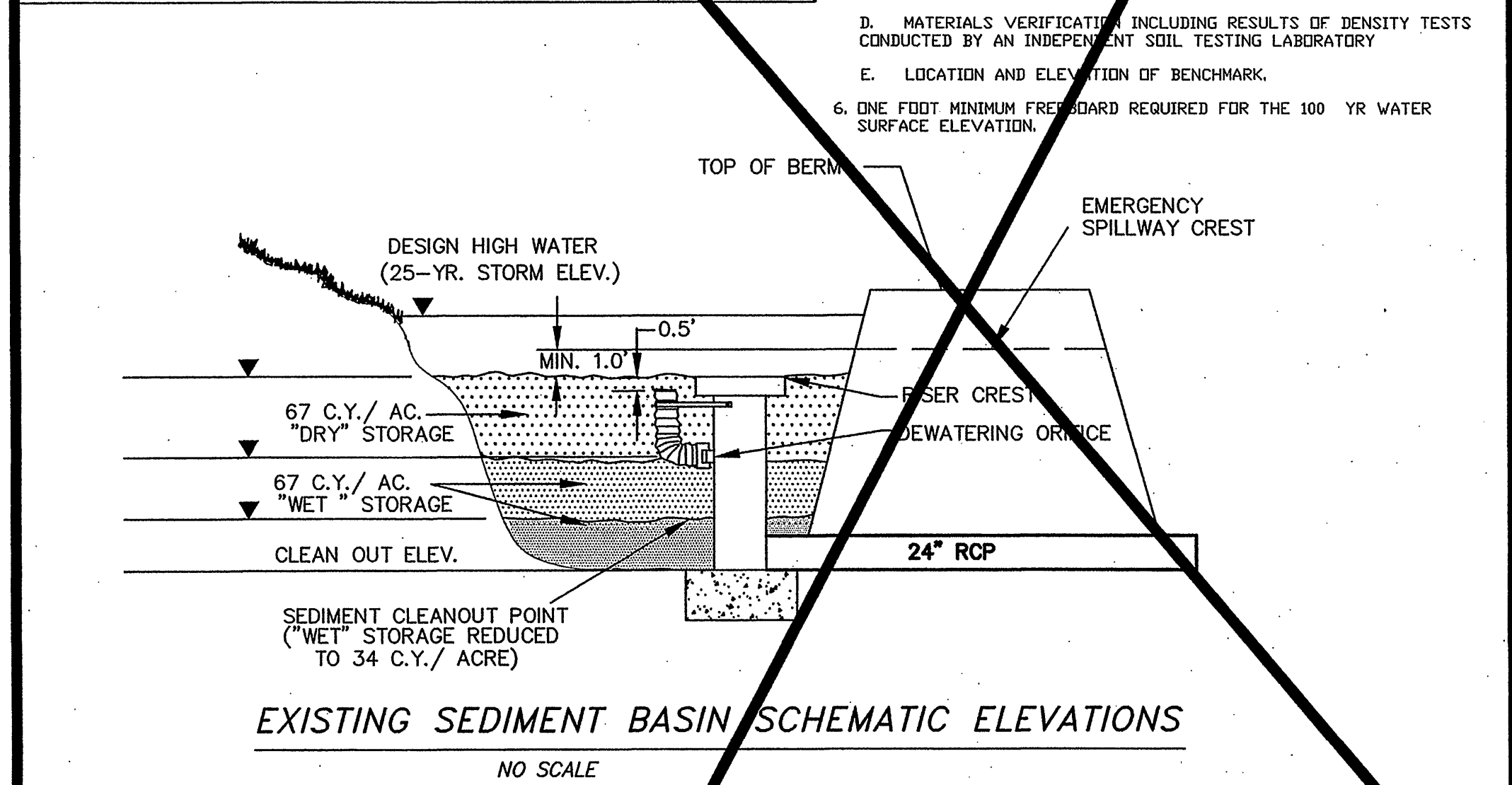
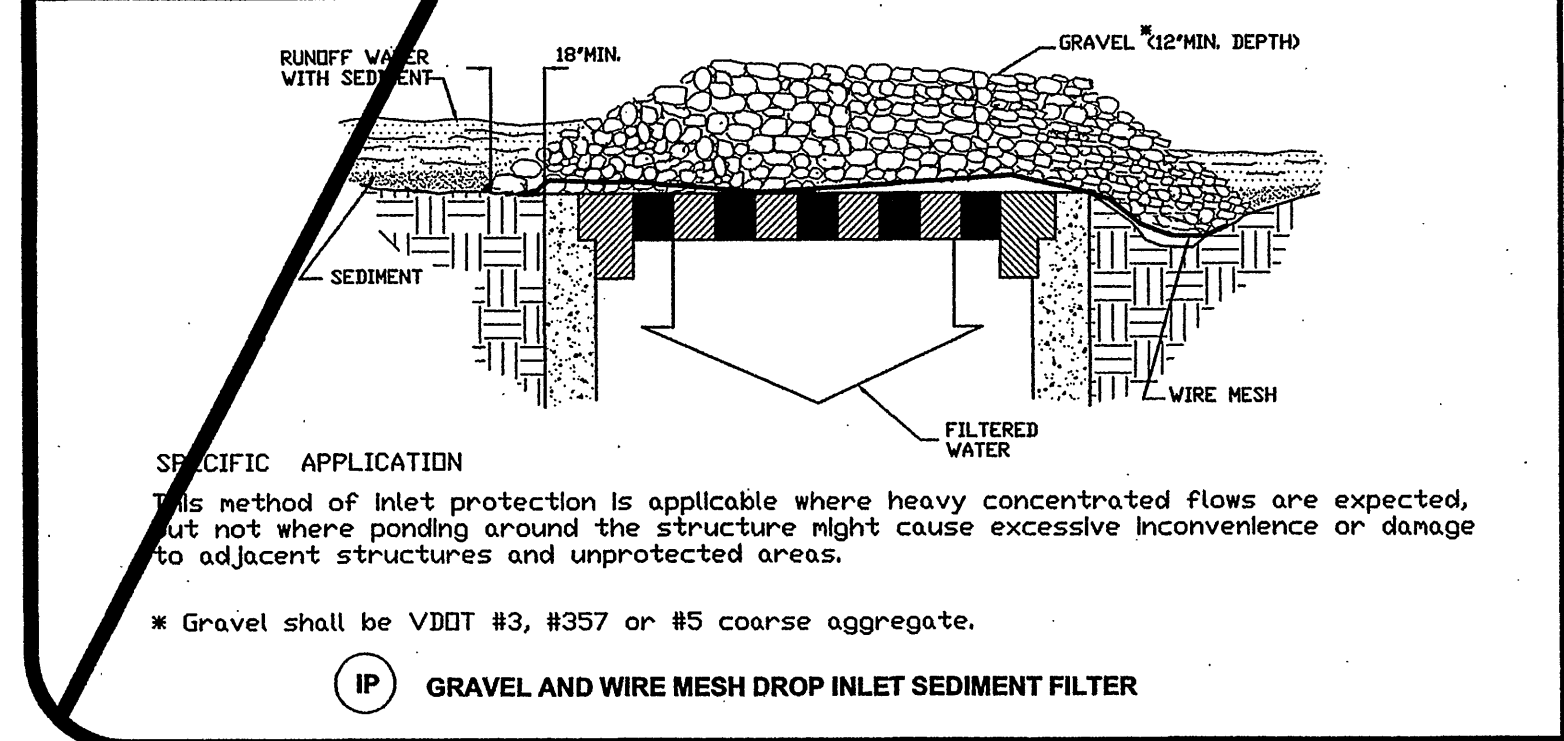


STORMWATER MANAGEMENT COST ESTIMATE				
ALL COSTS GIVEN ARE COMPLETE IN PLACE				
DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST
CLEARING & GRUBBING	LS		\$	\$
EXCAVATION	CY	1,000	5.00	N/A
EMBANKMENT	CY			
FENCING	LF	900	15.00	N/A
STRUCTURES				
ACCESS ROAD				
AS-BUILTS				N/A
SUB-TOTAL				\$ N/A
10% CONTINGENCY				\$ N/A
TOTAL PROJECT COST				\$ N/A



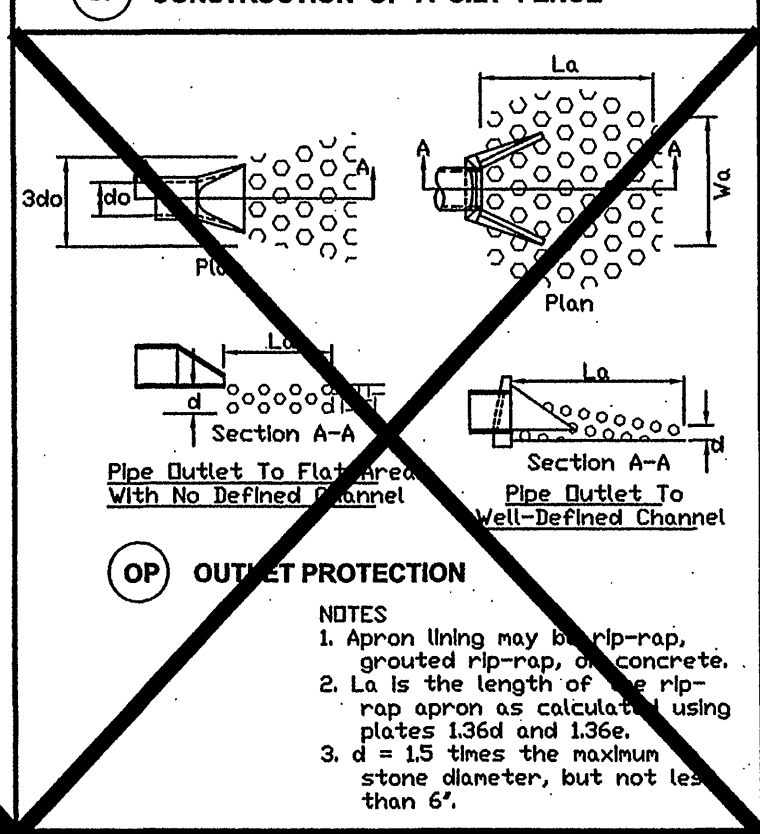
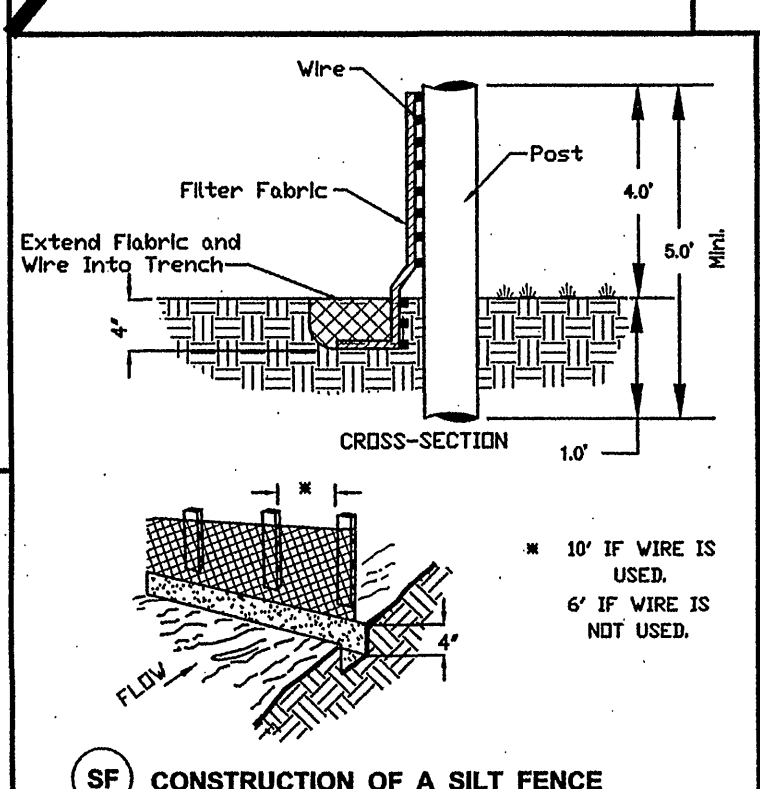
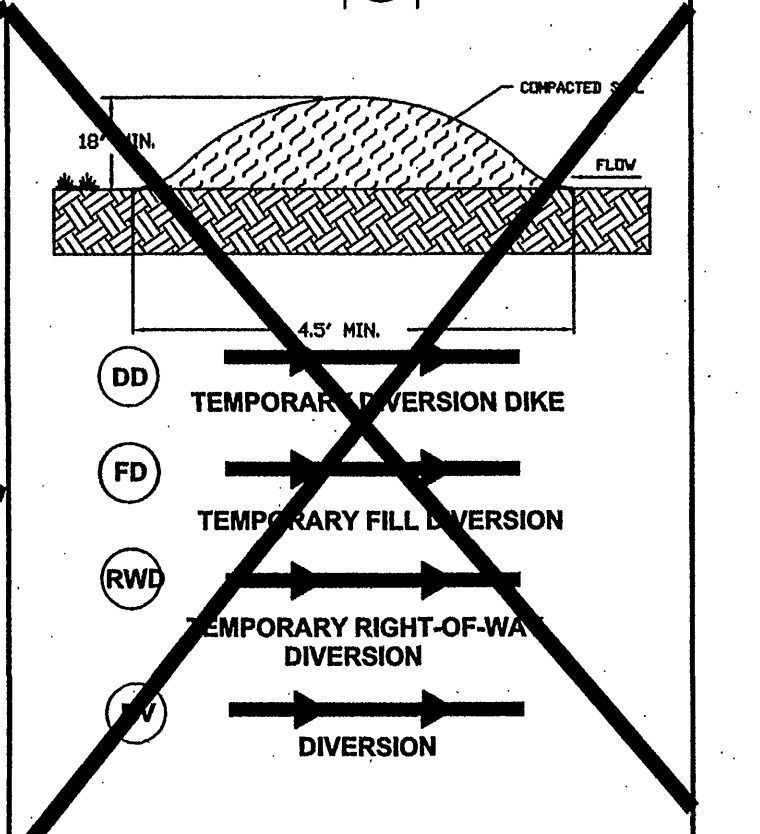
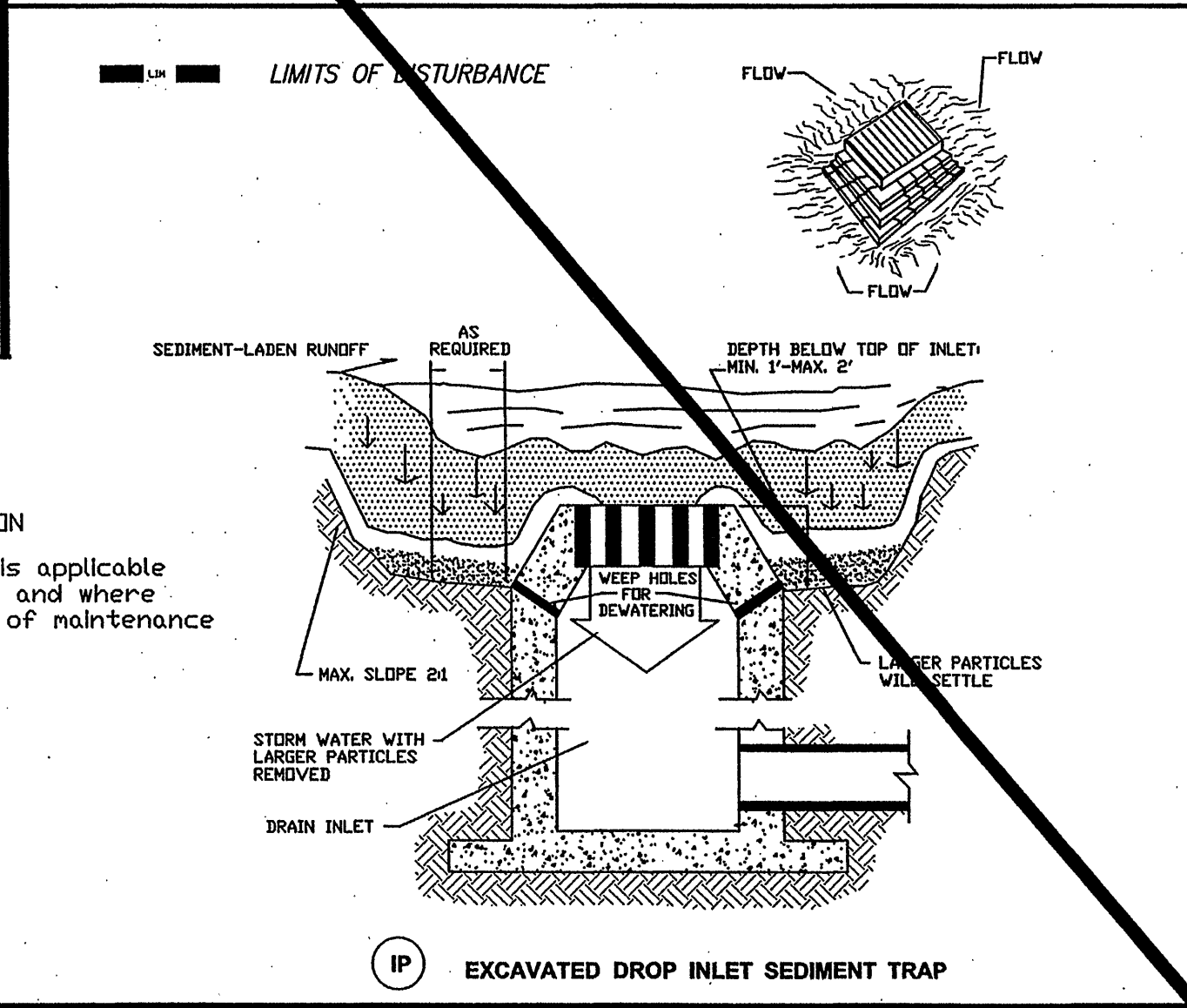
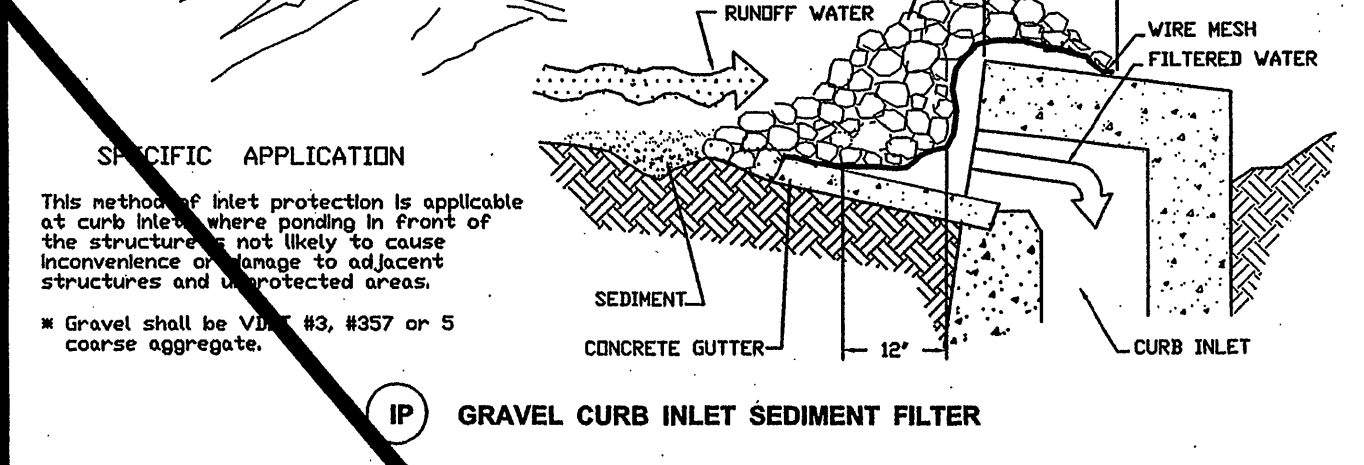
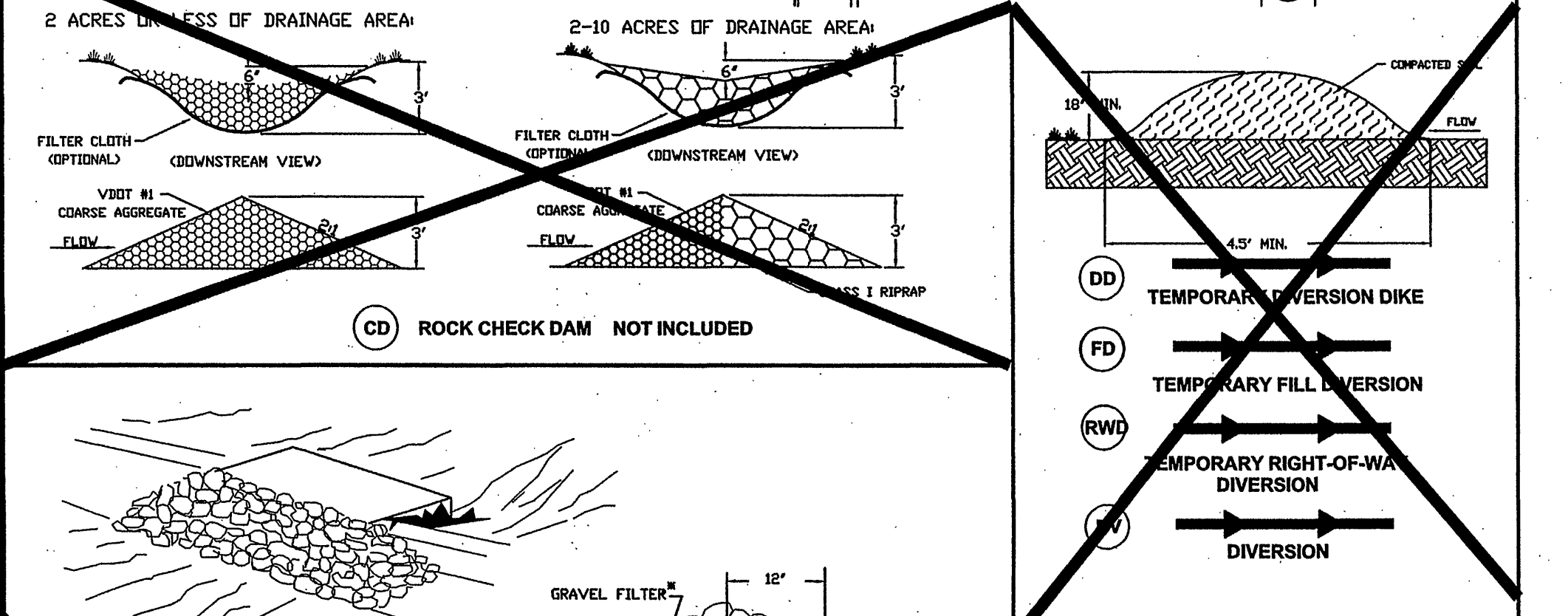
CONSTRUCTION NOTES	
1. SITE PREPARATION SHALL BE IN ACCORDANCE WITH THE COUNTY OF ROANOKE DESIGN AND CONSTRUCTION STANDARDS FOR DETENTION PONDS, LATEST EDITION.	
2. SLOPES STEEPER THAN 3 TO 1 (HORIZONTAL TO VERTICAL) SHALL BE BENCHED OR STEPPED PRIOR TO PLACING FILL ON THEM.	
3. ON-SITE FILL MATERIAL OR BORROW FILL MATERIAL MAY BE UTILIZED. FILL MATERIAL SOILS, IN GENERAL:	
A. SHALL BE COMPACTABLE	
B. SHALL BE WITHIN AN ACCEPTABLE RANGE OF MOISTURE CONTENT WHICH IS READILY CONTROLLED.	
C. SHALL NOT BE HIGHLY SUSCEPTIBLE TO VOLUME CHANGE (SHRINKAGE OR SWELL) OR SETTLEMENT	
4. FILL MATERIALS CONTAINING ROCKS LARGER THAN SIX (6) INCHES (15.2 CM) SHALL NOT BE USED. THE UPPERMOST TWO (2) FEET (61 CM) SHALL NOT HAVE ANY ROCK LARGER THAN TWO (2) INCHES (5.1 CM) IN DIAMETER.	
5. THE APPROVED FILL SHALL BE PLACED IN EIGHT (8) INCH (20 CM) LOOSE LIFTS. EACH LIFT SHALL BE SPREAD IN UNIFORM LAYERS. FILL SOIL SHALL BE UTILIZED ONLY WITHIN A MOISTURE RANGE OF +/- 5% OF THE OPTIMUM MOISTURE CONTENT. COMPACTION OF THE FILL SHALL BE PERFORMED WITH APPROVED EQUIPMENT. COMPACTION OF THE LAYERS SHALL BE CONTINUOUS AND UNIFORM.	
6. EMBANKMENT MATERIAL IN FILL AREAS SHALL BE PLACED IN LIFTS NOT EXCEEDING EIGHT (8) INCHES AND SHALL BE COMPACTED TO A MINIMUM 95% DENSITY IN ACCORDANCE WITH SECTION 303 OF THE VIRGINIA DEPARTMENT OF TRANSPORTATION ROAD AND BRIDGE SPECIFICATIONS.	
7. FIELD DENSITY TESTS ARE TO BE CONDUCTED BY AN INDEPENDENT SOILS TESTING LABORATORY UNDER THE DIRECTION OF A QUALIFIED GEOTECHNICAL ENGINEER. THE RESULTS OF THESE TESTS SHALL BE SUBMITTED TO THE COUNTY OF ROANOKE WITH AS-BUILT PLANS AS A CONDITION OF ACCEPTANCE OF THE FACILITY BY THE COUNTY. FIELD DENSITY TESTS, AS DIRECTED BY THE ENGINEER SHALL BE PERFORMED PERIODICALLY TO DETERMINE THE DEGREE OF COMPACTION. ANY AREAS FAILING TO MEET THE ABOVE REQUIREMENTS SHALL BE REWORKED AND/OR RECOMPACTED UNTIL THE REQUIRED DEGREE OF COMPACTION IS ACHIEVED.	
8. ANTI-SEEP COLLARS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION.	
9. ALL DISTURBED AREAS SHALL BE COVERED WITH FOUR (4) INCHES OF TOPSOIL AND SEEDED.	
10. THE MINIMUM SLOPE OF THE BASIN FLOOR SHALL BE ONE (1) PERCENT GRADED TO DRAIN TO THE PRINCIPAL SPILLWAY.	
THE STORMWATER MANAGEMENT POND IS IN PLACE. NO ADDITIONAL WORK WILL BE REQUIRED IN THIS AREA	



SPECIFIC APPLICATION

This method of inlet protection is applicable where heavy flows are expected and where an overflow capability and ease of maintenance are desirable.

NO.	TITLE	KEY	SYMBOL	NO.	TITLE	KEY	SYMBOL
3.01	SAFETY FENCE	SAF		3.20	ROCK CHECK DAMS	CD	
3.02	TEMPORARY GRAVEL CONSTRUCTION ENTRANCE	CE		3.21	LEVEL SPREADER	LS	
3.03	CONSTRUCTION ROAD STABILIZATION	CRS		3.22	VEGETATIVE STREAMBANK STABILIZATION	VSS	
3.04	STRAW BALE BARRIER	STB		3.23	STRUCTURAL STREAMBANK STABILIZATION	SSS	
3.05	SILT FENCE	SF		3.24	TEMPORARY VEHICULAR STREAM CROSSING	VSC	
3.06	BRUSH BARRIER	BB		3.25	UTILITY STREAM CROSSING	USC	
3.07	STORM DRAIN INLET PROTECTION	IP		3.26	DEWATERING STRUCTURE	DS	
3.08	CULVERT INLET PROTECTION	CIP		3.27	TURBIDITY CURTAIN	TC	
3.09	TEMPORARY DIVERSION DIKE	DD		3.28	SUBSURFACE DRAIN	SD	
3.10	TEMPORARY FILL DIVERSION	FD		3.29	SURFACE ROUGHENING	SR	
3.11	TEMPORARY RIGHT-OF-WAY DIVERSION	RWD		3.30	TOPSOILING	TD	
3.12	DIVERSION	DV		3.31	TEMPORARY SEEDING	TS	
3.13	TEMPORARY SEDIMENT TRAP	ST		3.32	PERMANENT SEEDING	PS	
3.14	TEMPORARY SEDIMENT BASIN	SB		3.33	SODDING	SD	
3.15	TEMPORARY SLOPE DRAIN	TSJ		3.34	BERMUDA GRASS AND ZOYSIAURASS ESTABLISHMENT	BEZ	
3.16	PAVED FLUME	PF		3.35	MULCHING	MU	
3.17	STORMWATER CONVEYANCE CHANNEL	SCC		3.36	SOIL STABILIZATION BLANKETS AND MATTING TREES, SHRUBS, VINES AND GROUND COVERS	SSM	
3.18	OUTLET PROTECTION	OP		3.37	TREE PRESERVATION AND PROTECTION	TP	
3.19	RIPRAP	RR		3.38			
				3.39	DUST CONTROL	DC	



01 MARCH TO 30 APRIL
WINTER RYE (SECALE CERALE) @ 2 1/2 LB / 1000 SF
OR ANNUAL RYEGRASS (LOLIUM MULTI-FLORUM) @ 1 1/2 LF / 1000 SF
OR KOREAN LESPEDEZA (LESPEDEZA STIPULACEA) @ 1 1/2 LF / 1000 SF

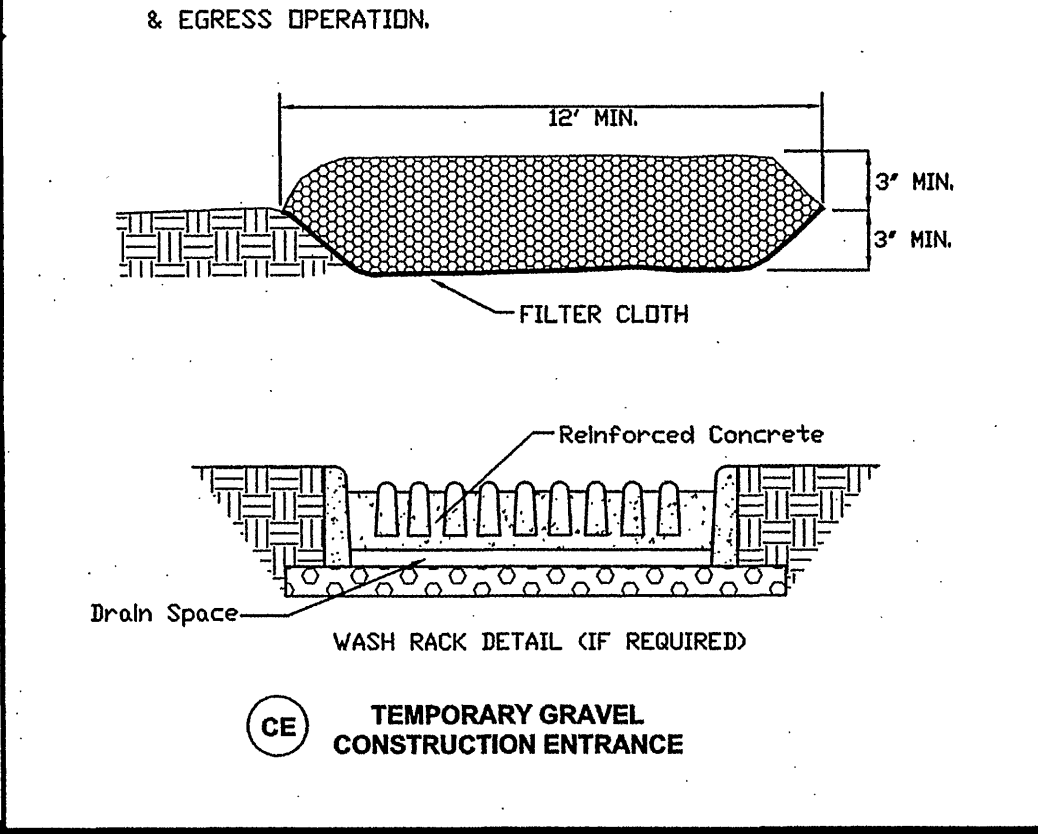
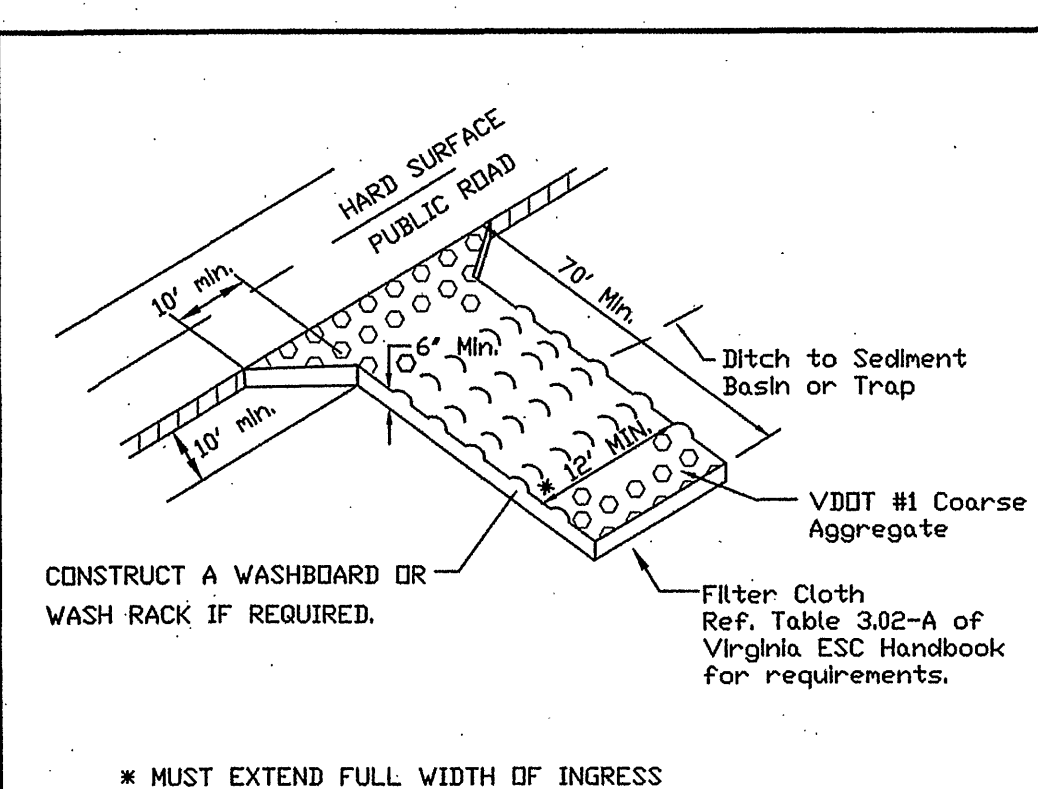
01 MAY TO 15 AUGUST
GERMAN MILLET (SETARIA ITALICA) @ 1 LB / 1000 SF
OR WEEPING LOVEGRASS (ERAGROSTIS CLRVULA) @ 5 1/2 OZ / 1000 SF
OR KOREAN LESPEDEZA (LESPEDEZA STIPULACEA) @ 1 1/2 LF / 1000 SF

15 AUGUST TO 01 NOVEMBER
WINTER RYE (SECALE CERALE) @ 1 LB / 1000 SF
AND ANNUAL RYEGRASS (LOLIUM MULTI-FLORUM) @ 1 LF / 1000 SF

MULCH:
SHALL BE USED OVER ALL SEEDED AREAS AND SHALL BE APPLIED IN ACCORDANCE WITH SECTION 3.35 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, 3rd ED.

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

(TS) TEMPORARY SEEDING MIXTURE
VA ESCH STD & SPEC 3.31



EROSION-SILTATION CONTROL COST ESTIMATE				
ALL COSTS GIVEN ARE COMPLETE IN PLACE				
DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST
CONSTRUCTION ENTRANCE	EA	1	\$ 1,500.00	\$ 1,500.00
SILT FENCE	LF	340	\$ 4.00	\$ 1,360.00
INLET PROTECTION	EA	0	\$ 500.00	\$ 0
TEMPORARY DIVERSION DIKE	LF	0	\$ 5.00	\$ 0
SEDIMENT TRAP	CY	0	\$ 7.00	\$ 0
PERMANENT SEEDING	1000 SF	3	\$ 45.00	\$ 135.00
RIGHT OF WAY DIVERSION	LF	0	\$ 5.00	\$ 0
BLANKET MATTING	SY	0	\$ 3.00	\$ 0
TEMPORARY SEEDING	1000 SF	3	\$ 29.00	\$ 135.00
SUB-TOTAL				\$ 3,130.00
10% CONTINGENCY				\$ 310.00
TOTAL PROJECT COST				\$ 3,440.00

GENERAL EROSION AND SEDIMENT CONTROL NOTES

- 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.
- 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.
- 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 PRACTICAL.
- IN NO CASE DURING CONSTRUCTION SHALL WATER RUNOFF BE DIVERTED OR ALLOWED TO FLOW TO LOCATIONS WHERE ADEQUATE PROTECTION HAS NOT BEEN PROVIDED.
- 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.
- 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 COUNTY.

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 JUNE	K-31 FESCUE @ 5 LB / 1000 SF ANNUAL RYE @ 1/2 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
TYPE B (SLOPES 3:1 OR STEEPER)	
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
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
LIME: 140 LB / 1000 SF PULVERIZED AGRICULTURAL LIMESTONE	
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 HYDROSEEDER ON A FIRM, FRIABLE, SEEDBED. MAXIMUM SEEDING DEPTH SHALL BE 1/4 INCH.	
TOTAL DISTURBED AREA = 0.082 AC. = 3225 SQ. FT.	

1	ENGR. & INSPEC.	04-10-93
2	ENGR. & INSPEC.	08-05-93
3	ENGR. & INSPEC.	10-27-93
4		
5		
6		
NO.	REVISIONS	DATE

DATE: 11/02/93
SCALE: NO SCALE
DRAWING BY: CLN,AF
DESIGNED BY: G:ICAD/DETAILS/EROSION/EROSION
APPROVED BY: GWS,III