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EROSION AND SEDIMENT CONTROL NARRATIVE:

PROJECT DESCRIPTION

PROJECT CONSISTS OF CONSTRUCTION ACTIVITIES FOR IMPROVEMENTS/REPLACEMENTS TO THE AUTHORITY'S SANITARY SEWER SYSTEM ALONG THE ROANOKE RIVER AND MUDLUCK CREEK AS SHOWN ON THE PLANS. THE PROJECTED DISTURBED AREA IS 0.2 ACRES. WORK WILL INCLUDE THE FOLLOWING ACTIVITIES:

1. TRENCH EXCAVATION AND BACKFILLING, PRIMARILY CONFINED TO WITHIN EXISTING AND PROPOSED EASEMENTS. INSTALLATION OF EROSION CONTROLS LINEAR TO THE WORK AREAS AS INDICATED ON PLANS;
2. FINAL SEEDING AND STABILIZATION MEASURES; AND
3. REMOVAL OF LINEAR EROSION CONTROLS.

EXISTING SITE CONDITIONS:

THE PROPOSED CONSTRUCTION IS GENERALLY LOCATED WITHIN EXISTING AND PROPOSED EASEMENTS AS SHOWN. THE SITE IS LOCATED ADJACENT TO THE ROANOKE RIVER AND MUDLUCK CREEK AS SHOWN. THE MAJORITY OF THE WORK WILL BE CONFINED TO EXISTING GRASS/GRAVEL AREAS AS SHOWN, WITH A PORTION OF THE TRENCH EXCAVATION WORK OCCURRING WITHIN THE SLOPED BANKS OF THE UNNAMED TRIBUTARY SHOWN.

ADJACENT PROPERTY:

INDUSTRIAL PROPERTIES AND NORFOLK SOUTHERN RAILROAD RIGHT-OF-WAY ADJACENT TO THE PROJECT AREA

OFF-SITE AREAS:

THERE ARE NO OFFSITE MATERIALS REQUIRED EXCEPT FOR BEDDING AND BACKFILL STONE. SHOULD THE CONTRACTOR ENCOUNTER UNSUITABLE MATERIALS AND REQUIRE MATERIAL OFFSITE, CONTRACTOR WILL PROVIDE LOCATION AND ANY REGULATORY REQUIREMENTS FOR THE BORROW AREA TO THE ENGINEER, OWNER AND CITY OF ROANOKE.

SOILS:

THE FOLLOWING SOILS INFORMATION IS ACCORDING TO THE SCS SOILS INFORMATION FROM THE NRCS WEB SOIL SURVEY:

57A WHEELING--URBAN LAND COMPLEX, 0 TO 2 PERCENT SLOPES

CRITICAL EROSION AREAS:

CRITICAL AREAS INCLUDE BANKS AND TOE OF SLOPES DOWNHILL FROM THE PROPOSED DISTURBANCE. THE PROPOSED EROSION AND SEDIMENT CONTROL MEASURES AND STREAM STABILIZATION MEASURES ARE INTENDED TO MINIMIZE ANY POTENTIAL PROBLEMS AND PROMOTE STABILIZATION. ANY CONSTRUCTION OCCURRING IN CLOSE PROXIMITY TO ROANOKE RIVER, MUDLUCK CREEK AND ASSOCIATED DRAINAGE SWALES ARE CONSIDERED CRITICAL AREAS.

EROSION AND SEDIMENT CONTROL MEASURES -- GENERAL: ALL STRUCTURAL AND VEGETATIVE EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE MINIMUM STANDARDS AND SPECIFICATIONS OF THE "VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK" (VESH), LATEST EDITION.

MINIMUM STANDARDS: ALL APPLICABLE MINIMUM STANDARDS SHOULD BE ADDRESSED:

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 FOURTEEN (14) DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE YEAR.
2. PERIMETER DIKES AND DITCHES, 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 LAND DISTURBANCE TAKES PLACE.
3. STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DAMS, DITCHES, AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.
4. WHERE CONSTRUCTION VEHICLE ACCESS ROUTES INTERSECT PAVED 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 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.
5. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN THIRTY (30) DAYS AFTER FINAL SITE STABILIZATION OR 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.

STRUCTURAL PRACTICES

1. TEMPORARY STONE CONSTRUCTION ENTRANCE -- STD. & SPEC. 3.02

Temporary stone construction entrance shall be used to reduce the amount of mud transported onto paved roadways by motor vehicles and runoff.

Sequence of Installation: Prior to any land disturbance
Maintenance: Refer to Std. & Spec. 3.02
Removal Event: To be coordinated with final stone placement

2. SILT FENCE -- STD. & SPEC. 3.05

Silt fence shall be used to intercept and detain small amounts of sediment from disturbed areas and to decrease the velocity of sheet flows and low-to-moderate level channel flows during construction.

Sequence of Installation: Prior to any land disturbance
Maintenance: Refer to Std. & Spec. 3.05
Removal Event: Following permanent stabilization of all upland areas

VEGETATIVE PRACTICES

GENERAL: A PERMANENT VEGETATIVE COVER SHALL BE ESTABLISHED ON DENUDED AREAS NOT OTHERWISE PERMANENTLY STABILIZED BY PAVEMENT. PERMANENT VEGETATION SHALL NOT BE CONSIDERED ESTABLISHED UNTIL A GROUND COVER IS ACHIEVED THAT IS UNIFORM AND MATURE ENOUGH TO SURVIVE AND INHIBIT EROSION. NEW VEGETATION SHALL BE MAINTAINED AT A MINIMUM OF ONE FULL YEAR AFTER PLANTING. NEW SEEDING SHALL BE SUPPLIED WITH ADEQUATE MOISTURE, ESPECIALLY LATE IN THE SEASON, AND IN ABNORMALLY HOT OR DRY WEATHER. STABILIZATION PRACTICES SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE APPROPRIATE VESH STANDARD AND SPECIFICATION AND THE EROSION AND SEDIMENT CONTROL PLAN.

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 SEEDING SHALL BE USED ON ALL AREAS THAT ARE NOT AT FINAL GRADE AND THAT WILL BE LEFT DORMANT FOR A PERIOD OF MORE THAN 1 YEAR.

1. TEMPORARY SEEDING -- STD. & SPEC. 3.31

Temporary seeding shall be applied over denuded areas within 7 days for areas that will not be brought to final grade within 30 days. Temporary seeding mixes shall be as described on the detail drawings.

Sequence of Installation: When cleared areas will not be brought to final grade within 30 days
Maintenance: Refer to Std. & Spec. 3.31; areas which fail to establish vegetative cover adequate to prevent rill erosion are to be reseeded.
Removal Event: As needed for final grading.

2. PERMANENT SEEDING -- STD. & SPEC. 3.32

Permanent seeding shall also be used on all areas that are not at final grade and that will be left dormant for a period of more than 1 year. If conflicts exist between the project specifications and the VESH Std. & Spec. 3.32, the more stringent requirement shall apply. Permanent seeding mixes and rates are found on this sheet.

Sequence of Installation: Within 7 days of achieving final grade or as noted above
Soil Testing Requirements: Refer to Std. & Spec. 3.32
Maintenance: Refer to Std. & Spec. 3.32; areas which fail to establish vegetative cover adequate to prevent rill erosion are to be immediately reseeded, following identification of the cause of poor germination.

PERMANENT STABILIZATION

ALL NON-PAVED AREAS DISTURBED BY CONSTRUCTION SHALL BE STABILIZED WITH PERMANENT SEEDING IMMEDIATELY FOLLOWING FINISH GRADING. SEEDING SHALL BE IN ACCORDANCE WITH STD. & SPEC. 3.32. PERMANENT SEEDING: SEED TYPE SHALL BE AS SPECIFIED FOR "MINIMUM CARE LAWNS" AND "GENERAL SLOPES" IN THE HANDBOOK. MULCH (STRAW OR FIBER) SHALL BE USED ON ALL SEEDD SURFACES. IN ALL SEEDING OPERATIONS SEED, FERTILIZER AND LIME SHALL BE APPLIED PRIOR TO MULCHING.

MANAGEMENT STRATEGIES

1. CONSTRUCTION SHALL BE SEQUENCED SO THAT GRADING OPERATIONS CAN BEGIN AND END AS QUICKLY AS POSSIBLE.
2. ISOLATE TRENCHING FOR UTILITIES AND DRAINAGE FROM DOWNSTREAM CONVEYANCES IN ORDER TO MINIMIZE PERIMETER CONTROLS.
3. ALL CUT AND FILL SLOPES SHALL BE SEEDD WITHIN SEVEN (7) DAYS OF ACHIEVING FINAL GRADE.
4. ALL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE MAINTAINED UNTIL THEY ARE NO LONGER REQUIRED TO COMPLY WITH THE CONTRACT DOCUMENTS OR STATE LAW. ONLY AFTER INSPECTION AND APPROVAL FROM THE VESCP AUTHORITY MAY ITEMS BE REMOVED FOLLOWING THE STABILIZATION OF CONTRIBUTING AREAS.

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 FOURTEEN (14) CALENDAR DAYS, AND WITHIN FORTY-EIGHT (48) HOURS OF THE END OF A STORM EVENT PRODUCING 1/4" OR GREATER OF PRECIPITATION. 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.

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.

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 PRACTICAL.

EROSION AND SEDIMENT CONTROL NARRATIVE (CONT'D):

INSPECTIONS (CONT'D)

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; LOCATIONS OF FAILED OR INADEQUATE CONTROLS; AND LOCATIONS WHERE ADDITIONAL CONTROLS ARE NEEDED.

STORMWATER MANAGEMENT

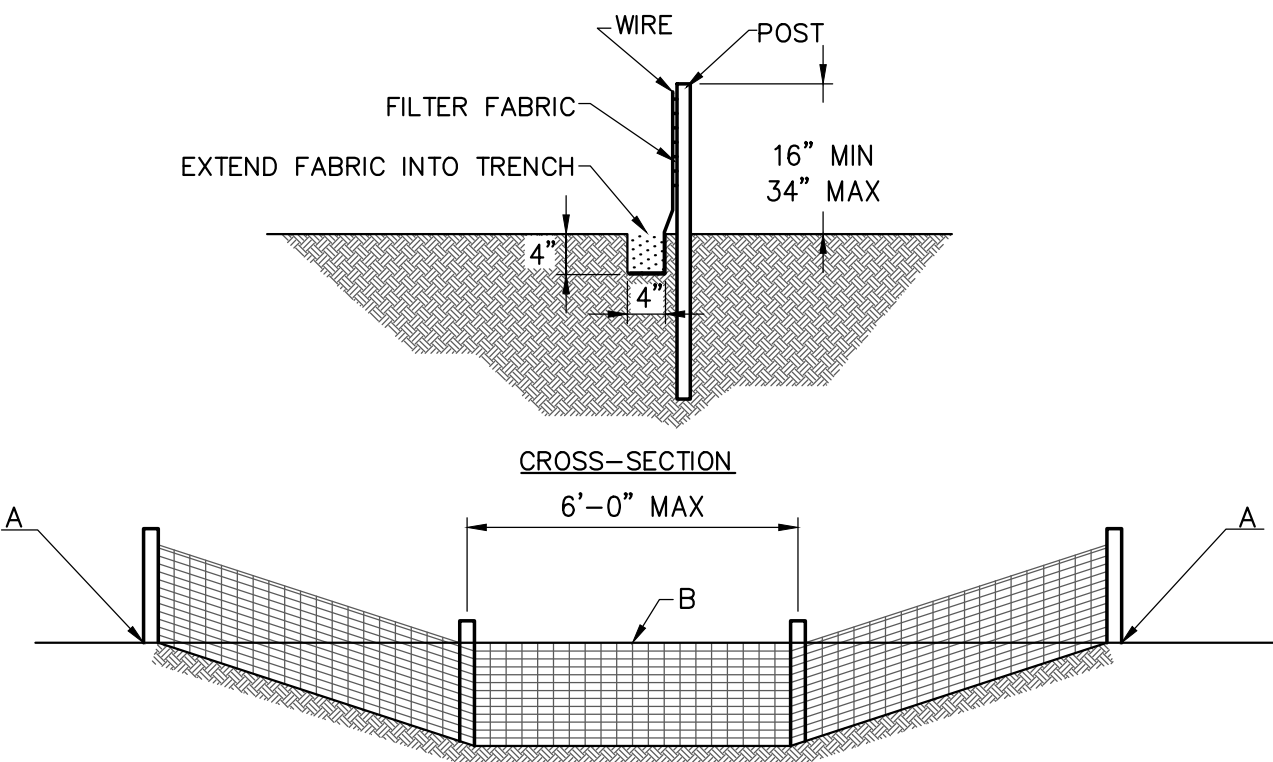
THIS PROJECT IS LINEAR IN NATURE AND ALL DISTURBED AREAS WILL BE RETURNED TO ORIGINAL CONDITION UPON COMPLETION OF CONSTRUCTION. EXISTING DRAINAGE PATTERNS WILL BE MAINTAINED DURING AND AFTER CONSTRUCTION AND THE PROJECT WILL RESULT IN MINIMAL TO NONE INCREASED STORMWATER RUNOFF.

ENVIRONMENTAL INVENTORY

THERE ARE NOT TIDAL SHORES, WETLANDS, NON-TIDAL WETLANDS, RESOURCE PROTECTION AREAS OR HYDRIC SOILS ASSOCIATED WITH THIS PROJECT SITE. SLOPES IN EXCESS OF 25% DO EXIST ON-SITE BUT NOT IN AREAS WHERE CONSTRUCTION ACTIVITIES ARE ANTICIPATED.

GENERAL EROSION AND SEDIMENT CONTROL NOTES:

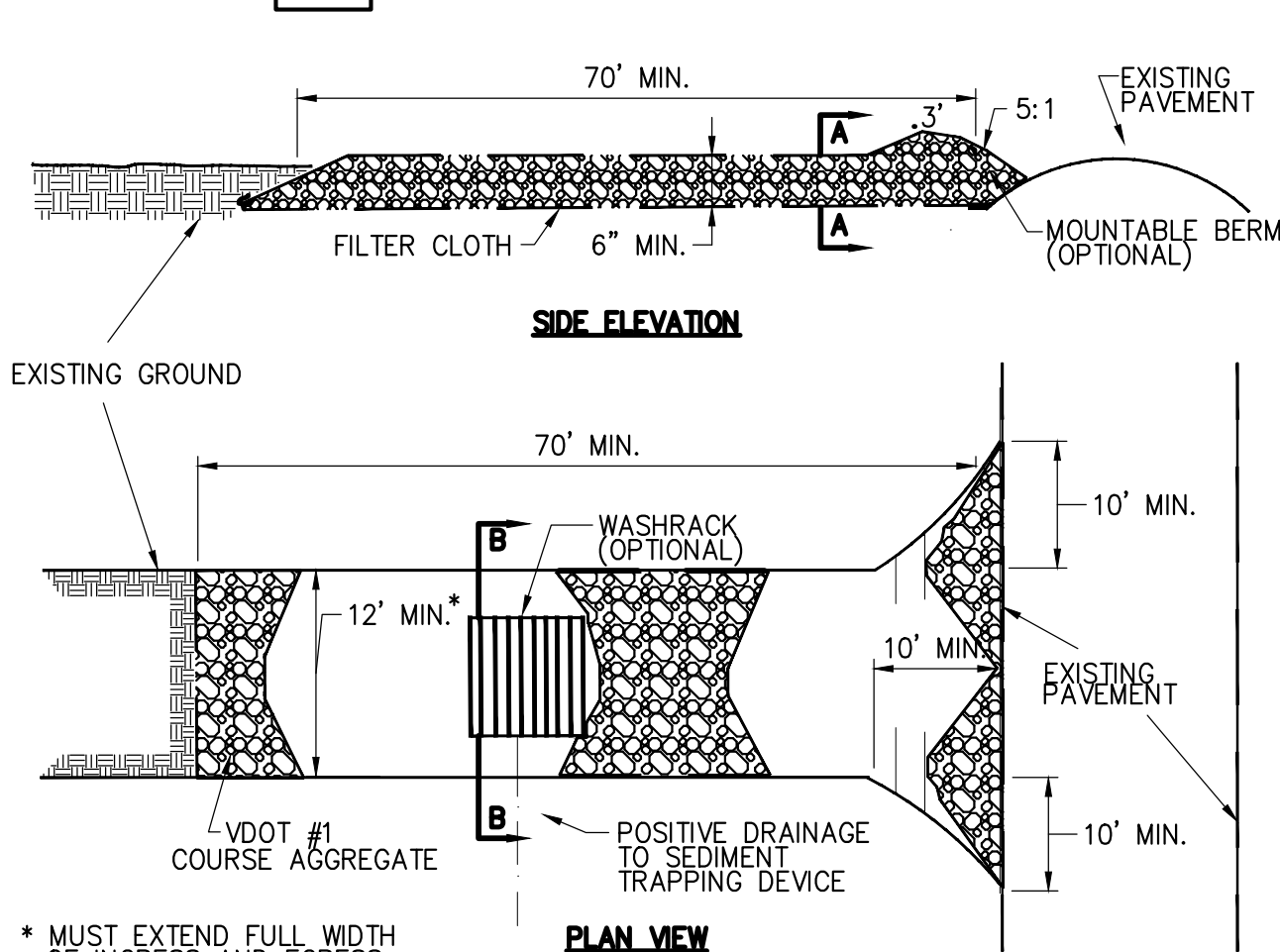
- ES-1: UNLESS OTHERWISE INDICATED, CONSTRUCT AND MAINTAIN ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, AND VIRGINIA REGULATIONS VR 625-02-00 EROSION AND SEDIMENT CONTROL REGULATIONS.
- ES-2: VESCP AUTHORITY INSPECTORS WILL MAKE A CONTINUING REVIEW AND EVALUATION OF THE METHODS AND EFFECTIVENESS OF THE E.S.C. PLAN.
- ES-3: PLACE ALL EROSION AND SEDIMENT CONTROL MEASURES PRIOR TO OR AS THE FIRST STEP IN CLEARING, GRADING, OR LAND DISTURBANCE.
- ES-4: MAINTAIN A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN ON THE SITE AT ALL TIMES.
- ES-5: PRIOR TO COMMENCING LAND-DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THESE PLANS (INCLUDING, BUT NOT LIMITED TO, OFFSITE BORROW OR WASTE AREA), SUBMIT A SUPPLEMENTARY EROSION CONTROL PLAN TO THE ARCHITECT/ENGINEER FOR REVIEW AND ACCEPTANCE.
- ES-6: PROVIDE ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE VESCP AUTHORITY.
- ES-7: ALL DISTURBED AREAS SHALL DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND-DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT.
- ES-8: DURING DEWATERING OPERATIONS, PUMP WATER INTO AN APPROVED FILTERING DEVICE.
- ES-9: INSPECT ALL EROSION CONTROL MEASURES DAILY AND AFTER EACH RUNOFF-PRODUCING RAINFALL EVENT. MAKE ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES IMMEDIATELY.
- ES-10: THE CONTRACTOR SHALL HAVE A RESPONSIBLE LAND DISTURBER ON-SITE AS REQUIRED.



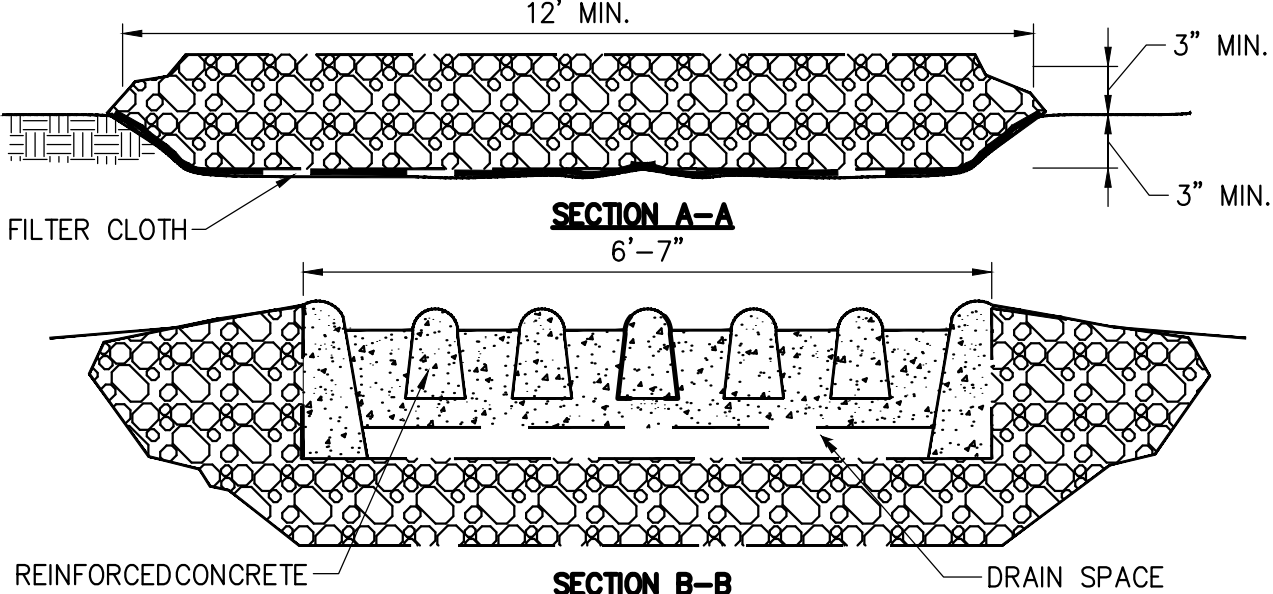
NOTES:

1. WHEN POINT B DROPS BELOW POINT A, USE EXTRA STRENGTH FILTER FABRIC WITH A MAXIMUM 3 FOOT SPACING OF POST.

1 SILT FENCE DETAIL
NOT TO SCALE



* MUST EXTEND FULL WIDTH OF INGRESS AND EGRESS OPERATION



2 CONSTRUCTION ENTRANCE
NOT TO SCALE

EROSION & SEDIMENT CONTROL LEGEND

| SYMBOL | VA. E&S HANDBOOK STANDARD |
|--------|---|
| CE | CONSTRUCTION ENTRANCE -- 3.02 |
| CRS | CONSTRUCTION ROAD STABILIZATION -- 3.03 |
| SF | SILT FENCE -- 3.05 |
| SC | TEMPORARY CULVERT CROSSING -- 3.24 |
| TO | TOPSOILING -- 3.30 |
| TS | TEMPORARY SEEDING -- 3.31 |
| PS | PERMANENT SEEDING --3.32 |
| MU | MULCHING -- 3.35 |

ALL DISTURBED GRASSED AREAS

CONSTRUCTION SEQUENCING

1. INSTALL PERIMETER EROSION AND SEDIMENT CONTROL MEASURES.
2. INSTALL SANITARY SEWER
3. STABILIZE ALL AFFECTED AREAS.
4. REMOVE TEMPORARY EROSION SEDIMENT CONTROL MEASURES ONCE PERMANENT STABILIZATION HAS OCCURRED

SEEDING SCHEDULES

TS TEMPORARY SEEDING SCHEDULE

ACCEPTABLE TEMPORARY SEEDING PLANT MATERIALS

| PLANTING DATES | SPECIES | RATE (LBS./ACRE) |
|----------------|---|------------------|
| SEPT 1--FEB 15 | 50/50 MIX OF ANNUAL RYEGRASS (LOLIUM MULTI-FLOSUM) & CEREAL (WINTER) RYE (SECALE CEREALE) | 50--100 |
| FEB 16--APR 20 | ANNUAL RYEGRASS (LOLIUM MULTI-FLOSUM) | 60--100 |
| MAY 1--AUG 31 | GERMAN MILLET (SETARIA ITALICA) | 50 |

SEEDINGS MADE IN FALL FOR WINTER COVER AND DURING HOT AND DRY SUMMER MONTHS SHALL BE MULCHED IMMEDIATELY UPON COMPLETION OF SEED APPLICATION WITH TACKIFIED STRAW, IN ACCORDANCE WITH VA E&S STD 3.35.

PS PERMANENT SEEDING SCHEDULE

GENERAL SLOPE (3:1 OR LESS) TOTAL LBS PER ACRE

| | |
|---------------------|----------|
| KENTUCKY 31 FESCUE | 200 LBS. |
| KENTUCKY BLUEGRASS | 10 LBS. |
| RED TOP GRASS | 10 LBS. |
| SEASONAL NURSE CROP | 30 LBS. |
| WHITE CLOVER | 2 LBS. |
| | 252 LBS. |

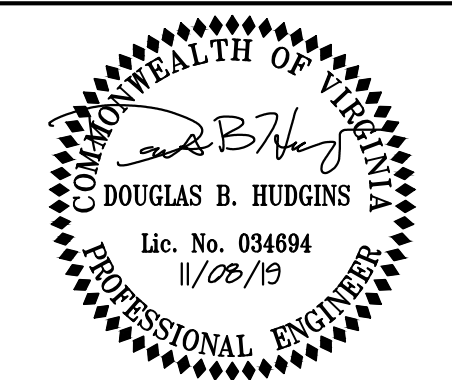
SEASONAL NURSE CROP

| | |
|--------------------------------------|----------------|
| MARCH, APRIL THROUGH MAY 15 | ANNUAL RYE |
| MAY 16 THROUGH AUGUST 15 | FOXTAIL MILLET |
| AUGUST 16 THROUGH SEPTEMBER, OCTOBER | ANNUAL RYE |
| NOVEMBER THROUGH FEBRUARY | WINTER RYE |

LIME AND FERTILIZER NEEDS SHALL BE DETERMINED BY SOIL TESTS.

SEEDINGS TO BE MULCHED AT THE RATE OF 2 TONS PER ACRE WITH TACKIFIED STRAW, IMMEDIATELY UPON COMPLETION OF SEED APPLICATION, IN ACCORDANCE WITH VA E&S STD 3.35.

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IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, ARCHITECT, LANDSCAPE ARCHITECT, OR LAND SURVEYOR TO ALTER AN ITEM IN ANY WAY IF AN ITEM BEARING THE SEAL OF A LICENSED PROFESSIONAL IS ALTERED. THE ALTERING ENGINEER, ARCHITECT, LANDSCAPE ARCHITECT OR LAND SURVEYOR SHALL STAMP THE DOCUMENT AND INCLUDE THE NOTATION "ALTERED BY FOLLOWED BY THEIR SIGNATURE, THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION."

WESTERN VIRGINIA WATER AUTHORITY

OLD ROANOKE RIVER INTERCEPTOR IMPROVEMENTS - PHASE 3

MUDLUCK CREEK INTERCEPTOR EXTENSION

| No. | Submittal / Revision | App'd. By | Date |
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| 1 | BID ISSUE | DBH/RAS | 11/08/19 |

EROSION & SEDIMENT CONTROL MARRATIVE, NOTES, AND DETAILS

| | | |
|-------------------------|-------------------|-----------------|
| Designed By: EES | Drawn By: RAS | Checked By: DBH |
| Issue Date: NOV 8, 2019 | Project No: 35105 | Scale: AS SHOWN |

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