

-FILTER CLOTH - DRIGINAL GROUND

-Length(ft) = 6 x Drainage Area (ac.)

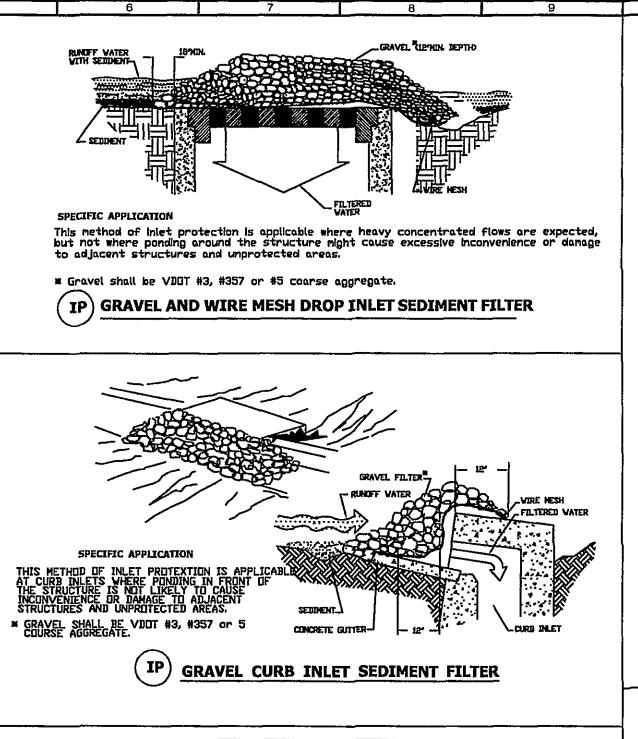
-DIVERSION DIKE

20

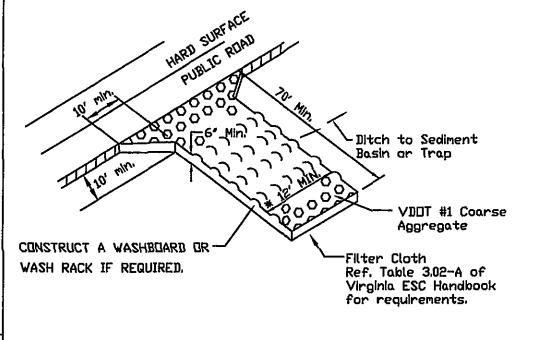
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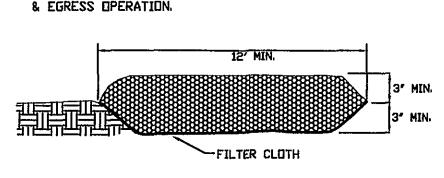
CHARSE AGGREGATE ##



<del></del>	
3.02 TEMPORARY STONE CE CONSTRUCTION ENTRANCE	
3.05 SILT FENCE SF	
3.07 STORM DRAIN INLET PROTECTION	
3.09 TEMPORARY DIVERSION DIKE	
3.11 TEMPORARY RIGHT-OF-WAY DIVERSION RWD	
3.13 SEDIMENT TRAP	
3.20 ROCK CHECK CD	
3.30 TOPSOILING TO	
3.31 TEMPORARY SEEDING TS	
3.32 PERMANENT SEEDING PS	
3.35 MULCHING MU	

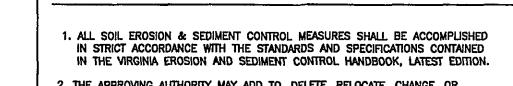


\* MUST EXTEND FULL WIDTH OF INGRESS



TEMPORARY GRAVEL **CONSTRUCTION ENTRANCE** 

TYPE B (SLOPES 3:1 OR STEEPER) TYPE A 15 OCTOBER TO 1 FEBRUARY 15 MARCH TO 1 MAY K-31 FESCUE @ 5 LB / 1000 SF CROWN VETCH • 1/2 LB / 1000 SF PERENNIAL RYEGRASS 0 1/2 LB / 1000 SF BORZY WINTER RYE • 1/2 LB / 1000 SF RED TOP • 1/8 LB / 1000 SF K-31 FESCUE • 5 LB / 1000 SF CROWN VETCH • 1/2 LB / 1000 SF ANNUAL RYE • 1/2 LB / 1000 SF PERENNIAL RYEGRASS # 1/2 LB / 1000 SF 1 JUNE TO 1 SEPTEMBER RED TOP • 1/8 LB / 1000 SF 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 140 LB / 1000 SF PULVERIZED AGRICULTURAL LIMESTONE FERTILIZER: 5-20-10 @ 25 LB / 1000 SF 38-0-0 • 7 LB / 1000 SF 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. 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 HYDROSEEDER ON A FIRM, FRIABLE, SEEDBED. MAXIMUM SEEDING DEPTH SHALL BE 1/4 INCH.



2. 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.

**GENERAL EROSION AND SEDIMENT CONTROL NOTES** 

3. 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 4. IN NO CASE DURING CONSTRUCTION SHALL WATER RUNOFF BE DIVERTED OR

ALLOWED TO FLOW TO LOCATIONS WHERE ADEQUATE PROTECTION HAS NOT BEEN 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

7. THE LOCATION OF ALL OFF-SITE FILL OR BORROW AREAS ASSOCIATED WITH THE CONSTRUCTION PROJECT WILL BE PROVIDED TO ROANOKE COUNTY DEPARTMENT OF COMMUNITY DEVELOPMENT. AN EROSION CONTROL PLAN OR MEASURES MAY BE REQUIRED FOR THIS AREA.

8. THIS SHEET MAY NOT BE MODIFIED EXCEPT FOR TABLES

PLANS SUBMITTED TO ROANOKE COUNTY.

TOTAL DISTURBED AREA = 1.5 AC.= 65,000 SQ. FT.

ALL	ALL COSTS GIVEN ARE COMPLETE IN PLACE						
	DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST		
	ISTRUCTION RANCE	EA	1	\$ 1,500	\$ 1,500		
SIL	T FENCE	LF	370	4.00	1,480		
INL	ET PROTECTION	EA	2	100.00	200		
	IPORARY 'ERSION DIKE	LF	340	3.00	1,020		
	IPORARY L DIVERSION	LF					
SEI	DIMENT TRAP	EA	1	1,000.00	1,000		
BLA	NKET MATTING	S.Y.					
PER	RMANENT SEEDING	1000 SF	30	20.00	600		
דטם	LET PROTECTION	EA					
CHE	CK DAMS	EA	2	50.00	100		
TEM	IP. SEEDING	1000 SF	30	15.00	450		
ROV	√ DIVERSION	LF	90	3.00	270		
SUE	B-TOTAL				\$ 6,620.00		
25%	CONTINGENCY				\$ 1,655.00		
ТОТ	TOTAL PROJECT COST						
S <sup>-</sup>	STORMWATER MANAGMENT						

**EROSION & SEDIMENT CONTROL** 

COST ESTIMATE

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

> LIMING REQUIREMENTS FOR TEMPORARY SITES RECOMMENDED APPLICATION OF AGRICULTURAL LIMESTONE 3 TONS PER ACRE 2 TONS PER ACRE 1 TON PER ACRE

ACCEPTABLE TEMPURARY SEEDING PLANT MATERIAL QUICK REFERENCE FOR ALL REGIONS'

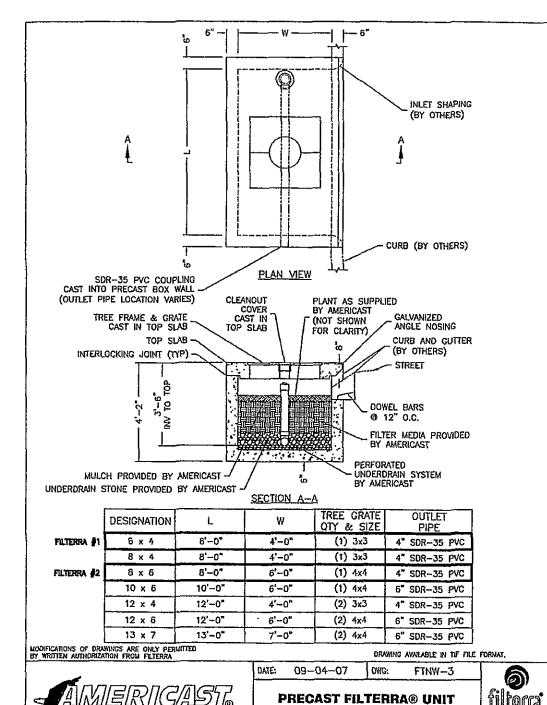
RYEGRASS 8 WINTER RYE

GERMAN MILLET **TEMPORARY SEEDING** 

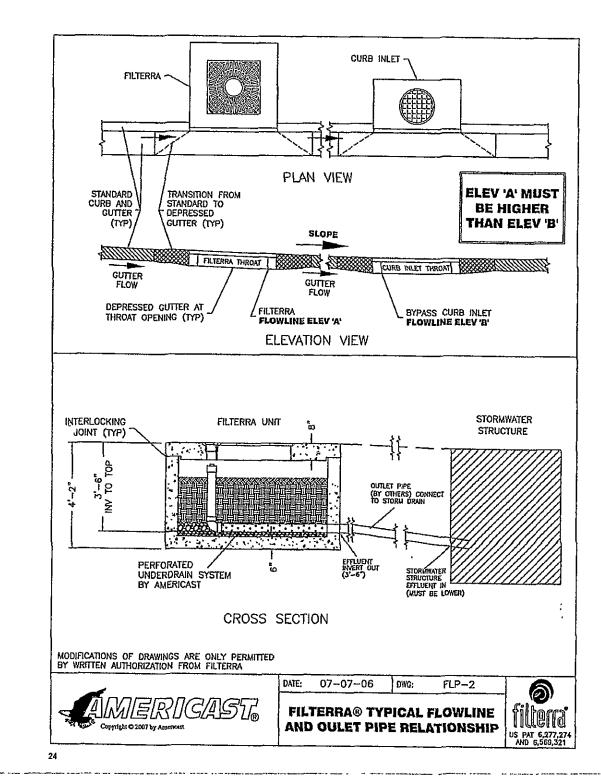
STORMWATER MANAGMENT COST ESTIMATE BMP # 1 FILTERRA #1 (4'x6') COST \$ 7,450.00 BMP # 2 FILTERRA #2 (6'x8') COST \$ 11,000.00

LUMP SUM \$ 18,450.00

COMPACTED SOIL TEMPORARY DIVERSION DIKE



IARROW WIDTH CONFIGURATION



FILTERRA CONSTRUCTION & INSTALLATION NOTES: 1. EACH UNIT SHALL BE CONSTRUCTED AT THE LOCATIONS AND ELEVATIONS ACCORDING TO THE SIZES SHOWN ON THE APPROVED DRAWINGS. ANY MODIFICATIONS TO THE ELEVATION OR LOCATION SHALL BE AT THE DIRECTION OF AND APPROVED BY THE ENGINEER. 2. IF THE FILTERRA IS STORED BEFORE INSTALLATION, THE TOP SLAB MUST BE PLACED ON THE BOX USING THE 2x4 WOOD PROVIDED, TO PREVENT ANY CONTAMINATION FROM THE SITE. ALL INTERNAL FITTINGS SUPPLIED (IF ANY), MUST BE LEFT IN PLACE AS PER THE

**PERMANENT SEEDING MIXTURE** 

3. THE UNIT SHALL BE PLACED ON A COMPACTED SUBGRADE WITH A MINIMUM 6-INCH GRAVEL BASE MATCHING THE FINAL GRADE OF THE CURB LINE IN THE AREA OF THE UNIT. THE UNIT TO BE PLACED SUCH THAT THE UNIT AND TOP SLAB MATCH THE GRADE OF THE CURB IN THE AREA OF THE UNIT.

4. OUTLET CONNECTIONS SHALL BE ALIGNED AND SEALED TO MEET THE APPROVED DRAWINGS WITH MODIFICATIONS NECESSARY TO MEET SITE CONDITIONS AND LOCAL

5. ONCE THE UNIT IS SET. THE INTERNAL WOODEN FORMS AND PROTECTIVE MESH COVER MUST BE LEFT INTACT. REMOVE ONLY THE TEMPORARY WOODEN SHIPPING BLOCKS BETWEEN THE BOX AND TOP SLAB. THE TOP LID SHOULD BE SEALED ONTO THE BOX SECTION BEFORE BACKFILLING, USING A NON-SHRINK GROUT, BUTYL RUBBER OR SIMILAR WATERPROOF SEAL. THE BOARDS ON TOP OF THE LID AND BOARDS SEALED IN THE UNIT'S THROAT MUST NOT BE REMOVED. THE SUPPLIER (AMERICAST OR ITS AUTHORIZED DEALER) WILL REMOVE THESE SECTIONS AT THE TIME OF ACTIVATION. BACKFILLING SHOULD BE PERFORMED IN A CAREFUL MANNER, BRINGING THE APPROPRIATE FILL MATERIAL UP IN 6" LIFTS ON ALL SIDES. PRECAST SECTIONS SHALL BE SET IN A MANNER THAT WILL RESULT IN A WATERTIGHT JOINT. IN ALL INSTANCES, INSTALLATION OF FILTERRA UNIT SHALL CONFORM TO ASTM SPECIFICATION C891 "STANDARD PRACTICE FOR INSTALLATION OF UNDERGROUND PRECAST UTILITY STRUCTURES", UNLESS DIRECTED OTHERWISE IN CONTRACT

DOCUMENTS. 6. CURB AND GUTTER CONSTRUCTION (WHERE PRESENT) SHALL ENSURE THAT THE FLOWLINE OF THE FILTERRA UNITS IS AT A GREATER ELEVATION THAN THE FLOWLINE OF THE BYPASS STRUCTURE OR RELIEF (DROP INLET, CURB CUT OR SIMILAR). FAILURE TO COMPLY WITH THIS GUIDELINE MAY CAUSE FAILURE AND/OR DAMAGE TO THE FILTERRA ENVIRONMENTAL

7. EACH FILTERRA UNIT MUST RECEIVE ADEQUATE IRRIGATION TO ENSURE SURVIVAL OF THE LIVING SYSTEM DURING PERIODS OF DRIER WEATHER. THIS MAY BE ACHIEVED THROUGH GUTTER FLOW OR THROUGH THE TREE GRATE.

1. ACTIVATION OF THE FILTERRA UNIT IS PERFORMED ONLY BY THE SUPPLIER. PURCHASER IS RESPONSIBLE FOR FILTERRA INLET PROTECTION AND SUBSEQUENT CLEAN OUT COST. THIS PROCESS CANNOT COMMENCE UNTIL THE PROJECT SITE IS FULLY STABILIZED AND CLEANED (FULL LANDSCAPING, GRASS COVER, FINAL PAVING AND STREET SWEEPING COMPLETED), NEGATING THE CHANCE OF CONSTRUCTION MATERIALS CONTAMINATING THE FILTERRA SYSTEM. CARE SHALL BE TAKEN DURING CONSTRUCTION NOT TO DAMAGE THE PROTECTIVE THROAT AND TOP PLATES. 2. ACTIVATION INCLUDES INSTALLATION OF PLANT(S) AND MULCH LAYERS AS NECESSARY.

INCLUDED MAINTENANCE: 1. EACH CORRECTLY INSTALLED FILTERRA UNIT IS TO BE MAINTAINED BY THE SUPPLIER, OR A SUPPLIER APPROVED CONTRACTOR FOR A MINIMUM PERIOD OF 1 YEAR. THE COST OF THIS SERVICE IS TO BE INCLUDED IN THE PRICE OF EACH FILTERRA UNIT. EXTENDED MAINTENANCE CONTRACTS ARE AVAILABLE AT EXTRA COST UPON REQUEST. 2. ANNUAL INCLUDED MAINTENANCE CONSISTS OF A MAXIMUM OF TWO (2) SCHEDULED VISITS. THE VISITS ARE SCHEDULED SEASONALLY; THE SPRING VISIT AIMS TO CLEAN UP AFTER WINTER LOADS THAT MAY INCLUDE SALTS AND SANDS. THE FALL VISIT HELPS THE SYSTEM BY REMOVING EXCESS LEAF LITTER.

60 - 100

3. EACH INCLUDED MAINTENANCE VISIT CONSISTS OF THE FOLLOWING TASKS: A. FILTERRA UNIT INSPECTION

B. FOREIGN DEBRIS, SILT, MULCH, AND TRASH REMOVAL C. FILTER MEDIA EVALUATION AND RECHARGE AS NECESSARY

D. PLANT HEALTH EVALUATION AND PRUNING OR REPLACEMENT AS **NECESSARY** E. REPLACEMENT OF MULCH

FILTER CLOTH

13 14

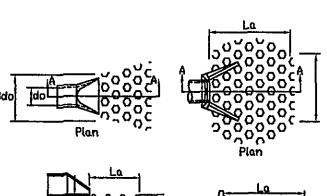
(OPTIONAL)

CUARSE AGGREGATE

CDDWNSTREAM VIEW

F. DISPOSAL OF ALL MAINTENANCE REFUSE ITEMS G. MAINTENANCE RECORDS UPDATED AND STORED (REPORTS AVAILABLE

UPON REQUEST) 4. THE BEGINNING AND ENDING DATE OF SUPPLIER'S OBLIGATION TO MAINTAIN THE INSTALLED SYSTEM SHALL BE DETERMINED BY THE SUPPLIER AT THE TIME THE SYSTEM IS ACTIVATED. OWNERS MUST PROMPTLY NOTIFY THE SUPPLIER OF ANY DAMAGE TO THE PLANT(S), WHICH CONSTITUTE(S) AN INTEGRAL PART OF THE BIORETENTION TECHNOLOGY.



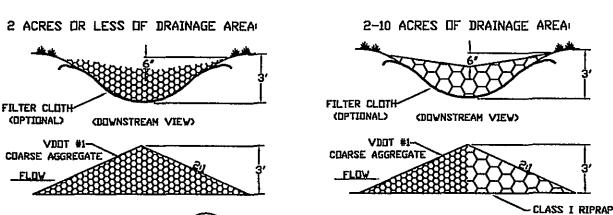
Section A-A <u>Pipe Dutlet To Flat Area</u> <u>With No Defined Chan</u>nel

(OP) OUTLET PROTECTION

1. Apron Uning may be rip-rap, grouted rip-rap, or concrete. 2. La is the length of the rip-

rap apron as calculated using plates 1,36d and 1,36e. 3, d = 1.5 times the maximum stone diameter, but not less

**REVISIONS:** 11-19-2008 12-10-2008



**ROCK CHECK DAM** 

SHEET NO.

SCALE: N/A

'ROGER STURGILL

Lic. No. 033058

12/10/08

REFLECTING TOMORROW www.balzer.cc

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ENGINEERS • SURVEYORS

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ETAIL

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BMP

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DRAWN BY: CPB

DESIGNED BY: CPB

CHECKED BY: SMH

**DATE:** 10-14-2008

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JOB NO. R0800339.00