PROJECT AND ARE CONSIDERED TO BE "CRITICAL EROSION AREAS." SPECIFIC MEASURES HAVE BEEN INCORPORATED INTO THE E&SC PLANS TO MINIMIZE THE POTENTIAL FOR UNANTICIPATED EROSION OF THESE SLOPES. MEASURES INCLUDE: BENCHES CONSTRUCTED WITHIN THE SLOPE, TOP OF SLOPE DIVERSIONS, USE OF TEMPORARY SLOPE DRAINS, AND BLANKET STABILIZATION MATTING. IN ADDITION, THE WORK ALONG THE BANKS OF GLADE CREEK - TRIBUTARY "A" ARE CONSIDERED "CRITICAL EROSION AREAS." SPECIFIC MEASURES HAVE BEEN INCORPORATED INTO THE SEQUENCE OF WORK AND ARE OUTLINED IN THE "GENERAL CONDITIONS" OF THE PERMITS FOR THE WORK OF THE PROJECT.

MS-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.

METHOD OF COMPLIANCE: NEW CUT OR FILL SLOPES AND EXISTING DENUDED STEEP SLOPES THAT ARE GREATER THAN 6-FEET IN HEIGHT ARE ANTICIPATED IN THIS PLAN AND ARE DEEMED "CRITICAL EROSION AREAS." THE E&SC PLAN CONTAINS PROVISIONS TO ENSURE CONCENTRATED RUNOFF DOES NOT FLOW DOWN CUT OR FILL SLOPES. THE PLAN INCORPORATES CHANNELS, INLETS, AND PAVED FLUMES THAT INTERCEPT DRAINAGE ALONG THE TOP OF HIGH FILL SLOPES SO RUN-OFF IS NOT CONCENTRATED DOWN THE SLOPE.

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

METHOD OF COMPLIANCE: BASED ON A REVIEW OF AVAILABLE SUBSURFACE INVESTIGATION REPORTS, PUBLIC DATA, AND KNOWLEDGE OF THE GROUNDWATER CONDITIONS AT THE SITE, THIS CONDITION IS NOT ANTICIPATED AT THE FACE OF CUT SLOPES DURING THIS PROJECT. IF ENCOUNTERED DURING CONSTRUCTION IT WILL BE ADDRESSED WITH PLAN REVISION.

MS-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.

METHOD OF COMPLIANCE: INLET PROTECTION (IP) DEVICES ARE SPECIFIED AND SHOWN ON THE E&SC PLAN SHEETS AND IN THE NARRATIVE. THE GENERAL WORK SEQUENCE SPECIFIES THE TIMING FOR INSTALLATION OF THESE MEASURES.

MS-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.

METHOD OF COMPLIANCE: WHERE REQUIRED, OUTLET PROTECTION (OP) MEASURES ARE SPECIFIED AND DETAILED ON THE E&SC PLAN SHEETS. THE TIMING OF INSTALLING LININGS AND OUTLET PROTECTIONS IS SPECIFIED IN THE NARRATIVE AND SEQUENCE OF WORK.

MS-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.

METHOD OF COMPLIANCE: WHERE THE WORK OF THE PROJECT INVOLVES WORKING IN A LIVE WATERCOURSE (GLADE CREEK - TRIBUTARY "A"), THE WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE SEQUENCE OF WORK AND THE "GENERAL CONDITIONS" OF PERMITS FOR THE PROJECT.

MS-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.

METHOD OF COMPLIANCE: THE WORK OF THE PROJECT WORK INVOLVES THE CROSSING OF A LIVE WATERCOURSE (GLADE CREEK - TRIBUTARY "A") FOR THE DETOUR AND THE INSTALLATION OF THE RELOCATED WATERLINE. THE PLANS INCLUDE PROVISIONS AND DETAILS FOR THE CONSTRUCTION OF A TEMPORARY CROSSING VIA IN-STREAM PIPES. THE WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE SEQUENCE OF WORK AND THE "GENERAL CONDITIONS" OF PERMITS FOR THE PROJECT.

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

METHOD OF COMPLIANCE: THE WORK OF THE PROJECT INVOLVES WORKING IN A LIVE WATERCOURSE AND PROPOSES FILL IN JURISDICTIONAL WATER (WATERS OF THE U.S.). THE CONTRACTOR AND RESPONSIBLE LAND DISTURBER (RLD) SHALL PERFORM THE WORK IN AND ADJACENT TO THE JURISDICTIONAL WATERS IN STRICT ACCORDANCE WITH THE "GENERAL CONDITIONS" OF THE PERMIT. REFER TO SECTION 2.4 OF THE E&SC NARRATIVE FOR ADDITIONAL INFORMATION.

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

METHOD OF COMPLIANCE: THE WORK OF THE PROJECT RESULT IN WORK WITHIN A LIVE WATERCOURSE (GLADE CREEK - TRIBUTARY "A"). THE PLANS REQUIRES THAT THE WORK BE SEQUENCED TO MINIMIZE THE POTENTIAL FOR STREAM EROSION AND DOWNSTREAM SEDIMENTATION. THIS INCLUDES THE IMMEDIATE RE-STABILIZATION OF DISTURBED CHANNEL BOTTOMS AND BANKS. REFER TO THE WORK SEQUENCE REQUIREMENTS FOR THE INSTALLATION AND REMOVAL OF THE TEMPORARY CULVERT FOR THE DETOUR, THE INSTALLATION OF THE RELOCATED WATERLINE, AND THE CONSTRUCTION OF CERTAIN COMPONENTS OF THE BRIDGE WORK.

MS-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 this chapter.

f. Applicable safety requirements shall be complied with.

METHOD OF COMPLIANCE: SPECIFIC REQUIREMENTS TO ADDRESS THIS MINIMUM STANDARD ARE INCORPORATED INTO AND IDENTIFIED IN THE SEQUENCE OF WORK AND THE E&SC NARRATIVE.

MS-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.

METHOD OF COMPLIANCE: THE E&SC PLAN SHEETS INDICATE THE LOCATION OF THE PROPOSED CONSTRUCTION ENTRANCE (CE) AND THE SEQUENCE OF INSTALLATION IS SPECIFIED IN THE NARRATIVE AND GENERAL SEQUENCE OF WORK. ALL CONSTRUCTION VEHICLES SHALL ENTER AND LEAVE THE SITE AT THE SPECIFIED LOCATION. PORTION OF THE PROPOSED CONSTRUCTION ENTRANCE SHALL BE LOCATED ON EXISTING ASPHALT PAVEMENT TO REMAIN.

MS-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 VESCP 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.

METHOD OF COMPLIANCE: REFER TO NARRATIVE AND WORK SEQUENCE ON THE E&SC PLAN SHEETS AND THE GENERAL NOTES FOR STATED REQUIREMENTS REGARDING THE PROVISIONS OF REMOVAL OF E&SC MEASURES.

MS-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. 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
(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 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 channels 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, the bed, or the banks; or
(2) Improve the pipe or pipe system to a condition where the ten-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 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 condition 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 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.

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 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. 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 any regulations promulgated pursuant to § 62.1-44.15:54 or 62.1-44.15:65 of the Act.

m. 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 compliance with water quantity 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 (VSMP) Regulations.

n. Compliance with the water quantity minimum standards set out in 9VAC25-870-66 of the Virginia Stormwater Management Program (VSMP) Regulations shall be deemed to satisfy the requirements of subdivision 19 of this subsection.

METHOD OF COMPLIANCE: THIS PROJECT SATISFIES THE REQUIREMENTS OF MS-19 BY DEMONSTRATING COMPLIANCE WITH THE WATER QUANTITY MINIMUM STANDARDS SET OUT IN 9VAC25-870-66 OF THE VIRGINIA STORMWATER MANAGEMENT PROGRAM (VSMP) REGULATIONS (AS SPECIFICALLY ALLOWED IN PARAGRAPH N. ABOVE). SPECIFICALLY THE PROJECT COMPLIES WITH THE CHANNEL PROTECTION AND FLOOD PROTECTION REQUIREMENTS AS OUTLINED IN 9VAC25-870-66 B.3. (CHANNEL PROTECTION) AND 9VAC25-870-66 C.2.B (FLOOD PROTECTION).

END OF STATEMENT OF COMPLIANCE WITH VIRGINIA EROSION AND SEDIMENT CONTROL REGULATIONS - 9VAC25-840-40 - MINIMUM STANDARDS

EROSION & SEDIMENT CONTROL GENERAL NOTES
(ADOPTED FROM TABLE 6-1 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK)

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. UNLESS OTHERWISE NOTED HEREON OR OTHERWISE STIPULATED BY THE LAND DISTURBING PERMIT, THE PLAN APPROVING AUTHORITY MUST BE NOTIFIED ONE WEEK PRIOR TO THE PRECONSTRUCTION CONFERENCE, ONE WEEK PRIOR TO THE COMMENCEMENT OF LAND DISTURBING ACTIVITY, AND ONE WEEK PRIOR TO THE FINAL INSPECTION.

ES-3. ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING. UNLESS OTHERWISE NOTED IN THE E&SC NARRATIVE, PERIMETER CONTROLS AND SEDIMENT TRAPS SHALL BE CONSTRUCTED AS A FIRST STEP IN ANY LAND DISTURBING ACTIVITY AND SHALL BE MADE FUNCTIONAL BEFORE UPSLOPE LAND DISTURBANCE TAKES PLACE.

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 FOR REVIEW AND APPROVAL BY THE PLAN APPROVING AUTHORITY OR PROVIDE DOCUMENTATION OF APPROVAL / PERMITTING FOR SAID SITE. REFER TO PARAGRAPH 3.5 OF THE EROSION & SEDIMENT CONTROL NARRATIVE FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

ES-6. THE CONTRACTOR SHALL BE 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. REFER TO THE STANDARDS AND SPECIFICATIONS FOR EACH MEASURE FOR INSPECTION FREQUENCY, INSPECTION ITEMS, AND MAINTENANCE / REPAIR PROCEDURES.

ES-10. THE EROSION AND SEDIMENT CONTROL (E&SC) MEASURES SHOWN ON THESE SHEETS ARE TO BE CONSTRUCTED DURING THE SITE GRADING, UTILITY INSTALLATION AND GENERAL CONSTRUCTION. REFER TO THE EROSION AND SEDIMENT CONTROL NARRATIVE, SEQUENCE OF WORK, DETAILS, AND DESIGN DATA FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

ES-11. STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DAMS, DIKES, AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.

ES-12. DURING CONSTRUCTION OF THE PROJECT, SOIL STOCKPILES AND BORROW AREAS SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES. THE CONTRACTOR 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. REFER TO PARAGRAPH 3.5 OF THE EROSION & SEDIMENT CONTROL NARRATIVE FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

ES-13. PERMANENT OR TEMPORARY SOIL STABILIZATION MEASURES SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN (7) DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE.

ES-14. TEMPORARY SOIL STABILIZATION (TS) MEASURES SHALL BE APPLIED WITHIN SEVEN (7) DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT FOR LONGER THAN FOURTEEN (14) DAYS. PERMANENT STABILIZATION (PS) MEASURES SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE YEAR.

CONTINUED ON NEXT SHEET

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BERKLEY ROAD OVER GLADE CREEK TRIBUTARY A
MS-19 COMPLIANCE
CITY OF ROANOKE, VIRGINIA

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