EROSION CONTROL NARRATIVE

PROJECT DESCRIPTION

THE PURPOSE OF THE PROJECT IS TO REPLACE EXISTING SUBSTANDARD WATERLINES. THE LENGTH OF WATERLINE TO BE INSTALLED IS APPROXIMATELY 2,360 FEET. ALL OF THE INSTALLATION WILL TAKE PLACE INSIDE EXISTING RIGHT-OF-WAY AND PARK AREA. PROJECT IS LOCATED IN THE OLD SOUTHWEST AREA OF THE CITY OF ROANOKE. TOTAL DISTURBED AREA IS APPROXIMATELY 0.25 ACRES.

EXISTING SITE CONDITIONS

THE EXISTING SITE CONSISTS OF THE OLD SOUTHWEST AREA OF THE CITY OF ROANOKE WHICH RUNS ALONG JANETTE AVENUE, 4TH STREET, AND KING GEORGE AVENUE. THE ROADS ARE ASPHALT PAVED AND MOST HAVE CURBING. WATERLINE IS TO BE INSTALLED IN PAVED AND UNPAVED AREAS.

ADJACENT PROPERTY

THE PROJECT IS SURROUNDED BY MOSTLY URBAN RESIDENTIAL DEVELOPMENT AND A FEW MIXED USE PARCELS.

OFF-SITE AREAS

IT IS NOT ANTICIPATED THAT ANY LAND DISTURBING ACTIVITIES WILL OCCUR OFFSITE. THE CITY OF ROANOKE WILL BE NOTIFIED OF ANY OFFSITE LAND DISTURBING ACTIVITY ASSOCIATED WITH THIS PROJECT. ALL OFFSITE AREAS SHALL HAVE THEIR OWN INDIVIDUAL EROSION CONTROL PLAN.

SOILS

REFER TO THE SOILS MAP INCLUDED ON THIS SHEET. ALL OF THE PROPOSED WORK IS INSIDE AREAS THAT HAVE BEEN PREVIOUSLY DEVELOPED.

SOILS	
SYMBOL	*SOIL TYPE*
6D	*CHISWELL-LITZ-URBAN LAND COMPLEX, 15% to 35% SLOPES*
41C	*SHOTTOWER-URBAN LAND COMPLEX, 2% to 15% SLOPES*

CHISWELL-LITZ-URBAN LAND COMPLEX SOIL PROPERTIES:
COMPOSITION: 0 to 2 INCHES, CHANNERY SILT LOAM; 2 to 12 INCHES, VERY CHANNERY SILT LOAM; 12 to 22 INCHES, BEDROCK.
PERMEABILITY: WELL DRAINED
AVAILABLE WATER CAPACITY: VERY LOW
DEPTH TO BEDROCK: 10 to 20 INCHES
DEPTH TO WATER TABLE: MORE THAN 80 INCHES

SHOTTOWER-URBAN LAND COMPLEX SOIL PROPERTIES:
COMPOSITION: 0 to 18 INCHES, LOAM; 18 to 34 INCHES, CLAY LOAM; 34 to 62 INCHES, CLAY.
PERMEABILITY: WELL DRAINED
AVAILABLE WATER CAPACITY: MODERATE
DEPTH TO BEDROCK: MORE THAN 80 INCHES
DEPTH TO WATER TABLE: MORE THAN 80 INCHES

CRITICAL EROSION AREAS

Early establishment and proper maintenance of perimeter controls will provide sedimentation control. Stabilize and maintain ditches and fill slopes throughout project construction to control erosion.

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 Virginia Erosion and Sediment Control Handbook. The minimum standards of the VESCH shall be adhered to unless otherwise waived or approved by a variance by local authorities having jurisdiction.

STRUCTURAL PRACTICES

(Include a description for each measure used on this project).

Temporary Construction Entrance – 3.02

A temporary construction entrance shall be provided at the location indicated on the plans. It is imperative that this measure be maintained throughout construction.

Silt Fence – 3.05

Silt fence sediment barriers shall be installed downslope of areas with minimal grades to filter sediment-laden runoff from sheet flow as indicated.

Tree Protection – 3.38

Tree Protection shall provide protection of desirable trees from mechanical and other injury during land disturbing and construction activity.

VEGETATIVE PRACTICES

Topsoiling (Temporary Stockpile) – 3.30

Any topsoil shall be stripped from areas to be graded and stockpiled for use in final grading and permanent stabilization. The stockpiles must be stabilized with temporary vegetation to prevent soil loss and sediment transport from the stockpile itself until needed.

Temporary Seeding – 3.31

All denuded areas which will be left dormant for more than 30 days shall be seeded with fast germinating temporary vegetation immediately following grading of those areas. Selection of the seed mixture shall depend on the time of year it is applied.

MANAGEMENT STRATEGIES

Provide sediment trapping measures as a first step in grading and seed and mulch immediately following installation.

Provide temporary seeding or other stabilization immediately after grading.

Isolate trenching for utilities and drainage from downstream conveyances in order to minimize perimeter controls.

All erosion and sediment control practices shall be maintained until they are no longer required to comply with the contract documents or state law.

PERMANENT STABILIZATION

All non-paved areas disturbed by construction shall be stabilized with permanent seeding immediately following finish grading. Seeding shall be in accordance with Std. & Spec. 3.32, PERMANENT SEEDING. Seed type shall be as specified for "Minimum Care Lawns" and "General Slopes" in the Handbook. Mulch (straw or fiber) shall be used on all seeded surfaces. In all seeding operations seed, fertilizer and lime shall be applied prior to mulching.

MAINTENANCE (See "Minimum Standards" for additional information).

All erosion and sediment control measures shall be checked daily and after each run-off producing rainfall. The following items shall be checked in particular:

1. *Check the silt fence barrier for undermining or deterioration of the fabric. Remove sediment when the level of sediment deposition reaches half way to the top of the barrier.*
2. *Check the seeding areas to ensure that a stand of grass is maintained. Fertilize and reseed as needed.*

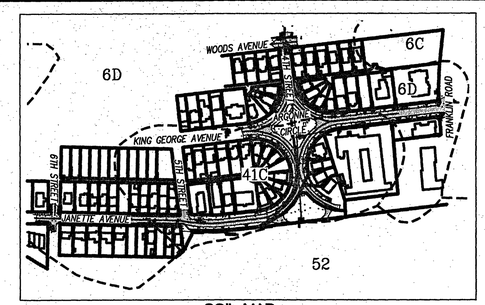
CONTRACTOR SHALL PAY PARTICULAR ATTENTION TO THE FOLLOWING MINIMUM STANDARDS:

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 14 days to denuded areas that may not be at final grade but will remain dormant for longer than 30 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 SURFACES 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 30 DAYS. NO ONSITE STOCKPILE IS CURRENTLY PLANNED FOR THIS PROJECT.*
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 TEMPORARY SILT FENCE AS SHOWN ON PLAN.*
5. *Stabilization measures shall be applied to earthen structures such as dams, dikes and diversions immediately after installation. NO EARTHEN STRUCTURES ARE PROPOSED WITH THIS PLAN.*
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 outlet 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. 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 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. 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. NO CONCENTRATED RUNOFF SHALL FLOW DOWN CUT OR FILL SLOPES.*
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.*
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. NOT APPLICABLE. NO STORM SEWER INLETS ARE LOCATED ON THIS PROJECT.*
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. NO NEW CHANNELS ARE PROPOSED WITH THIS PLAN.*
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 WATERCOURSES EXIST WITHIN OR ADJACENT TO THIS PROJECT.*
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 WATERCOURSES EXIST WITHIN OR ADJACENT TO THIS PROJECT.*
14. *All applicable federal, state and local regulations pertaining to working in or crossing live watercourses shall be met. NOT APPLICABLE. NO LIVE WATERCOURSES EXIST WITHIN OR ADJACENT TO THIS PROJECT.*
15. *The bed and banks of a watercourse shall be stabilized immediately after work in the watercourse is completed. NOT APPLICABLE. NO LIVE WATERCOURSES EXIST WITHIN OR ADJACENT TO THIS PROJECT.*

MINIMUM STANDARDS CONTINUED:

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.*

    INSTALL AS SHOWN ON THIS PLAN.
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 SITE.*
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. EROSION & SEDIMENT CONTROL MEASURES SHALL NOT BE REMOVED WITHOUT ROANOKE CITY PERMISSION AND SHALL BE IN ACCORDANCE WITH ABOVE REQUIREMENTS.*
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 plan-approving 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 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.*
    g. *Outfall from a detention facility shall be discharged to a receiving channel, and energy dissipator 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. INCREASES IN STORMWATER VOLUME, VELOCITY, AND PEAK RUNOFF ARE NOT EXPECTED WITH THIS EROSION & SEDIMENT CONTROL PLAN. RESPONSIBLE LAND DISTURBER SHALL PAY PARTICULAR ATTENTION TO OFF-SITE AREAS CONTRIBUTING RUNOFF TO THE SITE AND OFF-SITE LOCATIONS RECEIVING RUNOFF FROM THIS PROJECT, AND PROPER OPERATION OF STORMWATER MANAGEMENT PRACTICES ON-SITE.*



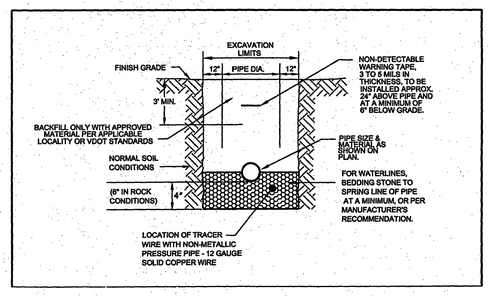
SOIL MAP
1" = 300'

ESC Measures		
Description	Unit	Quantity
CONSTRUCTION ENTRANCE	EACH	1
SILT FENCE	L.F.	650
TREE PROTECTION	EACH	3
TEMPORARY & PERMANENT SEEDING, MULCHING, ETC	ACRE	0.25

Additional items To Be Addressed On WVWA Plans

Unless specifically shown otherwise on the plans, post developed contours are the same as predeveloped contours and finished grades are assumed to be returned to existing contours within the limits of work and required variance in accordance with Section 4VAC50-30-50, variances, VESCH, Chapter 6, is granted upon plan approval by the Western Virginia Water Authority.

Plans for material and equipment staging and stockpile must be submitted to the City of Roanoke for review and approval at least two (2) days prior to the preconstruction meeting. Staging Plan sheets shall be full size sheets appropriate for replacing existing sheets or as additional sheets to be added to approved plan set as a Plan Revision during the preconstruction meeting.



Limits of Distrurbance - Typical Cross Section

Typical cross section showing limits of disturbance. Where typical section is not applicable, specific details and limits must be shown on the plans.

Recordation and/or intrument number must be provided for all temporary and permanent easements required for this project.

GENERAL EROSION AND SEDIMENT CONTROL NOTES

ES-1: Unless otherwise indicated, construct and maintain all vegetative and structural erosion and sediment control practices 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.

ES-2: Local authorities having jurisdiction will make a continuing review and evaluation of the methods and effectiveness of the e.c. plan.

ES-3: Place all erosion and sediment control measures prior to or as the first step in clearing, grading, or land disturbance.

ES-4: Maintain a copy of the approved erosion and sediment control plan on the site at all times.

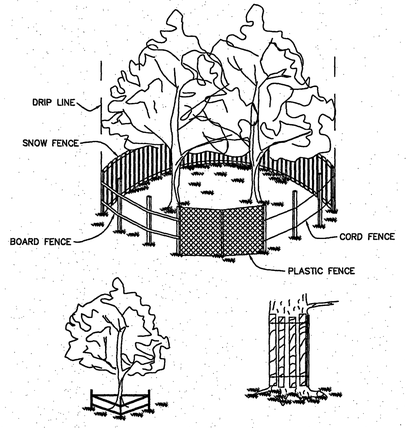
ES-5: Prior to commencing land-disturbing activities in areas other than indicated on these plans (including, but not limited to, offsite borrow or waste area), submit a supplementary erosion control plan to the Architect/Engineer for review and acceptance.

ES-6: Provide additional erosion control measures necessary to prevent erosion and sedimentation as determined by the local authority having jurisdiction.

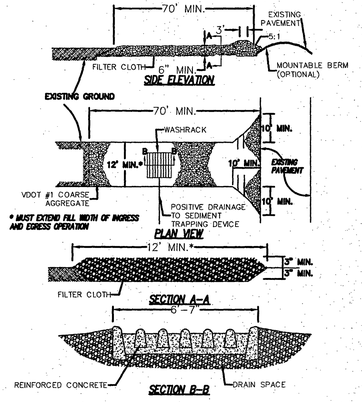
ES-7: All disturbed areas shall drain to approved sediment control measures at all times during land-disturbing activities and during site development.

ES-8: During dewatering operations, pump water into an approved filtering device.

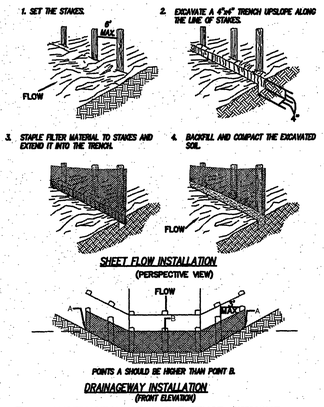
ES-9: Inspect all erosion control measures daily and after each runoff- producing rainfall event. Make any necessary repairs or cleanup to maintain the effectiveness of the erosion control devices immediately.



TP TREE PROTECTION (3.38-1)
NO SCALE



CE PAVED CONSTRUCTION ENTRANCE (3.02-1)
NO SCALE



SF CONSTRUCTION OF A SILT FENCE (WITHOUT WIRE SUPPORT) (3.05-2)
NO SCALE

LUMSDEN ASSOCIATES, P.C.
ENGINEERS-SURVEYORS-PLANNERS
ROANOKE, VIRGINIA
4661 BRAMBLETON AVENUE
P.O. BOX 20669
ROANOKE, VIRGINIA 24018
PHONE: (540) 774-4411
FAX: (540) 772-5445
E-MAIL: MAIL@LUMSDENPC.COM

COMMONWEALTH OF VIRGINIA
10-2-14
B. LEE HENDERSON, JR.
Lic. No. 017591
PROFESSIONAL ENGINEER

OLD SOUTHWEST WATERLINE REPLACEMENTS - PHASE I

PREPARED FOR
WESTERN VIRGINIA WATER AUTHORITY
SITUATED IN
THE CITY OF ROANOKE, VIRGINIA

EROSION & SEDIMENT CONTROL DETAILS

REVISIONS		
NO.	DATE	DESCRIPTION
1		
2		
3		
4		
5		

DATE: OCTOBER 2, 2014
SCALE: AS SHOWN
COMMISSION NO: 12-184
SHEET 8 OF 8

12184comp-08-es01.pit
w:\drawings\2012\12184\eng\12184comp.dwg