**GENERAL EROSION AND SEDIMENT CONTROL NOTES, ROANOKE CITY, VIRGINIA**

ES-1: UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CONSTRUCTED AND MAINTAINED 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: THE PLAN APPROVING AUTHORITY MUST BE NOTIFIED ONE WEEK PRIOR TO THE ON-SITE PRECONSTRUCTION CONFERENCE, ONE WEEK PRIOR TO THE COMMENCEMENT OF LAND DISTURBING ACTIVITY, AND ONE WEEK PRIOR TO THE FINAL INSPECTION.

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

ES-4: A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN AND NARRATIVE, AS WELL AS A COPY OF THE LAND DISTURBING PERMIT, SHALL BE MAINTAINED ON THE SITE AT ALL TIMES. THE EROSION AND SEDIMENT CONTROL ADMINISTRATOR WILL DELIVER THESE MATERIALS AT THE ON-SITE PRECONSTRUCTION CONFERENCE.

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 BE DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING THE LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.

ES-8: DURING DEWATERING OPERATION, 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.

GENERAL EROSION AND SEDIMENT CONTROL NOTES

- ALL SOIL EROSION & SEDIMENT CONTROL MEASURES SHALL BE ACCOMPLISHED IN STRICT ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS CONTAINED IN THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION.
- THE APPROVING AUTHORITY MAY ADD TO, DELETE, RELOCATE, CHANGE, OR OTHERWISE MODIFY CERTAIN EROSION AND SEDIMENT CONTROL MEASURES WHERE FIELD CONDITIONS ARE ENCOUNTERED THAT WARRANT SUCH MODIFICATIONS.
- ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES AS SHOWN ON THE PLAN SHALL BE PLACED IN ADVANCE OF THE WORK BEING PERFORMED, AS FAR AS PRACTICAL.
- IN NO CASE DURING CONSTRUCTION SHALL WATER RUNOFF BE DIVERTED OR ALLOWED TO FLOW TO LOCATIONS WHERE ADEQUATE PROTECTION HAS NOT BEEN PROVIDED.

IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LEAVE THE SITE ADEQUATELY PROTECTED AGAINST EROSION, SEDIMENTATION, OR ANY DAMAGE TO ANY ADJACENT PROPERTY AT THE END OF EACH DAY'S WORK.

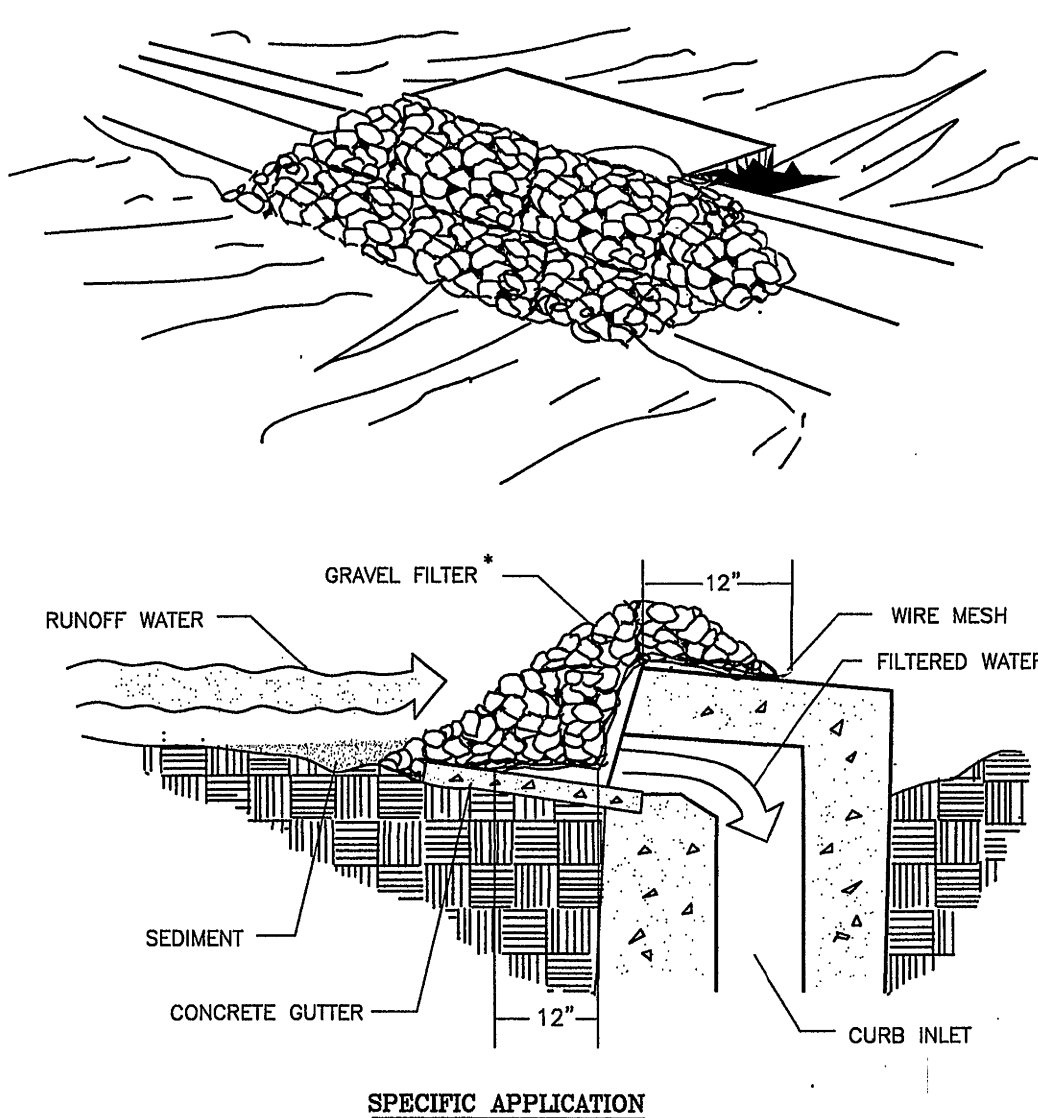
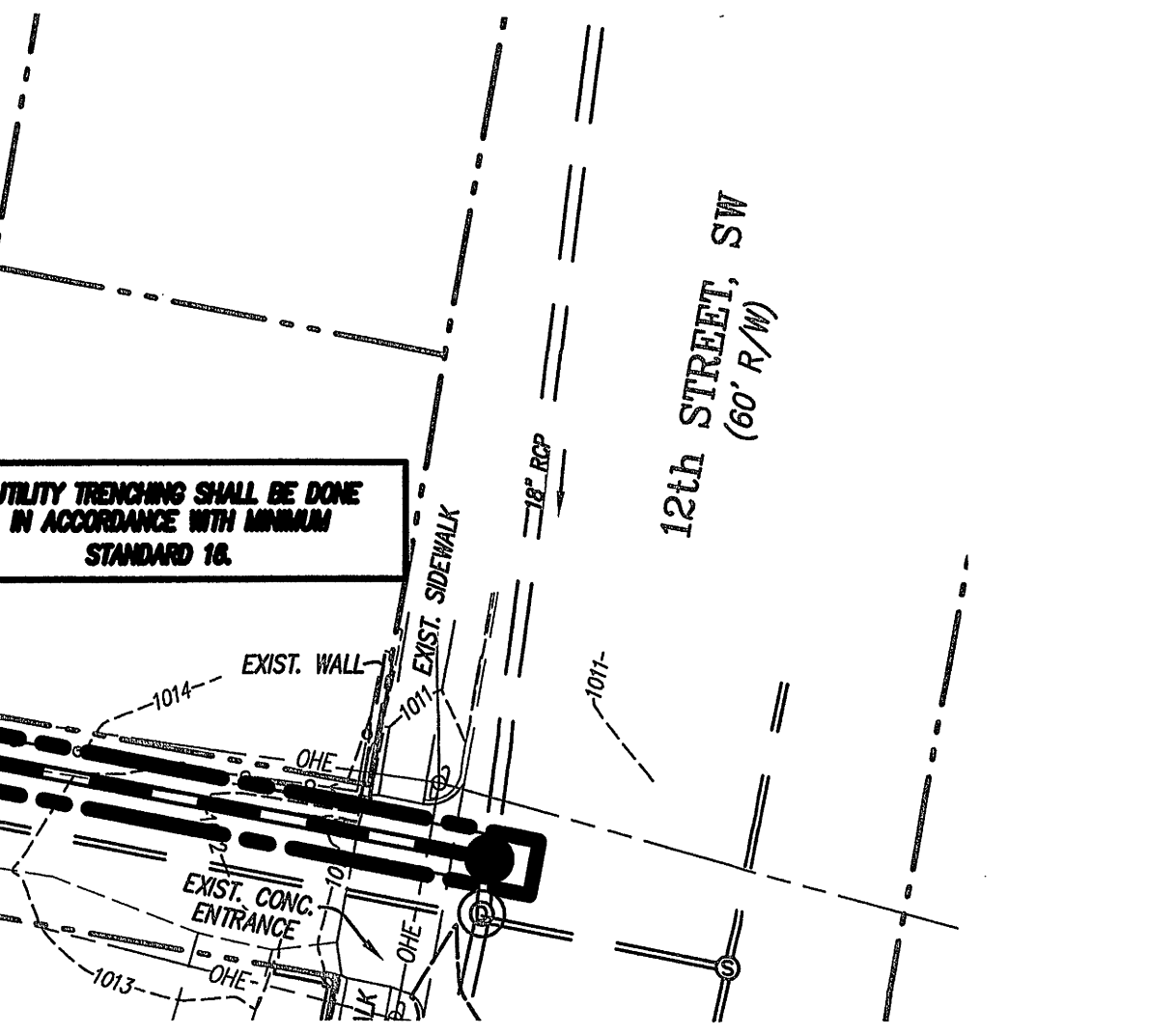
FOR THE EROSION CONTROL KEY SYMBOLS SHOWN ON THE PLANS, REFER TO THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION. THESE SYMBOLS AND KEYS ARE TO BE UTILIZED ON ALL EROSION CONTROL PLANS SUBMITTED TO ROANOKE CITY.

THE LOCATION OF ALL OFF-SITE FILL OR BORROW AREAS ASSOCIATED WITH THE CONSTRUCTION PROJECT WILL BE PROVIDED TO ROANOKE CITY PLANNING DIVISION. AN EROSION CONTROL PLAN OR MEASURES MAY BE REQUIRED FOR THIS AREA.

CONSTRUCTION SEQUENCE

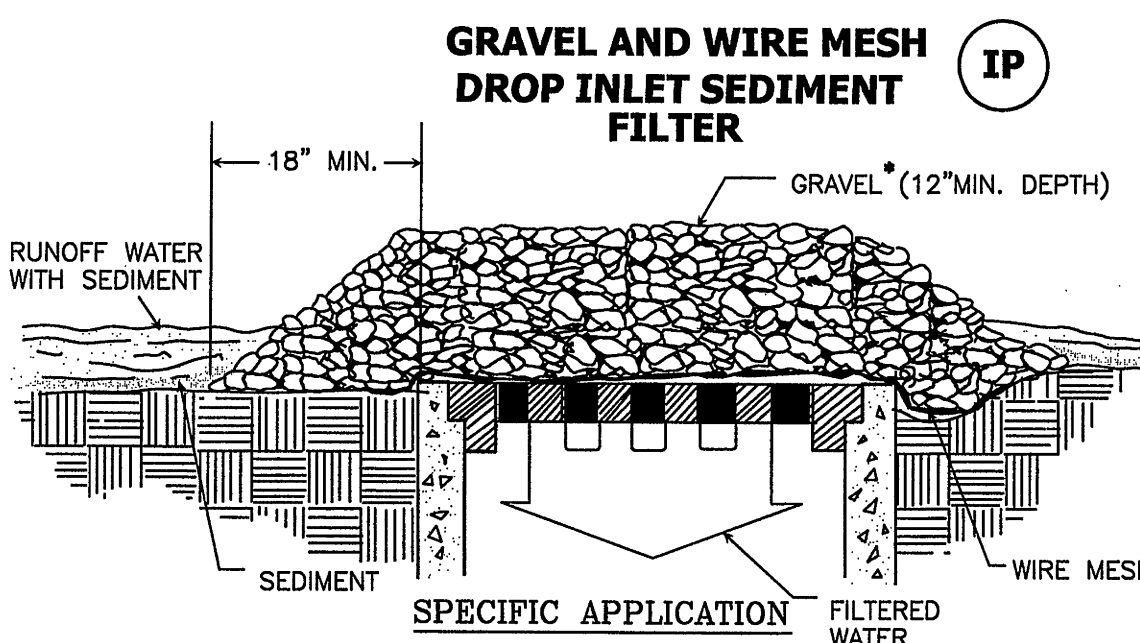
- CONTRACTOR'S CERTIFIED RESPONSIBLE LAND DISTURBER SHALL BE NAMED AND A COPY OF HIS RLD CERTIFICATE PROVIDED TO THE CITY OF ROANOKE AT LEAST TWO DAYS PRIOR TO THE PRE-CONSTRUCTION MEETING. RLD SHALL ALSO ATTEND PRE-CON MEETING.
- INSTALL THE CONSTRUCTION ENTRANCE.
- INSTALL PERIMETER SILT FENCE.
- IMPLEMENT GRADING OPERATIONS.
- INSTALL STORM DRAINS WITH EROSION AND SEDIMENT CONTROL MEASURES, AND SANITARY SEWER AND WATERLINE CONNECTIONS AS GRADING ALLOWS.
- INSTALL SEEDING AND / OR PAVEMENT GRAVEL SUBBASE AS GRADING ALLOWS. ALL DISTURBED AREAS RECEIVING SEEDING SHALL BE COVERED WITH TOPSOIL PER STD. 3.30. THE CONSTRUCTION PROCESS SHOULD BE SEQUENCED AS MUCH AS POSSIBLE SO THAT EACH AREA IS SEED AND / OR STABILIZED PRIOR TO BEGINNING GRADING OPERATIONS IN ANOTHER AREA.
- ONCE ALL AREAS ARE STABILIZED AND INSPECTED BY THE CITY OF ROANOKE REMOVE SILT FENCE AND INLET PROTECTION.

NO.	TITLE	KEY	SYMBOL
3.05	SILT FENCE	SF	XXXXXX
3.07	INLET PROTECTION	IP	⊗
3.31	TEMPORARY SEEDING	TS	—
3.32	PERMANENT SEEDING	PS	—
3.35	MULCHING	MU	—



THIS METHOD OF INLET PROTECTION IS APPLICABLE AT CURB INLETS WHERE PONDING IN FRONT OF THE STRUCTURE IS NOT LIKELY TO CAUSE INCONVENIENCE OR DAMAGE TO ADJACENT STRUCTURES AND UNPROTECTED AREAS.

* GRAVEL SHALL BE VDOT #3, #357 OR 5 COARSE AGGREGATE.

IP GRAVEL CURB INLET SEDIMENT FILTER

THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE HEAVY CONCENTRATED FLOWS ARE EXPECTED, BUT NOT WHERE PONDING AROUND THE STRUCTURE MIGHT CAUSE EXCESSIVE INCONVENIENCE OR DAMAGE TO ADJACENT STRUCTURES AND UNPROTECTED AREAS.

* GRAVEL SHALL BE VDOT #3, #357 OR #5 COARSE AGGREGATE.

EROSION CONTROL NARRATIVE

PROJECT DESCRIPTION
THIS PROJECT IS LOCATED NEAR THE CORNER OF 13TH ST. AND PATTERSON AVE. AT 1210 PATTERSON AVE. S.W. IN THE CITY OF ROANOKE AND CONSISTS OF THE CONSTRUCTION OF A NEW BUILDING, PARKING LOT, STORM DRAIN AND UTILITY CONNECTIONS. TOTAL DISTURBED AREA IS APPROXIMATELY 18,440 SQUARE FEET. (0.45 ACRES)

EXISTING SITE CONDITIONS
THIS SITE CURRENTLY CONTAINS A LARGE BUILDING USED AS A COMMUNITY CENTER ALONG WITH ASSOCIATED PAVED ASPHALT PARKING LOT. AN EROSION AND SEDIMENT CONTROL PLAN HAS BEEN APPROVED FOR THE REMOVAL OF THE EXISTING BUILDING. THE CURRENT SITE TOPOGRAPHY IS RELATIVELY FLAT WITH DRAINS FLOWING AWAY FROM THE EXISTING BUILDING TO BE REMOVED IN ALL DIRECTIONS. RUNOFF FROM THE SITE IS CAPTURED BY STORM DRAINS LOCATED IN PATTERSON AVE, 12TH ST. AND CAMPBELL AVE.

ADJACENT AREAS
THIS SITE IS BORDERED BY PATTERSON AVENUE TO THE NORTH, THE REMAINING PORTION OF THE WEST END CENTER ZONED COMMERCIAL-NEIGHBORHOOD TO THE WEST, AN EXISTING ZONED COMMERCIAL-NEIGHBORHOOD TO THE EAST, AND AN EXISTING ALLEY TO THE SOUTH.

OFFSITE AREAS
NO OFFSITE AREAS ARE COVERED WITH THIS PLAN SET. IF MATERIALS ARE TO BE WASTED OFFSITE THE LOCATION MUST BE PROVIDED TO THE CITY OF ROANOKE. A SEPARATE EROSION & SEDIMENT CONTROL PLAN MAY BE REQUIRED.

SOILS
SOILS INFORMATION IS BASED ON AN INSPECTION OF THE USDA SOIL SURVEY OF ROANOKE CITY AND HAS NOT BEEN FIELD VERIFIED. A SOILS MAP IS ATTACHED WHICH SHOWS THE LOCATION OF VARIOUS SOILS WITHIN THE CONSTRUCTION AREA. THE FOLLOWING SYMBOLS CORRESPOND WITH SOIL TYPES ON THE MAP.

SYMBOL
41C SHOTGROW-URBAN COMPLEX, 2-15% SLOPES

CRITICAL AREAS
THE CONTRACTOR SHALL TAKE SPECIAL CARE TO INSURE THAT SEDIMENT IS NOT ALLOWED TO FLOW OFFSITE AND TO INSURE NO SEDIMENT IS BEING TRACKED ONTO PATTERSON AVENUE. INSURE THAT ALL ESC MEASURES ARE STABILIZED AND FUNCTIONING TO MINIMIZE THE POTENTIAL FOR ANY SEDIMENT LEAVING THE SITE.

MINIMUM STANDARDS

REFER TO OUR MINIMUM STANDARDS.

EROSION AND SEDIMENT CONTROL MEASURES

SILT FENCE (3.05) - SILT FENCE WILL BE INSTALLED AT THE LOWER ENDS OF THE PROJECT SITE TO INTERCEPT SEDIMENT LAID RUN-OFF PRIOR TO EXITING THE SITE.

INLET PROTECTION (3.07) - THE INSTALLATION OF VARIOUS KINDS OF SEDIMENT TRAPPING MEASURES AROUND DROP INLETS.

TEMPORARY SEEDING (3.31) - TEMPORARY SEEDING SHALL BE APPLIED TO TEMPORARY DIVERSION Dikes, TOPSOIL STOCKPILES, AND ALL AREAS TO BE ROUGH GRADED, BUT NOT FINISHED GRADED DURING THE INITIAL PHASE OF CONSTRUCTION. TEMPORARY SEEDING SHALL BE FAST GERMINATING, TEMPORARY VEGETATION AND INSTALLED IMMEDIATELY FOLLOWING GRADING, OR INSTALLATION IF A TEMPORARY MEASURE. SEE ALSO MINIMUM STANDARDS.

PERMANENT SEEDING (3.32) - PERMANENT SEEDING SHALL BE INSTALLED ON ALL DISTURBED AREAS OF THE SITE NOT OTHERWISE STABILIZED.

MULCHING (3.35) - ALL DISTURBED AREAS SHALL BE MULCHED AFTER SEEDING. STRAW MULCH SHALL BE APPLIED AT A RATE OF TWO TONS PER ACRE AND ANCHORED WITH 750 LBS PER ACRE OF FIBER MULCH OVER THE SEEDING AREA.

MAINTENANCE
ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED BI-WEEKLY AND AFTER EVERY RUNOFF PRODUCING RAINFALL. A LOG OF DATES AND INSPECTIONS SHALL BE KEPT. ANY DEFICIENCIES THAT ARE FOUND SHALL BE CORRECTED IMMEDIATELY. ACCUMULATED SEDIMENT AT TRAPPING MEASURES SHALL BE ROUTINELY REMOVED.

EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED UNTIL AFTER ALL DISTURBED AREAS HAVE BEEN PERMANENTLY STABILIZED AND THEN TEMPORARY MEASURES PROPERLY REMOVED.

STORMWATER MANAGEMENT CONSIDERATION:
BASED ON THE CALCULATIONS PROVIDED WITH THIS PLAN SET AND ROANOKE CITY'S STORMWATER MANAGEMENT REQUIREMENTS, STORMWATER MANAGEMENT IS NOT REQUIRED DUE TO THE REDUCTION OF POST DEVELOPMENT IMPERVIOUS AREA.

DEFINITION - THE ESTABLISHMENT OF A TEMPORARY VEGETATIVE COVER ON DISTURBED AREAS BY SEEDING WITH APPROPRIATE RAPIDLY GROWING ANNUAL PLANTS.

LIMING REQUIREMENTS FOR TEMPORARY SITES

RECOMMENDED APPLICATION OF AGRICULTURAL LIMESTONE	
PH TEST	
BELOW 4.2	3 TONS PER ACRE
4.2 TO 5.2	2 TONS PER ACRE
5.2 TO 6	1 TON PER ACRE

ACCEPTABLE TEMPORARY SEEDING PLANT MATERIAL

PLANTING DATES	SPECIES	RATE (LBS./ACRE)
SEPT. 1 - FEB. 15	50/50 MIX OF ANNUAL RYEGRASS & WINTER RYE	50 - 100
FEB. 16 - APR. 30	ANNUAL RYEGRASS	60 - 100
MAY 1 - AUG. 31	GERMAN MILLET	50

TS TEMPORARY SEEDING

TYPE A	TYPE B (SLOPES 3:1 OR STEEPER)
15 OCTOBER TO 1 FEBRUARY K-31 FESCUE @ 5 LB / 1000 SF BURY WINTER RYE @ 1/2 LB / 1000 SF RED TOP @ 1/8 LB / 1000 SF	15 MARCH TO 1 MAY CROWN VETCH @ 1/2 LB / 1000 SF PERENNIAL RYEGRASS @ 1/2 LB / 1000 SF RED TOP @ 1/8 LB / 1000 SF
1 FEBRUARY TO 1 JUNE K-31 FESCUE @ 5 LB / 1000 SF ANNUAL RYE @ 1/2 LB / 1000 SF	15 AUGUST TO 1 OCTOBER CROWN VETCH @ 1/2 LB / 1000 SF PERENNIAL RYEGRASS @ 1/2 LB / 1000 SF RED TOP @ 1/8 LB / 1000 SF
1 JUNE TO 1 SEPTEMBER K-31 FESCUE @ 5 LB / 1000 SF GERMAN MILLET @ 1/2 LB / 1000 SF	
1 SEPTEMBER TO 15 OCTOBER K-31 FESCUE @ 5 LB / 1000 SF ANNUAL RYE @ 1/2 LB / 1000 SF	

LIME	140 LB / 1000 SF PULVERIZED AGRICULTURAL LIMESTONE
FERTILIZER	5-20-10 @ 25 LB / 1000 SF 30-0-0 @ 7 LB / 1000 SF

MULCH
IF REQUIRED, SHALL BE USED OVER ALL SEEDING AREAS AND SHALL BE APPLIED IN ACCORDANCE WITH SECTION 1.75 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION.

SOIL CONDITIONING
INCORPORATION OF LIME AND FERTILIZER, SELECTION OF CERTIFIED SEED, MULCHING, MAINTENANCE OF NEW SEEDLINGS, AND RESEEDING SHALL BE IN ACCORDANCE WITH SPECIFICATIONS CONTAINED WITHIN THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION. ADDITIONAL SEEDING TO BE PERFORMED AS REQUIRED BY THE INSPECTOR.

SEED APPLICATION: APPLY SEED UNIFORMLY WITH A CYCLONE SEEDER, DRILL, CULPICKER SEEDER, OR HYDROSEEDER IN A FIRM, FRIABLE, SEEDBED. MAXIMUM SEEDING DEPTH SHALL BE 1/4 INCH.

PS PERMANENT SEEDING MIXTURE**CONTRACTOR SHALL PAY PARTICULAR ATTENTION TO THE FOLLOWING MINIMUM STANDARDS:**

- 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 7 days to denuded areas that may not be at final grade but will remain denuded for longer than 14 days. Permanent stabilization shall be applied to areas that are to be left dormant for more than one year. **NO COVERING OR COMPLETION, APPLY SEEDING TO AREAS NOT RECEIVING PAYMENT OR OTHER LANDSCAPING MATERIALS.**
- During construction of the project, soil stockpiles and borrow areas shall be stabilized or protected with sediment trapping measures. The applicant is responsible for the temporary protection and permanent stabilization of soil stockpiles or piles on well as borrow areas and soil intentionally transported from the project site. **NO OFFSITE SOIL STOCKPILES SHALL BE ALLOWED. SEE MINIMUM STANDARD 3.30. ALSO, A TEMPORARY SEED MIX IS TO BE APPLIED OVER THE SOIL STOCKPILE IF TO REMAIN AS-IS FOR LONGER THAN 30 DAYS. NO OFFSITE STOCKPILE IS CURRENTLY PLANNED FOR THIS PROJECT.**
- 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 resist erosion, and will inhibit erosion. **SEE MINIMUM STANDARD 3.32.**
- Sediment basins and traps, perimeter dikes, sediment barriers and other measures intended to trap sediment shall be constructed on a first step in any land-disturbing activity and shall be made functional before uplope land disturbance takes place. **INSTALL PERIMETER SILT FENCE AS SHOWN ON THIS PLAN.**
- 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.**
- Sediment traps and sediment basins shall be designed and constructed based upon the total drainage area to be served by the trap or basin.
 - The minimum storage capacity of a sediment trap shall be 134 cubic yards per acre of drainage area and the trap shall only contain the drainage area less than three times the area of the trap.
 - 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. **NO SEDIMENT TRAPS OR BASINS ARE PROPOSED WITH THIS PLAN.**
- Cut and fill slopes shall be designed and constructed in a manner that will minimize erosion. Slopes that are found to be eroding within one year of permanent stabilization shall be provided with additional slope stabilizing measures until the problem is corrected. **NO CUT AND FILL SLOPES ARE PROPOSED WITH THESE PLANS.**
- 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 BE FLOW DOWN CUT OR FILL SLOPES.**
- 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.**
- 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. **INSTALL INLET PROTECTIONS AS SHOWN ON THIS PLAN.**
- 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.**
- When work in a live watercourse is performed, precautions shall be taken to minimize encroachment, control sediment transport and to the greatest extent possible during construction. Nonerodible material shall be used for the construction of cofferdams 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.**
- When a live watercourse must be crossed by construction vehicles more than twice in any six-month period, a temporary watercourse crossing shall be constructed of nonerodible material shall be provided. **NOT APPLICABLE. NO LIVE WATERCOURSES EXIST WITHIN OR ADJACENT TO THIS PROJECT.**
- All applicable federal, state and local regulations pertaining to working in or crossing the watercourse shall be met. **NOT APPLICABLE. NO LIVE WATERCOURSES EXIST WITHIN OR ADJACENT TO THIS PROJECT.**
- 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.**
- Underground utility lines shall be installed in accordance with the following standards in addition to other applicable criteria:
 - No more than 500 linear feet of trench may be opened at one time.
 - Excavated material shall be placed on the uphill side of trenches.
 - 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.
 - Material used for backfilling trenches shall be properly compacted in order to minimize erosion and promote stabilization.
 - Restabilization shall be accomplished in accordance with these regulations.
 - Applicable safety regulations shall be complied with.**INSTALL UNDERGROUND UTILITIES AS SHOWN ON THIS PLAN.**
- 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.**
- 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 ADEQUATE SITE PREPARATION AND SHALL BE IN ACCORDANCE WITH ABOVE REQUIREMENTS.**
 - 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.
 - Adequacy of all channels and pipes shall be verified in the following manner:
 - 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
 - Natural channels shall be analyzed by the use of a two-year storm to verify that stormwater will not overlap channel banks nor cause erosion of channel bed or banks; and
 - All previously constructed man-made channels shall be analyzed by the use of a two-year storm to verify that stormwater will not overlap 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
 - Pipes and storm sewer systems shall be analyzed by the use of a two-year storm to verify that stormwater will be contained within the pipe or system.
 - If existing natural receiving channels or previously constructed man-made channels or pipes are not adequate, the applicant shall:
 - Improve the channel to a condition where a two-year storm will not overlap the banks and a two-year storm will not cause erosion to the channel bed or banks; or
 - Improve the pipe or pipe system to a condition where the two-year storm is contained within the apertures; or
 - 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 two-year storm to increase when runoff outfalls into a man-made channel; or
 - Provide a combination of channel improvement, stormwater detention or other measures which is satisfactory to the plan-approving authority to prevent downstream erosion.
 - The applicant shall provide evidence of permission to make the improvements.
 - All hydrologic analyses shall be based on the existing watershed characteristics and the ultimate development of the subject project.
 - 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.
 - Outfall from a detention facility shall be discharged to a receiving channel, and every discharger shall be placed at the outfall of all detention facilities as necessary to provide a stabilized transition from the facility to the receiving channel.
 - All on-site channels must be verified to be adequate.
 - 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.
 - In applying these erosion and sediment control 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.
 - All measures used to protect properties 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 THE FOLLOWING MINIMUM STANDARDS TO PREVENT EROSION & SEDIMENTATION FROM THE SITE. OFF-SITE LOCATIONS RECEIVING RUNOFF FROM THIS PROJECT, AND PROPER OPERATION OF STORMWATER MANAGEMENT PRACTICES ON-SITE.**

APPROVED

JUL 2013