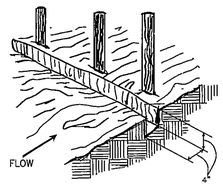
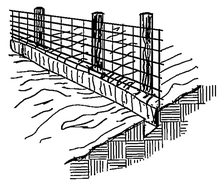
(SF) CONSTRUCTION OF A SILT FENCE (WITH WIRE SUPPORT)

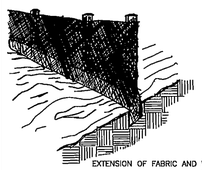
1. SET POSTS AND EXCAVATE A 4"X4" TRENCH UPSLOPE ALONG THE LINE OF POSTS.



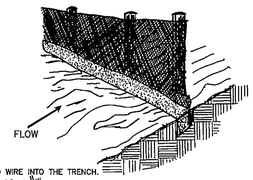
2. STAPLE WIRE FENCING TO THE POSTS.

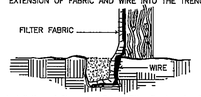


3. ATTACH THE FILTER FABRIC TO THE WIRE FENCE AND EXTEND IT INTO THE TRENCH.



4. BACKFILL AND COMPACT THE EXCAVATED SOIL.





SOURCE: Adopted from Installation of Straw and Fabric Filter Barriers for Sediment Control, Sherwood & Wyant

PLATE 3.05-1

(PS) PERMANENT SEEDING MIXTURE

TYPE A

15 OCTOBER TO 1 FEBRUARY
K-31 FESCUE @ 5 LB/1000 SF
BORZY WINTER RYE @ 1/2 LB / 1000 SF

1 FEBRUARY TO 1 SEPTEMBER
K-31 FESCUE @ 5 LB / 1000 SF
ANNUAL AYE @ 1/2 /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

TYPE B (SLOPES 3:1 OR STEEPER)

15 MARCH TO 1 MAY
CROWN VETCH @ 1/2 LB / 1000 SF
PERENNIAL RYE GRASS @ 1/2 LB / 1000 SF
RED TOP @ 1/8 LB / 1000 SF

15 AUGUST TO 1 OCTOBER
CROWN VETCH @ 1/2 LB / 1000 SF
PERENNIAL RYE GRASS @ 1/2 LB / 1000 SF
RED TOP @ 1/8 LB / 1000 SF

LIME:
140 LB / 1000 SF PULVERIZED AGRICULTURAL LIMESTONE

FERTILIZER:
5-20-10 @ 25 LB / 1000 SF
38-00-00 @ 7 LB / 1000 SF

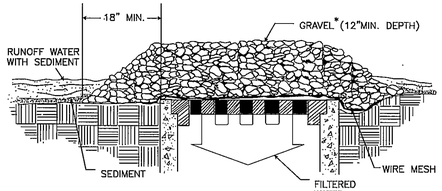
MULCH:
IF REQUIRED, SHALL BE USED OVER ALL SEEDED AREAS AND SHALL BE APPLIED IN ACCORDANCE WITH SECTION 1.75 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION.

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 INSPECTORS.

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

TEMPORARY SEEDING MIXTURE WILL BE PER THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION. SEED MIXUTRE AND TYPE ARE BASED ON THE TIME OF YEAR PLANTED AS SPECIFIED IN THE HANDBOOK.

(IP) GRAVEL AND WIRE MESH DROP INLET SEDIMENT FILTER



SPECIFIC APPLICATION

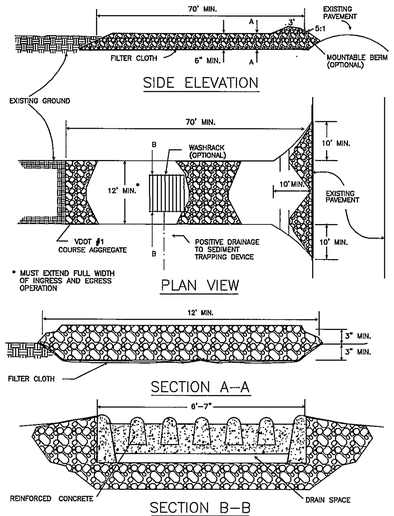
THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE HEAVY CONCENTRATED FLOWS ARE EXPECTED BUT NOT WHERE PONDING AROUND THE STRUCTURE MIGHT CAUSE EXCESSIVE INCONVENIENCE OR DAMAGE TO ADJACENT STRUCTURES AND UNPROTECTED AREAS.

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

SOURCE: VA. DSWC

PLATE. 3.07-2

STONE CONSTRUCTION ENTRANCE (CE)



SOURCE: ADAPTED from 1983 Maryland Standards for Soil erosion and Sediment Control, and Va. DSWC

Plate 3.02-1

NO.	TITLE	KEY	SYMBOL
3.05	SILT FENCE	(SF)	-x-x-x-
3.07	STORM DRAIN INLET PROTECTION	(IP)	
3.31	TEMPORARY SEEDING	(TS)	
3.32	PERMANENT SEEDING	(PS)	
3.35	MULCHING	(MU)	
3.02	TEMPORARY GRAVEL CONSTRUCTION ENTRANCE	(CE)	

ENGINEERING CONCEPTS, INC.
3433 BRAMBLETON AVENUE, SUITE 200B
ROANOKE, VIRGINIA 24018
540.776.5715 FAX: 540.776.8543

EROSION CONTROL AND STORM DRAINAGE COST ESTIMATE

Item	Quantity	Unit	Unit Price	Extension
Erosion Control				
Silt Fence	350	LF	$4.00	$1,440.00
Inlet Protection	2	EA	$150.00	$300.00
Temporary Seeding	0.18	AC	$700.00	$126.00
Permanent Seeding	0.18	AC	$1,375.00	$247.50
Rip Rap permanent	8	CY	$40.00	$320.00
Construction entrance	1	EA	$500.00	$500.00
Storm Drainage				
Trench Drain	1	LS	$2,000.00	$2,000.00
Nyloplast In Line Drain	1	EA	$300.00	$300.00
Concrete Flume	1	LS	$350.00	$350.00
6" PVC SDR 35	189	LF	$15.00	$2,835.00
	PROJECT SUB-TOTAL			$8,418.50
	20% CONTINGENCY			$1,683.70
	TOTAL PROJECT COST=			$10,102.20

EROSION AND SEDIMENT CONTROL NARRATIVE

PROJECT DESCRIPTION
The purpose of this project is to create a new parking lot with 23 spaces. The total disturbed area will be 0.41 Acres. No utilities are planned. Existing utilities are in the area. The amount of disturbance to the existing surface will be confined to within the site. The project is located at 2012 South Jefferson Street, Western Virginia Water Authority.

EXISTING SITE CONDITIONS

The property in the area of the proposed parking area slopes from south to north at eleven percent.

ADJACENT PROPERTY

The property is bounded on three sides by right of ways. Roanoke Memorial Hospital is on the north and Roanoke City property to the east.

SOILS
Soils information is from the USDA Soil Survey of Roanoke City. The soil classification is 44A Speedwell-Urban land complex. The soils are nearly level, very deep, well drained Speedwell soil areas of Urban land. Surface layer is 0 to 17 inches of dark silt brown loam, a subsoil of 17 to 45 inches of dark brown loam and a substratrum of 45 to 62 inches of brown loam. Soils have moderate permeability, slow surface runoff, slight eroison, moderate organic matter, low shrink well potential depth to the seasonal high water table more than 72 inches

CRITICAL EROSION AREAS

Critical erosion areas include 2:1 slopes and ditch linings. All 2:1 slopes will receive turf reinforcement matting. Ditch linings will receive EC-2 lining.

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 1992 Virginia Erosion and Sediment Control Handbook. The minimum standards of the Virginia Erosion and Sediment Control Regulations shall be adhered to unless otherwise waived or approved by a variance.

STRUCTURAL PRACTICES

1.SF-SILT FENCE BARRIER-3.05
Silt fence barriers will be installed down slope of areas with minimal grade to filter sediment runoff from sheet flow.

2. IP-INLET PROTECTION-3.07
Prevent sediment from entering the drainage system.

3. CE-CONSTRUCTION ENTRANCE-3.02
A temporary construction entrance shall be installed where the proposed access to the proposed parking lot meets the existing pavement.

VEGETATIVE PRACTICES

1.TS-TEMPORARY SEEDING-3.31
All denuded areas, which will be left dormant for more than 30 days , shall be seeded with fast germinating temporary vegetation immediately following grading.

2. PS-PERMANENT SEEDING-3.32
All final -graded areas where permanent cover is desired or rough-graded areas that will not be brought of final grade for a year or more shall be seeded with perennial vegetation within 7 days of reaching final grade.

3.MU-MULCH-3.35
Mulching prevents erosion and increases moisture for new plant growth.

MAINTENANCE
In general , all erosion and sediment control measures will be checked daily and after each significant rainfall. The following items will be checked in particular:

1. The silt fence barriers will be checked regularly for undermining or deterioration of the fabric. Sediment shall be removed when the level of sediment deposition reaches half way to the top of the barrier.

2. The seeded areas will be checked regularly to ensure that a good stand is maintained. Areas shall be fertilized and re-seeded as needed.

3. All storm drains will be flushed prior to removing sediment trapping measures.

PERMANENT STABILIZATION
All areas disturbed by construction shall be stabilized with permanent seeding within 7 days of reaching final grades. Seeding shall be done with Kentucky 31 tall Fescue according to Std. an Spec. 3.32, PERMANENT SEEDING, of the 1992 Virginia Erosion and Sediment Control Handbook. Mulch (straw or fiber) will be used on all seeded areas. In all seeding operations, seed, fertilizer and lime will be applied prior to mulching. Erosion control blankets may be installed over fill slopes, which have been brought to final grade and have been seeded to protect the slopes properly.

STORM WATER MANAGEMENT
The site was analyzed for pre and post runoff conditions. The 2 yr pre is 3.09 cfs and the post 2 yr is 3.44 cfs, increase of 0.35 cfs. The 10 pre is 4.04 cfs and the 10 yr post is 4.5 cfs, increase is 0.46 cfs.
Although a stormwater mangement facility is not required per code, the Western Virginia Water Authority chose to install a rain garden to intercept the majority of runoff from the parking lot.

EROSION AND SEDIMENT CONTROL NOTES

1. THE EROSION CONTROL NARRATIVE BY ENGINEERING CONCEPTS, INC. SHALL BE ADHERED TO AS A PART OF THE CONTRACT. ALL ERDSION CONTROL DEVICES SHALL BE INSTALLED PER THE NARRATIVE AND PLAN.

2. UNLESS DTHERWISE INDICATED ALL VEGETATIVE AND STRUCTURAL PRACTICES SHALL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VA. EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION.

3. THE PLAN APPROVING AUTHORITY MUST BE NOTIFIED ONE WEEK PRIOR TO THE COMMENCEMENT OF LAND DISTURBING ACTIVITY, AND ONE WEEK PRIOR TO THE FINAL INSPECTION.

4. ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED AS THE FIRST STEP IN GRADING.

5. A COPY OF THE APPROVED EROSION CONTROL PLANS SHALL BE KEPT ON SITE AT ALL TIMES.

6. THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE CITY OF ROANOKE INSPECTOR.

7. ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL DEVICES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND UNTIL FINAL STABILIZATION IS ACHIEVED.

8. PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DISTURBED AREAS WITHIN SEVEN DAYS OF REACHING FINAL GRADES. TEMPORARY, DENUDED AREAS THAT ARE TO BE EXPOSED LONGER THAN THIRTY DAYS SHALL BE SEEDED WITH TEMPORARY VEGETATION.

9. DURING CONSTRUCTION, SOIL STOCKPILES SHALL BE STABILIZED AND PROTECTED WITH SEDIMENT TRAPPING MEASURES AND STABILIZED WITH TEMPORARY VEGETATION IF UNUSED FOR 30 DAYS OR LONGER.

10. THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EACH MAJOR RAINFALL EVENT . ANY REPAIRS NECESSARY SHALL BE MADE IMMEDIATELY TO ENSURE THE PROTECTION OF OFFSITE PROPERTIES.

11. THE CONTRACTOR IS REQUIRED TO REMOVE ALL SILT FROM STREAMS AND DRAINAGE WAYS PRIOR TO BOND RELEASE.

12. TEMPORARY AND PERMANENT SEEDING SHALL ADHERE TO THE SPECIFICATIONS SHOWN HEREON.

13. REFER TO THE MINIMUM STANDARD REFERENCES FOLLOWING FOR STATE SPECIFIC REFERENCES TO EROSION SEDIMENT CONTROL REQUIREMENTS.

14. MINIMUM STANDARD # 3: PERMANENT STABILIZATION SHALL NOT BE CONSIDERED ESTABLISHED UNTIL A GROUND COVER IS ACHIEVED THAT IS UNIFORM, MATURE ENOUGH TO SURVIVE, AND WILL INHIBIT ERDSION. AREAS THAT DO NOT BECOME ESTABLISHED WILL REQUIRE ADDITIONAL STABILIZATION MEASURES.

15. MINIMUM STANDARD # 7 & 9: CUT AND FILL SLOPES MUST BE CONSTRUCTED IN A MANNER THAT WILL MINIMIZE ERDSION. SLOPES THAT BEGIN TO ERODE EXCESSIVELY WITHIN ONE YEAR OF PERMANENT STABILIZATION MUST BE PROVIDED WITH ADDITIONAL STABILIZATION UNTIL THE PROBLEM IS CORRECTED.

16. MINIMUM STANDARD # 11: BEFORE NEWLY CONSTRUCTED STORM WATER CONVEYANCE CHANNELS ARE MADE OPERATIONAL, OUTLET PROTECTION AND ANY REQUIRED TEMPORARY OR PERMANENT LINING MUST BE INSTALLED IN BOTH CONVEYANCE AND RECEIVING CHANNELS. ALL CHANNELS AND OUTLETS MUST BE CHECKED FOR ADEQUACY AND ERDSION CONTROL MEASURES.

17. MINIMUM STANDARD #16: UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING STANDARDS IN ADDITION TO OTHER APPLICABLE CRITERIA:
A. NO MORE THAN 500 LINEAR FEET OF TRENCH MAY BE OPENED AT ONE TIME.
B. EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES.
C. EFFLUENT FROM DEWATERING OPERATIONS SHALL BE FILTERED OR PASSED THROUGH AN APPROVED SEDIMENT TRAPPING DEVICE, OR BOTH, AND DISCHARGED IN A MANNER THAT DOES NOT ADVERSELY AFFECT FLOWING STREAMS OR OFF-SITE PROPERTY.
D. RESTABILIZATION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH E&S REGULATIONS.
E. APPLICABLE SAFETY REGULATIONS SHALL BE COMPLIED WITH.

18. MINIMUM STANDARD # 17: ANY SEDIMENT WHICH IS TRACKED ONTO PUBLIC ROADS MUST BE REMOVED FROM THE ROAD DAILY, BY EITHER SHOVELING OR SWEEPING, AND TRANSPORTED TO AN APPROVED DISPOSAL AREA.

19. MINIMUM STANDARD # 18: TRAPPED SEDIMENT AND DISTURBED AREAS RESULTING FROM THE DISPOSITION OF TEMPORARY PRACTICES MUST BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION.

20. MINIMUM STANDARD # 19: PROPERTIES AND WATERWAYS FROM THE DEVELOPMENT SITE SHALL BE PROTECTED FROM SEDIMENT DEPOSITION, EROSION AND DAMAGE DUE TO INCREASES IVOLUME, VELOCITY AND PEAK FLOW RATE OF STORMWATER RUNOFF FOR THE STATED FREQUENCY STORM OF 24-HOUR DURATION IN ACCORDANCE WITH THE PRACTICES AND CRITERA SET FORTH IN THE VIRGINIA EROSION AND SEDIMENT CONTROL MANUAL.

21. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL LAND DISTURBING PERMITS.

22. REMOVE DEBRIS AND SEDIMENT FROM THE EXISTING SEDIMENT BASIN IN ORDER TO CONVERT IT TO THE PLANNED STORMWATER MANAGEMENT FACILITY.

23. PERMANENT SEEDING IS REQUIRED ON DENUDED AREAS THAT WILL BE DORMANT FOR MORE THEN ONE YEAR.

GENERAL 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 VR 625--00 EROSION AND SEDIMENT CONTROL REGULATIONS.

ES-2 THE PLAN APPROVING AUTHORITY MUST BE NOTIFIED ONE WEEK PRIOR TO THE 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 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 FOR REVIEW AND APPROVAL BY THE PLAN APPROVING AUTHORITY.
THE BARROW/WASTE AREA PLAN MUST BE SUBMITTED PRIOR TO THE REQUIRED PRE-CONSTRUCTION CONFERENCE. PLAN APPROVAL IS REQUIRED PRIOR TO ISSUANCE OF LAND DISTURBING PERMIT.

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.

ES-10 SOIL STOCKPILES SHALL RECEIVE PERMANENT SEEDING AND SILT FENCE AS REQUIRED.

NOTE:
A RESPONSIBLE LAND DISTURBER WILL NEED TO BE PRESENT AT THE PRE CONSTRUCTION MEETING AND PROVIDE LICENSE INFORMATION TO THE CITY BEFORE A LAND DISTURBING PERMIT CAN BE OBTAINED.

WVWA ID# 6L6GUJ

COMMONWEALTH OF VIRGINIA
JACK DURRELL ELLINWOOD
No. 001107
LANDSCAPE ARCHITECT
9/15/05

No.	Revision	By	Appd.	Date
1	REV / COMMENTS OF 9-6-05	DRB	JDE	9/15/05

Drawn DRB
Designed DRB/JDE
Checked JDE
Approved JDE

WESTERN VIRGINIA WATER AUTHORITY LOWER PARKING LOT EXPANSION

EROSION CONTROL DETAILS ROANOKE, VIRGINIA

SCALE: AS SHOWN
AUGUST 18, 2005
PROJECT: 05052
7