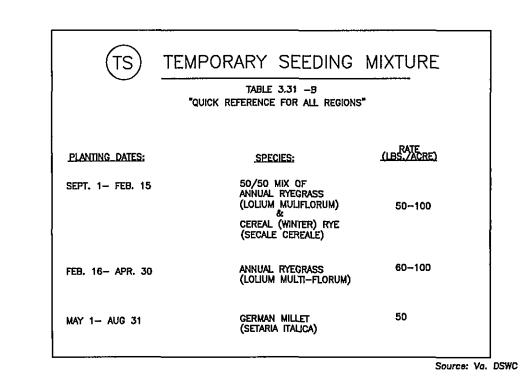
STORMWATER MANAGEMENT COST ESTIMATE ALL COSTS GIVEN ARE COMPLETE IN PLACE DESCRIPTION QUANTITY UNIT COS TOTAL COST CY 750 4.00 3,000 EXCAVATION STRUCTURES EA. 1,500 1,500 AS-BUILTS 1,500 EA. ANTI-SEEP COLLARS 1,000 24" RCP PIPE LF 26 48.00 1,248 SUB-TOTAL \$ 8,248 PROVIDED IN OVERALL BONDING TABLE 10% CONTINGENCY TOTAL PROJECT COST \$ 8,248 SEDIMENT BASIN SCHEMATIC **ELEVATIONS** DESIGN HIGH WATER (100-YR, STORM ELEV.) MIN. 2.0'/ MIN. 1.0' 67 C,Y,/AC, — 'DRY' STORAGE RISER_CREST 67 C.Y./AC. -~ 'WET' STORAGE - DEWATERING DEVICE 1104,50 SEDIMENT CLEANOUT POINT

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 PUNDS, 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 CUNGESTED 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,
- . 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.
- REFERENCE THE COUNTY OF ROANDKE 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 CUNDUCTED BY AN INDEPENDENT SUIL TESTING LABORATURY E. LOCATION AND ELEVATION OF BENCHMARK
- 6. DNE FOOT MINIMUM FREEBOARD REQUIRED FOR THE 100 YR WATER SURFACE ELEVATION.

CONSTRUCTION NOTES

- 1. SITE PREPARATION SHALL BE IN ACCORDANCE WITH THE COUNTY OF RDANDKE DESIGN AND CONSTRUCTION STANDARDS FOR DETENTION PONDS, LATEST EDITION
- 2, SLOPES STEEPER THAN 3 TO 1 (HORIZONTAL TO VERTICAL) SHALL BE BENCHED OR STEPPED PRIOR TO PLACING FILL ON THEM.
- 3. DN-SITE FILL MATERIAL OR BORROW FILL MATERIAL MAY BE UTILIZED. FILL MATERIAL SUILS, IN GENERAL
- SHALL BE COMPACTABLE SHALL BE WITHIN AN ACCEPTABLE RANGE OF MOISTURE CONTENT
- C. SHALL NOT BE HIGHLY SUSCEPTIBLE TO VOLUME CHANGE (SHRINKAGE OR SWELL) OR SETTLEMENT

WHICH IS READILY CONTROLLED

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

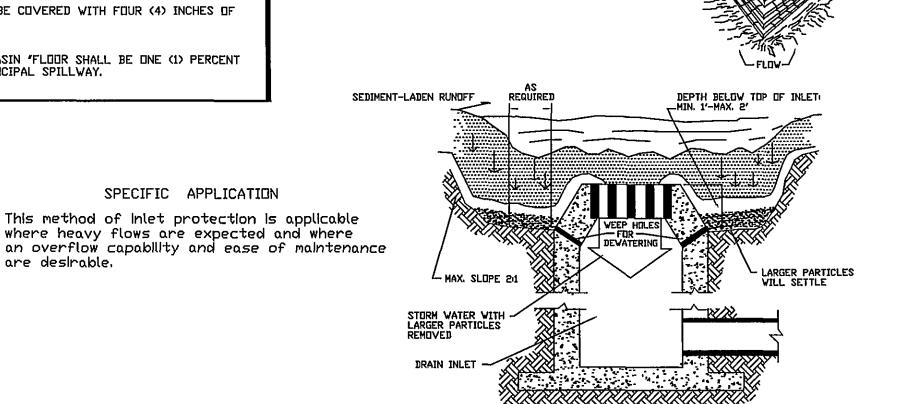
- LODSE LIFTS. EACH LIFT SHALL BE SPREAD IN UNIFORM LAYERS. FILL SOIL SHALL BE UTILIZED ONLY WITHIN A MOISTURE RANGE OF +/- 5% OF THE OPTIMUM MOISTURE CONTENT, COMPACTION OF THE FILL SHALL BE PERFORMED WITH APPROVED EQUIPMENT, COMPACTION OF THE LAYERS SHALL BE CONTINUOUS AND UNIFORM.
- 6. EMBANKMENT MATERIAL IN FILL AREAS SHALL BE PLACED IN LIFTS NUT EXCEEDING EIGHT (8) INCHES AND SHALL BE COMPACTED TO A MINIMUM 95% DENSITY IN ACCURDANCE WITH SECTION 303 OF THE VIRGINIA DEPARTMENT OF TRANSPORTATION RUAD 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.

GRAVEL (12°MIN, DEPTH)

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

are destrable.

SPECIFIC APPLICATION



CONCRETE GUTTER-

(IP) GRAVEL CURB INLET SEDIMENT FILTER

1. Apron lining may be rip-rap, grouted rip-rap, or concrete.
2. La is the length of the rip-rap apron as calculated using 3, d = 1.5 times the maximum EXCAVATED DROP INLET SEDIMENT TRAP

SYMBOL -----(SR)---------(15)---- ----(PS)-------(33)----B GR ----(A) ----@---------(P)----

____(DC)

TEMPORARY DIVERSION DIKE

TEMPORARY FILL DIVERSION

TEMPORARY RIGHT-OF-WAY

CROSS-SECTION

(SF) CONSTRUCTION OF A SILT FENCE

直%%%

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

Section A-A

(OP) OUTLET PROTECTION

10' IF WIRE IS

USED.

6' IF WIRE IS

NDT USED.

Section A-A

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

plates 1.36d and 1.36e.

stone diameter, but not less

DIVERSION

Filter Fabric

VARIABLE *-67 CU. YD./ACRE 67 CU, YD./ACRI ∕-FILTER CLOTH ∽ COARSE AGGREGATE ** CROSS-SECTION * SEE PLATE 3.13-1 CLASS I RIR-RAP -CDARSE AGGREGATE ** Inalnage Area (ac.) -DIVERSION DIKE FILTER CLOTH --EXCAVATED AREA-CDARSE AGGREGATE SHALL BE VDOT #3,#357 0F#5 (ST) SEDIMENT TRAP 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.

ALL COSTS GIVEN ARE COMPLETE IN PLACE TOTAL COST DESCRIPTION QUANTITY CONSTRUCTION EΑ \$ 1,200 2,400 ENTRANCE SILT FENCE 855 3,420 4.00 INLET PROTECTION EΑ 1050 150 140 420 DIVERSION 3.00 RIGHT OF WAY 250 LF 250 DIVERSION 450 150 RIP RAP 1000 SF 2,275 PERMANENT SEEDING 35.00 CONSTRUCTION 1,520 380 4.00 ROAD STABILIZATION CULVERT INLET PROTECTION EΑ 150 150 LF 200 800 DIVERSION 4.00 200 4.00 800 2,500 SEDIMENT BASIN EΑ 2,500 16,035 SUB-TOTAL 10% CUNTINGENCY 1,603 \$ 17,638 TOTAL PROJECT COST

EROSION-SILTATION CONTROL

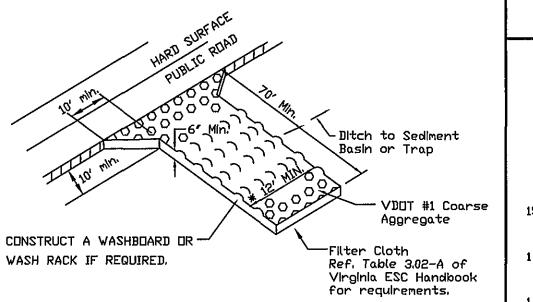
COST ESTIMATE

TEMPORARY SEDIMENT TRAP DATA GENERAL EROSION AND SEDIMENT CONTROL NOTES STORAGE (C.Y.)

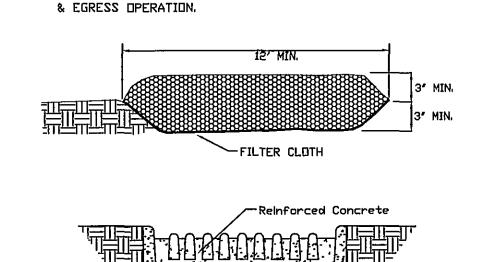
> IN THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION. THE APPROVING AUTHORITY MAY ADD TO, DELETE, RELOCATE, CHANGE, OR OTHERWISE MODIFY CERTAIN EROSION AND SEDIMENT CONTROL MEASURES WHERE FIELD CONDITIONS ARE ENCOUNTERED THAT WARRANT SUCH MODIFICATIONS,

1. ALL SUIL ERUSION & SEDIMENT CONTROL MEASURES SHALL BE ACCOMPLISHED IN STRICT ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS CONTAINED

- 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
- 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 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 VIRGINIA UNIFORM CODING SYSTEM FOR ERUSION 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 ROANCIKE COUNTY.



* MUST EXTEND FULL WIDTH OF INGRESS



WASH RACK DETAIL (IF REQUIRED) TEMPORARY GRAVEL CONSTRUCTION ENTRANCE

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 PERENNIAL RYEGRASS @ 1/2 LB / 1000 SF BURZY WINTER RYE @ 1/2 LB / 1000 S RED TOP 2 1/8 LB / 1000 SF 1 FEBRUARY TO 1 JUNE K-31 FESCUE @ 5 LB / 1000 SF 15 AUGUST TO 1 DCTDBER CROWN VETCH @ 1/2 LB / 1000 SF ANNUAL RYE @ 1/2 LB / 1000 SF PERENNIAL RYEGRASS @ 1/2 LB / 1000 SF RED TOP @ 1/8 LB / 1000 SF K-31 FESCUE @ 5 LB / 1000 SF

GERMAN MILLET @ 1/2 LB / 1000 SF 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 MULCH AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION.

SOIL CONDITIONING INCURPORATION OF LIME AND FERTILIZER, SELECTION OF CERTIFIED SEED, MULCHING, MAINTENANCE OF NEW SEEDLINGS, AND RESEDING SHALL BE IN ACCURDANCE 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.

TUTAL DISTURBED AREA = 2.35 AC. = 102,366 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 VDDT #3, #357 or #5 coarse aggregate.

	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

SYMBOL

-x -x -x -x

(20000000)

FILTER CLOTH-

(OPTIONAL)

(CD) ROCK CHECK DAM

2-10 ACRES OF DRAINAGE AREA

(DOWNSTREAM VIEW)

- CLASS I RIPRA

FILTERED WATER

TITLE

ROCK CHECK DAMS

LEVEL SPREADER

VEGETATIVE STREAMBANK

STABILIZATION

FEMPORARY VEHICULAR

UTILITY STREAM CROSSING

DEWATERING STRUCTURE

TURBIDITY CURTAIN

SUBSURFACE DRAIN

TOPSOILING

TEMPORARY SEEDING

PERMANENT SEEDING

BERMUDA GRASS AND

MULCHING

ZUYSIAURASS ESTABLISHMENT

SOIL STABILIZATION

BLANKETS AND MATTING

TREES, SHRUBS, VINES

AND GROUND COVERS

TREE PRESERVATION

AND PROTECTION

DUST CONTROL

SURFACE ROUGHENING

STREAM CRUSSING

RUCTURAL STREAMBANK

TITLE

ΓEMP□RARY GRA∨EL

CONSTRUCTION ENTRANCE

STABILIZATION

STRAW BALE BARRIER

SILT FENCE

BRUSH BARRIER

STORM DRAIN

INLET PROTECTION

CULVERT INLET PROTECTION(CIP

TEMPURARY DIVERSION DIKE (DD

TEMPORARY FILL DIVERSION(FI

TEMPORARY RIGHT-OF-WAY

DIVERSION

DIVERSION

TEMPORARY SEDIMENT TRAP

TEMPORARY SLOPE DRAIN

PAVED FLUME

STORMWATER CONVEYANCE

CHANNEL

DUTLET PROTECTION

RIPRAP

2 ACRES OR LESS OF DRAINAGE AREA

(DOWNSTREAM VIEW)

TEMPORARY SEDIMENT BASIN (SB

CONSTRUCTION ROAD

SAFETY FENCE

3.01

3.02

3,03

3,05

3.06

3.07

3.10

3.12

3.13 ||

3.16

3.18

3.19

FILTER CLOTH-

(OPTIONAL)

COARSE AGGREGATE

SPECIFIC APPLICATION

Gravel shall be VDOT #3, #357 or 5

coarse aggregate.

This method of inlet protection is applicable at curb inlets where ponding in front of the structure is not likely to cause inconvenience or damage to adjacent structures and unprotected areas.

DATE: 11/02/	93	
SCALE: NO S	CALE	
DRAWING BY:	CLN,AF	(G:\CAD\DETAILS\EROS)
DESIGNED BY:		
APPROVED BY:	GWS,III	

BOJANGLES RESTAURANT EROSION & SEDIMENT CONTROL STORMWATER MANAGEMENT DETAILS

SHEET