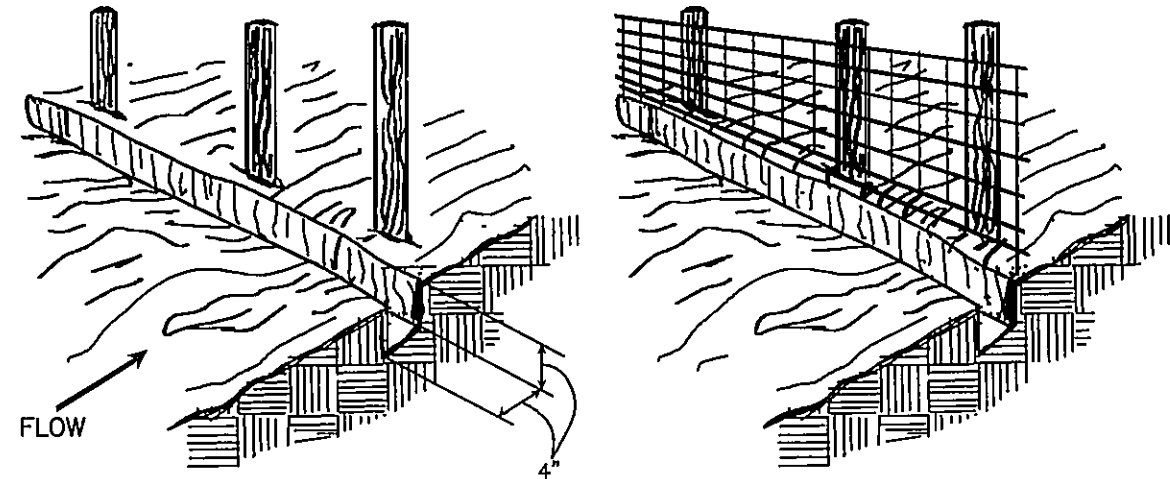
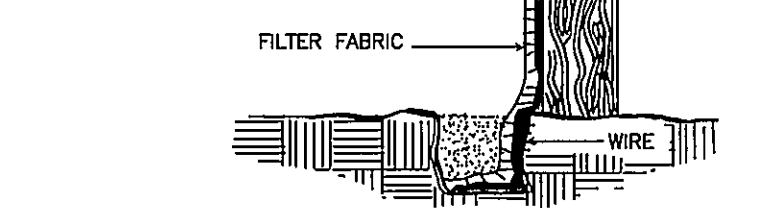
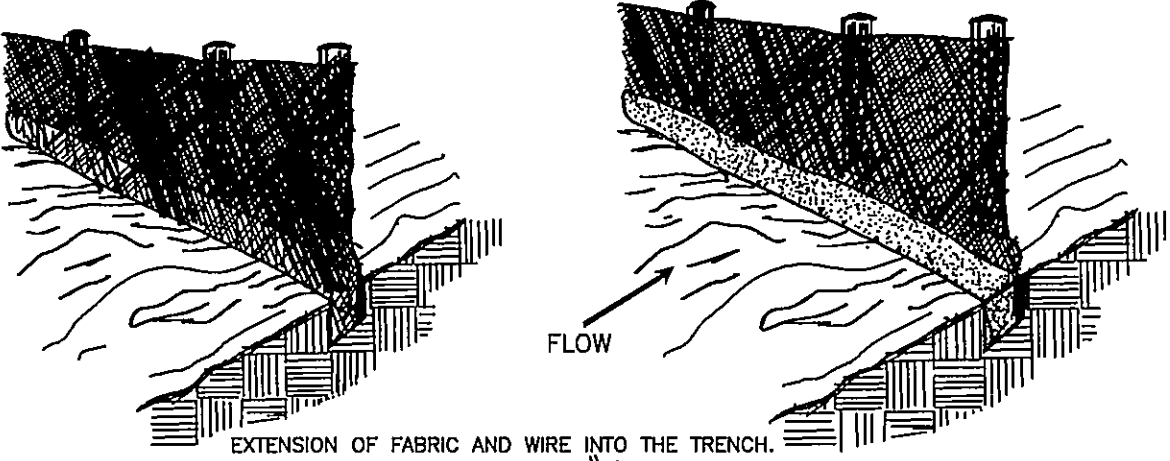


**SF CONSTRUCTION OF A SILT FENCE
(WITH WIRE SUPPORT)**

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.

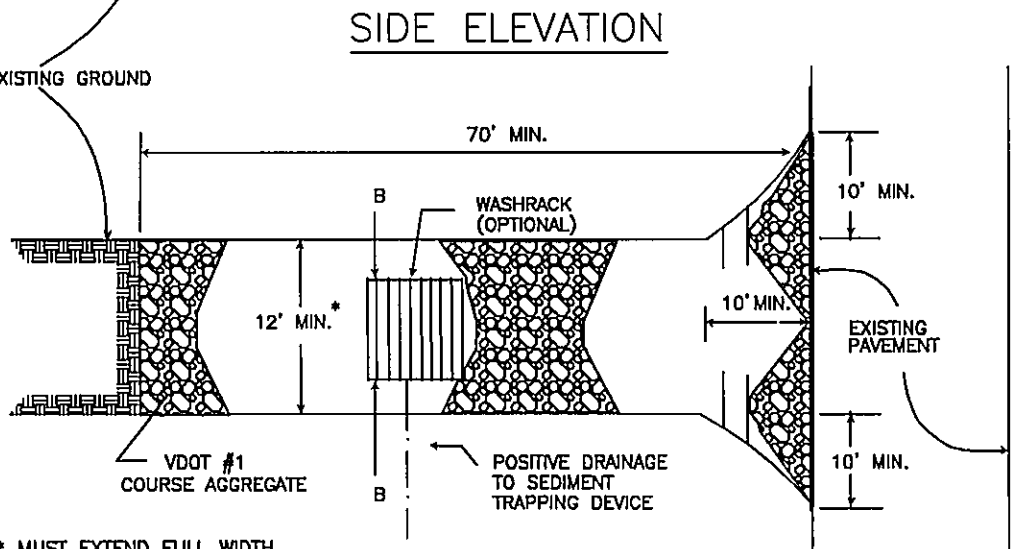
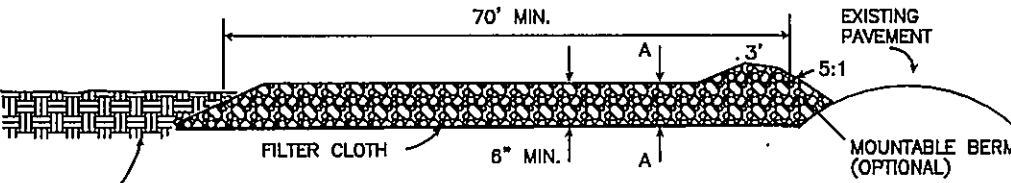


SOURCE: Adapted from Installation of Straw and Fabric Filter Barriers for Sediment Control, Steved & West

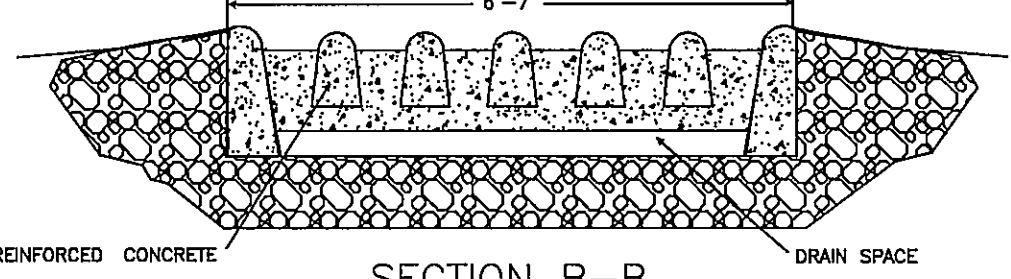
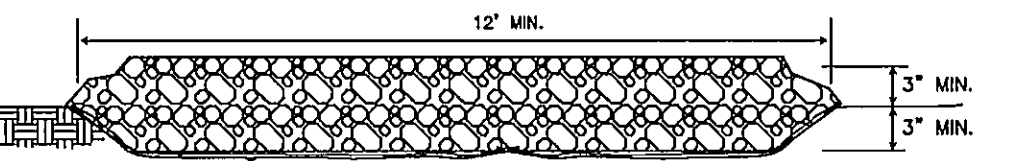
PLATE 3.05-1

CE STONE CONSTRUCTION ENTRANCE

CE



* MUST EXTEND FULL WIDTH OF INGRESS AND EGRESS OPERATION



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

Plate 3.02-1

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

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 MIXTURE AND TYPE ARE BASED ON THE TIME OF YEAR PLANTED AS SPECIFIED IN THE HANDBOOK.

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.

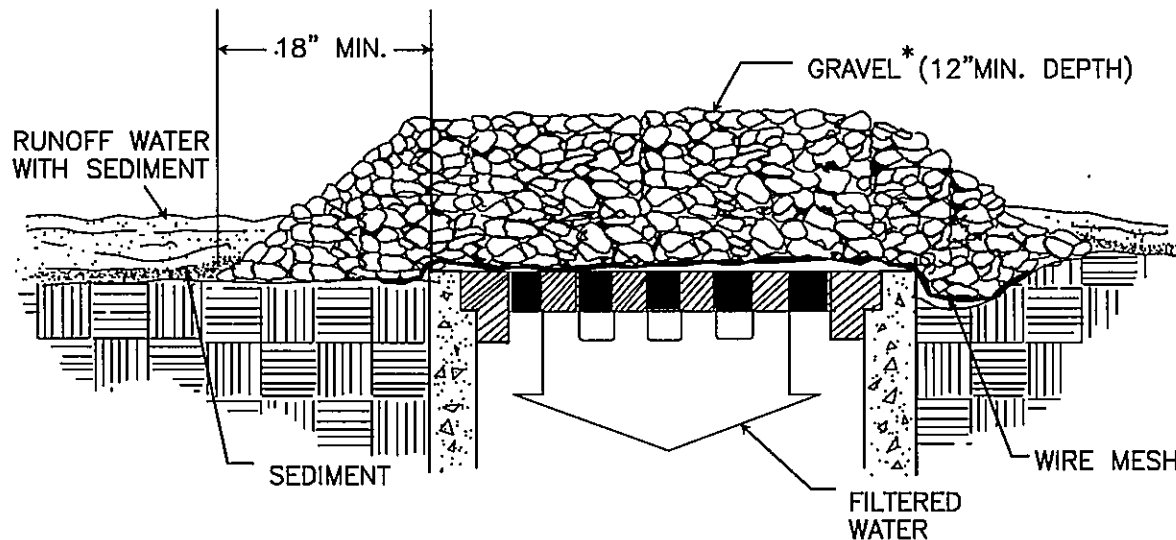
SEED APPLICATION:

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 MIXTURE AND TYPE ARE BASED ON THE TIME OF YEAR PLANTED AS SPECIFIED IN THE HANDBOOK.

**IP GRAVEL AND WIRE MESH
DROP INLET SEDIMENT
FILTER**

IP



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.

EROSION AND SEDIMENT CONTROL NARRATIVE

PROJECT DESCRIPTION

The purpose of this project is to create additional parking 14 spaces and restripe an existing parking lot. The total disturbed area will be 0.43 Acres. No utilities are planned. The amount of disturbance to the existing surface will be confined to within the site, borrow/fill material will be stored on 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.

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.

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 substratum of 45 to 62 inches of brown loam. Soils have moderate permeability, slow surface runoff, slight eroision, moderate organic matter, low shrink well potential depth to the seasonal high water table more than 72 inches.

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. SCC-STORMWATER CONVEYANCE CHANNEL-3.17

Convey surface runoff water to a receiving channel.

3. TP-TREE PROTECTION-3.38

Protect the tree and the tree root system from mechanical and other land disturbing activity.

4. IP-INLET PROTECTION-3.07

Protect existing drop inlets from sediment runoff.

5. CE-CONSTRUCTION ENTRANCE-3.02

A temporary construction entrance shall be installed where the proposed parking lot abuts the existing parking lot.

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 perennal vegetation within 7 days of reaching final grade.

3.MU-MULCH-3.35

Mulching prevents erosion and increases moisture for new plant growth.

4. B/M-SOIL STABILIZATION BLANKETS & MATTING-3.36

A protective covering (blanket) or a soil stabilization mat will be installed on prepared planting areas of steep slopes, channels, or shorelines where noted. VDOT EC-2 shall be used on slopes steeper than 2.5:1. All slopes 2.5:1 or less shall be hydro-seeded.

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 sediment trapping devices will be checked regularly for sediment cleanout.

2. 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.

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

4. 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. on 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 post development will result in less than 0.5 cfs increase in runoff. no stormwater management facility is proposed.

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.

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 EROSION CONTROL DEVICES SHALL BE INSTALLED PER THE NARRATIVE AND PLAN.

2. UNLESS OTHERWISE 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, DENUEDED 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 EROSION. AREAS THAT DO NOT BECOME ESTABLISHED WILL REQUIRE ADDITIONAL STABILIZATION MEASURES.

15. MINIMUM STANDARD # 7 & 8: CUT AND FILL SLOPES MUST BE CONSTRUCTED IN A MANNER THAT WILL MINIMIZE EROSION. 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 EROSION 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 IN VOLUME, VELOCITY AND PEAK FLOW RATE OF STORMWATER RUNOFF FOR THE STATED FREQUENCY STORM OF 24-HOUR DURATION IN ACCORDANCE WITH THE PRACTICES AND CRITERIA 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 DENUEDED AREAS THAT WILL BE DORMANT FOR MORE THEN ONE YEAR.

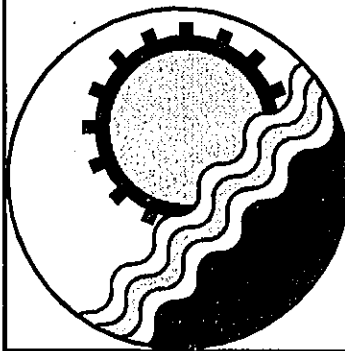
24. A STREET OPENING PERMIT IS REQUIRED BEFORE PLACEMENT OF THE CONSTRUCTION ENTRANCE.

NO.	TITLE	KEY	SYMBOL
3.05	SILT FENCE	SF	— x — x — x —
3.38	TREE PRESERVATION AND PROTECTION	TP	— x — x — x —
3.31	TEMPORARY SEEDING	TS	
3.32	PERMANENT SEEDING	PS	
3.35	MULCHING	MU	
3.17	STORMWATER CONVEYANCE CHANNEL	SCC	→
3.07	STORM DRAIN INLET PROTECTION	IP	⊗
3.02	TEMPORARY GRAVEL CONSTRUCTION ENTRANCE	CE	— x — x — x —

EROSION AND SEDIMENT CONTROLCOST ESTIMATE

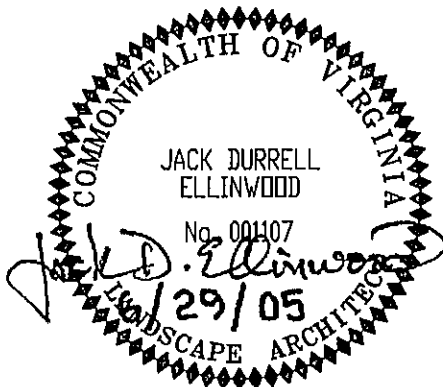
Item	Quantity	Unit	Unit Price	Extension
Silt Fence	368	LF	\$4.00	\$1,472
Tree Protection	72	LF	\$3.00	\$216
Storm Water Conveyance Channel	28	SY	\$5.50	\$154
Temporary Seeding	0.15	AC	\$700.00	\$105
Permanent Seeding	0.15	AC	\$1,375.00	\$208
Construction entrance	1	EA	\$500.00	\$500
Inlet protection	1	EA	\$100.00	\$100
PROJECT SUB-TOTAL				\$2,753
20% CONTINGENCY				\$550.65
TOTAL PROJECT COST=				\$3,303.90

WVWA ID# BL6GUJ



ENGINEERING CONCEPTS, INC.

3433 BRAMBLETON AVENUE, SUITE 200B
ROANOKE, VIRGINIA 24018
540.776.5715 FAX: 540.776.8543



No.	Revision	By	Appd.	Date	Drawn	DRB
1	REV PER CITY COMMENTS 7/5/05	DRB	JDE	8/1/05	Designed	JDE
					Checked	JDE
					Approved	JDE

**WESTERN VIRGINIA WATER AUTHORITY
PARKING LOT EXPANSION**

**EROSION CONTROL DETAILS
ROANOKE, VIRGINIA**

SCALE: AS SHOWN

JUNE 29, 2005

PROJECT: 05052