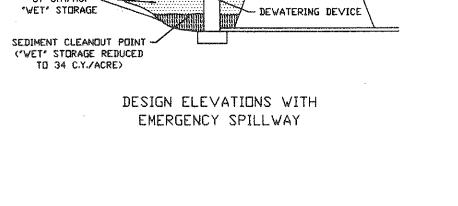
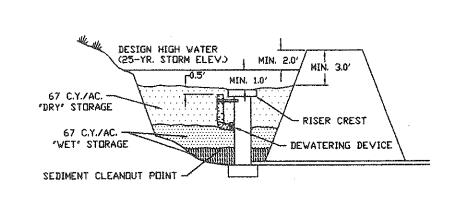
STORMWATER MANAGEMENT COST ESTIMATE ALL COSTS GIVEN ARE COMPLETE IN PLACE DESCRIPTION QUANTITY UNIT COST TOTAL COST CLEARING & GRUBBING LS EXCAVATION **EMBANKMENT** CY FENCING LF STRUCTURES ACCESS ROAD AS-BUILTS SUB-TOTAL 10% CONTINGENCY TOTAL PROJECT COST SEDIMENT BASIN SCHEMATIC **ELEVATIONS** - CREST OF EMERGENCY DESIGN HIGH WATER -YR, STORM ELEV.) 67 C.Y./AC. "DRY" STORAGE - RISER CREST "WET" STORAGE DEVATERING DEVICE SEDIMENT CLEANOUT POINT -("WET" STORAGE REDUCED TD 34 C.Y./ACRE>





DESIGN ELEVATIONS WITHOUT EMERGENCY SPILLWAY (RISER PASSES 25-YR. EVENT)

GENERAL NOTES

- DESIGN OF DETENTION BASINS SHALL CONFORM TO THE REQUIREMENTS OF THE COUNTY OF ROANOKE DRAINAGE STANDARDS (REF. SECTIONS 503.02, 503.03, AND 505.02). THE DESIGN OF THE FACILITY AND PREPARATION OF AS-BUILT PLANS SHALL BE BY A CERTIFIED PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE COMMONWEALTH
- . ACCESS TO THE FACILITY MUST BE PROVIDED IN ACCORDANCE WITH THE COUNTY OF ROANOKE DESIGN AND CONSTRUCTION STANDARDS FOR DETENTION PONDS, LATEST EDITION.
- 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), PERMANENT FENCING MAY BE REQUIRED, ADDITIONALLY, IF THE FACILITY IS IN A CONGESTED AREA OR WILL IN ANY WAY POSE A HAZARD TO THE GENERAL PUBLIC, FENCING MAY BE REQUIRED. FENCING SHALL BE A MINIMUM OF SIX (6) FEET HIGH, A MINIMUM OF STANDARD NINE GAUGE LINK FENCE, AND MUST HAVE DNE DR MORE LOCKING DOUBLE GATES (MINIMUM TEN FEET WIDE) FOR ACCESS.
- 4. DETENTION PONDS SHALL BE BONDED IN ACCORDANCE WITH THE ROANDKE COUNTY BONDING POLICY FOR SUBDIVISION AND SITE DEVELOPMENT. A SEPARATE BOND FOR THE DETENTION FACILITY WILL BE REQUIRED AND ADMINISTERED APART FROM THE SUBDIVISION DEVELOPMENT BOND. REFERENCE ESTIMATE - THIS SHEET.
- . REFERENCE THE COUNTY OF ROANDKE DESIGN AND CONSTRUCTION STANDARDS FOR DETENTION PONDS, LATEST EDITION, FOR ACCEPTANCE AND MAINTENANCE OF THE FACILITY. CERTIFIED AS-BUILTS ARE
- A. DIMENSIONS OF THE FACILITY
- B. VOLUME @ MAXIMUM DEPTH

REQUIRED AND MUST INCLUDE:

- C. ELEVATIONS OF STRUCTURES, SPILLWAYS, AND TOP
- D. MATERIALS VERIFICATION INCLUDING RESULTS OF DENSITY TESTS CONDUCTED BY AN INDEPENDENT SOIL TESTING LABORATORY
- E. LOCATION AND ELEVATION OF BENCHMARK.
- 6. DNE FOOT MINIMUM FREEBOARD REQUIRED FOR THE 100 YR WATER

CONSTRUCTION NOTES

FILL MATERIAL SOILS, IN GENERAL:

- 1. SITE PREPARATION SHALL BE IN ACCORDANCE WITH THE COUNTY OF ROANDKE DESIGN AND CONSTRUCTION STANDARDS FOR DETENTION PONDS,
- 2. SLOPES STEEPER THAN 3 TO 1 (HORIZONTAL TO VERTICAL) SHALL BE BENCHED OR STEPPED PRIOR TO PLACING FILL ON THEM.

FILTER CLOTH -

(OPTIONAL)

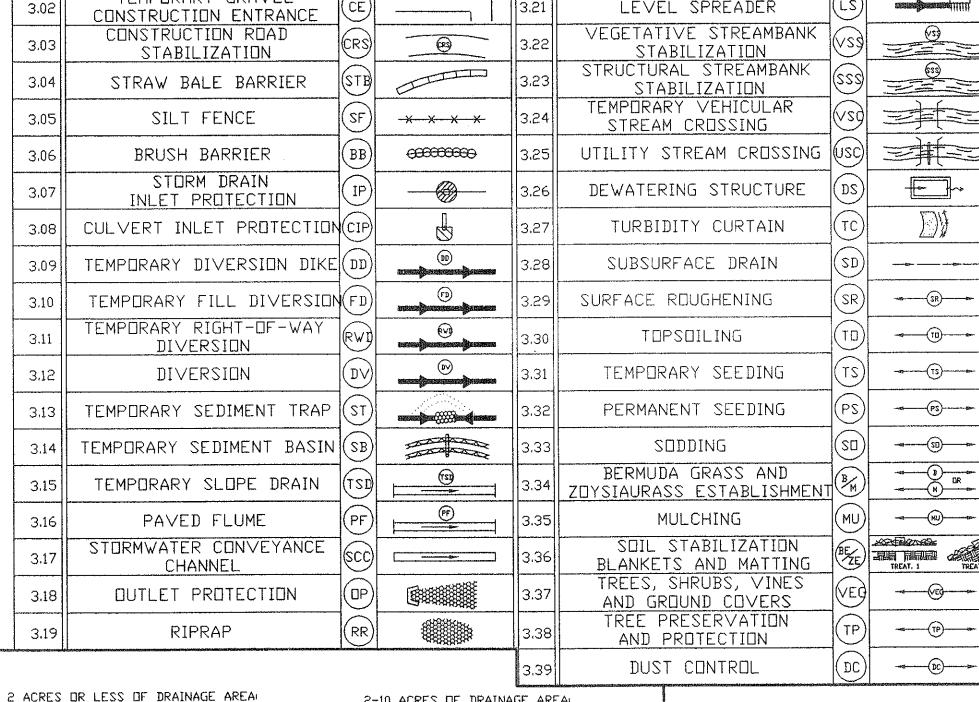
COARSE AGGREGATE

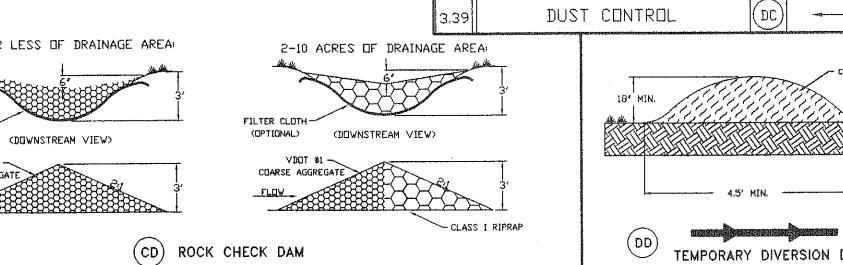
- 3. ON-SITE FILL MATERIAL OR BORROW FILL MATERIAL MAY BE UTILIZED.
- SHALL BE COMPACTABLE SHALL BE WITHIN AN ACCEPTABLE RANGE OF MOISTURE CONTENT
- WHICH IS READILY CONTROLLED C. SHALL NOT BE HIGHLY SUSCEPTIBLE TO VOLUME CHANGE (SHRINKAGE OR SWELL) OR SETTLEMENT
- 4. FILL MATERIALS CONTAINING ROCKS LARGER THAN SIX (6) INCHES (15.2 CM) SHALL NOT BE USED. THE UPPERMOST TWO (2) FEET (61 CM) SHALL NOT HAVE ANY ROCK LARGER THAN TWO (2) INCHES (5.1
- 5. THE APPROVED FILL SHALL BE PLACED IN EIGHT (8) INCH (20 CM) LOOSE LIFTS. EACH LIFT SHALL BE SPREAD IN UNIFORM LAYERS. 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 OF THE LAYERS SHALL BE CONTINUOUS AND UNIFORM.
- 6. EMBANKMENT MATERIAL IN FILL AREAS SHALL BE PLACED IN LIFTS NOT EXCEEDING EIGHT (8) INCHES AND SHALL BE COMPACTED TO A MINIMUM 95% DENSITY IN ACCORDANCE WITH SECTION 303 OF THE VIRGINIA DEPARTMENT OF TRANSPORTATION ROAD AND BRIDGE SPECIFICATIONS.
- 7. FIELD DENSITY TESTS ARE TO BE CONDUCTED BY AN INDEPENDENT SOILS TESTING LABORATORY UNDER THE DIRECTION OF A QUALIFIED GEOTECHNICAL ENGINEER. THE RESULTS OF THESE TESTS SHALL BE SUBMITTED TO THE COUNTY OF ROANOKE WITH AS-BUILT PLANS AS A CONDITION OF ACCEPTANCE OF THE FACILITY BY THE COUNTY. FIELD DENSITY TESTS, AS DIRECTED BY THE ENGINEER SHALL BE PERFORMED PERIODICALLY TO DETERMINE THE DEGREE OF COMPACTION. ANY AREAS FAILING TO MEET THE ABOVE REQUIREMENTS SHALL BE REWORKED AND/OR RECOMPACTED UNTIL THE REQUIRED DEGREE OF COMPACTION IS
- 8. ANTI-SEEP COLLARS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION.
- 9. ALL DISTURBED AREAS SHALL BE COVERED WITH FOUR (4) INCHES OF TOPSOIL AND SEEDED.
- 10, THE MINIMUM SLOPE OF THE BASIN "FLOOR SHALL BE ONE (1) PERCENT GRADED TO DRAIN TO THE PRINCIPAL SPILLWAY.

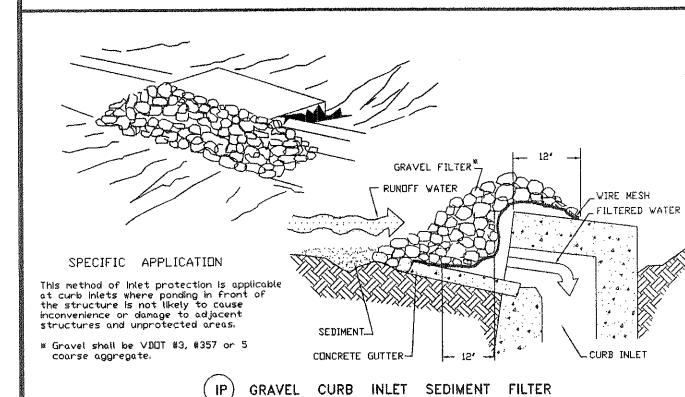
are desirable.

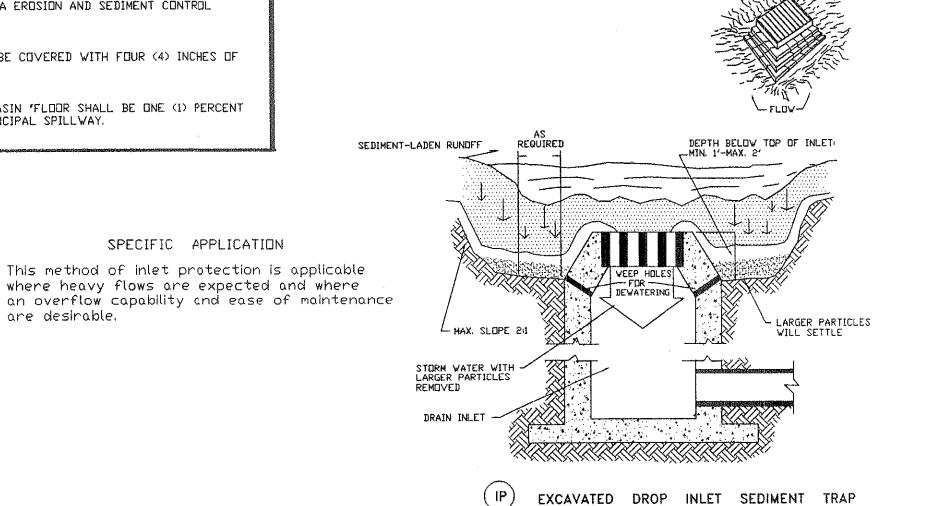
SPECIFIC APPLICATION

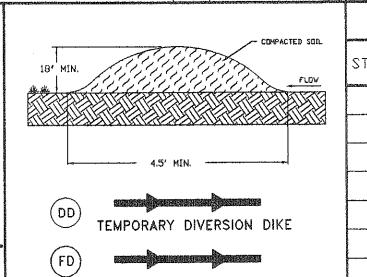
SYMBOL SYMBOL TITLE SAFETY FENCE ROCK CHECK DAMS TEMPORARY GRAVEL LEVEL SPREADER CONSTRUCTION ENTRANCE CONSTRUCTION ROAD VEGETATIVE STREAMBANK STABILIZATION STABILIZATION TRUCTURAL STREAMBANK STRAW BALE BARRIER STABILIZATION TEMPORARY VEHICULAR SILT FENCE -X--X--X--X- STREAM CROSSING BRUSH BARRIER (2000) UTILITY STREAM CROSSING STORM DRAIN DEWATERING STRUCTURE INLET PROTECTION 3.08 | CULVERT INLET PROTECTION(CIP TURBIDITY CURTAIN SUBSURFACE DRAIN TEMPORARY DIVERSION DIKE (DD) -S---(SR)------TEMPORARY FILL DIVERSION(FI SURFACE ROUGHENING FEMPORARY RIGHT-OF-WAY **→** 10 **→** TOPSOILING DIVERSION TEMPORARY SEEDING -----(12)------DIVERSION TEMPORARY SEDIMENT TRAF PERMANENT SEEDING -d--(52)----------(20)------SODDING TEMPORARY SEDIMENT BASIN (SB B DR BERMUDA GRASS AND TEMPORARY SLOPE DRAIN JYSIAURASS ESTABLISHMEN⁻ MULCHING PAVED FLUME SOIL STABILIZATION STORMWATER CONVEYANCE BLANKETS AND MATTING CHANNEL REES, SHRUBS, VINES OUTLET PROTECTION AND GROUND COVERS TREE PRESERVATI**u**n RIPRAP AND PROTECTION

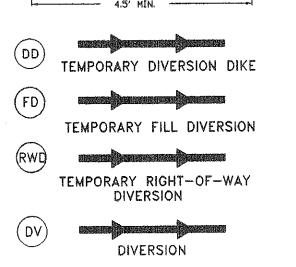












CROSS-SECTION

SF) CONSTRUCTION OF A SILT FENCE

Section A-A

(OP) OUTLET PROTECTION

<u>Pipe Dutlet To Flat A</u>rea <u>With No Defined Chan</u>nel

10' IF WIRE IS

USED.

6' IF WIRE IS

NOT USED.

Section A-A

<u>Pipe Dutlet To</u> <u>Well-Defined Channe</u>

1. Apron lining may be rip-rap,

plates 1,36d and 1,36e.

3. d = 1.5 times the maximum

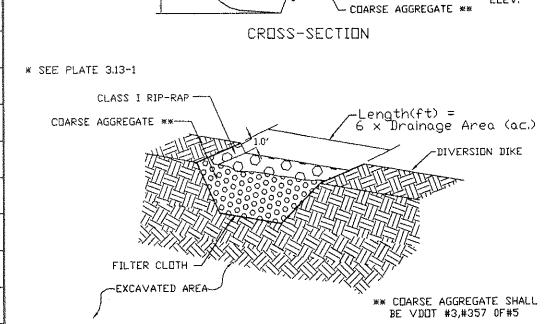
2. La is the length of the riprap apron as calculated using

grouted rip-rap, or concrete.

stone dlameter, but not less

xtend Flabric and Wire Into Trench-

VARIABLE * FILTER CLOTH DRIGINAL GROUND



VARIABLE *-

✓ ORIGINAL GROUND 1.0′ → -

37 CU. YD./ACRE

(ST) SEDIMENT TRAF

FOR AREAS LESS THAN 3.0 ACRES, FOR AREAS LARGER THAN 3.0 ACRES A SEDIMENT BASIN IS REQUIRED, SEE DETAIL THIS SHEET.

TEMPORARY SEDIMENT TRAP DATA

STORAGE (C.Y.)

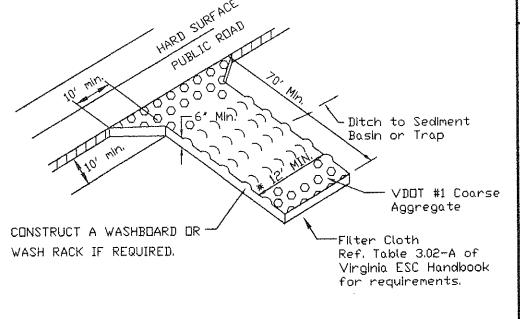
EROSION-SILTATION CONTROL COST ESTIMATE

ALL COSTS GIVEN ARE COMPLETE IN PLACE

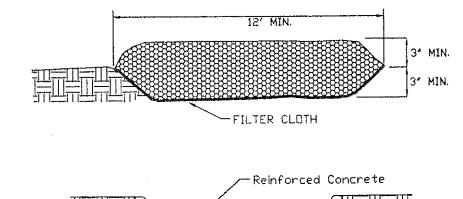
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DESCRIPȚION	UNIT	QUANTITY	UNIT COST	TOTAL COST
CONSTRUCTION ENTRANCE	EA	I	\$1000.00	\$1000.00
SILT FENCE	LF	375	\$3.00	\$1125.00
INLET PROTECTION	EA			
TEMPORARY DIVERSION DIKE	LF			
TEMPORARY FILL DIVERSION	LF			
SEDIMENT TRAP	EA			
CHECK DAM	EA			
PERMANENT SEEDING	1000 SF	40	\$30.00	\$1200.00
DUTLET PROTECTION	EA			
SEDIMENT BASIN	EA			
SUB-TOTAL				\$3325.00
10% CONTINGENCY				\$332.50
TOTAL PROJECT COST			\$3657.50	
			он филопорация в портиненти постану в под под достану в постану в под под достану в постану в под под достану в	zakonomia kirakon bakiraki kiraki karika kirakira kirakira kirakira kirakira kirakira kirakira kirakira kirakir

GENERAL EROSION AND SEDIMENT CONTROL NOTES

- ALL SOIL EROSION & SEDIMENT CONTROL MEASURES SHALL BE ACCOMPLISHED IN STRICT ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS CONTAINED IN THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION. THE APPROVING AUTHORITY MAY ADD TO, DELETE, RELOCATE, CHANGE, DR OTHERWISE MODIFY CERTAIN EROSION AND SEDIMENT CONTROL MEASURES WHERE FIELD CONDITIONS ARE ENCOUNTERED THAT WARRANT SUCH MODIFICATIONS.
- ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES AS SHOWN ON THE PLAN SHALL BE PLACED IN ADVANCE OF THE WORK BEING PERFORMED, AS FAR AS
- 4. IN NO CASE DURING CONSTRUCTION SHALL WATER RUNDFF BE DIVERTED OR ALLOWED TO FLOW TO LOCATIONS WHERE ADEQUATE PROTECTION HAS NOT BEEN
- 5. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LEAVE THE SITE ADEQUATELY PROTECTED AGAINST EROSION, SEDIMENTATION, OR ANY DAMAGE TO ANY ADJACENT PROPERTY AT THE END OF EACH DAY'S WORK.
- 6. FOR THE EROSION CONTROL KEY SYMBOLS SHOWN ON THE PLANS, REFER TO THE ∕IRGINIA UNIFORM CODING SYSTEM FOR ERDSION AND SEDIMENT CONTROL PRACTICE CONTAINED IN THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION, THESE SYMBOLS AND KEYS ARE TO BE UTILIZED ON ALL EROSION CONTROL PLANS SUBMITTED TO ROANDKE COUNTY.



* MUST EXTEND FULL WIDTH OF INGRESS & EGRESS OPERATION,



0,0,0,0,0,0,0,0,0 WASH RACK DETAIL (IF REQUIRED)

> TEMPORARY GRAVEL CONSTRUCTION ENTRANCE

PERMANENT SEEDING MIXTURE

TYPE B (SLOPES 34 OR STEEPER) 15 MARCH TO 1 MAY 15 DCTOBER TO 1 FEBRUARY CRDWN VETCH @ 1/2 LB / 1000 SF K-31 FESCUE @ 5 LB / 1000 SF BORZY WINTER RYE @ 1/2 LB / 1000 PERENNIAL RYEGRASS @ 1/2 LB / 1000 SF RED TOP @ 1/8 LB / 1000 SF

15 AUGUST TO 1 OCTOBER K-31 FESCUE @ 5 LB / 1000 SF CROWN VETCH @ 1/2 LB / 1000 SF ANNUAL RYE € 1/2 LB / 1000 SF PERENNIAL RYEGRASS @ 1/2 LB / 1000 SF JUNE TO 1 SEPTEMBER RED TOP @ 1/8 LB / 1000 SF K-31 FESCUE @ 5 LB / 1000 SF GERMAN MILLET @ 1/2 LB / 1000 SF

SEPTEMBER TO 15 OCTOBER K-31 FESCUE @ 5 LB / 1000 SF ANNUAL RYE @ 1/2 LB / 1000 SF

140 LB / 1000 SF PULVERIZED AGRICULTURAL LIMESTONE FERTILIZER: 5-20-10 @ 25 LB / 1000 SF 38-0-0 @ 7 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 AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION.

SOIL CONDITIONING INCORPORATION OF LIME AND FERTILIZER, SELECTION OF CERTIFIED SEED, MULCHING, 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 CYCLONE SEEDER, DRILL, CULTIPACKER SEEDER, OR HYDROSEEDER ON A FIRM, FRIABLE, SEEDBED. MAXIMUM SEEDING DEPTH SHALL BE 1/4 INCH.

TOTAL DISTURBED AREA =

SQ. FT.

DEPARTMENT ENGINEERING AND INSPECTIONS

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

(IP) GRAVEL AND WIRE MESH DROP INLET SEDIMENT FILTER

SPECIFIC APPLICATION

to adjacent structures and unprotected areas.

* Gravel shall be VDOT #3, #357 or #5 coarse aggregate.

1	ENGR. & INSPEC.	04-10-93
2	ENGR. & INSPEC.	08-05-93
3	ENGR. & INSPEC.	10-27-93
4		
5		
6		
NO.	REVISIONS	DATE

COUNTY OF ROANOKE

DATE: 11/02/93		
SCALE: NO SCALE		
DRAWING BY: CLN,AF		
DESIGNED BY: G:\CAD\DETAILS\EROSION\EROSION		
APPROVED BY: GWS.III		

EROSION & SEDIMENT CONTROL STORMWATER MANAGEMENT DETAILS