

SOIL EROSION CONTROL NARRATIVE

**PROJECT DESCRIPTION:**  
THE PROPOSED DEVELOPMENT IS THE CONSTRUCTION OF A NEW 11,200 SQ. FT. BUILDING. THE BUILDING WILL REPLACE EXISTING PAVEMENT. TOTAL DISTURBED AREA IS 0.602 ACRES. THE EROSION & SEDIMENT CONTROL MEASURES SHOWN HERE ARE DESIGNED IN ACCORDANCE WITH THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VA ESCH).

**EXISTING SITE CONDITIONS:**  
THE EXISTING SITE IS FULLY IMPROVED AND IMPERVIOUS. CURRENT AND PROPOSED USE IS FOR INDUSTRIAL ACTIVITY. EXISTING RUNOFF FLOWS TO THE SOUND AND OVER THE BANK TO A CONVEYANCE SWALE AT THE TOE OF SLOPE.

**ADJACENT PROPERTY:**  
THE SITE IS BOUNDED BY RESIDENTIAL (R-5) PROPERTY & BEECH STREET TO THE NORTH. ALL OTHER SIDES ARE ADJOINING INDUSTRIAL (I-2) PROPERTY OWNED BY THE DEVELOPER (ROANOKE ELECTRIC STEEL CORPORATION).

**OFF-SITE AREAS:**  
THIS PROJECT ANTICIPATES OFF-SITE WASTE AREAS. THE CONTRACTOR SHALL PROVIDED THE LOCATION OF THESE AREAS TO THE GOVERNING AUTHORITY. EROSION CONTROL PLANS OR MEASURES WILL BE REQUIRED FOR THESE OFF-SITE LOCATIONS OR MAY ALREADY BE IN PLACE. THE DEMOLITION ITEMS SHALL BE DISPOSED IN ACCORDANCE WITH LOCAL GOVERNING REQUIREMENTS.

**SOILS:**  
SEE APPENDIX A OF THE STORMWATER SUBMITTAL PACKAGE FOR A SOILS MAP A SOILS DESCRIPTION OF THE ON-SITE SOIL CHARACTERISTICS.

**CRITICAL EROSION AREAS:**  
BLANKET MATTING IS PLANNED FOR THE STEEP SLOPES. SHOULD EROSION BECOME EVIDENT IN OTHER AREAS, CONTRACTOR SHALL STABILIZE AREAS WITH TEMPORARY SEEDING, BLANKET MATTING AND/OR HYDROMULCHING.

**EROSION & SEDIMENT CONTROL MEASURES:**  
UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO THE MINIMUM STANDARDS AND SPECIFICATIONS OF THE "VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK", THIRD EDITION. ADDITIONAL REFERENCE IS DIRECTED TO THE SUBMITTAL PACKAGE FOR THE PROJECT DESCRIBING EACH EROSION & SEDIMENT CONTROL MEASURE, AND WHETHER THAT MEASURE IS ANTICIPATED WITH THIS PROJECT.

- REGARDLESS OF FUTURE DEVELOPMENT PLANS, THE CONTRACTOR SHALL IMMEDIATELY INSTALL EROSION AND SEDIMENT CONTROL DEVICES AS SHOWN ON THE PLANS. THIS WORK SHALL BE COORDINATED IN ORDER OF THE WORK WHICH IS TO FOLLOW: CONTROL AT CENTERS OF FLOW, AND OTHER POINTS OF CONCENTRATION SHOWN SHALL BE CONSTRUCTED IN PLACE FIRST.
- AFTER THE INSTALLED CONTROL DEVICES ARE FOUND TO BE FUNCTIONAL, THE CONTRACTOR SHALL IMMEDIATELY PROCEED WITH DEMOLITION, CLEARING, AND PRELIMINARY GRADING OPERATIONS. ALL EXPOSED DENUDED AREAS SHALL BE SEEDD WITHIN SEVEN (7) DAYS AFTER FINAL GRADING, AND SHALL BE ACCOMPLISHED IN STRICT ACCORDANCE WITH THE "VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK", THIRD EDITION.
- IN GENERAL, ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED WEEKLY AND AFTER EACH SIGNIFICANT RAINFALL. IN PARTICULAR:
  - MEASURES SHALL BE MAINTAINED TO PREVENT TRACKING OR FLOW OF MUD ONTO PUBLIC RIGHT-OF-WAYS.
  - ALL SILT FENCE BARRIERS AND INLET PROTECTIONS SHALL BE CHECKED REGULARLY FOR UNDERMINING AND SEDIMENT BUILDUP.
  - ALL SEEDD AREAS WILL BE CHECKED REGULARLY TO SEE THAT A GOOD STAND IS MAINTAINED. AREAS SHALL BE FERTILIZED AND RESEEDD AS NEEDED.
- FOLLOWING THE COMPLETION OF DEVELOPMENT AND STABILIZATION OF ALL AREAS AND AFTER IT HAS BEEN DETERMINED THAT EROSION OR SEDIMENTATION IS NO LONGER OCCURRING ON THE SITE OR AT ITS BOUNDARIES AND THAT DRAINAGE FLOWS ARE FUNCTIONING ACCORDING TO DESIGN, THE CONTRACTOR MAY THEN BEGIN TO REMOVE THE TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES. THIS WORK SHALL BE DONE IN A CAREFUL, NEAT, ORGANIZED MANNER.

**STRUCTURAL PRACTICES**  
Listed and described below are various structural practices used for this project.

**Temporary Construction Entrance (3.02)** – A stone pad, located at points of vehicular ingress and egress on a construction site, to reduce the soil transported onto public roads and other paved areas. A TEMPORARY CONSTRUCTION ENTRANCE HAS BEEN INCLUDED IN THIS PROJECT AND IS SHOWN ON THE DRAWINGS.

**Silt Fence (3.05)** – A temporary sediment barrier constructed of posts, filter fabric and, in some cases, a wire support fence, placed across or at the toe of a slope or in a minor drainage way to intercept and detain sediment and decrease flow velocities from drainage areas of limited size; applicable where sheet and rill erosion or small concentrated flows may be a problem. Maximum effective life of 6 months. SILT FENCE WILL BE USED ON THIS PROJECT AND IS SHOWN ON THE DRAWINGS.

**Storm Drain Inlet Protection (3.07)** – The installation of various kinds of sediment trapping measures around drop inlets or curb inlet structures prior to permanent stabilization of the disturbed area; limited to drainage areas not exceeding one acre, and not intended to control large, concentrated stormwater flows. Storm Drain Inlet Protection will be used on this project and is shown on the drawings. INLET PROTECTION WILL BE USED ON THIS PROJECT AND IS SHOWN ON THE DRAWINGS.

**Topsailing (3.30)** – Preserving and using topsoil to provide a suitable growth medium for vegetation used to stabilize disturbed areas. Applicable where preservation or importation of topsoil is most cost-effective method of providing a suitable growth medium; not recommended for slopes steeper than 2:1 unless additional measures are taken to prevent sloughing and erosion. Topsoil may be stockpiled, protected from erosion, and then redistributed for lawn/grass areas. Exact location shall be determined by the Contractor.

**Temporary Seeding (3.31)** – Establishment of temporary vegetative cover on disturbed areas that will not be brought to final grade for periods of 30 days to one year by seeding with appropriate rapidly-growing plants. Temporary Seeding is planned for this development.

**Permanent Seeding (3.32)** – Establishment of perennial vegetative cover by planting seed on rough-graded areas that will not be brought to final grade for a year or more or where permanent, long-lived vegetative cover is needed on fine-graded areas. Permanent Seeding will be used on all finished areas outside of the parking areas.

**Mulching (3.35)** – Application of plant residues or other suitable materials to disturbed surfaces to prevent erosion and reduce overland flow velocities. Fosters plan growth by increasing available moisture and providing insulation against extreme heat or cold. Should be applied to all seeding operations, themselves, and bare areas which cannot be seeded due to the season but which still need protection to prevent soil loss.

Mulching is planned for this project.

**Dust Control (3.39)** – Reducing surface and air movement of dust during land disturbance, demolition or construction activities in areas subject to dust problems in order to prevent soil loss and reduce the presence of potentially harmful airborne substance. Dust Control will be practiced to keep dust generation to reasonable levels.

**MANAGEMENT STRATEGIES**  
1. A PRE-CONSTRUCTION CONFERENCE SHALL BE SCHEDULED WITH THE CITY, TO BE HELD AT LEAST 48 HRS PRIOR TO ANY CONSTRUCTION.  
2. CONTRACTOR OR SITE OPERATOR SHALL HAVE AN ON-SITE EMPLOYEE CERTIFIED AS THE "RESPONSIBLE LAND DISTURBER" BY THE COMMONWEALTH OF VIRGINIA, DEPARTMENT OF CONSERVATION AND RECREATION, WHO WILL INSPECT EROSION AND SILTATION CONTROL DEVICES AND MEASURES FOR PROPER INSTALLATION. THIS EMPLOYEE SHALL ALSO INSPECT FOR DEFICIENCIES IMMEDIATELY AFTER EACH RAINFALL. AT LEAST DAILY DURING PROLONGED RAINFALL, AND AT LEAST EVERY OTHER WEEK WHEN NO RAINFALL OCCURS. PRIOR TO RECEIVING A LAND DISTURBANCE PERMIT, THE OWNER WILL PROVIDE THE NAME OF THE "RESPONSIBLE LAND DISTURBER" TO THE GOVERNING AUTHORITY. THE CERTIFIED RESPONSIBLE LAND DISTURBER MUST ATTEND THE PRE-CONSTRUCTION MEETING.  
3. CONSTRUCTION SEQUENCING OF INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES SHALL BE AS DEFINED ON THE EROSION AND SEDIMENT CONTROL PLANS FOR THE VARIOUS PHASES DESCRIBED.

**MAINTENANCE**  
ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE CHECKED DAILY AND AFTER ALL SIGNIFICANT RAINFALL. IN PARTICULAR:

- SILT FENCE AND INLET PROTECTION SHALL BE CHECKED REGULARLY TO ENSURE THAT THE FABRIC HAS NOT BEEN UNDERMINED OR HAS DETERIORATED. SEDIMENT SHALL BE REMOVED WHEN LEVEL OF BUILDUP REACHES HALFWAY UP THE BARRIER.
- AREAS WHICH HAVE RECEIVED SEEDING SHALL BE CHECKED REGULARLY TO ENSURE THAT A GOOD STAND OF GRASS IS MAINTAINED. AREAS SHALL BE FERTILIZED AND RESEEDD AS REQUIRED.

SPECIFIC REQUIREMENTS RELATED TO INSPECTION AND MAINTENANCE OF EACH EROSION CONTROL MEASURE ARE DISCUSSED IN THE VESCH STANDARDS AND SPECIFICATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF ALL EROSION CONTROL MEASURES TO THE SATISFACTION OF LOCAL REVIEWING AUTHORITIES, AS WELL AS THE INSTALLATION OF ADDITIONAL MEASURES AS NEEDED TO ENSURE THAT SEDIMENT LADEN RUNOFF DOES NOT LEAVE THE SITE.

**STORMWATER CONSIDERATIONS:**  
THE SITE IS EVALUATED AS FOLLOWS:

**QUANTITY CONSIDERATIONS:**  
THE DEVELOPED SITE WILL REDUCE TOTAL IMPERVIOUS BUT CONVERTS SOME FOREST COVER TO LAWN. POST- IS SLIGHTLY LESS THAN PRE-DISCHARGE. PLEASE SEE APPENDIX C FOR THE POST DEVELOPED CONDITIONS.

**QUALITY CONSIDERATIONS:**  
THE VRRM REDEVELOPMENT SPREADSHEET WAS USED TO CALCULATE THE PHOSPHOROUS REMOVAL REQUIREMENTS FOR THE ENTIRE LIMITS OF DISTURBANCE. THE PHOSPHOROUS REMOVAL WILL BE ADDRESSED BY PURCHASING PHOSPHOROUS CREDITS FROM A NUTRIENT BANK. PLEASE SEE APPENDIX E.

**INLET/CULVERT CONSIDERATIONS:**  
CULVERT AND STORM SEWER CALCULATIONS HAVE BEEN PROVIDED FOR THE PROPOSED STORM SYSTEM. THESE CALCULATIONS SHOW THAT THE 10-YEAR STORM IS CONTAINED WITHIN THE SYSTEM WITHOUT CAUSING ANY EROSION OR FLOODING. PLEASE SEE APPENDIX D FOR CALCULATIONS.

**DOWNSTREAM ANALYSIS:**  
UNDER PROPOSED CONDITIONS, ALL RUNOFF FROM THE SITE IS BEING DIRECTED TO THE EXISTING ON-SITE SYSTEM. ALL RUNOFF FROM OUR SITE WILL BE DIRECTED TO THE EXISTING CONCRETE GROUTED RIP RAP SWALE.  
AS OUR SITE DRAINS TO A MANMADE STORM SYSTEM, THE ENERGY BALANCE EQUATION IS NOT REQUIRED TO BE MET. THE PROPOSED SITE IMPROVEMENTS DO NOT INCREASE THE 2 AND 10 YEAR STORM EVENTS TO MORE THAN PRE-DEVELOPED CONDITION. PLEASE SEE APPENDIX F FOR ADDITIONAL ANALYSIS

WITH RESPECT TO MS-19, ADJACENT PROPERTIES ARE PROTECTED FROM INCREASES IN VELOCITIES, VOLUMES, AND PEAK RUNOFF RATES. THE ON-SITE CONVEYANCE SYSTEM COLLECTS AND DIRECTS FLOWS ACROSS THE SITE AND TO THE FLOOD PLAIN.

**GENERAL EROSION & SEDIMENT CONTROL NOTES: (TABLE 6-1)**  
ES-1. Unless otherwise indicated, all vegetative and structural erosion & sediment control practices will be constructed and maintained according to minimum standards and specifications of the Virginia Erosion and Sediment Control Handbook, latest edition, and Virginia Regulations 4VAC50-30 Erosion & Sediment Control Regulations.  
ES-2. Not utilized in this locality.  
ES-3. All erosion and sediment control measures, identified within the initial erosion & sediment control plan, 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, or approval letter from the locality of the property being used to borrow or waste material.  
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.

EROSION & SEDIMENT CONTROL MINIMUM STANDARDS

**MS-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 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. **TEMPORARY AND PERMANENT SEEDING ARE NEEDED FOR THIS PROJECT AND ARE SHOWN ON THE PLANS.**

**MS-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. **STOCKPILING HAS BEEN CALLED FOR ON THE PLANS. THE SPECIFIC LOCATIONS ARE TO BE DETERMINED BY THE CONTRACTOR.**

**MS-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. **ADEQUATE SYMBOLS, DETAILS, AND NOTES ARE PROVIDED ON THE PLAN FOR DIRECTION.**

**MS-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. **SILT FENCE IS SHOWN ON THE PLAN WHERE NEEDED AND SHALL BE INSTALLED PRIOR TO GRADING.**

**MS-5** STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DAMS, DIKES AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION. **ADEQUATE SYMBOLS, DETAILS, AND NOTES ARE PROVIDED ON THE PLAN FOR DIRECTION.**

**N/A MS-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 OUTFALL 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.

**MS-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. **SLOPE STABILIZING MEASURES ARE IDENTIFIED ON THE PLANS, SPECIFICALLY BLANKET MATTING.**

**N/A 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.

**N/A MS-9** WHENEVER WATER SEEPS FROM A SLOPE FACE, ADEQUATE DRAINAGE OR OTHER PROTECTION SHALL BE PROVIDED.

**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. **INLET PROTECTION IS SHOWN ON THE PLANS. LESS THAN THE MAXIMUM OF 1.0 ACRE DRAINS TO EACH INLET.**

**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. **ADEQUATE SYMBOLS, DETAILS, AND NOTES ARE PROVIDED ON THE PLAN FOR DIRECTION.**

**N/A 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.

**N/A 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.

**N/A MS-14** ALL APPLICABLE FEDERAL, STATE AND LOCAL REQUIREMENTS PERTAINING TO WORKING IN OR CROSSING LIVE WATERCOURSES SHALL BE MET.

**N/A MS-15** THE BED AND BANKS OF A WATERCOURSE SHALL BE STABILIZED IMMEDIATELY AFTER WORK IN THE WATERCOURSE IS COMPLETED.

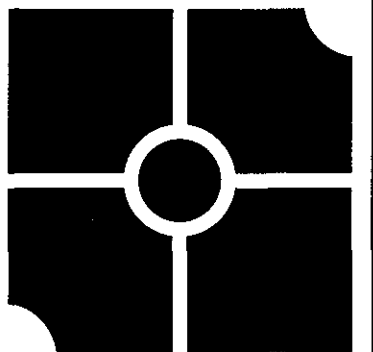
**MS-16** UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING STANDARDS IN ADDITION TO OTHER APPLICABLE CRITERIA:  
a. NO MORE THAN 500 LINEAR FEET OF TRENCH MAY BE OPENED AT ONE TIME.  
b. EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES.  
c. EFFLUENT FROM 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.

**THE CONTRACTOR SHALL FOLLOW MS-16 WHEN INSTALLING STORM SYSTEMS & UTILITIES.**

**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 SCREWING AND TRANSPORTED TO A SEDIMENT CONTROL DISPOSAL AREA. SEEDING SHALL BE ALLOWED ONLY AFTER SEDIMENT IS REMOVED IN THIS MANNER. THIS PROVISION SHALL NOT APPLY TO INDIVIDUAL DEVELOPMENT LOTS AS WELL AS TO LARGER LAND-DISTURBING ACTIVITIES. **MEASURES TO ADDRESS THE CONSTRUCTION ENTRANCE IS PROVIDED ON THE PLAN.**

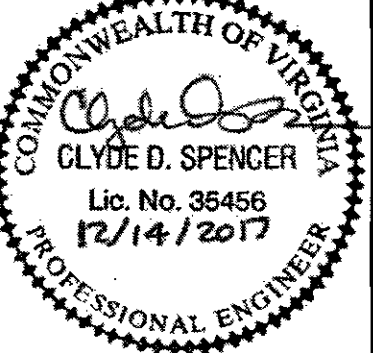
**MS-18** ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED, UNLESS OTHERWISE AUTHORIZED BY THE VESOP AUTHORITY. TRACKING OF SEDIMENT FROM THE DETENTION SOIL AREAS RESULTING FROM THE DISPOSITION OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION. **CONTRACTOR SHALL FOLLOW MS-18 ONCE FINAL GRADE IS MET AND CONSTRUCTION IS FINISHED.**

**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 NON-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 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 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.  
(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. 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 OUTFALLS INTO A NATURAL CHANNEL OR WILL NOT CAUSE THE PRE-DEVELOPMENT PEAK RUNOFF RATE FROM A 10-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 VESOP 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 VESOP 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. A SINGLE DEVELOPMENT PROJECT SHALL 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) REGULATION OR ARE EXEMPT PURSUANT TO SUBDIVISION C 7 OF § 62.1-44.15:34 OF THE ACT.  
n. COMPLIANCE WITH THE WATERQUANTITY STANDARDS SHALL SATISFY THE MINIMUM STANDARD OF 9VAC25-870-66 OF THE VIRGINIA STORMWATER MANAGEMENT PROGRAM (VSMP) REGULATION SHALL BE DEEMED TO SATISFY THE REQUIREMENTS OF THIS SUBDIVISION 19.  
**ADDRESSED IN THE STORMWATER CONSIDERATIONS AND STORMWATER SUBMITTAL PACKAGE.**



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**STEEL DYNAMICS**  
**Steel Parts Warehouse 2017**  
Tax # 6021103  
City of Roanoke, Virginia

City of Roanoke  
Planning, Building, & Development  
COMPREHENSIVE DEVELOPMENT PLAN  
**FIELD REVISION**  
**APPROVED**  
by Adrian Gilbert 12/26/2017

REVISIONS:	
Rev. 1 per City Comments 2017-09-13	
Rev. 1 Completed 2017-09-15	
Rev. 2 Client Information	
Rev. 2 Completed 2017-09-27	
Rev. 3 Revised for Consistency	
Rev. 3 Completed 2017-10-16	
Rev. 4 Revised for Water & Dev	
Field Rev. #1: Utility Conflicts	
Field Rev. #1: Completed 2017-12-14	

**DESIGNED BY:** CDS  
**DRAWN BY:** CDS  
**CHECKED BY:** SRB

**DATE:**  
September 18, 2017  
**SHEET TITLE:**  
ESC  
Narrative  
**SCALE:**  
**SHEET NO.**

**C06**