPRESS FOOTINGS. THE CAST-IN-PLACE CONCRETE WILL COVER THE BOTTOM 4" OF PLATE STRUCTURE.

OPTION 2:

- 1. SET PRECAST EXPRESS FOOTINGS.
- 2. TIE REBAR INTO EXPRESS FOOTINGS.
- 3. POUR CAST-IN-PLACE CONCRETE IN EXPRESS FOOTING. FORM A KEYWAY IN THE FOOTING MATCHING THE KEYWAY NOTCHES IN THE EXPRESS FOOTINGS.
- 4. ASSEMBLE PLATE STRUCTURE IN THE KEYWAYS OF THE FOOTING. (OR ASSEMBLE PLATE STRUCTURE TO THE SIDE AND SET IT ON THE FOOTING.)

PRECAST REINFORCED CONCRETE EXPRESS™ FOUNDATION NOTES:

- 1. PRECAST FOUNDATION UNITS SHALL BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH SPECIFICATIONS FOR MANUFACTURE AND INSTALLATION OF EXPRESS FOOTINGS.
- PRECAST AND CAST-IN-PLACE CONCRETE FOR EXPRESS FOUNDATIONS SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4000 PSI. REINFORCING STEEL FOR FOUNDATIONS SHALL CONFORM TO ASTM A615 OR A996, GRADE 60.
- 3. PRECAST FOUNDATION UNITS SHALL BE SET ON A MINIMUM 4-INCH THICK BASE LAYER OF COMPACTED GRANULAR MATERIAL THE FULL WIDTH OF THE FOUNDATION.
- COMPACTED BACKFILL MATERIAL MUST BE PLACED UP TO THE TOP OF THE PRECAST FOUNDATION UNITS ON BOTH SIDES PRIOR TO PLACING CAST-IN-PLACE CONCRETE PORTION OF FOUNDATIONS.
- CONCRETE SURFACES WHICH CAST-IN-PLACE CONCRETE WILL BE PLACED AGAINST SHALL BE CLEAN, FREE OF LAITANCE, DIRT, STANDING WATER AND ANY OTHER MATERIAL THAT MAY IMPAIR THE BOND BETWEEN THE PRECAST CONCRETE AND CAST-IN-PLACE CONCRETE.
- 6. CAST-IN-PLACE CONCRETE MIX USED TO FILL FOUNDATION SHALL BE ABLE TO FLOW INTO ARCH SHIM SPACE OR NON-SHRINK GROUT SHALL BE PLACED UNDER ARCH UNIT LEG AT FOUNDATION CROSS MEMBERS PRIOR TO PLACEMENT OF CAST-IN-PLACE PORTION OF FOUNDATION.
- 7. IF THE AMBIENT TEMPERATURE AT THE TIME OF PLACEMENT OF CAST-IN-PLACE CONCRETE IS ABOVE 90°F OR EXPECTED TO GO BELOW 35°F DURING THE CURE PERIOD, THE CONTRACTOR SHALL FOLLOW THE REQUIREMENTS OF THE LATEST EDITION OF THE AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS, SECTION 8.6.2 HOT WEATHER PROTECTION OR SECTION 8.6.4 COLD WEATHER PROTECTION.
- 8. IF CAST-IN-PLACE CONCRETE PORTION OF FOUNDATION IS TO BE PLACED PRIOR TO SETTING OF MULTI-PLATE ARCH, CAST-IN-PLACE CONCRETE SHALL REACH A MINIMUM COMPRESSIVE STRENGTH OF 2000 PSI BEFORE PLACEMENT OF MULTI-PLATE ARCH.
- 9. FOUNDATION CONCRETE SHALL REACH ITS FULL DESIGN STRENGTH BEFORE BACKFILLING OF MULTI-PLATE ARCH.

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CUNTECH STRUCTURAL PLATE

PROPOSAL

LEWIS COUNTY. WV

SHEET NO.:	10	OI	=	11	
CHECKED:		APPR	OVE	D:	
DESIGNED: MJD		DRAW		JD	
PROJECT No.: 548650	SEQ. I		DAT 8/	E: 26/201	16

MULTIPLATE SINGLE RADIUS ARCH 6'-0" X 2'-4"
MARTS COMPRESSOR STATION



ARMORFLEX FULL INVERT



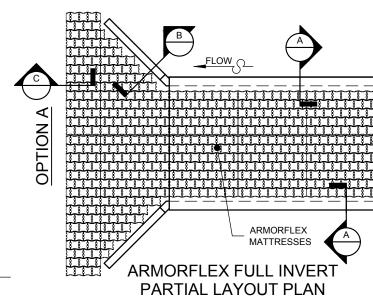
ARMORFLEX PARTIAL INVERT

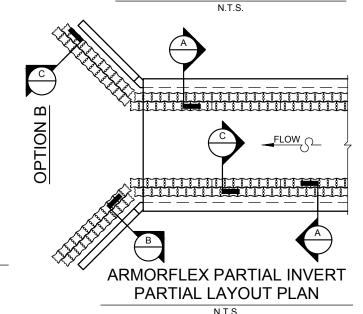
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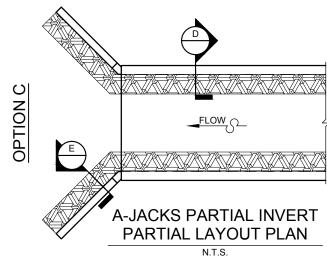


A-JACKS PARTIAL INVERT

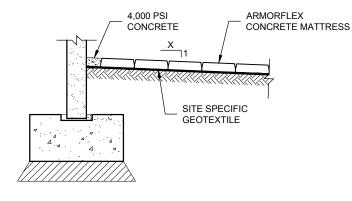
N.T.S.



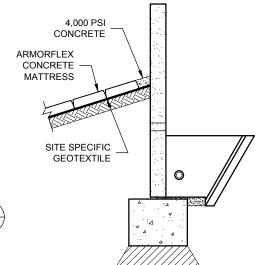


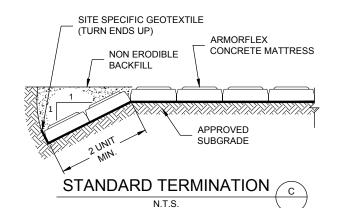


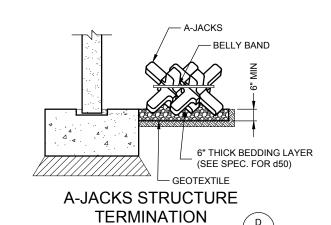
CONSIDER A COMPLETE SYSTEM WITH ARMORTEC REVETMENT



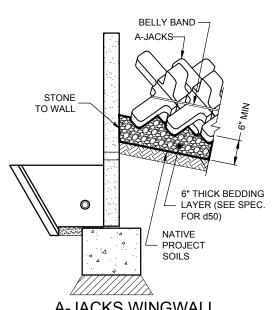








N.T.S.



ARMORFLEX WINGWALL **TERMINATION**

N.T.S.

A-JACKS WINGWALL **TERMINATION**

-	
-	

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STRUCTURAL PLATE

PROPOSAL

LEWIS COUNTY, WV

PROJECT No.:	SEQ. I	No.:	DAT	E:	
548650	020		8/26/2016		
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MJD			M	IJD	
CHECKED:		APPR	OVE	D:	
SHEET NO.:	11	OI	-	11	

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MULTIPLATE SINGLE RADIUS ARCH 6'-0" X 2'-4" MARTS COMPRESSOR STATION

Stormwater Analysis - Outlet Protection Sizing Marts Compressor Station 160-781

Created By. GSZ

Date: 10/7/2016

Checked By: Tes

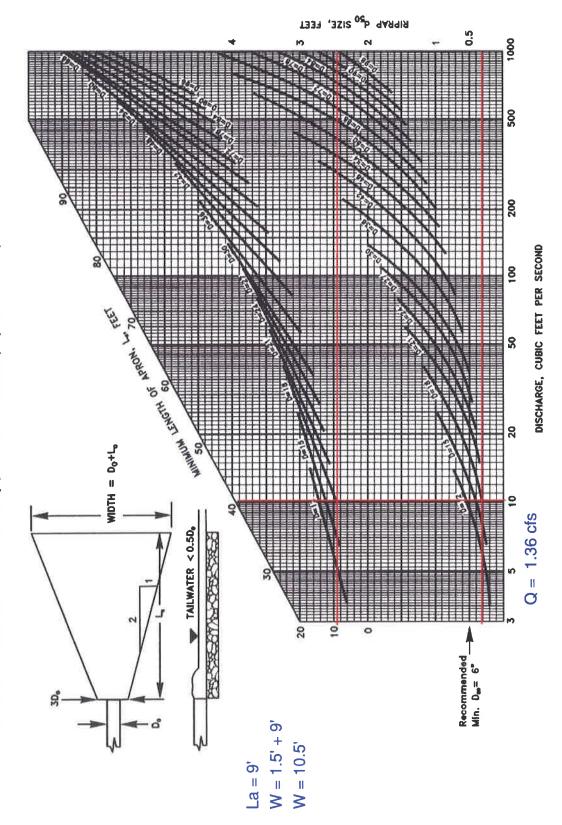
Date: 10/7/2016

(in) THICKNESS (ft)	1.50	2.25	2.25	2.25	2.25	1.50
DIAMETER	12	18	18	18	18	12
RIP RAP	8.4	R-5	R-5	R-5	R-5	R-4
Tailwater Conditions	Minimum	Minimum	Minimum	Minimum	Minimum	Minimum
W (ft)	10.5	10.5	10.5	15.0	17.0	15.0
(tt)	đ)	6	6	13	13	13
(in) b	18	89	18	24	24	24
Do (ft)	1.50	1.50	1.50	2.00	2.00	2:00
VELOCITY (ft/s)	8.74	10.57	9.37	90'6	10.18	3.15
AREA (sf)	0.16	0.28	0.21	1:47	3.14	3.14
Tw (ft)	0.50	0.50	0.50	0.75	0.75	0.75
PIPE SIZE (In)	18	60	8.	24	24	24
FLOW (cfs)	1.36	2.91	1.97	13.31	31.95	68.6
FACILITY	Culvert 1 (13+50)	Cuivert 2 (16+00)	Culvert 3 (19+75)	Cuiver 4 (23+00)	Pipe Stope (Apron 1)	Basin Outlet (Apron 2)
RIPRAP NO	(F)	2	3	4	ın	9

23

FIGURE 3.17.2

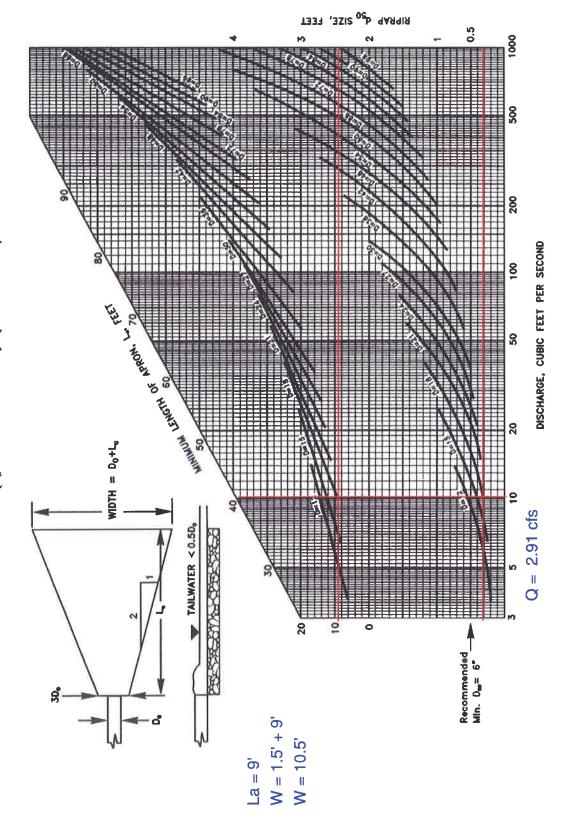
DESIGN OF OUTLET PROTECTION FROM A ROUND PIPE FLOWING FULL MINIMUM TAILWATER CONDITION (T., <0.5 DIAMETER) (USDA-NRCS)



Velocity = 8.74 ft/s > Vmax for R-3 = 6.5 ft/s ====> Use R-4

FIGURE 3.17.2

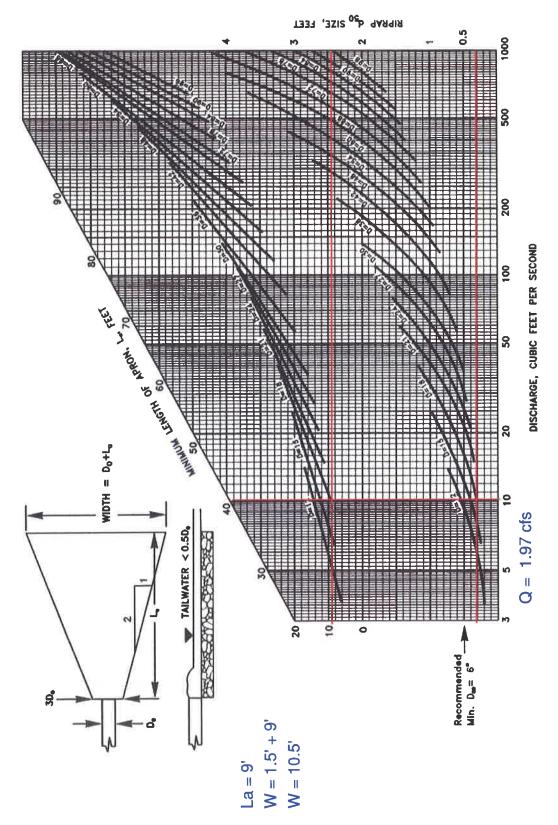
DESIGN OF OUTLET PROTECTION FROM A ROUND PIPE FLOWING FULL MINIMUM TAILWATER CONDITION (T., <0.5 DIAMETER) (USDA-NRCS)



Velocity = 10.57 ft/s > Vmax for R-4 = 9.00 ft/s ====> Use R-5

FIGURE 3.17.2

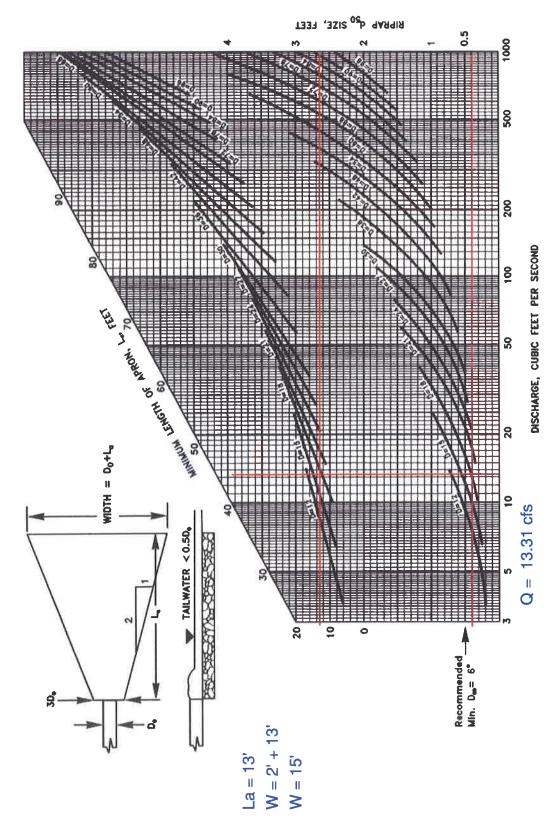
DESIGN OF OUTLET PROTECTION FROM A ROUND PIPE FLOWING FULL MINIMUM TAILWATER CONDITION (T., <0.5 DIAMETER) (USDA-NRCS)



Velocity = 9.37 ft/s > Vmax for R-4 = 9.00 ft/s ====> Use R-5

FIGURE 3.17.2

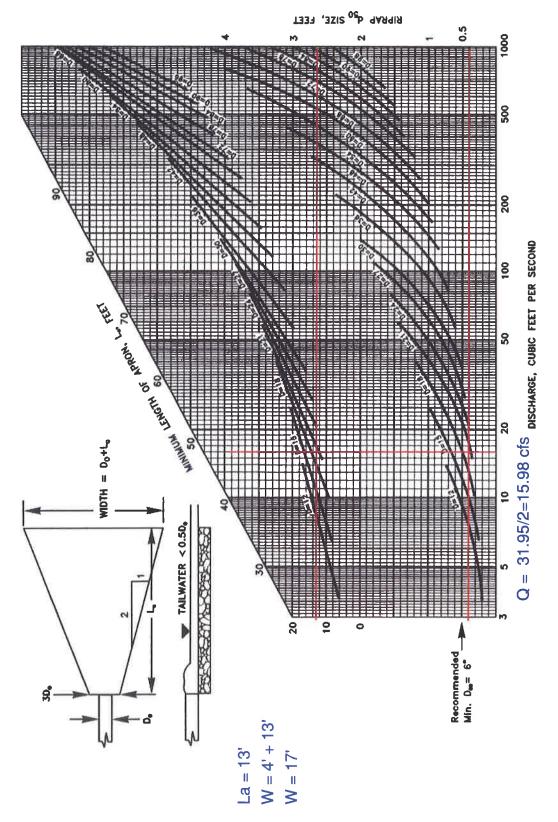
DESIGN OF OUTLET PROTECTION FROM A ROUND PIPE FLOWING FULL MINIMUM TAILWATER CONDITION (T, <0.5 DIAMETER) (USDA-NRCS)



Velocity = 9.06 ft/s > Vmax for R-4 = 9.00 ft/s ====> Use R-5

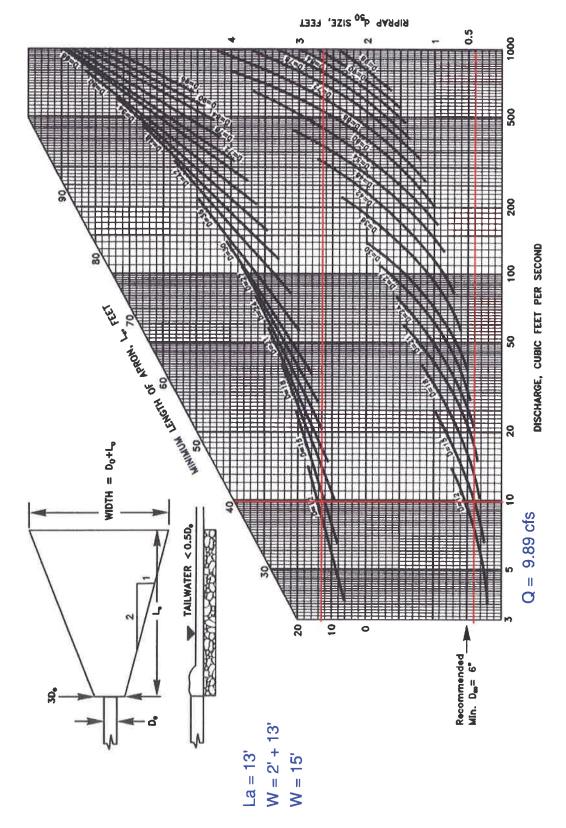
FIGURE 3.17.2

DESIGN OF OUTLET PROTECTION FROM A ROUND PIPE FLOWING FULL MINIMUM TAILWATER CONDITION (T., <0.5 DIAMETER) (USDA-NRCS)



Velocity = 10.18 ft/s > Vmax for R-4 = 9.00 ft/s ====> Use R-5

DESIGN OF OUTLET PROTECTION FROM A ROUND PIPE FLOWING FULL MINIMUM TAILWATER CONDITION (T., <0.5 DIAMETER) (USDA-NRCS)



Velocity = 3.15 ft/s < Vmax for R-4 = 9.0 ft/s ====> Use R-4

COMPOST SOCK SEDIMENT TRAP #1 MARTS COMPRESSOR STATION **CEC PROJECT NUMBER 160-781**

PREPARED BY: GSZ DATE: 10/3/2016 CHECKED BY: MMC DATE: 10/5/10

TRIBUTARY DRAINAGE AREA (ac): 0.6 REQUIRED STORAGE CAPACITY (cf):

1200

(TRIBUTARY DRAINAGE AREA x 2,000 cf/acre)

TRAP BASE ELEVATION:

1082

AP BASE ELEVATION + PROPOSED EFFECTIVE TRAP HEIGHT)

	TRAP TO	P ELEVATION:	1086.2	TRAP BASE ELEVATI
	AREA	AVERAGE AREA	STORAGE VO	DLUME (cf) TOTAL
1082	(sf) 0	(sf) 0	0	0
1082.2	55	27	5	5
1082.4	110	82	16	22
1082.6	164	137	27	49
1082.8	219	192	38	88
1083	274	247	49	137
1083.2	329	301	60	197
1083.4	384	356	71	269
1083.6	438	411	82	351
1083.8	493	466	93	444
1084	548	521	104	548
1084.2	603	575	115	663
1084.4	657	630	126	789
1084.6	712	684	137	926
1084.8	766	739	148	1,074
1085	821	793	159	1,232
1085.2	875	848	170	1,402
1085.4	930	902	180	1,582
1085.6	984	957	191	1,774
1085.8	1,039	1,011	202	1,976
1086	1,093	1,066	213	2,189
1086.2	1,149	1,121	224	2,413
1086.4	1,205	1,177	235	2,649
1086.6	1,261	1,233	247	2,895
1086.8	1,317	1,289	258	3,153
1087	1,374	1,345	269	3,422
1087.2	1,430	1,402	280	3,703
1087.4	1,486	1,458	292	3,994
1087.6	1,542	1,514	303	4,297
1087.8	1,598	1,570	314	4,611
1088	1,654	1,626	325	4,936

REQUIRED TRAP HEIGHT

1085 EL. @ REQ'D STORAGE CAPACITY 1082 TRAP BASE ELEVATION FOOT (FREEBOARD) 4.0 FEET

PROPOSED TRAP CONFIGURATION

QTY	NOMINAL	EFFECTIVE
	8 " SOCK	6.5 " SOCK
1	12 " SOCK	9.5 " SOCK
2	18 " SOCK	14.5 " SOCK
	24 " SOCK	19 " SOCK
3	32 " SOCK	26 " SOCK
TOTAL	50 " EFFECTI	VE TRAP HEIGHT

4.2 ' EFFECTIVE TRAP HEIGHT

← REQUIRED STORAGE CAPACITY

COMPOST SOCK SEDIMENT TRAP #2 MARTS COMPRESSOR STATION **CEC PROJECT NUMBER 160-781**

PREPARED BY: GSZ DATE: 10/3/2016

CHECKED BY: MMC DATE: 10/5/10

TRIBUTARY DRAINAGE AREA (ac): REQUIRED STORAGE CAPACITY (cf):

0.51

1020

(TRIBUTARY DRAINAGE AREA x 2,000 cf/acre)

TRAP BASE ELEVATION: TRAP TOP ELEVATION:

1074 1077.4

(TRAP BASE ELEVATION + PROPOSED EFFECTIVE TRAP HEIGHT)

	AREA	AVERAGE AREA	STORAGE VO	LUME (cf) TOTAL
1074	(sf)	(sf) 0	0 0	0
1074	0		0	
1074.2	93	46	9	9
1074.4	185	139	28	37
1074.6	278	232	46	- 83
1074.8	370	324	65	148
1075	463	417	83	232
1075.2	556	509	102	333
1075.4	648	602	120	454
1075.6	741	695	139	593
1075.8	833	787	157	750
1076	926	880	176	926
1076.2	1,003	964	193	1,119
1076.4	1,079	1,041	208	1,327
1076.6	1,156	1,117	223	1,550
1076.8	1,232	1,194	239	1,789
1077	1,309	1,270	254	2,043
1077.2	1,385	1,347	269	2,313
1077.4	1,462	1,423	285	2,597
1077.6	1,538	1,500	300	2,897
1077.8	1,615	1,576	315	3,212
1078	1,691	1,653	331	3,543
1078.2	1,756	1,724	345	3,888
1078.4	1,821	1,789	358	4,245
1078.6	1,886	1,854	371	4,616
1078.8	1,951	1,919	384	5,000
1079	2,016	1,984	397	5,397
1079.2	2,081	2,049	410	5,806
1079.4	2,146	2,114	423	6,229
1079.6	2,211	2,179	436	6,665
1079.8	2,276	2,244	449	7,113
1080	2,341	2,309	462	7,575

REQUIRED TRAP HEIGHT

1076.2 EL. @ REQ'D STORAGE CAPACITY 1074 TRAP BASE ELEVATION FOOT (FREEBOARD)

3.2 FEET

PROPOSED TRAP CONFIGURATION

QTY	NOMINAL	EFFECTIVE
112.00	8 " SOCK	6.5 " SOCK
	12 " SOCK	9.5 " SOCK
1	18 " SOCK	14.5 " SOCK
127	24 " SOCK	19 " SOCK
2	32 " SOCK	26 " SOCK

TOTAL 40.5 " EFFECTIVE TRAP HEIGHT 3.4 'EFFECTIVE TRAP HEIGHT

← REQUIRED STORAGE CAPACITY

COMPOST SOCK SEDIMENT TRAP #3 MARTS COMPRESSOR STATION **CEC PROJECT NUMBER 160-781**

1066

349

345

PREPARED BY: GSZ DATE: 10/3/2016 CHECKED BY: MYMIC DATE: 10 5 10

TRIBUTARY DRAINAGE AREA (ac): REQUIRED STORAGE CAPACITY (cf):

0.18

(TRIBUTARY DRAINAGE AREA x 2,000 cf/acre)

TRAP BASE ELEVATION: TRAP TOP ELEVATION:

1060

1064.5

(TRAP BASE ELEVATION + PROPOSED EFFECTIVE TRAP HEIGHT)

	AREA	AVERAGE AREA	STORAGE VO	
ELEVATION	(sf)	(sf)	INCREMENTAL	TOTAL
1060	0	0	0	0
1060.2	13	7	1	1
1060.4	26	20	4	5
1060.6	39	33	7	12
1060.8	52	46	9	21
1061	66	59	12	33
1061.2	79	72	14	47
1061.4	92	85	17	64
1061.6	105	98	20	84
1061.8	118	111	22	106
1062	131	124	25	131
1062.2	144	138	28	159
	157	151	30	189
1062.4				
1062.6	170	164	33	221
1062.8	183	177	35	257
1063	196	190	38	295
1063.2	209	203	41	335
1063.4	222	216	43	378
1063.6	235	229	46	424
1063.8	248	242	48	472
1064	261	255	51	523
1064.2	270	265	53	576
		274	55	631
1064.4	279			
1064.6	287	283	57	688
1064.8	296	292	58	746
1065	305	301	60	806
1065.2	314	309	62	868
1065.4	323	318	64	932
1065.6	331	327	65	997
1065.8	340	336	67	1,064

REQUIRED TRAP HEIGHT

1063.4 EL. @ REQ'D STORAGE CAPACITY 1060 TRAP BASE ELEVATION FOOT (FREEBOARD)

PROPOSED TRAP CONFIGURATION

QTY	NOMINAL	EFFECTIVE
UNA TYPE	8 " SOCK	6.5 " SOCK
1	12 " SOCK	9.5 " SOCK
	18 " SOCK	14.5 " SOCK
2	24 " SOCK	19 " SOCK
3	32 " SOCK	26 " SOCK

TOTAL 54.5 " EFFECTIVE TRAP HEIGHT 4.5 'EFFECTIVE TRAP HEIGHT

← REQUIRED STORAGE CAPACITY

1,133

PROJECT NAME: MARTS COMPRESSOR STATION **PROJECT #**: 160-781

PREPARED BY GSZ

DATE: 9/30/16

CHECKED BY MANY

DATE: 9/30/10

BARRIER A

SILT FENCE/SOCK TYPE:

32 INCH FILTREXX SILT SOCK

	0	0%	0	0		SLOPE LENGTH =		SLOPE =	SEGMENT C
OK	117	12%	42	350	75	SLOPE LENGTH =	15	SLOPE =	SEGMENT B
OK	60	33%	20	60	40	SLOPE LENGTH =	50	SLOPE =	SEGMENT A
RESULT	LENGTH (FT)	PERCENTAGE REMAINING	LENGTH (FT)	(FT)	FEET	LENGTH	%	SLOPE	SLOPE SEGMENT
	ALLOWABLE		REMAINING	LENGTH		ACTUAL SLOPE		ACTUAL	
	MUMIXAM			ALLOWABLE					

SLOPE LENGTH TOTAL ACTUAL 115

SINCE THE ACTUAL SLOPE LENGTH IS LESS THAN THE MAXIMIUM ALLOWABLE SLOPE LENGTH

32 INCH FILTREXX SILT SOCK IS ACCEPTABLE

BARRIER B

SUPER SILT FENCE

OK OK	107	29%	87	300	20	SLOPE LENGTH =	10	SLOPE =	SEGMENT C
S	275	36%	178	500	97	SLOPE LENGTH =	5	SLOPE =	SEGMENT B
OK.	200	55%	110	200	06	SLOPE LENGTH =	12	SLOPE =	SEGMENT A
RESULT	LENGTH (FT)	PERCENTAGE REMAINING	LENGTH (FT)	(FT)	FEET	LENGTH	%	SLOPE	SLOPE SEGMENT
	ALLOWABLE		REMAINING	LENGTH		ACTUAL SLOPE		ACTUAL	
	MAXIMUM			ALLOWABLE					

SLOPE LENGTH TOTAL ACTUAL 207

SINCE THE ACTUAL SLOPE LENGTH IS LESS THAN THE MAXIMIUM ALLOWABLE SLOPE LENGTH

SUPER SILT FENCE

IS ACCEPTABLE

PROJECT #: MARTS COMPRESSOR STATION

PROJECT #: 160-781

PREPARED BY GSZ

DATE: 9/30/16

CHECKED BY MM C

DATE: 9/30/16

BARRIER C

SILT FENCE/SOCK TYPE:

32 INCH FILTREXX SILT SOCK

					ALLOWABLE			MAXIMUM	
	ACTUAL		ACTUAL SLOPE		LENGTH	REMAINING		ALLOWABLE	
SLOPE SEGMENT	SLOPE	%	LENGTH	FEET	(FT)	LENGTH (FT)	PERCENTAGE REMAINING	LENGTH (FT)	RESULT
SEGMENT A	SLOPE =	11	SLOPE LENGTH =	94	350	256	73%	350	OK
SEGMENT B	SLOPE =	6	SLOPE LENGTH =	70	400	223	56%	293	OK
SEGMENT C	SLOPE =	13	SLOPE LENGTH =	165	350	30	8%	195	OK

TOTAL ACTUAL
SLOPE LENGTH 329
(FT)

SINCE THE ACTUAL SLOPE LENGTH IS LESS THAN THE MAXIMIUM ALLOWABLE SLOPE LENGTH

32 INCH FILTREXX SILT SOCK IS ACCEPTABLE

BARRIER D

SILT FENCE/SOCK TYPE:

32 INCH FILTREXX SILT SOCK

SEGMENT C	SEGMENT B	SEGMENT A S	SLOPE SEGMENT		
SLOPE =	SLOPE =	SLOPE =	SLOPE	ACTUAL	
19	4	11	%		
SLOPE LENGTH =	SLOPE LENGTH =	SLOPE LENGTH =	LENGTH	ACTUAL SLOPE	
116	91	130	FEET		
250	650	350	(FT)	LENGTH	ALLOWABLE
6	318	220	LENGTH (FT)	REMAINING	
2%	49%	63%	PERCENTAGE REMAINING		
123	409	350	LENGTH (FT)	ALLOWABLE	MAXIMUM
OK	OK	OK	RESULT		

TOTAL ACTUAL
SLOPE LENGTH 337
(FT)

SINCE THE ACTUAL SLOPE LENGTH IS LESS THAN THE MAXIMIUM ALLOWABLE SLOPE LENGTH

32 INCH FILTREXX SILT SOCK IS ACCEPTABLE

PROJECT NAME: MARTS COMPRESSOR STATION **PROJECT #**: 160-781

PREPARED BY GSZ

DATE: 9/30/16

CHECKED BY MMC

DATE: 9/30/12

BARRIER E

SILT FENCE/SOCK TYPE:

SUPER SILT FENCE

ACTUAL ACTUAL SLOPE ACTUAL SLOPE SLOPE SLOPE ENGTH SLOPE SLOPE ENGTH SLOPE SLOPE ENGTH	0		0,0		-		01011111		1	OF CHIEF O
ACTUAL ACTUAL SLOPE ACTUAL SLOPE LENGTH REMAINING REMAINING LENGTH (FT) LENGTH (FT) FECT FECT LENGTH (FT) FECT		<u> </u>	0%	0	>		SI OPF FNGTH =		SI OPF =	SEGMENT C
ACTUAL ACTUAL SLOPE LENGTH FEET (FT) LENGTH (FT) PERCENTAGE REMAINING LENGTH (FT) FEET (FT) LENGTH (FT) PERCENTAGE REMAINING LENGTH (FT) FEET (FT) LENGTH (FT) FEET (FT) LENGTH (FT) FEET	*	c	0.70	c	c		OF OF FEING 111 -		OLOF L	OF GIALIA - D
ACTUAL ACTUAL SLOPE FEET (FT) LENGTH (FT) PERCENTAGE REMAINING LENGTH (FT) FECT (FT) ON THE PERCENTAGE REMAINING LENGTH (FT) FECT (FT) LENGTH (FT) ON THE PERCENTAGE REMAINING LENGTH (FT) FECT (FT) LENGTH (FT) ON THE PERCENTAGE REMAINING LENGTH (FT) FECT (F).		700	0	0		SI ODE I ENGTH -		SI OBE -	SECMENT B
ACTUAL ACTUAL SLOPE LENGTH REMAINING ALLOWABLE SEGMENT SLOPE % LENGTH FEET (FT) LENGTH (FT) PERCENTAGE REMAINING LENGTH (FT) FEET (FT) ACCURATE ACCURATION ACCURATE ACCURATE ACCURATION ACCURATE ACCURAT	NO	100	U%	c	100	100	SLOPE LENGIN =	17	OLUPE -	OEGIVIEN I A
ACTUAL ACTUAL SLOPE LENGTH CFT) LENGTH (FT) PERCENTAGE REMAINING LENGTH (FT) F	2	400	00/	0	100	100	SI ODE I ENCTU -	77	SI ODE -	CECMENT A
ACTUAL ACTUAL SLOPE LENGTH REMAINING ALLOWABLE ALLOWABLE	KEOULI	LENGIN (FI)	TEXCEN AGE NEWAINING	LENGIN (FI)	((1)	7001	LENGIN	70	SLOPE	SECTION OF
ACTUAL SLOPE ALLOWABLE ALLOWABLE ALLOWABLE ALLOW		LENCTU (ET)	DEDCENTACE DEMAINING	I ENICYLI (ET)	(FT)	7 7 7	- FNOTE	9	21 000	CI ODE CECMENT
ALLOWABLE		-		KEMAINING	LENGIH		ACTUAL SLOPE		ACTUAL	
ALLOWABLE							* OT O O O		201	
		MAXIMUM			ALLOWABLE					

SLOPE LENGTH TOTAL ACTUAL 100

IS ACCEPTABLE

SINCE THE ACTUAL SLOPE LENGTH IS LESS THAN THE MAXIMIUM ALLOWABLE SLOPE LENGTH

SUPER SILT FENCE

SILT FENCE/SOCK TYPE:

BARRIER F

SUPER SILT FENCE

a:	0	0%	0	0		SLOPE LENGTH =		SLOPE =	SEGMENT C
OK	156	46%	91	200	64	SLOPE LENGTH =	12	SLOPE =	SEGMENT B
OK	300	78%	233	300	67	SLOPE LENGTH =	7	SLOPE =	SEGMENT A
RESULT	LENGTH (FT)	PERCENTAGE REMAINING	LENGTH (FT)	(FT)	FEET	LENGTH	%	SLOPE	SLOPE SEGMENT
	ALLOWABLE		REMAINING	LENGTH		ACTUAL SLOPE		ACTUAL	
	MAXIMUM			ALLOWABLE					

SINCE THE ACTUAL SLOPE LENGTH IS LESS THAN THE MAXIMIUM ALLOWABLE SLOPE LENGTH

SLOPE LENGTH

131

TOTAL ACTUAL

SUPER SILT FENCE

IS ACCEPTABLE

PROJECT NAME: MARTS COMPRESSOR STATION **PROJECT #**: 160-781

PREPARED BY GSZ

DATE: 9/30/16

CHECH

CHECKED BY MMC

DATE: 9/30/10

BARRIER G

SILT FENCE/SOCK TYPE:

SUPER SILT FENCE

					ALLOWABLE			MUMIXAM	
	ACTUAL		ACTUAL SLOPE		LENGTH	REMAINING		ALLOWABLE	
SLOPE SEGMENT	SLOPE	%	LENGTH	FEET	(FT)	LENGTH (FT)	PERCENTAGE REMAINING	LENGTH (FT)	RESUL1
SEGMENT A	SLOPE =	50	SLOPE LENGTH =	20	50	30	60%	50	OK
SEGMENT B	SLOPE =		SLOPE LENGTH =		0	0	0%	0	á
SEGMENT C	SLOPE =		SLOPE LENGTH =		0	0	0%	0	Œ.

TOTAL ACTUAL
SLOPE LENGTH

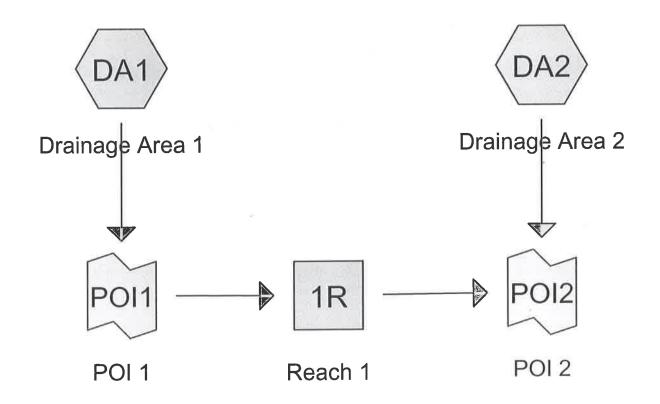
20

SINCE THE ACTUAL SLOPE LENGTH IS LESS THAN THE MAXIMIUM ALLOWABLE SLOPE LENGTH

SUPER SILT FENCE

IS ACCEPTABLE

Pre-Development



PREPARED BY: TGS 10/5/2016
CHELLED BY: EJB 10/6/2016









Routing Diagram for 160-781 Marts Hydrology

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Summary for Subcatchment DA1: Drainage Area 1

Runoff

16.51 cfs @ 12.26 hrs, Volume=

1.737 af, Depth= 1.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs Type II 24-hr 10-year Rainfall=3.56"

Area	a (ac)	CN Des	cription		
	9.930	70 Woo	ds, Good,	HSG C	
	0.200		ods, Good,		
	8.660			grazed, HS	GC
	0.120		vel roads,	•	
	8.910		ghted Ave		
	0.0.0		9	-9-	
To	Lengtl	Slope	Velocity	Capacity	Description
(min	_		(ft/sec)	(cfs)	'
23.9	100	0.0200	0.07		Sheet Flow, A-B
					Woods: Light underbrush n= 0.400 P2= 2.58"
3.9	589	0.2500	2.50		Shallow Concentrated Flow, B-C
					Woodland Kv= 5.0 fps
1.2	549	0.1400	7.95	11.93	
					Bot.W=2.00' D=0.50' Z= 2.0 '/' Top.W=4.00'
					n= 0.035
1.4	669	0.1200	8.00	19.99	Trap/Vee/Rect Channel Flow, D-POI1
• • •		3			Bot.W=4.00' D=0.50' Z= 2.0 '/' Top.W=6.00'
					n= 0.035
30.4	1,90	7 Total			

Summary for Subcatchment DA2: Drainage Area 2

Runoff

29.67 cfs @ 12.23 hrs, Volume=

2.868 af, Depth= 1.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs Type II 24-hr 10-year Rainfall=3.56"

	Area (ac)	CN	Description	
	15.500	70	Woods, Good, HSG C	
	0.320	77	Woods, Good, HSG D	
	14.680	71	Meadow, non-grazed, HSG C	
	0.620	89	Gravel roads, HSG C	
*	0.110	98	Impervious	
	31.230	71	Weighted Average	

Type II 24-hr 10-year Rainfall=3.56"

160-781 Marts Hydrology

Prepared by Civil & Environmental Consultants, Inc. HydroCAD® 10.00-18 s/n 01006 © 2016 HydroCAD Software Solutions LLC Printed 10/5/2016

Page 3

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1	100	0.0400	0.09		Sheet Flow, A-B
					Woods: Light underbrush n= 0.400 P2= 2.58"
2.5	394	0.2800	2.65		Shallow Concentrated Flow, B-C
					Woodland · Kv= 5.0 fps
1.1	563	0.2100	8.89	8.89	
					Bot.W=1.00' D=0.50' Z= 2.0 '/' Top.W=3.00'
					n= 0.035
2.7	1,067	0.0800	6.53	16.32	Trap/Vee/Rect Channel Flow, D-E
					Bot.W=4.00' D=0.50' Z= 2.0 '/' Top.W=6.00'
					n= 0.035
2.5	375	0.0100	2.52	16.36	Trap/Vee/Rect Channel Flow, D-POI 2
					Bot.W=12.00' D=0.50' Z= 2.0 '/' Top.W=14.00'
					n= 0.035
26.9	2,499	Total			

Summary for Reach 1R: Reach 1

Inflow Area = 18.910 ac, Inflow Depth = 1.10" for 10-year event 16.51 cfs @ 12.26 hrs, Volume= 1.737 af

Outflow = 15.29 cfs @ 12.36 hrs, Volume= 1.737 af, Atten= 7%, Lag= 5.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Max. Velocity= 2.74 fps, Min. Travel Time= 7.2 min Avg. Velocity = 0.90 fps, Avg. Travel Time= 22.1 min

Peak Storage= 6,651 cf @ 12.36 hrs Average Depth at Peak Storage= 0.43'

Bank-Full Depth= 4.00' Flow Area= 80.0 sf, Capacity= 776.75 cfs

12.00' x 4.00' deep channel, n= 0.035 Side Slope Z-value= 2.0 '/' Top Width= 28.00' Length= 1,191.0' Slope= 0.0141 '/' Inlet Invert= 1,005.36', Outlet Invert= 988.60'

Summary for Link POI1: POI 1

Inflow Area = 18.910 ac, Inflow Depth = 1.10" for 10-year event 16.51 cfs @ 12.26 hrs, Volume= 1.737 af

Primary = 16.51 cfs @ 12.26 hrs, Volume= 1.737 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Type II 24-hr 10-year Rainfall=3.56"

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Summary for Link POI2: POI 2

Inflow Area =

50.140 ac, Inflow Depth = 1.10" for 10-year event

Inflow

42.76 cfs @ 12.28 hrs, Volume=

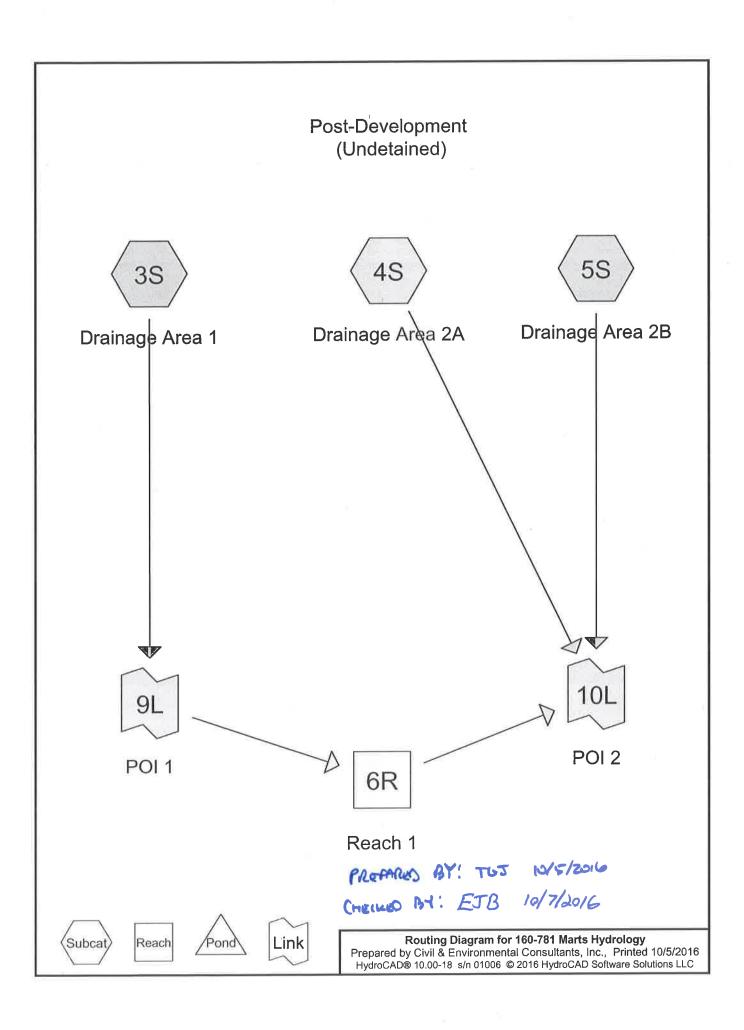
4.605 af

Primary

42.76 cfs @ 12.28 hrs, Volume=

4.605 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs



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Page 2

Summary for Subcatchment 3S: Drainage Area 1

Runoff = 12.24 cfs @ 12.28 hrs, Volume=

1.286 af, Depth= 1.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs Type II 24-hr 10-year Rainfall=3.56"

Area	(ac) C	N Desc	cription		
8.	.390 7	'0 Woo	ds, Good,	HSG C	
0.	.200 7		ds, Good,		
5.	.290 7			grazed, HS	GC
0.			∕el roads, Ì		
14.	.000 7	'1 Weig	ghted Aver	age	
		`		J	
Tc	Length	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
23.9	100	0.0200	0.07		Sheet Flow, A-B
					Woods: Light underbrush n= 0.400 P2= 2.58"
3.5	527	0.2500	2.50		Shallow Concentrated Flow, B-C
					Woodland Kv= 5.0 fps
1.5	704	0.1300	7.66	11.49	Trap/Vee/Rect Channel Flow, C-D
					Bot.W=2.00' D=0.50' Z= 2.0 '/' Top.W=4.00'
					n= 0.035
1.4	669	0.1200	8.00	19.99	Trap/Vee/Rect Channel Flow, D-POI1
					Bot.W=4.00' D=0.50' Z= 2.0 '/' Top.W=6.00'
					n= 0.035
30.3	2,000	Total			

Summary for Subcatchment 4S: Drainage Area 2A

Runoff = 33.25 cfs @ 12.00 hrs, Volume=

1.757 af, Depth= 2.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs Type II 24-hr 10-year Rainfall=3.56"

	Area (ac)	CN	Description
-	0.280	70	Woods, Good, HSG C
	0.420	71	Meadow, non-grazed, HSG C
	6.880	89	Gravel roads, HSG C
*	1.160	98	Impervious
	8.740	89	Weighted Average

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	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
-					(0.07	
	1.3	100	0.0200	1.24		Sheet Flow, A-B
						Smooth surfaces n= 0.011 P2= 2.58"
	4.7	453	0.0100	1.61		Shallow Concentrated Flow, B-C
			0.0.00			Unpaved Kv= 16.1 fps
	2.5	315	0.0100	2.13	3.19	Trap/Vee/Rect Channel Flow, C-D
	2.0	010	0.0100	2.10	0	Bot.W=2.00' D=0.50' Z= 2.0 '/' Top.W=4.00' n= 0.035
	0.1	249	0.4700	53.48	168.02	Pipe Channel, D-E
						24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50'
						n= 0.012
	8.6	1.117	Total			

Summary for Subcatchment 5S: Drainage Area 2B

Runoff = 31.26 cfs @ 12.22 hrs, Volume=

2.926 af, Depth= 1.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs Type II 24-hr 10-year Rainfall=3.56"

	Area	(ac) C	N Desc	cription		
				ds, Good,		
				ds, Good,		
	12.	300 7			grazed, HS	GC
	2.	170 8	89 Gra√	∕el roads, l	HSG C	
*	1.	770 9	8 Impe	ervious		
	27.	400 7	'4 Wei	ghted Aver	age	
	Тс	Length	Slope	Velocity	Capacity	Description
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	18.1	100	0.0400	0.09		Sheet Flow, A-B
	10.1	100	0.0100	0.00		Woods: Light underbrush n= 0.400 P2= 2.58"
	2.5	394	0.2800	2.65		Shallow Concentrated Flow, B-C
	2.0	00-1	0.2000	2.00		Woodland Kv= 5.0 fps
	1.2	581	0.1800	8.23	8.23	Trap/Vee/Rect Channel Flow, C-D
	1.2	001	0.1000	0.20	0.20	Bot.W=1.00' D=0.50' Z= 2.0 '/' Top.W=3.00'
						n= 0.035
	0.3	197	0.2000	10.32	25.81	Trap/Vee/Rect Channel Flow, D-E
	0.5	197	0.2000	10.52	25.01	Bot.W=4.00' D=0.50' Z= 2.0 '/' Top.W=6.00'
						n= 0.035
	2.2	000	0.0000	C EO	16 22	
	2.2	868	0.0800	6.53	16.32	Trap/Vee/Rect Channel Flow, E-F
						Bot.W=4.00' D=0.50' Z= 2.0 '/' Top.W=6.00'
			0.0400	0.50	40.00	n= 0.035
	2.5	375	0.0100	2.52	16.36	Trap/Vee/Rect Channel Flow, F-POI 2
						Bot,W=12.00' D=0.50' Z= 2.0 '/' Top.W=14.00'
_						n= 0.035
	26.8	2.515	Total			

Type II 24-hr 10-year Rainfall=3.56"

160-781 Marts Hydrology

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Summary for Reach 6R: Reach 1

Inflow Area = 14.000 ac, Inflow Depth = 1.10" for 10-year event

Inflow = 12.24 cfs @ 12.28 hrs, Volume= 1.286 af

Outflow = 11.15 cfs @ 12.37 hrs, Volume= 1.286 af, Atten= 9%, Lag= 5.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Max. Velocity= 2.44 fps, Min. Travel Time= 8.1 min Avg. Velocity = 0.82 fps, Avg. Travel Time= 24.2 min

Peak Storage= 5,451 cf @ 12.37 hrs Average Depth at Peak Storage= 0.36' Bank-Full Depth= 4.00' Flow Area= 80.0 sf, Capacity= 776.75 cfs

12.00' x 4.00' deep channel, n= 0.035 Side Slope Z-value= 2.0 '/' Top Width= 28.00' Length= 1,191.0' Slope= 0.0141 '/' Inlet Invert= 1,005.36', Outlet Invert= 988.60'



Summary for Link 9L: POI 1

Inflow Area = 14.000 ac, Inflow Depth = 1.10" for 10-year event 12.24 cfs @ 12.28 hrs, Volume= 1.286 af

Primary = 12.24 cfs @ 12.28 hrs, Volume= 1.286 af, Atten= 0%, Lag= 0.0 min

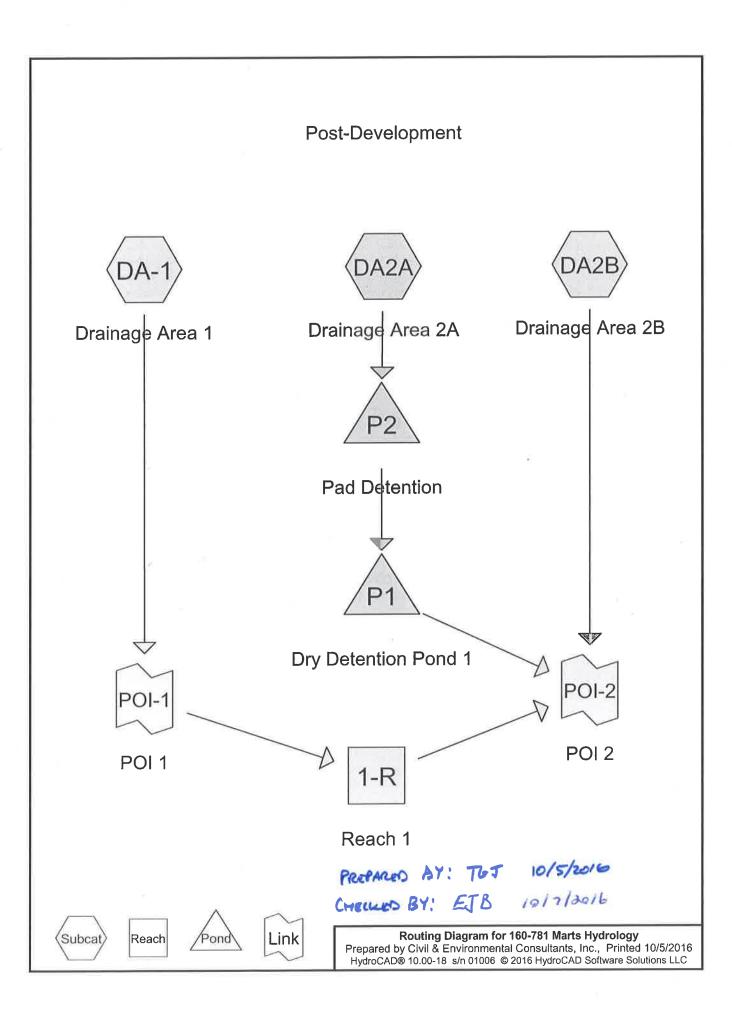
Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Link 10L: POI 2

Inflow Area = 50.140 ac, Inflow Depth = 1.43" for 10-year event Inflow = 49.30 cfs @ 12.03 hrs, Volume= 5.969 af

Primary = 49.30 cfs @ 12.03 hrs, Volume= 5.969 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs



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Summary for Subcatchment DA-1: Drainage Area 1

Runoff

12.24 cfs @ 12.28 hrs, Volume=

1.286 af, Depth= 1.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs Type II 24-hr 10-year Rainfall=3.56"

12	Area	(ac) C	N Desc	cription		
	8.	390 7	70 Woo	ds, Good,	HSG C	
	0.	200 7		ds, Good,		
	5.	290 7	71 Mea	dow, non-g	grazed, HS	GC
	0.	120 8	39 Grav	∕el roads, Ì	HSG C	
	14.	000 7	71 Weig	ghted Aver	age	
			·	-	=	
	Tc	Length	Slope	Velocity	Capacity	Description
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	23.9	100	0.0200	0.07		Sheet Flow, A-B
						Woods: Light underbrush n= 0.400 P2= 2.58"
	3.5	527	0.2500	2.50		Shallow Concentrated Flow, B-C
						Woodland Kv= 5.0 fps
	1.5	704	0.1300	7.66	11.49	Trap/Vee/Rect Channel Flow, C-D
						Bot.W=2.00' D=0.50' Z= 2.0 '/' Top.W=4.00'
						n= 0.035
	1.4	669	0.1200	8.00	19.99	Trap/Vee/Rect Channel Flow, D-POI1
						Bot.W=4.00' D=0.50' Z= 2.0 '/' Top.W=6.00'
1						n= 0.035
	30.3	2,000	Total			

2,000 Total

Summary for Subcatchment DA2A: Drainage Area 2A

Runoff

33.38 cfs @ 12.00 hrs, Volume=

1.757 af, Depth= 2.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs Type II 24-hr 10-year Rainfall=3.56"

	Area (ac)	CN	Description
//==	0.280	70	Woods, Good, HSG C
	0.420	71	Meadow, non-grazed, HSG C
	6.880	89	Gravel roads, HSG C
*	1.160	98	Impervious
	8.740	89	Weighted Average

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	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
-	1.3	100	0.0200	1.24		Sheet Flow, A-B
					6	Smooth surfaces n= 0.011 P2= 2.58"
	4.7	453	0.0100	1.61		Shallow Concentrated Flow, B-C
						Unpaved Kv= 16.1 fps
	2.5	315	0.0100	2.13	3.19	Trap/Vee/Rect Channel Flow, C-D
						Bot.W=2.00' D=0.50' Z= 2.0 '/' Top.W=4.00'
						n= 0.035
	8.5	868	Total			

Summary for Subcatchment DA2B: Drainage Area 2B

Runoff = 31.26 cfs @ 12.22 hrs, Volume=

2.926 af, Depth= 1.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs Type II 24-hr 10-year Rainfall=3.56"

·	Area	(ac) C	N Desc	cription			
				ds, Good,			
	0.	320 7	7 Woo	ds, Good,	HSG D		
	12.	300 7	'1 Mea	dow, non-	grazed, HS	GC	
	2.	170 8	9 Grav	∕el roads, Ì	HSG C		
*	1.	770 9	8 Impe	ervious			
	27.	400 7	'4 Wei	ghted Avei	age		
	Тс	Length	Slope	Velocity	Capacity	Description	
(r	min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	2 documental.	
_	18.1	100	0.0400	0.09	(5.5)	Sheet Flow, A-B	_
	10.1	100	0.0400	0.00		Woods: Light underbrush n= 0.400 P2= 2.58"	
	2.5	394	0.2800	2.65		Shallow Concentrated Flow, B-C	
	2.0	004	0.2000	2.00		Woodland Kv= 5.0 fps	
	1.2	581	0.1800	8.23	8.23	Trap/Vee/Rect Channel Flow, C-D	
	1.2	001	0.1000	0.20	0.20	Bot.W=1.00' D=0.50' Z= 2.0 '/' Top.W=3.00'	
						n= 0.035	
	0.3	197	0.2000	10.32	25.81	Trap/Vee/Rect Channel Flow, D-E	
	0.0	107	0.2000	10.52	20.01	Bot.W=4.00' D=0.50' Z= 2.0 '/' Top.W=6.00'	
						n= 0.035	
	2.2	868	0.0800	6.53	16.32	Trap/Vee/Rect Channel Flow, E-F	
	۷.۷	000	0.0000	0.55	10.52	Bot.W=4.00' D=0.50' Z= 2.0 '/' Top.W=6.00'	
						n= 0.035	
	2.5	275	0.0400	0.50	16.26		
	2.5	375	0.0100	2.52	16.36	Trap/Vee/Rect Channel Flow, F-POI 2	
						Bot.W=12.00' D=0.50' Z= 2.0 '/' Top.W=14.00'	
:=						n= 0.035	_
2	26.8	2,515	Total				

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Summary for Reach 1-R: Reach 1

Inflow Area = 14.000 ac, Inflow Depth = 1.10" for 10-year event 12.24 cfs @ 12.28 hrs, Volume= 1.286 af

Outflow = 11.15 cfs @ 12.37 hrs, Volume= 1.286 af, Atten= 9%, Lag= 5.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Max. Velocity= 2.44 fps, Min. Travel Time= 8.1 min Avg. Velocity = 0.82 fps, Avg. Travel Time= 24.2 min

Peak Storage= 5,451 cf @ 12.37 hrs Average Depth at Peak Storage= 0.36' Bank-Full Depth= 4.00' Flow Area= 80.0 sf, Capacity= 776.75 cfs

12.00' x 4.00' deep channel, n= 0.035 Side Slope Z-value= 2.0 '/' Top Width= 28.00' Length= 1,191.0' Slope= 0.0141 '/' Inlet Invert= 1,005.36', Outlet Invert= 988.60'

Summary for Pond P1: Dry Detention Pond 1

Inflow Area = 8.740 ac, Inflow Depth = 2.41" for 10-year event
Inflow = 18.16 cfs @ 12.10 hrs, Volume= 1.757 af
Outflow = 9.89 cfs @ 12.42 hrs, Volume= 1.757 af, Atten= 46%, Lag= 19.3 min
Primary = 9.89 cfs @ 12.42 hrs. Volume= 1.757 af

Primary = 9.89 cfs @ 12.42 hrs, Volume= 1.757 af Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs Peak Elev= 1,008.52' @ 12.42 hrs Surf.Area= 5,328 sf Storage= 25,557 cf

Plug-Flow detention time= 77.8 min calculated for 1.757 af (100% of inflow) Center-of-Mass det. time= 77.7 min (899.1 - 821.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,000.00'	34,137 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Elevation	Surf.Area	Inc.Store	Cum.Store
(feet)	(sq-ft)	(cubic-feet)	(cubic-feet)
1,000.00	1,066	0	0
1,001.00	1,438	1,252	1,252
1,002.00	1,844	1,641	2,893
1,003.00	2,283	2,064	4,957
1,004.00	2,766	2,525	7,481
1,005.00	3,279	3,023	10,504
1,006.00	3,823	3,551	14,055
1,007.00	4,396	4,110	18,164
1,008.00	4,998	4,697	22,861
1,009.00	5,631	5,315	28,176
1,010.00	6,292	5,962	34,137

Device	Routing	Invert	Outlet Devices
#1	Primary	999.90'	24.0" Round Culvert
	•		L= 54.0' RCP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 999.90' / 998.60' S= 0.0241 '/' Cc= 0.900
			n= 0.013, Flow Area= 3.14 sf
#2	Device 1	1,000.00'	6.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	1,008.20'	24.0" x 48.0" Horiz. Orifice/Grate C= 0.600
			Limited to weir flow at low heads
#4	Secondary	1,008.60'	35.0' long x 15.0' breadth Broad-Crested Rectangular Weir
25			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=9.89 cfs @ 12.42 hrs HW=1,008.52' TW=0.00' (Dynamic Tailwater)

1=Culvert (Passes 9.89 cfs of 41.76 cfs potential flow)

-2=Orifice/Grate (Orifice Controls 2.72 cfs @ 13.85 fps)

-3=Orifice/Grate (Weir Controls 7.17 cfs @ 1.86 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,000.00' TW=0.00' (Dynamic Tailwater)

4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond P2: Pad Detention

Inflow Area = 8.740 ac, Inflow Depth = 2.41" for 10-year event 33.38 cfs @ 12.00 hrs, Volume= 1.757 af Inflow

18.16 cfs @ 12.10 hrs, Volume= 18.16 cfs @ 12.10 hrs, Volume= 1.757 af, Atten= 46%, Lag= 5.9 min Outflow =

Primary 1.757 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs Peak Elev= 1,118.59' @ 12.10 hrs Surf.Area= 20,391 sf Storage= 16,797 cf

Plug-Flow detention time= 15.2 min calculated for 1.757 af (100% of inflow) Center-of-Mass det. time= 15.3 min (821.4 - 806.1)

Volume	Invert	Avail.Storage	Storage Description
#1	1,117.00'	58,272 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Type II 24-hr 10-year Rainfall=3.56"

160-781 Marts Hydrology

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Elevation	Surf.Area	Inc.Store	Cum.Store
(feet)	(sq-ft)	(cubic-feet)	(cubic-feet)
1,117.00	885	0	0
1,118.00	13,004	6,945	6,945
1,119.00	25,523	19,264	26,208
1,120.00	38,605	32,064	58,272

Device	Routing	Invert	Outlet Devices
#1	Primary	1,117.00'	24.0" Round Culvert X 2.00

L= 249.0' CPP, projecting, no headwall, Ke= 0.900

Inlet / Outlet Invert= 1,117.00' / 1,000.00' S= 0.4699 '/' Cc= 0.900

n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=18.15 cfs @ 12.10 hrs HW=1,118.59' TW=1,005.96' (Dynamic Tailwater) 1=Culvert (Inlet Controls 18.15 cfs @ 3.39 fps)

Summary for Link POI-1: POI 1

Inflow Area = 14.000 ac, Inflow Depth = 1.10" for 10-year event 12.24 cfs @ 12.28 hrs, Volume= 1.286 af

Primary = 12.24 cfs @ 12.28 hrs, Volume= 1.286 af, Atten= 0%, Lag= 0.0 min

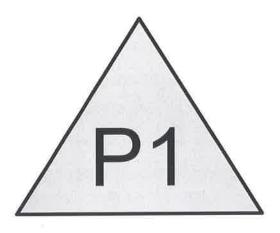
Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Link POI-2: POI 2

Inflow Area = 50.140 ac, Inflow Depth = 1.43" for 10-year event Inflow = 44.50 cfs @ 12.36 hrs, Volume= 5.969 af

Primary = 44.50 cfs @ 12.36 hrs, Volume= 5.969 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs



Dry Detention Pond 1

100-YEAR FREEBOARD CALCULATION

PREPARED BT: TGT 10/5/2016
CHECKED BT: EJB 10/7/2016



Reach





Routing Diagram for 160-781 Marts Hydrology

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Summary for Pond P1: Dry Detention Pond 1

8.740 ac, Inflow Depth = 3.95" for 100-year event Inflow Area = 25.15 cfs @ 12.11 hrs, Volume= 2.880 af Inflow 2.880 af, Atten= 4%, Lag= 5.3 min 24.06 cfs @ 12.20 hrs, Volume= Outflow 18.69 cfs @ 12.20 hrs, Volume= 2.773 af Primary Secondary = 5.36 cfs @ 12.20 hrs, Volume= 0.107 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs Peak Elev= 1,008.75' @ 12.20 hrs Surf.Area= 5,472 sf Storage= 26,779 cf

Plug-Flow detention time= 63.5 min calculated for 2.880 af (100% of inflow) Center-of-Mass det. time= 63.4 min (871.3 - 808.0)

Volume	Invert A	vail.Storage	Storage D	escription	
#1	1,000.00'	34,137 cf	Custom S	Stage Data (Pri	smatic) Listed below (Recalc)
			0.	0 01	
Elevation	Surf.Are	ea Ind	:.Store	Cum.Store	
(feet)	(sq-1	t) (cubi	c-feet)	(cubic-feet)	
1,000.00	1,06	66	0	0	
1,001.00	1,43	88	1,252	1,252	
1,002.00	1,84	4	1,641	2,893	
1,003.00	2,28	3	2,064	4,957	
1,004.00	2,76	66	2,525	7,481	
1,005.00	3,27	9	3,023	10,504	
1,006.00	3,82	23	3,551	14,055	
1,007.00	4,39	6	4,110	18,164	
1,008.00	4,99	18	4,697	22,861	

Device	Routing	Invert	Outlet Devices
#1	Primary	999.90'	24.0" Round Culvert
	-		L= 54.0' RCP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 999.90' / 998.60' S= 0.0241 '/' Cc= 0.900
			n= 0.013, Flow Area= 3.14 sf
#2	Device 1	1,000.00'	6.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	1,008.20'	24.0" x 48.0" Horiz. Orifice/Grate
			Limited to weir flow at low heads
#4	Secondary	1,008.60'	35.0' long x 15.0' breadth Broad-Crested Rectangular Weir
	•		Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

28.176 34,137

Primary OutFlow Max=18.69 cfs @ 12.20 hrs HW=1,008.75' (Free Discharge)

5,315

5,962

-1=Culvert (Passes 18.69 cfs of 42.38 cfs potential flow) **-2=Orifice/Grate** (Orifice Controls 2.76 cfs @ 14.04 fps)

5,631

6,292

-3=Orifice/Grate (Weir Controls 15.93 cfs @ 2.42 fps)

Secondary OutFlow Max=5.36 cfs @ 12.20 hrs HW=1,008.75' (Free Discharge) 4=Broad-Crested Rectangular Weir (Weir Controls 5.36 cfs @ 1.03 fps)

MARTS COMPRESSOR STATION CEC PROJECT NUMBER 160-781 SEDIMENT BASIN DESIGN

PREPARED BY:

TG.

DATE: CHECKED BY: 10/5/2016

DATE:

10/4/16

Contributing Drainage Area: (ac)

7.1

Total Sediment Storage Volume Needed (Wet

and Dry): (cf)

25,560

(drainage area * 3,600 cf/acre)

Sediment Storage Volume Needed (Wet): (cf)

12,780

Cleanout Volume Needed: (cf)

6,390

Total Volume Needed: (cf)	25,560
Total Volume Needed: (ac-ft)	0.59

Bottom Elevation of Basin

1000

Top Elevation of Basin

1010

Elevation	Area	Volume		
(FT)	(SF)	(CF)	(ACRE-FT)	
1000	1066	0	0.000	
1001	1438	1252	0.029	
1002	1844	2893	0.066	
1003	2283	4957	0.114	
1004	2766	7481	0.172	
1005	3279	10504	0.241	
1006	3823	14055	0.323	
1007	4396	18164	0.417	
1008	4998	22861	0.525	
1009	5631	28176	0.647	
1010	6292	34137	0.784	

Clean-out Storage	
Volume EL	1003.57
Clean-out Storage	
Surface Area (sf)	2557.26
Wet Storage Volume	
EL	1005.64
Wet Storage Surface	
Area (sf)	3627.75
Dry Storage Volume	
EL	1008.57
Dry Storage Surface	
Area (sf)	5343.92

MARTS COMPRESSOR STATION CEC PROJECT NUMBER 160-781 SEDIMENT BASIN DESIGN PRINCIPAL SPILLWAY FLOW CALCULATION

RISER DIA (FT) = 3
RISER ELEV. = 1008.6
GRATE AREA (SQ FT) = 7.07
WEIR COEFF. = 3.1
ORIFICE COEFF. = 9.42

24	0.012	20	2:00	9 866	1000.0
OUTLET PIPE SIZE (IN):	MANNING n =	PIPE LENGTH (FT) =	PIPE INSIDE DIA, (FT) =	OUTLET INVERT ELEV =	INLET INVERT ELEV. =

NI).	2,4	TALL CD WITH
-(11)	47	EIN, ST. WILL
= 11	0.012	EM. SP.
= ()	50	
 - -	2.00	

32	1008.6	100
VIDTH (FT) =	SP. ELEV. =	

PREPARED BY:
DATE:
CHECKED BY:
DATE:

PERF, DIA, (FT) =	NO. OF PERF/ROW =	BOW I WHITH THE PER PARTY

	() !!!!!	0
ž	NO. OF PERF /ROW =	4.00
ROV	V I INVERT ELEV =	1005.0
ROV	ROW 2 INVERT ELEV =	
ROV	ROW 3 INVERT ELEV =	
ROV	ROW 4 INVERT ELEV =	
ROV	ROW 5 INVERT ELEV =	

												25-Year Storm (cfs)	32.74					0																													
	TOTAL	DISCHARGE (CFS)	203.17	184,64	166,70	148,14	128.53	109.88	92.22	75.64	60.19	45.96	33 09	21.71	12.08	4.58	0.30	0.18	0,17	0.17	0,17	0.16	0.16	0.16	0,15	0.15	0.15	0.14	0.14	0.14	0.13	0.13	0.12	0.12	0,11	0.11	0.10	0.10	60.0	60.0	80.0	0.07	90.0	90.0	0.04	0.03	000
SPILLWAY		DISCHARGE (CFS)	162,34	145.26	128.82	113.06	98 00	83.67	70.12	57,39	45,55	34,65	24.79	16.10	8.77	3.10	0.00	00'0	00.00	00'0	00'0	00.00	00.00	00.00	00'0	00.00	00.0	00.00	0.00	00.00	0.00	00.0	00.00	00.0	00'0	0.00	0.00	00'0	00.0	00'0	00:00	00'0	00.00	0.00	00.00	00.00	000
EMERGENCY SPILLWAY		HEAD ON SPILLWAY (FT)	1,40	1.30	1,20	1.10	1.00	0.00	0.80	0,70	09"0	0.50	0.40	0.30	0.20	0.10	00.0	00.0	00.0	00.0	0.00	0.00	0.00	00.0	00'0	00.00	0.00	00'0	00.00	0.00	00.0	00.00	0.00	00.00	0.00	0.00	00.00	00.00	00.0	00'0	00.0	00'0	00.00	00'0	00.00	00.0	0.00
	OUTLET CONTROL	PIPE FLOW (CFS)		50.88	50.63	50.38	50.13	49.88	49,63	49.37	49,12	48.86	48.60	48.35	48.08	47.82	47.56	47.29	47.03	46.76	46,49	46.22	45.95	45.67	45.40	45.12	44.84	44.56	44.28	43.99	43.70	43.42	43.12	42,83	42.54	42,24	41.94	41.64	41.34	41.03	40.73	40.42	40.11	39.79	39.47	39.15	18 81
TPIPE	OUTLET	HEAD (FT)	10.40	10.30	10.20	10.10	10.00	06.6	9.80	0.70	09'6	9.50	9.40	9.30	9,20	9,10	00'6	8,90	8.80	8.70	8.60	8.50	8.40	8.30	8.20	8.10	8.00	7.90	7.80	7.70	7.60	7.50	7.40	7.30	7.20	7.10	7.00	06.9	08'9	6.70	09'9	6.50	6.40	6.30	6.20	6.10	009
OUTLET PIPE	INLET CONTROL	PIPE FLOW (CFS)		45.10	44.85	44 59	44.34	44.08	43.82	43.56	43.29	43.03	42.76	42.49	42.23	41.95	41.68	41.41	41.13	40.85	40.57	40.29	40.00	39.71	39.43	39.13	38.84	38.55	38,25	37.95	37.65	37.34	37.03	36,72	36.41	36,10	35.78	35.46	35.13	34.81	34,48	34,14	33.81	33.47	33.12	32.78	22 43
	INLET	HEAD (FT)	00.6	8,90	8.80	8.70	8.60	8.50	8,40	8.30	8.20	8.10	8.00	7.90	7.80	7.70	7.60	7.50	7.40	7.30	7.20	7,10	7.00	06'9	6.80	02.9	09'9	6.50	6.40	6.30	6.20	019	00.9	5.90	5.80	5.70	5.60	5.50	5.40	5.30	5.20	5.10	5.00	4.90	4.80	4.70	4.60
		DISCHARGE	40,83	39,38	37.87	35.07	30.53	26.20	22,10	18.24	14,64	11,32	8.29	5.61	3,31	1.48	0.30	0.18	0.17	0.17	0.17	0.16	0.16	0.16	0,15	0.15	0.15	0.14	0,14	0.14	0.13	0.13	0.12	0,12	0.11	0.11	0.10	0.10	60'0	0.09	80'0	0,07	90'0	0.05	0.04	0,03	00.0
RUCTURE		ORIFICE FLOW	40.61	39.16	37.66	36.09	34.45	32.72	30,91	28.97	26.90	24.66	22.19	19.40	16.15	12.05	5,42	00'0	00'0	00'0	00.0	00'0	00.0	00.0	00'0	00'0	00'0	0.00	00'0	00'0	0,00	00'0	00'0	00'0	00'0	00'0	00.00	00'0	00.00	00'0	00'0	00.0	00'0	00.00	00.00	0.00	000
PERMANENT RISER STR	31	WEIR FLOW	49 69	44.56	39.61	34.86	30.32	26.00	21.90	18.04	14,44	11.12	8,10	5,42	3.12	1.30	0,12	00'0	00'0	00'0	00.00	00'0	00.00	00'0	00.0	00 0	00'0	00.0	00.0	00'0	0.00	00'0	00'0	00'0	0.00	00'0	00'0	00'0	00'0	00'0	00'0	0.00	00.00	00.00	00.00	00'0	000
PERMA		PERF, FLOW (CFS)	0.22	0.22	0.21	0.21	170	0.21	0.20	0.20	0,20	0.20	61.0	0.19	61.0	0.18	0.18	81.0	0.17	0.17	0.17	91.0	0.16	0.10	0.15	0.15	0.15	11.0	†I'0	0,14	0,13	0,13	0,12	0,12	0.11	0.11	0.10	0.10	60'0	0.09	80.0	0.07	90.0	0.05	0.04	0.03	000
		HEAD ON RISER (FT)	1.1	Ε.	1.2	10.0	0.1	6.0	8.0	0.7	90	0.5	0.4	0.3	0.3	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0:0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	00
l-		WS EL	1010.00	06-6001	08 6001	02 6001	09 6001	1009 50	1009,40	0£ 6001	02,6001	01.6001	00 6001	06 8001	1008.80	1008,70	1008 60	1008.50	1008 40	1008.30	1008 20	1008 10	1008 00	06.7001	1007.80	02,7001	1007.60	1007.50	1007.40	1007.30	1007.20	1007.10	H007.00	1006.9001	1006.80	1006.70	09.9001	1006.50	1006.40	1006.30	1006,20	1006.10	1006.00	1005.90	1005.80	1005,70	09 5001

MARTS COMPRESSOR STATION CEC PROJECT NUMBER 160-781 SEDIMENT BASIN DESIGN DEWATERING ORIFICE SIZE AND TIME DESIGN

Ao = As x $(2h)^0.5/(T \times Cd \times 20,428)$ Where

Ao = total area of dewatering holes, ft^2

As - surface area of the basin, sq.ft.

H = head of water above the hole, ft

Cd = coefficient of contraction for an orifice, ~ 0.6

T = detention time needed to dewater the basin, hours

	48 HOURS
As*	5344
.H	2.93
Т	48
Cd	0.6
Ao _{REQUIRED}	0.022
	72 HOURS
As*	5344
Н	2.93
Т	72
Cd	0.6
Ao _{REQUIRED}	0.015

^{*} Determined by Interpolation

ORIFICE DE	SIGN	30.0
Perforation Dia (in)	1.00	
Perforation Dia (ft)	0.0833	
Perforation Area (sf)	0.005	
Number of Perforations	4	
Total Area of Perforations (sf)	0.022	
Total Dewatering Time (hours)	48	



Sediment Basin Drainage Area

PRETARCO BY: TGJ

10/5/2016

CHECKED DY! ARC

10/6/2016









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Page 2

Summary for Subcatchment DA: Sediment Basin Drainage Area

Runoff =

8.6

1.103 Total

32.74 cfs @ 12.00 hrs, Volume=

1.771 af, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Type II 24-hr 25-year Rainfall=4.18"

	Area	(ac) C	N Des	cription		
	0.	280 7	70 Woo	ds, Good,	HSG C	
					grazed, HS	G C
				/el roads, l	136 6	
*	1.	120 9	98 Impe	ervious		
	7.	100 8	39 Weig	ghted Aver	age	
	* -			J	. 0	
	Tc	Length	Slope	Velocity	Capacity	Description
		•	•			Description
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	1.8	100	0.0100	0.94		Sheet Flow, A-B
						Smooth surfaces n= 0.011 P2= 2.58"
	4.6	440	0.0100	1.61		Shallow Concentrated Flow, B-C
	1.0	110	0.0.00			Unpaved Kv= 16.1 fps
	0.4	045	0.0400	0.40	2.72	· · · · · · · · · · · · · · · · · · ·
	2.1	315	0.0100	2.48	3.72	
						Bot.W=2.00' D=0.50' Z= 2.0 '/' Top.W=4.00'
						n= 0.030 Earth, grassed & winding
	0.1	248	0.4700	53.48	168.02	Pipe Channel, D-E
	011					24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50'
						n= 0.012
_						11- 0.012

160-781 MARTS COMPRESSOR STATION Dry Detention Basin #1 Anti-Seep Collar

MADE BY: TGJ
DATE: 10/5/2016
CHECKED BY: MEL
DATE: DIVIDIN

$$L_{z} = y (z + 4) \left[1 + \frac{\text{pipe slope (ft/ft)}}{0.25 - \text{pipe slope}}\right]$$

Where:

y = Distance from upstream invert of outlet pipe to top of dewatering volume

= 1008.75 - 999.9

 $= 8.85 \, \text{ft}$

z = Horizontal component of upstream embankment slope

= 3

p = Pipe slope

= 0.0241 ft/ft

 L_s = 8.85 ft (3 + 4) [1 + 0.0241 / (0.25 - 0.0241)]

= 68.56 ft

For a permanent basin, the increase in flow path is 15%

$$L_f = 68.56 \text{ ft x } 1.15$$

= 78.84 ft

Minimum collar projection (V_{min}) = flow path increase/twice the number of collars

Using 3 collars:

$$V_{min} = (78.84 \text{ ft} - 68.56 \text{ ft}) / 2 (3)$$

= 1.70 ft

Space collars evenly along length of pipe in phreatic zone

Spacing =
$$L_s$$
/(No. of collars +1)
= $68.56 \text{ ft} / (3 + 1)$

= 17.14 ft

Check minimum and maximum collar spacing

$$L_{s min} = 5 x V = 5 x 1.7 ft$$

= 8.5 ft
 $L_{s max} = 14 x V = 14 x 1.7 ft$
= 23.8 ft

Use 3 collars spaced 9 ft apart with one placed 9.0 ft from upstream end of the culvert with overall dimensions of 6' by 6'



NORTH AMERICAN GREEN®

Tensar International Corporation 5401 St. Wendel-Cynthiana Road Poseyville, Indiana 47633 Tel. 800.772.2040 Fax 812.867.0247 www.nagreen.com

Erosion Control Materials Design Software Version 5.0

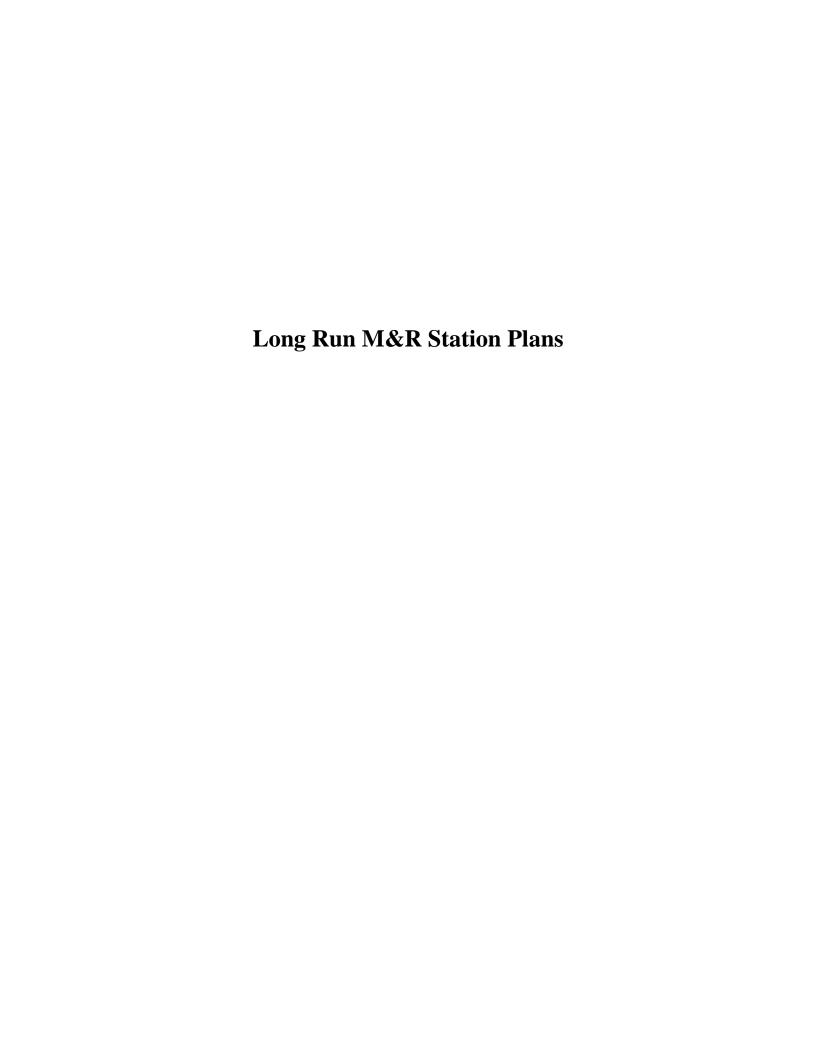
Project Name: Marts Compressor Station Project Number: 103102 Spillway Name: Sediment Basin 1

Discharge	24.79
Peak Flow Period	12
Channel Slope	0.33
Channel Bottom Width	35
Left Side Slope	
Right Side Slope	
Low Flow Liner	
Retardance Class	
Vegtation Type	
Vegetation Density	
Soil Type	Silt Loam

Prepared by: Test 10/6/16
CWelled by: MEC 194/16

Rock Riprap (R-5)

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress		Remarks	Staple Pattern
Rock Riprap Unvegetated	Straight	24.79 cfs	6.23 ft/s	0.11 ft	0.032	3 lbs/ft2	2.34 lbs/ft2	1.28	STABLE	

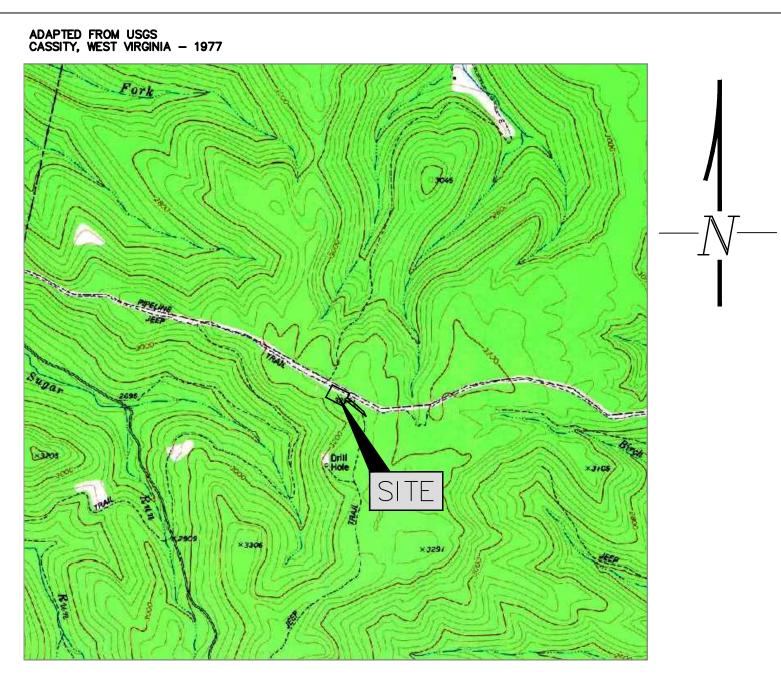


LONG RUN M&R STATION EROSION AND SEDIMENT CONTROL PLAN

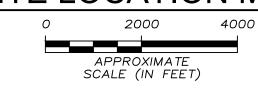


GENERAL NOTES

- 1. UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE WEST VIRGINIA EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES MANUAL, 2006.
- 2. ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING.
- 3. A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN AND NPDES INFORMATION SIGN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.
- 4. PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THESE PLANS (INCLUDING, BUT NOT LIMITED TO, OFF—SITE BORROW OR WASTE AREAS), THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION CONTROL PLAN TO THE OWNER FOR REVIEW AND APPROVAL BY THE PLAN APPROVING AUTHORITY.
- 5. THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE PLAN APPROVING AUTHORITY.
- 6. ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.
- 7. DURING DEWATERING OPERATIONS, WATER WILL BE PUMPED INTO AN APPROVED FILTERING DEVICE.
- 8. THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EACH RUNOFF-PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.

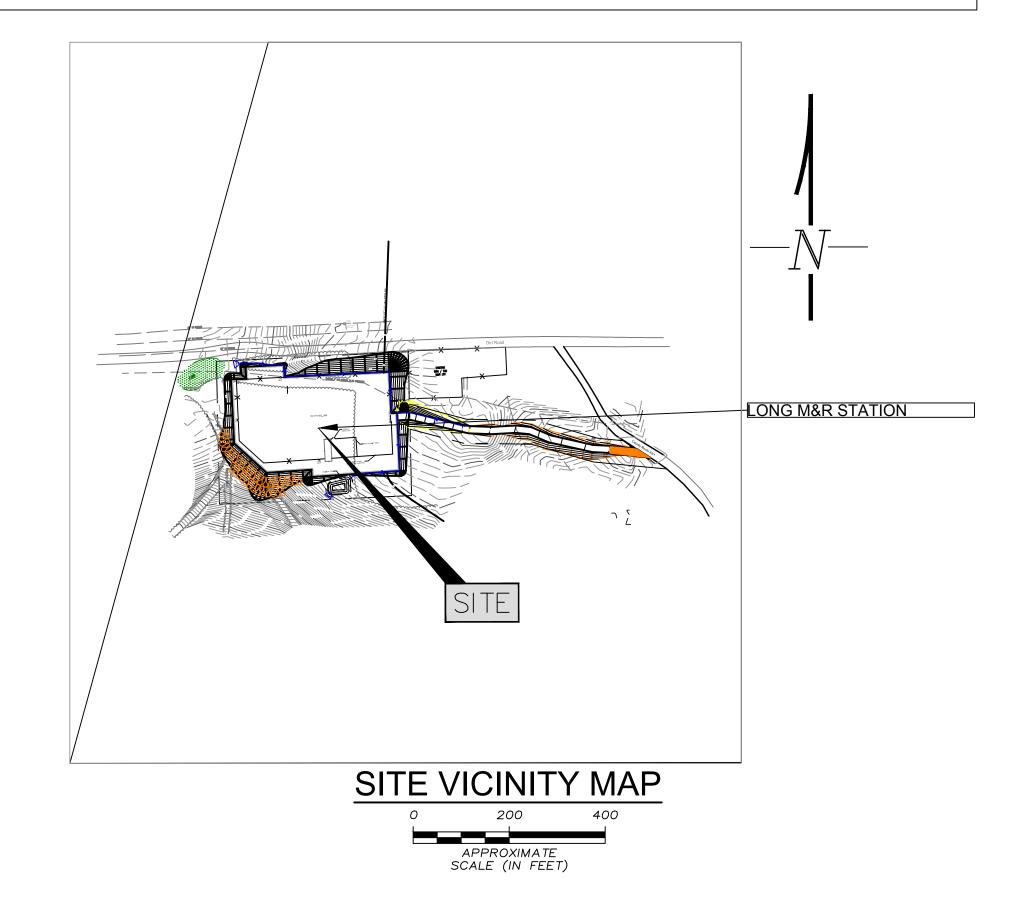


38' 46' 17.57"N
80' 05' 35.25"W (NAD83)
RANDOLPH COUNTY, WEST VIRGINIA
SITE LOCATION MAP



LIST OF DRAWINGS

DRAWING NO.	TITLE				
PD Z9948B	EROSION	AND	SEDIMENT	CONTROL	COVER SHEET
PD Z9948C	EROSION	AND	SEDIMENT	CONTROL	SITE PLAN
PD Z9948D	EROSION	AND	SEDIMENT	CONTROL	DETAILS



PROJECT NARRATIVE

PROJECT AND SITE DESCRIPTION

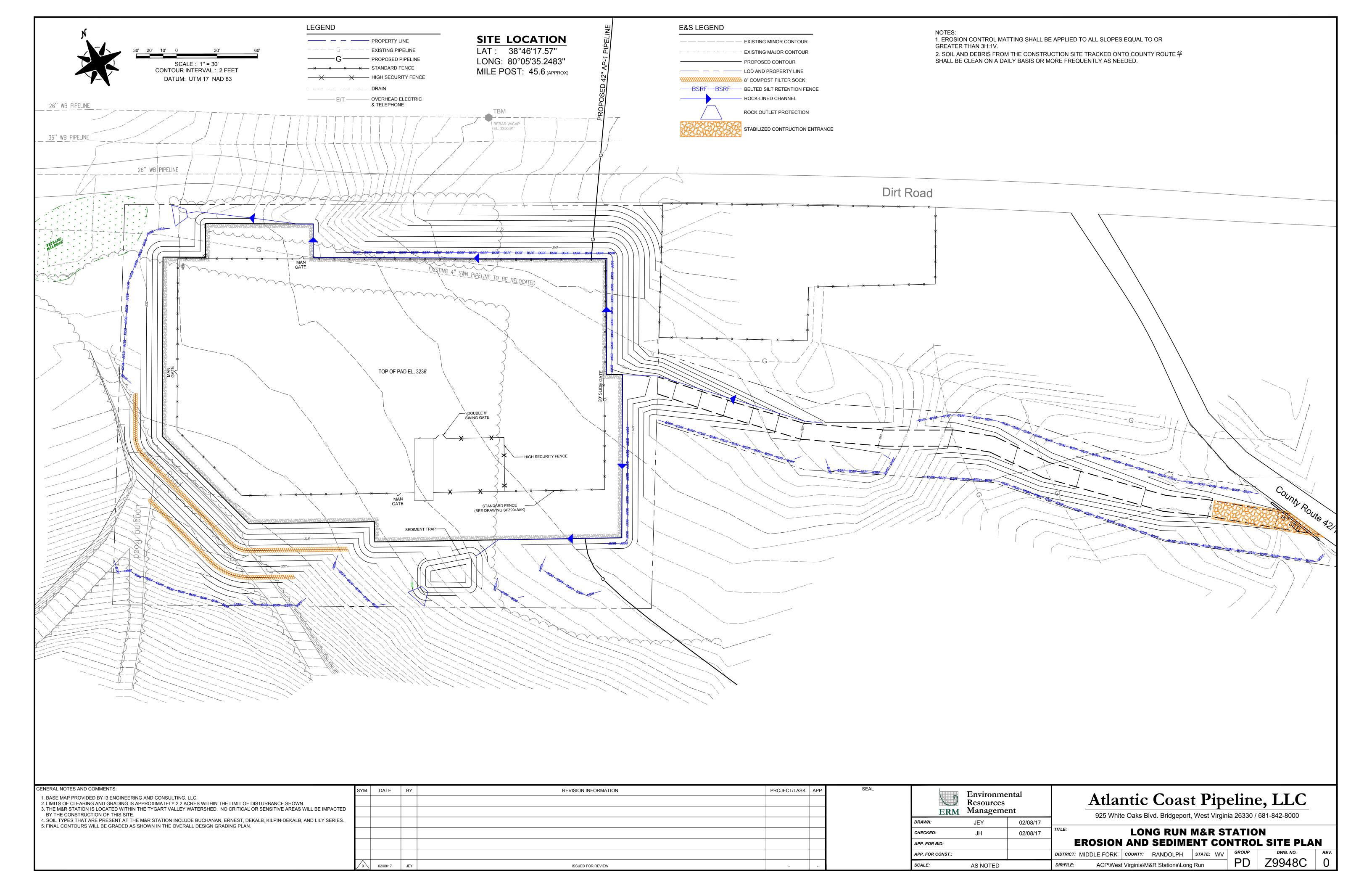
AS PART OF THE ATLANTIC COAST PIPELINE (ACP) PROJECT, DOMINION TRANSMISSION INC. (DTI) IS PROPOSING TO CONSTRUCT AN APPROXIMATELY 2.2—ACRE ABOVEGROUND METERING AND REGULATING STATION IN RANDOLF COUNTY, WEST VIRGINIA. THIS STATION, REFERRED TO AS THE LONG RUN M&R STATION (M&R STATION), WILL BE LOCATED NEAR LONG RUN ROAD (CR $\frac{42}{7}$). THE M&R STATION WILL BE LOCATED NEAR MILEPOST 47.5 OF THE AP-1 LATERAL SECTION OF THE ACP PIPELINE, WITHIN RANDOLPH COUNTY, WV. THE APPROXIMATELY 2.2—ACRE RECTANGULAR TRACT OF LAND IS LOCATED ALONG THE NORTHERN PROPERTY BOUNDARY OF A LARGER PARCEL. THE LARGER PARCEL IS IDENTIFIED AS LL-04-002-A006, TAX MAP # 11-144000100000000. THE GENERAL VICINITY AROUND THE M&R STATION IS UNDEVELOPED/FORESTED PROPERTY.

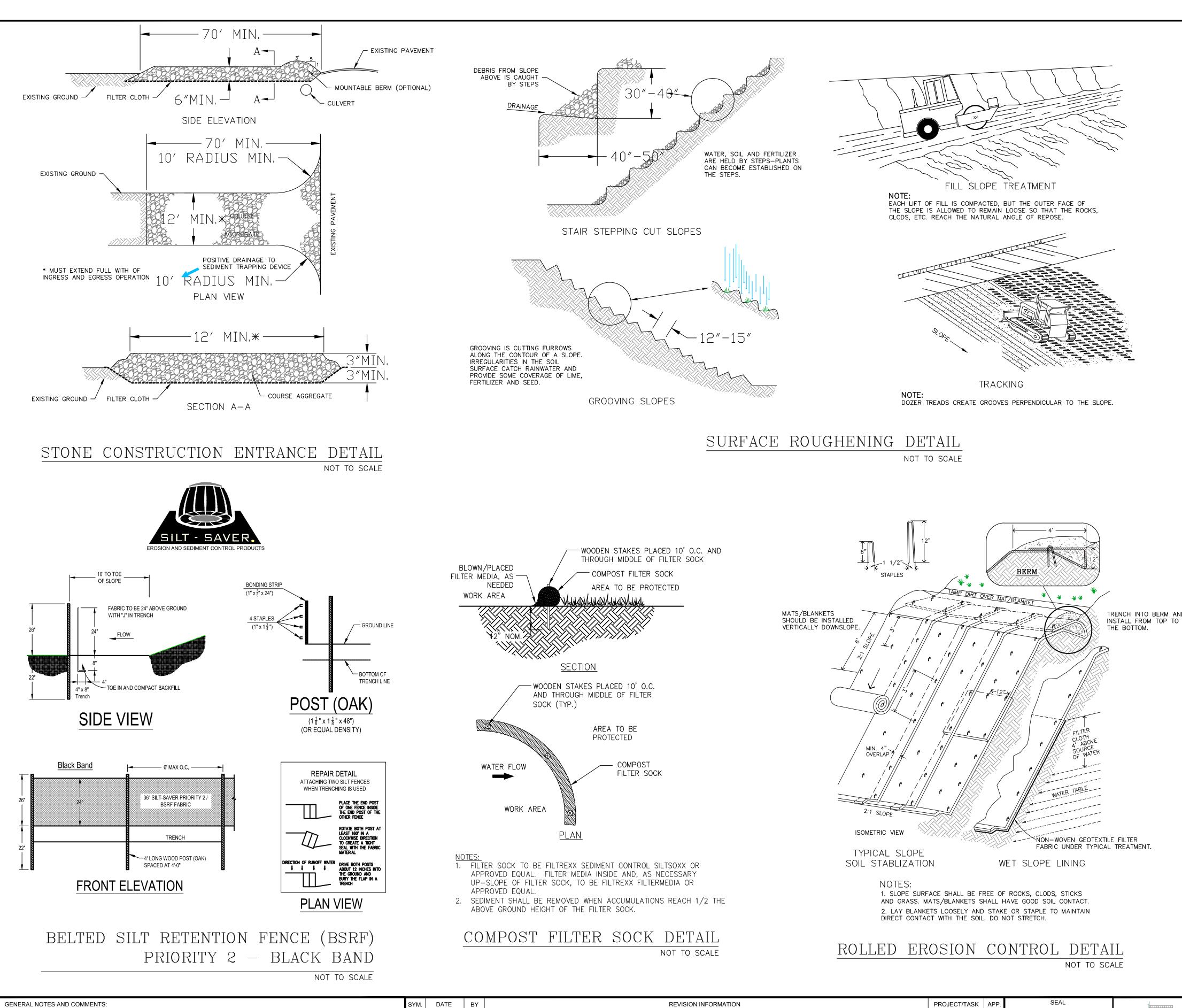
EXISTING SITE CONDITIONS

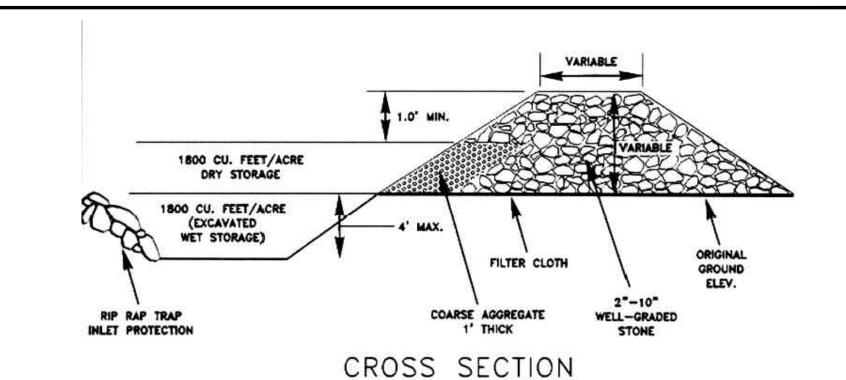
THE TOPOGRAPHY AT THE M&R STATION IS CHARACTERIZED BY GENTLY SLOPING TERRAIN WITH AN ELEVATION OF APPROXIMATELY 3240 FEET ABOVE MEAN SEA LEVEL. THE PROPOSED DEVELOPMENT WILL RETAIN THE EXISTING TOPOGRAPHY OF FLAT TO GENTLY SLOPING TERRAIN WITH GRADING TO DIRECT STORMWATER TOWARD A RETENTION POND PLANNED TO BE LOCATED SOUTH OF THE PROPOSED M&R STATION.

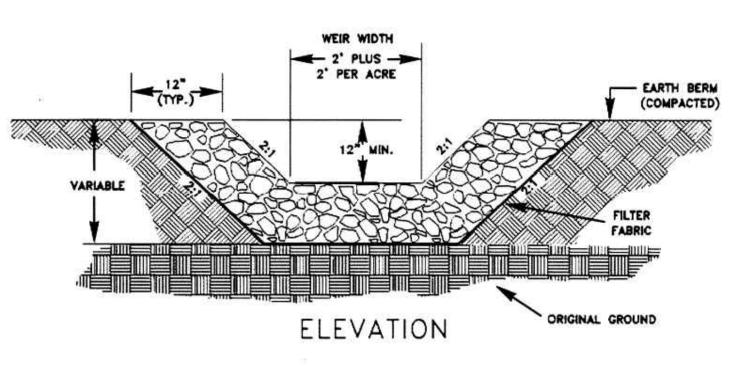
THE FULL PROJECT NARRATIVE HAS BEEN PROVIDED IN THE STORMWATER POLLUTION PREVENTION PLAN, APPENDIX F, EROSION AND SEDIMENT CONTROL AND STORMWATER MANAGEMENT PLAN FOR THE LONG RUN M&R STATION.

NOTE:	SYM. DATE	BY	REVISION INFORMATION	PROJECT/TASK APP.	SEAL	Environmental Resources ERM Management DRAWN: JEY 02/08/17 CHECKED: JH 02/08/17		Environmental Resources Management Atlantic Coast Pipeli			Atlantic Coast Pipeline, LLC 925 White Oaks Blvd. Bridgeport, West Virginia 26330 / 681-842-8000
								02/08/17	- 325 Winto Sake Biva. Bridgeport, West Vilginia 20000 7 00 1 042 0000		
								02/08/17	LONG RUN M&R STATION		
						APP. FOR BID:			EROSION AND SEDIMENT CONTROL COVER SHEET		
						APP. FOR CONS	т.:		DISTRICT: MIDDLE FORK COUNTY: RANDOLPH STATE: WV GROUP DWG. NO. REV.		
	02/08/17	, JEY	ISSUED FOR REVIEW			SCALE:	AS NOTED		DIR/FILE: ACP\West Virginia\M&R Stations\Long Run PD Z9948B 0		









ROCK OUTLET SEDIMENT TRAP

NOT TO SCALE

SEDIMENT TRAP SIZING TABLE

3600 cubic feet Volume per Acre Drainage Area 0.85 Acres 3060 cubic feet Volume Needed

Input Top Width 29 ft 44 ft Input Top Length 5 ft Input Depth

Input Side Slopes

Depth (ft)	Width (ft)	Length (ft)	Storage Vol	ume
0	29	44	0	cf
0.5	27	42	567	cf
1	25	40	500	cf
1.5	23	38	437	cf
2	21	36	378	cf
2.5	19	34	323	cf
3	17	32	272	cf
3.5	15	30	225	cf
4	13	28	182	cf
4.5	11	26	143	cf
5	9	24	108	cf

2:1

27	42	567	cf
25	40	500	cf
23	38	437	cf
21	36	378	cf
19	34	323	cf
17	32	272	cf
15	30	225	cf
13	28	182	cf
11	26	143	cf
9	24 108		cf
	Total Vol	3135	cf
	25 23 21 19 17 15 13	25 40 23 38 21 36 19 34 17 32 15 30 13 28 11 26 9 24	25 40 500 23 38 437 21 36 378 19 34 323 17 32 272 15 30 225 13 28 182 11 26 143 9 24 108

SYM.	DATE E	3Y	REVISION INFORMATION	PROJECT/TASK	APP.	SEAL	ERM	Environment Resources Management	
							DRAWN:	JEY	02/08/17
							CHECKED:	JH	02/08/17
							APP. FOR BID:		
							APP. FOR CONST.:		
0	02/08/17 J	EY	ISSUED FOR REVIEW	-	-		SCALE:	AS NOTED	

Atlantic Coast Pipeline, LLC 925 White Oaks Blvd. Bridgeport, West Virginia 26330 / 681-842-8000

LONG RUN M&R STATION

	EROSIO	N AN	D SEDIM	ENT C	ONTRO	OL DETAILS	•					
\	MIDDLE FORK	COUNTY	D 4 4 1 D 6 1 D 1 1	07475	GROUP	DWG. NO.	R					

DISTRICT: MIDDLE FORK | COUNTY: RANDOLPH | STATE: WV | PD Z9948D 0 ACP\West Virginia\M&R Stations\Long Run