## EROSION AND SEDIMENT CONTROL NARRATIVE

I. PROJECT DESCRIPTION:

THE SUBJECT SITE IS LOCATED NORTHEAST OF THE INTERSECTION OF HERSHBERGER ROAD AND RUTGERS STREET IN ROANOKE, VIRGINIA. THE SITE IS PART OF A LARGER SHOPPING CENTER WHICH CONTAINS AN EXISTING GROCERY MARKET. RESTAURANTS, AND AN AUTO PARTS MANUFACTURER. THE PROPOSED IMPROVEMENTS INCLUDE DEMOLITION OF AN EXISTING BUILDING, A PROPOSED ±102,260 WHOLESALE CLUB WITH UTILITIES. LANDSCAPING, AND ASSOCIATED SITE IMPROVEMENTS AS SHOWN IN THIS SITE PLAN SET. THE AREA OF DISTURBANCE FOR THIS PROJECT IS APPROXIMATELY 6.07 ACRES.

II. EXISTING SITE CONDITIONS:

THE SUBJECT PARCEL IS IDENTIFIED BY TAX MAP NUMBER 6660105. THE SITE IS CURRENTLY AN EXISTING SHOPPING CENTER. THE SOUTH SIDE OF THE EXISTING DEPARTMENT STORE SHEET FLOWS ACROSS THE EXISTING PARKING AREA TOWARD HERSHBERGER ROAD, WHERE IT IS CAPTURED BY AN EXISTING STORMWATER CONVEYANCE SYSTEM. THE NORTH SIDE OF THE DEPARTMENT STORE DRAINS TO THE NORTHEAST, TOWARD THE EXISTING AUTO PART MANUFACTURER BEFORE ITS CAPTURED BY AN EXISTING STORMWATER CONVEYANCE SYSTEM ALONG AIRPORT ROAD. THE EXISTING TOPOGRAPHY ON THE SITE VARIES FROM ELEVATIONS OF 1110 TO 1135, WITH AVERAGE SLOPES OF APPROXIMATELY 4%.

III. ADJACENT PROPERTIES:

THE SITE IS BORDERED ON THE NORTH BY AN EXISTING SHOPPING CENTER ON THE SOUTH BY HERSHBERGER ROAD, ON THE EAST BY AN EXISTING AUTO PARTS MANUFACTURER, AND ON THE WEST BY EXISTING COMMERCIAL BUSINESSES AND RUTGERS STREET. NO IMPACTS TO THE ADJACENT PROPERTIES ARE ANTICIPATED WITH THIS DEVELOPMENT.

IV. OFFSITE AREAS:

NO OFFSITE LAND DISTURBANCE IS ANTICIPATED. IF UNSUITABLE SOILS ARE ENCOUNTERED DURING CONSTRUCTION, IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE PROPER METHOD OF DISPOSAL AND SUBMIT ANY NECESSARY PLANS TO THE CITY OF ROANOKE. FURTHERMORE IF ANY OFFSITE BORROW OR WASTE AREAS ARE NECESSARY. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE FINAL STABILIZATION AND MAINTENANCE OF THOSE OFFSITE AREAS.

THE SOIL FOR THE ENTIRE 14.02 ACRE SUBJECT SITE IS DEFINED AS URBAN LAND, WITH SLOPES RANGING FROM 0 TO 30 PERCENT.

VI. CRITICAL EROSION AREAS:

NONE EXIST ON SITE.

VII. EROSION AND SEDIMENT CONTROL MEASURES:

ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PROTECTION SHALL BE CONSTRUCTED AND MAINTAINED ACCORDING TO THE MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH). THE MINIMUM STANDARDS OF VESCR SHALL BE ADHERED TO UNLESS OTHERWISE WAIVED OR APPROVED BY A VARIANCE. SPECIFIC EROSION AND SEDIMENT CONTROL MEASURES UTILIZED IN THIS PROJECT INCLUDE THE FOLLOWING:

1. TEMPORARY CONSTRUCTION ENTRANCE - 3.02 A TEMPORARY CONSTRUCTION ENTRANCE WITH A WASH RACK SHALL BE INSTALLED AT THE ENTRANCE FROM THE ON-SITE PARKING LOT AISLE AS INDICATED ON THE EROSION AND SEDIMENT CONTROL PLANS. DURING MUDDY CONDITIONS, DRIVERS OF CONSTRUCTION VEHICLES WILL BE REQUIRED TO WASH THEIR WHEELS PRIOR TO ENTERING THE RIGHT-OF-WAY. DURING PHASE I OF CONSTRUCTION, WATER FOR THE WASH RACK SHALL BE PROVIDED WITH A WATER TRUCK. THE PROPOSED WATERLINE WILL BE UTILIZED AFTER INSTALLED.

2. SILT FENCE/SUPER SILT FENCE - 3.05 SILT FENCE/SUPER SILT FENCE SEDIMENT BARRIERS WILL BE INSTALLED DOWN SLOPE OF AREAS WITH MINIMAL GRADES TO FILTER SEDIMENT-LADEN RUNOFF FROM SHEET FLOW.

3. STORM DRAIN INLET PROTECTION - 3.07 ALL STORM SEWER INLETS SHALL BE PROTECTED DURING CONSTRUCTION. SEDIMENT-LADEN WATER SHALL BE FILTERED PRIOR TO ENTERING THE STORM SEWER INLETS AND BMP STRUCTURE.

4. PERMANENT SEEDING - 3.32 SEE NEXT SHEET FOR PERMANENT SEEDING SPECIFICATIONS.

5. TREE PRESERVATION & PROTECTION - 3.38 PROTECTION OF DESIRABLE TREES FROM MECHANICAL AND OTHER INJURY DURING LAND DISTURBING AND CONSTRUCTION ACTIVITY.

VIII. MAINTENANCE PROGRAM:

1. TEMPORARY CONSTRUCTION ENTRANCE - 3.02 SILT FENCE SHALL BE INSPECTED AT THE END OF EACH DAY AND AFTER EACH RAINFALL. ANY REQUIRED REPAIRS OR REPLACEMENTS SHALL BE DONE IMMEDIATELY. SEDIMENT DEPOSITS SHALL BE REMOVED BY HAND AFTER EACH RAINFALL AND AT ANY TIME DEPOSITS REACH HALF THE HEIGHT OF THE BARRIER.

2. SILT FENCE/SUPER SILT FENCE - 3.05 INLET PROTECTIONS SHALL BE INSPECTED AT THE END OF EACH DAY AND AFTER EACH RAINFALL. ANY REQUIRED REPAIRS SHALL BE DONE

3. STORM DRAIN INLET PROTECTION - 3.07 ALL SEEDED AREAS SHALL BE CHECKED REGULARLY TO ENSURE THAT A GOOD STAND IS MAINTAINED. AREAS SHOULD BE FERTILIZED AND RESEEDED AS NEEDED.

4. ADJAÇENT ROADWAYS AND ENTRANCES WILL BE KEPT CLEAN FROM ACCUMULATED DEBRIS AT ALL TIMES.

IX. PERMANENT STABILIZATION:

TEMPORARY AND FINAL SEEDING WILL BE PROVIDED IN ACCORDANCE TO VESCH REQUIREMENTS THROUGHOUT CONSTRUCTION AS STATED ABOVE.

X. STORMWATER RUNOFF CONSIDERATIONS:

THE WATER QUALITY, OR BEST MANAGEMENT PRACTICES (BMP) FOR THIS SITE ARE MET WITH THE PURCHASE OF OFFSITE NUTRIENT CREDITS. SEE SHEET CXXX FOR BMP DETAILS. STORMWATER MANAGEMENT (SWM) FOR THIS SITE IS BEING MET THROUGH THE DECREASE OF IMPERVIOUS AREA THROUGHOUT THE SITE. SEE SHEET CXXX FOR SWM DETAILS.

XI. CALCULATIONS:

STORM WATER MANAGEMENT CALCULATIONS SHOWN ON SHEET C-504.

XII. SEQUENCE OF CONSTRUCTION

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1. OBTAIN ALL REQUIRED PERMITS.

2. PRECONSTRUCTION MEETING. 3. CONTRACTOR SHALL CONTACT JURISDICTION AT LEAST 48 HOURS PRIOR

TO COMMENCING CONSTRUCTION. 4. CONTRACTOR SHALL STAKE AND FLAG LIMITS OF CLEARING.

5. INSTALL CONSTRUCTION ENTRANCE

6. INSTALL ALL PERIMETER CONTROLS

7. BEGIN DEMOLITION OF EXISTING DEPARTMENT STORE. 8. SAWOUT AND REMOVE EXISTING PAVEMENT PER DEMOLITION PLAN. 9. PROPERLY DISPOSE OF ANY EXISTING UNUSABLE MATERIAL

11. PROVIDE A TEMPORARY BYPASS PRIOR TO REMOVAL OF EXISTING STORM

NOTE: THE INSPECTOR SHALL APPROVE PHASE I PRIOR TO PHASE II COMMENCING.

PHASE II

1. BEGIN SITE WORK 2. DIG TRENCHES NECESSARY FOR UTILITY PLACEMENT IN ACCORDANCE

WITH MS-16. 3. INSTALL ALL UNDERGROUND UTILITIES.

4. INSTALL CURB, GUTTER AND INLET PROTECTION. 5. INSTALL BASE AGGREGATE FOR DRIVE AND PARKING AREAS.

6. FINAL GRADE AND PERMANENTLY STABILIZE ALL DISTURBED LANDSCAPE

7. PAVE SITE AND INSTALL CONCRETE SIDEWALKS. 8. INSTALL LANDSCAPE PLANTINGS IN ACCORDANCE WITH THE LANDSCAPE

9. FOLLOWING COMPLETE SITE STABILIZATION AND WITH THE AGREEMENT OF INSPECTOR, REMOVE ALL EROSION AND SEDIMENT CONTROL MEASURES.

XIII. GENERAL LAND CONSERVATION NOTES:

1. NO DISTURBED AREA, WHICH IS NOT ACTIVELY BEING WORKED, SHALL REMAIN DENUDED FOR MORE THAN SEVEN (7) CALENDAR DAYS UNLESS OTHERWISE AUTHORIZED BY THE DIRECTOR.

2. ALL E&S CONTROL MEASURES APPROVED WITH THE PHASE I E&S CONTROL PLAN SHALL BE PLACED AS THE FIRST STEP IN GRADING.

3. ALL STORM AND SANITARY SEWER LINES NOT IN STREETS SHALL BE SEEDED AND MULCHED WITHIN SEVEN (7) DAYS AFTER BACKFILL. NO MORE

4. ELECTRIC, POWER, TELEPHONE AND GAS SUPPLY TRENCHES SHALL BE COMPACTED, SEEDED AND MULCHED WITHIN SEVEN (7) DAYS AFTER

THAN 500 FEET SHALL BE OPEN AT ANY ONE TIME.

5. ALL TEMPORARY EARTH BERMS, DIVERSIONS AND SEDIMENT CONTROL DAMS SHALL BE SEEDED AND MILLCHED FOR TEMPORARY VEGETATIVE COVER IMMEDIATELY (AS SOON AS POSSIBLE, BUT NO LATER THAN 48 HOURS) AFTER COMPLETION OF GRADING. STRAW OR HAY MULCH IS REQUIRED. ALL SOIL STOCKPILES SHALL BE SEEDED AND MULCHED WITHIN SEVEN (7) DAYS AFTER GRADING.

6. DURING CONSTRUCTION, ALL STORM SEWER INLETS SHALL BE PROTECTED BY INLET PROTECTION MAINTAINED AND MODIFIED DURING CONSTRUCTION PROGRESS AS REQUIRED.

7. ANY DISTURBED AREA NOT COVERED BY NOTE #1 ABOVE AND NOT PAVED, SODDED OR BUILT UPON BY NOVEMBER 1 OR DISTURBED AFTER THAT DATE SHALL BE MULCHED IMMEDIATELY WITH STRAY OR HAY MULCH AT THE RATE OF TWO (2) TONS PER ACRE (4,483 KG/HA) AND OVERSEEDED BY

8. AT THE COMPLETION OF ANY PROJECT CONSTRUCTION AND PRIOR TO BOND RELEASE. ALL TEMPORARY SEDIMENT CONTROL SHALL BE REMOVED AND ALL DENUDED AREAS SHALL BE STABILIZED.

9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PREPARING A STORMWATER POLLUTION PREVENTION PLAN PER FEDERAL, STATE AND LOCAL REQUIREMENTS UNLESS OTHERWISE DIRECTED BY THE CLIENT.

10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FILING THE APPLICABLE NOTICE OF INTENT TO INITIATE LAND DISTURBING ACTIVITIES WITH THE APPROPRIATE REVIEWING AGENCY.

11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FILING THE APPLICABLE NOTICE OF TERMINATION OF LAND DISTURBING ACTIVITIES WITH THE APPROPRIATE REVIEWING AGENCY.

XIV. OTHER IMPORTANT NOTES:

1. ALL AREAS TO BE PAVED MAY BE STABILIZED BY INSTALLATION OF BASE AND SUBBASE MATERIALS INSTEAD OF TEMPORARY VEGETATION COVER

2. THE CONTRACTOR SHALL PROVIDE ADEQUATE MEANS OF CLEANING MUD FROM TRUCKS AND/OR OTHER EQUIPMENT PRIOR TO ENTERING THE PUBLIC RIGHT-OF-WAY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CLEAR THE STREETS AND TAKE WHATEVER MEASURES NECESSARY TO ENSURE THAT THE STREETS ARE MAINTAINED IN A CLEAN AND DUST-FREE CONDITION AT ALL TIMES.

3. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PERFORM THE WORK IN SUCH A MANNER AS TO PREVENT THE WASHING OF ANY TOPSOIL OR DEBRIS INTO ADJACENT PROPERTIES.

4. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO HAVE AND MAINTAIN A WATER TRUCK ON SITE AT ALL TIMES FOR THE PURPOSE OF WASHING CONSTRUCTION VEHICLES AT THE STONE CONSTRUCTION ENTRANCE PRIOR TO THEIR ENTERING THE RIGHT-OF-WAY. SEDIMENT LADEN RUNOFF SHALL BE DIRECTED AWAY FROM THE RIGHT-OF-WAY AND TOWARDS AN EROSION AND SEDIMENT CONTROL DEVICE PRIOR TO DISCHARGE INTO THE PUBLIC STORM SYSTEM.

5. BORROW OR HAUL (IF REQUIRED) SHALL BE FROM AN APPROVED OFFSITE LOCATION. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL RELATED PERMITS.

6. IF GROUNDWATER IS ENCOUNTERED DURING CONSTRUCTION, GROUNDWATER AND SOIL SHALL BE DISPOSED OF IN A MANNER WHICH DOES NOT SPILL ONTO EXISTING PAVEMENT AND CLOG EXISTING INLETS. MINIMUM STANDARDS

MS-1: PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN (7) DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN (7) DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT (UNDISTURBED) FOR LONGER THAN 14 DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE (1)

ACTION: SEE EROSION AND SEDIMENT CONTROL NARRATIVE, SECTION IX. PERMANENT STABILIZATION:

MS-2: DURING CONSTRUCTION OF THE PROJECT, SOIL STOCKPILES AND BORROW AREAS SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES. THE APPLICANT RESPONSIBLE FOR THE TEMPORARY PROTECTION AND PERMANENT STABILIZATION OF ALL SOIL STOCKPILES ON SITE AS WELLAS BORROW AREAS AND SOIL INTENTIONALLY TRANSPORTED FROM THE PROJECT SITE.

**ACTION: NO SOIL STOCKPILES ARE ANTICIPATED.** 

MS-3: A PERMANENT VEGETATIVE COVER SHALL BE ESTABLISHED ON DENUDED AREAS NOT OTHERWISE 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.

ACTION: SEE EROSION AND SEDIMENT CONTROL NARRATIVE, SECTION IX. PERMANENT STABILIZATION.

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.

MS-5: STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DAMS, DIKES, AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.

ACTION: SEE SEQUENCE OF CONSTRUCTION - PHASE I ON THIS SHEET

ACTION: NO EARTHEN STRUCTURES ARE PROPOSED WITH THIS PLAN. 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 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. ACTION: NO SEDIMENT TRAPS ARE PROPOSED WITH THIS PLAN.

MS-7: CUT AND FILL SLOPES SHALL BE ASSIGNED AND CONSTRUCTED IN A MANNER THAT WILL MINIMIZE EROSION, SLOPES THAT ARE FOUND TO BE ERODING EXCESSIVELY WITHIN ONE (1) YEAR OF PERMANENT STABILIZATION SHALL BE PROVIDED WITH ADDITIONAL SLOPE STABILIZING MEASURES UNTIL THE PROBLEM

ACTION: ALL CUT/FILL SLOPES HAVE BEEN DESIGNED SO THAT MAX. 3:1 GRADE IS NOT EXCEEDED. 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.

ACTION: CONCENTRATED RUNOFF WILL BE CONTAINED WITH AN ADEQUATE TEMPORARY OR

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

ACTION: ALL STORM SEWER INLETS WILL BE PROTECTED DURING CONSTRUCTION.

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.

ACTION: SEE SEQUENCE OF CONSTRUCTION - PHASE II ON THIS SHEET.

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. NON-ERODIBLE MATERIAL SHALL BE USED FOR THE CONSTRUCTION OF CAUSEWAYS AND COFFERDAMS, EARTHEN FILL MAY BE USED FOR THESE STRUCTURES IF ARMORED BY NON-ERODIBLE COVER MATERIALS.

ACTION: NOT APPLICABLE.

**ACTION: NOT APPLICABLE** 

MS-13: WHEN A LIVE WATERCOURSE MUST BE CROSSED BY CONSTRUCTION VEHICLES MORE THAN TWICE SIX (6) MONTH PERIOD, A TEMPORARY VEHICULAR STREAM CROSSING CONSTRUCTED OF NON-ERODIBLE MATERIALS SHALL BE PROVIDED. **ACTION: NOT APPLICABLE** 

MS-14: ALL APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS PERTAINING TO WORKING IN OR CROSSING LIVE WATERCOURSES SHALL BE MET

MS-15: THE BED AND BANKS OF A WATERCOURSE SHALL BE STABILIZED IMMEDIATELY AFTER WORK IN THE WATERCOURSE IS COMPLETED

**ACTION: NOT APPLICABLE.** 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 SHALL 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 OFFSITE PROPERTY

d. MATERIAL USED FOR BACKFILLING TRENCHES SHALL BE PROPERLY COMPACTED IN ORDER TO MINIMIZE EROSION AND PROMOTE STABILIZATION

e. RE-STABILIZATION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THESE REGULATIONS.

f. APPLICABLE SAFETY REGULATIONS SHALL BE COMPLIED WITH.

ACTION: INSTALLATION OF UNDERGROUND UTILITY LINES SHALL COMPLY WITH MS-16. 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 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.

ACTION: A CONSTRUCTION ENTRANCE WITH WASHRACK HAS BEEN PROVIDED.

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 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

**ACTION: SEE SEQUENCE OF CONSTRUCTION - PHASE II ON THIS SHEET** 

## MINIMUM STANDARDS (CONT'D)

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:

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

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

(a) NATURAL CHANNELS SHALL BE ANALYZED BY THE USE OF A TWO (2) 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 (10) YEAR STORM TO VERIFY THAT STORMWATER WILL NOT OVERTOP ITS BANKS BY THE USE OF A TWO (2) 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 (10) YEAR STORM TO VERIFY THAT STORMWATER WILL BE CONTAINED WITHIN THE PIPE OR SYSTEM.

(1) IMPROVE THE CHANNEL TO A CONDITION WHERE A TEN (10) YEAR STORM WILL NOT OVERTOP THE

c. IF EXISTING NATURAL RECEIVING CHANNELS OR PREVIOUSLY CONSTRUCTED MAN-MADE CHANNELS OR PIPES ARE NOT ADEQUATE, THE APPLICANT SHALL

BANKS AND A TWO (2) YEAR STORM WILL NOT CAUSE EROSION TO THE CHANNEL BED OR BANKS;

(2) IMPROVE THE PIPE OR PIPE SYSTEM TO A CONDITION WHERE THE TEN (10) 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 (2) YEAR STORM TO INCREASE WHEN RUNOFF OUTFALLS INTO A NATURAL CHANNEL OR WILL NOT CAUSE THE PRE-DEVELOPMENT PEAK RUNOFF RATE FROM A TEN (10) YEAR STORM TO INCREASE WHEN RUNOFF OUTFALLS INTO A MAN-MADE CHANNEL: OF

(4) PROVIDE A COMBINATION OF CHANNEL IMPROVEMENT, STORMWATER DETENTION OR OTHER MEASURE WHICH IS SATISFACTORY TO THE PLAN-APPROVING AUTHORITY TO PREVENT

d. THE APPLICANT SHALL PROVIDE EVIDENCE OF PERMISSION TO MAKE THE IMPROVEMENTS.

RESPONSIBLE FOR PERFORMING THE MAINTENANCE.

STREAMS AND OTHER WATERS OF THE STATE.

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

3. OUTFALL FROM A DETENTION FACILITY SHALL BE DISCHARGED TO A RECEIVING CHANNEL, AND ENERGY DISSIPATERS SHALL BE PLACED AT THE OUTFALL OF ALL DETENTION FACILITIES AS NECESSARY TO PROVIDE A STABILIZED TRANSITION FROM THE FACILITY TO THE RECEIVING CHANNEL

I INCREASED VOLUMES OF SHEET FLOWS THAT MAY CAUSE PROSION OR SEDIMENTATION ON

SEPARATE DEVELOPMENT PROJECTS. INSTEAD, THE DEVELOPMENT, AS A WHOLE, SHALL BE

CONSIDERED TO BE A SINGLE DEVELOPMENT PROJECT, HYDROLOGIC PARAMETERS THAT REFLECT

PLAN SHALL SET FORTH THE MAINTENANCE REQUIREMENTS OF THE FACILITY AND THE PERSON

h. ALL ON-SITE CHANNELS MUST BE VERIFIED TO BE ADEQUATE.

ADJACENT PROPERTY SHALL BE DIVERTED TO A STABLE OUTLET, ADEQUATE CHANNEL, PIPE OR PIPE SYSTEM, OR TO A DETENTION FACILITY. i. IN APPLYING THESE STORMWATER RUNOFF CRITERIA, INDIVIDUAL LOTS OR PARCELS IN A RESIDENTIAL, COMMERCIAL OR INDUSTRIAL DEVELOPMENT SHALL NOT BE CONSIDERED TO BE

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,

. 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 § 10.1-562 OR 10.1-570 OF THE ACT m.FOR PLANS APPROVED ON AND AFTER JULY 1, 2014, THE FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS OF § 10.1-561 A OF THE ACT AND THIS SUBSECTION SHALL BE SATISFIED BY COMPLIANCE WITH WATER QUANTITY REQUIREMENTS IN THE STORMWATER MANAGEMENT ACT (§ 10.1-603.2 ET SEQ. OF THE CODE OF VIRGINIA) AND ATTENDANT REGULATIONS, UNLESS SUCH LAND-DISTURBING ACTIVITIES ARE IN ACCORDANCE WITH 4VAC50-60-48 OF THE VIRGINIA STORMWATER MANAGEMENT PROGRAM (VSMP) PERMIT REGULATIONS

n. COMPLIANCE WITH THE WATER QUANTITY MINIMUM STANDARDS SET OUT IN 4VAC50-60-66 OF THE VIRGINIA STORMWATER MANAGEMENT PROGRAM (VSMP) PERMIT REGULATIONS SHALL BE DEEMED TO SATISFY THE REQUIREMENTS OF MINIMUM STANDARD 19

ACTION: SEE STORMWATER RUNOFF CONSIDERATIONS ON THIS SHEET.

SOURCE: TABLE 6-1, CHAPTER 6, VIRGINIA EROSION & SEDIMENT CONTROL HANDBOOK

COMMENCEMENT OF LAND DISTURBING ACTIVITY, AND ONE WEEK PRIOR TO THE FINAL INSPECTION.

ES-8 DURING DEWATERING OPERATIONS, WATER WILL BE PUMPED INTO AN APPROVED FILTERING DEVICE.

ES-3 ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING AND GRADING.

ES-5 PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THESE PLANS (INCLUDING BUT NOT LIMITED, OFFSITE BORROW OR WASTE AREAS), THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION CONTROL PLAN TO THE OWNER FOR REVIEW AND

ES-6 THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES AS NECESSARY TO PREVENT EROSION AND

ES-7 ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING

ES.4 A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLANS SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.

REGULATIONS 4VAC50-30 EROSION AND SEDIMENT CONTROL REGULATIONS.

SEDIMENTATION AS DETERMINED BY THE PLAN APPROVING AUTHORITY.

SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.

APPROVAL BY THE PLAN APPROVING AUTHORITY

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REVISIONS DATE COMMENT ADDRESS CITY 10/25/17 COMMENTS

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NOT APPROVED FOR CONSTRUCTION

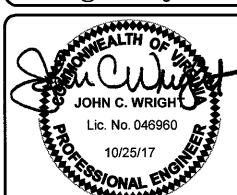
It's fast. It's free. It's the law.

DRAWN BY: HECKED BY: DATE: 9/12/17 SCALE: CADID

COMPREHENSIVE DEVELOPMENT

LOCATION OF SITE 1419 HERSHBERGER ROAD CITY OF ROANOKE, VIRGINIA

8 BLACKWELL PARK LANE, SUITE 201 WARRENTON, VIRGINIA 20186 Phone: (540) 349-4500 (540) 349-0321 VA@BohlerEng.com



**EROSION AND** 

GENERAL EROSION AND 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 ES-2 THE PLAN APPROVING AUTHORITY MUST BE NOTIFIED ONE WEEK PRIOR TO THE PRE-CONSTRUCTION CONFERENCE, ONE WEEK PRIOR TO THE

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.