

# GENERAL NOTES

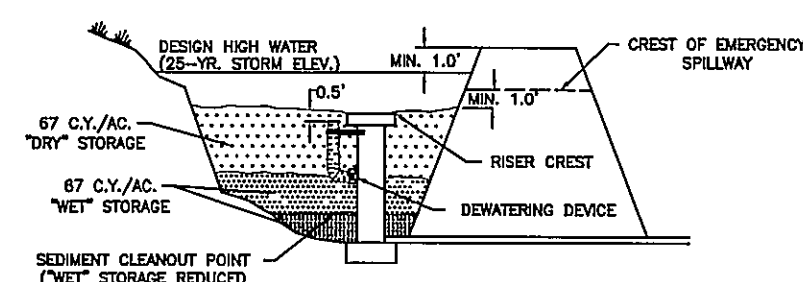
- DESIGN OF DETENTION BASINS SHALL CONFORM TO THE REQUIREMENTS OF THE COUNTY OF ROANOKE DESIGN STANDARDS (REF. SECTIONS 505.02, 505.03, AND 505.02). THE DESIGN OF THE FACILITY AND PREPARATION OF AS-BUILT PLANS SHALL BE BY A CERTIFIED PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE COMMONWEALTH OF VIRGINIA.
- ACCESS TO THE FACILITY MUST BE PROVIDED IN ACCORDANCE WITH THE COUNTY OF ROANOKE DESIGN AND CONSTRUCTION STANDARDS FOR DETENTION PONDS, LATEST EDITION.
- 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.
- 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 REQUIRED AND MUST INCLUDE:
  - DIMENSIONS OF THE FACILITY
  - VOLUME & MAXIMUM DEPTH
  - ELEVATIONS OF STRUCTURES, SPILLWAYS, AND TOP
  - MATERIALS VERIFICATION INCLUDING RESULTS OF DENSITY TESTS CONDUCTED BY AN INDEPENDENT SOIL TESTING LABORATORY
  - LOCATION AND ELEVATION OF BENCHMARK

ONE FOOT MINIMUM FREEBOARD REQUIRED FOR THE 100 YR WATER SURFACE ELEVATION.

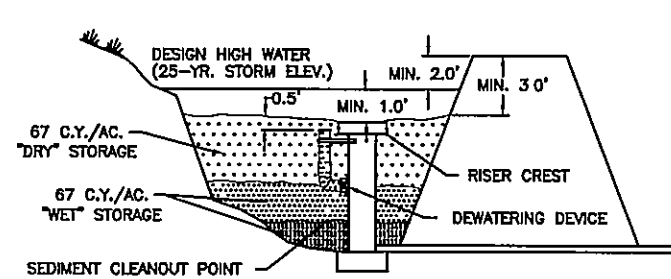
# CONSTRUCTION NOTES

- SITE PREPARATION SHALL BE IN ACCORDANCE WITH THE COUNTY OF ROANOKE DESIGN AND CONSTRUCTION STANDARDS FOR DETENTION PONDS, LATEST EDITION.
- SLOPES STEEPER THAN 3 TO 1 (HORIZONTAL TO VERTICAL) SHALL BE BENCHED OR STEPPED PRIOR TO PLACING FILL ON THEM.
- ON-SITE FILL MATERIAL OR BORROW FILL MATERIAL MAY BE UTILIZED. FILL MATERIAL SHALL BE:
  - SHALL BE COMPACTABLE
  - SHALL BE WITHIN AN ACCEPTABLE RANGE OF MOISTURE CONTENT WHICH IS READILY COMPACTED
  - SHALL NOT BE HIGHLY SUSCEPTIBLE TO VOLUME CHANGE (SHRINKAGE OR SWELL) OR SETTLEMENT
- 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 CM) IN DIAMETER.
- 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  $\pm 7\%$  OF THE OPTIMUM MOISTURE CONTENT. COMPACTION OF THE FILL SHALL BE PERFORMED WITH APPROVED EQUIPMENT. COMPACTION OF THE LAYERS SHALL BE CONTINUOUS AND UNIFORM.
- EMBANKMENT MATERIAL IN FILL AREAS SHALL BE PLACED IN LIFTS NOT EXCEEDING EIGHT (8) INCHES AND SHALL BE COMPACTED TO A MINIMUM 92% DENSITY IN ACCORDANCE WITH SECTION 303 OF THE VIRGINIA DEPARTMENT OF TRANSPORTATION ROAD AND BRIDGE SPECIFICATIONS.
- 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 ACHIEVED.
- ANTI-SEEP COLLARS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION.
- ALL DISTURBED AREAS SHALL BE COVERED WITH FOUR (4) INCHES OF TOPSOIL AND SEEDED.
- THE MINIMUM SLOPE OF THE BASIN "FLOOR" SHALL BE ONE (1) PERCENT GRADED TO DRAIN TO THE PRINCIPAL SPILLWAY.

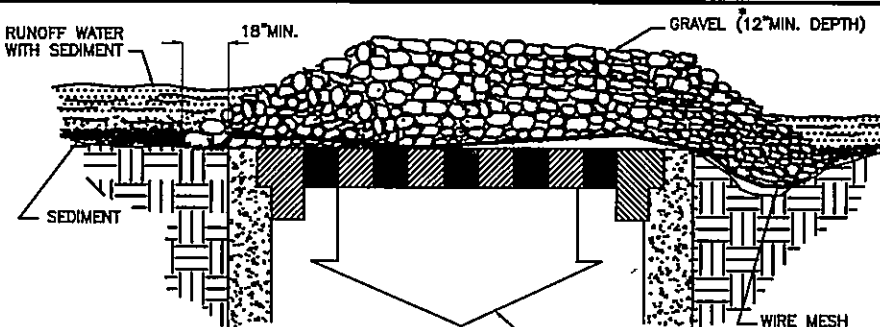
## SEDIMENT BASIN SCHEMATIC ELEVATIONS



## DESIGN ELEVATIONS WITH EMERGENCY SPILLWAY

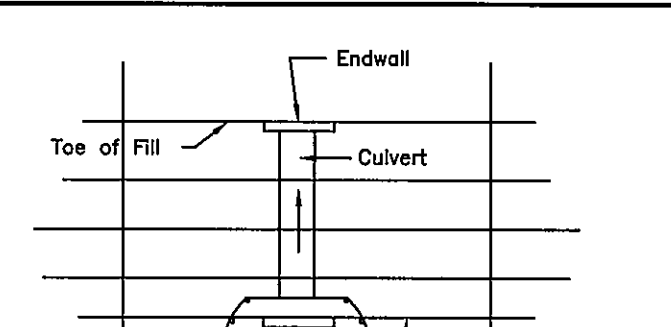


## DESIGN ELEVATIONS WITHOUT EMERGENCY SPILLWAY (RISER PASSES 25-YR EVENT)



**SPECIFIC APPLICATION**  
This method of inlet protection is applicable where heavy flows are expected, but not where ponding around the structure might cause excessive inconvenience or damage to adjacent structures and unprotected areas.  
\* Gravel shall be VDOT #3, #57 or #5 coarse aggregate.

(IP) GRAVEL AND WIRE MESH DROP INLET SEDIMENT FILTER

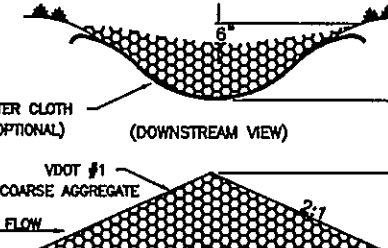


**SPECIFIC APPLICATION**  
This method of inlet protection is applicable where heavy flows are expected and where an overflow capability and ease of maintenance are desirable.

(CIP) SILT FENCE CULVERT INLET PROTECTION

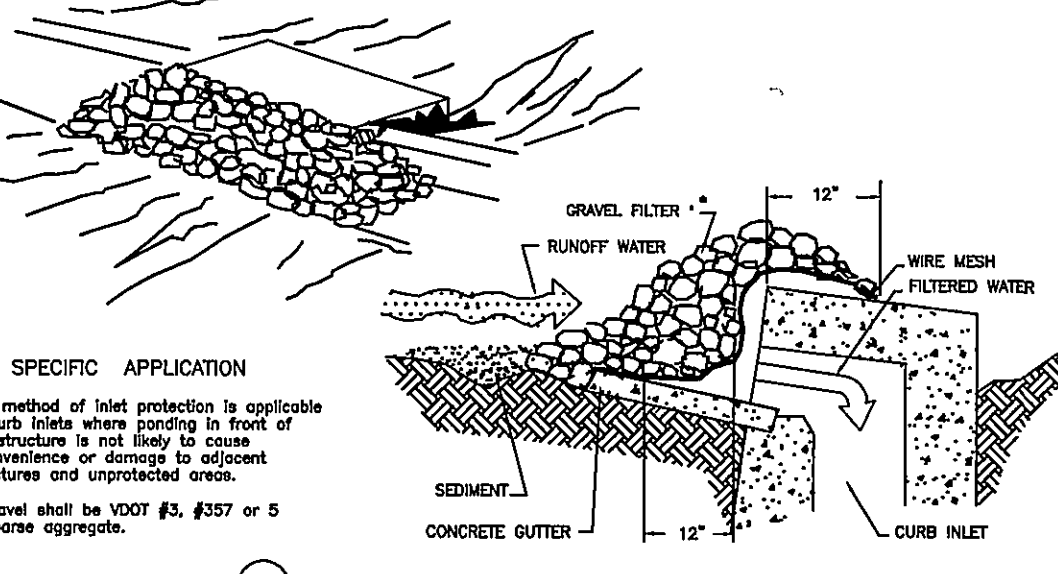
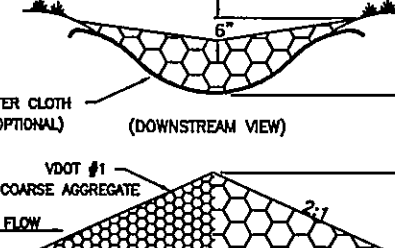
NO.	TITLE	KEY	SYMBOL	NO.	TITLE	KEY	SYMBOL
3.01	SAFETY FENCE	SAF		3.20	ROCK CHECK DAMS	CD	
3.02	TEMPORARY GRAVEL CONSTRUCTION ENTRANCE	CE		3.21	LEVEL SPREADER	LS	
3.03	STRAW BALE BARRIER	STB		3.22	VEGETATIVE STREAMBANK STABILIZATION	VSS	
3.04	SILT FENCE	SF		3.23	STRUCTURAL STREAMBANK STABILIZATION	SSS	
3.05	BRUSH BARRIER	BB		3.24	TEMPORARY VEHICULAR STREAM CROSSING	VSC	
3.06	STORM DRAIN INLET PROTECTION	IP		3.25	UTILITY STREAM CROSSING	USC	
3.07	CULVERT INLET PROTECTION	CIP		3.26	DEWATERING STRUCTURE	DS	
3.08	TEMPORARY DIVERSION DIKE	DD		3.27	TURBIDITY CURTAIN	TC	
3.09	TEMPORARY FILL DIVERSION	FD		3.28	SUBSURFACE DRAIN	SD	
3.10	TEMPORARY RIGHT-OF-WAY DIVERSION	RWD		3.29	SURFACE ROUGHENING	SR	
3.11	DIVERSION	DV		3.30	TOPSOILING	TO	
3.12	TEMPORARY SEDIMENT TRAP	ST		3.31	TEMPORARY SEEDING	TS	
3.13	TEMPORARY SEDIMENT BASIN	SB		3.32	PERMANENT SEEDING	PS	
3.14	TEMPORARY SEDIMENT DRAIN	TD		3.33	SODDING	SO	
3.15	PAVED FLOUME	PF		3.34	BERMUDA GRASS AND ZOYSIAGRASS ESTABLISHMENT	BZ	
3.16	STORMWATER CONVEYANCE CHANNEL	SCC		3.35	MULCHING	MU	
3.17	OUTLET PROTECTION	OP		3.36	SOIL STABILIZATION BLANKETS AND MATTING TREES, SHRUBS, VINES AND GROUND COVERS	VEG	
3.18	RIPRAP	RR		3.37	TREE PRESERVATION AND PROTECTION	TP	
3.19				3.38	DUST CONTROL	DC	

## 2 ACRES OR LESS OF DRAINAGE AREA:



(CD) ROCK CHECK DAM

## 2-10 ACRES OF DRAINAGE AREA:

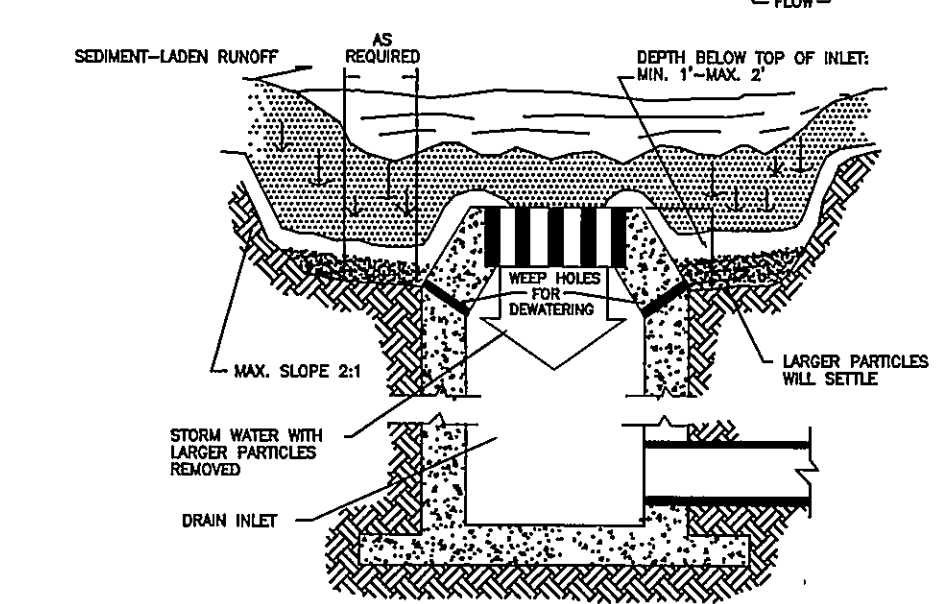


(IP) GRAVEL CURB INLET SEDIMENT FILTER

## SPECIFIC APPLICATION

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

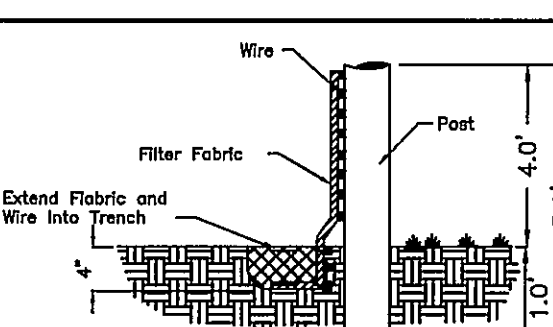
(IP) EXCAVATED DROP INLET SEDIMENT TRAP



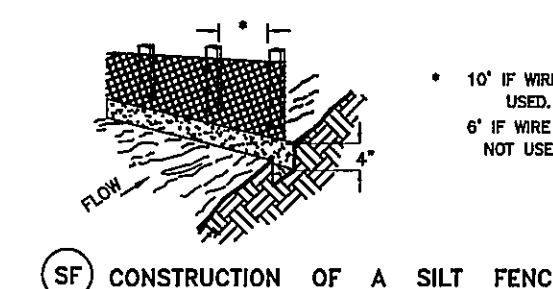
(IP) EXCAVATED DROP INLET SEDIMENT TRAP

## TEMPORARY SEDIMENT TRAP DATA

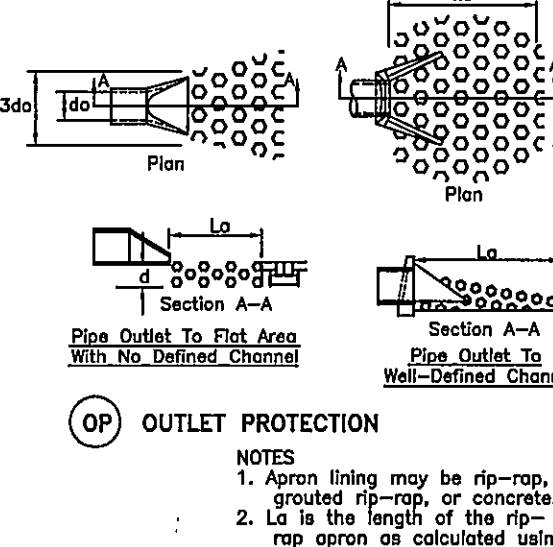
STRUCTURE	DRAINAGE AREA (ACRES)	STORAGE (C.Y.) REG'D	STORAGE (C.Y.) DESIGN	WEIR LENGTH (FT)	WEIR HEIGHT (FT)	BERM HEIGHT (FT)
DD						
FD						
RWD						
DV						



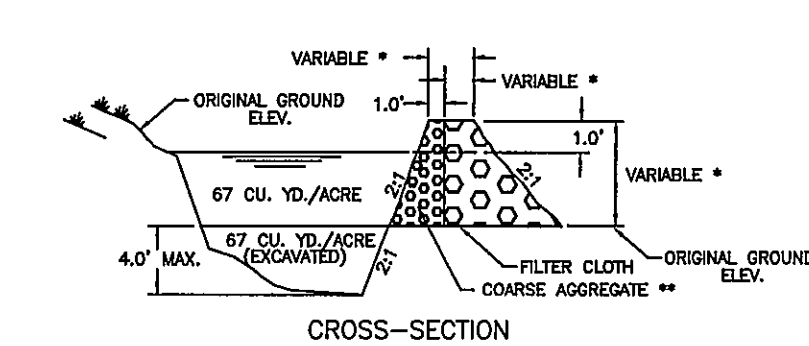
(SF) CONSTRUCTION OF A SILT FENCE



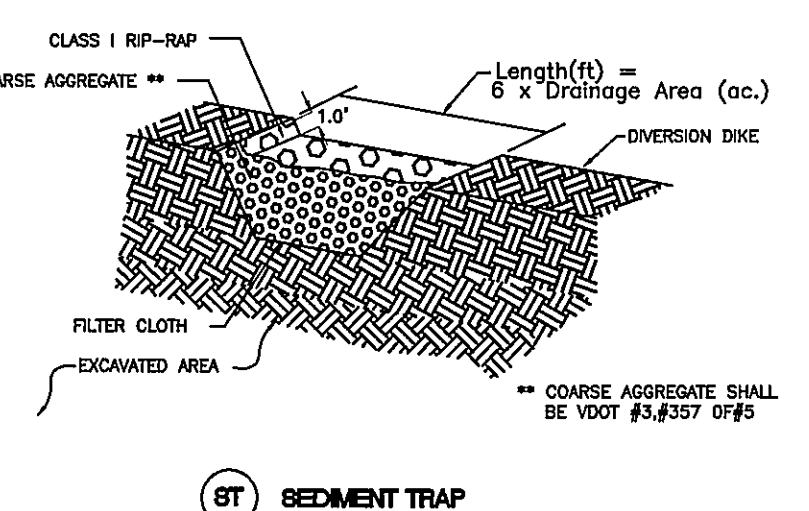
(OP) OUTLET PROTECTION



(CE) TEMPORARY GRAVEL CONSTRUCTION ENTRANCE



CROSS-SECTION

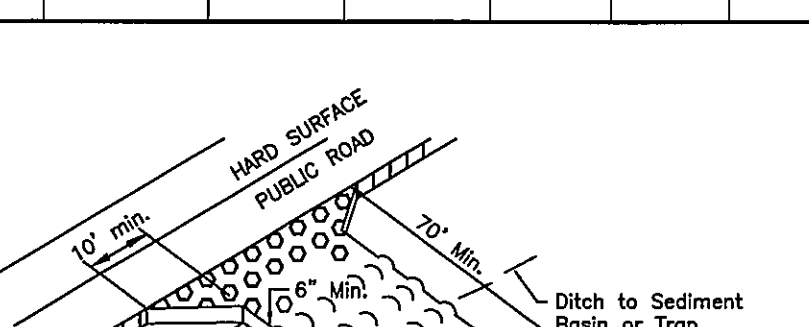


(ST) SEDIMENT TRAP

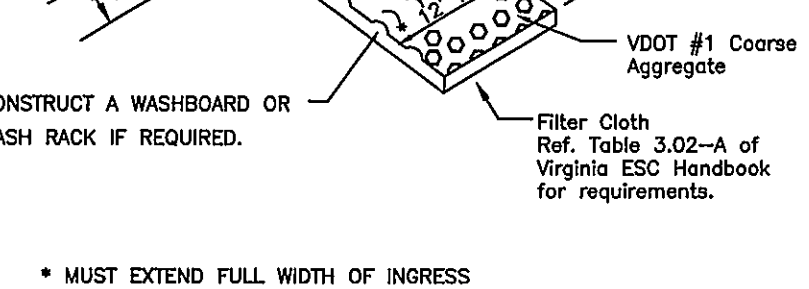
NOTE: FOR AREAS LESS THAN 3.0 ACRES. FOR AREAS LARGER THAN 3.0 ACRES A SEDIMENT BASIN IS REQUIRED. SEE DETAIL THIS SHEET.

## TEMPORARY SEDIMENT TRAP DATA

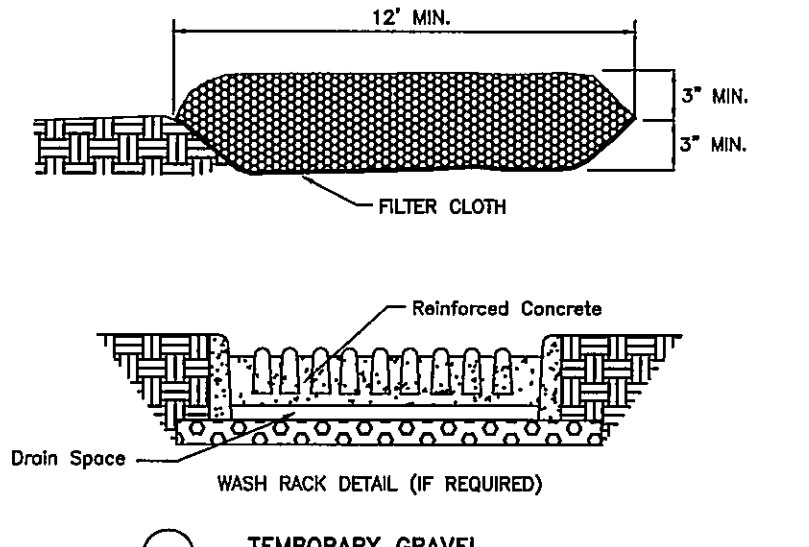
STRUCTURE	DRAINAGE AREA (ACRES)	STORAGE (C.Y.) REG'D	STORAGE (C.Y.) DESIGN	WEIR LENGTH (FT)	WEIR HEIGHT (FT)	BERM HEIGHT (FT)
DD						
FD						
RWD						
DV						



(SF) CONSTRUCTION OF A SILT FENCE



(OP) OUTLET PROTECTION



(CE) TEMPORARY GRAVEL CONSTRUCTION ENTRANCE

# EROSION-SILTATION CONTROL COST ESTIMATE

DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST
CONSTRUCTION ENTRANCE	EA	1	\$ 1,050.00	\$ 1,050.00
SILT FENCE	LF	2010	5.00	10,050.00
INLET PROTECTION	EA	12	300.00	3,600.00
TEMPORARY DIVERSION DIKE	LF	250	3.00	750.00
CHECK DAM TYPE II	EA	7	200.00	1,400.00
PERMANENT SEEDING	1000 SF	36.7	105.00	3,854.00
CULVERT INLET PROTECTION	EA	1	150.00	150.00
SUB-TOTAL				\$ 20,854.00
10% CONTINGENCY				\$ 2,085.40
TOTAL PROJECT COST				\$ 22,939.40

## GENERAL EROSION AND SEDIMENT CONTROL NOTES

- 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 PRACTICAL.
- IN NO CASE DURING CONSTRUCTION SHALL WATER RUNOFF BE DIVERTED OR ALLOWED TO FLOW TO LOCATIONS WHERE ADEQUATE PROTECTION HAS NOT BEEN PROVIDED.
- 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.

## (TS) TEMPORARY SEEDING MIXTURE

PLANTING DATES	SPECIES	RATE (LBS./ACRE)
SEPT. 1 - FEB. 15	50/50 MIX OF ANNUAL RYEGRASS (LOLUM MULTI-FLORUM) CEREAL (WINTER) RYE (SECALE CEREALE)	50 - 100
FEB. 16 - APR. 30	ANNUAL RYEGRASS (LOLUM MULTI-FLORUM)	60 - 100
MAY. 1 - AUG. 31	GERMAN MILLET (SETARIA ITALICA)	50

TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT (UNDISTURBED) FOR LONGER THAN 30 DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE YEAR.

## (PS) PERMANENT SEEDING MIXTURE

TYPE A	TYPE B (SLOPES 3:1 OR STEEPER)
15 OCTOBER TO 1 FEBRUARY K-31 FESCUE @ 5 LB / 1000 SF BOUTY WINTER RYE @ 1/2 LB / 1000 SF 1 FEBRUARY TO 1 JUNE K-31 FESCUE @ 5 LB / 1000 SF ANNUAL RYE @ 1/2 LB / 1000 SF 1 JUNE TO 1 SEPTEMBER K-31 FESCUE @ 5 LB / 1000 SF GERMAN MILLET @ 1/2 LB / 1000 SF 1 SEPTEMBER TO 15 OCTOBER K-31 FESCUE @ 5 LB / 1000 SF ANNUAL 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 @ 1/8 LB / 1000 SF 15 AUGUST TO 1 OCTOBER CROWN VETCH @ 1/2 LB / 1000 SF PERENNIAL RYEGRASS @ 1/2 LB / 1000 SF RED TOP @ 1/8 LB / 1000 SF
LIME: 140 LB / 1000 SF PULVERIZED AGRICULTURAL LIMESTONE FERTILIZER: 3-20-10 @ 25 LB / 1000 SF 38-0-0 @ 7 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. 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, FRABLE, SEEDED. MAXIMUM SEEDING DEPTH SHALL BE 1/4 INCH.	

TOTAL DISTURBED AREA = APPROX. 3.08 AC.

# DEPARTMENT OF ENGINEERING AND INSPECTIONS

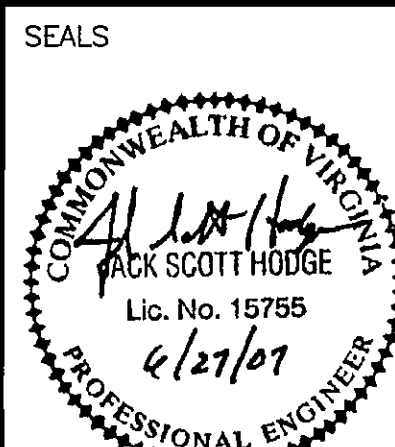
1	ENGR. & INSPEC.	04-10-93
2	ENGR. & INSPEC.	08-05-93
3	ENGR. & INSPEC.	10-27-93
4		
5		
6		
NO.	REVISIONS	DATE

# COUNTY OF ROANOKE

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

# EROSION & SEDIMENT CONTROL STORMWATER MANAGEMENT DETAILS

# SHEET OF



CONSULTANT

**OPPIDAN RETAIL CENTER**  
OPPIDAN INVESTMENT COMPANY  
ROANOKE COUNTY, VIRGINIA

**HSMM**  
ARCHITECTS ENGINEERS PLANNERS  
HAYES, SEAY, MATTERN & MATTERN, INC.  
1315 FRANKLIN ROAD  
ROANOKE, VA 24016  
(540) 857-3100 WWW.HSMM.COM

COMM NO:	30182C
ISSUE DATE:	JUNE 27, 2007
DESIGNED BY:	AEB
DRAWN BY:	MGS
CHECKED BY:	JSH
SUBMITTED BY:	JSH

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# EROSION AND SEDIMENT CONTROL DETAILS

**C503**