

EROSION AND SEDIMENT CONTROL NARRATIVE

Project Description:
The Project consists of the installation of 870 linear feet of 12" waterline, 580 linear feet of 8" sanitary sewer line and the necessary appurtenances. The total disturbed area is approximately 0.1 Acre.

Existing Site Conditions:

The site slopes in a westerly direction, toward Electric Road/VA Route 419, to a road side ditch along Electric Road. The site has previously been graded or is currently being developed. Current undisturbed areas where construction is to occur are covered in native grasses.

Adjacent Areas:

The site is bounded on the west by Electric Road/VA Route 419. The remaining areas are or will be developed for office usage.

Off-site areas:

There are no off-site borrow of fill areas associated with the project.

Soils:

The soil information is based on an observation of sheet number 10 of the soil survey of Roanoke County and the cities of Roanoke and Salem Virginia.

CHISWELL-LITZ-URBAN LAND COMPLEX 15 TO 35 PERCENT SLOPES

CHISWELL SOIL
Surface layer -0 to 2 inches, dark brown channely silt loam
Subsoil -2 to 12 inches, reddish brown very channely silt loam
Bedrock -12 inches, mottled reddish brown, brown and brownish yellow soft shale.

LITZ SOIL
Surface Layer -0 to 5 inches, dark brown channely silt loam.
Subsoil -5 to 18 inches, brown very channely silt loam and strong brown silty clay loam.
Bedrock -24 inches, hard grey and red shale.

Permeability -Moderate
Surface Runoff -Rapid
Erosion Potential -High
Shrink-Swell Potential -Low

Critical Areas:

There are no areas considered critical.

EROSION AND SEDIMENT CONTROL MEASURES:

Standard and Specification 3.02 - Construction Entrance (CE)
A stone Construction Entrance will be installed to minimize the amount of mud transported into existing roads.

Standard and Specification 3.05 - Silt Fence (SF)
Silt Fence will be installed at the lower ends of the project site to intercept sediment laden run-off prior to exiting the site.

Standard and Specification 3.20 - Rock Check Dam (CD)
Rock Check Dams will be installed to reduce the velocity in the roadside ditch thereby allowing the settling of sediment.

Standard and Specification 3.31 - Temporary Seeding (TS)
all to be rough graded areas shall be seeded with fast germinating, temporary vegetation immediately following grading, or installation if a temporary measure. See also Minimum Standards.

Standard and Specification 3.32 - Permanent Seeding (PS)
Permanent Seeding shall be installed on all disturbed areas of the site not otherwise stabilized.

Standard and Specification 3.35 - Mulching (MU)
All disturbed areas shall be mulched after seeding. Straw mulch shall be applied at a rate of two tons per acre and anchored with 750 lbs per acre of fiber mulch over the seeded area.

Storm Water Management Consideration:

The proposed improvements will NOT result in an increase in the stormwater runoff. As such, stormwater management is not required.

SEQUENCING:

1. The Temporary Gravel Construction Entrance, Silt Fencing and the Rock Check Dams shall be installed prior to any grading operations.
2. Permanent stabilization shall be applied to disturbed areas as soon as those areas are brought to final grade.
3. Once the site has been stabilized, Temporary ESC Measures shall be removed and those affected areas shall receive permanent stabilization.

MAINTENANCE:

All erosion and sediment control measures shall be checked daily and after each significant rainfall. A log of dates and inspections shall be kept. Any deficiencies that are found shall be corrected immediately. Accumulated sediment at trapping measures shall be routinely removed.

1. The construction entrance will be checked regularly for sediment buildup. If stone is clogged by sediment, it will be removed and cleaned, or replaced.
2. The silt fence will be checked regularly for undermining or deterioration of the fabric. Sediment shall be removed when sediment buildup reaches the midway point of the silt fence.
3. The Rock Check Dams will be checked regularly for sediment buildup. If the stone is clogged by sediment, it shall be cleaned or replaced.
4. All seeded areas will be checked regularly to ensure that a good stand of grass is maintained. Areas shall be fertilized and reseeded as required to achieve a good stand of grass.

Contractor shall pay particular attention to the following MINIMUM STANDARDS:

MS-1: Though TS / PS labels are shown generically on the plans, the contractor shall seed all areas not indicated to be otherwise stabilized with permanent seed mixture within 7 days of reaching final grade or with temporary seed mixture any area yet to reach final grade but that is not proposed to be actively involved in the work within 30 days. These seed mixtures and application specifications are shown herein. The contractor shall honor the clearing and grading limits shown on the plan.

MS-2: The contractor shall stabilize with TS and protect from erosion, with any applicable method, all steep slopes and any on-site or off-site borrow or spoil areas, as applicable. Approval of this plan does not cover off-site borrow or spoil areas. Prior to commencing land disturbing activities in areas other than those indicated on these plans (including but not limited to, off-site borrow or waste areas), the contractor shall submit a Supplementary Erosion Control Plan for review and approval by the Plan Approving Authority.

MS-3: Where TS/PS are not applicable provide other means of stabilization (CES, etc.) within 7 days of reaching final grade or within 30 days where the area is yet to reach final grade but is not proposed to be actively involved in the work.

MS-4: All soil erosion and sediment control measures shall be placed in advance of the work they are intended to protect.

MS-5: Earthen controls and structures shall be stabilized immediately upon installation (Not Applicable).

MS-6: Where a sediment trap (<3 acres of drainage) or sediment basin (>3 acres of drainage) are indicated calculations shown are based on outflow drainage areas. Contractor shall honor indicated drainage divides and conform to volumes, details, etc. provided on plans (Not Applicable).

MS-7: Care has been taken in design to minimize drainage over slopes and provide a suitable protective stabilization method. Contractor shall protect slope areas during and after construction from concentrated runoff and the erosion effects of wind and rain. Stabilize as soon as practical to minimize erosion (Not Applicable).

MS-8: Where concentrated runoff has been routed down slopes care has been taken to design an adequate channel or drain. Contractor shall install these measures along with their stabilization as soon as practical to protect slope (Not Applicable).

MS-9: NOT APPLICABLE: seepage through slopes is not anticipated to be encountered on this project.

MS-10: Inlet or culvert inlet protection is proposed for the inlets of all storm sewers or culverts on-site. RLD shall insure proper installation and ensure adequate clearing based on drainage area of each inlet (Not Applicable).

MS-11: RLD shall verify that adequate channel linings and proper outlet protection is in place prior to operation of storm sewer system (Not Applicable).

MS-12: When working in and around a live watercourse, the contractor shall take great care to minimize impact on the stream. Assume that proper permits from DEQ / CDE are in hand prior to commencing such work (Not Applicable).

MS-13: Where more than 2 trips in 6 months are expected across a live watercourse obtain the necessary permit and install a temporary stream crossing (Not Applicable).

MS-14: Other federal, state, and local regulations must be met when working in live watercourses (Not Applicable).

MS-15: The bed and banks of disturbed watercourses must be stabilized immediately (Not Applicable).

MS-16: Regarding utility installations, no more than 500 LF of trench may be open at a given time. Excavated material shall be placed on uphill side of trench. Effluent of any dewatering system used must be filtered. Trenches shall be properly backfilled and compacted per detail and specs. Completed installation shall be re-stabilized immediately.

MS-17: The contractor shall provide adequate means of cleaning mud from trucks and / or other equipment prior to entering public streets. It is the contractor's responsibility to insure that the streets are in a clean, mud and dust free condition at all times.

MS-18: See Maintenance under ESC Narrative for removal of temporary measures.

Include in maintenance schedule that RLD shall observe off-site receiving channel regularly and correct any problems (even downstream).

MS-19: There will be no more increases in stormwater volume, velocity, and peak runoff. Responsible Land Disturber shall pay particular attention to off-site areas contributing runoff to the site, off-site locations receiving runoff from this project, and proper operation of stormwater management practices on-site. All ditches, swales, and natural watercourses downstream of this project shall be field inspected during and after construction by the RLD to ensure compliance with DCR's MS-19. If erosion or scour is occurring the developer shall be responsible for all corrective measures.

General Erosion and Sediment Control Notes, Roanoke County, Virginia

ES-1: 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 EROSION AND SEDIMENT CONTROL REGULATIONS.

ES-2: THE PLAN APPROVING AUTHORITY MUST BE NOTIFIED ONE WEEK PRIOR TO THE ON-SITE PRECONSTRUCTION CONFERENCE, ONE WEEK PRIOR TO THE COMMENCEMENT OF LAND DISTURBING ACTIVITY, AND ONE WEEK PRIOR TO THE FINAL INSPECTION.

ES-3: ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CONSTRUCTION.

ES-4: A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN AND NARRATIVE, AS WELL AS A COPY OF THE LAND DISTURBING PERMIT, SHALL BE MAINTAINED ON THE SITE AT ALL TIMES. THE EROSION AND SEDIMENT CONTROL ADMINISTRATOR WILL DELIVER THESE MATERIALS AT THE ON-SITE PRECONSTRUCTION CONFERENCE.

ES-5: PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THESE PLANS (INCLUDING, BUT NOT LIMITED TO, OFF-SITE BORROW OR WASTE AREAS), THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION CONTROL PLAN TO THE OWNER FOR REVIEW AND APPROVAL BY THE PLAN APPROVING AUTHORITY.

ES-6: THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE PLAN APPROVING AUTHORITY.

ES-7: ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING THE LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.

ES-8: DURING DEWATERING OPERATION, WATER WILL BE PUMPED INTO AN APPROVED FILTERING DEVICE.

ES-9: THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EACH RUNOFF-PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY. AN INSPECTION REPORT MUST BE FILED WITH THE ROANOKE COUNTY EROSION AND SEDIMENT CONTROL ADMINISTRATOR ONCE EVERY TWO WEEKS, BEGINNING WITH COMMENCEMENT OF THE LAND DISTURBING ACTIVITY, AND WITHIN 48 HOURS OF ANY RUNOFF-PRODUCING RAINFALL EVENT. FAILURE TO SUBMIT A REPORT WILL BE GROUNDS FOR IMMEDIATE REVOCATION OF THE LAND DISTURBING PERMIT. REPORTS MUST BE POSTMARKED WITHIN 24 HOURS OF THE DEADLINE. A STANDARD INSPECTION REPORT FORM WILL BE SUPPLIED, WHICH SHOULD BE COPIED AS NECESSARY. THIS PROVISION IN NO WAY WAIVES THE RIGHT OF ROANOKE COUNTY PERSONNEL TO CONDUCT SITE INSPECTIONS, NOR DOES IT DENY THE RIGHT OF THE PERMITEE(S) TO ACCOMPANY THE INSPECTOR(S).

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	CONSTRUCTION ROAD STABILIZATION	CRS		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	VSC	
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	RWD		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	TSB		3.34	BERMUDA GRASS AND ZOYSIAGRASS ESTABLISHMENT	ZG	
3.16	PAVED FLUME	PF		3.35	MULCHING	MU	
3.17	STORMWATER CONVEYANCE CHANNEL	SCC		3.36	SOIL STABILIZATION BLANKETS AND MATTING	SB	
3.18	OUTLET PROTECTION	OP		3.37	TREES, SHRUBS, VINES AND GROUND COVERS	VEG	
3.19	RIPRAP	RR		3.38	TREE PRESERVATION AND PROTECTION	TP	
				3.39	DUST CONTROL	DC	

EROSION-SILTATION CONTROL COST ESTIMATE

ALL COSTS GIVEN ARE COMPLETE IN PLACE

DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST
CONSTRUCTION ENTRANCE	EA	1	\$ 1,000.00	\$ 1,000.00
CHECK DAM	EA	3	\$ 75.00	\$ 225.00
PERMANENT SEEDING	1000 SF	25		\$ 1,375.00
SILT FENCE	LF	710	\$ 3.00	\$ 2,130.00
SUB-TOTAL				\$ 4,730.00
10% CONTINGENCY				\$ 473.00
TOTAL PROJECT COST				\$ 5,203.00

GENERAL EROSION AND SEDIMENT CONTROL NOTES

1. ALL SOIL EROSION AND 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 ENCOUNTERED THAT WARRANT SUCH MODIFICATIONS.
3. 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.
4. IN 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 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 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 DENUDDED 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 BORYZ 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 @ 1/8 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 @ 1/8 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	

LIME: 140 LB / 1000 SF PULVERIZED AGRICULTURAL LIMESTONE

FERTILIZER: 5-20-10 @ 25 LB / 1000 SF

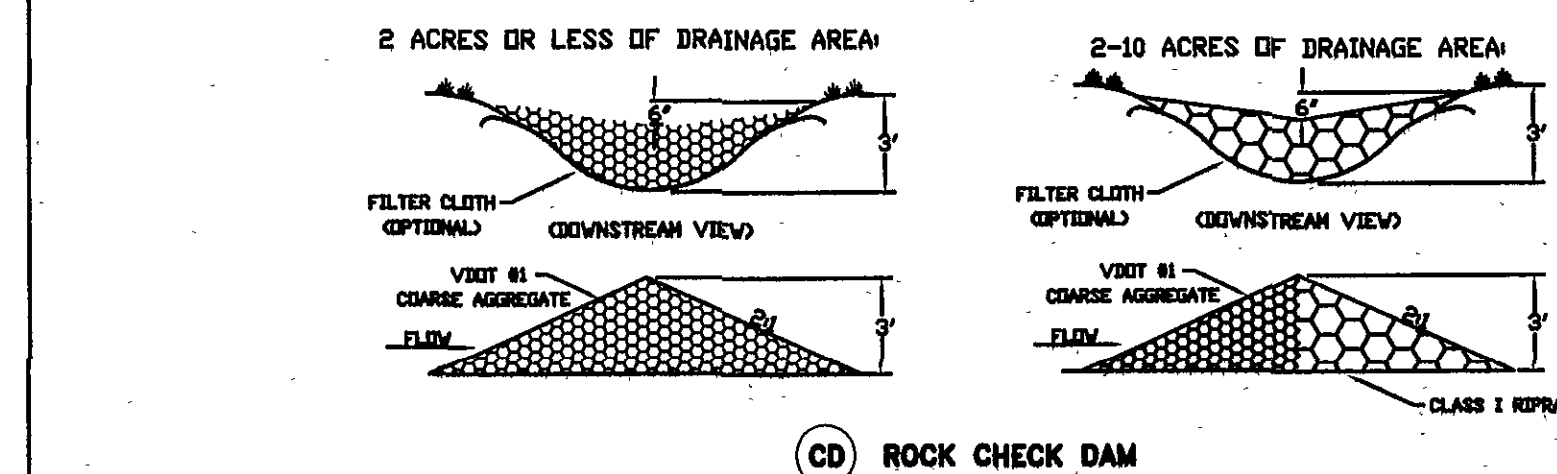
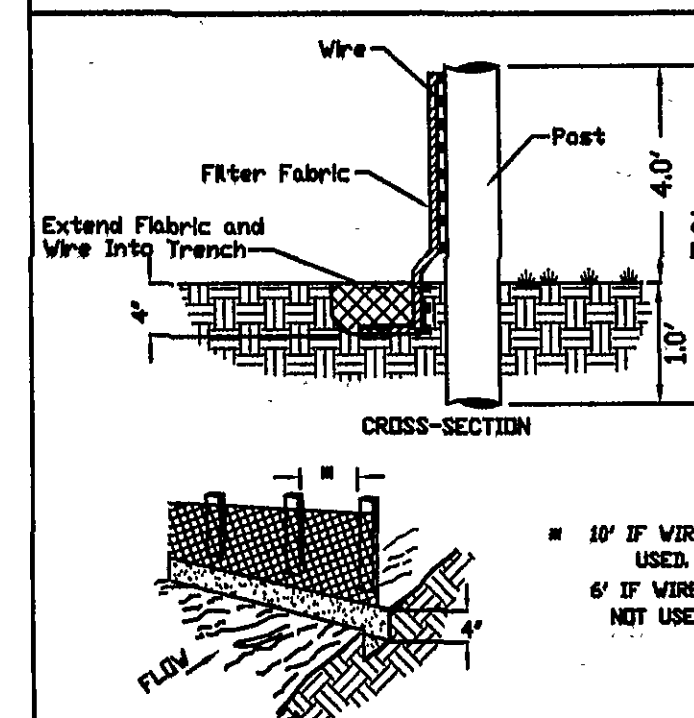
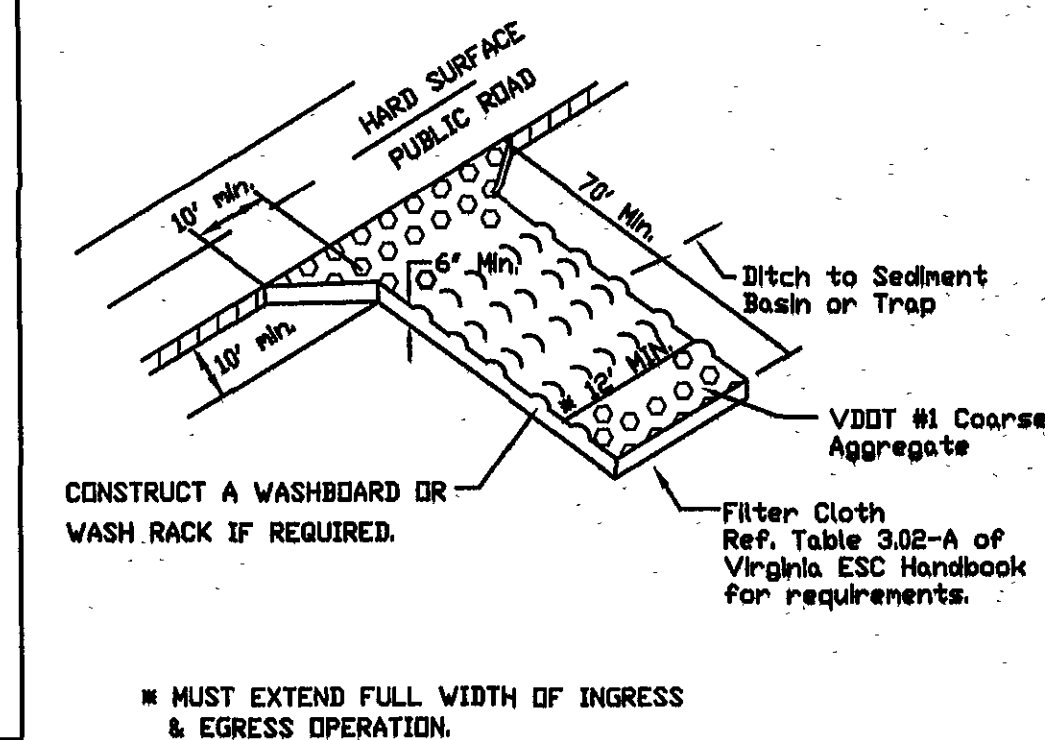
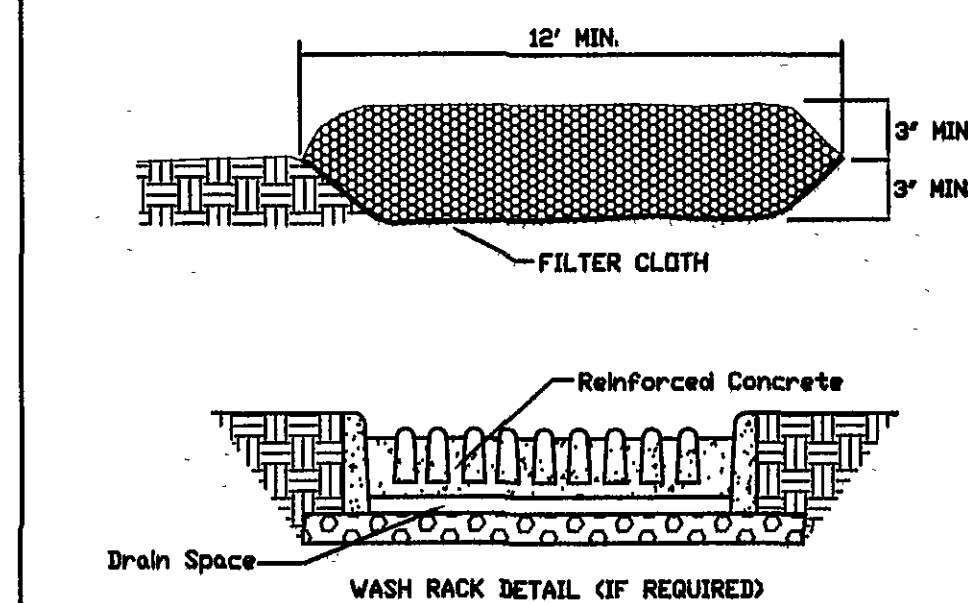
38-0-0 @ 7 LB / 1000 SF

MULCH: IF REQUIRED, SHALL BE USED OVER ALL SEEDDED AREAS AND SHALL BE APPLIED IN ACCORDANCE WITH SECTION 1.75 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, FRIABLE, SEEDBED. MAXIMUM SEEDING DEPTH SHALL BE 1/4 INCH.

TOTAL DISTURBED AREA = 0.56 AC.

**CD ROCK CHECK DAM****SF CONSTRUCTION OF A SILT FENCE****CE TEMPORARY GRAVEL CONSTRUCTION ENTRANCE****CE TEMPORARY GRAVEL CONSTRUCTION ENTRANCE**