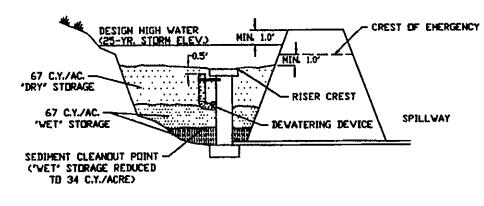
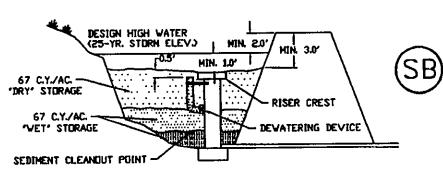
STORMWATER MANAGEMENT COST ESTIMATE LL COSTS GIVEN ARE COMPLETE IN PLACE UNIT COST TOTAL COST QUANTITY DESCRIPTION CLEARING & GRUBBING 1220.00 2.00 510 EXCAVATION CY CY EMBANKMENT 6400.00 510 WOOD SPLIT RAIL 5400.00 LS 2700.00 STRUCTURES ACCESS RDAD 200.00 LS 200.00 AS-BUILTS \$13,220 SUB-TOTAL \$ 1,322 10% CONTINGENCY \$14,542 TOTAL PROJECT COST

SEDIMENT BASIN SCHEMATIC **ELEVATIONS**



DESIGN ELEVATIONS WITH EMERGENCY SPILLWAY



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

BASIN 1

TOP OF DAM 1083' SPILLWAY CREST TOP 1081.6' DEWATERING ORIFICE ELEV. 1082' CLEANOUT ELEV. 1080.2 BASIN BOTTOM 1077.5' 1 ANTI-SEEP COLLAR 5' SQ. TRASH RACK: 30" DIAM., HT. 11" RISER DIAM. MIN. 21" MIN. FLEX. TUBING 9.5'

BASIN 2

TOP OF DAM 1083' SPILLWAY CREST TOP 1082.5' DEWATERING ORIFICE ELEV. 1081.9' CLEANOUT ELEV. 1081 BASIN BOTTOM 1077.0 1 ANTI-SEEP COLLAR 5' SQ. TRASH RACK: 30" DIAM., HT. 11" RISER DIAM. MIN. 21"

MIN. FLEX. TUBING 9.5"

GENERAL NOTES

- . DESIGN OF DETENTION BASINS SHALL CONFORM TO THE REQUIREMENTS OF THE COUNTY OF ROANDKE 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 ROANDKE DESIGN AND CONSTRUCTION STANDARDS FOR DETENTION PONDS, LATEST EDITION.
- 3. IF THE FACILITY IS DIVER FOUR (4) FEET DEEP, TAKES DIVER 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.
- I. 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.
- 5. REFERENCE THE COUNTY OF ROANOKE DESIGN AND CONSTRUCTION STANDARDS FOR DETENTION PUNDS, LATEST EDITION, FOR ACCEPTANCE AND MAINTENANCE OF THE FACILITY. CERTIFIED AS-BUILTS ARE REQUIRED AND MUST INCLUDE:
- A. DIMENSIONS OF THE FACILITY
- B. VOLUME @ MAXIMUM DEPTH
- 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. 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
- B. 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 (6) CM) SHALL NOT HAVE ANY ROCK LARGER THAN TWO (2) INCHES (5.1 CM) IN DIAMETER.
- 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 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 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 ACHIEVED.
- 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.

are destrable.

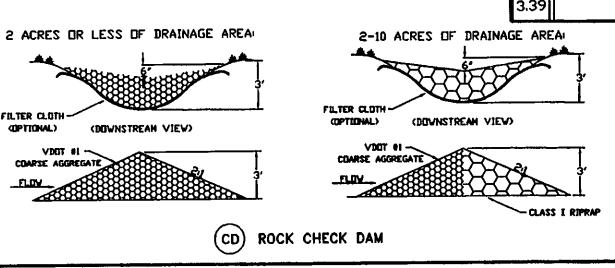
SPECIFIC APPLICATION

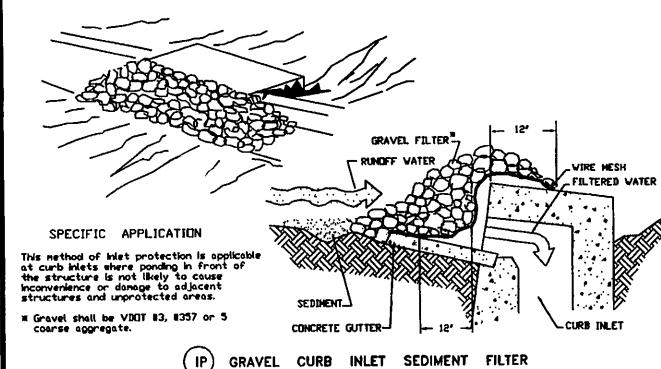
10. THE MINIMUM SLOPE OF THE BASIN "FLOOR SHALL BE ONE (1) PERCENT GRADED TO DRAIN TO THE PRINCIPAL SPILLWAY.

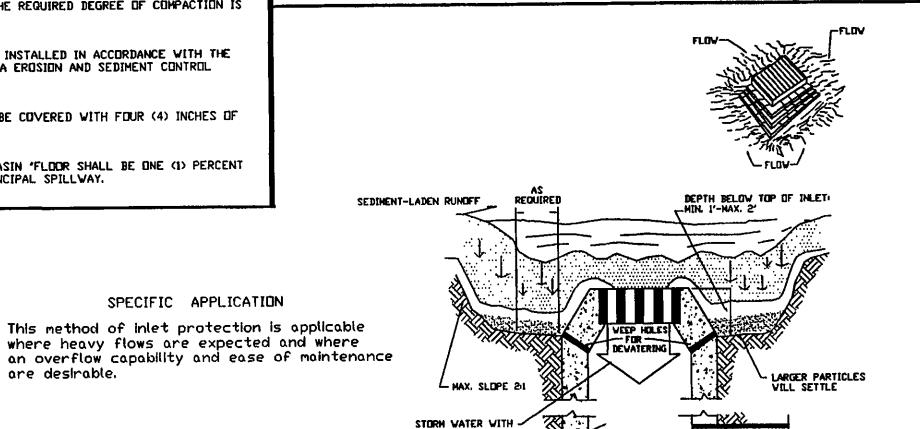
SYMBOL ROCK CHECK DAMS SAFETY FENCE TEMPORARY GRAVEL LEVEL SPREADER 3.02 CONSTRUCTION ENTRANCE VEGETATIVE STREAMBANK CONSTRUCTION ROAD 3.03 STABILIZATION STABILIZATION RUCTURAL STREAMBANK 3.04 STRAW BALE BARRIER EMPORARY VEHICULAR SILT FENCE 3.05 -x -x -x -x - STREAM CROSSING UTILITY STREAM CROSSING 66666666 BRUSH BARRIER ~ STORM DRAIN DEWATERING STRUCTURE INLET PROTECTION TURBIDITY CURTAIN CULVERT INLET PROTECTION(CIP) SUBSURFACE DRAIN ____ TEMPORARY DIVERSION DIK SURFACE ROUGHENING TEMPORARY FILL DIVERSION 3.10 TEMPORARY RIGHT-OF-WAY TOPSOILING 3.11 DIVERSION ---TEMPORARY SEEDING DIVERSION PERMANENT SEEDING TEMPORARY SEDIMENT TRAP SODDING TEMPORARY SEDIMENT BASIN BERMUDA GRASS AND ZOYSIAURASS ESTABLISHMENT TEMPORARY SLOPE DRAIN MULCHING PAVED FLUME SOIL STABILIZATION STORMWATER CONVEYANCE LANKETS AND MATTING CHANNEL REES, SHRUBS, VINES DUTLET PROTECTION AND GROUND COVERS TREE PRESERVATION ----(1P)------RIPRAP AND PROTECTION DUST CONTROL

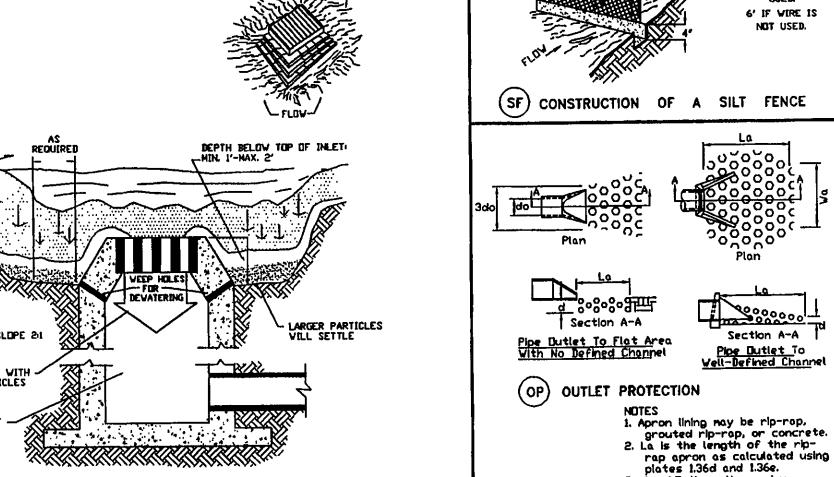
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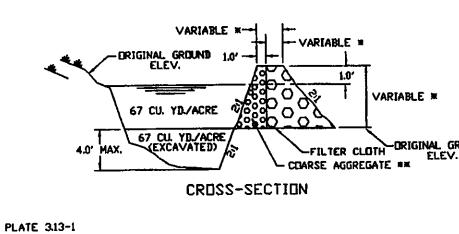
TITLE











SYMBOL

TEMPORARY DIVERSION DIKE

TEMPORARY FILL DIVERSION

TEMPORARY RIGHT-OF-WAY

DIVERSION

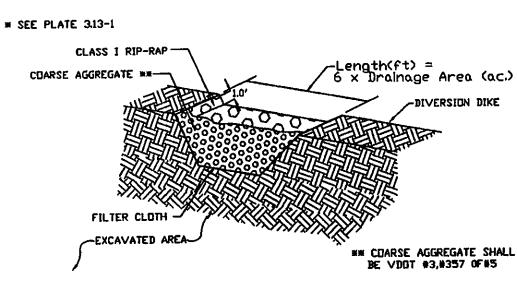
DIVERSION

CROSS-SECTION

3. d = 1.5 times the maximum stone diameter, but not less

Filter Fabric -

xtend Flabric and



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

DRAINAGE

SEDIMENT TRAF

TEMPORARY SEDIMENT TRAP DATA GENERAL EROSION AND SEDIMENT CONTROL NOTES

1. 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. 2. THE APPROVING AUTHORITY MAY ADD TO, DELETE, RELOCATE, CHANGE, OR OTHERWISE MODIFY CERTAIN EROSION AND SEDIMENT CONTROL MEASURES WHERE

EROSION-SILTATION CONTROL

COST ESTIMATE

QUANTITY

1568

145

UNIT COST

12000.00

2.50

75.00

31.00

400.00

1350.00

200.00

TOTAL COST

1200.00

3920.00

675.00

4495.00

800.00

2700.00

400.00

\$14,190

\$ 1,419

\$15,609

ALL COSTS GIVEN ARE COMPLETE IN PLACE

EA

LF

EΑ

1000/SF

DESCRIPTION

INLET PROTECTION

CONSTRUCTION

ENTRANCE

SILT FENCE

TEMPORARY

[EMPORARY

CHECK DAM

DIVERSION DIKE

FILL DIVERSION

PERMANENT SEEDING

DUTLET PROTECTION

INLET PROTECTION

10% CONTINGENCY

TOTAL PROJECT COST

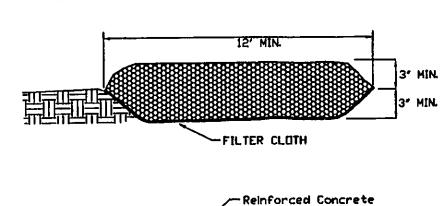
SEDIMENT BASIN

SUB-TOTAL

- FIELD CONDITIONS ARE ENCOUNTERED THAT VARRANT 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. , 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

VDOT #1 Coarse Aggregate CONSTRUCT A WASHBOARD OR -USED. 6' IF WIRE IS WASH RACK IF REQUIRED. Ref. Table 3.02-A of Virginia ESC Handbook for requirements.

* MUST EXTEND FULL WIDTH OF INGRESS & EGRESS OPERATION.



Brain Space-WASH RACK DETAIL (IF REQUIRED)

> TEMPORARY GRAVEL CE CONSTRUCTION ENTRANCE

APPROVED BY: GWS,III

PERMANENT SEEDING MIXTURE

PLANS SUBMITTED TO ROANCIKE COUNTY.

TYPE B (SLOPES 3:1 OR STEEPER) 5 OCTOBER TO 1 FEBRUARY CROWN VETCH @ 1/2 LB / 1000 SF PERENNIAL RYEGRASS @ 1/2 LB / 1000 SF K-31 FESCUE @ 5 LB / 1000 SF BORZY WINTER RYE @ 1/2 LB / 1000 RED TOP @ 1/8 LB / 1000 SF 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 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 LIMESTENE 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.

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 = 3.0 AC. = 121,000 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	ENGR. & INSPEC.	04-10-93
	2	ENGR. & INSPEC.	08-05-93
	3	ENGR. & INSPEC.	10-27-93
	4		
	5		
	6		
	NO.	REVISIONS	DATE

ROANOKE COUNTY

EXCAVATED DROP INLET SEDIMENT TRAP

DATE: 11/02/93 SCALE: NO SCALE DRAWING BY: CLN,AF DESIGNED BY: G:\CAD\DETAILS\EROSION\EROSION)

EROSION & SEDIMENT CONTROL STORMWATER MANAGEMENT DETAILS

SHEET