

CONTRACTOR SHALL PARTICULAR ATTENTION TO THE FOLLOWING MINIMUM STANDARDS:

MS-1: THOUGH TS / PS LABELS ARE SHOWN GENERALLY ON THE PLANS, THE CONTRACTOR SHALL SEED ALL AREAS NOT INDICATED TO BE OTHERWISE STABILIZED WITH PERMANENT SEED MIXTURE WITHIN 7 DAYS OF REACHING FINAL GRADE OR WITH TEMPORARY SEED MIXTURE ANY AREA YET TO REACH FINAL GRADE BUT THAT IS NOT PROPOSED TO BE ACTIVELY INVOLVED IN THE WORK WITHIN 30 DAYS. THESE SEED MIXTURES AND APPLICATION SPECIFICATIONS ARE SHOWN HEREON. THE CONTRACTOR SHALL HONOR THE CLEARING AND GRADING LIMITS SHOWN ON THE PLAN.

MS-2: THE CONTRACTOR SHALL STABILIZE WITH TS AND PROTECT FROM EROSION, WITH ANY APPLICABLE METHOD, ALL STOCKPILES AND ANY ON-SITE OR OFF-SITE BORROW OR SPOIL AREAS, AS APPLICABLE. APPROVAL OF THIS PLAN DOES NOT COVER OFF-SITE BORROW OR SPOIL AREAS. 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.

MS-3: WHERE TS/PS ARE NOT APPLICABLE PROVIDE OTHER MEANS OF STABILIZATION (CRS, ETC.) WITHIN 7 DAYS OF REACHING FINAL GRADE OR WITHIN 30 DAYS WHERE THE AREA IS YET TO REACH FINAL GRADE BUT IS NOT PROPOSED TO BE ACTIVELY INVOLVED IN THE WORK.

MS-4: ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE PLACED IN ADVANCE OF THE WORK THEY ARE INTENDED TO PROTECT.

MS-5: EARTHEN CONTROLS AND STRUCTURES SHALL BE STABILIZED IMMEDIATELY UPON INSTALLATION.

MS-6: WHERE A SEDIMENT TRAP (<3 ACRES OF DRAINAGE) OR SEDIMENT BASIN (>3 ACRES OF DRAINAGE) ARE INDICATED CALCULATIONS SHOWN ARE BASED ON. CONTRACTOR SHALL HONOR INDICATED DRAINAGE DIVIDES AND CONFORM TO VOLUMES, DETAILS, ETC. PROVIDED ON PLANS.

MS-7: CARE HAS BEEN TAKEN IN DESIGN TO MINIMIZE DRAINAGE OVER SLOPES AND PROVIDE A SUITABLE PROTECTIVE STABILIZATION METHOD. CONTRACTOR SHALL PROTECT SLOPE AREAS DURING AND AFTER CONSTRUCTION FROM CONCENTRATED RUNOFF AND THE EROSION EFFECTS OF WIND AND RAIN. STABILIZE AS SOON AS PRACTICAL TO MINIMIZE EROSION.

MS-8: NO CHANNELS OR DRAINS ARE PROPOSED OVER SLOPES.

MS-9: SEEPAGE THROUGH SLOPES IS NOT ANTICIPATED TO BE ENCOUNTERED ON THIS PROJECT.

MS-10: INLET OR CULVERT INLET PROTECTION IS PROPOSED FOR THE INLETS OF ALL STORM SEWERS OR CULVERTS ON-SITE. RLD SHALL INSURE PROPER INSTALLATION AND ASSURE ADEQUATE SIZING BASED ON DRAINAGE AREA OF EACH INLET.

MS-11: RLD SHALL VERIFY THAT ADEQUATE CHANNEL LININGS AND PROPER OUTLET PROTECTION IS IN PLACE PRIOR TO OPERATION OF STORM SEWER SYSTEM.

MS-12: LIVE WATERCOURSE PROTECTION AND PERMITS ARE NOT APPLICABLE; NO LIVE WATERCOURSES EXIST WITHIN OR ADJACENT TO THIS PROJECT.

MS-13: STREAM CROSSING IS NOT APPLICABLE; NO LIVE WATERCOURSES EXIST WITHIN OR ADJACENT TO THIS PROJECT.

MS-14: REGULATIONS PERTAINING TO LIVE WATERCOURSES ARE NOT APPLICABLE; NO LIVE WATERCOURSES EXIST WITHIN OR ADJACENT TO THIS PROJECT.

MS-15: LIVE WATERCOURSE BED AND BANK STABILIZATION ARE NOT APPLICABLE; NO LIVE WATERCOURSES EXIST WITHIN OR ADJACENT TO THIS PROJECT.

MS-16: REGARDING UTILITY INSTALLATIONS, NO MORE THAN 500 LF OF TRENCH MAY BE OPEN AT A GIVEN TIME. EXCAVATED MATERIAL SHALL BE PLACED ON UPHILL SIDE OF TRENCH. EFFLUENT OF ANY Dewatering SYSTEM USED MUST BE FILTERED. TRENCHES SHALL BE PROPER BACKFILLED AND COMPACTED PER DETAIL AND SPECS. COMPLETED INSTALLATION SHALL BE RE-STABILIZED IMMEDIATELY.

MS-17: THE CONTRACTOR SHALL PROVIDE ADEQUATE MEANS OF CLEANING MUD FROM TRUCKS AND / OR OTHER EQUIPMENT PRIOR TO ENTERING PUBLIC STREETS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSURE THAT THE STREETS ARE IN A CLEAN, MUD AND DUST FREE CONDITION AT ALL TIMES.

MS-18: SEE MAINTENANCE UNDER ESC NARRATIVE FOR CE, IP, SF, AND TS/PS AT A MINIMUM.

MS-19: [IF STORMWATER MANAGEMENT PROVIDED] INCREASES IN STORMWATER VOLUME, VELOCITY, AND PEAK RUNOFF HAVE BEEN ADDRESSED IN THE PLAN PER CALCULATIONS SUBMITTED FOR REVIEW. RESPONSIBLE LAND DISTURBER SHALL PAY PARTICULAR ATTENTION TO OFF-SITE AREAS CONTRIBUTING RUNOFF TO THE SITE. OFF-SITE LOCATIONS RECEIVING RUNOFF FROM THIS PROJECT, AND PROPER OPERATION OF STORMWATER MANAGEMENT PRACTICES ON-SITE. ALL DITCHES, SWALES, AND NATURAL WATERCOURSES DOWNSTREAM OF THIS PROJECT SHALL BE FIELD INSPECTED DURING AND AFTER CONSTRUCTION BY THE RLD TO ENSURE COMPLIANCE WITH DCR'S MS-18. IF EROSION OR SCOUR IS OCCURRING THE DEVELOPER SHALL BE RESPONSIBLE FOR ALL CORRECTIVE MEASURES.

GENERAL ESC 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 625-02-00 EROSION AND SEDIMENT CONTROL REGULATIONS, LATEST EDITION. THE EROSION CONTROL KEY SYMBOLS SHOWN ON THE PLANS ARE FROM THE VIRGINIA UNIFORM CODING SYSTEM FOR ESC PRACTICES.

ES-2: 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.

ES-3: ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED IN ADVANCE OF THE WORK THEY ARE INTENDED TO PROTECT. THIS INCLUDES CLEARING. IN NO CASE DURING CONSTRUCTION SHALL 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.

ES-4: 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.

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.

ES-6: THE APPROVING AUTHORITY MAY ADD TO, DELETE, CHANGE, OR OTHERWISE MODIFY CERTAIN ESC MEASURES WHERE FIELD CONDITIONS THAT WARRANT SUCH MODIFICATIONS. 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 THE LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.

ES-8: DURING DEWATERING OPERATION, WATER WILL BE PUMPED INTO AN APPROVED FILTERING DEVICE.

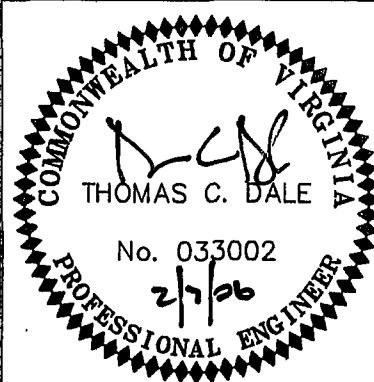
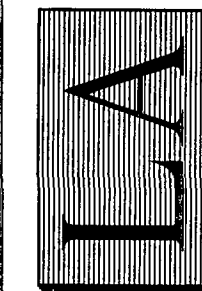
ES-9: THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EACH RUNOFF-PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.

STRUCTURE	DRAINAGE AREA (ACRES)	TEMPORARY SEDIMENT TRAP DATA		WEIR LENGTH (FT.)	WEIR HEIGHT (FT.)	BERM HEIGHT (FT.)
		REQ'D	DESIGN			
ST1	0.7	93	104	4.2'	1.5'	2.5'
			NET: 42'(L) X 20'(W) X 2'(D)			
			DRY: 48'(L) X 26'(W) X 1.5'(D)			
ST2	3.0	402	473	18'	2'	3'
			NET: 94'(L) X 34'(W) X 2'(D)			
			DRY: 102'(L) X 42'(W) X 2'(D)			
ST3	1.7	228	239	10.2'	1.5'	2.5'
			NET: 64'(L) X 30'(W) X 2'(D)			
			DRY: 20'(L) X 36'(W) X 1.5'(D)			
ST4	1.2	161	180	7.2'	1.5'	2.5'
			NET: 56'(L) X 26'(W) X 2'(D)			
			DRY: 62'(L) X 32'(W) X 1.5'(D)			

EROSION AND SEDIMENT CONTROL LEGEND

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

LUMSDEN ASSOCIATES, P.C.
ENGINEERS-SURVEYORS-PLANNERS
ROANOKE, VIRGINIA



SECTION No. 1
"WILLOW WALK"
PREPARED FOR
BLACKSTOCK, INC.
SITUATED ALONG COVE ROAD, N.W.
THE CITY OF ROANOKE, VIRGINIA

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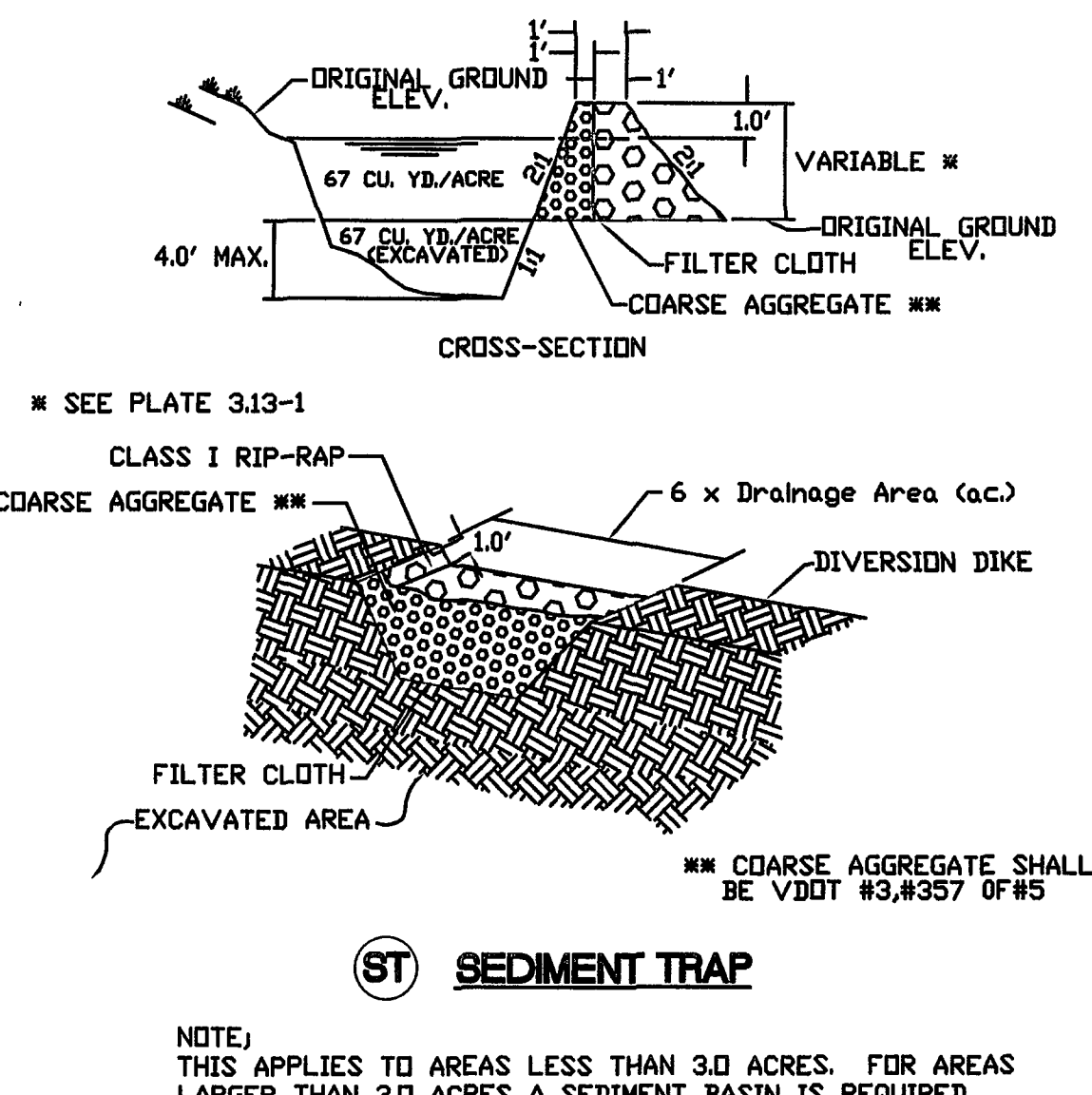
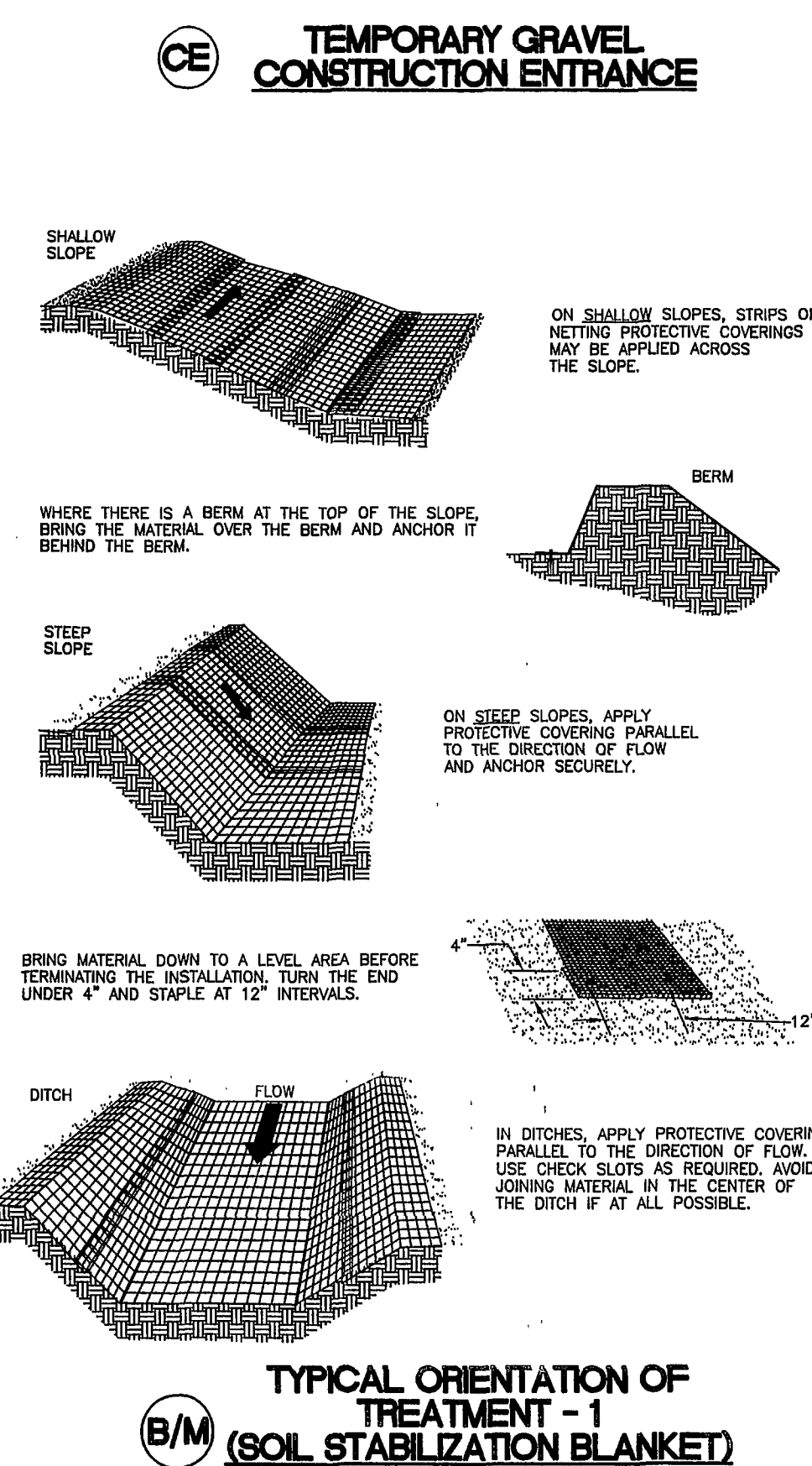
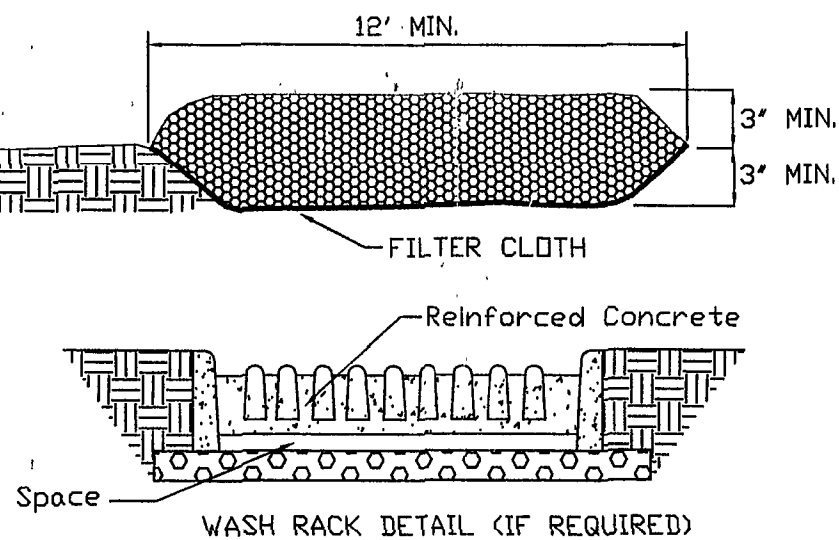
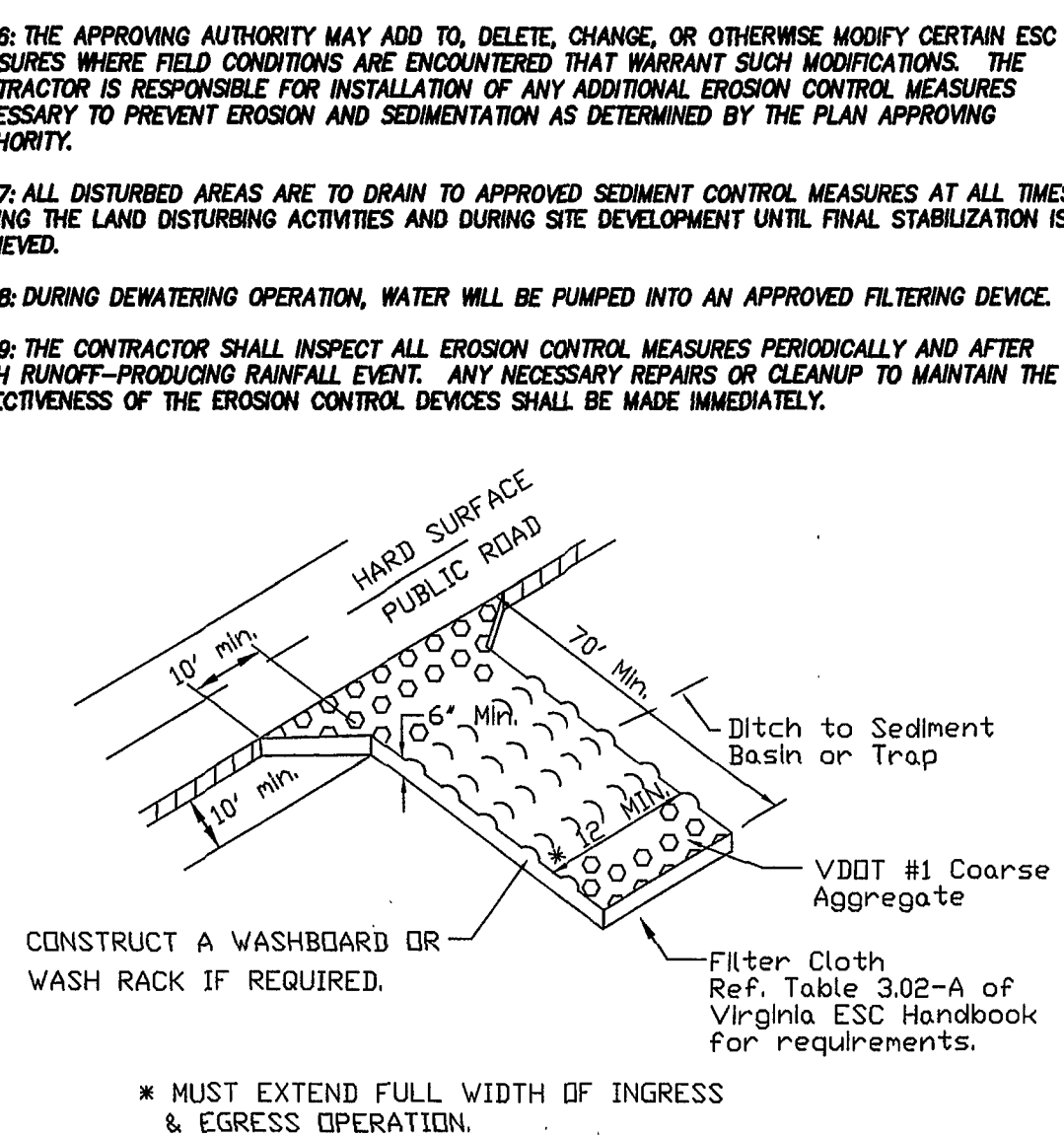
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DATE: FEBRUARY 7, 2006

SCALE: NONE

COMMISSION NO: 2004-367

SHEET 12 OF 16



TEMPORARY STABILIZATION

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.

TS TEMPORARY SEEDING MIXTURE

PLANTING DATES	SPECIES	RATE (LBS./ACRE)
SEPT. 1 - FEB. 15	50/50 MIX OF ANNUAL RYEGRASS (LOLIUM MULTI-FLORUM) & CEREAL (WINTER) RYE (SECALE CEREALE)	50 - 100
FEB. 16 - APR. 30	ANNUAL RYEGRASS (LOLIUM MULTI-FLORUM)	60 - 100
MAY. 1 - AUG. 31	GERMAN MILLET (SETARIA ITALICA)	50

PERMANENT STABILIZATION

ALL AREAS DISTURBED BY CONSTRUCTION WILL BE STABILIZED WITH PERMANENT SEEDING WITHIN 7 DAYS OR IMMEDIATELY FOLLOWING FINISH GRADING. SEEDING WILL BE DONE ACCORDING TO STANDARD AND SPECIFICATION 3.32 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK. PERMANENTLY SEEDING AREAS SHALL BE PROTECTED DURING ESTABLISHMENT WITH STRAW MULCH.

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 BORZY 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	
LIME: 140 LB / 1000 SF PULVERIZED AGRICULTURAL LIMESTONE	
FERTILIZER: 5-20-10 @ 25 LB / 1000 SF 38-0-0 @ 7 LB / 1000 SF	
MULCH: MULCH SHALL BE USED OVER ALL SEEDING AREAS AND SHALL BE APPLIED IN ACCORDANCE WITH SECTION 1.75 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION. ADDITIONAL SEEDING TO BE PERFORMED AS REQUIRED BY THE INSPECTOR.	
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.	
SEED APPLICATION: APPLY SEED UNIFORMLY WITH A CYCLONE SEEDER, DRILL, CULPACKER SEEDER, OR HYDROSEEDER ON A FIRM, FRIABLE, SEEDBED. MAXIMUM SEEDING DEPTH SHALL BE 1/4 INCH.	

EROSION-SILTATION CONTROL COST ESTIMATE

DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST
CONSTRUCTION ENTRANCE	EA		\$ 700.00	\$ 700.00
SILT FENCE	LF	2,706	3.00	8,118.00
TEMPORARY DIVERSION DIKE	LF	3100	2.00	6,200.00
INLET PROTECTION	EA	21	100.00	2,100.00
SEDIMENT BASIN	EA	1	5,000.00	5,000.00
OUTLET PROTECTION	EA	2	200.00	400.00
SEDIMENT TRAP	EA	4	500.00	2,000.00
PERMANENT SEEDING	AC	13.77	1,500.00/AC	20,655.00
CONSTRUCTION ROAD STABILIZATION	SF	57,000	0.50/SF	28,500.00
TOPSOIL STOCKPILE	EA	1	500.00	500.00
SOIL STABILIZATION BLANKETS & MATTING	SF	5,000	80.00/100-SF	4,000.00
TEMPORARY R/W DIVERSION	LF	130	3.00	390.00
SUB-TOTAL				78,563.00
10% CONTINGENCY				7,856.00
TOTAL PROJECT COST				\$86,419.00

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