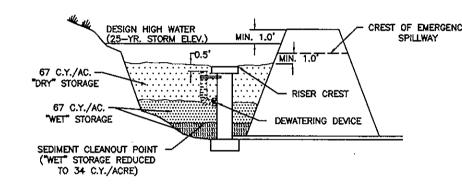
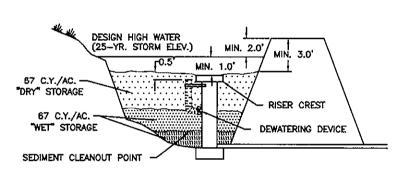
## STORMWATER MANAGEMENT COST ESTIMATE ALL COSTS GIVEN ARE COMPLETE IN PLACE QUANTITY UNIT COST | TOTAL COST DESCRIPTION LEARING & GRUBBING EXCAVATION **EMBANKMENT** FENCING STRUCTURES ACCESS ROAD AS-BUILTS SUB-TOTAL 10% CONTINGENCY TOTAL PROJECT COST SEDIMENT BASIN SCHEMATIC

## **ELEVATIONS**



DESIGN ELEVATIONS WITH EMERGENCY SPILLWAY



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

## GENERAL NOTES

- . THE DESIGN OF THE FACILITY AND PREPARATION OF AS-BUILT PLANS SHALL BE BY A CERTIFIED PROFESSIONAL ENGINEER LISCENSED TO PRACTICE IN THE COMMONWEALTH OF VIRGINIA. CERTIFIED AS-BUILTS MUST INCLUDE:
- A. DIMENSIONS OF THE FACILITY
- B. VOLUME @ MAXIMUM DEPTH
- 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.
- . 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 ONE OR MORE LOCKING DOUBLE GATES (MINIMUM TEN FEET WIDE) FOR ACCESS.
- . DETENTION PONDS SHALL BE BONDED IN ACCORDANCE WITH THE ROANOKE 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.
- . ONE FOOT MINIMUM FREEBOARD REQUIRED FOR THE 100 YR WATER SURFACE ELEVATION.

## CONSTRUCTION NOTES

1. SITE PREPARATION SHALL BE IN ACCORDANCE WITH THE COUNTY OF ROANOKE 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.
- 3. ON-SITE FILL MATERIAL OR BORROW FILL MATERIAL MAY BE UTILIZED. FILL MATERIAL SOILS, IN GENERAL:
- SHALL BE COMPACTABLE SHALL BE WITHIN AN ACCEPTABLE RANGE OF MOISTURE CONTENT
- WHICH IS READILY CONTROLLED 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.

(OPTIONAL)

COARSE AGGREGATE

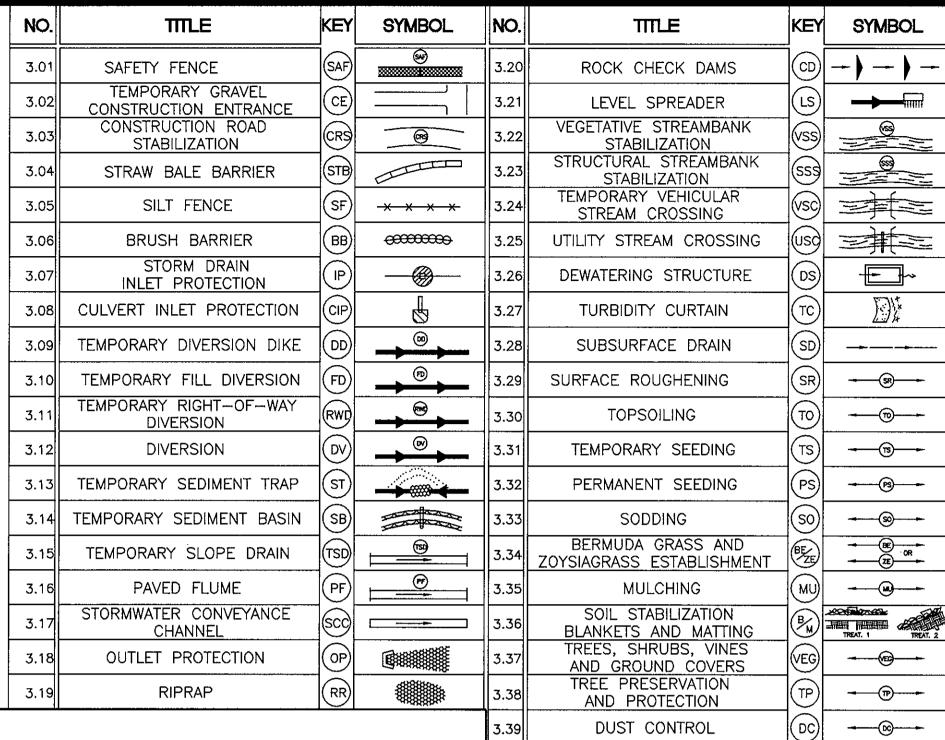
- 6. EMBANKMENT MATERIAL IN FILL AREAS SHALL BE PLACED IN LIFTS NOT EXCEEDING EIGHT (8) INCHES AND SHALL BE COMPACTED TO A MINIMUM 95% DENSITY IN ACCORDANCE WITH SECTION 303 OF THE VIRGINIA DEPARTMENT OF TRANSPORTATION ROAD AND BRIDGE SPECIFICATIONS.
- 7. FIELD DENSITY TESTS ARE TO BE CONDUCTED BY AN INDEPENDENT SOILS TESTING LABORATORY UNDER THE DIRECTION OF A QUALIFIED GEOTECHNICAL ENGINEER. THE RESULTS OF THESE TESTS SHALL BE 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. ALL DISTURBED AREAS SHALL BE COVERED WITH FOUR (4) INCHES OF
- 9. THE MINIMUM SLOPE OF THE BASIN "FLOOR" SHALL BE ONE (1) PERCENT GRADED TO DRAIN TO THE PRINCIPAL SPILLWAY.

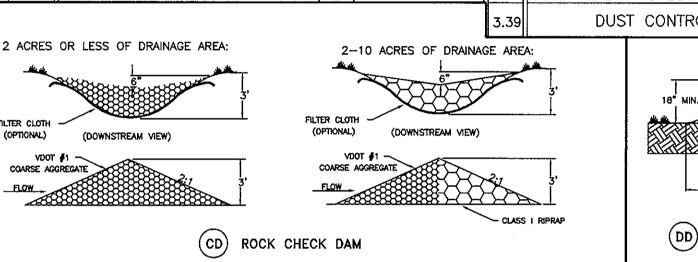
SPECIFIC APPLICATION

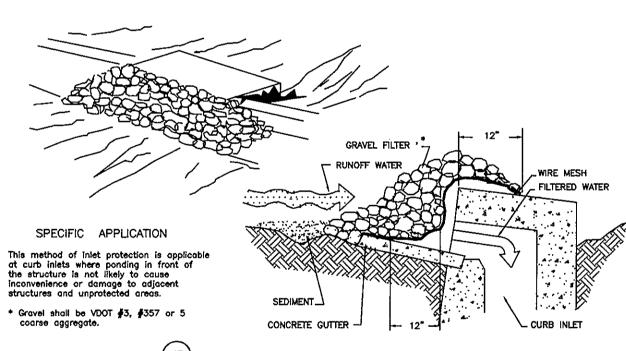
This method of inlet protection is applicable

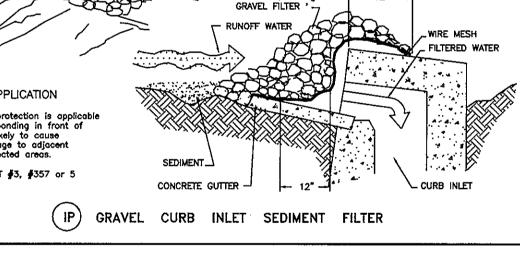
where heavy flows are expected and where

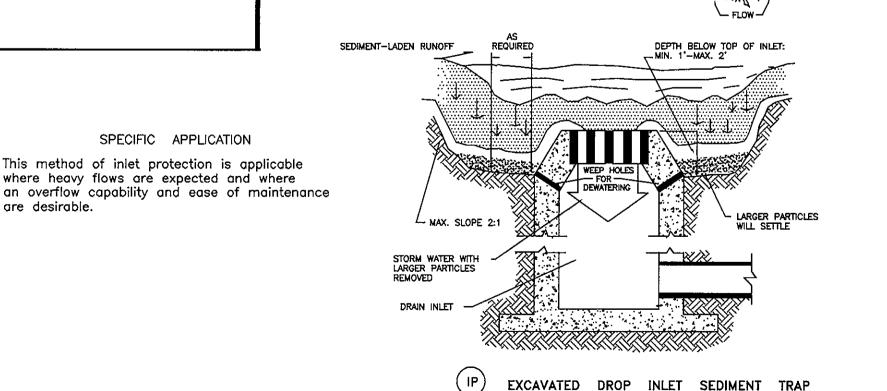
are desirable.

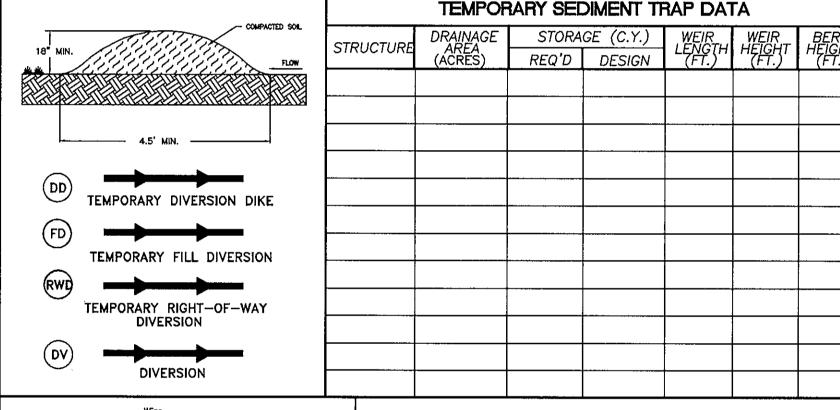












CROSS-SECTION

(SF) CONSTRUCTION OF A SILT FENCE

Pipe Outlet To Flat Area With No Defined Channel

(OP) OUTLET PROTECTION

use wire backed silt fence for this project

6' IF WIRE IS

NOT USED.

Section A-A

Pipe Outlet To /ell—Defined Channel

1. Apron lining may be rip-rap,

grouted rip—rap, or concrete.

2. La is the length of the rip—

plates 1.36d and 1.36e.

3. d = 1.5 times the maximum

rap apron as calculated using

stone diameter, but not less than 6".

\* SEE PLATE 3.13-1

COARSE AGGREGATE \*\* --

- EXCAVATED AREA

For areas less than 3.0 acres. For areas larger than 3.0 acres, A SEDIMENT TRAP, is required Please see Va' ESC manual for design.



-ORIGINAL GROUND ELEV.

-FILTER CLOTH

- COARSE AGGREGATE \*\*

-Length(ft) = 6 x Drainage Area (ac.)

\*\* COARSE AGGREGATE SHALL

BE VDOT #3,#357 OF#5

CROSS-SECTION

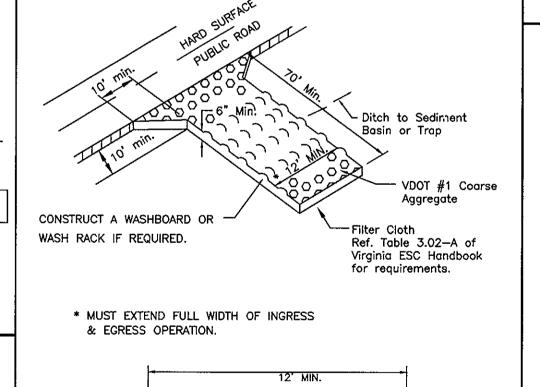
(ST) SEDIMENT TRAP

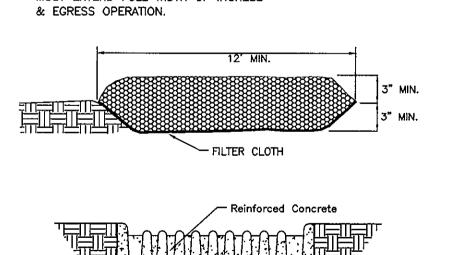
ALL COSTS GIVEN AT	L COMI LLIL	- III I LACL			
DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST	
CONSTRUCTION ENTRANCE	EA	1	\$ 450.00	\$ 450.00	EXISTING TO REMAIN
SILT FENCE	LF	190	6.00	1,140.00	PHASE II
INLET PROTECTION	EA	3	150.00	450.00	PHASE II
CULVERT INLET PROTECTION	EA	2	125.00	<del>-250.00-</del>	EXISTING TO REMAIN
PERMANENT SEEDING	1000 SF	50	35.00	1,750.00	PHASE II
OUTLET PROTECTION	EA	1	250.00	- <del>250.00</del> -	EXISTING TO REMAIN
SEDIMENT TRAP	EA	1	1500.00	<del>-1,500.00</del>	EXISTING TO REMAIN
STORM WATER CONVEYANCE CHANNEL	LF	79	4.00	316.00	PHASE II
CHECK DAM	EA	1	100.00	100.00	PHASE II
BLANKET MATTING	SY	280	4.50	1,260.00	PHASE II
EC-2 LINING	SY	45	5.50	248.00	PHASE II
SUB-TOTAL				\$ 5,264.00	PHASE II
10% CONTINGENCY				\$ <i>526.40</i>	PHASE II
TOTAL PROJECT COST \$ 5,79					PHASE II
					g.

TOTAL DISTURBED AREA = 0.97 ACRES, 42,576 SF

GENERAL EROSION AND SEDIMENT CONTROL NOTES

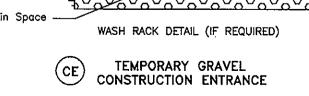
- I. ALL SOIL EROSION & SEDIMENT CONTROL MEASURES SHALL BE ACCOMPLISHED IN STRICT ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS CONTAINED IN THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION.
- THE APPROVING AUTHORITY MAY ADD TO, DELETE, RELOCATE, CHANGE, OR OTHERWISE MODIFY CERTAIN EROSION AND SEDIMENT CONTROL MEASURES WHERE FIELD CONDITIONS ARE ENCOUNTERED THAT WARRANT SUCH MODIFICATIONS. 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
- . 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. 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 ROANOKE COUNTY.





JDE

JDE



PERMANENT SEEDING MIXTURE

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

140 LB / 1000 SF PULVERIZED AGRICULTURAL LIMESTONE FERTILIZER: 5-20-10 @ 25 LB / 1000 SF

K-31 FESCUE @ 5 LB / 1000 SF ANNUAL RYE @ 1/2 LB / 1000 SF

MULCH: 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.

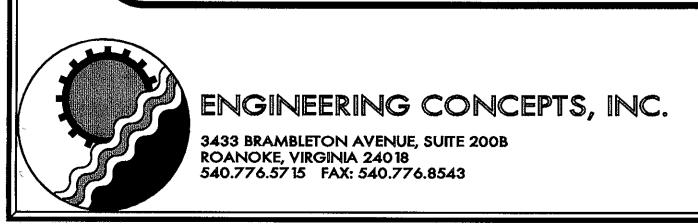
SOIL CONDITIONING: INCORPORATION OF LIME AND FERTILIZER, SELECTION OF CERTIFIED SEED, MULCHING, MAINTENANCE OF NEW SEEDLINGS, AND RESEEDING SHALL BE IN ACCORDANCE WITH SPECIFICATIONS CONTAINED WITHIN THE VIRGINIA SOIL EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION. ADDITIONAL SEEDING TO BE PERFORMED 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.

2 COMMENTS CO 05-25-06 AND VDOT 05-23-06 DRB JDE 05-30-06 1 COMMENTS CO AND VDOT DRB JDE 05-09-00

27, 2006

05083



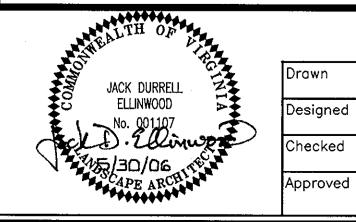
This method of inlet protection is applicable where heavy concentrated flows are expected, but not where ponding around the structure might cause excessive inconvenience or damage

(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.



 VERIZON WIRELESS BUILDING ADDITION		
PHASE II THIRLANE ROAD	MAR.	
 EDOCIONI AND CEDUAENT DETAILO		
EROSION AND SEDIMENT DETAILS		
ROANOKE COUNTY, VIRGINIA	C-	