CONTRACTOR SHALL PAY PARTICULAR ATTENTION TO THE FOLLOWING MINIMUM STANDARDS:

1. Permanent or temporary soil stabilization shall be applied to denuded areas within seven days after final grade is reached on any portion of the site. Temporary soil stabilization shall be applied within seven days to denuded areas that may not be at final grade but will remain dormant for longer than 14 days. Permanent stabilization shall be applied to areas that are to be left dormant for more than one year. *APPLY SEEDING MIXTURES IN ACCORDANCE WITH SPECIFICATIONS 3.31 AND 3.32 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH) TO ALL AREAS THAT DO NOT HAVE A NON-ERODABLE SURFACE AS SHOWN ON THE PLAN.*

2. During construction of the project, soil stock piles and borrow areas shall be stabilized or protected with sediment trapping measures. The applicant is responsible for the temporary protection and permanent stabilization of all soil stockpiles on site as well as borrow areas and soil intentionally transported from the project site. *ANY ONSITE SOIL STOCKPILE SHALL HAVE SILT FENCE ALONG THE DOWNHILL PERIMETER. ALSO, A TEMPORARY SEED MIX IS TO BE APPLIED OVER THE SOIL STOCKPILE IF TO REMAIN AS-IS FOR LONGER THAN 14 DAYS.*

3. A permanent vegetative cover shall be established on denuded areas not otherwise permanently stabilized. Permanent vegetation shall not be considered established until a ground cover is achieved that is uniform, mature enough to survive and will inhibit erosion. *SEE MINIMUM STANDARD 1.*

4. Sediment basins and traps, perimeter dikes, sediment barriers and other measures intended to trap sediment shall be constructed as a first step in any land-disturbing activity and shall be made functional before upslope land disturbance takes place. *INSTALL EROSION CONTROL MEASURES AS SHOWN ON THE PLAN AND OUTLINED IN THE CONSTRUCTION SEQUENCE.*

5. Stabilization measures shall be applied to earthen structures such as dams, dikes and diversions immediately after installation. *APPLY TEMPORARY SEEDING TO TEMPORARY DIVERSION DIKES AND ANY OTHER EARTHEN STRUCTURES IMMEDIATELY FOLLOWING CONSTRUCTION.*

6. Sediment traps and sediment basins shall be designed and constructed based upon the total drainage area to be served by the trap or basin.
   a. The minimum storage capacity of a sediment trap shall be 134 cubic yards per acre of drainage area and the trap shall only control drainage areas less than three acres.
   b. Surface runoff from disturbed areas that is comprised of flow from drainage areas greater than or equal to three acres shall be controlled by a sediment basin. The minimum storage capacity of a sediment basin shall be 134 cubic yards per acre of drainage area. The outfall system shall, at a minimum, maintain the structural integrity of the basin during a 25-year storm of 24-hour duration. Runoff coefficients used in runoff calculations shall correspond to a bare earth condition or those conditions expected to exist while the sediment basin is utilized.

   NOT APPLICABLE; NO SEDIMENT TRAPS OR BASINS ARE PROPOSED WITH THIS PLAN.

7. Cut and fill slopes shall be designed and constructed in a manner that will minimize erosion. Slopes that are found to be eroding excessively within one year of permanent stabilization shall be provided with additional slope stabilizing measures until the problem is corrected. *AREAS TO RECEIVE PERMANENT SEEDING ARE TO BE INSPECTED PERIODICALLY. RESEED ANY AREAS THAT DO NOT HAVE AN ESTABLISHMENT OF A GOOD STAND OF GRASS AFTER INITIAL APPLICATION OF PERMANENT SEEDING. APPLY SLOPE STABILIZATION MATTING WHERE INDICATED ON PLANS. ADDITIONAL SLOPE STABILIZATION MEASURES ARE TO BE CONSIDERED AS CONDITIONS DICTATE.*

8. Concentrated runoff shall not flow down cut or fill slopes unless contained within an adequate temporary or permanent channel, flume or slope drain structure. *CONCENTRATED FLOW DOWN SLOPES IS TO BE AVOIDED WITH THIS PLAN. SHOULD CONCENTRATED FLOW OCCUR, CONTRACTOR SHALL REPAIR OR IMPROVE THE GRADE TO DISBURSE FLOW ACROSS A BROAD AREA.*

9. Whenever water seeps from a slope face, adequate drainage or other protection shall be provided. *NOT APPLICABLE. SEEPAGE THROUGH SLOPES IS NOT ANTICIPATED TO BE ENCOUNTERED ON THIS PROJECT. SHOULD SEEPAGE OCCUR, ADEQUATE DRAINAGE SHALL BE ESTABLISHED TO CONVEY WATER TO A CONTROLLED POINT OF DISCHARGE AND PROTECT THE SLOPE.*

10. All storm sewer inlets that are made operable during construction shall be protected so that sediment-laden water cannot enter the conveyance system without first being filtered or otherwise treated to remove sediment. *INLET PROTECTION SHALL BE INSTALLED AS STORM DRAIN SYSTEM IS INSTALLED. SEE CONSTRUCTION SEQUENCE FOR MORE INFORMATION.*

11. Before newly constructed stormwater conveyance channels or pipes are made operational, adequate outlet protection and any required temporary or permanent channel lining shall be installed in both the conveyance channel and receiving channel. *CONSTRUCT OUTLET PROTECTION WHERE INDICATED ON PLAN, AND TO THE MINIMUM DIMENSIONS LISTED OR NOTED.*

12. When work in a live watercourse is performed, precautions shall be taken to minimize encroachment, control sediment transport and stabilize the work area to the greatest extent possible during construction. Nonerodible material shall be used for the construction of causeways and cofferdams. Earthen fill may be used for these structures if armored by nonerodible cover materials. *NOT APPLICABLE. NO LIVE WATERCOURSE IS ADJACENT TO THIS PROJECT AND NO WORK IN ANY LIVE WATERCOURSE IS ANTICIPATED WITH THESE PLANS.*

13. When a live watercourse must be crossed by construction vehicles more than twice in any six-month period, a temporary vehicular stream crossing constructed of nonerodible material shall be provided. *NOT APPLICABLE. NO LIVE WATERCOURSE IS ADJACENT TO THIS PROJECT AND NO WORK IN ANY LIVE WATERCOURSE IS ANTICIPATED WITH THESE PLANS.*

14. All applicable federal, state and local regulations pertaining to working in or crossing live watercourses shall be met. *NOT APPLICABLE. NO LIVE WATERCOURSE IS ADJACENT TO THIS PROJECT AND NO WORK IN ANY LIVE WATERCOURSE IS ANTICIPATED WITH THESE PLANS.*

15. The bed and banks of a watercourse shall be stabilized immediately after work in the watercourse is completed. *NOT APPLICABLE. NO LIVE WATERCOURSE IS ADJACENT TO THIS PROJECT AND NO WORK IN ANY LIVE WATERCOURSE IS ANTICIPATED WITH THESE PLANS.*

16. Underground utility lines shall be installed in accordance with the following standards in addition to other applicable criteria:
   a. No more than 500 linear feet of trench may be opened at one time.
   b. Excavated material shall be placed on the uphill side of trenches.
   c. Effluent from dewatering operations shall be filtered or passed through an approved sediment trapping device, or both, and discharged in a manner that does not adversely affect flowing streams or off-site property.
   d. Material used for backfilling trenches shall be properly compacted in order to minimize erosion and promote stabilization.
   e. Restabilization shall be accomplished in accordance with these regulations.
   f. Applicable safety regulations shall be complied with.

   UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE STANDARDS ABOVE.

17. Where construction vehicle access routes intersect paved or public roads, provisions shall be made to minimize the transport of sediment by vehicular tracking onto the paved surface. Where sediment is transported onto a paved or public road surface, the road surface shall be cleaned thoroughly at the end of each day. Sediment shall be removed from the roads by shoveling or sweeping and transported to a sediment control disposal area. Street washing shall be allowed only after sediment is removed in this manner. This provision shall apply to individual development lots as well as to larger land-disturbing activities. *FOLLOW ABOVE REQUIREMENTS FOR ACCESS TO THE SITE UTILIZING THE EXISTING ACCESS DRIVE CONNECTION TO STARKEY ROAD.*

18. All temporary erosion and sediment control measures shall be removed within 30 days after final site stabilization or after the temporary measures are no longer needed, unless otherwise authorized by the local program authority. Trapped sediment and the disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion and sedimentation. *REMOVE TEMPORARY MEASURES IN ACCORDANCE WITH ABOVE REQUIREMENTS, AND WITH THE PRIOR APPROVAL OF ROANOKE COUNTY.*

EROSION & SEDIMENT CONTROL COST ESTIMATE

ALL COSTS GIVEN ARE COMPLETE IN PLACE

DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST
CONSTRUCTION ENTRANCE	EACH	1	$1,200.00	$1,200.00
CONSTRUCTION ROAD STABILIZATION	S.F.	22,200	$0.35	$7,770.00
SILT FENCE	L.F.	1510	$4.00	$6,040.00
DIVERSION DIKE	L.F.	0	$5.00	$0.00
RIGHT-OF-WAY DIVERSION	L.F.	0	$5.00	$0.00
INLET PROTECTION	EACH	14	$150.00	$2,100.00
CULVERT INLET PROTECTION	EACH	1	$150.00	$150.00
TEMPORARY SEEDING	S.F.	42,700	$0.04	$1,708.00
SEDIMENT TRAP	EACH	0	$1,500.00	$0.00
OUTLET PROTECTION	EACH	1	$250.00	250.00
PERMANENT SEEDING AND MULCHING	S.F.	42,700	$0.05	$2,135.00
BLANKET MATTING	S.F.	8,468	$0.25	$2,117.00
SUB-TOTAL				$23,470.00
10% CONTINGENCY				$2,347.00
TOTAL PROJECT COST				$25,817.00

MINIMUM STANDARDS CONTINUED:

19. Properties and waterways downstream from development sites shall be protected from sediment deposition, erosion and damage due to increases in volume, velocity and peak flow rate of stormwater runoff for the stated frequency storm of 24-hour duration in accordance with the following standards and criteria:
   a. Concentrated stormwater runoff leaving a development site shall be discharged directly into an adequate natural or man-made receiving channel, pipe or storm sewer system. For those sites where runoff is discharged into a pipe or pipe system, downstream stability analyses at the outfall of the pipe or pipe system shall be performed.
   b. Adequacy of all channels and pipes shall be verified in the following manner:
      (1) The applicant shall demonstrate that the total drainage area to the point of analysis within the channel is one hundred times greater than the contributing drainage area of the project in question; or
      (2) (a) Natural channels shall be analyzed by the use of a two-year storm to verify that stormwater will not overtop channel banks nor cause erosion of channel bed or banks; and
          (b) All previously constructed man-made channels shall be analyzed by the use of a ten-year storm to verify that stormwater will not overtop its banks and by the use of a two-year storm to demonstrate that stormwater will not cause erosion of channel bed or banks; and
          (c) Pipes and storm sewer systems shall be analyzed by the use of a ten-year storm to verify that stormwater will be contained within the pipe or system.
   c. If existing natural receiving channels or previously constructed man-made channels or pipes are not adequate, the applicant shall:
      (1) Improve the channel to a condition where a ten-year storm will not overtop the banks and a two-year storm will not cause erosion to the channel bed or banks; or
      (2) Improve the pipe or pipe system to a condition where the ten-year storm is contained within the appurtenances; or
      (3) Develop a site design that will not cause the pre-development peak runoff rate from a two-year storm to increase when runoff outfalls into a natural channel or will not cause the pre-development peak runoff rate from a ten-year storm to increase when runoff outfalls into a man-made channel; or
      (4) Provide a combination of channel improvement, stormwater detention or other measures which is satisfactory to the VESCP authority to prevent downstream erosion.
   d. The applicant shall provide evidence of permission to make the improvements.
   e. All hydrologic analyses shall be based on the existing watershed characteristics and the ultimate development of the subject project.
   f. If the applicant chooses an option that includes stormwater detention, he shall obtain approval from the VESCP of a plan for maintenance of the detention facilities. The plan shall set forth the maintenance requirements of the facility and the person responsible for performing the maintenance.
   g. Outfall from a detention facility shall be discharged to a receiving channel, and energy dissipater shall be placed at the outfall of all detention facilities as necessary to provide a stabilized transition from the facility to the receiving channel.
   h. All on-site channels must be verified to be adequate.
   i. Increased volumes of sheet flows that may cause erosion or sedimentation on adjacent property shall be diverted to a stable outlet, adequate channel, pipe or pipe system, or to a detention facility.
   j. In applying these stormwater runoff criteria, individual lots or parcels in a residential, commercial or industrial development shall not be considered to be separate development projects. Instead, the development, as a whole, shall be considered to be a single development project. Hydrologic parameters that reflect the ultimate development condition shall be used in all engineering calculations.
   k. All measures used to protect properties and waterways shall be employed in a manner which minimizes impacts on the physical, chemical and biological integrity of rivers, streams and other waters of the state.
   l. Any plan approved prior to July 1, 2014, that provides for stormwater management that addresses any flow rate capacity and velocity requirements for natural or man-made channels shall satisfy the flow rate capacity and velocity requirements for natural and man-made channels if the practices are designed to
      (i) detain the water quality volumes and release it over 48 hours;
      (ii) detain and release over 24-hour period the expected rainfall resulting from the one year, 24-hour storm and;
      (iii) reduce the allowable peak flow rate resulting from the 1.5, 2, and 10-year, 24-hour storms to a level that is less than or equal to the peak flow rate from the site assuming it was in good forested condition, achieved through multiplication of the forested peak flow rate by a reduction factor that is equal to the runoff volume from the site when it was in a good forested condition divided by the runoff volume from the site in its proposed condition, and shall be exempt from any flow rate capacity and velocity requirements for natural or man-made channels as defined in any regulations promulgated pursuant to 10.1-562 or 10.1-570 of the Act.
   m. For plans approved on and after July 1, 2014, the flow rate capacity and velocity requirements of 10.1-561 A of the Act and this subsection shall be satisfied by compliance with water quantity requirements in the Stormwater Management Act (10.1-603.2 et seq. of the Code of Virginia) and attendant regulations, unless such land-disturbing activities are in accordance with 4VAC50-60-48 of the Virginia Stormwater Management Program (VSMP) Permit Regulations.
   n. Compliance with the water quantity minimum standards set out in 4VAC50-60-66 of the Virginia Stormwater Management Program (VSMP) Permit Regulations shall be deemed to satisfy the requirements of Minimum Standard 19.

MS-19 IS SATISFIED BY COMPLIANCE WITH SUBSECTION "n", ABOVE.

EROSION CONTROL NARRATIVE

PROJECT DESCRIPTION
THE PROJECT AREA IS LOCATED ALONG STARKEY ROAD IN ROANOKE COUNTY AND CONSISTS OF SITE GRADING AND CONSTRUCTION OF TWO MINI-WAERHOUSE BUILDINGS. TOTAL DISTURBED AREA IS APPROXIMATELY 2.8 ACRES.

EXISTING SITE CONDITIONS
THE SITE IS CURRENTLY USED AS A PORTION OF A PLANT NURSERY, GRASS-COVERED WITH GRAVEL PATHWAYS. THE TOPOGRAPHY IS NEARLY LEVEL, GENTLY SLOPING TO THE SOUTH, DRAINING TO AN EXISTING DRY CHANNEL.

ADJACENT AREAS
THE DEVELOPMENT AREA IS WHOLLY SURROUNDED BY THE ORIGINAL VIRGINIA VARSITY STORAGE PARCEL AND PARENT TRACT OF GREENBRIER NURSERY. VIRGINIA VARSITY IS SURROUNDED BY INDUSTRIAL USES LOCATED TO THE WEST AND NORTH, RESIDENTIAL PARCELS AND A COMMERCIAL PARCEL TO THE EAST. THE REMAINING GREENBRIER NURSERY PARCEL IS LOCATED TO THE SOUTH.

OFFSITE AREAS
NO OFFSITE AREAS ARE ASSOCIATED WITH THIS PLAN. ALL MATERIAL THAT IS REMOVED FROM OR DELIVERED TO THIS SITE IN ASSOCIATION WITH THIS PROJECT SHALL BE FROM A PERMITTED CUT OR FILL SITE.

SOILS
SOILS INFORMATION IS BASED ON AN INSPECTION OF THE USDA WEB SOIL SURVEY AND HAS NOT BEEN FIELD VERIFIED. THE ONSITE SOILS ARE INDICATED TO BE DERROC COBBLY SANDY LOAM (MAP UNIT 13A, 0 TO 4% SLOPES) AND EDGEMONT CHANNERY SANDY LOAM (MAP UNIT 15C, 7 TO 15% SLOPES).

THE DERROC SOIL, HYDROLOGIC SOIL GROUP A, POSSESSES THE FOLLOWING CHARACTERISTICS AND PROPERTIES:
DEPTH TO RESTRICTIVE FEATURE: MORE THAN 80 INCHES — DEPTH TO WATER TABLE: MORE THAN 80 INCHES
DRAINAGE CLASS: WELL DRAINED — AVAILABLE WATER CAPACITY: LOW
PERMEABILITY: MODERATELY HIGH TO VERY HIGH — RUNOFF CLASS: VERY LOW
TYPICAL PROFILE: 0 TO 4 INCHES – COBBLY SANDY LOAM; 4 TO 31 INCHES – VERY COBBLY SANDY LOAM; 31 TO 65 INCHES – EXTREMELY COBBLY LOAMY SAND

THE EDGEMONT SOIL, HYDROLOGIC SOIL GROUP A, POSSESSES THE FOLLOWING CHARACTERISTICS AND PROPERTIES:
DEPTH TO RESTRICTIVE FEATURE: MORE THAN 80 INCHES — DEPTH TO WATER TABLE: MORE THAN 80 INCHES
DRAINAGE CLASS: WELL DRAINED — AVAILABLE WATER CAPACITY: LOW
PERMEABILITY: MODERATELY HIGH TO HIGH — RUNOFF CLASS: LOW
TYPICAL PROFILE: 0 TO 6 INCHES – CHANNERY SANDY LOAM; 6 TO 38 INCHES – CLAY LOAM; 38 TO 62 INCHES – LOAM

CRITICAL AREAS
THE CONTRACTOR SHALL TAKE SPECIAL CARE TO MINIMIZE THE POTENTIAL FOR ANY SEDIMENT LEAVING THE SITE ONTO ADJACENT PROPERTY, INTO THE EXISTING DRAINAGE CHANNEL AND TO STARKEY ROAD. THE EXISTING CHANNEL IS TO BE UNDISTURBED, EXCEPT AS NECESSARY FOR THE INSTALLATION OF NEW PIPE, AND SHALL BE MONITORED REGULARLY AND PROTECTED THROUGHOUT THE CONSTRUCTION PROCESS. OUTFALL AREA FOR THE STORM DRAIN SYSTEM AND THE TOE OF ALL FILL SLOPES SHALL BE INSPECTED REGULARLY.

MINIMUM STANDARDS
REFER TO DEQ MINIMUM STANDARDS.

EROSION AND SEDIMENT CONTROL MEASURES

CONSTRUCTION ENTRANCE (3.02) – A STONE CONSTRUCTION ENTRANCE WILL BE INSTALLED TO MINIMIZE THE AMOUNT OF MUD TRANSPORTED ONTO EXISTING ROADS.

CONSTRUCTION ROAD STABILIZATION (3.03) – TO REDUCE THE EROSION AND SUBSEQUENT REGRADING OF PERMANENT DRIVE AREAS BETWEEN THE TIME OF INITIAL GRADING AND FINAL STABILIZATION, THESE ROADS WILL BE TEMPORARILY STABILIZED WITH STONE IMMEDIATELY AFTER GRADING.

SILT FENCE (3.05) – SILT FENCE WILL BE INSTALLED AT THE LOWER ENDS OF THE PROJECT SITE TO INTERCEPT SEDIMENT LADEN RUN-OFF PRIOR TO EXITING THE SITE.

INLET PROTECTION (3.07) – INLET PROTECTION WILL BE INSTALLED AT EACH STORM DRAIN INLET TO MINIMIZE THE AMOUNT OF SEDIMENT LADEN RUNOFF FROM ENTERING THE STORM DRAIN SYSTEM.

CULVERT INLET PROTECTION (3.08) – INLET PROTECTION WILL BE INSTALLED AT UPSTREAM END OF STORM DRAIN CULVERT TO MINIMIZE THE AMOUNT OF SEDIMENT LADEN RUNOFF ENTERING THE STORM DRAIN SYSTEM.

OUTLET PROTECTION (3.18) – TO PREVENT SCOUR AT STORMWATER OUTLETS, TO PROTECT THE OUTLET STRUCTURE, AND TO MINIMIZE THE POTENTIAL FOR DOWNSTREAM EROSION BY REDUCING THE VELOCITY AND ENERGY OF CONCENTRATED FLOWS.

TEMPORARY SEEDING (3.31) – TEMPORARY SEEDING SHALL BE APPLIED TO TEMPORARY DIVERSION DIKES, TOPSOIL STOCKPILES, AND ALL AREAS TO BE ROUGH GRADED, BUT NOT FINISHED GRADED DURING THE INITIAL PHASE OF CONSTRUCTION. TEMPORARY SEEDING SHALL BE FAST GERMINATING, TEMPORARY VEGETATION AND INSTALLED IMMEDIATELY FOLLOWING GRADING, OR INSTALLATION IF A TEMPORARY MEASURE. SEE ALSO MINIMUM STANDARDS.

PERMANENT SEEDING (3.32) – PERMANENT SEEDING SHALL BE INSTALLED ON ALL DISTURBED AREAS OF THE SITE NOT OTHERWISE STABILIZED.

MULCHING (3.35) – 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.

SOIL STABILIZATION & MATTING (3.36) – SLOPES 3:1 OR GREATER SHALL HAVE A PROTECTIVE COVERING OR MAT INSTALLED TO MINIMIZE EROSION AND AID IN ESTABLISHMENT OF PERMANENT VEGETATIVE STABILIZATION.

PERMANENT STABILIZATION
AREAS NOT COVERED BY DRIVEWAYS, WALKS OR OTHER PERMANENT HARD SURFACE SHALL BE STABILIZED WITH PERMANENT SEEDING. THE CONTRACTOR SHALL ENSURE THAT A STRONG STAND OF GRASS IS ESTABLISHED BEFORE THE REMOVAL OF EROSION CONTROL MEASURES.

MAINTENANCE:
ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED AT LEAST ONCE EVERY FOUR BUSINESS DAYS OR AT LEAST ONCE EVERY FIVE BUSINESS DAYS AND NO LATER THAN 48 HOURS FOLLOWING A MEASURABLE STORM EVENT. 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. THE CONTRACTOR AND RLD SHALL PAY PARTICULAR ATTENTION TO THE FOLLOWING:

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.

SILT FENCE SHALL BE INSPECTED REGULARLY AND ACCUMULATED SEDIMENT SHALL BE REMOVED AS NECESSARY TO MAINTAIN FUNCTIONALITY.

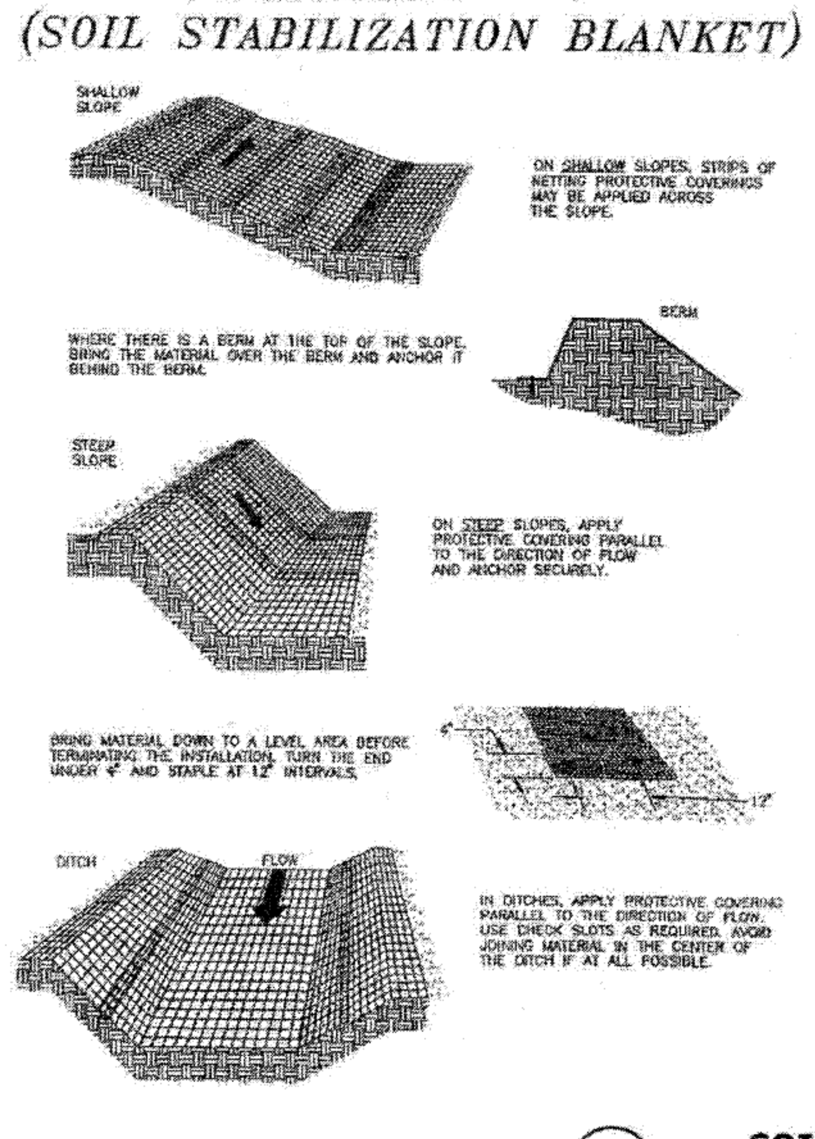
EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED UNTIL AFTER ALL DISTURBED AREAS HAVE BEEN PERMANENTLY STABILIZED AND THEN TEMPORARY MEASURES PROPERLY REMOVED.

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.

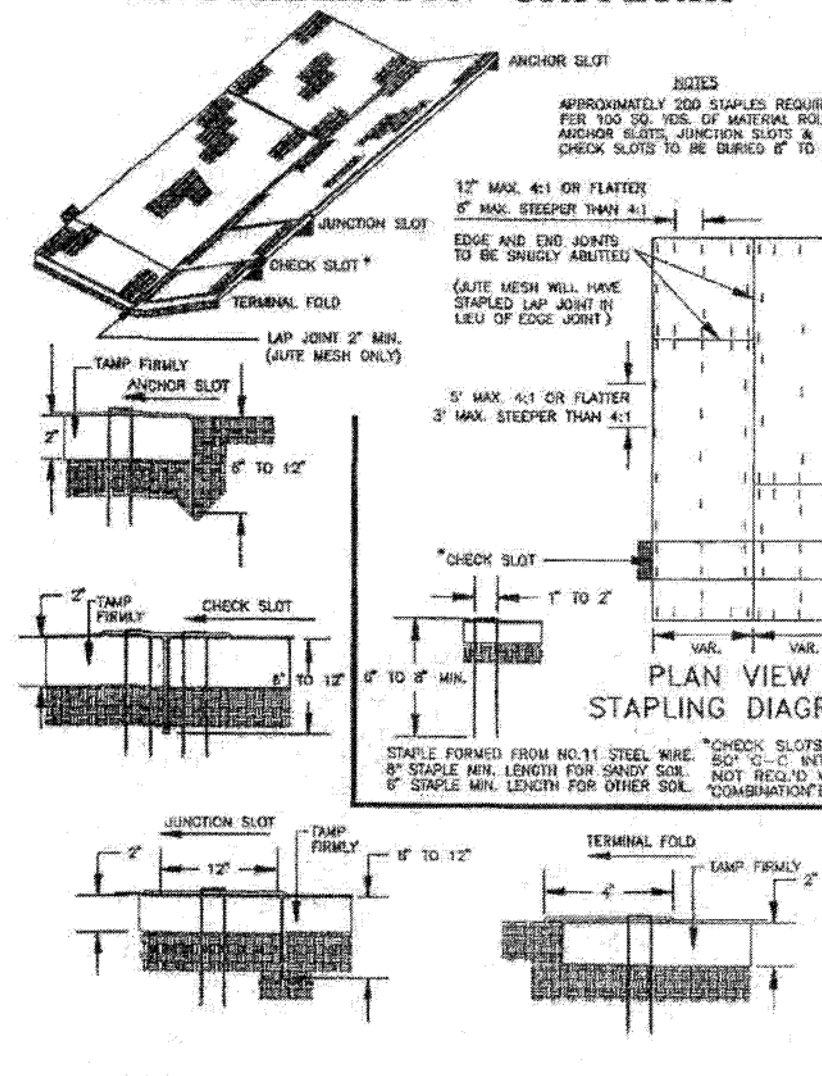
THE CONSTRUCTION ENTRANCE SHALL BE CHECKED REGULARLY TO ENSURE THAT MUD IS NOT TRANSPORTED ONTO THE ADJACENT ROADS. THE STONE SHALL BE REMOVED, CLEANED, OR REPLACED AS REQUIRED FOR THE CONSTRUCTION ENTRANCE TO FUNCTION PROPERLY.

STORMWATER MANAGEMENT CONSIDERATION:
THE INCREASE IN STORMWATER RUNOFF RESULTING FROM NEW IMPERVIOUS SURFACES WILL BE ATTENUATED BY USE OF AN UNDERGROUND DETENTION FACILITY. REFER TO STORMWATER MANAGEMENT CALCULATIONS FOUND IN THE "PROJECT CALCULATIONS" WORKBOOK ASSOCIATED WITH THIS PROJECT.

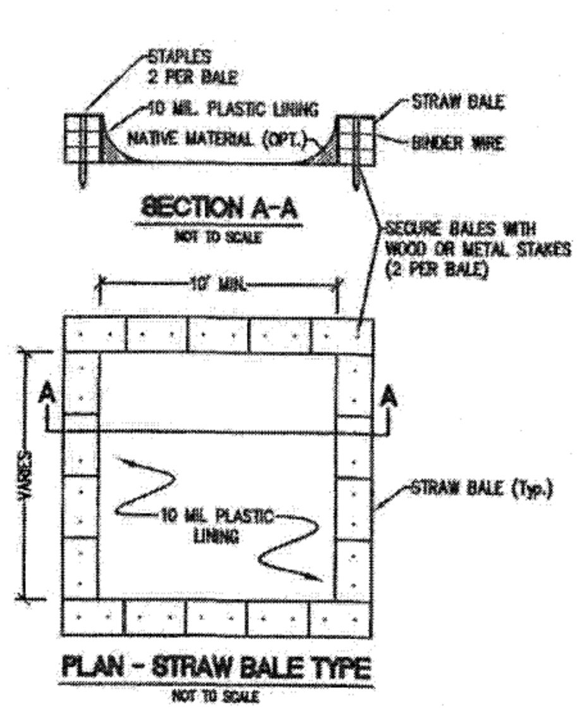
TYPICAL ORIENTATION OF TREATMENT – 1 (SOIL STABILIZATION BLANKET)

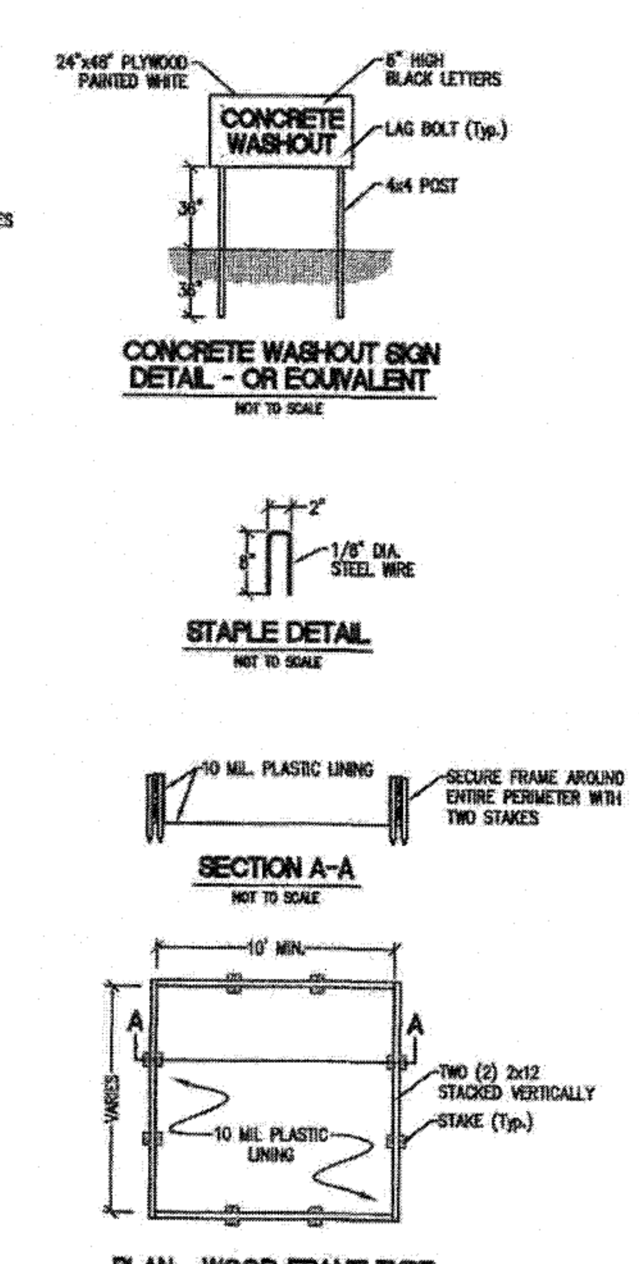


TYPICAL TREATMENT – 1 (SOIL STABILIZATION BLANKET) INSTALLATION CRITERIA



(B/M) **SOIL STABILIZATION BLANKET AND MATTING**





CONCRETE WASHOUT NOTES:

1. TEMPORARY CONCRETE WASHOUT ACTUAL LAYOUT TO BE DETERMINED IN THE FIELD
2. TEMPORARY WASHOUT FACILITIES SHOULD BE LOCATED A MINIMUM OF 50' FROM STORM DRAIN INLETS, OPEN DRAINAGE CHANNELS AND WATERCOURSES.
3. A CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30' OF THE TEMPORARY CONCRETE WASHOUT FACILITY.
4. MATERIALS AND PROCEDURES USED TO CONSTRUCT ABOVE-GRADE TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE ADEQUATE FOR THE ANTICIPATED VOLUME OF USE FOR THE PROJECT.
5. PLASTIC LINING MATERIAL SHALL BE A MINIMUM 10 MIL POLYETHYLENE SHEETING, FREE OF TEARS, HOLES OR OTHER DEFECTS THAT WOULD COMPROMISE THE INTEGRITY OF THE LINING.
6. ONCE CONCRETE WASTE MATERIAL HAS HARDENED, THE CONCRETE SHALL BE BROKEN UP, REMOVED AND DISPOSED OF OFF SITE IN ACCORDANCE WITH ALL DISPOSAL REGULATIONS.
7. MATERIALS USED TO CONSTRUCT TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE REMOVED FROM THE SITE AND DISPOSED OF OR RECYCLED IN ACCORDANCE WITH ALL DISPOSAL REFULATIONS.
8. HOLES, DEPRESSIONS OR OTHER GROUND DISTURBANCE CAUSED BY THE REMOVAL OF TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE BACKFILLED, REPAIRED AND STABILIZED TO PREVENT EROSION.

CONCRETE WASHOUT

NO.	TITLE	KEY	SYMBOL
3.02	TEMPORARY GRAVEL CONSTRUCTION ENTRANCE	CE	
3.03	CONSTRUCTION ROAD STABILIZATION	CRS	
3.05	SILT FENCE	SF	
3.07	INLET PROTECTION	IP	
3.08	CULVERT INLET PROTECTION	CIP	
3.18	OUTLET PROTECTION	OP	
3.31	TEMPORARY SEEDING	TS	
3.32	PERMANENT SEEDING	PS	
3.35	MULCHING	MU	
3.36	SOIL STABILIZATION BLANKETS AND MATTING	B/M	TREAT. 1 TREAT. 2

GENERAL EROSION AND SEDIMENT CONTROL NOTES

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 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.
7. 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 CONTROL PLAN OR MEASURES MAY BE REQUIRED FOR THIS AREA.

TOTAL DISTURBED AREA = 2.77 AC. = 120,788 SQ. FT.

TEMPORARY STABILIZATION

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 14 DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE YEAR.

(TS) TEMPORARY SEEDING MIXTURE

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

LIME: 90 LB / 1000 SF PULVERIZED AGRICULTURAL LIMESTONE
FERTILIZER: 10-10-10 @ 10 LB / 1000 SF

PERMANENT STABILIZATION

ALL AREAS DISTURBED BY CONSTRUCTION WILL BE STABILIZED WITH PERMANENT SEEDING WITHIN 7 DAYS OR IMMEDIATELY FOLLOWING FINISH GRADING. SEEDING WILL BE DONE ACCORDING TO STANDARD AND SPECIFICATION 3.32 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK. PERMANENTLY SEEDED AREAS SHALL BE PROTECTED DURING ESTABLISHMENT WITH STRAW MULCH.

(PS) PERMANENT SEEDING MIXTURE

SEEDING AREA:		SEEDING RATE:
GENERAL TURF		
	K-31 FESCUE	200 lbs/Ac
	(Optional) PERENNIAL RYEGRASS	20 lbs/Ac
GENERAL SLOPE (3:1 or less)		
	K-31 FESCUE	128 lbs/Ac
	RED TOP GRASS	2 lbs/Ac
	SEASONAL NURSE CROP	20 lbs/Ac
STEEP SLOPE (Greater than 3:1)		
	K-31 FESCUE	108 lbs/Ac
	RED TOP GRASS	2 lbs/Ac
	SEASONAL NURSE CROP	20 lbs/Ac
	CROWNVETCH	20 lbs/Ac

SEASONAL NURSE CROP SCHEDULE:

March, April – May 15th	ANNUAL RYE
May 16th – August 15th	FOXTAIL MILLET
August 16th – September, October	ANNUAL RYE
November – February	WINTER RYE

LIME: 90 LB / 1000 SF PULVERIZED AGRICULTURAL LIMESTONE
FERTILIZER: 10-20-10 @ 12 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.
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.

APPROVED

Lumsden Associates, P.C.
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ROANOKE, VIRGINIA 24018
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COMMONWEALTH OF VIRGINIA
HOWARD P. BOGGESS, II
Lic. No. 000929
12/20/18
LANDSCAPE ARCHITECT

EROSION & SEDIMENT CONTROL NARRATIVE, NOTES & DETAILS

Site Development Plan for
VIRGINIA VARSITY STORAGE EXPANSION
Prepared for
VIRGINIA VARSITY STORAGE
CAVE SPRING MAGISTERIAL DISTRICT
ROANOKE COUNTY, VIRGINIA

REVISIONS

NO.	DATE	DESCRIPTION
1		
2		
3		
4		
5		

DATE: December 20, 2018
SCALE: NO SCALE
COMMISSION NO: 17-057
SHEET 8 OF 8