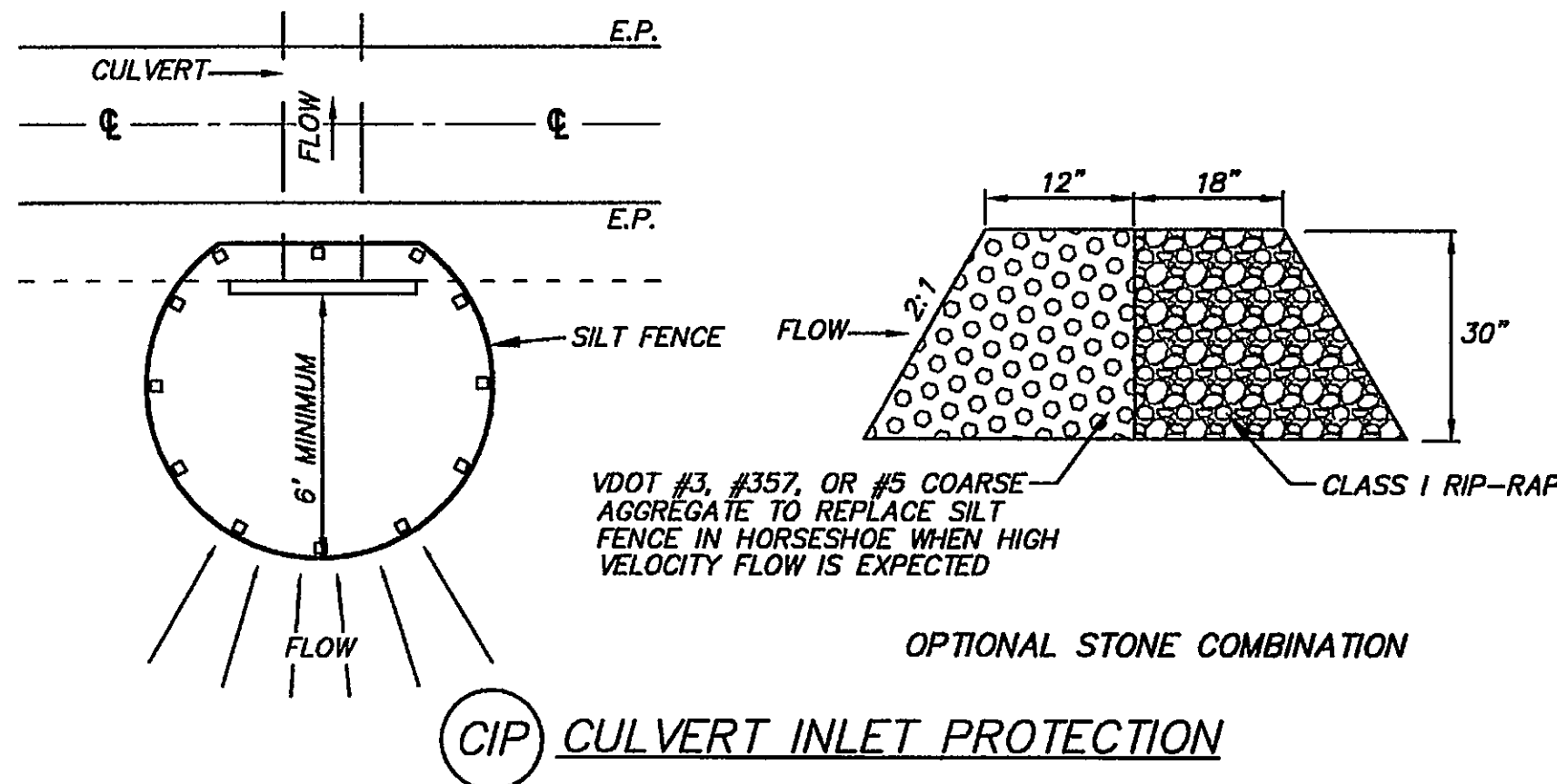


SPECIFICATIONS

1. THE HEIGHT OF THE SILT FENCE (IN FRONT OF THE CULVERT OPENING) SHALL BE A MINIMUM OF 16" AND SHALL NOT EXCEED 34".
2. EXTRA STRENGTH FILTER FABRIC WITH A MINIMUM SPACING OF STAKES OF 3' SHALL BE USED TO CONSTRUCT THE MEASURE.
3. THE PLACEMENT OF SILT FENCE SHOULD BE APPROXIMATELY 6' FROM THE CULVERT IN THE DIRECTION OF INCOMING FLOW. CREATE A "HORSESHOE" SHAPE AS SHOWN IN DETAIL.
4. IF THE SILT FENCE CANNOT BE INSTALLED PROPERLY OR THE FLOW AND/OR VELOCITY OF FLOW TO THE CULVERT PROTECTION IS EXCESSIVE AND MAY BREACH THE STRUCTURE, THE STONE COMBINATION NOTED IN DETAIL SHOULD BE UTILIZED.

MAINTENANCE

1. THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRS MADE AS NEEDED.
2. AGGREGATE SHALL BE REPLACED OR CLEANED WHEN INSPECTION REVEALS THAT CLOGGED VOIDS ARE CAUSING PONDING PROBLEMS WHICH INTERFERE WITH ON-SITE CONSTRUCTION.
3. TEMPORARY STRUCTURES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFUL PURPOSE, BUT NOT BEFORE THE UPSLOPE AREA HAS BEEN PERMANENTLY STABILIZED.



CIP CULVERT INLET PROTECTION

TEMPORARY SEEDING

SEED:

1 SEPTEMBER TO 15 FEBRUARY
ANNUAL RYEGRASS @ 25 LB-50 LB / ACRE
CEREAL (WINTER) RYE @ 25 LB-50 LB / ACRE

16 FEBRUARY TO 30 APRIL
ANNUAL RYEGRASS @ 60 LB-100 LB / ACRE

MAY 1 TO 31 AUGUST
GERMAN MILLET @ 50 LB / ACRE

1 SEPTEMBER TO 15 OCTOBER
K-31 FESCUE @ 5 LB / 1000 SF
ANNUAL RYE @ 1/2 LB / 1000 SF

LIME: PH BELOW 4.2 - 3 TONS PER ACRE OF AGRICULTURAL LIMESTONE
PH 4.2 TO 5.2 - 2 TONS PER ACRE OF AGRICULTURAL LIMESTONE
PH 5.2 TO 6 - 1 TONS PER ACRE OF AGRICULTURAL LIMESTONE

FERTILIZER: 10-20-10 @ 600 LB / ACRE

MULCH: SHALL BE USED OVER ALL SEEDED AREAS AND SHALL BE APPLIED IN ACCORDANCE WITH STANDARD AND SPECIFICATION 3.35 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION.

SURFACE ROUGHENING: IF THE AREA HAS BEEN RECENTLY LOOSENEED OR DISTURBED, NO FURTHER ROUGHENING IS REQUIRED.
WHEN THE AREA IS COMPACTED, CRUSTED, OR HARDENED, THE SOIL SURFACE SHALL BE LOOSENEED BY DISCING, RAKING, HARROWING, OR OTHER ACCEPTABLE MEANS (SEE SURFACE ROUGHENING, IN VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK STD. & SPEC. 3.29).

TRACKING: TRACKING WITH BULLDOZER CLEATS IS MOST EFFECTIVE ON SANDY SOILS. THIS PRACTICE OFTEN CAUSES UNDUE COMPACTION OF THE SOIL SURFACE, ESPECIALLY IN CLAYEY SOILS, AND DOES NOT AID PLANT GROWTH AS EFFECTIVELY AS OTHER METHODS OF SURFACE ROUGHENING.

SEEDING: SEED SHALL BE EVENLY APPLIED WITH A BROADCAST SEEDER, DRILL, CULTIPACKER SEEDER OR HYDROSEEDER. SMALL GRAINS SHALL BE PLANTED NO MORE THAN 1 1/2" DEEP. SMALL SEEDS, SUCH AS KENTUCKY BLUEGRASS, SHOULD BE PLANTED NO MORE THAN 1/4" DEEP. OTHER GRASSES AND LEGUMES SHOULD BE PLANTED 1/4" TO 1/2" DEEP.

RE-SEEDING: AREAS WHICH FAIL TO ESTABLISH VEGETATIVE COVER ADEQUATE TO PREVENT RILL EROSION WILL BE RESEED AS SOON AS SUCH AREAS ARE IDENTIFIED.

MU MULCHING

ORGANIC MULCH MATERIALS AND APPLICATION RATES

MULCHES	RATES:		NOTES:
	PER ACRE	PER 1000 SQ.FT.	
STRAW OR HAY	1 1/2 - 2 TONS (MINIMUM 2 TONS FOR WINTER COVER)	70 - 90 LBS	FREE FROM WEEDS AND COARSE MATTER. MUST BE ANCHORED. SPREAD WITH MULCH BLOWER OR BY HAND.
FIBER MULCH	MINIMUM 1500 LBS.	35 LBS	DO NOT USE AS MULCH FOR WINTER COVER OR DURING HOT, DRY PERIODS.* APPLY AS SLURRY.
CORN STALKS	4 - 6 TONS	185 - 275 LBS.	CUT OR SHREDDED IN 4-6" LENGTHS. AIR-DRIED. DO NOT USE IN FINE TURF AREAS. APPLY WITH MULCH BLOWER OR BY HAND.
WOOD CHIPS	4 - 6 TONS	185 - 275 LBS.	FREE OF COARSE MATTER. AIR-DRIED. TREAT WITH 12 LBS. NITROGEN PER TON. DO NOT USE IN FINE TURF AREAS. APPLY WITH MULCH BLOWER, CHIP HANDLER, OR BY HAND.
BARK CHIPS OR SHREDDED BARK	50 - 70 CU.YDS.	1 - 2 CU. YDS.	FREE OF COARSE MATTER. AIR-DRIED. DO NOT USE IN FINE TURF AREAS. APPLY WITH MULCH BLOWER, CHIP HANDLER, OR BY HAND.

* WHEN FIBER MULCH IS THE ONLY AVAILABLE MULCH DURING PERIODS WHEN STRAW SHOULD BE USED, APPLY AT A MINIMUM RATE OF 2000 LBS./AC. OR 45 LBS./1000 SQ.FT.

SPECIFICATIONS

1. PRIOR TO MULCHING COMPLETE REQUIRED GRADING AND INSTALL NEEDED SEDIMENT CONTROL PRACTICES.
2. LIME AND FERTILIZER SHOULD BE INCORPORATED AND SURFACE ROUGHENING ACCOMPLISHED AS NEEDED, SEED SHOULD BE APPLIED PRIOR TO MULCHING EXCEPT IN THE FOLLOWING CASES:

- A. WHERE SEED IS TO BE APPLIED AS PART OF A HYDROSEEDER SLURRY CONTAINING FIBER MULCH.
- B. WHERE SEED IS TO BE APPLIED FOLLOWING A STRAW MULCH SPREAD DURING WINTER MONTHS.

3. APPLICATION: MULCH MATERIAL SHALL BE SPREAD UNIFORMLY, BY HAND OR MACHINE. WHEN SPREADING STRAW BY HAND, DIVIDE THE AREA TO BE MULCHED INTO APPROXIMATELY 1,000 SQ.FT. SECTIONS AND PLACE 70-90 LBS. (1 1/2 TO 2 BALES) OF STRAW IN EACH SECTION TO FACILITATE UNIFORM DISTRIBUTION.

4. MULCH ANCHORING: STRAW MULCH MUST BE ANCHORED IMMEDIATELY AFTER SPREADING TO PREVENT DISPLACEMENT. OTHER ORGANIC MULCHES LISTED IN TABLE DO NOT REQUIRE ANCHORING. THE FOLLOWING METHODS OF ANCHORING STRAW MAY BE USED:

1. MULCH ANCHORING TOOL (OFTEN REFERRED TO AS A KRIMPER OR KRIMPER TOOL): THIS IS A TRACTOR-DRAWN IMPLEMENT DESIGNED TO PUNCH MULCH INTO THE SOIL SURFACE. THIS METHOD PROVIDES GOOD EROSION CONTROL WITH STRAW. IT IS LIMITED TO USE ON SLOPES NO STEEPER THAN 3:1 WHERE EQUIPMENT CAN OPERATE SAFELY. MACHINERY SHALL BE OPERATED ON THE CONTOUR.
2. FIBER MULCH: APPLY FIBER MULCH BY MEANS OF A HYDROSEEDER AT A RATE OF 500-750 LBS./ ACRE OVER TOP OF STRAW MULCH OR HAY. IT HAS AN ADDED BENEFIT OF PROVIDING ADDITIONAL MULCH TO THE NEWLY SEEDED AREA.
3. LIQUID MULCH BINDERS: APPLICATION OF LIQUID MULCH BINDERS AND TACKIFIERS SHOULD BE HEAVIEST AT THE EDGES OF AREAS AND AT CRESTS OF RIDGES AND BANKS, TO PREVENT DISPLACEMENT. THE REMAINDER OF THE AREA SHOULD HAVE BINDER APPLIED UNIFORMLY. BINDER MAY BE APPLIED AFTER MULCH IS SPREAD OR MAY BE SPRAYED INTO MULCH AS IT IS BEING BLOWN ONTO THE SOIL.

THE FOLLOWING TYPES OF BINDERS MAY BE USED:

- A. SYNTHETIC BINDERS - FORMULATED BINDERS OR ORGANICALLY FORMULATED PRODUCTS MAY BE USED AS RECOMMENDED BY THE MANUFACTURER TO ANCHOR MULCH.
- B. ASPHALT - ANY TYPE OF ASPHALT THIN ENOUGH TO BE BLOWN FROM SPRAY EQUIPMENT IS SATISFACTORY. RECOMMENDED FOR USE ARE RAPID CURING (RC-70, RC-250, RC-800), MEDIUM CURING (MC-250, MC-800) AND EMULSIFIED ASPHALT (SS-1, CSS-1, CMS-2, MS-2, RS-1, RS-2, CRS-1 AND CRS-2).

*NOTE: WHEN THIS METHOD IS USED, ENVIRONMENTAL CONCERNS SHOULD BE ADDRESSED TO ENSURE THAT PETROLEUM-BASED PRODUCTS DO NOT ENTER VALUABLE WATER SUPPLIES. AVOID APPLICATIONS INTO WATERWAYS OR CHANNELS.

4. MULCH NETTINGS: LIGHTWEIGHT PLASTIC, COTTON, OR PAPER NETS MAY BE STAPLED OVER THE MULCHED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.

EROSION SEDIMENT CONTROL MINIMUM STANDARDS

MS #	MINIMUM STANDARDS	MEASURE APPLIED FOR EACH MINIMUM STANDARD
MS #1	PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN (7) DAYS AFTER FINAL GRADE HAS BEEN REACHED ON ANY DISTURBED AREA. TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN (7) DAYS TO DENUDED AREAS THAT MAY BE AT FINAL GRADE BUT WILL REMAIN DENUDED UNDISTURBED FOR LONGER THAN THIRTY (30) DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE (1) YEAR.	PERMANENT SEEDING HAS BEEN SPECIFIED FOR ALL DENUDED AREAS ALONG WITH APPLICABLE MULCH, LIME AND FERTILIZATION.
MS #2	DURING CONSTRUCTION OF THE PROJECT, SOIL STOCKPILES SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES. THE CONTRACTOR IS RESPONSIBLE FOR THE TEMPORARY PROTECTION AND PERMANENT STABILIZATION OF ALL SOIL STOCKPILES ON SITE.	THERE ARE NO SOIL STOCKPILES PROPOSED, IF SOIL IS TO BE STORED ON SITE IS SHALL HAVE SILT FENCE INSTALLED AROUND THE DOWN HILL SIDE OF THE PILE TO INSURE PROTECTION FROM SEDIMENT LADEN RUN-OFF FROM LEAVING THE SITE.
MS #3	A PERMANENT VEGETATIVE COVER SHALL BE ESTABLISHED ON DENUDED AREAS NOT OTHERWISE PERMANENTLY STABILIZED. PERMANENT VEGETATION SHALL NOT BE CONSIDERED ESTABLISHED UNTIL A GROUND COVER IS ACHIEVED THAT, IN THE OPINION OF THE LOCAL PROGRAM ADMINISTRATOR OR AGENT, IS UNIFORM, MATURE ENOUGH TO SURVIVE AND WILL INHIBIT EROSION.	PERMANENT SEEDING HAS BEEN SPECIFIED FOR ALL DENUDED AREAS ALONG WITH APPLICABLE MULCH, LIME AND FERTILIZATION.
MS #4	SEDIMENT BASINS AND TRAPS, PERIMETER DIKES, SEDIMENT BARRIERS AND OTHER MEASURES INTENDED TO TRAP SEDIMENT SHALL BE CONSTRUCTED AS A FIRST STEP IN THE LAND DISTURBING ACTIVITY AND SHALL BE MADE FUNCTIONAL BEFORE UPLOPES LAND DISTURBANCES BEGINS.	PERIMETER SILT FENCE IS SPECIFIED TO INSTALLED TO HANDLE SEDIMENT LADEN RUN-OFF.
MS #5	STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DAMS, DIKES, AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.	NOT APPLICABLE
MS #7	CUT AND FILL SLOPES SHALL BE CONSTRUCTED IN A MANNER THAT WILL MINIMIZE EROSION. SLOPES THAT ARE FOUND TO BE ERODING EXCESSIVELY WITHIN ONE (1) YEAR OF PERMANENT STABILIZATION SHALL BE PROVIDED WITH ADDITIONAL SLOPE STABILIZING MEASURES UNTIL THE PROBLEM IS CORRECTED.	NOT APPLICABLE
MS #8	CONCENTRATED RUNOFF SHALL NOT FLOW DOWN CUT OR FILL SLOPES UNLESS CONTAINED WITHIN AN ADEQUATE TEMPORARY OR PERMANENT CHANNEL, FLUME OR SLOPE DRAIN STRUCTURE.	NOT APPLICABLE
MS #9	WHENEVER WATER SEEPS FROM A SLOPE FACE, ADEQUATE DRAINAGE OR OTHER PROTECTION SHALL BE PROVIDED.	NOT APPLICABLE
MS #10	ALL STORM SEWER INLETS THAT ARE MADE OPERABLE DURING CONSTRUCTION SHALL BE PROTECTED SO THAT SEDIMENT-LADEN WATER CANNOT ENTER THE CONVEYANCE SYSTEM WITHOUT FIRST BEING FILTERED OR OTHERWISE TREATED TO REMOVE SEDIMENT.	ALL STORM INLETS WILL HAVE INLET PROTECTION PROVIDED.
MS #11	BEFORE NEWLY CONSTRUCTED STORMWATER CONVEYANCE CHANNELS ARE MADE OPERATIONAL, ADEQUATE OUTLET PROTECTION AND ANY REQUIRED TEMPORARY OR PERMANENT CHANNEL LINING SHALL BE INSTALLED IN BOTH THE CONVEYANCE CHANNEL AND RECEIVING CHANNEL.	NOT APPLICABLE
MS #12	WHEN WORK IN A LIVE WATERCOURSE IS PERFORMED, PRECAUTIONS SHALL BE TAKEN TO MINIMIZE EROSION. CONTROL SEDIMENT TRANSPORT AND STABILIZE THE WORK AREA TO THE GREATEST EXTENT POSSIBLE DURING CONSTRUCTION. NONERODIBLE MATERIAL SHALL BE USED FOR THE CONSTRUCTION OF CAUSEWAYS AND COTTERDAIRS. EARTHEN FILL MAY BE USED FOR THESE STRUCTURES IF ARMORED BY NONERODIBLE COVER MATERIALS.	NOT APPLICABLE
MS #13	WHEN A LIVE WATERCOURSE MUST BE CROSSED BY CONSTRUCTION VEHICLES MORE THAN TWICE IN ANY SIX-MONTH PERIOD, A TEMPORARY STREAM CROSSING CONSTRUCTED OF NONERODIBLE MATERIAL SHALL BE PROVIDED.	NOT APPLICABLE
MS #14	ALL APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS PERTAINING TO WORKING IN OR CROSSING LIVE WATERCOURSES SHALL BE MET.	NOT APPLICABLE
MS #15	THE BED AND BANKS OF ANY WATERCOURSE SHALL BE STABILIZED IMMEDIATELY AFTER WORK IN THE WATERCOURSE IS COMPLETED.	NOT APPLICABLE
MS #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 THRU 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 WITH THESE REGULATIONS. E. APPLICABLE SAFETY REGULATIONS SHALL BE COMPLIED WITH.	NOT APPLICABLE
MS #17	WHERE CONSTRUCTION VEHICLE ACCESS ROUTES INTERSECT PAVED PUBLIC ROADS, PROVISIONS SHALL BE MADE TO MINIMIZE THE TRANSPORT OF SEDIMENT BY VEHICULAR TRACKING ONTO THE PAVED SURFACE. WHERE SEDIMENT IS TRANSPORTED ONTO A PUBLIC ROAD SURFACE, THE ROAD SHALL BE CLEANED THOROUGHLY AT THE END OF THE DAY. SEDIMENT SHALL BE REMOVED FROM THE ROAD BY SHOVELING OR SWEEPING AND TRANSPORTED TO A SEDIMENT CONTROL DISPOSAL AREA. STREET WASHING SHALL BE ALLOWED ONLY AFTER SEDIMENT IS REMOVED IN THIS MANNER.	A CONSTRUCTION ENTRANCE HAS BEEN SPECIFIED.
MS #18	ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN THIRTY (30) DAYS AFTER FINAL SITE STABILIZATION OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED, UNLESS OTHERWISE AUTHORIZED BY THE LOCAL PROGRAM ADMINISTRATOR. TRAPPED SEDIMENT AND THE DISTURBED SOIL AREAS RESULTING FROM THE DISPOSITION OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION.	REMOVAL OF TEMPORARY EROSION CONTROL MEASURES ARE WHEN THE COUNTY DEEMS THE SITE FULLY STABILIZED.
MS #19	PROPERTIES AND WATERWAYS DOWNSTREAM FROM DEVELOPMENT SITE SHALL BE PROTECTED FROM SEDIMENT DEPOSITION, EROSION & DAMAGE DUE TO INCREASES IN VOLUME, VELOCITY & PEAK FLOW RATE OF STORMWATER RUNOFF FOR THE STATED FREQUENCY STORM OF 24 HOUR DURATION.	ON SITE STORMWATER DETENTION WILL BE ESTABLISHED TO SATISFY ROANOKE COUNTY'S STORMWATER MANAGEMENT ORDINANCE. THE OUTFALL DITCH HAS THE CAPACITY TO CARRY POST DEVELOPED RUNOFF.

5. PEG AND TWINE: BECAUSE IT IS LABOR-INTENSIVE, THIS METHOD IS FEASIBLE ONLY IN SMALL AREAS WHERE OTHER METHODS CANNOT BE USED. DRIVE 8 TO 10 INCH WOODED PEGS TO WITHIN 3 INCHES OF THE SOIL SURFACE, EVERY 4 FEET IN ALL DIRECTIONS. STAKES MAY BE DRIVEN BEFORE OR AFTER STRAW IS SPREAD. SECURE MULCH BY STRETCHING TWINE BETWEEN PEGS IN A CRISS-CROSS-WITHIN-A SQUARE. TURN TWINE 2 OR MORE TIMES AROUND EACH PEG.

CHEMICAL MULCHES

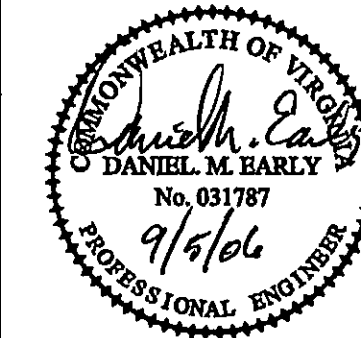
CHEMICAL MULCHES* MAY BE USED ALONE ONLY IN THE FOLLOWING SITUATIONS:

- A. WHERE NO OTHER MULCHING MATERIAL IS AVAILABLE.
- B. IN CONJUNCTION WITH TEMPORARY SEEDING DURING THE TIMES WHEN MULCH IS NOT REQUIRED FOR THAT PRACTICE.
- C. FROM MARCH 15 TO MAY 1 AND AUGUST 15 TO SEPTEMBER 30, PROVIDED THAT THEY ARE USED ON AREAS WITH SLOPES NO STEEPER THAN 4:1, WHICH HAVE BEEN ROUGHENED IN ACCORDANCE WITH SURFACE ROUGHENING, STANDARD AND SPECIFICATION 3.29 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK. IF RILL EROSION OCCURS, ANOTHER MULCH MATERIAL SHALL BE APPLIED IMMEDIATELY.

*NOTE: CHEMICAL MULCHES MAY BE USED TO BIND OTHER MULCHES OR WITH FIBER MULCH IN A HYDROSEEDER SLURRY AT ANY TIME. MANUFACTURER'S RECOMMENDATIONS FOR APPLICATION OF CHEMICAL MULCHES SHALL BE FOLLOWED.

MAINTENANCE

ALL MULCHES AND SOIL COVERINGS SHOULD BE INSPECTED PERIODICALLY (PARTICULARLY AFTER RAINSTORMS) TO CHECK FOR EROSION. WHERE EROSION IS OBSERVED IN MULCHED AREAS, ADDITIONAL MULCH SHOULD BE APPLIED. NETS AND MATS SHOULD BE INSPECTED AFTER RAINSTORMS FOR DISLOCATION OR FAILURE. IF WASHOUTS OR BREAKAGE OCCUR, RE-INSTALL NETTING OR MATTING AS NECESSARY AFTER REPAIRING DAMAGE TO THE SLOPE OR DITCH. INSPECTIONS SHOULD TAKE PLACE UP UNTIL GRASSES ARE FIRMLY ESTABLISHED. WHERE MULCH IS USED IN CONJUNCTION WITH ORNAMENTAL PLANTINGS, INSPECT PERIODICALLY THROUGHOUT THE YEAR TO DETERMINE IF MULCH IS MAINTAINING COVERAGE OF THE SOIL SURFACE; REPAIRER AS NEEDED.



ACS DESIGN

Engineering-Planning-Surveying
Construction Management

2203 Peters Creek Road, NW
Roanoke, Virginia 24017
Phone: 540 562 2345
Fax: 540 562 2344
Email: info@acsdesignllc.com
www.acsdesignllc.com

VISTAR EYE CENTER
SITE PLAN
ROANOKE COUNTY, VIRGINIA

DRAWN BY: KAL

DESIGNED BY: KAL

CHECKED BY: DME

DATE: 03/28/2006

SCALE: 1"=20'

REVISIONS

DATE	REVISION	COMMENT

SHEET NO.

C1.6

EROSION CONTROL
DETAILS

JOB NO. 06005