

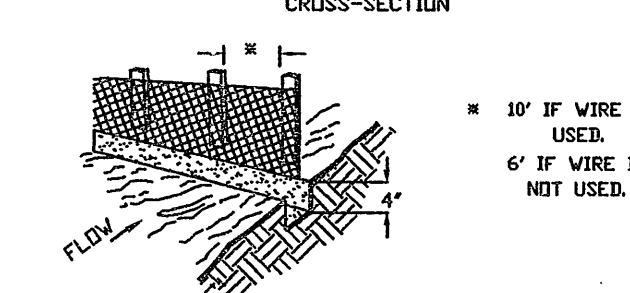
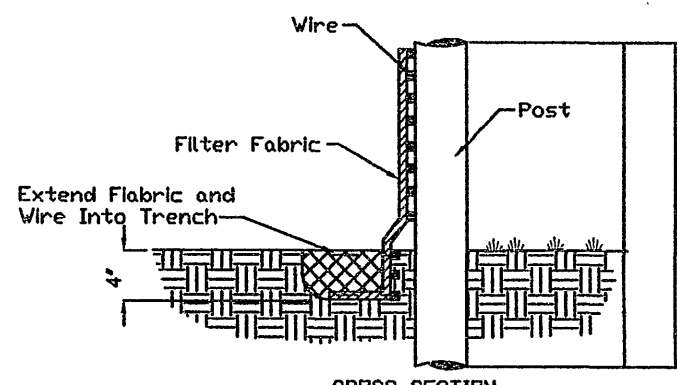
PS PERMANENT SEEDING MIXTURE

TYPE A	TYPE B (SLOPES 3:1 OR STEEPER)
15 OCTOBER TO 1 FEBRUARY K-31 FESCUE @ 5 LB / 1000 SF BORZY WINTER RYE @ 1/2 LB / 1000 SF	15 MARCH TO 1 MAY CROWN VETCH @ 1/2 LB / 1000 SF PERENNIAL RYEGRASS @ 1/2 LB / 1000 SF RED TOP @ 1/8 LB / 1000 SF
1 FEBRUARY TO 1 JUNE K-31 FESCUE @ 5 LB / 1000 SF ANNUAL RYE @ 1/2 LB / 1000 SF	15 AUGUST TO 1 OCTOBER CROWN VETCH @ 1/2 LB / 1000 SF PERENNIAL RYEGRASS @ 1/2 LB / 1000 SF RED TOP @ 1/8 LB / 1000 SF
1 JUNE TO 1 SEPTEMBER K-31 FESCUE @ 5 LB / 1000 SF GERMAN MILLET @ 1/2 LB / 1000 SF	
1 SEPTEMBER TO 15 OCTOBER K-31 FESCUE @ 5 LB / 1000 SF ANNUAL RYE @ 1/2 LB / 1000 SF	

LIME 140 LB / 1000 SF PULVERIZED AGRICULTURAL LIMESTONE  
FERTILIZER 5-20-10 @ 25 LB / 1000 SF  
30-0-0 @ 7 LB / 1000 SF  
HULCH IF REQUIRED, SHALL BE USED OVER ALL SEEDING AREAS AND SHALL BE APPLIED IN ACCORDANCE WITH SECTION 1.75 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION.  
SOIL CONDITIONS: INCORPORATION OF LIME AND FERTILIZER, SELECTION OF CERTIFIED SEED, HULCHING, MAINTENANCE OF NEW SEEDLINGS, AND RESEEDING SHALL BE IN ACCORDANCE WITH SPECIFICATIONS CONTAINED WITHIN THE VIRGINIA SOIL EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION. ADDITIONAL SEEDING TO BE PERFORMED AS REQUIRED BY THE INSPECTOR.  
SEED APPLICATION: APPLY SEED UNIFORMLY WITH A CYCLING SEEDER, DRILL, CULTIPACKER SEEDER, OR HYDROSEEDER IN A FIRM, FRIABLE, SEEDBED. MAXIMUM SEEDING DEPTH SHALL BE 1/4 INCH.

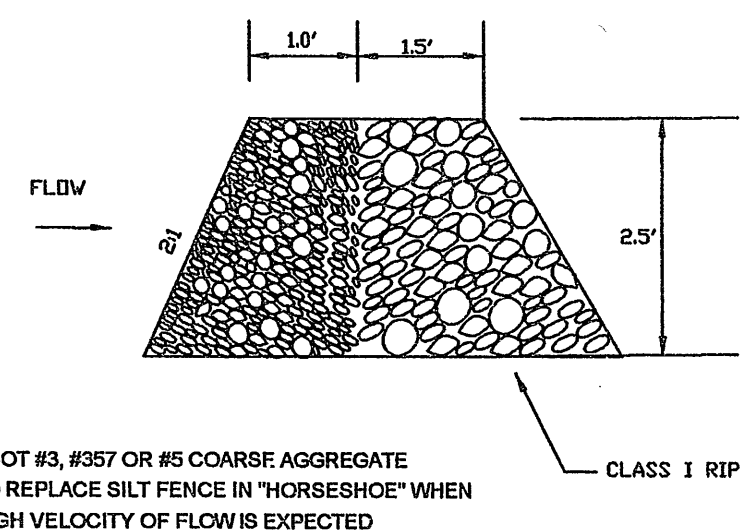
TOTAL DISTURBED AREA = 0.53 AC. = 22,696 SQ. FT.

SC TEMPORARY CULVERT CROSSING



SF CONSTRUCTION OF A SILT FENCE

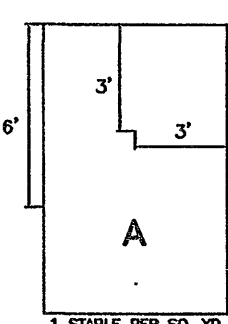
OPTIONAL STONE COMBINATION\*\*



\*\* VDOT #3, #57 OR #5 COARSE AGGREGATE TO REPLACE SILT FENCE IN "HORSESHOE" WHEN HIGH VELOCITY OF FLOW IS EXPECTED

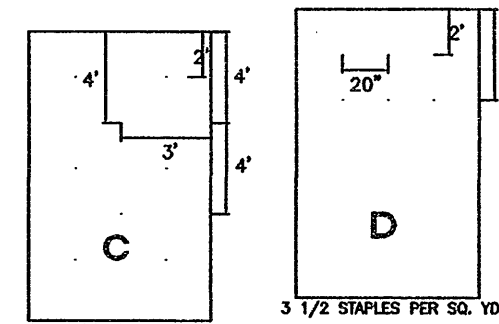
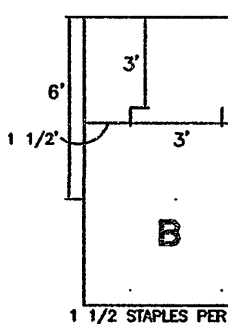
\* DISTANCE IS 6' MINIMUM IF FLOW IS TOWARD EMBANKMENT

GENERAL STAPLE PATTERN GUIDE FOR TREATMENT - 1 (SOIL STABILIZATION MATTING)

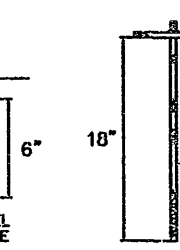
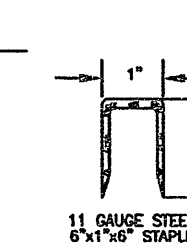
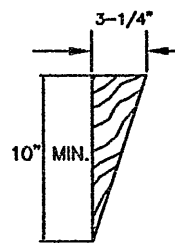


Flow	Flow	Flow	Flow	Flow
A	B	C	C	D
4:1	3:1	2:1	1:1	LOW / HIGH FLOW CHANNEL AND SHORELINE

NOTE: FOR OPTIMUM RESULTS, THESE RECOMMENDED STAPLE PATTERN GUIDES MUST BE FOLLOWED. SUGGESTED ANCHORING METHODS MUST ACCORD TO THE MANUFACTURER. THIS CHART SHOWS LOW SLOPE LENGTHS AND GRADIENTS AFFECT STAPLING PATTERNS.



STAPLES, STAPLES, & PINS TREATMENT - 1 SOIL STABILIZATION MATTING



SOURCE: PRODUCT LITERATURE FROM GREENSTREAK, INC. PLATE: 3.36-3

THE CONTRACTOR SHALL UTILIZE SOME MEASURE OF BLANKET MATTING OR SOIL STABILIZATION MATERIAL TO STABILIZE DISTURBED SLOPES AT 3:1 SLOPE OR STEEPER.  
SOIL STABILIZATION BLANKETS & MATTINGS - VESCH STD & SPEC 3.36  
TREATMENT-1: DEGRADABLE SOIL STABILIZATION BLANKET  
EXAMPLES: JUTE MESH, LANDSCAPE SUPPLY (NORTH AMERICAN GREEN) P300, C350, C125 EQUIVALENT SUPPLIES  
USE TO HELP ESTABLISH VEGETATIVE GROWTH, TEMPORARY MEASURES.  
TREATMENT-2: NON-DEGRADABLE SOIL STABILIZATION BLANKET  
EXAMPLES: LANDSCAPE SUPPLY (NORTH AMERICAN GREEN) P550 PYRAMAT

EROSION AND SEDIMENT CONTROL NARRATIVE

PROJECT DESCRIPTION: THE PURPOSE OF THIS PROJECT IS TO REPLACE APPROXIMATELY NINE-HUNDRED AND FIFTY FEET (950') OF SANITARY SEWERLINE. THIS PROJECT IS BEING COMPLETED TO ADDRESS THE BACKUPS AT BRANDYWINE APARTMENTS. THE MAIN CONSTRUCTION WILL DISTURB A 15' WIDE STRIP OR LESS FOR A DISTANCE OF 950'. THE AREA OF LAND DISTURBANCE IS ESTIMATED AS FOLLOWS: 950' x 15' FOR MAIN LINE CONSTRUCTION, WITH APPROXIMATELY 75% OF THE DISTURBED AREA BEING IN PAVEMENT. DISTURBED SOIL/GRASS AREA WILL BE 3,500 SQ. FT.

EXISTING SITE CONDITIONS: THE PROPERTY IS RELATIVELY FLAT AND DRAINS TO THE NORTH/NORTHEAST TOWARD AN EXISTING DITCH WHICH FLOWS INTO A STORMDRAIN SYSTEM THAT OUTFALLS INTO MURRAY RUN. THE PROJECTS STARTS AT MANHOLE 03A-3063.0 LOCATED AT THE RIGHT-OF-WAY AT 698 BRANDON AVENUE. THE FIRST 200' OF THE PROJECT HAS A SUBSTANTIAL AMOUNT OF TREE AND SHRUB GROWTH. THE MAJORITY OF THE PROJECT IS WITHIN PAVEMENT OR PARKING LOT.

ADJACENT PROPERTY: THE PROJECT IS SURROUNDED BY RESIDENTIAL AND MULTIPLE RESIDENTIAL PROPERTIES.

OFF-SITE AREAS: THE DEVELOPMENT WILL BE A "BALANCED" SITE AND NO EXCESS MATERIAL WILL BE EXPORTED NOR WILL ANY MATERIAL BE IMPORTED FROM OTHER PROPERTIES.

SOILS: AS IDENTIFIED BY THE US DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, GENERAL SOIL MAP, THE BASIC SOIL IS CHISWELL-LITZ. A SILTY LOAM SOIL TYPE.

CRITICAL EROSION AREAS: DRAINAGE CHANNELS ARE THE CRITICAL AREAS. BLANKET MATTING WILL BE INSTALLED IN THE DISTURBED AREAS OF THE CHANNELS.

EROSION AND SEDIMENT CONTROL MEASURES: UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE HANDBOOK. THE MINIMUM STANDARDS OF THE VESCR SHALL BE ADHERED TO UNLESS OTHERWISE WAIVED OR APPROVED BY A VARIANCE.

STRUCTURAL PRACTICES:

SILT FENCE - 3.05  
SILT FENCE WILL BE INSTALLED DOWNSLOPE OF BRANDON LANE AREA TO PREVENT SOIL ERODING INTO DRAINAGE DITCH AND STORMDRAIN SYSTEM.

CULVERT INLET PROTECTION - 3.08  
CULVERT INLET PROTECTION WILL BE PLACED PRIOR TO CONSTRUCTION TO KEEP SEDIMENT OUT OF EXISTING CULVERT LOCATED NEAR OAKWOOD DRIVE. CULVERT INLET PROTECTION WILL ALSO BE INSTALLED AFTER THE DUAL 24" STORMDRAIN CULVERT IS CONSTRUCTED.

VEGETATIVE PRACTICES:  
PERMANENT SEEDING - 3.32  
ALL DISTURBED AREAS WILL RECEIVE PERMANENT SEEDING.

SOIL STABILIZATION MATTING AND BLANKETS - 3.36  
SOIL STABILIZATION MATTING WILL BE INSTALLED IN THE DRAINAGE CHANNEL.

MANAGEMENT STRATEGIES:  
1. THE CONSTRUCTION ENTRANCE AND SILT FENCE SHALL BE INSTALLED PRIOR TO BEGINNING CONSTRUCTION.  
2. AREA WILL RECEIVE PERMANENT SEEDING IMMEDIATELY AFTER SEWERLINE IS INSTALLED.  
3. ALL EBS MEASURES SHALL BE INSPECTED DAILY AND AFTER A SIGNIFICANT STORM. ANY DAMAGE SHALL BE REPAIRED IMMEDIATELY.  
4. AFTER GRASS IS ESTABLISHED, THE SILT FENCE WILL BE REMOVED.

CALCULATIONS:  
NO DESIGN CALCULATIONS ARE REQUIRED.

MINIMUM STANDARDS

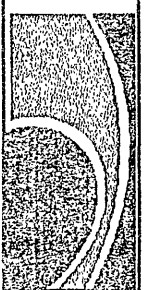
THE FOLLOWING STANDARDS ARE TO BE PROVIDED OR ADDRESSED ON EVERY DEVELOPMENT PROJECT EXCEEDING 5000 S.F. IN AREA OF DISTURBANCE. THESE STANDARDS ARE CONSIDERED A MINIMUM AND MAY REQUIRE ADDITIONAL MEASURES AS DEEMED NECESSARY BY THE LOCAL APPROVING AUTHORITY OR THE CONSULTING ENGINEER.

No.	CRITERIA, TECHNIQUE OR METHOD	PRACTICES PROVIDED
1	PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN (7) DAYS AFTER FINAL GRADE HAS BEEN REACHED ON ANY PORTION OF THE SITE. TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN (7) DAYS TO DENUDED AREAS THAT MAY BE AT FINAL GRADE BUT WILL REMAIN DORMANT (UNDISTURBED) FOR LONGER THAN THIRTY (30) DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE (1) YEAR.	PS B/M FOR ALL DENUDED AREAS
2	DURING CONSTRUCTION OF THE PROJECT, SOIL STOCKPILES SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES. THE CONTRACTOR IS RESPONSIBLE FOR THE TEMPORARY PROTECTION AND PERMANENT STABILIZATION OF ALL SOIL STOCKPILES ON SITE AS WELL AS SOIL INTENTIONALLY TRANSPORTED FROM THE PROJECT SITE.	PS ST IF STOCKPILE APPLICABLE
3	A PERMANENT VEGETATIVE COVER SHALL BE ESTABLISHED ON DENUDED AREAS NOT OTHERWISE PERMANENTLY STABILIZED. PERMANENT VEGETATION SHALL NOT BE CONSIDERED ESTABLISHED UNTIL A GROUND COVER IS ACHIEVED THAT, IN THE OPINION OF THE LOCAL PROGRAM ADMINISTRATOR OR DESIGNATED AGENT, IS UNIFORM, MATURE ENOUGH TO SURVIVE AND WILL INHIBIT EROSION.	PS FOR ALL DENUDED AREAS
4	SEDIMENT BASINS AND TRAPS, PERIMETER DIKES, SEDIMENT BARRIERS AND OTHER MEASURES INTENDED TO TRAP SEDIMENT SHALL BE CONSTRUCTED AS A FIRST STEP IN ANY LAND-DISTURBING ACTIVITY AND SHALL BE MADE FUNCTIONAL BEFORE UPSLOPE LAND DISTURBANCE TAKES PLACE.	SF
5	STABILIZATION METHODS SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DAMS, DIKES AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.	NA
6	SEDIMENT TRAPS AND BASINS SHALL BE DESIGNED AND CONSTRUCTED BASED UPON THE TOTAL DRAINAGE AREA TO BE SERVED BY THE TRAP OR BASIN.	NA
7	CUT AND FILL SLOPES SHALL BE CONSTRUCTED IN A MANNER THAT WILL MINIMIZE EROSION. SLOPES THAT ARE FOUND TO BE ERODING EXCESSIVELY WITHIN ONE (1) YEAR OF PERMANENT STABILIZATION SHALL BE PROVIDED WITH ADDITIONAL SLOPE STABILIZATION MEASURES UNTIL THE PROBLEM IS CORRECTED.	PS FOR ALL ERODING SLOPES
8	CONCENTRATED RUNOFF SHALL NOT FLOW DOWN CUT OR FILL SLOPES UNLESS CONTAINED WITHIN AN ADEQUATE TEMPORARY OR PERMANENT CHANNEL, FLUME OR SLOPE DRAIN STRUCTURE.	NA
9	WHENEVER WATER SEEPS FROM A SLOPE FACE, ADEQUATE DRAINAGE OR OTHER PROTECTION SHALL BE PROVIDED.	NA
10	ALL STORM SEWER INLETS THAT ARE MADE OPERABLE DURING CONSTRUCTION SHALL BE PROTECTED SO THAT SEDIMENT-LADEN WATER CANNOT ENTER THE CONVEYANCE SYSTEM WITHOUT FIRST BEING FILTERED OR OTHERWISE TREATED TO REMOVE SEDIMENT.	NA
11	BEFORE NEWLY CONSTRUCTED STORMWATER CONVEYANCE CHANNELS ARE MADE OPERATIONAL, ADEQUATE OUTLET PROTECTION AND ANY REQUIRED TEMPORARY OR PERMANENT CHANNEL LINING SHALL BE INSTALLED IN BOTH THE CONVEYANCE CHANNEL AND RECEIVING CHANNEL.	NA
12	WHEN WORK IN A LIVE WATERCOURSE IS PERFORMED, PRECAUTIONS SHALL BE TAKEN TO MINIMIZE ENCROACHMENT, CONTROL SEDIMENT TRANSPORT AND STABILIZE THE WORK AREA TO THE GREATEST EXTENT POSSIBLE DURING CONSTRUCTION. NONERODIBLE MATERIAL SHALL BE USED FOR THE CONSTRUCTION OF CAUSEWAYS AND COFFERDAMS. EARTHEN FILL MAY BE USED FOR THESE STRUCTURES IF ARMORED BY NONERODIBLE COVER MATERIALS.	NA
13	WHEN A LIVE WATERCOURSE MUST BE CROSSED BY CONSTRUCTION VEHICLES MORE THAN TWICE IN ANY SIX (6) MONTH PERIOD, A TEMPORARY STREAM CROSSING CONSTRUCTED OF NONERODIBLE MATERIAL.	NA
14	ALL APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS PERTAINING TO WORKING IN OR CROSSING LIVE WATERCOURSES SHALL BE MET. THE BEDS AND BANKS OF ANY WATERCOURSE SHALL BE STABILIZED IMMEDIATELY AFTER WORK IN THE WATERCOURSE IS COMPLETED.	B/M
15	THE BEDS AND BANKS OF A WATERCOURSE SHALL BE STABILIZED IMMEDIATELY AFTER WORK IN THE WATERCOURSE IS COMPLETED.	PS B/M
16	UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING STANDARDS IN ADDITION TO OTHER APPLICABLE CRITERIA: 1)NO MORE THAN 500 LINEAR FEET OF ANY TRENCH MAY BE OPENED AT ONE TIME. 2)EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES. 3)EFFLUENT FROM DEWATERING OPERATIONS SHALL BE FILTERED OR PASSED THROUGH AN APPROVED SEDIMENT TRAPPING DEVICE, OR BOTH, AND DISCHARGED IN A MANNER THAT DOES NOT ADVERSELY AFFECT FLOWING STREAMS OR OFF-SITE PROPERTY. 4)MATERIAL USED FOR BACKFILLING TRENCHES SHALL BE PROPERLY COMPACTED IN ORDER TO MINIMIZE EROSION AND PROMOTE STABILIZATION. 5)STABILIZATION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THESE REGULATIONS. 6)APPLICABLE SAFETY REGULATIONS SHALL BE COMPLIED WITH.	CONTRACTOR'S WORK SHALL BE IN ACCORDANCE
17	WHERE CONSTRUCTION VEHICLE ACCESS ROUTES INTERSECT PAVED OR PUBLIC ROADS, PROVISIONS SHALL BE MADE TO MINIMIZE THE TRANSPORT OF SEDIMENT BY VEHICULAR TRACKING ONTO THE PAVED SURFACE. WHERE SEDIMENT IS TRANSPORTED ONTO A PAVED OR PUBLIC ROAD SURFACE, THE ROAD SURFACE SHALL BE CLEANED THOROUGHLY AT THE END OF EACH DAY. SEDIMENT SHALL BE REMOVED FROM THE ROADS BY SHOVELING OR SWEEPING AND TRANSPORTED TO A SEDIMENT CONTROL DISPOSAL AREA. STREET WASHING SHALL BE ALLOWED ONLY AFTER SEDIMENT IS REMOVED IN THIS MANNER.	SITE ENTRANCES ARE PAVED. NO CONSTRUCTION ENTRANCE IS REQUIRED, HOWEVER, STREET SHALL BE KEPT CLEAN OF DIRT, DEBRIS, ETC
18	ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN THIRTY (30) DAYS AFTER FINAL SITE STABILIZATION OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED, UNLESS OTHERWISE AUTHORIZED BY THE LOCAL PROGRAM ADMINISTRATOR. TRAPPED SEDIMENT AND THE DISTURBED SOIL AREAS RESULTING FROM THE DISPOSITION OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION.	PS SELF-EXPLANATORY
19	PROPERTIES AND WATERWAYS DOWNSTREAM FROM DEVELOPMENT SITES SHALL BE PROTECTED FROM SEDIMENT DEPOSITION, EROSION AND DAMAGE DUE TO INCREASES IN VOLUME, VELOCITY AND PEAK FLOW RATE OF STORMWATER RUNOFF FOR THE STATED FREQUENCY STORM OF 24-HOUR DURATION IN ACCORDANCE WITH THE APPLICABLE CRITERIA.	NA

GENERAL EROSION AND SEDIMENT CONTROL NOTES:

- ES-1: Unless otherwise indicated, all vegetative and structural control practices will be constructed and maintained according to the minimum standards and specifications of the Virginia Erosion and Sediment Control Handbook and Virginia Regulations 4VAC50-30 Erosion and Sediment Control Regulations.
- ES-2: The plan approving authority must be notified one week prior to the pre-construction conference, one week prior to the commencement of land disturbing activity, and one week prior to the final inspection.
- ES-3: All erosion and sediment control measures are to be placed prior to or as the first step in clearing.
- ES-4: A copy of the approved erosion and sediment control plan shall be maintained on the site at all times.
- ES-5: 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.
- ES-6: 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.
- ES-7: 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.
- ES-8: During dewatering operations, water will be pumped into an approved filtering device.
- ES-9: 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.

WESTERN VIRGINIA  
WATER AUTHORITY



Brandon Lane  
Sewer Replacement

E & S Narrative  
PLAN

Rev	Description	Date	By
1	Changed per City Review Comments	6/2/20	CDA

Designed: CDA  
Drawn: CDA  
Checked: CDA  
Approved: JGR  
Date: 14 MAY 2009  
Project: