

ALL COSTS GIVEN ARE COMPLETE IN PLACE				
DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST
CLEARING & GRUBBING	LS		\$	\$
EXCAVATION	CY			
EMBANKMENT	CY			
FENCING	LF			
STRUCTURES				
ACCESS ROAD				
AS-BUILTS				
SUB-TOTAL				\$
10% CONTINGENCY				\$
TOTAL PROJECT COST				\$

DESIGN HIGH WATER
(25-YR. STORM ELEV.)

67 CY/AC
"DRY" STORAGE

67 CY/AC
"WET" STORAGE

SEEDMENT CLEANOUT POINT
(CYET) STORAGE REDUCED TO
34 CY/AC(RE)

DEWATERING DEVICE

RISER CREST

CREST

DESIGN ELEVATIONS WITH
EMERGENCY SPILLWAY

DESIGN HIGH WATER (25-YR. STORM ELEV.)

67 CY./AC. 'DRY' STORAGE

67 CY./AC. 'WET' STORAGE

SEDIMENT CLEANTOUT POINT

RISER CREST

DEWATERING DEVICE

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

(IP) GRAVEL AND WIRE MESH DROP INLET SEDIMENT FILTER

1. DESIGN OF DETENTION BASINS SHALL CONFORM TO THE REQUIREMENTS OF THE COUNTY OF ROCKLAND DRAINAGE STANDARDS (REF. SECTIONS 503.00 AND 503.01). THE DESIGN OF THE FACILITY AND PREPARATION OF AS-BUILT PLANS SHALL BE BY A CERTIFIED PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE COMMONWEALTH OF VIRGINIA.
2. ACCESS TO THE FACILITY MUST BE PROVIDED IN ACCORDANCE WITH THE COUNTY OF ROCKLAND DESIGN AND CONSTRUCTION STANDARDS FOR DETENTION PONDS, LATEST EDITION.
3. IF THE FACILITY IS OVER FOUR (4) FEET DEEP, EXCEEDS OVER TWO (2) HOURS TO DRAIN OR THE INTERIOR SLOPE TAKES 3 (3) IN 1 (1) V/D, PROTECTION 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 MINIMUM 3' (3) 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.
4. DETENTION POND SHALL BE BONDED IN ACCORDANCE WITH THE ROCKLAND COUNTY BONDING POLICY FOR SUBSIDIARIES AND SITE DEVELOPMENT. A SEPARATE BOND FOR THE DETENTION FACILITY WILL BE REQUIRED AND SHALL BE ADDED APART FROM THE SUBSIDIARY DEVELOPMENT BOND. REFERENCE ESTIMATE - THIS SHEET.
5. STANDARD FOR THE COUNTY OF ROCKLAND DESIGN AND CONSTRUCTION STANDARDS FOR DETENTION PONDS, 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

- 5 SITE PREPARATION SHALL BE IN ACCORDANCE WITH THE COUNTY OF RANDOLPH DESIGN AND CONSTRUCTION STANDARDS FOR DETENTION POND/LATEST EDITION
- 6 SLOPES STEEPER THAN 3 TO 1 (HORIZONTAL, TO VERTICAL) SHALL BE BENCH OR STEPPED PRIOR TO PLACING FILL ON THEM
- 7 ON-SITE FILL MATERIAL OR BORROW FILL MATERIAL MAY BE UTILIZED FILL MATERIAL. SOILS, IN GENERAL:
 - A. SHALL BE COMPACTABLE
 - B. SHALL BE WITH ACCEPTABLE RANGE OF MOISTURE CONTENT WHICH IS READILY CONTROLLABLE
 - C. SHALL BE HIGHLY COMPRESSIBLE TO VOLUME CHANGE (SHRINKAGE OR SWELL) OR SETTLEMENT
- 8 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 7.62 (19.3 CM) IN DIAMETER
- 9 THE APPROVED FILL SHALL BE PLACED IN EIGHT (8) INCH (20 CM) LIFTS. EACH LIFT SHALL BE SPREAD IN UNIFORM LAYERS. FILL SOIL SHALL BE UTILIZED ONLY WITHIN A MOISTURE RANGE OF $\pm 4\%$ OF THE OPTIMUM MOISTURE CONTENT. COMPACTION OF THE FILL SHALL BE PERFORMED WITH APPROVED EQUIPMENT. COMPACTION OF THE LAYERS SHALL BE CONTINUOUS AND UNIFORM.
- 10 ENHANCEMENT MATERIAL IN FILL AREAS SHALL BE PLACED IN LIFTS NOT EXCEEDING EIGHT (8) INCHES AND SHALL BE COMPACTED TO A MINIMUM OF 95% OF THE ACCORDANCE WITH SECTION 303 OF THE VIRGINIA DEPARTMENT OF TRANSPORTATION ROAD AND BRIDGE SPECIFICATIONS.
- 11 FIELD DESIGN 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 RANDOLPH WITH AS-BUILT PLANS AS A CONDITION OF THE ACCEPTANCE OF THE FACILITY BY THE COUNTY. FIELD DESIGN TESTS, AS DIRECTED BY THE ENGINEER SHALL BE PERFORMED PERIODICALLY TO DETERMINE THE DEGREE OF COMPACTION. ANY AREAS NOT MEETING THE ABOVE REQUIREMENTS SHALL BE REWORKED AND/OR RECOMPACTED UNTIL THE REQUIRED DEGREE OF COMPACTION IS ACHIEVED.
- 12 ANTI-SLEEP COLLARS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION.
- 13 ALL DISTURBED AREAS SHALL BE COVERED WITH FOUR (4) INCHES OF TOPSOIL AND SEEDS
- 14 THE MINIMUM SLOPE OF THE BASIN FILL SHALL BE ONE (1) PERCENT GRADED TO DRAIN TO THE PRINCIPAL SPILLWAY

This method of inlet protection is applicable where heavy flows are expected and where an overflow capability and ease of maintenance are desirable.

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

NO.	TITLE	KEY	SYMBOL	NO.	TITLE	KEY	SYMBOL
3.01	SAFETY FENCE	(SAF)		3.20	ROCK CHECK DAMS	(CD)	
3.02	TEMPORARY GRAVEL CONSTRUCTION ENTRANCE STABILIZATION	(CE)		3.21	LEVEL SPREADER	(LS)	
3.03	CONSTRUCTION ROAD STABILIZATION	(ERS)		3.22	VEGETATIVE STREAMBANK STABILIZATION	(VSS)	
3.04	STRAW BALE BARRIER	(STB)		3.23	STRUCTURAL STREAMBANK STABILIZATION	(SSS)	
3.05	SILT FENCE	(SF)		3.24	TEMPORARY VEHICULAR STREAM CROSSING	(VSD)	
3.06	BRUSH BARRIER	(BB)		3.25	UTILITY STREAM CROSSING	(USC)	
3.07	STORM DRAIN INLET PROTECTION	(IP)		3.26	DEWATERING STRUCTURE	(DS)	
3.08	CULVERT INLET PROTECTION	(CIP)		3.27	TURBIDITY CURTAIN	(TC)	
3.09	TEMPORARY DIVERSION DIKE	(DD)		3.28	SUBSURFACE DRAIN	(SD)	
3.10	TEMPORARY FILL DIVERSION	(FD)		3.29	SURFACE ROUGHENING	(SR)	
3.11	TEMPORARY RIGHT-OF-WAY DIVERSION	(RWV)		3.30	TOPSOILING	(TD)	
3.12	DIVERSION	(DV)		3.31	TEMPORARY SEEDING	(TS)	
3.13	TEMPORARY SEDIMENT TRAP	(ST)		3.32	PERMANENT SEEDING	(PS)	
3.14	TEMPORARY SEDIMENT BASIN	(SB)		3.33	SODDING	(SD)	
3.15	TEMPORARY SLOPE DRAIN	(TSD)		3.34	BERMUDA GRASS AND ZOYSIAURUS ESTABLISHMENT	(ZG)	
3.16	PAVED FLUME	(PF)		3.35	MULCHING	(MU)	
3.17	STORMWATER CONVEYANCE CHANNEL	(SCC)		3.36	SOIL STABILIZATION BANKS AND MATTING TREES, SHRUBS, VINES AND GROUND COVERS	(ES)	
3.18	OUTLET PROTECTION	(OP)		3.37	TREE PRESERVATION AND PROTECTION	(TP)	
3.19	RIPRAP	(RP)		3.39	DUST CONTROL	(DC)	

The diagrams illustrate the construction of a road cross-section. The top row shows two 'DOWNSTREAM VIEW' cross-sections of a road bed. The left one shows a 'FILTER CLOTH (OPTIONAL)' layer above the road bed. The right one shows a 'FILTER CLOTH (OPTIONAL)' layer above the road bed. The bottom row shows two 'UPSTREAM VIEW' cross-sections of a road bed. The left one shows a 'FILTER CLOTH (OPTIONAL)' layer above the road bed. The right one shows a 'FILTER CLOTH (OPTIONAL)' layer above the road bed. The diagrams are labeled with 'VDOT #1', 'COARSE AGGREGATE', 'FLY', and 'CLASS 1 RPS'.

(CD) ROCK CHECK DAM

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.

■ Gravel shall be VDOT 83, #357 or 5 coarse aggregate.

The diagram shows a cross-section of a curb inlet. A concrete gutter is shown on the left, sloping down to the curb inlet. Sediment is shown accumulating in the gutter. The curb inlet is on the right, with a concrete curb and a concrete gutter. The sediment is shown as a layer of material that has accumulated in the gutter. The diagram is labeled with 'SEDIMENT', 'CONCRETE GUTTER', and 'CURB INLET'.

(IP) GRAVEL CURB INLET SEDIMENT FILTER

SEDIMENT-LADEN RUNOFF	REQUIRED	DEPTH BELOW TOP OF INLET MIN. 1'-MAX. 2'
1.0	1.0	1.0
2.0	2.0	2.0
3.0	3.0	3.0
4.0	4.0	4.0
5.0	5.0	5.0
6.0	6.0	6.0
7.0	7.0	7.0
8.0	8.0	8.0
9.0	9.0	9.0
10.0	10.0	10.0
11.0	11.0	11.0
12.0	12.0	12.0
13.0	13.0	13.0
14.0	14.0	14.0
15.0	15.0	15.0
16.0	16.0	16.0
17.0	17.0	17.0
18.0	18.0	18.0
19.0	19.0	19.0
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41.0	41.0	41.0
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91.0	91.0	91.0
92.0	92.0	92.0
93.0	93.0	93.0
94.0	94.0	94.0
95.0	95.0	95.0
96.0	96.0	96.0
97.0	97.0	97.0
98.0	98.0	98.0
99.0	99.0	99.0
100.0	100.0	100.0

(IP) EXCAVATED DROP INLET SEDIMENT TRAP

3.21	LEVEL SPREADER	LS	
3.22	VEGETATIVE STREAMBANK STABILIZATION	VSS	
3.23	STRUCTURAL STREAMBANK STABILIZATION	SSS	
3.24	TEMPORARY VEHICULAR STREAM CROSSING	VSC	
3.25	UTILITY STREAM CROSSING	USC	
3.26	DEWATERING STRUCTURE	DS	
3.27	TURBIDITY CURTAIN	TC	
3.28	SUBSURFACE DRAIN	SD	
3.29	SURFACE ROUGHENING	SR	
3.30	TOPSOILING	TD	
	TEMPORARY SEEDING	TS	
3.32	PERMANENT SEEDING	PS	
3.33	SODDING	SD	
3.34	BERMUDA GRASS AND ZOYSIA GRASS ESTABLISHMENT	BZ	
3.35	MULCHING	MU	
3.36	SOIL STABILIZATION BLANKETS AND MATTING TREES, SHRUBS, VINES AND GROUND COVERS	ES	
3.37	TREE PRESERVATION AND PROTECTION	TP	
3.38			
3.39	DUST CONTROL	DC	

The diagram illustrates the design of a sediment trap. The top portion is a cross-section showing a trapezoidal excavation. The top width is 10' and the bottom width is 6'. The height is 4'0" MAX. The original ground elevation is shown as a dashed line, and the excavated area is indicated by a hatched pattern. The bottom of the excavation is covered with a filter cloth and coarse aggregate. The sides are labeled 'VARIABLE' with a width of 1.0'. The bottom is labeled '67 CU. YD./ACRE EXCAVATED'. The original ground elevation is also shown as a dashed line on the right side.

The bottom portion is a plan view of the sediment trap. It shows a rectangular area with a length of 6' and a width of 6'. The area is divided into three sections: a top section labeled 'CLASS I RIP-RAP', a middle section labeled 'COARSE AGGREGATE', and a bottom section labeled 'FILTER CLOTH EXCAVATED AREA'. The length of the trap is given by the formula: $\text{Length}(ft) = 6 \times \text{Drainage Area (ac.)}$. A 'DIVERSION DIKE' is shown on the right side. The bottom of the trap is labeled 'SEDIMENT TRAP'. A note at the bottom right states: 'COARSE AGGREGATE SHALL BE VDOT 3.4257 OF #5'.

SEE PLATE 313-1

[illegible]

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 FIELD CONDITIONS ARE DIFFERENT FROM SUCH MAJOR DESIGN CONDITIONS.
3. ALL EROSION AND SEDIMENT CONTROL MEASURES AS SHOWN ON THE PLAN SHALL BE PLACED IN ADVANCE OF THE WORK BEING PERFORMED, AS FAR AS PRACTICAL.
4. NO CASE DURING CONSTRUCTION SHALL WATER RUNOFF BE DIVERTED OR ALLOWED TO FLOW TO LOCATIONS WHERE ADEQUATE PROTECTION HAS NOT BEEN PROVIDED.
5. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LEAVE THE SITE ADEQUATELY PROTECTED AGAINST EROSION, SEDIMENTATION, OR ANY DAMAGE TO ANY ADJACENT PROPERTY OR TO THE ENVIRONMENT.
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 RANDOLPH COUNTY.

TYPE A	TYPE B (SLOPES 3:1 OR STEEPER)
15 OCTOBER TO 1 FEBRUARY K-31 FESCUE @ 5 LB / 1000 SF BURNZY WINTER RYE 1/2 LB / 1000 SF	15 MARCH TO 1 MAY CROWN VETCH @ 1/2 LB / 1000 SF PERENNIAL RYEGRASS @ 1/2 LB / 1000 SF RED TOP @ 1/6 LB / 1000 SF
1 FEBRUARY TO 1 JUNE K-31 FESCUE @ 5 LB / 1000 SF ANNUAL RYE 1/2 LB / 1000 SF	15 AUGUST TO 1 OCTOBER CROWN VETCH @ 1/2 LB / 1000 SF PERENNIAL RYEGRASS @ 1/2 LB / 1000 SF RED TOP @ 1/6 LB / 1000 SF
1 JUNE TO 1 SEPTEMBER K-31 FESCUE @ 5 LB / 1000 SF GERMAN RILLET @ 1/2 LB / 1000 SF	
1 SEPTEMBER TO 15 OCTOBER K-31 FESCUE @ 5 LB / 1000 SF ANNUAL RYE @ 1/2 LB / 1000 SF	

DEPARTMENT
OF
ENGINEERING AND INSPECTIONS

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

SHEET
OF

WT-0541