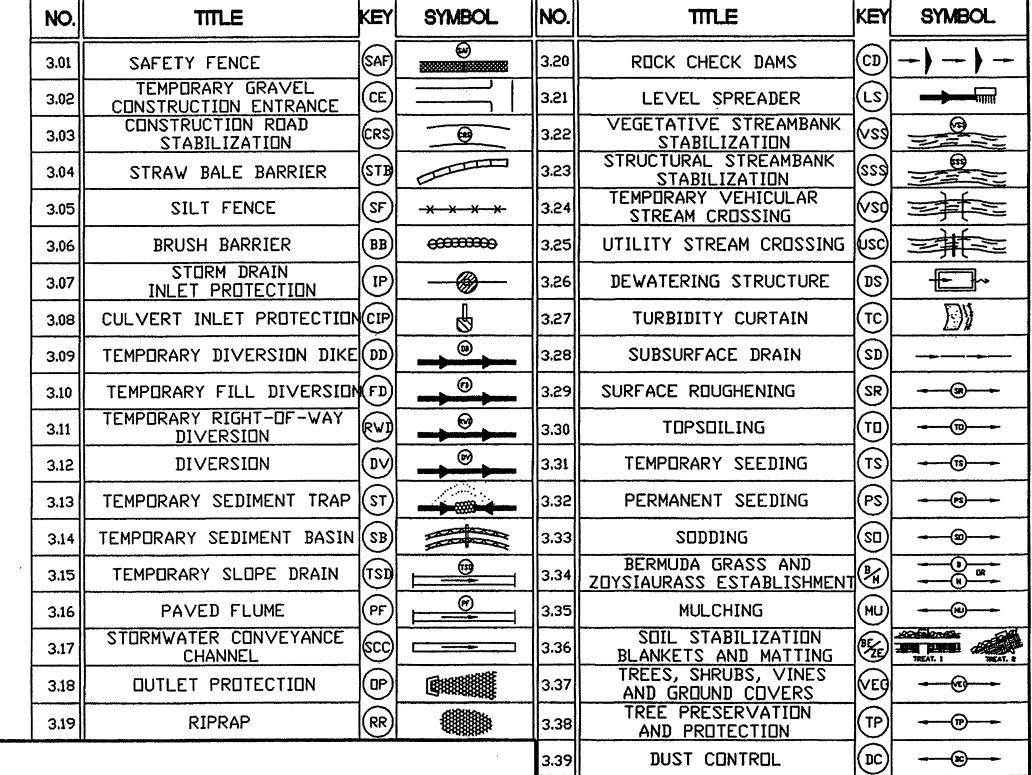
## STORMWATER MANAGEMENT GENERAL NOTES COST ESTIMATE DESIGN OF DETENTION BASINS SHALL CONFORM TO THE REQUIREMENTS OF THE COUNTY OF ROANOKE DRAINAGE STANDARDS (REF. SECTIONS 503.02, 503.03, AND 505.02). THE DESIGN OF THE FACILITY AND ALL COSTS GIVEN ARE COMPLETE IN PLACE PREPARATION OF AS-BUILT PLANS SHALL BE BY A CERTIFIED DESCRIPTION QUANTITY UNIT COST TOTAL COST PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE COMMONWEALTH LEARING & GRUBBING LS \$500.00 \$500.00 ACCESS TO THE FACILITY MUST BE PROVIDED IN ACCORDANCE WITH THE COUNTY OF ROANDKE DESIGN AND CONSTRUCTION STANDARDS FOR \$2000.00 \$2000.00 EXCAVATION DETENTION PONDS, LATEST EDITION. **EMBANKMENT** \$2000.00 \$2000.00 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), FENCING PERMANENT FENCING MAY BE REQUIRED, ADDITIONALLY, IF THE \$5.00 \$1600.00 320 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 STRUCTURES \$1500.00 \$1500.00 STANDARD NINE GAUGE LINK FENCE, AND MUST HAVE ONE OR MORE LOCKING DOUBLE GATES (MINIMUM TEN FEET WIDE) FOR ACCESS. LS ACCESS ROAD DETENTION PONDS SHALL BE BONDED IN ACCORDANCE WITH THE ROANDKE COUNTY BONDING POLICY FOR SUBDIVISION AND SITE DEVELOPMENT. \$500.00 \$500.00 AS-BUILTS LS A SEPARATE BOND FOR THE DETENTION FACILITY WILL BE REQUIRED AND ADMINISTERED APART FROM THE SUBDIVISION DEVELOPMENT BOND. SUB-TOTAL \$8,100 REFERENCE ESTIMATE - THIS SHEET. 10% CONTINGENCY \$810 S. REFERENCE THE COUNTY OF ROANOKE DESIGN AND CONSTRUCTION STANDARDS FOR DETENTION PONDS, LATEST EDITION, FOR ACCEPTANCE AND MAINTENANCE OF THE FACILITY. CERTIFIED AS-BUILTS ARE \$8,910 TOTAL PROJECT COST REQUIRED AND MUST INCLUDE: A. DIMENSIONS OF THE FACILITY B. VOLUME @ MAXIMUM DEPTH C. ELEVATIONS OF STRUCTURES, SPILLWAYS, AND TOP MATERIALS VERIFICATION INCLUDING RESULTS OF DENSITY TESTS CONDUCTED BY AN INDEPENDENT SOIL TESTING LABORATORY E. LOCATION AND ELEVATION OF BENCHMARK. SEDIMENT BASIN SCHEMATIC **ELEVATIONS** 6. DNE FOOT MINIMUM FREEBOARD REQUIRED FOR THE 100 YR WATER SURFACE ELEVATION. CONSTRUCTION NOTES SITE PREPARATION SHALL BE IN ACCORDANCE WITH THE COUNTY OF ROANDKE DESIGN AND CONSTRUCTION STANDARDS FOR DETENTION PONDS, "DRY" STORAGE 2. SLOPES STEEPER THAN 3 TO 1 (HORIZONTAL TO VERTICAL) SHALL BE BENCHED OR STEPPED PRIOR TO PLACING FILL ON THEM. DEVATERING DEVICE 3. ON-SITE FILL MATERIAL OR BORROW FILL MATERIAL MAY BE UTILIZED. SEDIMENT CLEANDUT POINT FILL MATERIAL SOILS, IN GENERAL ("WET" STORAGE REDUCED TO 34 C.Y./ACRE) SHALL BE COMPACTABLE SHALL BE VITHIN AN ACCEPTABLE RANGE OF MOISTURE CONTENT WHICH IS READILY CONTROLLED DESIGN ELEVATIONS WITH SHALL NOT BE HIGHLY SUSCEPTIBLE TO VOLUME CHANGE EMERGENCY SPILLWAY (SHRINKAGE DR SVELL) DR 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) LODSE LIFTS. EACH LIFT SHALL BE SPREAD IN UNIFORM LAYERS. FILL SOIL SHALL BE UTILIZED DNLY 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. DESIGN HIGH VATER (25-YR. STORM ELEV.) | MIN. 2.0' | MIN. 3.0' MIN. 1.0' 1/ 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. - DEVATERING DEVICE 7. FIELD DENSITY TESTS ARE TO BE CONDUCTED BY AN INDEPENDENT SOILS TESTING LABORATORY UNDER THE DIRECTION OF A QUALIFIED SEDIMENT CLEANOUT POINT GEDTECHNICAL ENGINEER. THE RESULTS OF THESE TESTS SHALL B SUBMITTED TO THE COUNTY OF ROANDKE 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 DESIGN ELEVATIONS WITHOUT PERIODICALLY TO DETERMINE THE DEGREE OF COMPACTION. ANY AREAS FAILING TO MEET THE ABOVE REQUIREMENTS SHALL BE REVORKED EMERGENCY SPILLWAY AND/OR RECOMPACTED UNTIL THE REQUIRED DEGREE OF COMPACTION IS (RISER PASSES 25-YR. EVENT) 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 VITH FOUR (4) INCHES OF TOPSOIL AND SEEDED. 10. THE MINIMUM SLOPE OF THE BASIN "FLOOR SHALL BE DNE (1) PERCENT GRADED TO DRAIN TO THE PRINCIPAL SPILLWAY. RAVEL "(12'HIN. DEPTH) SPECIFIC APPLICATION



2-10 ACRES OF DRAINAGE AREA

(DOWNSTREAM VIEW)

FILTER CLOTH-

(CD) ROCK CHECK DAM

CDARSE AGGREGAT

2 ACRES OR LESS OF DRAINAGE AREA:

(DOWNSTREAM VIEW)

SEDIMENT-LADEN RUNDFF

STORM WATER WITH -LARGER PARTICLES RENOVED

This method of inlet protection is applicable

where heavy flows are expected and where

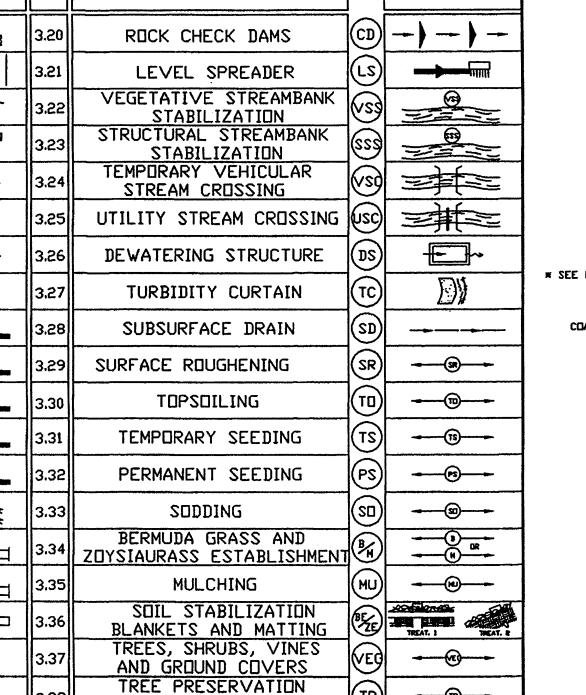
are desirable.

an overflow capability and ease of maintenance

FILTER CLOTH-

(OPTIONAL)

CDARSE AGGREGATE



TEMPORARY FILL DIVERSION

TEMPORARY RIGHT-OF-WAY

DIVERSION

(SF) CONSTRUCTION OF A SILT FENCE

10000000

Section A-A

<u>Pipe Dutlet</u>To <u>Well-Defined Chan</u>nel

Apron lining may be rip-rap, grouted rip-rap, or concrete.
 La is the length of the rip-

dates 1.36d and 1.36e. 3. d = 1.5 times the maximum

than 6'.

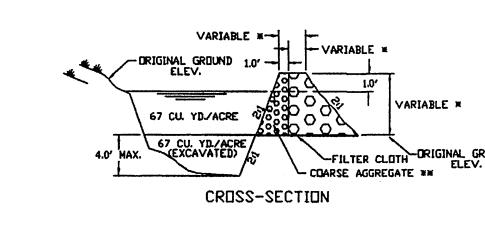
rap apron as calculated using

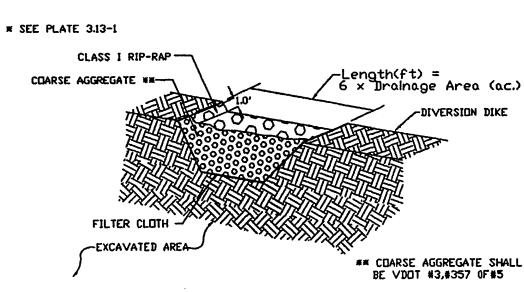
stone diameter, but not less

Section A-A

OP) OUTLET PROTECTION

Pipe Butlet To Flat Are With No Defined Channel





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.)

REQ'D

DRAINAGE

2.0

STRUCTUR

ST 1

SEDIMENT TRAP

## ALL COSTS GIVEN ARE COMPLETE IN PLACE DESCRIPTION CONSTRUCTION **ENTRANCE** SILT FENCE FILTER CLOTH-DRIGINAL GROUND NLET PROTECTION TEMPORARY DIVERSION DIKE **TEMPORARY** FILL DIVERSION

12.0

3.5

**EROSION-SILTATION CONTROL** 

COST ESTIMATE

EA

EA

EΑ

LS

1000/SF

EΑ

SEDIMENT TRAP

CONST. ROAD STAB.

PERMANENT SEEDING

DUTLET PROTECTION

TEMP SLOPE DRAIN

ROCK CHECK DAMS

BANK STAB. EC-2

10% CONTINGENCY

TOTAL PROJECT COST

SUB-TOTAL

QUANTITY

420

UNIT COST TOTAL COS

\$700

\$1410.00

\$400.00

\$500.00

\$1200.00

\$500.00

\$600.00

\$5,310

\$535

\$5,845

\$700

\$3/ft

\$3/ft

\$500

\$40/1000 sf

\$12/ft

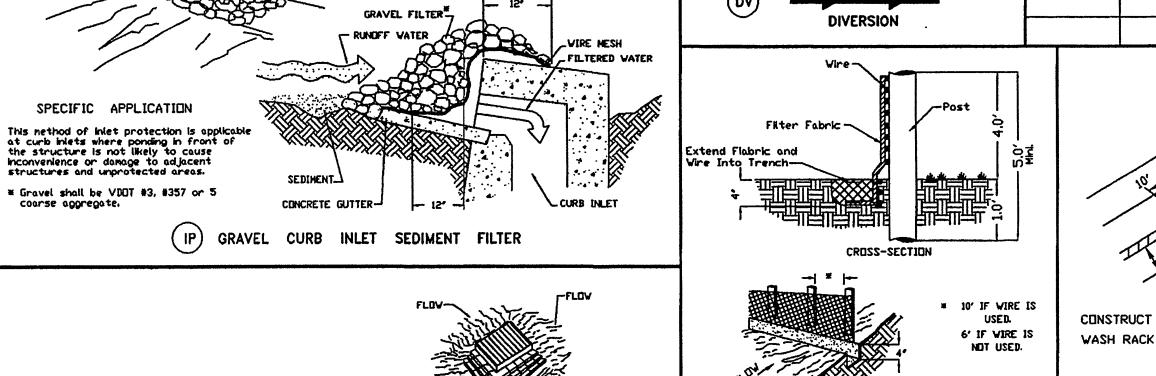
\$100

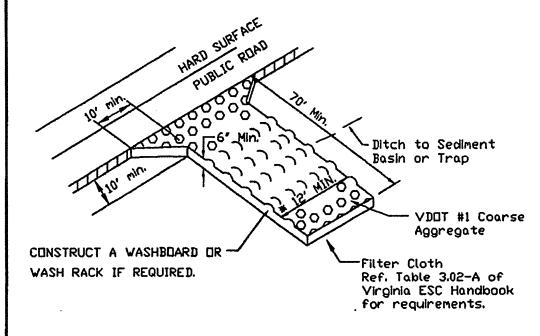
\$0.75/SF

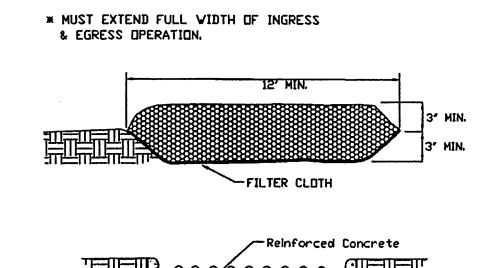
I. ALL SOIL EROSION & SEDIMENT CONTROL MEASURES SHALL BE ACCOMPLISHED IN STRICT ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS CONTAINED IN THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION

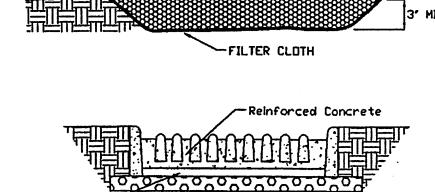
GENERAL EROSION AND SEDIMENT CONTROL NOTES

- THE APPROVING AUTHORITY MAY ADD TO, DELETE, RELOCATE, CHANGE, OR OTHERWISE MODIFY CERTAIN EROSION AND SEDIMENT CONTROL MEASURES WHERE FIELD CONDITIONS ARE ENCOUNTERED THAT WARRANT SUCH MODIFICATIONS.
- 3. 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 RUNOFF 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 ADEQUATEL' 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 VIRGINIA UNIFORM CODING SYSTEM FOR EROSION AND SEDIMENT CONTROL PRACTICES 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.









WASH RACK DETAIL (IF REQUIRED)

TEMPORARY GRAVEL CE TEMPORARY GRAVEL CONSTRUCTION ENTRANCE

## PERMANENT SEEDING MIXTURE

TYPE B (SLOPES 3:1 OR STEEPER) 15 OCTOBER TO 1 FEBRUARY
K-31 FESCUE @ 5 LB / 1000 SF CROWN VETCH @ 1/2 LB / 1000 SF PERENNIAL RYEGRASS @ 1/2 LB / 1000 SF BURZY WINTER RYE @ 1/2 LB / 1000 SF

RED TOP @ 1/8 LB / 1000 SF I FEBRUARY TO 1 JUNE K-31 FESCUE @ 5 LB / 1000 SF 15 AUGUST TO 1 DCTOBER CROWN VETCH @ 1/2 LB / 1000 SF PERENNIAL RYEGRASS @ 1/2 LB / 1000 SF ANNUAL RYE @ 1/2 LB / 1000 SF 1 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 1 SEPTEMBER TO 15 DCTOBER 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 2 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 MULCH 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 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 = 1.0 AC. = 44,000 SQ. FT.

## DEPARTMENT ENGINEERING AND INSPECTIONS

to adjacent structures and unprotected areas.

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

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

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

COUNTY OF ROANOKE

EXCAVATED DROP INLET SEDIMENT TRAP

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