EROSION & SEDIMENT CONTROL NARRATIVE

PROJECT DESCRIPTION

The purpose of this project is to construct a proposed 12,000 sf metal building with attached 2,000 sf canopy overhang. This project will include all necessary grading and utility construction to serve the project site with a disturb area of 0.77 AC (33,541 SF)

The proposed site is located on approximately 0.9550 acres on a lot half grass and half asphalt parking lot located in the City of Roanoke, VA.

The project site is bordered to the north of by Centre Ave., N.W., to the east by a residential property (zoned CN), to the south by a commercial property, and to the east by 12th St., N.W.

Soils found at this site are common to the area. Chiswell-Litz-Urban land complex, 2% to 15% slope; Urban land

CRITICAL EROSION AREAS

1. The potential critical erosion areas are the exposed building pad and loading

EROSION AND SEDIMENT CONTROL MEASURES

Unless otherwise indicated, all vegetative and structural erosion and sediment control practices shall be constructed and maintained according to minimum standards and specifications of the handbook. The minimum standards of the VESCR shall be adhered to unless otherwise waived or approved by a variance.

STRUCTURAL PRACTICES

- 1. Silt Fence (Section 3.05) Temporary silt fences will be installed as indicated on the site plan.
- 2. Temporary Seeding (Section 3.31) Temporary seeding will be placed on all disturbed areas that will not be brought to final grade within one year or less. Temporary seeding will aid in the reduction of dust and sediment. Temporary seeding will be

Sept. 1 - Feb. 15 50/50 Mix of Annual Ryearass 50-100 (lbs./acre) Feb. 16 - Apr. 30 Annual Ryegrass 60-100 (lbs./acre) May 1 - Aug. 31 German Millet 50 (lbs./acre)

3. Permanent Seeding (Section 3.32) After final grading permanent seeding will be employed to reduce erosion and sediment yield.

> General Slope (3:1 OR LESS) Kentucky 31 Fescue 128 lbs. Red Top Grass 2 lbs. 20 lbs. Seasonal Nurse Crop* 150 lbs.

Low-Maintenance Slope (Steeper than 3:1) Kentucky 31 Fescue Red Top Grass 2 lbs. Seasonal Nurse Crop* 20 lbs. Crownvetch** 20 lbs. 150 lbs.

VESCH STATE MINIMUM STANDARDS (1992 EDITION)

IN STRUCTURAL PRACTICES ON THE SH. AND NOTED ON SH. C-3.

survive and will inhibit erosion. NOTED IN PERMANENT STABILIZATION, SH. C-1

takes place. NOTED IN MANAGEMENT, PARAGRAPH 2 ON THIS SH. AND ON SH. C-3

the trap shall only control drainage areas less than three acres. N/A

MAINTENANCE, PARAGRAPH 3, SH. C-3

installation. N/A

by the trap or basin. N/A

utilized. N/A

channel. N/A

channel, flume or slope drain structure. N/A

*Use seasonal nurse crop in accordance with seeding dates as stated

March, April through May 15th Annual Rye Foxtail Millet May 16th through August 15th August 16th through September, October Annual Rye November through February Winter Rye

**If Flatpea is used, increase to 30 lbs./acre. All legume seed must be properly inoculated. Weeping Lovegrass may also be included in any slope or low-maintnance mixture during warmer seeding periods; add 10-20 lbs/acre in mixes

An erosion and sediment control program adopted by a district or locality must be consistent with the following criteria,

1. Permanent or temporary soil stabilization shall be applied to denuded areas within seven days after final grade is

2. During construction of the project, soil stock piles and borrow areas shall be stabilized or protected with sediment

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 30 days. Permanent stabilization shall be

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. ADDRESSED IN

3. A permanent vegetative cover shall be established on denuded areas not otherwise permanently stabilized. Permanent

5. Stabilization measures shall be applied to earthen structures such as dams, dikes and diversions immediately after

vegetation shall not be considered established until a ground cover is achieved that is uniform, mature enough to

Sediment basins and traps, perimeter dikes, sediment barriers and other measures intended to trap sediment shall be

6. Sediment traps and sediment basins shall be designed and constructed based upon the total drainage area to be served

6.1. a. The minimum storage capacity of a sediment trap shall be 134 cubic yards per acre of drainage area and

6.2. b. Surface runoff from disturbed areas that is comprised of flow from drainage areas greater than or equal to

134 cubic yards per acre of drainage area. The outfall system shall, at a minimum, maintain the structural

shall correspond to a bare earth condition or those conditions expected to exist while the sediment basin is

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

8. Concentrated runoff shall not flow down cut or fill slopes unless contained within an adequate temporary or permanent

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. N/A

12. When work in a live watercourse is performed, precautions shall be taken to minimize encroachment, control 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

measures until the problem is corrected. ADDRESSED IN PERMANENT STABILIZATION, THIS SH. AND SH. C-3

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

three acres shall be controlled by a sediment basin. The minimum storage capacity of a sediment basin shall be

integrity of the basin during a 25-year storm of 24-hour duration. Runoff coefficients used in runoff calculations

constructed as a first step in any land-disturbing activity and shall be made functional before upslope land disturbance

applied to areas that are to be left dormant for more than one year. PERMANENT AND TEMPORARY SEEDING SPECIFIED

4. Mulching (Section 3.35) Application of plant residues or other suitable materials to the soil surface to prevent erosion by protecting the soil surface from raindrop impact and reducing the velocity of overland flow; to foster the growth of vegetation by increasing available moisture and providing insulation against extreme heat and cold. Areas which have been permanently seeded should be mulched immediately following seeding.

- Construction should be sequenced so that grading operations can begin and end as auickly as possible.
- 2. Erosion and Sediment control devices shall be installed as the first step of construction.
- Areas which are not to be disturbed shall be clearly marked by flags, signs,
- 4. The grading contractor shall be responsible for the installation and maintenance of all erosion and sediment control practices. Inspections are to be made periodically and after every significant rainfall.
- 5. After achieving adequate stabilization, the temporary E&S controls will be cleaned up and removed, and the sediment basins will be cleaned out and converted to permanent stormwater management basins.

PERMANENT STABILIZATION

All areas disturbed by construction shall be stabilized with permanent seeding immediately following finish grading. Seeding shall be done with Kentucky 31 Tall Fescue according to Std. & Spec. 3.32, PERMANENT SEEDING, of the handbook. Erosion control blankets will be installed over fill slopes which have been brought to final grade and have been seeded to protect the slopes from rill and gully erosion and to allow seed to germinate properly. Mulch (straw or fiber) will be used on relatively flat areas. In all seeding operations, seed, fertilizer and lime will be applied prior to mulching.

STORMWATER MANAGEMENT

Calculation of runoff before and after development indicates that there will be a net increase in peak runoff as a result of project development. Consequently, stormwater will be managed by a stormwater management facility.

MAINTENANCE

In general, all erosion and sediment control measures will be checked daily and after each significant rainfall. Any items not found in accordance with the Virginia Erosion and Sediment Control Handbook will be immediately replaced and/or repaired. The following items will be checked in particular:

- 1. The gravel outlets will be checked regularly for sediment buildup which will prevent drainage. If the gravel is clogged by sediment, it shall be removed and cleaned or replaced.
- 2. The silt fence barrier will be checked regularly for undermining or deterioration of the fabric. Sediment shall be removed when the level of sediment deposition reaches half way to the top of the barrier.
- 3. The seeded areas will be checked regularly to ensure that a good stand is maintained. Areas should be fertilized and re-seeded as needed

The erosion and sediment control measures shown on the construction plans are the minimum measures required. Due to construction phasing and other considerations all measures can not be shown. The owner, through his contractor, will employ whatever measures which may be required to assure that sediment laden runoff does not leave the site.

All materials and measures employed for erosion and sediment control will be in accordance with the Virginia Erosion and Sediment Control Handbook, latest

If, during construction, additional Erosion and Sediment Control measures are deemed necessary, they shall be installed as directed by the Owner, Engineer or County agent.

This project is to be constructed consistent with the 2013 Virginia Erosion And Sediment Control Regulations.

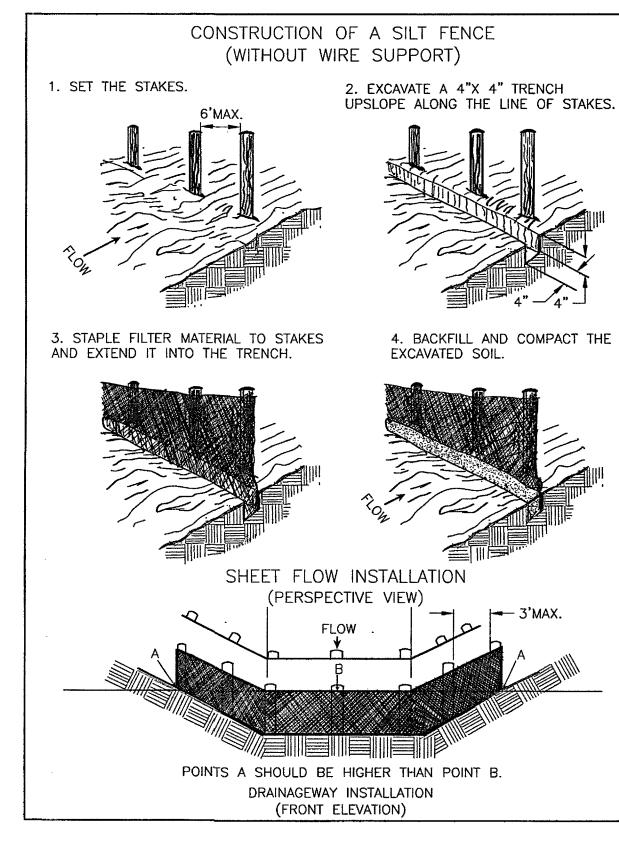
UNDERGROUND UTILITY LINE INSTALLATION

- 1. No more than (500) Five hundred linear feet of trench may be open at one
- Excavated material shall be placed on uphill side of trenches. Effluent from dewatering operations shall be filtered through an approved sediment trapping device and discharged in a manner that does not adversely affect flowing streams or off-site property.
- 4. Material used for backfilling trenches shall be property compacted in order to minimize erosion and promote stabilization. Restabilization shall be accomplished in accordance to VESCR.
- 6. All safety regulations shall be followed.

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. N/A

- 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. N/A
- 14. All applicable federal, state and local chapters pertaining to working in or crossing live watercourses shall be met. N/A
- 15. The bed and banks of a watercourse shall be stabilized immediately after work in the watercourse is completed. N/A 16. Underground utility lines shall be installed in accordance with the following standards in addition to other applicable
- 16.1. a. No more than 500 linear feet of trench may be opened at one time.
- ADDRESSED IN UNDERGROUND UTILITY LINE INSTALLATION, PARAGRAPH 1 THIS SHEET
- 16.2. b. Excavated material shall be placed on the uphill side of trenches. ADDRESSED IN UNDERGROUND UTILITY LINE INSTALLATION, PARAGRAPH 2 THIS SHEET
- 16.3. 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. ADDRESSED IN UNDERGROUND UTILITY LINE INSTALLATION, PARAGRAPH 3 THIS SHEET
- 16.4. d. Material used for backfilling trenches shall be properly compacted in order to minimize erosion and promote stabilization. ADDRESSED IN UNDERGROUND UTILITY LINE INSTALLATION, PARAGRAPH 4 THIS SHEET
- 16.5. e. Restabilization shall be accomplished in accordance with this chapter.
- ADDRESSED IN UNDERGROUND UTILITY LINE INSTALLATION, PARAGRAPH 5 THIS SHEET 16.6. f. Applicable safety chapters shall be complied with.
- ADDRESSED IN UNDERGROUND UTILITY LINE INSTALLATION, PARAGRAPH 5 THIS SHEET
- 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. N/A
- 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. ADDRESSED IN MANAGEMENT, PARAGRAPH 5, THIS SHEET
- 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:
- STORM WATER RUN-OFF QUANTITY WILL BE MANAGED WITH A BIORENTION FILTER, SH. C-3 19.1. 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. STORMDRAIN SYSTEM, SH. C-3
- 19.2. b. Adequacy of all channels and pipes shall be verified in the following manner: N/A

- 19.2.1. (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 great of the project in guestion; or N/A 19.2.2. (2)
- 19.2.2.1. (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. N/A
- 19.2.2.2. (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 N/A
- 19.2.2.3. (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. N/A
- 19.3. c. If existing natural receiving channels or previously constructed man-made channels or pipes are not adequate, the applicant shall: N/A 19.3.1. (1) Improve the channels to a condition where a ten-year storm will not overtop the banks and a two-year
- storm will not cause erosion to channel the bed or banks; or N/A 19.3.2. (2) Improve the pipe or pipe system to a condition where the ten-year storm is contained within the appurtenances; N/A
- 19.3.3. (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 N/A 19.3.4. (4) Provide a combination of channel improvement, stormwater detention or other measures which is satisfactory to the plan approving authority to prevent downstream erosion. <u>BIORENTENTION FILTER, SH. C-3</u>
- 19.4. d. The applicant shall provide evidence of permission to make the improvements. N/A 19.5. e. All hydrologic analyses shall be based on the existing watershed characteristics and the ultimate development
- condition of the subject project. N/A 19.6. f. If the applicant chooses an option that includes stormwater detention, he shall obtain approval from the locality 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. SUBMITTED WITH SITE PLAN PACKAGE
- 19.7. g. Outfall from a detention facility shall be discharged to a receiving channel, and energy dissipators shall be placed at the outfall of all detention facilities as necessary to provide a stabilized transition from the facility to the receiving channel. N/A
- 19.8. h. All on-site channels must be verified to be adequate. N/A
- 19.9. 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.
- 19.10. j. In applying these stormwater management 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. N/A
- 19.11, 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. SEE EROSION & SEDIMENT CONTROL NARRATIVE AND ASSOCIATED STRUCTURAL PRACTICES AND MAINTENANCE, SH. C-3



E&S LEGEND

- 3.02 CONSTRUCTION ENTRANCE
- (SF) 3.05 SILT FENCE
- (TS) 3.31 TEMPORARY SEEDING
- (PS) 3.32 PERMANENT SEEDING (MU) 3.35 MULCHING

TABLE 6-1 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 Erosion and Sediment Control Regulations.

The plan approving authority must be notified one week prior to the preconstruction conference, one week prior to the commencement of the land disturbing activity, and one week prior to the final inspection.

All erosion and sediment control measures are to be placed prior to or as the first step in clearing.

A copy of the approved erosion and sediment control plan shall be maintained on the site at all times.

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 approving authority.

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.

All disturbed areas are to drain to approved sediment control measures at all times during land disturbing activities and during site development until final stabilization is achieved.

During dewatering operations, water will be pumped into an approved filtering device.

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.

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RICHARD C. WHITE Lic. No.20021 Drawn By Checked By **Project Date** 05/30/14 Drawing **4198 CIVIL**

Commission No.