

EROSION AND SEDIMENT CONTROL NARRATIVE

PROJECT DESCRIPTION: THE PURPOSE OF THIS PROJECT IS FOR THE DEMOLITION OF AN EXISTING ROADEWAY MOTEL AND CONSTRUCTION OF A NEW HOLIDAY INN EXPRESS HOTEL AND ASSOCIATED IMPROVEMENTS TO SERVE THIS USE. THERE WILL BE TWO ACCESS POINTS FROM EXISTING PUBLIC RIGHT OF WAYS OF WILLIAMSON ROAD AND ORANGE AVENUE. PUBLIC IMPROVEMENTS INCLUDE A NEW COMMERCIAL ENTRANCE, THE DISTURBED AREA FOR THE PROJECT IS 2.71 ACRES.

EXISTING SITE CONDITIONS: THE EXISTING SITE CONTAINS A PARKING LOT AND TWO MOTEL BUILDINGS ALONG WITH MISC. SITE IMPROVEMENTS. THE SITE DRAINS FROM NORTH TO SOUTH TO THE RIGHT OF WAY OF ORANGE AVENUE AND THE ASSOCIATED STORM SEWER SYSTEM. THE STORM SEWER IS CONVEYED INTO THE RIGHT OF WAY VIA STREET FLOW, CONCENTRATED FLOWS, AND UNDERGROUND PIPES.

ADJACENT PROPERTY: THE PROPERTY IS BOUNDED BY THE PUBLIC RIGHT OF WAY OF WILLIAMSON ROAD AND A COMMERCIAL PROPERTY TO THE WEST AND COMMERCIAL PROPERTIES TO THE NORTH, EAST, AND SOUTH. THE SITE IS NOT LOCATED WITHIN A FEMA DESIGNATED FLOODPLAIN. THE SITE ALSO HAS PUBLIC ROAD FRONTAGE ALONG ORANGE ROAD LOCATED TO THE SOUTH OF THE SITE.

OFF-SITE AREAS: THERE WILL BE OFF-SITE IMPROVEMENTS LOCATED WITHIN THE PUBLIC RIGHT OF WAY OF ORANGE AVENUE AND WILLIAMSON ROAD. THE CITY OF ROANOKE WILL BE NOTIFIED OF THE LOCATION OF MATERIAL BEING TRANSPORTED TO THE SITE TO ENSURE IT IS LOCATED WITHIN A PERMITTED SITE.

SOILS: SOILS INFORMATION HAS BEEN PROVIDED ON SHEET C10 INDICATING THAT THE SITE IS ENTIRELY COMPRISED OF 53--URBAN LAND, 0 TO 30 PERCENT SLOPES (HSG-D) AS SPECIFIED BY THE UNITED STATES DEPARTMENT OF AGRICULTURE - NATURAL RESOURCES CONSERVATION SERVICE - WEB SOIL SURVEY.

CRITICAL EROSION AREAS: THE G.C. SHALL ENSURE THAT NO SEDIMENT LADEN RUNOFF IS TRANSPORTED INTO THE EXISTING STORM SEWER SYSTEM. THE G.C. SHALL ALSO ENSURE THAT NO MUD TRACKING IS TRANSPORTED ONTO THE ADJACENT PUBLIC ROADS. SLOPES LOCATED TO THE EAST OF THE PROPOSED BUILDING SHALL BE PROPERLY STABILIZED AND VEGETATED.

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, THIRD EDITION" (VESCH). THE MINIMUM STANDARDS OF THE VESCH SHALL BE ADHERED TO UNLESS OTHERWISE DIRECTED BY THE LOCAL PROGRAM ADMINISTRATOR.

STRUCTURAL - SAFETY FENCE--STD. 3.01....A PROTECTIVE BARRIER TO PROHIBIT UNDESIRABLE USE OF AN EROSION CONTROL MEASURE.

CONSTRUCTION ENTRANCE--STD. 3.02....A STONE PAD, LOCATED AT POINTS OF VEHICULAR INGRESS AND EGRESS TO THE CONSTRUCTION SITE, TO REDUCE THE SOIL TRANSPORTED ONTO PUBLIC ROADS AND OTHER PAVED AREAS.

SILT FENCE--STD. 3.05....A TEMPORARY BARRIER CONSTRUCTED ALONG THE PERIMETER OF THE DISTURBED AREA AS REQUIRED TO INTERCEPT AND DETAIN SEDIMENT. SUPER SILT SHALL CONTAIN A WIRE BACKING TO PREVENT SEDIMENT LADEN RUNOFF FROM EXITING THE SITE.

STORM DRAIN INLET PROTECTION--STD. 3.07....THE INSTALLATION OF VARIOUS KINDS OF SEDIMENT TRAPPING MEASURES ARE DROP INLETS OR CURB INLET STRUCTURES PRIOR TO PERMANENT STABILIZATION OF THE DISTURBED AREA.

TEMPORARY DIVERSION DIKE--STD. 3.09....A RIDGE OF SOIL COMPACTED SOIL CONSTRUCTED AT THE TOP OR BASE OF A SLOPING DISTURBED AREA WHICH DIVERTS RUNOFF OFF-SITE RUNOFF AWAY FROM UNPROTECTED SLOPES AND TO A STABILIZED OUTLET, OR TO DIVERT SEDIMENT--LADEN RUNOFF TO A SEDIMENT TRAPPING STRUCTURE.

TEMPORARY SEDIMENT TRAP--STD. 3.13....A TEMPORARY PONDING AREA FORMED BY CONSTRUCTING AN EARTHEN EMBANKMENT WITH A STONE OUTLET TO DETAIN SEDIMENT--LADEN RUNOFF FROM SMALL DISTURBED AREAS LONG ENOUGH TO ALLOW THE MAJORITY OF SEDIMENT TO SETTLE OUT.

VEGETATIVE - TEMPORARY SEEDING--STD. 3.31....ESTABLISHMENT OF A TEMPORARY VEGETATIVE COVER ON DISTURBED AREAS THAT WILL NOT BE BROUGHT TO FINAL GRADE FOR PERIODS OF 30 DAYS TO 1-YEAR BY SEEDING WITH AN APPROPRIATE RAPIDLY GROWING SEED MIXTURE.

PERMANENT SEEDING--STD. 3.32....ESTABLISHMENT OF A VEGETATIVE COVER BY PLANTING SEED ON ALL FINAL GRADED AREAS THAT WILL NOT RECEIVE AN IMPERVIOUS COVER OR RECEIVE TOPSOIL MATERIAL TO PROVIDE A STABILIZED SITE AFTER THE PROJECT IS COMPLETE.

MULCHING--3.35....MULCH SHALL BE APPLIED TO ALL TEMPORARY AND PERMANENT SEEDING OPERATIONS TO PROMOTE THE GROWTH OF VEGETATION AND TO PROTECT THE SOIL SURFACE FROM RAINPOND IMPACTS.

SOIL STABILIZATION BLANKETS & MATTING--3.36....UPON COMPLETION OF GRADING OPERATIONS FOR THE AREA ALONG THE CUL-DE-SAC EMBANKMENT, A DEGRADABLE BLANKET SHALL BE INSTALLED ON ALL SLOPES 3:1 OR GREATER TO PROMOTE STABILIZATION DUE TO SEEDING OPERATIONS.

MANAGEMENT STRATEGIES:

A) CONSTRUCTION WILL BE SEQUENCED SO THAT GRADING OPERATIONS CAN BEGIN AND END AS QUICKLY AS POSSIBLE.

B) SEDIMENT TRAPPING MEASURES WILL BE INSTALLED AS A FIRST STEP IN GRADING.

C) THE LOCAL PROGRAM ADMINISTRATOR RESERVES THE RIGHT TO ADD TO, DELETE OR OTHERWISE CHANGE THE EROSION CONTROL MEASURES AS DEEMED NECESSARY DUE TO ACTUAL FIELD CONDITIONS BY WRITTEN NOTIFICATION TO THE CONTRACTOR.

D) ALL FILL AND CUT SLOPES SHALL BE SEED WITHIN SEVEN (7) DAYS OF ACHIEVING FINAL GRADE.

E) ONLY AFTER INSPECTION AND APPROVAL FROM THE LOCAL PROGRAM ADMINISTRATOR MAY ITEMS BE REMOVED FOLLOWING THE STABILIZATION OF THE CONTRIBUTING AREAS.

PERMANENT STABILIZATION:

ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE STABILIZED WITH PERMANENT SEEDING IMMEDIATELY FOLLOWING FINISHED GRADING. THE PERMANENT SEEDING INSTALLATION SHALL BE PER THE APPROPRIATE PERMANENT SEEDING APPLICATION.

STORMWATER MANAGEMENT:

THE 10-YEAR POST DEVELOPMENT PEAK RUNOFF RATES ARE LESS THAN 10-YEAR PRE DEVELOPMENT PEAK RUNOFF RATES THEREFORE MEETING FLOOD PROTECTION/QUANTITY REQUIREMENTS. THE PROJECT WILL DISCHARGE STORMWATER INTO A CLOSED DRAIN SYSTEM. THEREFORE, THE PROJECT WILL ELIMINATE EROSION FOR THE 2-YEAR POST DEVELOPMENT PEAK FLOW RATES AND SATISFYING THE CHANNEL PROTECTION REQUIREMENTS. FOR THE DEVELOPMENT, THE DECREASE IN OVERALL IMPERVIOUS AREA ON-SITE MEETS THE REQUIREMENTS FOR STORMWATER QUALITY FOR THE SUBJECT DEVELOPMENT AS OUTLINED IN THE VSWP REDEVELOPMENT WORKSHEET. FUTURE DEVELOPMENT ON THE OUT-PARCEL ALONG ORANGE AVENUE WILL BE RESPONSIBLE FOR MEETING STORMWATER QUALITY MEASURES ONLY AT THE TIME OF DEVELOPMENT. FLOOD PROTECTION/CHANNEL PROTECTION HAS BEEN PLANNED AND INCORPORATED INTO THE OVERALL STORMWATER CALCULATIONS FOR THE DEVELOPMENT THEREFORE NO ADDITIONAL MEASURES WILL BE REQUIRED AT THE TIME OF CONSTRUCTION.

MAINTENANCE/INSPECTIONS:

THE GENERAL CONTRACTOR SHALL INSPECT DISTURBED AREAS OF THE SITE THAT HAVE NOT BEEN FINALLY STABILIZED, AND AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION, STRUCTURAL CONTROL MEASURES, AND THE AREA OF CONSTRUCTION VEHICLE ACCESS AT LEAST EVERY FIVE (5) CALENDAR DAYS, AND WITHIN 48 HOURS OF THE END OF A STORM EVENT PRODUCING 1/2" OR GREATER OF PRECIPITATION OR EVERY FOUR (4) DAYS. WHERE AREAS HAVE BEEN FINALLY OR TEMPORARILY STABILIZED OR RUNOFF IS UNLIKELY DUE TO WINTER CONDITIONS (SITE IS COVERED WITH SNOW, ICE, OR FROZEN GROUND EXISTS) SUCH INSPECTIONS SHALL BE CONDUCTED AT LEAST ONCE EVERY MONTH.

A) INSPECT DISTURBED AREAS AND AREAS OF MATERIALS STORAGE THAT ARE EXPOSED TO PRECIPITATION FOR EVIDENCE OF, OR THE POTENTIAL FOR SEDIMENT ENTERING THE STORM DRAIN SYSTEM. INSPECT E&S CONTROLS IN ACCORDANCE WITH REQUIREMENTS STATED HEREIN, AND INSPECT POINTS OF STORM DRAIN DISCHARGE FOR EXCESSIVE SEDIMENTATION. CORRECT SITE CONTROLS AS REQUIRED TO REDUCE SEDIMENTATION OF STORM DRAINS, CULVERTS, AND RECEIVING CHANNELS.

B) IF CONTROLS OR SEDIMENT PREVENTION AREAS ARE FOUND TO BE IN NEED OF REPAIR OR MODIFICATION, THE GENERAL CONTRACTOR SHALL PROVIDE ADDITIONAL MEASURES OR MODIFICATIONS TO EXISTING MEASURES AS REQUIRED. ANY ADDITIONAL MEASURES OR MODIFICATIONS TO EXISTING MEASURES SHALL BE RECORDED AS FIELD REVISIONS TO THESE PLANS. IN THE EVENT THAT ADDITIONAL CONTROLS ARE FOUND TO BE REQUIRED, THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING THESE CONTROLS BEFORE THE NEXT ANTICIPATED STORM EVENT. IF IMPLEMENTATION BEFORE THE NEXT STORM EVENT IS IMPRACTICAL, THEY SHALL BE IMPLEMENTED AS SOON AS PRACTICABLE.

C) A REPORT SUMMARIZING THE SCOPE OF INSPECTIONS, NAME OF INSPECTOR, INSPECTOR'S QUALIFICATIONS, DATES OF INSPECTIONS, MAJOR OBSERVATIONS PERTAINING TO THE IMPLEMENTATION OF THESE EROSION CONTROL PLANS, AND ACTIONS TAKEN SHALL BE MADE AND RETAINED AS A PART OF THESE PLANS. MAJOR OBSERVATIONS OF THESE REPORTS SHALL INCLUDE: THE LOCATIONS OF EXCESSIVE SEDIMENTATION FROM THE SITE; LOCATIONS OF CONTROLS IN NEED OF REPAIR.

TABLE 3.32-C
(Revised June 2003)
PERMANENT SEEDING SPECIFICATIONS FOR APPALACHIAN MOUNTAIN AREA

LAND USE	SEED SPECIES	APPLICATION RATES
Minimum Grade Lawn (Commercial or Residential)	Tall Fescue ¹ Perennial Ryegrass ² Kentucky Bluegrass ³	90-100% 0-10% 0-10%
High-Maintenance Lawn	Minimum of three (3) up to five (5) varieties of Kentucky Bluegrass from approved list for use in Virginia	TOTAL: 200-250 lbs./acre
General Slope (3:1 or less)	Tall Fescue ¹ Red Top Grass or Creeping Red Fescue Seasonal Nurse Crop ⁴	125 lbs./acre 2 lbs./acre 20 lbs./acre
Low-Maintenance Slope (Steeper than 3:1)	Tall Fescue ¹ Red Top Grass or Creeping Red Fescue Seasonal Nurse Crop ⁴ Crownvetch ⁵	100 lbs./acre 2 lbs./acre 20 lbs./acre 150 lbs./acre

1- When selecting varieties of turfgrass, use the Virginia Crop Improvement Association (VCA) recommended turfgrass variety list. Quality seed must bear a label indicating that it was approved by VCA. A current turfgrass variety list is available at the local County Extension office or through VCA at 804-746-4884 or at <http://www.vce.virginia.edu/extension/turfgrass.htm>

2- Perennial Ryegrass will germinate faster and at lower soil temperatures than Tall Fescue, thereby providing cover and erosion resistance for seedbed.

3- Use seasonal nurse crop in accordance with seeding dates as stated below:

March, April, May 15th Annual Ryegrass
May 16th - August 15th Annual Ryegrass
August 16th - September 15th Annual Ryegrass
September 16th - November 15th Winter Rye
November 16th - February 15th Winter Rye

4- All turfgrass seed must be protected by low maintenance mulch during warmer seeding periods; increase to 30-40 before.

5- Crownvetch is a legume that is used to improve soil fertility and increase soil nitrogen levels.

FERTILIZER & LIME

● Apply 10-20-10 fertilizer at a rate of 500 lbs./acre (or 10 lbs./1,000 sq. ft.)

● Apply Pulverized Agricultural Limestone at a rate of 2 tons/acre (or 90 lbs./1,000 sq. ft.)

NOTE:

1- A soil test is necessary to determine the actual amount of time required to adjust the soil pH of site

2- Incorporate the lime and fertilizer into the top 4-6 inches of the soil by disking or by other means

3- When applying Slowly Available Nitrogen, use rates available in Erosion & Sediment Control Technical Bulletin #4, 2003 Nutrient Management for Development Sites at <http://www.dcr.state.va.us/esw/es.htm#pubs>

EROSION AND SEDIMENT CONTROL NARRATIVE

GENERAL E.S.C. NOTES

ES-1: UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND VIRGINIA REGULATIONS 4VAC50-30 EROSION AND SEDIMENT CONTROL REGULATIONS.

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

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

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

ES-6: THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE PLAN APPROVING AUTHORITY.

ES-7: ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.

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

ES-9: THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EACH RUNOFF--PRODUCING RAINFALL EVENT, ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.

SEDIMENT TRAP SUMMARY TABLE

DRAINAGE AREA ID	ST-1
TOTAL DRAINAGE AREA SIZE	1.70 AC
LENGTH	66LF
WIDTH	15LF
DEPTH	4'
BERM HEIGHT	2'
WEIR LENGTH	12 LF
WEIR HEIGHT	2'
STORAGE REQUIRED (CY)	114 WET - 114 DRY
STORAGE PROVIDED (CY)	124 WET - 185 DRY

SEDIMENT TRAP #1 DETAIL

* SEE PLATE 3.13-1

*SEE PLAN VIEW FOR LENGTH, WIDTH, AND DEPTH DIMENSIONS.

CLASS 1 RIP-RAP

COARSE AGGREGATE **

Length (ft) = 12.0 FT
6 x Drainage Area (ac.)

DIVERSION DIKE

1.0'

EXCAVATED AREA

FILTER CLOTH

** SEDIMENT TRAP SHALL HAVE 3:1 SIDE SLOPES **

ORIGINAL GROUND ELEV.

ELEV = 935

ELEV = 933

67 CU. YD./ACRE

67 CU. YD./ACRE (EXCAVATED)

ELEV = 931

COARSE AGGREGATE **

CROSS-SECTION

TEMPORARY SEDIMENT TRAP SPECIFICATIONS

TABLE 3.31-B
(Revised June 2003)
TEMPORARY SEEDING SPECIFICATIONS
QUICK REFERENCE FOR ALL REGIONS

APPLICATION DATES	SEED SPECIES	APPLICATION RATES
Sept 1 - Feb 15	50/50 Mix of Annual Ryegrass (tolium multi-florum) & Cereal (Winter) Rye (Secale cereale)	50-100 (lbs/acre)
Feb 16 - Aug 31	Annual Ryegrass (tolium multi-florum)	60-100 (lbs/acre)
May 1 - Aug 31	German Millet	50 (lbs/acre)

FERTILIZER & LIME

● Apply 10-10-10 fertilizer at a rate of 450 lbs./acre (or 10 lbs./1,000 sq. ft.)

● Apply Pulverized Agricultural Limestone at a rate of 2 tons/acre (or 90 lbs./1,000 sq. ft.)

NOTE:

1- A soil test is necessary to determine the actual amount of time required to adjust the soil pH of site

2- Incorporate the lime and fertilizer into the top 4-6 inches of the soil by disking or by other means

3- When applying Slowly Available Nitrogen, use rates available in Erosion & Sediment Control Technical Bulletin #4, 2003 Nutrient Management for Development Sites at <http://www.dcr.state.va.us/esw/es.htm#pubs>

MINIMUM STANDARDS

No.	CRITERIA, TECHNIQUE OR METHOD	PRACTICES PROVIDED
1	PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN (7) DAYS AFTER FINAL GRADE HAS BEEN REACHED ON ANY PORTION OF THE SITE. TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN (7) DAYS TO DENUDED AREAS THAT MAY BE AT FINAL GRADE BUT WILL REMAIN DORMANT (UNDISTURBED) FOR LONGER THAN FOURTEEN (14) DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE (1) YEAR.	(TS) (PS) (MU) (B/M) FOR ALL DENUDED AREAS
2	DURING CONSTRUCTION OF THE PROJECT, SOIL STOCKPILES 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 SOIL INTENTIONALLY TRANSPORTED FROM THE PROJECT SITE.	NOT APPLICABLE
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, IN THE OPINION OF THE LOCAL PROGRAM ADMINISTRATOR OR DESIGNATED AGENT, IS UNIFORM, MATURE ENOUGH TO SURVIVE AND WILL INHIBIT EROSION.	(TS) (PS) (MU) (B/M) FOR ALL DENUDED AREAS
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.	(ST) (DD) (IP) (SF)
5	STABILIZATION METHODS SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DAMS, DIKES AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.	(TS) (PS) (MU)
6	SEDIMENT TRAPS AND BASINS SHALL BE DESIGNED AND CONSTRUCTED BASED UPON THE TOTAL DRAINAGE AREA TO BE SERVED BY THE TRAP OR BASIN.	(ST)
7	CUT AND FILL SLOPES SHALL BE 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 SOLE STABILIZATION MEASURES UNTIL THE PROBLEM IS CORRECTED.	(TS) (PS) (MU) (B/M)
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.	NOT APPLICABLE
9	WHENEVER WATER SEEPS FROM A SLOPE FACE, ADEQUATE DRAINAGE OR OTHER PROTECTION SHALL BE PROVIDED.	SHOULD SEEPS OCCUR IN ANY EXISTING OR NEW CUT OR FILL SLOPE, THE CONTRACTOR SHALL FIRST DETERMINE THAT THERE ARE NOT AREAS OF PONDING WATER AT THE TOPS OF THE SLOPES AND THEN SHALL CONSULT BOTH THE DESIGN ENGINEER AND THE PROJECT GEOTECHNICAL ENGINEER FOR ON-SITE EVALUATION OF THE AREAS OF SEEPAGE.
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.	(IP)
11	BEFORE NEWLY CONSTRUCTED STORMWATER CONVEYANCE CHANNELS 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.	NOT APPLICABLE
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 APPROVED BY NONERODIBLE COVER MATERIALS.	NOT APPLICABLE NO CREEKS ON-SITE
13	WHEN A LIVE WATERCOURSE MUST BE CROSSED BY CONSTRUCTION VEHICLES MORE THAN TWICE IN ANY SIX (6) MONTH PERIOD, A TEMPORARY STREAM CROSSING CONSTRUCTED OF NONERODIBLE MATERIAL.	NOT APPLICABLE NO CREEKS ON-SITE
14	ALL APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS PERTAINING TO WORKING IN OR CROSSING LIVE WATERCOURSES SHALL BE MET. THE BEDS AND BANKS OF ANY WATERCOURSE SHALL BE STABILIZED IMMEDIATELY AFTER WORK IN THE WATERCOURSE IS COMPLETED.	NOT APPLICABLE NO CREEKS ON-SITE
15	THE BEDS AND BANKS OF A WATERCOURSE SHALL BE STABILIZED IMMEDIATELY AFTER WORK IN THE WATERCOURSE IS COMPLETED.	NOT APPLICABLE NO CREEKS ON-SITE
16	UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING STANDARDS IN ADDITION TO OTHER APPLICABLE STANDARDS & CRITERIA: 1) EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES. 2) EXHAUSTION 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. 3) MATERIAL USED FOR BACKFILLING TRENCHES SHALL BE PROPERLY COMPACTED IN ORDER TO MINIMIZE EROSION AND PROMOTE STABILIZATION. 4) RESTABILIZATION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THESE REGULATIONS. 5) APPLICABLE SAFETY REGULATIONS SHALL BE COMPLIED WITH.	UTILIZE FOR SANITARY, STORM SEWER, & WATERLINE INSTALLATION
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.	(CE) FOR ALL POINTS OF INGRESS/EGRESS
18	ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN THIRTY (30) DAYS AFTER FINAL SITE STABILIZATION. AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED, UNLESS OTHERWISE AUTHORIZED BY THE LOCAL PROGRAM ADMINISTRATOR, TRAPPED SEDIMENT AND THE DISTURBED SOIL AREAS RESULTING FROM THE DISPOSITION OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION.	(PS) (MU) (B/M)
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 & CRITERIA: A. CONCENTRATED STORMWATER RUNOFF LEAVING A DEVELOPMENT SITE SHALL BE DISCHARGED DIRECTLY INTO AN ADEQUATE 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 THE 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 THE 10-YEAR STORM TO VERIFY THAT STORMWATER WILL NOT OVERTOP ITS BANKS AND BY THE USE OF A 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-YEAR STORM TO VERIFY THE STORMWATER WILL BE CONTAINED WITHIN THE PIPE 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 10-YEAR STORM WILL NOT OVERTOP THE BANKS AND A 2-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 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-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 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 DISSIPATORS SHALL BE PLACED AT THE OUTFALL OF ALL DETENTION FACILITIES AS NECESSARY TO PROVIDE A STABILIZED TRANSITION FROM THE OUTFALL TO THE RECEIVING CHANNEL. H. ALL ON-SITE CHANNELS MUST BE DESIGNED 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. 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 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 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 OR 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 (VSWMP) PERMIT REGULATIONS. N. COMPLIANCE WITH THE WATER QUANTITY MINIMUM STANDARDS SET OUT IN 4VAC50-60-66 OF THE VIRGINIA STORMWATER MANAGEMENT PROGRAM (VSWMP) PERMIT REGULATIONS SHALL BE DEEMED TO SATISFY THE REQUIREMENTS OF MINIMUM STANDARD 19.	M.S. 19 CALCULATIONS PROVIDED WITHIN STORMWATER CALCULATIONS PACKAGE VERIFYING THE APPROPRIATE STORM SEWER DISCHARGE POINTS AND EXISTING MAN-MADE CHANNELS & PIPE SYSTEMS



REFLECTING TOMORROW

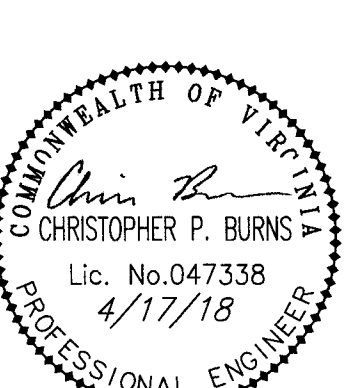
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City of Roanoke
Building & Development
COMPREHENSIVE DEVELOPMENT PLAN

APPROVED

by Adrian Gilbert 02/11/2019

HOLIDAY INN EXPRESS HOTEL
556 ORANGE AVENUE NE

E.S.C. NOTES & DETAILS

Incode: ROAOA Location#: 18807
CITY OF ROANOKE, VIRGINIA

DRAWN BY BTC
DESIGNED BY BTC

CHECKED BY CPB

DATE 2/9/2018

SCALE AS SHOWN

REVISIONS:
3/20/2018
4/17/2018

SHEET NO.

C9

JOB NO. 04170051.00