

EROSION AND SEDIMENT CONTROL NARRATIVE

RESPONSIBLE LAND DISTURBER

Upon award of the Construction Contract, the Contractor shall employ a Responsible Land Disturber, who is certified by the Department of Environmental Quality (DEQ), to assume this responsibility for the project. The name of this person is to be designated in writing by the Contractor to the State ESC plan approving authority, the A/E, and the Owner along with copies of their certification prior to any land disturbance. The Responsible Land Disturber for this project shall be in charge of and is responsible for carrying out the land-disturbing activities in this project. Should the certified Land Disturber change at any time during the life of this project then the Land Disturbing Permit will become void and a new Permit must be obtained. Hereinafter RLD shall be interpreted as the Responsible Land Disturber. Relative to the SWPP Plan the RLD shall be the "Operator".

STORM WATER POLLUTION PREVENTION PLAN & REGISTRATION STATEMENT

A Virginia Pollutant Discharge Elimination System (VPDES) Permit for the Discharge of Stormwater from Construction Activities is required for this project, which disturbs one (1) acre or greater. This narrative incorporates requirements related to the VPDES General Permit for Storm Water Discharges from Construction Sites. The basic SWPP Plan is included in the Contract Documents but may require revision and maintenance by the permittee as permit requirements as construction progresses. Should any conflict exist between this document and the Permit, the Permit shall take precedence.

RLD (as the contractor) shall file a Registration Statement as the Permit Holder with DEQ at least fifteen (15) days prior to commencement of any land disturbing activity. Contractor shall pay all associated fees. Obtain Registration Statement from DEQ Regional Office or online

PROJECT DESCRIPTION

The purpose of this project is to construct a new Bus Transit Station in the existing Salem Ave SW Parking Lot. The bus lot will include two new buildings and a canopy system for bus loading and unloading. Construction will be progressed through several phases. Work will include grading and new concrete pavement to replace the existing parking lot. Two new access points from Salem Ave SW will be added; western most access point will be full service and the eastern access point will be right-out only. A permanent stormwater management master control treatment device (dry/ditch Filter) will be installed to address the site's stormwater quality requirements. The site's stormwater will be collected via a new storm drain network and conveyed to the existing storm drain network within the right of way Salem Avenue.

The total disturbed area within the project's limits of disturbance totals 92,500 square feet (2.12 acre).

EXISTING SITE CONDITIONS

The existing conditions within the site include an existing parking lot with grade sloping generally from west to east. Currently the site is entirely asphalt pavement making it entirely impervious. The parking lot has sanitary lines running west to east across the site and some stormwater infrastructure at the intersection of Salem Ave and 3rd St. Overhead electrical power running to light poles are also found on site.

ADJACENT PROPERTY

The properties adjacent to the project site include:
Areas to the west the Roanoke Homeless Assistance Team.
Areas to the north the Virginia Museum of Transportation.
Areas to the east an existing parking lot owned by Times-World Corporation.
Areas to the south are several commercial facilities and an existing parking lot.
Norfolk Avenue running along the Northern edge of the property.
3rd Street running along the Eastern edge of the property.
Salem Avenue running along the Southern edge of the property.

OFF-SITE AREAS

The proposed work will not result in a balanced site. Excess excavated material will be transported to a permitted disposal site, to be determined by contractor.

In the event that subsurface conditions result in insuitable material for use as pavement, utility, or foundation base, the contractor shall source suitable materials from a permitted borrow source.

SOILS

NRCS Soil Survey for the site area is provided in the Drainage Narrative and Computational Synopsis. Soil Survey indicates the area as Urban land.

CRITICAL EROSION AREAS

This site should include no critical erosion areas.
All slopes greater than or equal to 3H:1V shall be considered a critical erosion area and be treated with VDOT Standard EC-2 or equivalent method in accordance with Virginia ESC Handbook section 3.36 used seedbed immediately after establishment of final grade.

Inlet protection on all existing and proposed inlets shall be installed and maintained throughout the project.

EROSION AND SEDIMENT CONTROL MEASURES

Unless otherwise indicated, all vegetative and structural erosion and sediment control practices will be constructed and maintained in accordance with the minimum standards and specifications to the Virginia Erosion and Sediment Control Handbook, latest edition. References to VDOT refer to the Virginia Department of Transportation "Road and Bridge Standards and Specifications," latest edition. A copy of the approved ESC Plan and Narrative and the Virginia Erosion and Sediment Control Handbook shall be maintained at the jobsite at all times.

STRUCTURAL PRACTICES

- Temporary Construction Entrance (CE) - Std. & Spec. 3.02**
A temporary construction entrance shall be installed where the construction access road leaves existing pavement. During wet weather conditions, drivers of construction vehicles will be required to wash their wheels before entering the street.
Sequence of Installation: Prior to any land disturbance.
Removal Event: Immediately prior to paving.
- Construction Road Stabilization (CRS) - Std. & Spec. 3.03**
All construction roads/travel lanes on the site shall be stabilized with gravel immediately after rough grading. Construction traffic shall be limited to access roads and areas to be graded. Traffic is prohibited from entering drainage swales or waterways unnecessarily.
Sequence of Installation: Following establishment of subgrade elevation for the access drive and drive aisles.
Removal Event: Prior to placing subbase and pavement.
- Storm Drain Inlet Protection (IP) - Std. & Spec. 3.07**
Protect inlets of storm sewers from erosion and sedimentation during construction. 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.
Sequence of Installation: Immediately following structure installation.
Removal Event: Following permanent stabilization of the contributing drainage area.

STABILIZATION & VEGETATIVE PRACTICES

A permanent vegetative cover shall be established on denuded areas not otherwise permanently stabilized by concrete or pavement. Permanent vegetation shall not be considered established until a ground cover is achieved that is uniform, mature enough to survive and will inhibit erosion. New vegetation shall be maintained for one full year after planting. New seeding shall be sappedled with adequate moisture, especially late in the season, and in abnormally hot or dry weather. Stabilization practices shall be accomplished in accordance with the appropriate VESCH Std. & Spec. as provided in this narrative and E&SC Plan. Selection of the appropriate seed mixture for temporary seeding will depend upon the time of year it is applied.

- Dust Control (DC) - Std. & Spec. 3.19**
Reduces surface and air movement of dust during land disturbing, demolition, and construction activities.
Sequence of Installation: Immediately as needed to reduce surface and air movement of dust in areas subject to dust problems.

- Topsoiling (TO) - Std. & Spec. 3.30**
Topsoil shall be stripped from all areas to be graded and stockpiled for later use and protected from erosion. Stockpile locations shall be approved by the Architect. See TOPSOILING, SEEDING, PLANTING notes on plans.
Maintenance: Areas which fail to establish vegetative cover adequate to prevent rill erosion are to be reseeded.
Removal Event: Permanent practice and shall not be removed.

- Temporary Seeding (TS) - Std. & Spec. 3.31**
Temporary seeding shall be applied over denuded areas within 7 days for areas that will not be brought to final grade within 14 days. Temporary seeding mixes shall be as described on the seeding table, this sheet.
Sequence of Installation: When cleared areas will not be brought to final grade within 14 days.
Maintenance: Areas which fail to establish vegetative cover adequate to prevent rill erosion are to be reseeded.
Removal Event: As needed for final grading.

- Permanent Seeding (PS) - Std. & Spec. 3.32**
Permanent seeding shall also be used on all areas that are not at final grade and that will be left dormant for a period of more than 1 year. If conflicts exist between the project specifications and the VESCH Std. & Spec. 3.32, the more stringent requirement shall apply. Permanent seeding mixes and rates are found on the seeding table, this sheet, and in the project manual.
Sequence of Installation: Within 7 days of achieving final grade or as noted above.
Maintenance: Areas which fail to establish vegetative cover adequate to prevent rill erosion are to be reseeded, following identification of the cause of poor germination. Contractor is responsible for establishment of permanent seed.
Removal Event: Not Applicable.

- Mulching (MU) - Std. & Spec. 3.35**
Application of plant residues or other suitable materials to the soil surface such that erosion is mitigated by protecting the soil surface from raindrop impact and reducing the velocity of overland flow. Also, to foster growth of vegetation by increasing available moisture and provide insulation against extreme heat and cold.
Sequence of Installation: Following establishment of final grade and placement of lime, fertilizer, and seed or in areas which cannot be seeded because of the season.
Removal Event: Not Applicable, unless used for temporary cover in areas which cannot be seeded because of the season.

MANAGEMENT STRATEGIES

- The RLD shall amend the SWPP Plan whenever there is a change in design, construction, operation, or maintenance, which has a significant effect on the potential for the discharge of pollutants to surface waters and which has not otherwise been addressed in the plan or if the plan proves to be ineffective in eliminating or significantly minimizing pollutants from sources identified in the permit, or in otherwise achieving the general objectives of controlling pollutants in storm water discharges from construction activities. Also amend to identify any new contractor that will implement a measure of the plan.
- The RLD shall be responsible for the installation and maintenance of all erosion and sediment control practices maintaining them in good and effective operating condition.
- The RLD shall notify the Architect/Engineer when the local governing official has inspected and approved all in-place erosion and sediment control devices, required by local ordinances to be in place prior to land disturbance.
- Construction shall be sequenced so that the duration of grading operations is as brief as possible.
- Maintenance of inlet and outlet protection shall be given high priority.
- Temporary seeding or other stabilization shall follow within 7 days after grading, or installation if a temporary measure.
- Areas which are not to be disturbed shall be clearly marked by flags, signs, etc.
- No solid materials, including building materials, garbage, and debris shall be discharged to surface waters of the State, except as authorized by a Section 404 permit.
- 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 shovelling 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. The generation of dust shall be minimized.
- Ensure and demonstrate compliance with applicable State and/or local water disposal, sanitary sewer or septic system regulations.
- All sediment removed from sediment trapping measures or cleaning operations shall be managed so as not to become a dust or sediment problem elsewhere.
- 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 per plans and specifications.

PERMANENT STABILIZATION

Exposed soil surfaces shall receive permanent cover as indicated on plans immediately following earthwork. Unless otherwise required in on the landscaping or civil plans, all areas shall be permanently seeded according to the specifications and Spec. 3.32 in the ESC handbook. See Seeding and Mulching Tables on this sheet and the Project Manual for additional requirements. Slopes that are found to be eroding within one year of permanent stabilization shall be provided with additional slope stabilizing measures until the problem is corrected.

MAINTENANCE

The contractor shall inspect all erosion control measures immediately after each run-off producing rainfall event, at least daily during prolonged rainfall, at least weekly when no rainfall occurs, and in accordance with the Virginia Stormwater Management Program (VSMPP) Permit Regulations. The following items shall be checked in particular:

- Inlet protection shall be checked regularly for sediment cleanout. Remove sediment prior to it reaching 1/2 the design depth of the trap.
- Channel linings shall be checked regularly for undermining or deterioration. Stabilize immediately if not in conformance with minimum standards described in VESCH.
- Silt fences shall be checked regularly for structural/functional integrity. Remove any sediment deposits - do not allow buildup.
- All seeded areas shall be checked regularly to see that a good stand is maintained. Areas should be fertilized and reseeded as needed.
- Temporary sediment basin and sediment traps shall be checked regularly for sediment build-up. Remove sediment buildup prior to it reaching the channel level.

POTENTIAL POLLUTION SOURCES & STORED MATERIALS

The RLD shall prepare a list of all potential sources of pollution and all construction and waste materials expected to be stored on-site and update as appropriate. Examples would be vehicle fueling area, fuel delivery vehicle, fertilizer, chemicals, temp. sanitary waste facilities, concrete washouts, etc. For each listed item list its location and describe necessary controls to reduce pollutants from these materials including storage practices to minimize exposure to storm water as well as spill prevention and response, schedule of implementation and maintenance necessary for effectiveness. Keep latest copy on the job site at all times and with the SWPPP package.

INSPECTIONS

The RLD shall inspect disturbed areas of the construction site and areas used for storage of materials that are exposed to precipitation, structural control measures, and locations where vehicles enter or exit the site. The inspections shall be conducted at least once every four (4) days and within forty-eight (48) hours after a rain event greater than 0.25" inches.

Disturbed areas and areas used for storage of materials that are exposed to precipitation shall be inspected for evidence of, or the potential for, pollutants entering the drainage system. ESC measures identified in the plan shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters. Locations where vehicles enter or exit the site shall be inspected for evidence of off-site sediment tracking.

Based on the results of the inspection, the site description identified in the plan and pollution prevention measures shall be revised as appropriate, within seven (7) calendar days following the inspection. Such modifications shall provide for timely implementation of any changes to the plan within seven (7) calendar days following the inspection and before next anticipated storm event, if practical.

REPORTING

A report summarizing the scope of the inspection, names and qualifications of personnel making the inspection, the date of the inspection, major observations relating to the implementation of the storm water pollution prevention plan and actions taken as a result of the inspection shall be made and retained as part of the SWPP Plan. Where no incidents of noncompliance are reported, report shall certify that facility is in compliance with SWPP Plan and permit; keep reports with this narrative. The report shall be certified in accordance with the permit.

STORM WATER MANAGEMENT

All runoff from the site will be controlled by a number of measures to meet current Commonwealth of Virginia Standards and Regulations for both Stormwater Quality and Stormwater Quantity.

UNDERGROUND UTILITY INSTALLATION

Underground utility lines shall be installed in accordance with the following standards in addition to other applicable criteria:

No more than 500 linear feet of trench may be open at one time.
Excavated material shall be placed on the uphill side of trenches.
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.
Re-establishment of disturbed area shall be accomplished in accordance with the ESC Handbook and contract documents.
Applicable safety regulations shall be complied with.

PROHIBITION OF NON-STORM WATER DISCHARGES

- The following non-storm water discharges are allowed: discharges from fire fighting activities; fire hydrant flushing; waters used to wash vehicles where detergents are not used; water used to control dust; potable water sources including watering flushing; hydrostatic testing; routine external building washdown which does not use detergents; pavement washwaters where spills or leaks of toxic or hazardous materials have not occurred (unless all spill material has been removed) and where detergents are not used; air conditioning condensate; uncontaminated compressor condensate; uncontaminated ground water or spring water; and foundation or footing drains where flows are not contaminated with process materials such as solvents.
- Except for allowed discharges listed above, sources of non-storm water that are combined with storm water discharges from the construction site must be identified on the plan. The plan shall identify and ensure the implementation of appropriate pollution prevention measures for the nonstorm water components.

CONTRACTORS

Identify for each measure identified in the plan, the Contractor/subcontractor that will implement the measure. All contractors identified above must sign the following certification statement. All certifications must be included in the SWPP Plan.

"I certify under penalty of law that I understand the terms and conditions of this Virginia Pollutant Discharge Elimination System (VPDES) general permit that authorizes the storm water discharges from the construction activity identified as part of this certification."

Name & title of signatory (Responsible Corporate Officer, General Partner, or Sole Proprietor)
Name, address & phone of contracting firm
Address of other identifying description of the site
Date of certification made

DISPLAY & STATUS OF PLAN

Plan with a copy of the permit must be maintained on-site and kept available for inspections at all times from the date of commencement of construction to the date of final stabilization. Note that this narrative and RLD's log of inspection reports and all certifications are part of the plan (keep with this narrative).

The Plan with all attachments, reports, etc. shall be retained by the contractor for at least three (3) years from the date that the site is finally stabilized.

SCHEDULE

Record of the dates when major grading activities occur, when construction activities temporarily or permanently cease on a portion of the site, and when stabilization measures are initiated.

Perimeter controls shall be installed after clearing and grubbing necessary for installation of the measure, but before the clearing and grubbing for the remaining portions of the site. The perimeter controls shall be actively maintained until final stabilization of those portions of the site upward of the perimeter control. Temporary perimeter controls may be removed after final stabilization.

Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than seven (7) days after the construction activities have temporarily or permanently ceased, unless construction activity will resume within twenty-one (21) days after ceasing. Permanent seeding shall be done within 30 days if construction has permanently ceased.

Wherever water seeps from a slope face, adequate subsurface interception (french drain) shall be provided discharging to the nearest suitable stabilized channel.

All temporary ESC 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 administrator. Trapped sediment and other disturbed soil areas resulting from temporary disposal of temporary measures shall be permanently stabilized to prevent further erosion and sedimentation.

- Ensure and demonstrate compliance with applicable State and/or local water disposal, sanitary sewer or septic system regulations.
- All sediment removed from sediment trapping measures or cleaning operations shall be managed so as not to become a dust or sediment problem elsewhere.
- 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 per plans and specifications.

Table 6-1
GENERAL EROSION & SEDIMENT CONTROL NOTES

- 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 (4VAC50-30) Erosion and Sediment Control Regulations.
- ES-2: The plan approving authority must be notified one week prior to the pre-construction conference, one week prior to the commencement of land disturbing activities, and one week prior to final inspection.
- ES-3: All erosion and sediment control measures are to be placed prior to or as the first step in clearing.
- ES-4: A copy of the approved erosion and sediment control plan shall be maintained on the site at all times.
- 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 land disturbing activities and during site development until final stabilization is achieved.
- ES-8: During dewatering operations, 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.

GENERAL MANAGEMENT STRATEGIES & SEQUENCE OF CONSTRUCTION

CONTRACTOR SHALL REFER TO DEMOLITION AND STAGING SHEETS: C102-0, C102-1, C102-2, AND C102-3 TO FULLY UNDERSTANDING THE SEQUENCE OF CONSTRUCTION AND MAINTAINING OF PUBLIC WAYS, ETC. THROUGH THE COURSE OF THE PROJECT.

SIMILARLY, CONTRACTOR SHALL REFER TO THE E&SC PLAN STAGING SHEETS: C401-0, C401-1, C401-2, C401-3 AND PROVIDE PROPER EROSION AND SEDIMENT CONTROLS PER EACH CONSTRUCTION STAGE.

Erosion and Sediment Control Minimum Standards

NOTE:
✓ CHECKMARK INDICATES ITEM IS APPLICABLE TO PROJECT.
N/A • N/A – NOT APPLICABLE.

MS-1 STABILIZATION OF DENuded AREAS

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.

MS-2 STABILIZATION OF SOIL STOCKPILES

During construction of the project, soil stockpiles 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.

MS-3 PERMANENT VEGETATION

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.

MS-4 TIMING AND STABILIZATION OF SEDIMENT TRAPPING MEASURES

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.

MS-5 STABILIZATION OF EARTHEN STRUCTURES

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

MS-6 SEDIMENT BASINS

N/A 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 twenty-five 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.

MS-7 CUT AND FILL SLOPES

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.

MS-8 CONCENTRATED RUNOFF FLOW DOWN CUT OR FILL SLOPES

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

MS-9 WATER SEEPS FROM A SLOPE FACE

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

MS-10 STORM SEWER INLET PROTECTION

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.

MS-11 STABILIZATION OF OUTLETS

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.

MS-12 WORK IN LIVE WATERCOURSES

N/A 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.

MS-13 CROSSING A LIVE WATERCOURSE

N/A 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.

MS-14 APPLICABLE REGULATIONS

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

MS-15 STABILIZATION OF BED AND BANKS

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

MS-16 UTILITY CONSTRUCTION

- 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.

MS-17 CONSTRUCTION ACCESS ROUTES

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 shovelling 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.

MS-18 TEMPORARY EROSION & SEDIMENT CONTROL MEASURE REMOVAL

✓ 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.

MS-19 PROTECTION OF DOWNSTREAM PROPERTIES AND WATERWAYS

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. Stream restoration and relocation projects that incorporate natural channel design concepts are not man-made channels and shall be exempt from any flow rate capacity and velocity requirements for natural or man-made channels.

- 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

N/A 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.

(b) All previously constructed man-made channels shall be analyzed by the use of a 10-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 10-year storm to verify that stormwater will be contained within the pipe or system.

C. N/A If existing natural receiving channels or previously constructed man-made channels or pipes are not adequate, the applicant shall: 1. Improve the channels to a condition where a 10-year storm will not overtop the banks and a two-year storm will not cause erosion to the channel, the bed, or the banks; or 2. Improve the pipe or pipe system to a condition where the 10-year storm is contained within the appurtenances;

3. Develop a site design that will not cause the pre-development peak runoff rate from a two-year storm to increase when runoff overfalls into a natural channel or will not cause the pre-development peak runoff rate from a 10-year storm to increase when runoff overfalls from a man-made channel; and 4. Provide a combination of channel improvement, stormwater detention or other measures which is satisfactory to the VESCP authority to prevent downstream erosion.

D. N/A 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 condition of the subject project.

F. N/A 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. N/A 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. N/A In the event that subsurface conditions result in unsuitable material for use as pavement, utility, or foundation base, the contractor shall source suitable materials from a permitted borrow source.

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.

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. N/A 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 or man-made channels if the practices are designed to (i) detain the water quality volume and to release it over 48 hours; (ii) detain and release over a 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 a 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 the regulations promulgated pursuant to § 62.1-44.15:54 or 62.1-44.15:65 of the Act. For plans approved on and after July 1, 2014, the flow rate capacity and velocity requirements of § 62.1-44.15:52 A of the Act and this subsection shall be satisfied by the water quantity and velocity requirements in the Stormwater Management Act (§ 62.1-44.15:24 et seq. of the Code of Virginia) and attendant regulations, unless such land-disturbing activities are in accordance with 9VAC25-870-48 of the Virginia Stormwater Management Program (VSMPP) Regulation or are exempt pursuant to subdivision C.7 of § 62.1-44.15:34 of the Act. Compliance with the water quantity minimum standards set out in 9VAC25-870-66 of the Virginia Stormwater Management Program (VSMPP) Regulation shall be deemed to satisfy the requirements of this subdivision 19.

HUC: 0301010403

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City of Roanoke Planning, Building, & Development	
COMPREHENSIVE DEVELOPMENT PLAN	
<u>APPROVED</u>	
by Aaron Cypher 09/08/2021	