## NO. SYMBOL TITLE SYMBOL **EROSION-SILTATION CONTROL** STORMWATER MANAGEMENT GENERAL NOTES **COST ESTIMATE** COST ESTIMATE 3.01 SAFETY FENCE ROCK CHECK DAMS . DESIGN OF DETENTION BASINS SHALL CONFORM TO THE REQUIREMENTS TEMPORARY GRAVEL ALL COSTS GIVEN ARE COMPLETE IN PLACE ALL COSTS GIVEN ARE COMPLETE IN PLACE LEVEL SPREADER OF THE COUNTY OF ROANOKE DRAINAGE STANDARDS (REF. SECTIONS CONSTRUCTION ENTRANCE 503.02, 503.03, AND 505.02). THE DESIGN OF THE FACILITY AND - VARIABLE VEGETATIVE STREAMBANK CONSTRUCTION ROAD PREPARATION OF AS-BUILT PLANS SHALL BE BY A CERTIFIED UNIT COST QUANTITY UNIT COST QUANTITY TOTAL COST DESCRIPTION UNIT TOTAL COST DESCRIPTION UNIT - ORIGINAL GROUND 1.0'-PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE COMMONWEALTH STABILIZATION STABILIZATION TRUCTURAL STREAMBANK CONSTRUCTION EΑ \$3,000.00 LS \$1,500.00 CLEARING & GRUBBING 3.04 STRAW BALE BARRIER ENTRANCE STABILIZATION ACCESS TO THE FACILITY MUST BE PROVIDED IN ACCORDANCE WITH THE 67 CU. YD./ACRE TEMPORARY VEHICULAR COUNTY OF ROANOKE DESIGN AND CONSTRUCTION STANDARDS FOR \$7,920.00 CY 3.05 ILT FENCE 2648 \$3.00 EXCAVATION SILT FENCE DETENTION PONDS, LATEST EDITION. STREAM CROSSING FILTER CLOTH EΑ - COARSE AGGREGATE \*\* NLET PROTECTION EMBANKMENT CY 3.06 BRUSH BARRIER <del>(2000)</del> UTILITY STREAM CROSSING 3. IF THE FACILITY IS OVER FOUR (4) FEET DEEP, TAKES OVER TWO (2) HOURS TO DRAIN, OR THE INTERIOR SLOPE EXCEEDS 3 (H): 1 (V), CROSS-SECTION STORM DRAIN TEMPORARY PERMANENT FENCING MAY BE REQUIRED, ADDITIONALLY, IF THE FENCING DEWATERING STRUCTURE 3.07 DIVERSION DIKE FACILITY IS IN A CONGESTED AREA OR WILL IN ANY WAY POSE A INLET PROTECTION \* SEE PLATE 3.13-1 HAZARD TO THE GENERAL PUBLIC, FENCING MAY BE REQUIRED. TEMPORARY LF FENCING SHALL BE A MINIMUM OF SIX (6) FEET HIGH, A MINIMUM OF STRUCTURES 3.08 CULVERT INLET PROTECTION TURBIDITY CURTAIN FILL DIVERSION STANDARD NINE GAUGE LINK FENCE, AND MUST HAVE ONE OR MORE CLASS I RIP-RAP LOCKING DOUBLE GATES (MINIMUM TEN FEET WIDE) FOR ACCESS. -Length(ft) = 6 x Drainage Area (ac.) SEDIMENT TRAP EΑ COARSE AGGREGATE \*\* ---TEMPORARY DIVERSION DIKE SUBSURFACE DRAIN ACCESS ROAD ----. DETENTION PONDS SHALL BE BONDED IN ACCORDANCE WITH THE ROANOKE DIVERSION DIKE COUNTY BONDING POLICY FOR SUBDIVISION AND SITE DEVELOPMENT. (SR)\$R CHECK DAM EΑ AS-BUILTS TEMPORARY FILL DIVERSION SURFACE ROUGHENING A SEPARATE BOND FOR THE DETENTION FACILITY WILL BE REQUIRED AND ADMINISTERED APART FROM THE SUBDIVISION DEVELOPMENT BOND. TEMPORARY RIGHT-OF-WAY SUB-TOTAL 1,000 SF \$30.00 \$5,200.00 3.11 **TOPSOILING** REFERENCE ESTIMATE - THIS SHEET. PERMANENT SEEDING DIVERSION 10% CONTINGENCY EΑ 5. REFERENCE THE COUNTY OF ROANOKE DESIGN AND CONSTRUCTION TEMPORARY SEEDING ---(7S)----3.12 DIVERSION OUTLET PROTECTION STANDARDS FOR DETENTION PONDS, LATEST EDITION, FOR ACCEPTANCE AND MAINTENANCE OF THE FACILITY. CERTIFIED AS-BUILTS ARE FILTER CLOTH TOTAL PROJECT COST EΑ TEMPORARY SEDIMENT TRAP PERMANENT SEEDING PS ---SEDIMENT BASIN REQUIRED AND MUST INCLUDE: -EXCAVATED AREA -A. DIMENSIONS OF THE FACILITY \*\* COARSE AGGREGATE SHALL TEMPORARY SEDIMENT BASIN SODDING ----(SO)----BE VDOT #3,#357 OF#5 B. VOLUME @ MAXIMUM DEPTH BERMUDA GRASS AND TEMPORARY SLOPE DRAIN C. ELEVATIONS OF STRUCTURES, SPILLWAYS, AND TOP OYSIAURASS ESTABLISHMENT ----(N)----SEDIMENT TRAF D. MATERIALS VERIFICATION INCLUDING RESULTS OF DENSITY TESTS SUB-TOTAL \$16,120.00 3.16 PAVED FLUME MULCHING MU ( MU) CONDUCTED BY AN INDEPENDENT SOIL TESTING LABORATORY STORMWATER CONVEYANCE SOIL STABILIZATION E. LOCATION AND ELEVATION OF BENCHMARK. 10% CONTINGENCY \$1,612.00 SEDIMENT BASIN SCHEMATIC BLANKETS AND MATTING CHANNEL TREES, SHRUBS, VINES \$17,732.00 **ELEVATIONS** OUTLET PROTECTION 6. ONE FOOT MINIMUM FREEBOARD REQUIRED FOR THE 100 YR WATER → VEG → TOTAL PROJECT COST 3.18 AND GROUND COVERS FOR AREAS LESS THAN 3.0 ACRES. FOR AREAS SURFACE ELEVATION. LARGER THAN 3.0 ACRES A SEDIMENT BASIN TREE PRESERVATION RIPRAP (P) IS REQUIRED. SEE DETAIL THIS SHEET. AND PROTECTION (DC) DUST CONTROL CONSTRUCTION NOTES 2 ACRES OR LESS OF DRAINAGE AREA: 2-10 ACRES OF DRAINAGE AREA: TEMPORARY SEDIMENT TRAP DATA GENERAL EROSION AND SEDIMENT CONTROL NOTES WEIR HEIGHT (FT.) STORAGE (C.Y.) DESIGN HIGH WATER . SITE PREPARATION SHALL BE IN ACCORDANCE WITH THE COUNTY OF -YR. STORM ELEV.) STRUCTUF ROANOKE DESIGN AND CONSTRUCTION STANDARDS FOR DETENTION PONDS. REQ'D DESIGN 0.5' FILTER CLOTH FILTER CLOTH 67 C.Y./AC. -(DOWNSTREAM VIEW) (OPTIONAL) . ALL SOIL EROSION & SEDIMENT CONTROL MEASURES SHALL BE ACCOMPLISHED (OPTIONAL) (DOWNSTREAM VIEW) "DRY" STORAGE IN STRICT ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS CONTAINED 2. SLOPES STEEPER THAN 3 TO 1 (HORIZONTAL TO VERTICAL) SHALL BE - RISER CREST IN THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION. BENCHED OR STEPPED PRIOR TO PLACING FILL ON THEM. 67 C.Y./AC. COARSE AGGREGATE COARSE AGGREGATE DEWATERING DEVICE THE APPROVING AUTHORITY MAY ADD TO, DELETE, RELOCATE, CHANGE, OR 4.5' MIN. OTHERWISE MODIFY CERTAIN EROSION AND SEDIMENT CONTROL MEASURES WHERE 3. ON-SITE FILL MATERIAL OR BORROW FILL MATERIAL MAY BE UTILIZED. FIELD CONDITIONS ARE ENCOUNTERED THAT WARRANT SUCH MODIFICATIONS. SEDIMENT CLEANOUT POINT FILL MATERIAL SOILS, IN GENERAL: ("WET" STORAGE REDUCED CLASS I RIPRAF ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES AS SHOWN ON THE PLAN TO 34 C.Y./ACRE) A. SHALL BE COMPACTABLE SHALL BE PLACED IN ADVANCE OF THE WORK BEING PERFORMED, AS FAR AS (CD) ROCK CHECK DAM SHALL BE WITHIN AN ACCEPTABLE RANGE OF MOISTURE CONTENT TEMPORARY DIVERSION DIKE PRACTICAL WHICH IS READILY CONTROLLED DESIGN ELEVATIONS WITH C. SHALL NOT BE HIGHLY SUSCEPTIBLE TO VOLUME CHANGE 4. IN NO CASE DURING CONSTRUCTION SHALL WATER RUNOFF BE DIVERTED OR EMERGENCY SPILLWAY ALLOWED TO FLOW TO LOCATIONS WHERE ADEQUATE PROTECTION HAS NOT BEEN (SHRINKAGE OR SWELL) OR SETTLEMENT TEMPORARY FILL DIVERSION . IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LEAVE THE SITE ADEQUATELY 4. FILL MATERIALS CONTAINING ROCKS LARGER THAN SIX (6) INCHES PROTECTED AGAINST EROSION, SEDIMENTATION, OR ANY DAMAGE TO ANY ADJACENT (15.2 CM) SHALL NOT BE USED. THE UPPERMOST TWO (2) FEET (61 PROPERTY AT THE END OF EACH DAY'S WORK. CM) SHALL NOT HAVE ANY ROCK LARGER THAN TWO (2) INCHES (5.1 CM) IN DIAMETER. TEMPORARY RIGHT-OF-WAY 5. FOR THE EROSION CONTROL KEY SYMBOLS SHOWN ON THE PLANS, REFER TO THE DIVERSION VIRGINIA UNIFORM CODING SYSTEM FOR EROSION AND SEDIMENT CONTROL PRACTICES CONTAINED IN THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK. LATES 5. THE APPROVED FILL SHALL BE PLACED IN EIGHT (8) INCH (20 CM) EDITION. THESE SYMBOLS AND KEYS ARE TO BE UTILIZED ON ALL EROSION CONTROL LOOSE LIFTS. EACH LIFT SHALL BE SPREAD IN UNIFORM LAYERS. PLANS SUBMITTED TO ROANOKE COUNTY. FILL SOIL SHALL BE UTILIZED ONLY WITHIN A MOISTURE RANGE OF +/- 5% OF THE OPTIMUM MOISTURE CONTENT. COMPACTION OF THE FILL SHALL BE PERFORMED WITH APPROVED EQUIPMENT. COMPACTION DESIGN HIGH WATER (25-YR. STORM ELEV.) | MIN. 2.0' | MIN. 3.0' OF THE LAYERS SHALL BE CONTINUOUS AND UNIFORM. MIN. 1.0' 6. EMBANKMENT MATERIAL IN FILL AREAS SHALL BE PLACED IN LIFTS NOT EXCEEDING EIGHT (8) INCHES AND SHALL BE COMPACTED TO A MINIMUM "DRY" STORAGE SPECIFIC APPLICATION 95% DENSITY IN ACCORDANCE WITH SECTION 303 OF THE VIRGINIA DEPARTMENT OF TRANSPORTATION ROAD AND BRIDGE SPECIFICATIONS. This method of inlet protection is applicable 67 C.Y./AC. at curb inlets where ponding in front of the structure is not likely to cause DEWATERING DEVICE Extend Fiabric and inconvenience or damage to adjacent structures and unprotected areas. 7. FIELD DENSITY TESTS ARE TO BE CONDUCTED BY AN INDEPENDENT Wire Into Trench SEDIMENT CLEANOUT POINT SOILS TESTING LABORATORY UNDER THE DIRECTION OF A QUALIFIED SEDIMENT. GEOTECHNICAL ENGINEER. THE RESULTS OF THESE TESTS SHALL BE \* Gravel shall be VDOT #3, #357 or 5 SUBMITTED TO THE COUNTY OF ROANOKE WITH AS-BUILT PLANS AS A PERMANENT SEEDING MIXTURE CONDITION OF ACCEPTANCE OF THE FACILITY BY THE COUNTY. FIELD DENSITY TESTS, AS DIRECTED BY THE ENGINEER SHALL BE PERFORMED DESIGN ELEVATIONS WITHOUT PERIODICALLY TO DETERMINE THE DEGREE OF COMPACTION. ANY AREAS ( IP ) GRAVEL CURB INLET SEDIMENT FILTER FAILING TO MEET THE ABOVE REQUIREMENTS SHALL BE REWORKED **EMERGENCY SPILLWAY** CROSS-SECTION1 AND/OR RECOMPACTED UNTIL THE REQUIRED DEGREE OF COMPACTION IS (RISER PASSES 25-YR. EVENT) TYPE B (SLOPES 3:1 OR STEEPER) ACHIEVED. VDOT #1 Coarse 15 OCTOBER TO 1 FEBRUARY 15 MARCH TO 1 MAY Aggregate K-31 FESCUE @ 5 LB / 1000 SF CROWN VETCH @ 1/2 LB / 1000 SF \* 10' IF WIRE IS 8. ANTI-SEEP COLLARS SHALL BE INSTALLED IN ACCORDANCE WITH THE BORZY WINTER RYE @ 1/2 LB / 1000 SF PERENNIAL RYEGRASS @ 1/2 LB / 1000 SF CONSTRUCT A WASHBOARD OF REQUIREMENTS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL RED TOP @ 1/8 LB / 1000 SF -Filter Cloth 6' IF WIRE IS HANDBOOK, LATEST EDITION. WASH RACK IF REQUIRED. Ref. Table 3.02-A of NOT USED. K-31 FESCUE @ 5 LB / 1000 SF 15 AUGUST TO 1 OCTOBER Virginia ESC Handbook CROWN VETCH @ 1/2 LB / 1000 SF ANNUAL RYE @ 1/2 LB / 1000 SF for requirements. PERENNIAL RYEGRASS @ 1/2 LB / 1000 SF 9. ALL DISTURBED AREAS SHALL BE COVERED WITH FOUR (4) INCHES OF JUNE TO 1 SEPTEMBER TOPSOIL AND SEEDED. RED TOP @ 1/8 LB / 1000 SF K-31 FESCUE @ 5 LB / 1000 SF GERMAN MILLET @ 1/2 LB / 1000 SF (SF) CONSTRUCTION OF A SILT FENCE \* MUST EXTEND FULL WIDTH OF INGRESS 10. THE MINIMUM SLOPE OF THE BASIN "FLOOR SHALL BE ONE (1) PERCENT SEPTEMBER TO 15 OCTOBER & EGRESS OPERATION. GRADED TO DRAIN TO THE PRINCIPAL SPILLWAY. K-31 FESCUE @ 5 LB / 1000 SF ANNUAL RYE @ 1/2 LB / 1000 SF SEDIMENT-LADEN RUNOFF \_MIN. 1'-MAX. 2' GRAVEL (12"MIN. DEPTH) 140 LB / 1000 SF PULVERIZED AGRICULTURAL LIMESTONE FERTILIZER: 5-20-10 @ 25 LB / 1000 SF IF REQUIRED, SHALL BE USED OVER ALL SEEDED AREAS AND SHALL BE APPLIED IN ACCORDANCE WITH SECTION 1.75 OF THE VIRGINIA EROSION SPECIFIC APPLICATION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION. This method of inlet protection is applicable SOIL CONDITIONING: where heavy flows are expected and where INCORPORATION OF LIME AND FERTILIZER, SELECTION OF CERTIFIED an overflow capability and ease of maintenance SEED, MULCHING, MAINTENANCE OF NEW SEEDLINGS, AND RESEEDING SHALL BE IN ACCORDANCE WITH SPECIFICATIONS CONTAINED WITHIN are desirable. Section A-A LARGER PARTICLES -Reinforced Concrete THE VIRGINIA SOIL EROSION AND SEDIMENT CONTROL HANDBOOK, Section A-A LATEST EDITION. ADDITIONAL SEEDING TO BE PERFORMED AS REQUIRED Pipe Outlet To Flat Area With No Defined Channel BY THE INSPECTOR. STORM WATER WITH SEED APPLICATION: APPLY SEED UNIFORMLY WITH A CYCLONE SEEDER, DRILL, LARGER PARTICLES SPECIFIC APPLICATION CULTIPACKER SEEDER, OR HYDROSEEDER ON A FIRM, FRIABLE, SEEDBED. (OP) OUTLET PROTECTION REMOVED MAXIMUM SEEDING DEPTH SHALL BE 1/4 INCH. This method of inlet protection is applicable where heavy concentrated flows are expected, but not where ponding around the structure might cause excessive inconvenience or damage DRAIN INLET to adjacent structures and unprotected areas. 1. Apron lining may be rip-rap, WASH RACK DETAIL (IF REQUIRED) grouted rip-rap, or concrete. 2. La is the length of the rip-SQ. FT. TOTAL DISTURBED AREA = \* Gravel shall be VDOT #3, #357 or #5 coarse aggregate. rap apron as calculated using TEMPORARY GRAVEL plates 1.36d and 1.36e. CONSTRUCTION ENTRANCE 3. d = 1.5 times the maximum IP ) GRAVEL AND WIRE MESH DROP INLET SEDIMENT FILTER stone diameter, but not less EXCAVATED DROP INLET SEDIMENT TRAP þ4-10-93 DATE: 11/02/93 DEPARTMENT b8-05-93 ENGR. & INSPEC SCALE: NO SCALE 10-27-93 **EROSION & SEDIMENT CONTROL** ENGR. & INSPEC COUNTY OF ROANOKE DRAWING BY: CLN, AF STORMWATER MANAGEMENT DETAILS ENGINEERING AND INSPECTIONS G:\CAD\DETAILS\EROSION\EROSION)

APPROVED BY:

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REVISIONS