

Erosion Control Narrative

PROJECT DESCRIPTION

The purpose of the project is the construction of a new religious activity building and associated parking on a 6.13 acre parcel(s). The entire disturbed area is approximately 3.5 acres. One of the existing buildings and portions of the existing parking will be demolished as part of the development plan to make room for the new building and parking. All areas not covered by building, asphalt or concrete pavement will be permanently seeded with grass or mulch & other vegetation.

EXISTING CONDITIONS

The existing site consists of 6.13 acres of land situated on the side of a knoll. The land slopes in multiple directions from the top of the knoll near the western property boundary. All of the existing runoff is conveyed towards Layman Road and it is discharged to a tributary to Glade Creek.

The existing ground cover varies from well-maintained grass to pasture type grasses along the slopes of the south and eastern portions of the property. The slopes on the property range from 30% slope to the eastern portion of the property boundary to 5% at various locations near the center and northwestern portions of the site.

ADJACENT PROPERTY

Bonsack Road and Layman Road bound the property on two sides. Multiple other residential properties adjoin the other property boundaries as indicated on the design plans.

OFFSITE AREAS

No offsite areas are affected by the grading on this project. In the event that fill material is necessary from offsite sources, a borrow source erosion control plan shall be submitted for those areas under separate cover.

SOILS

The soils that will be disturbed by development construction primarily consist of clayey silts. The majority of the soils possess moderate to high erosion potential and are compatible with the anticipated vegetative cover to be established.

STRUCTURAL PRACTICES

1. TEMPORARY CONSTRUCTION ENTRANCE - 3.02

A temporary construction entrance shall be installed where one of the existing entrances intersects with the existing paved area. During wet and muddy conditions, drivers of construction vehicles may be required to wash their wheels before entering Bonsack Road.

2. SILT FENCE BARRIER - 3.05

Silt fence barriers will be installed downslope of disturbed areas to filter sediment laden runoff from sheet flow.

3. DIVERSION - 3.12

A diversion is to be installed transverse to the slope along Layman Rd. to convey stormwater runoff to the new earthen stormwater management pond.

4. OUTLET PROTECTION - 3.18

Riprap is to be placed at the outlet of all pipes.

5. CHECK DAM - 3.20

Rock check dams are to be placed in the drainage swales as indicated on the plans to reduce the runoff velocity and minimize the potential for erosion in the swales.

VEGETATIVE PRACTICES

1. SURFACE ROUGHENING - 3.29

All slopes steeper than 3:1 will require surface roughening consisting of either stair-step grading, grooving, furrowing, or tracking if they are to be stabilized with vegetation. Areas with slopes less than 3:1 shall have the soil surface lightly roughened to a depth of 2 to 4 inches prior to seeding. Areas that have been graded and will not be stabilized immediately may be roughened to reduce runoff velocity until seeding takes place.

2. TOPSOILING - 3.30

Topsoil will be shipped from areas to be graded and stockpiled for later use. Stockpiled locations are to be stabilized with temporary vegetation and siltfence shall be installed around the perimeter of the stockpile.

3. TEMPORARY SEEDING - 3.31

All denuded areas, which are not to be fine graded within 30 days, shall be seeded with fast germinating temporary vegetation immediately following grading.

4. PERMANENT SEEDING - 3.32

All final-graded areas where permanent cover is desired or rough-graded areas that will not be brought to final grade for a year or more shall be seeded with perennial vegetation within seven days. High maintenance areas (low level grassed areas) will be lined and fertilized regularly and mowed frequently similar to home lawns. Low maintenance areas will be mowed infrequently or not at all, and lime and fertilized only periodically. These areas will not be subjected to intense use, nor required to have a uniform appearance.

5. MULCHING - 3.35

Mulch (straw or fiber) will be used on relatively flat areas and will be applied as the second step in the seeding operation at a rate of 2 to 3 per acre.

6. SOIL STABILIZATION BLANKETS & MATTING - 3.36

Soil stabilization blankets (treatment 1- degradable) will be applied to all disturbed slopes steeper than 3:1 to assist in establishing adequate ground cover.

MANAGEMENT STRATEGIES

1. Construction will be sequenced so that grading operations can begin and end as quickly as possible. The rough grading for the site improvements will be accomplished as indicated on the grading plan.

2. Sediment trapping measures will be installed as a first step in grading and will be seeded and mulched immediately following installation.

3. Temporary seeding or other stabilization will follow immediately following grading.

4. The job superintendent shall be responsible for the installation and maintenance of all erosion & sediment control practices.

5. After achieving adequate stabilization, the temporary E&S controls will be cleaned out or converted to permanent stormwater management control structures.

6. No more than 500 feet of open trench at any one time. Excavated material shall be placed on uphill side of trench. Effluent of dewatering system must be filtered. Proper backfill and compaction. Re-stabilize immediately.

CRITICAL AREAS

Critical erosion areas include all of the cut and fill slopes on the site, especially those adjacent to the roads along the perimeter of the property. These areas shall be closely monitored to insure the seeding techniques are effective in establishing a permanent stabilized vegetative surface. Should conventional seeding techniques fail, then soil stabilization blankets may be required for adequate stabilization.

PERMANENT STABILIZATION

The site will be seeded with ordinary seeding techniques or hydro-seeding, using a mixture of annual rye and fescue grasses. All permanent seeding is to be covered with mulch to minimize the adverse effects of wind and rain on the seedbed. Seeding is to be done immediately upon completion of grading to minimize vulnerability to erosion.

All internal grassed areas (slopes less than 3:1) visible from the public road(s) will be treated as high maintenance areas, which will require frequent fertilization and mowing. The remaining slopes and other non-visible areas will be treated as low maintenance areas, which will not require frequent lime, fertilizer, or mowing.

STORMWATER RUNOFF CONSIDERATIONS

The disturbed area is 3.5 acres. Due to the topographic constraints and locations of the existing and proposed buildings, two separate stormwater management facilities need to be installed to cost effectively manage the increased stormwater runoff. The site was divided into two drainage areas that only extend to the property lines to simplify the quantifiable increases in runoff resulting from this development. The portions of land that drain towards Bonsack Road were considered Drainage Area 1, while the portions of land that drain towards Layman Rd. were considered Drainage Area 2. Due to the lack of available undeveloped site area along Bonsack Rd. and the necessity to maintain parking in that vicinity, an earthen stormwater management pond in the vicinity of the church officehouse (to be demolished) was chosen as the best way to satisfy the Roanoke County stormwater management requirements. Conversely, the amount of undeveloped land along the southeast portion of the site was very conducive to constructing an additional earthen stormwater management pond to satisfy County regulations for the remainder of the site. Both management facilities manage the runoff such that the 10 year post development runoff rates are discharged at the 2 year predevelopment rates, and the 25 year post development runoff rates are discharged at the 10 year predevelopment rates. Both ponds adequately pass the 100-year storm flows without overtopping.

The tributary to Glade Creek is an adequate channel that is more than capable of conveying the normal runoff increases from the post-developed site. As previously mentioned, all of the existing development in this area is currently draining to the tributary. With the proposed stormwater management facilities in place, the proposed development actually decreases the runoff rate seen by the tributary.

CALCULATIONS

Please refer to the hydrology and runoff calculations enclosed.

GENERAL NOTES

1. 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 OF VIRGINIA.

2. ACCESS TO THE FACILITY MUST BE PROVIDED IN ACCORDANCE WITH THE COUNTY OF ROANOKE DESIGN AND CONSTRUCTION STANDARDS FOR DETENTION PONDS, 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 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.

4. 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.

5. 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

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

7. ANY ALTERATIONS TO THE APPROVED EROSION SEDIMENT CONTROL PLAN WILL REQUIRE A NEW SET OF ESC PLANS STAMPED BY THE CONSULTING ENGINEER. PLAN SHEETS CAN BE 8.5" x 11" IF THE INFORMATION IS LEGIBLE AND WITH THE SCOPE OF THE EXISTING APPROVED PLAN.

8. THE LOCATION OF ALL OFF-SITE FILL OR BORROW AREAS ASSOCIATED WITH THE CONSTRUCTION PROJECT WILL BE PROVIDED TO ROANOKE COUNTY DEPARTMENT OF COMMUNITY DEVELOPMENT. AN EROSION SEDIMENT CONTROL PLAN OR MEASURES MAY BE REQUIRED FOR THIS AREA.

CONSTRUCTION NOTES

1. SITE PREPARATION SHALL BE IN ACCORDANCE WITH THE COUNTY OF ROANOKE DESIGN AND CONSTRUCTION STANDARDS FOR DETENTION PONDS, LATEST EDITION.

2. SLOPES STEEPER THAN 3 TO 1 (HORIZONTAL TO VERTICAL) SHALL BE BENCHMARKED 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 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 BOND 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 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.

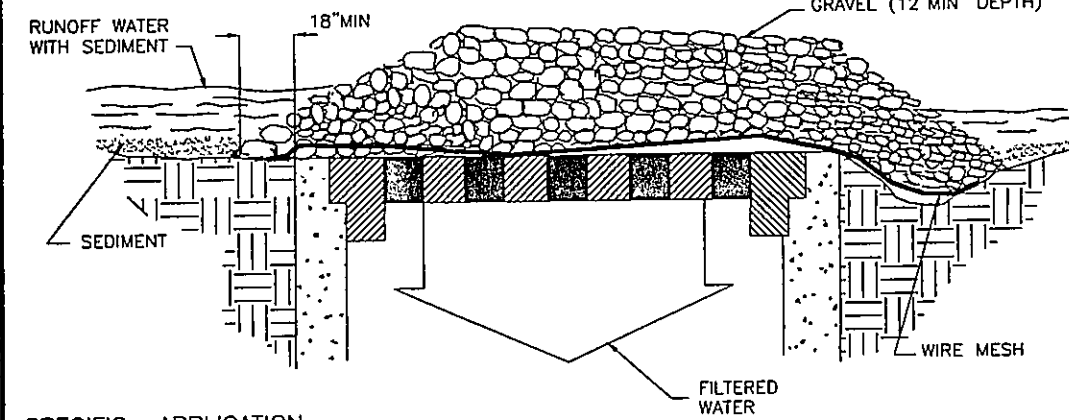
8. ANTI-SLEEP COLLARS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION.

9. ALL DISTURBED AREAS SHALL BE COVERED WITH FOUR (4) INCHES OF TOPSOIL AND SEED.

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

11. NO CONSTRUCTION/FIELD CHANGES WITHOUT THE APPROVAL OF THE CONSULTING ENGINEER AND ROANOKE COUNTY.

12. ANY NEW ALIGNMENTS, CHANGES IN GRADE, ALTERNATIVE PIPE SIZES OR MANHOLES WITHIN STORM DRAIN SYSTEM WILL REQUIRE A NEW SET OF PLANS STAMPED BY THE CONSULTING ENGINEER. COUNTY ENGINEERS WILL REVIEW PLANS WITHIN ONE DAY OF SUBMITTAL. PLAN SHEETS CAN BE 8.5" x 11" IF THE INFORMATION IS LEGIBLE.



SPECIFIC APPLICATION

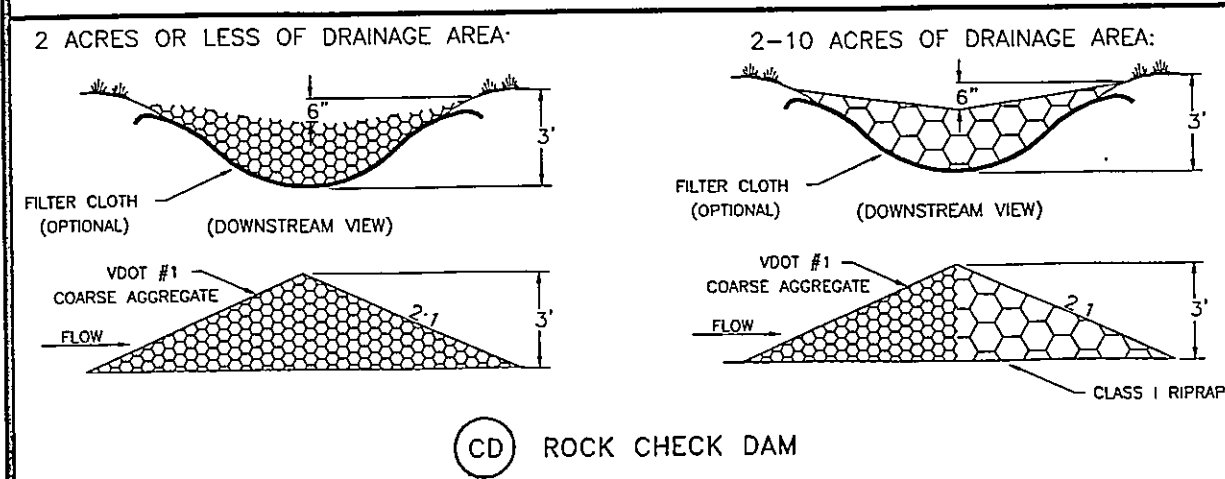
This method of inlet protection is applicable where heavy concentrated flows are expected, but not where ponding around the structure might cause excessive inconvenience or damage to adjacent structures and unprotected areas.

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

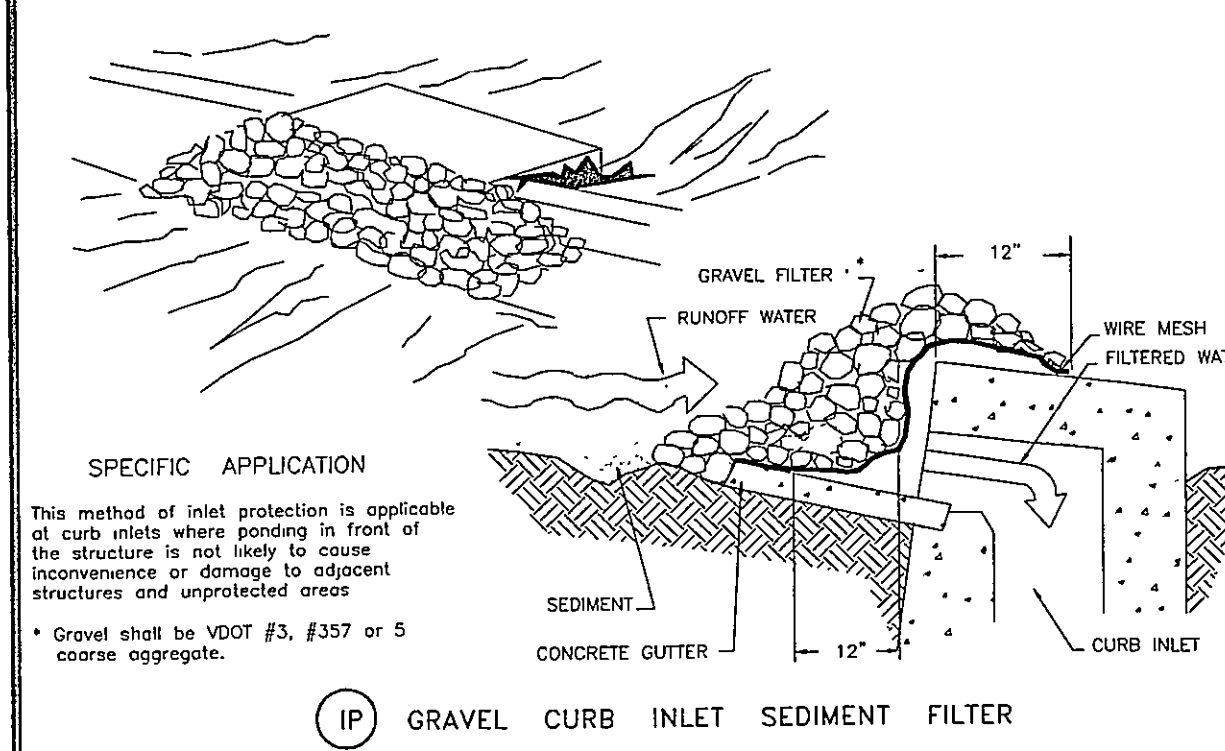
(IP) GRAVEL AND WIRE MESH DROP INLET SEDIMENT FILTER

MINIMUM STANDARDS CHECKLIST

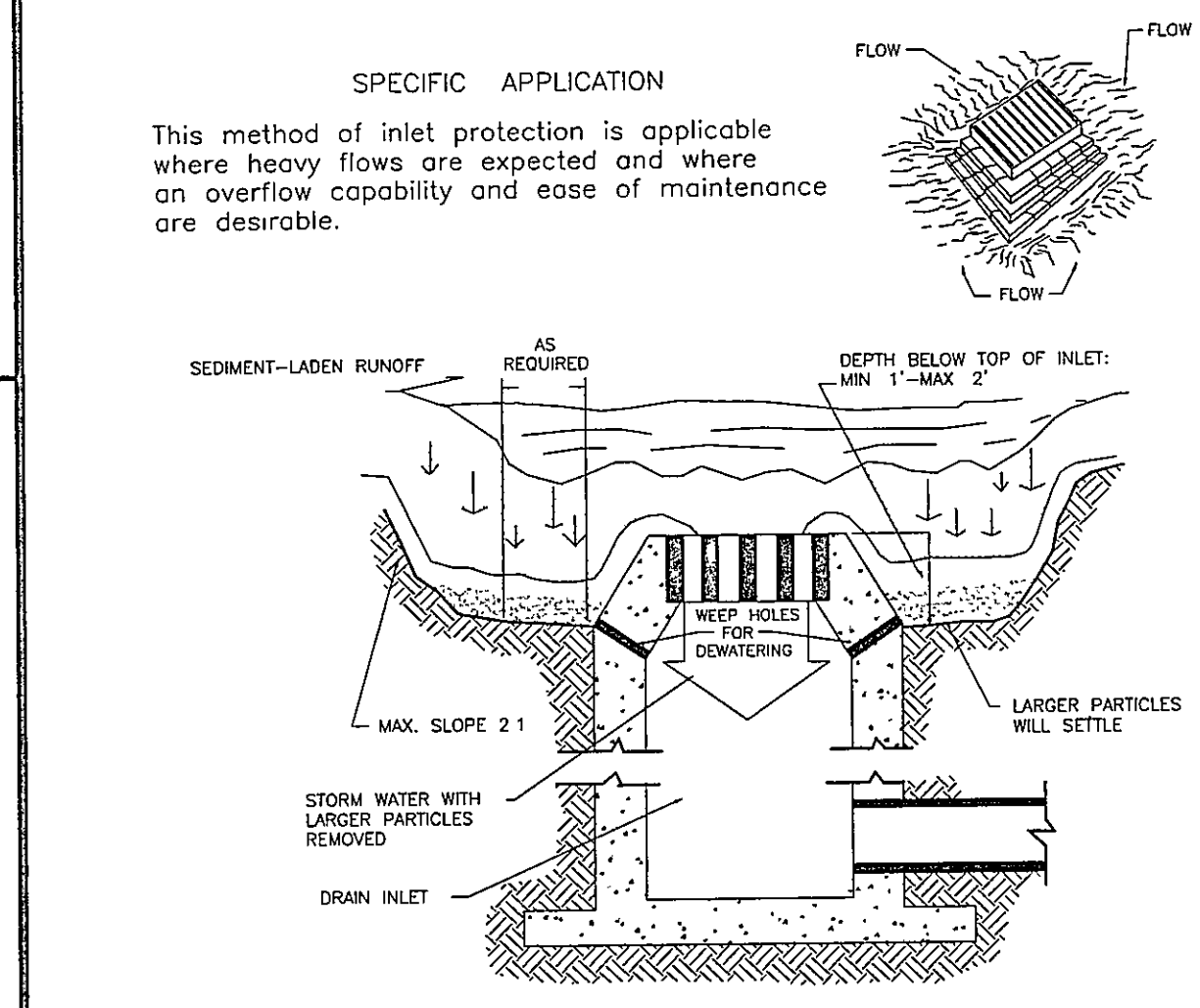
YES	MS-1: Temporary and permanent stabilization of denuded areas (Permanent within 7 days for areas at final grade, Temporary for areas not to final for 30 days).	N/A	MS-13: Temporary vehicular stream crossings for more than 2 trips in 6 months.
	a) Are practices shown on the plan? YES	N/A	MS-14: Other federal, state and local regulations must be met when working in live watercourses
	b) Are the limits of clearing and grading shown on the plan? YES	N/A	MS-15: The bed and banks of disturbed watercourses must be stabilized immediately.
	c) Seed Specifications? YES		MS-16: Utility installations. REFER TO ESC NARRATIVE
YES	MS-2: Protection or stabilization of on-site and off-site stockpiles and borrow areas. YES - INDICATED ON ESC PLAN	YES	a) No more than 500 feet of open trench at any one time.
YES	MS-3: Permanent Stabilization of denuded areas not otherwise stabilized. YES - INDICATED ON ESC PLAN		b) Excavated material shall be placed on uphill side of trench.
YES	MS-4: Install E&S Measures as first step in land-disturbing activity. YES - REFER TO ESC NARRATIVE		c) Effluent of dewatering system must be filtered.
YES	MS-5: Earthen controls and structures stabilized immediately upon installation. YES		d) Proper backfill and compaction.
			e) Re-stabilize immediately.
N/A	MS-6: Sediment Traps (less than 3 acres drainage) and basins (greater than 3 acres of drainage).	YES	MS-17: Keep paved or public areas clean (Construction Entrances) CONSTRUCTION ENTRANCES INDICATED ON ESC PLAN.
	a) Are traps/basins properly sized?	YES	MS-18: Temporary measures should be removed with 30 when no longer needed. SEE ESC NOTES.
	b) Are the details shown on the plans?		a) Schedule for maintenance
	c) Are the calculations included in the narrative or plan?	YES	MS-19: Address increases in stormwater volume, velocity, and peak runoff. SEE STORMWATER MANAGEMENT DETAILS.
YES	MS-7: Design and construction of cut and fill slopes to minimize erosion.		a) Are offsite, receiving areas accounted for? YES
N/A	MS-8: Concentrated flow down cut and fill must be in adequate channel, flume, or slope drain.		b) Are offsite, receiving areas and channels described and adequate? YES
YES	MS-9: Slopes protected from seepage. TEMP. & PERM. SEEDING & MULCHING SPECIFIED		c) Are calculations included in the narrative or plan and adequate? YES
YES	MS-10: Storm sewer inlets must have adequate inlet protection. SPECIFIED ON ESC PLAN		
YES	MS-11: Outlet protection and channel lining is required prior to operation storm sewer system. SPECIFIED ON ESC PLAN		
N/A	MS-12: Minimize impacts when working in and around live watercourse.		
	a) DEQ and/or Army Corps of Engineers permits may be required.		



(CD) ROCK CHECK DAM



(IP) GRAVEL CURB INLET SEDIMENT FILTER

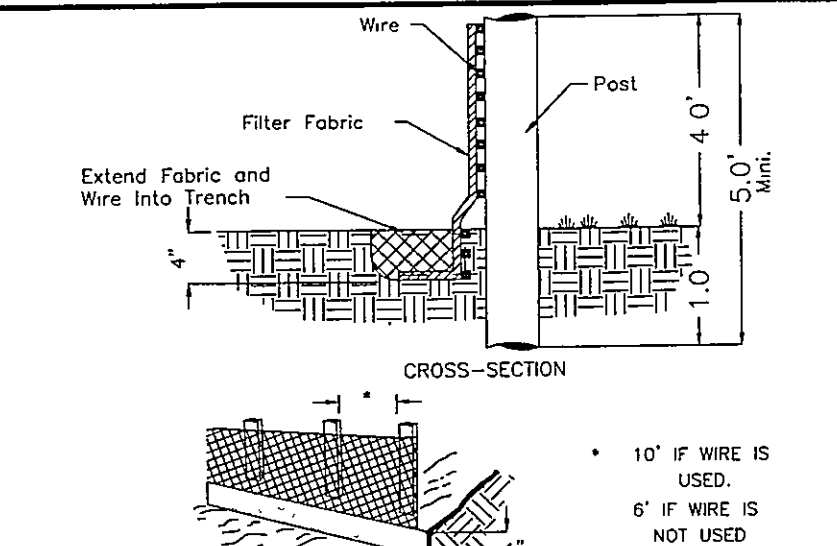


(IP) EXCAVATED DROP INLET SEDIMENT TRAP

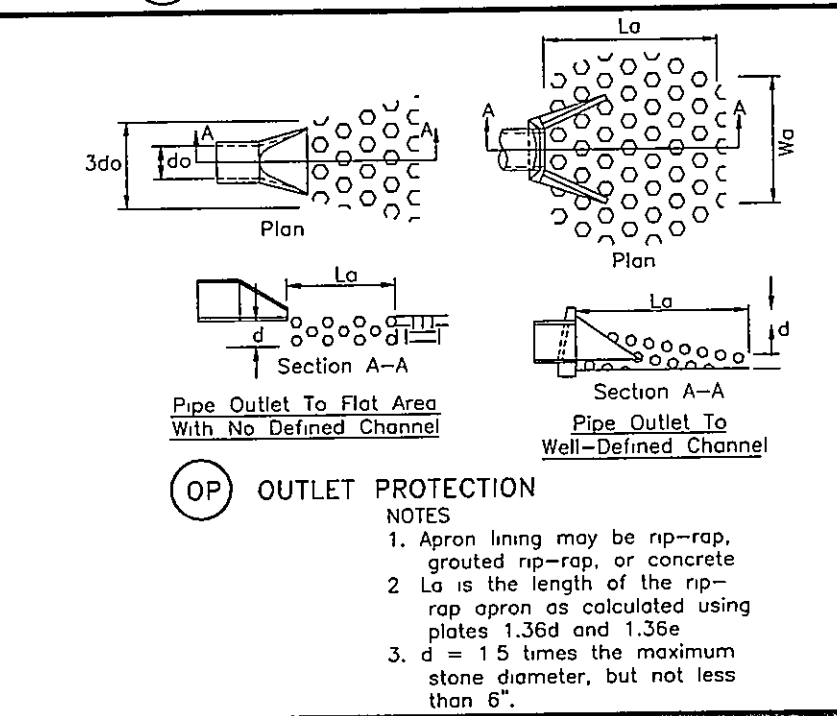
ACCEPTABLE TEMPORARY SEEDING PLANT MATERIALS

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

REF: 1992 VESC HANDBOOK, TABLE 3.31-B



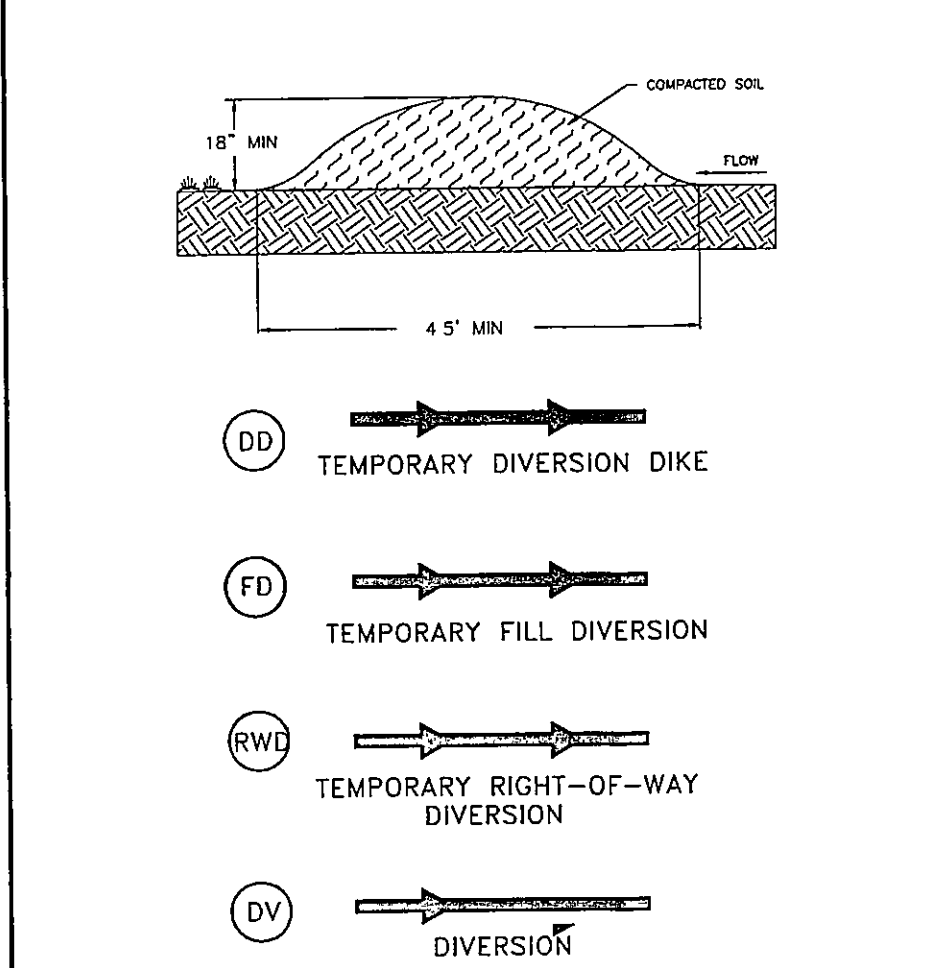
(SF) CONSTRUCTION OF A SILT FENCE



(OP) OUTLET PROTECTION

- Apron lining may be rip-rap, grouted rip-rap, or concrete
- Lo is the length of the rip-rap apron as calculated using plates 1.36d and 1.36e
- d = 1.5 times the maximum stone diameter, but not less than 6".

NO.	TITLE	KEY	SYMBOL
3.02	TEMPORARY GRAVEL CONSTRUCTION ENTRANCE	CE	
3.05	SILT FENCE	SF	
3.07	STORM DRAIN INLET PROTECTION	IP	
3.12	DIVERSION	DV	
3.18	OUTLET PROTECTION	OP	
3.19	RIPRAP	RR	
3.20	ROCK CHECK DAMS	CD	
3.29	SURFACE ROUGHENING	SR	
3.30	TOPSOILING	TO	
3.31	TEMPORARY SEEDING	TS	
3.32	PERMANENT SEEDING	PS	
3.35	MULCHING	MU	

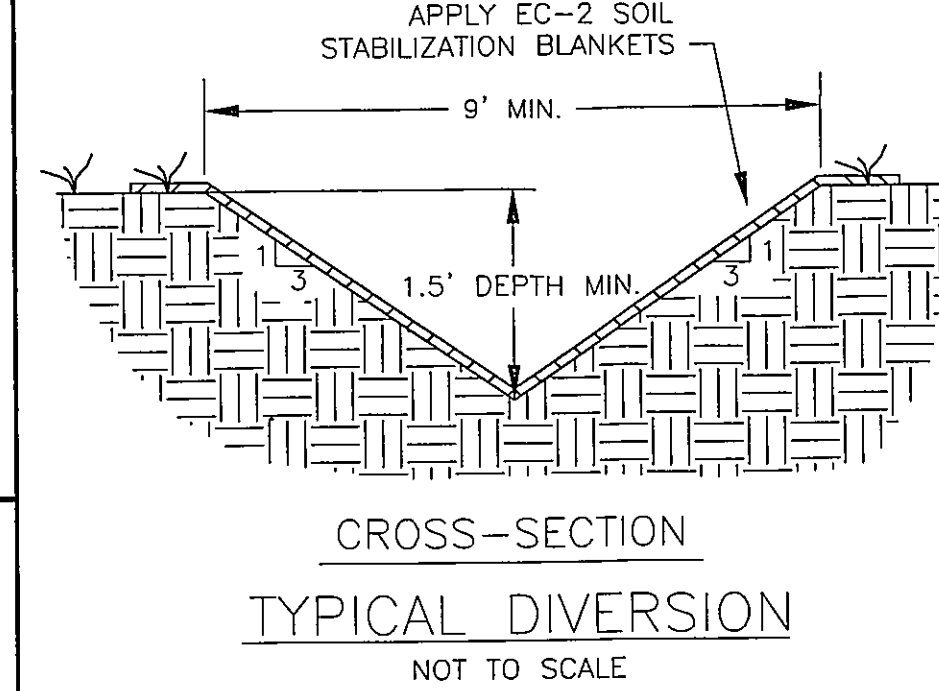


(DD) TEMPORARY DIVERSION DIKE

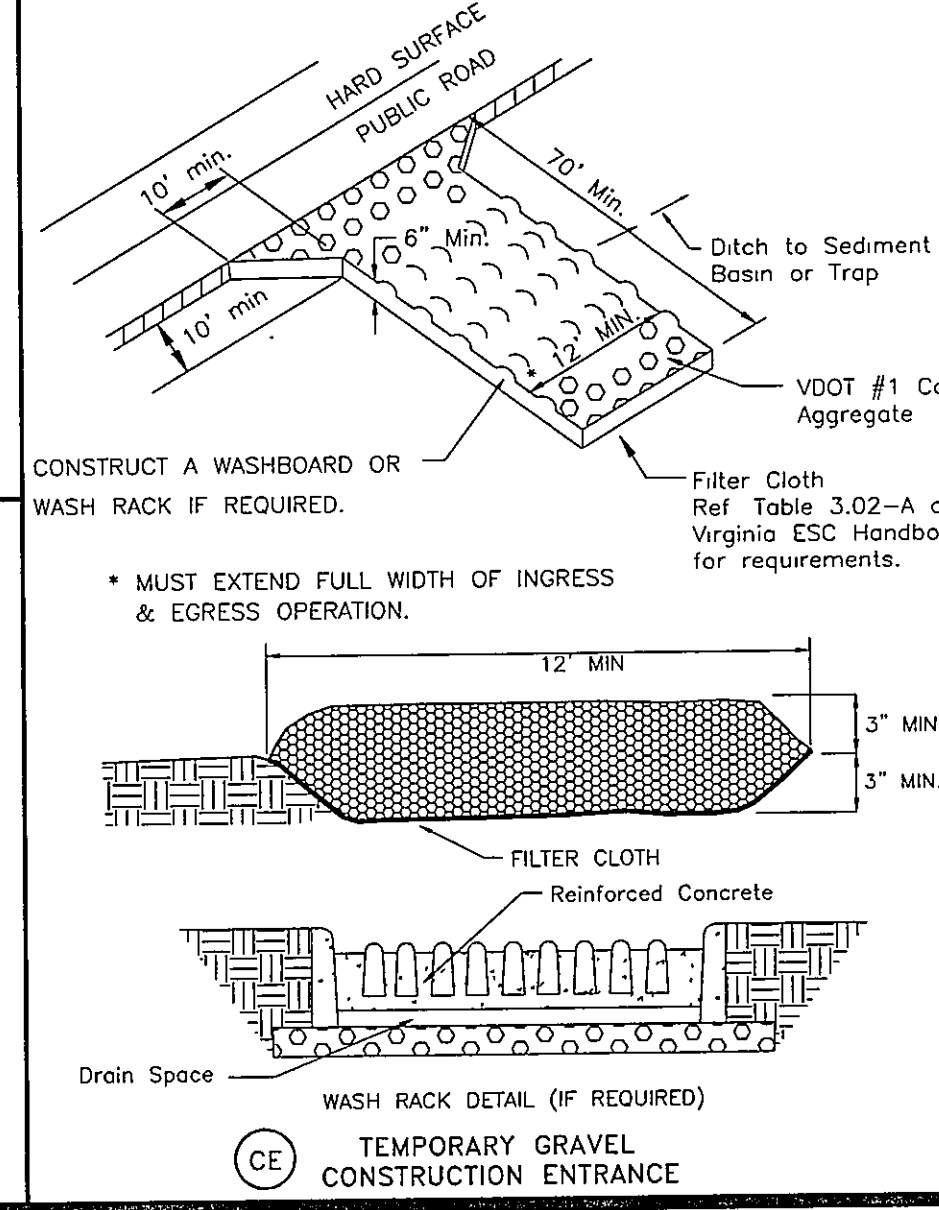
(FD) TEMPORARY FILL DIVERSION

(RWI) TEMPORARY RIGHT-OF-WAY DIVERSION

(DV) DIVERSION



CROSS-SECTION
TYPICAL DIVERSION
NOT TO SCALE



(CE) TEMPORARY GRAVEL CONSTRUCTION ENTRANCE

EROSION - SILTATION CONTROL COST ESTIMATE				
ALL COSTS GIVEN ARE COMPLETE IN PLACE				
DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST
CONSTRUCTION ENTRANCE	EA	1	\$ 500.00	\$ 500
SILT FENCE	LF	1840	\$ 4.00	\$ 7360 00
INLET PROTECTION	EA	6	\$ 250.00	\$ 1500.00
DIVERSION	LF	232	\$ 10.00	\$ 2320.00
TEMPORARY SEEDING	AC	0.75	\$ 500 00	\$ 375.00
PERMANENT SEEDING	AC	0.75	\$ 1000.00	\$ 750.00
CHECK DAM	EA	2	\$ 50.00	\$ 100.00
SUB-TOTAL				\$ 12905.00
10% CONTINGENCY				\$ 1290 50
TOTAL PROJECT COST				\$ 14195 50

STORMWATER MANAGEMENT COST ESTIMATE				
ALL COSTS GIVEN ARE COMPLETE IN PLACE				
DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST
CLEARING & GRUBBING	LS			
EXCAVATION	LS	2	\$ 1000.00	\$ 2000.00
EMBANKMENT	LS	2	\$ 1500.00	\$ 3000 00
STRUCTURES	EA	2	\$ 2000.00	\$ 4000 00
AS-BUILTS				
SUB-TOTAL				\$ 9000.00
10% CONTINGENCY				\$ 900.00
TOTAL PROJECT COST				\$ 9900 00

GENERAL EROSION AND SEDIMENT CONTROL NOTES

- UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND VIRGINIA REGULATIONS VR 625-02-00 AND ROANOKE COUNTY EROSION AND SEDIMENT CONTROL ORDINANCE.
- 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 PROVIDED.
- IN NO CASE DURING CONSTRUCTION SHALL WATER RUNOFF BE DIVERTED OR ALLOWED TO FLOW TO LOCATIONS WHERE ADEQUATE PROTECTION HAS NOT BEEN PRACTICAL.
- 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.

PERMANENT SEEDING MIXTURE	
TYPE A	
15 OCTOBER TO 1 FEBRUARY	K-31 FESCUE @ 5 LB / 1000 SF
BORZY WINTER RYE @ 1/2 LB / 1000 SF	PERENNIAL RYEGRASS @ 1/2 LB / 1000 SF
1 FEBRUARY TO 1 JUNE	K-31 FESCUE @ 5 LB / 1000 SF
ANNUAL RYE @ 1/2 LB / 1000 SF	PERENNIAL RYEGRASS @ 1/2 LB / 1000 SF
1 JUNE TO 1 SEPTEMBER	K-31 FESCUE @ 5 LB / 1000 SF
GERMAN MILLET @ 1/2 LB / 1000 SF	PERENNIAL RYEGRASS @ 1/2 LB / 1000 SF
1 SEPTEMBER TO 15 OCTOBER	K-31 FESCUE @ 5 LB / 1000 SF
ANNUAL RYE @ 1/2 LB / 1000 SF	PERENNIAL RYEGRASS @ 1/2 LB / 1000 SF
LIME	140 LB / 1000 SF PULVERIZED AGRICULTURAL LIMESTONE
FERTILIZER:	5-20-10 @ 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 3.75 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, FRABLE, SEEDBED. MAXIMUM SEEDING DEPTH SHALL BE 1/4 INCH.
TOTAL DISTURBED AREA =	3.5 AC.

1	ENGR. & INSPEC	10-27-93
2	NARRATIVE; DETAILS	4-14-05
3	SWM COST ESTIM.	11-21-05
4		
5		
6		
NO.	REVISIONS	DATE