

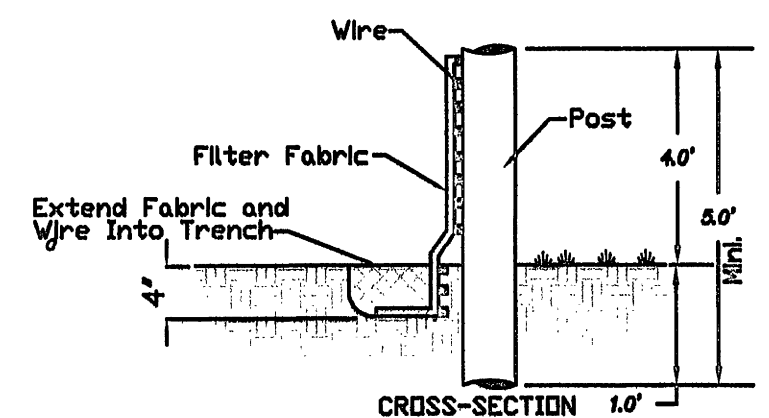
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PS PERMANENT SEEDING MIXTURE

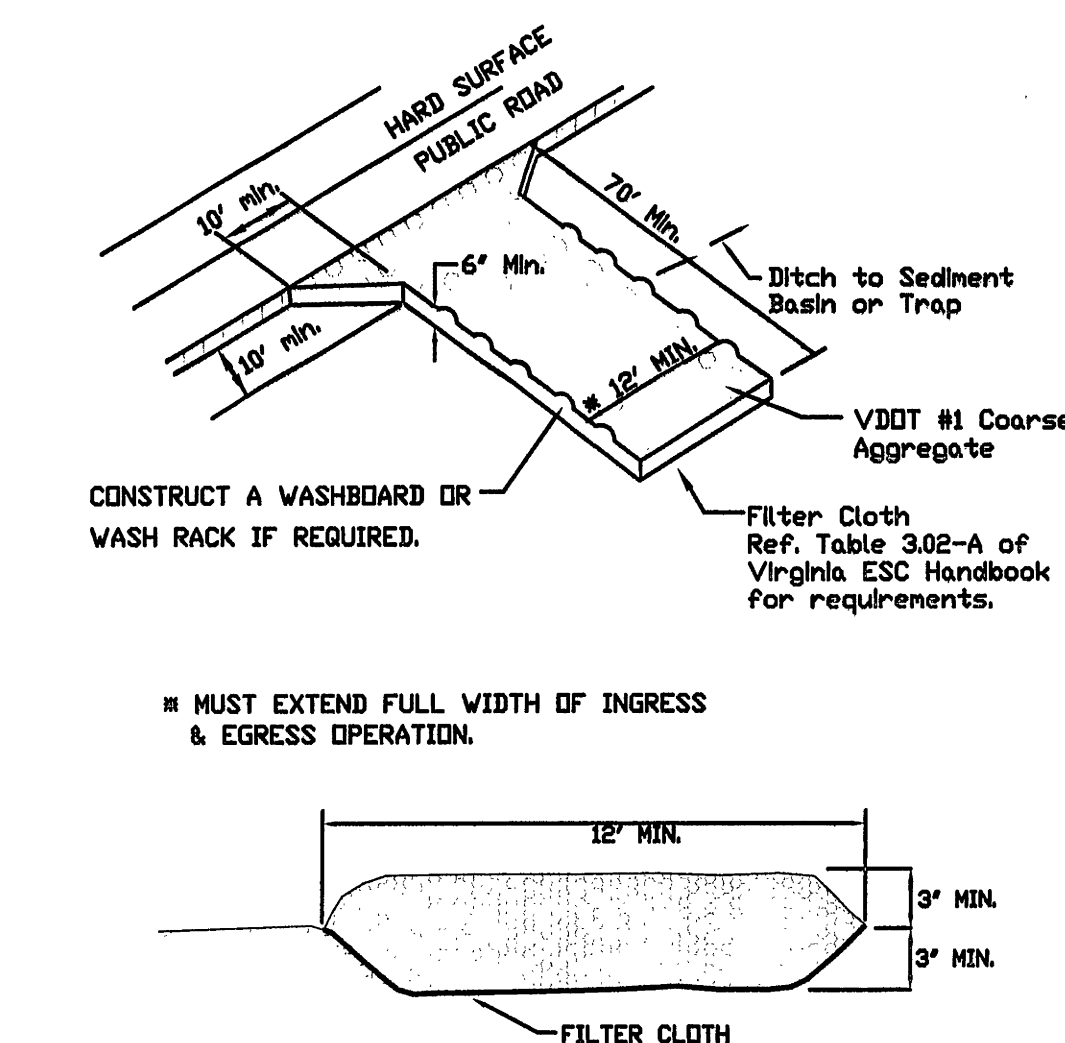
TYPE A	TYPE B (SLOPES 3:1 OR STEEPER)
15 OCTOBER TO 1 FEBRUARY K-31 FESCUE @ 5 LB / 1000 SF BORYZ WINTER RYE @ 1/2 LB / 1000 SF	15 MARCH TO 1 MAY CROWN VETCH @ 1/2 LB / 1000 SF PERENNIAL RYEGRASS @ 1/2 LB / 1000 SF RED TOP @ 1/8 LB / 1000 SF
1 FEBRUARY TO 1 JUNE K-31 FESCUE @ 5 LB / 1000 SF ANNUAL RYE @ 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	
FERTILIZER: 5-20-10 @ 25 LB / 1000 SF 38-0-0 @ 7 LB / 1000 SF	
MULCH: IF REQUIRED, SHALL BE USED OVER ALL SEEDED 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 SOIL 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, CULTIPACKER SEEDER, OR HYDRASEEDER ON A FIRM, FRIABLE, SEEDBED. MAXIMUM SEEDING DEPTH SHALL BE 1/4 INCH.	

TS TEMPORARY SEEDING MIXTURE

PLANTING DATES	SPECIES	RATE (LBS./ACRE)
SEPT. 1 - FEB. 15	50/50 MIX OF ANNUAL RYEGRASS (LOLUM MULTIFLORUM) CEREAL (WINTER) RYE (SECALE CEREALE)	50 - 100
FEB. 16 - APR. 30	ANNUAL RYEGRASS (LOLUM MULTIFLORUM)	60 - 100
MAY 1 - AUG. 31	GERMAN MILLET (SETARIA ITALICA)	50
TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT (UNDISTURBED) FOR LONGER THAN 30 DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE YEAR.		



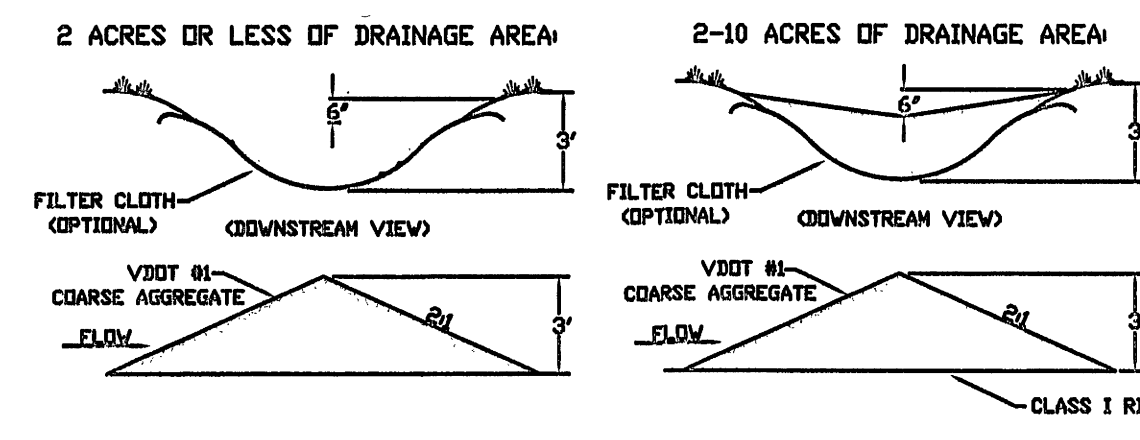
SF CONSTRUCTION OF A SILT FENCE



CE TEMPORARY GRAVEL CONSTRUCTION ENTRANCE

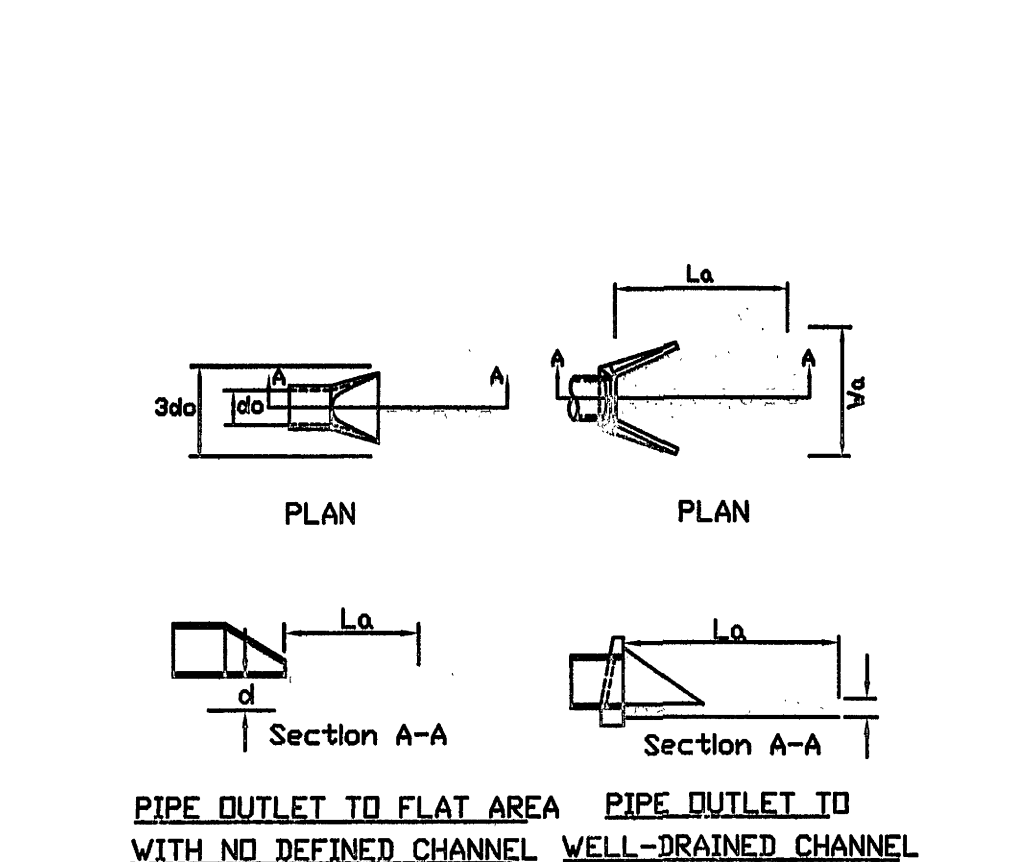
NO.	TITLE	KEY	SYMBOL
3.02	TEMPORARY GRAVEL CONSTRUCTION ENTRANCE	CE	[Symbol]
3.03	CONSTRUCTION ROAD STABILIZATION	CRS	[Symbol]
3.05	SILT FENCE	SF	[Symbol]
3.07	STORM DRAIN INLET PROTECTION	IP	[Symbol]
3.18	OUTLET PROTECTION	OP	[Symbol]
3.20	ROCK CHECK DAMS	CD	[Symbol]
3.31	TEMPORARY SEEDING	TS	[Symbol]
3.32	PERMANENT SEEDING	PS	[Symbol]
3.35	MULCHING	MU	[Symbol]
3.38	TREE PROTECTION	TP	[Symbol]

CD ROCK CHECK DAM



SPECIFIC APPLICATION
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 COURSE AGGREGATE.

IP GRAVEL CURB INLET SEDIMENT FILTER

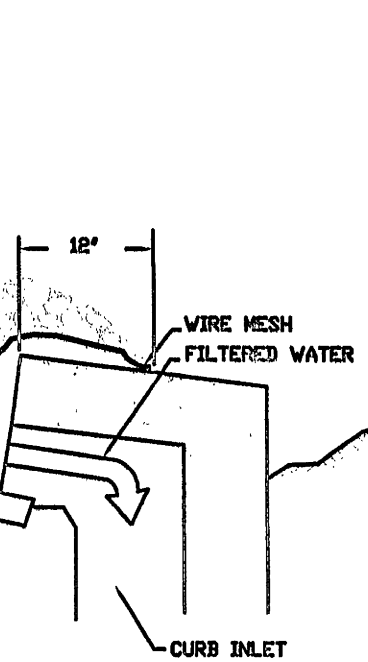


NOTES
1. APPROX Lining MAY BE RIP-RAP, GROUTED RIP-RAP, OR CONCRETE.
2. L_o IS THE LENGTH OF THE RIP-RAP APRON AS CALCULATED USING VESCH PLATES 3.18-3 AND 3.18-4.
3. d = 15 TIMES THE MAXIMUM STONE DIAMETER, BUT NOT LESS THAN 6'.

OP OUTLET PROTECTION

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.
- THE CONSTRUCTION PROCESS SHOULD BE SEQUENCED AS MUCH AS POSSIBLE SO THAT EACH AREA IS SEEDED AND STABILIZED PRIOR TO BEGINNING GRADING OPERATIONS IN ANOTHER AREA.
- SEE PHASING NOTES ON SHEET 7 FOR INFORMATION ON INCORPORATING E & S MEASURES FOR PHASE I AND PHASE II.
- INSTALL CONSTRUCTION ENTRANCE FOR THE UPPER PARKING LOT AREA WHILE THE EXISTING ASPHALT ENTRANCE WILL ACT AS THE CONSTRUCTION ENTRANCE FOR THE LOWER PARKING LOT AREA.
- INSTALL PERIMETER ESC MEASURES.
- INSTALL THE SILT FENCE FOR EACH GRADING AREA PRIOR TO GRADING OPERATIONS BEGINNING IN THOSE AFFECTED AREAS.
- CONSTRUCT STORMWATER MANAGEMENT POND AND ASSOCIATED OUTLET STORMDRAIN WHICH CONNECTS TO EXISTING STORM DRAIN SYSTEM.
- PERFORM DEMOLITION ACTIVITIES. ONCE DEMOLITION AND EXCAVATION ARE COMPLETE, CONTRACTOR SHALL APPLY THE STONE BASE AS QUICKLY AS POSSIBLE TO PREVENT SEDIMENT FROM FLOWING OFF-SITE IN THE EVENT OF A STORM.
- INSTALL NEW STORM DRAIN LINES AND STORM DRAIN STRUCTURES IN PHASE I.
- INSTALL INLET PROTECTIONS AS STORM DRAIN CONSTRUCTION PROGRESSES.
- CONSTRUCT PHASE I PARKING AREA.
- ALL PHASE I TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED AFTER THOSE AFFECTED AREAS HAVE BEEN BROUGHT TO FINAL GRADE AND AFTER PERMANENT VEGETATION HAS BEEN ESTABLISHED. PHASE II EROSION AND SEDIMENT CONTROL MEASURES MUST REMAIN.
- INSTALL PHASE II PARKING AREA STORMDRAIN AND TYPE "A" DITCH.
- INSTALL INLET PROTECTIONS AND OUTLET PROTECTION FOR PHASE II PARKING AREA.
- INSTALL CONSTRUCTION ROAD STABILIZATION FOR PHASE II PARKING AREA.
- CONSTRUCT PHASE II PARKING AREA.
- WHEN NECESSARY, ADJUST SILT FENCE AS CONSTRUCTION PROCEEDS.
- ALL PHASE II TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED AFTER THOSE AFFECTED AREAS HAVE BEEN BROUGHT TO FINAL GRADE AND AFTER PERMANENT VEGETATION HAS BEEN ESTABLISHED.



GENERAL EROSION AND SEDIMENT CONTROL NOTES, ROANOKE CITY, VIRGINIA

- 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 VR 628-02-02-09 EROSION AND SEDIMENT CONTROL REGULATIONS.
- 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.
- ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING.
- 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.
- 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.
- ALL DISTURBED AREAS ARE TO BE DRAWN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING THE LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.
- DURING DEWATERING OPERATION, WATER WILL BE PUMPED INTO AN APPROVED FILTERING DEVICE.
- THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EACH RUNOFF-PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.

EROSION CONTROL NARRATIVE

- PROJECT DESCRIPTION
THIS PROJECT IS LOCATED ACROSS FROM THE INTERSECTION OF HOLLINS ROAD AND OLD MOUNTAIN ROAD AT 3322 HOLLINS ROAD IN THE CITY OF ROANOKE. THE PROPOSED DEVELOPMENT OF THIS SITE CONSISTS OF EXISTING PARKING LOT REPAIRING AND PARKING LOT EXPANSION ALONG WITH STORM DRAIN AND STORMWATER MANAGEMENT CONSTRUCTION. TOTAL DISTURBED AREA IS APPROXIMATELY 3.3 ACRES.
- EXISTING SITE CONDITIONS
THIS SITE CURRENTLY USED AS THE FIELD OPERATIONS CENTER FOR THE WESTERN VIRGINIA WATER AUTHORITY. THE SITE CONSISTS OF AN EXISTING BUILDING AND ASSOCIATED PAVED PARKING AREAS. THE CURRENT SITE TOPOGRAPHY GENERALLY DRAINS AWAY FROM THE EXISTING BUILDING TO THE SOUTHWEST AND TOWARDS HOLLINS ROAD TO THE NORTHEAST.
- ADJACENT AREAS
THIS SITE IS BORDERED BY HOLLINS ROAD TO THE NORTHEAST AND EAST WHILE RILEY ROAD (PRIVATE) SURROUNDS THE REMAINDER OF THE SITE. TINKER CREEK IS LOCATED ADJACENT TO THE SITE WHICH FLOWS PARALLEL TO HOLLINS ROAD.
- OFF-SITE AREAS
NO OFF-SITE AREAS ARE COVERED WITH THIS PLAN SET. IF MATERIALS ARE TO BE WASTED OFF-SITE THE LOCATION MUST BE PROVIDED TO THE CITY OF ROANOKE. A SEPARATE EROSION & SEDIMENT CONTROL PLAN MAY BE REQUIRED. FILL MATERIAL WILL BE REQUIRED TO PERFORM THE GRADING OF THE STORM WATER MANAGEMENT POND. IT WILL BE THE RESPONSIBILITY OF THE RLD TO SUPPLY APPROVABLE FILL MATERIAL FOR THE EMBANKMENT.
- SOILS
SEE SUBSURFACE INVESTIGATION BY GEOTECHNICS, INC. OF ROANOKE, VIRGINIA DATED JANUARY 18, 2012 FOR FURTHER SOIL INFORMATION AND RECOMMENDATIONS.
- CRITICAL AREAS
THE CONTRACTOR SHALL TAKE SPECIAL CARE TO INSURE THAT SEDIMENT IS NOT ALLOWED TO FLOW INTO EITHER THE NEW STORM DRAIN OR THE EXISTING DOWNSTREAM STORM DRAIN. INSURE THAT ALL ESC MEASURES ARE STABILIZED AND FUNCTIONING TO MINIMIZE THE POTENTIAL FOR ANY SEDIMENT LEAVING THE SITE.
- MINIMUM STANDARDS
REFER TO DCR MINIMUM STANDARDS.
- EROSION AND SEDIMENT CONTROL MEASURES
CONSTRUCTION ENTRANCE (3.02) - A STONE CONSTRUCTION ENTRANCE WILL BE INSTALLED TO MINIMIZE THE AMOUNT OF MUD TRANSPORTED INTO EXISTING ROADS.
- CONSTRUCTION ROAD STABILIZATION (3.03) - TO REDUCE THE EROSION AND SUBSEQUENT REGRADING OF PERMANENT ROADS BETWEEN THE TIME OF INITIAL GRADING AND FINAL STABILIZATION, THESE ROADS WILL BE TEMPORARILY STABILIZED WITH STONE IMMEDIATELY AFTER GRADING.
- SILT FENCE (3.05) - SILT FENCE WILL BE INSTALLED AT THE LOWER ENDS OF THE PROJECT SITE TO INTERCEPT SEDIMENT LADEN RUN-OFF PRIOR TO EXITING THE SITE.
- INLET PROTECTION (3.07) - INLET PROTECTION WILL BE INSTALLED AT EACH STORM DRAIN INLET TO MINIMIZE THE AMOUNT OF SEDIMENT LADEN RUNOFF FROM ENTERING THE STORM DRAIN SYSTEM.
- OUTLET PROTECTION (3.18) - TO PREVENT SCOUR AT STORMWATER OUTLETS, TO PROTECT OUTLET STRUCTURES, AND MINIMIZE DOWNSTREAM EROSION BY REDUCING VELOCITY AND ENERGY OF CONCENTRATED OUTFLOWS.
- ROCK CHECK DAM (3.20) - A ROCK CHECK DAM IS A SMALL TEMPORARY STONE DAM CONSTRUCTED ACROSS A SWALE OR DITCH IN ORDER TO REDUCE THE VELOCITY OF CONCENTRATED STORMWATER FLOWS, THEREBY REDUCING THE EROSION OF THE SWALE OR DITCH.
- TEMPORARY SEEDING (3.31) - TEMPORARY SEEDING SHALL BE APPLIED TO TEMPORARY DIVERSION DICES, 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 SEEDED AREA.
- TREE PROTECTION (3.38) - PROTECTION OF DESIRABLE TREES FROM MECHANICAL AND OTHER INJURY DURING LAND DISTURBING AND CONSTRUCTION ACTIVITY.
- PERMANENT STABILIZATION
ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE STABILIZED WITH PERMANENT SEEDING WITHIN 7 DAYS OF REACHING FINAL GRADES. SEEDING SHALL BE DONE IN ACCORDANCE WITH DCR SPECIFICATION 3.32 (PERMANENT SEEDING), OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION AND WITH THE DETAILS SHOWN ON THIS PLAN. MULCH (STRAW OR FIBER) SHALL BE USED ON ALL SEEDED AREAS. IN ALL SEEDING OPERATIONS, SEED, FERTILIZER, AND LIME SHALL BE APPLIED PRIOR TO MULCHING.
- 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 TRIVIAL OR NOT, SHALL BE CORRECTED IMMEDIATELY. ACCUMULATED SEDIMENT AT TRAPPING MEASURES SHALL BE ROUTINELY REMOVED.
- ALL DITCHES, SWALES, AND NATURAL WATERCOURSES DOWNSTREAM OF THIS PROJECT SHALL BE FIELD INSPECTED PRIOR AND AFTER CONSTRUCTION BY THE RLD TO ENSURE COMPLIANCE WITH DCR'S 18-19. IF EROSION OR SCOUR IS OCCURRING, THE DEVELOPER SHALL BE RESPONSIBLE FOR ALL CORRECTIVE MEASURES.
- 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
AN EXTENDED DETENTION BASIN IS PROPOSED FOR THIS DEVELOPMENT TO LIMIT THE POSTDEVELOPMENT RUNOFF RATE LEAVING THE SITE, AND IMPROVE STORMWATER QUALITY IN ACCORDANCE WITH THE CITY OF ROANOKE STANDARDS.
- GENERAL EROSION AND SEDIMENT CONTROL NOTES
1. 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.
2. THE APPROVING AUTHORITY MAY ADD TO, DELETE, RELOCATE, CHANGE, OR MODIFY ANY EROSION AND SEDIMENT CONTROL MEASURES WHERE FIELD CONDITIONS ARE ENCOUNTERED THAT WARRANT SUCH MODIFICATIONS.
3. ALL EROSION AND SEDIMENT CONTROL MEASURES AS SHOWN ON THE PLAN SHALL BE PLACED IN ADVANCE OF THE WORK BEING PERFORMED, AS FAR AS PRACTICAL.
4. IN NO CASE DURING CONSTRUCTION SHALL WATER RUNOFF BE DIVERTED OR ALLOWED TO FLOW TO LOCATIONS WHERE ADEQUATE PROTECTION HAS NOT BEEN PROVIDED.
5. 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.
6. FOR THE EROSION CONTROL KEY SYMBOLS SHOWN ON THE PLANS, REFER TO THE VIRGINIA UNIFORM CODING SYSTEM FOR EROSION AND SEDIMENT CONTROL PRACTICES CONTAINED IN 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.
7. 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.

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 seven days to denuded areas that may not be at final grade but will remain dormant for longer than 30 days. Permanent stabilization shall be applied to areas that are to be left dormant for more than one year. **APPLY SEEDING MIXTURES IN ACCORDANCE WITH SPECIFICATIONS 3.31 AND 3.32 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH) TO ALL AREAS THAT DO NOT HAVE A NON-ERODIBLE SURFACE AS SHOWN ON THIS PLAN.**
- During construction of the project, all steep slopes and borrow areas shall be stabilized or protected with sediment trapping measures. The applicant is responsible for the temporary protection and permanent stabilization of all soil stabilizes on site as well as borrow areas and soil intentionally transported from the project site. **DO NOT DISTURB SOIL SPECIFICALLY STABILIZED ALONG THE DOWNSTREAM PERMANENT DRAIN. A PREPARED SEED MIXTURE IS TO BE APPLIED OVER THIS SOIL STABILIZER IT TO REMAIN AS-IS FOR ADEQUATE SEED TO GROW.**
- A permanent vegetation 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 curtail and will inhibit erosion. **SEE MINIMUM STANDARD 1.**
- Sediment basins and traps, perimeter 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 upland and disturbance takes place. **INSTALL EROSION CONTROL AS OUTLINED IN THE CONSTRUCTION SEQUENCE.**
- Stabilization measures shall be applied to erosion structures such as dams, dikes and diversions immediately after installation. **STORMWATER SEEDING IS TO BE APPLIED TO THE STORMWATER DETENTION BASIN ONCE INSTALLATION.**
- 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 control drainage areas less than three acres.
 - 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 outlet 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 within the sediment basin to be utilized.**NO SEDIMENT TRAPS OR BASINS ARE REQUIRED 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 excessively within one year of permanent stabilization shall be provided with additional slope stabilizing measures until the problem is corrected. **AREAS TO RECEIVE PERMANENT SEEDING ARE TO BE INSPECTED PERIODICALLY. RESCED ANY AREAS THAT DO NOT HAVE AN ESTABLISHMENT OF A GOOD STAND OF GRASS AFTER INITIAL APPLICATION OF PERMANENT SEEDING. ADDITIONAL SLOPE STABILIZATION MEASURES ARE TO BE CONSIDERED AS CONDITIONS DETERIORATE.**
- 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 FLOW DOWN CUT OR FILL SLOPES AND SHALL BE DIVERTED AS NECESSARY.**
- Whenever water seeps from a slope face, adequate drainage or other protection shall be provided. **THE CONTRACTOR SHALL CONTACT THE ENGINEER IMMEDIATELY UPON THE DISCOVERY OF ANY WATER SEEPS.**
- All storm sewer inlets that are made operable during construction shall be protected so that sediment-laden water cannot enter the sewer system without first being filtered or otherwise treated to remove sediment. **INLET PROTECTION SHALL BE INSTALLED AS STORM DRAIN SYSTEM IS INSTALLED.**
- 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. **INSTALL EROSION CONTROL AS OUTLINED IN THE CONSTRUCTION SEQUENCE.**
- When work in a live watercourse is performed, precautions shall be taken to minimize encroachment, control sediment transport and stabilize the channel 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 covered 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 vehicular stream-crossing structure 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 live watercourses 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.
 - Excavated trench stabilization 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.
 - Rehabilitation shall be accomplished in accordance with these regulations.
 - Applicable safety regulations shall be complied with.**UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE STANDARDS ABOVE.**
- 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 sweeping or transported to a sediment control disposal area. Street sweeping 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. **ADJACENT AREAS SHALL BE PROVIDED FOR THE CLEANING OF TRENCHES AND STORMWATER TRUCKS PRIOR TO ENTERING PUBLIC STREETS, INCLUDING, BUT NOT LIMITED TO THE CONSTRUCTION ENTRANCES SHOWN ON THIS PLAN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ANY MUD AND SEDIMENT TRANSPORTED FROM THIS SITE ONTO THE PUBLIC STREETS.**
- All temporary erosion and sediment control measures shall be removed within 30 days after final site stabilization or other permanent 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 ROANOKE CITY PERMISSION AND SHALL BE IN ACCORDANCE WITH APPROPRIATE REGULATIONS.**
- 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:
 - 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 outlet 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
 - (a) Natural channels shall be analyzed by the use of a two-year storm to verify that stormwater will not overtop channel banks nor cause erosion of channel bed or banks; and (b) All previously constructed man-made channels shall be analyzed by the use of a two-year storm to verify that stormwater will not overtop its banks and by the use of a ten-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 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 ten-year storm will not overtop 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 ten-year storm is contained within the appurtenances; 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 ten-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 to a receiving channel, and energy dissipater shall be placed at the outlet 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 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.
 - 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.

THE DOWNSTREAM CHANNEL HAS BEEN PROVEN TO BE ADEQUATE. REFER TO DRAINAGE CALCULATIONS FOR ADDITIONAL INFORMATION.

APPROVED
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EROSION & SEDIMENT CONTROL DETAILS
DEVELOPMENT PLAN SHOWING
PARKING LOT IMPROVEMENTS
FOR
WESTERN VIRGINIA WATER AUTHORITY
SITUATED AT
3322 HOLLINS ROAD
THE CITY OF ROANOKE, VIRGINIA

REVISIONS
NO. DATE DESCRIPTION
1 12/19/12 1. REVISIONS
2 12/19/12 2. REVISIONS
3 12/19/12 3. REVISIONS
4 12/19/12 4. REVISIONS
5 12/19/12 5. REVISIONS

DATE: September 19, 2012
SCALE: NONE
COMMISSION NO.: 11-258
SHEET 8 OF 10