Management Strategies

1. Sequence construction so that grading operations can begin and end as quickly as possible.
2. Temporary seeding or other stabilization must follow immediately after grading.
3. Clearly mark areas which are not to be disturbed with flags, signs, etc.
4. The responsible land disturber must be responsible for the installation and maintenance of all erosion and sediment control practices.
5. After achieving adequate stabilization, the temporary E&S controls must be cleaned up and removed.

Permanent Stabilization

All disturbed areas that will remain dormant for more than one year must be stabilized with permanent seeding immediately following grading. Seeding will be done in accordance with the planting schedule provided in the notes sheets in the site plan drawings. In all seeding operations, seed must be applied prior to mulching as approved by the CO.

Maintenance and Inspection

In general, check all erosion and sediment control measures daily, after every significant rainfall (0.5" in a 24-hour duration), and in accordance with the Stormwater Pollution Prevention Plan (SWPPP). In particular, check the following:

1. Inspect fiber roll weekly and after each runoff event. Remove sediment deposits from the fiber roll when it reaches the maximum height of the device. Replace damaged fiber roll within 24 hours of inspection.
2. Check SCRE regularly for sediment buildup, which will prevent the clearing of wheel traffic. If SCRE is clogged by sediment, remove and clean, or replace.
3. Check the seeded areas regularly to ensure that a good stand of vegetation is maintained. Areas must be reseeded as needed to establish and maintain a good stand of vegetation.
4. Check RECP regularly to ensure it has not been damaged. Replace any damaged RECP.

Soils

The following soil types were identified within the project site: Camoccia fine sand, hydrologic soil group is classified as A. Refer to the SWPPP for a map of specific soil type cover.

Sequence of Construction

Phase I: Establish Perimeter Controls

Prior to any clearing, grubbing, or excavation, construct perimeter controls to ensure that disturbed sediment does not leave the project site. Perimeter controls include fiber roll and silt fence.

Phase II: Intermediate Controls

Prior to any heavy machinery or truck vehicles entering the site, construct a SCE. At the end of each day's rough grading operations, shape earthwork to minimize and control erosion from storm runoff. Provide fiber roll around all stockpiled excavated roadway material. Apply temporary seeding to stockpiles remaining in place longer than 14 days within 7 days of stockpiling. Provide watering for dust control within the construction limits, on active haul roads, and in pits and staging areas. Install inlet protection prior to diverting water through inlets. Upon completion of clearing, ensure that culvert entrances, outfalls, and outlet chains are at final grade and are stabilized (with vegetation, riprap, or pavement) before routing drainage through culverted areas.

Phase III: Final Construction/Stabilization

After completion of roadway construction, do the following as directed by the CO: finish grading, place riprap, and arrange permanent turf establishment to any remaining disturbed areas where necessary, replace fiber roll around any remaining permanent establishment to disturbed areas where vegetation has not been established; inspect, clean, and repair all culvert outlet protection, riprap basins, and stabilized channels; remove all devices used for dewatering; and remove silt fence only after all upslope areas are stabilized and vegetation is well established.
VESCH Minimum Standards (MS-19)

This section presents the guidelines & requirements identified in Chapter 6 of the Virginia Erosion & Sediment Control Handbook. All applicable minimum standards, from the Virginia Erosion & Sediment Control Regulations, MS-1MS-19 must be addressed.

1. Permanent or temporary soil stabilization shall be applied to erodible areas within seven days after final soil is reached on any portion of the site. Temporary soil stabilization shall be applied within seven days to erodible areas that may not be at final grade but will remain permanent for longer than 13 days. Permanent stabilization shall be applied to areas to be left permanent for more than one year.

2. During construction of the project, soil stockpiles and borrow areas shall be stabilized or protected with sediment trapping measures. Temporary protection and permanent stabilization shall be applied to all soil stockpiles onsite and borrow areas or soil intentionally transferred offsite.

3. Vegetative cover shall be established on erodible areas that are 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.

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 maintained to prevent upslope disturbance takes place.

5. Stabilization measures shall be applied to earthworks of structures such as dams, dikes and other diversions immediately after installation.

6. Sediment traps and sediment basins shall be designed and constructed based on the total drainage area to be served by the trap or basin. Sediment traps shall be constructed to control drainage areas less than three acres with minimum storage capacity of 134 cubic yards/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 hours.

7. Cut and fill slopes shall be designed and constructed in a manner that will prevent erosion. Slopes that are found to be eroding excessively within one year of permanent stabilization shall be provided with additional slope stabilization measures until the problem is corrected.

8. Concentrated runoff shall not flow down cut or fill slopes unless contained within an adequate temporary or permanent channel, flume or slope drain structures.

9. Whenever water seeps from a slope face, adequate drainage or other protection shall be provided.

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.

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.

12. When work in a live watercourse is performed, precautions shall be taken to minimize erosion, control sediment transport and stabilize the work area to the greatest extent possible during construction. Non-erodible material shall be used for the construction of caissons and other support of structures. Earthen fill may be used for these structures if armored by non-erodible cover materials.

13. When a live watercourse must be crossed by construction vehicles more than twice in any six-month period, a temporary vehicular stream crossing stabilized of non-erodible material shall be provided.

14. All applicable federal, state, and local regulations pertaining to working in or crossing live watercourses shall be met.

15. The bed and banks of a watercourse shall be stabilized immediately after work in the watercourse is completed.

16. Underground utility lines shall be installed in accordance with the following standards in addition to the 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 ditching operations shall be filtered through or passed through an approved sediment trapping device, or both, and discharged in a manner that does not adversely affect flowing streams on-off site property.

D. Material used for backfilling trenches shall be properly compacted in order to minimize erosion and promote stabilization.

E. Re-stabilization shall be accomplished in accordance with these regulations.

F. Applicable safety regulations shall be complied with.

17. Where construction vehicles access routes intersect paved or public roads, provisions shall be made to minimize the impact of sediment-laden water by vehicular tracking onto the paved surface. Where sediment is transported onto a public or private road surface, the road surface shall be cleaned thoroughly at the end of the 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 sediments are removed in this manner. This provision shall apply to individual development lots as well as to larger land disturbing activities.

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 sediment resulting from the deposition of temporary measures shall be permanently stabilized to prevent further erosion and sedimentation.

19. Properties and waterways downstream from development sites shall be protected from the sediment deposition, erosion and damage due to increases in volume, velocity and peak flow rate of stormwater runoff for the stated frequency of storm event of 24-hour duration in accordance with the following standards:

A. Contractor must backfill trench greater than 50 linear feet.

B. Contractor must place excavated material uplift from utility trenches.

C. Contractor must not discharge sediment-laden runoff or groundwater. Contractor shall install and maintain sediment trapping device prior to discharge.

D. Contractor to compact trenches in accordance with the plans and specifications.

E. Contractor must re-stabilize any disturbed area until permanent stabilization is achieved.

F. Contractor to adhere to all applicable safety regulations.

G. Contractor to sweep streets and elave dust daily within the project area.

H. Contractor to remove temporary filter barriers following final stabilization and prior to project close out.

I. Contractor must discharge treated or filtered runoff directly to the open space unless otherwise directed.
**Temporary Seeding**

<table>
<thead>
<tr>
<th>Planting Dates</th>
<th>Species</th>
<th>Rate (lbs./acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>September 1 - February 15</td>
<td>50/50 mix of Annual Ryegrass (Lolium multiflorum) and Cereal (winter) Rye (Secale cereale)</td>
<td>50 - 100</td>
</tr>
<tr>
<td>February 16 - April 30</td>
<td>Annual Ryegrass (Lolium multiflorum)</td>
<td>60 - 100</td>
</tr>
<tr>
<td>May 1 - August 31</td>
<td>German Millet (Setaria italica)</td>
<td>50</td>
</tr>
</tbody>
</table>

The following criteria shall apply to all seed species listed above:

**Seeding Procedures:**
Apply seed evenly with a broadcast seeder, cultipack seeder, or hydrosower. Plant small grains with no more than 1 inch deep. Plant grasses and legumes with no less than one quarter inch soil cover.

**Mulching Procedures:**
Seed applied in the fall for winter cover and seed applied during hot and dry summer months shall be mulched according to LIST SPEC, except that hydromulches shall not be acceptable during these periods.
Temporary seeding applications performed under favorable soil and site conditions during optimum spring and fall seeding dates, as listed above, may not require mulch.

**Permanent Seeding**

<table>
<thead>
<tr>
<th>Species</th>
<th>Rate (lbs./acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Little Bluestem (Schizachyrium scoparium)</td>
<td>50</td>
</tr>
<tr>
<td>Purpletop (Tridens fascus)</td>
<td>15</td>
</tr>
<tr>
<td>Switchgrass, Shelter (Panicum virgatum)</td>
<td>15</td>
</tr>
<tr>
<td>Virginia Wildrye (Elymus virginicus)</td>
<td>20</td>
</tr>
</tbody>
</table>