

***Culpeper Soil and Water Conservation District
Guidance on Erosion and Sediment Control Measures (Feb 2006)***

**Sediment Control Measures
Erosion and Sediment Control Design Standards ¹**

| Practice | Maximum Drainage Area³ | Maximum Slope Length² | Maximum Gradient² | Life Expectancy | Live stream/swale Applicability |
|-----------------------------|--|--|--|------------------------|---|
| Straw Bales (Spec 3.04) | 0.25 Ac/100 linear feet | 100 feet | 50 % Install 5 to 7 feet from base of slopes with gradients >7% | 3 months | NO |
| Silt Fence (Spec 3.05) | 0.25 Ac/100 linear feet | 100 feet | 50 % Install 5 to 7 feet from base of slopes with gradients >7% | 3-6 months | Flows < 1cfs |
| **CIP – SF (Spec 3.08) | 1 Ac | ~100 feet | ~10 % | 3 months | Sheet flows < 1cfs |
| **CIP – ST | 3 Ac | ~100 feet | ~25 % | 18 months | See Drainage Area |
| **IP – SF (Spec 3.07) | 1 Ac | ~100 feet | ~10 % | ~3months | NO. |
| **IP–gravel | ~3Ac | ~100 feet | ~25 % | ~18months | NO. |
| Diversion Dikes (Spec 3.09) | 5 Ac | ~100 feet | >2 %, need additional stabilization | 18 months | NO. Can be used to divert clean water from cut/fill slopes. |
| Check Dams (Spec 3.20) | 10 Ac | ~100 feet Depends on slope gradient. | Top of check dam should be at the same elevation as the toe of the upstream check dam. | Clean out when needed. | Not in live streams. Where topography prevent the use of stabilization matting. |
| Slope Drain (Spec 3.15) | 5 Ac | NA | NA | Clean out when needed. | NO. Conveys runoff down cut/fill slopes |
| Level Spreader (Spec 3.21) | See E&S Specs for design flow details. | 20 feet of 1% slope prior to entering structure. | Discharge unto a stable slope of 10% or less. | Clean out when needed. | NO. Use with diversions & roadside ditches to convert channel flow to sheet flow. |
| Sediment Trap (Spec 3.13) | 3 Ac | NA | NA | 18 months | See Drainage Area |
| Sediment Basin (Spec 3.14) | 100 Ac | NA | NA | 18 months | 50 acres or more require a hydrologic report. |

¹All design standards can be found in the Virginia Erosion and Sediment Control Handbook (VAESCH). Contact Department of Conservation and Recreation (<http://www.dcr.state.va.us/sw/e&s.htm>).

²Where gradient and slope length is a problem, additional phasing and possible re-evaluation of the project may be necessary.

³Where drainage area is a problem, additional phasing of the project may be necessary.

**Culvert Inlet Protection and Inlet Protection.

For use by Preparers, Reviewers and Inspectors.

Contact CSWCD at (540) 825-8591 with any questions or requests.

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**Stabilization Measures
Erosion and Sediment Control Design Standards¹**

| Practice | Applicable Condition | Notes |
|--|--|--|
| Construction Road Stabilization* (Spec 3.03) | Wherever stone-based roads or parking areas are constructed (permanent or temporary) for use by construction traffic. | Best way to stabilize access roads during construction. May conflict with utility installation.* |
| Surface Roughing (Spec 3.29) | Slopes steeper than 3:1 sideslopes and longer than 100 feet. Areas that are graded but will not be stabilized immediately. | Soil preparation method that aids seed establishment and reduce runoff velocity. Should be done in conjunction with seeding and mulching. |
| Temporary Seeding (Spec 3.31) | Stabilize disturbed area that will not be brought to final grade for a period of more than 30 days. | Protects bare soils until permanent vegetation or other erosion control measures are established. |
| Permanent Seeding (Spec 3.32) | For final stabilization of disturbed areas. Rough graded areas which will not be brought to final grade for a year or more. | Final step in vegetative stabilization. Seeding schedule recommended for both permanent and temporary seeding. |
| Sod (Spec 3.33) | For immediate vegetative cover. | Can Stabilize drainageways where concentrated overland flow occurs. |
| Mulching (Spec 3.35) | Areas that have been temporarily or permanently seeded and where seasonal conditions do not allow for establishment of surface cover. | Generally mulch at about 2 tons per acre. For application rates see Table 3.35-A. |
| Soil Stabilization Matting (Spec 3.36) | Short and steep slopes where erosion hazard is high and planting establishment too slow. In vegetative channels where allowable flow velocities are exceeded. Recommend the use of matting for slopes 2:1 or greater and flow lengths at 100-foot intervals. | Treatment 1 (aka VDOT EC-2) is for allowable velocity of 0-4 fps <i>during</i> vegetative establishment. Treatment 2 (aka VDOT EC-3) is for allowable velocity of 0 -10fps <i>after</i> vegetative establishment. For longer slopes, breakup flow path with structural measures to maintain 100-foot flow lengths. |
| Soil Test (Call your Virginia Cooperative Extension Office) | Intended to aid in the establishment of vegetation. Provides accurate recommendations for fertilizer and liming application rates and schedule. Cost effective. | Soil test should include concentrations of phosphorus (P), potassium (K), calcium (Ca), Magnesium (Mg) and micronutrients. |

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*Additional planning may be needed to ensure that utilities are installed prior to mass grading and increased construction traffic.

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**Work in Live Watercourse
Erosion and Sediment Control Design Standards¹**

| Practice | Applicable Condition | Permits Required | Notes |
|---|--|--|---|
| Vegetative Streambank Stabilization (Spec 3.22) | Along banks of streams where bankfull flow velocity does not exceed 5 ft/sec. | Generally no. Contact Army Corp and Va. DEQ. | Includes the use of live stakes, seed/mulch and stabilization matting. |
| Structural Streambank Stabilization (Spec 3.23) | Streambank sections which are subjective to flow velocities greater than 5 ft/sec. | Yes. Army Corp, Va. DEQ and Va. Marine Commission | Start and end stabilization at a stabilized or controlled point on the stream. Design velocity of 10-year storm. |
| Temporary Vehicular Stream Crossing (Spec 3.24) | Flowing streams with drainage areas less than 1 square mile. | Depends on length of disturbance. Contact Army Corp and Va. DEQ. | Crossing must be at right angles to stream channel. |
| Utility Stream Crossing (Spec 3.25) | Flowing streams with drainage areas less than 1 square mile. | Depends on type of stream and length. Contact Army Corp and Va. DEQ. | Water diverting structures should be used at all trenching approaches. |
| Dewatering Structure (Spec 3.26) | Wherever sediment-laden water is to be removed from a construction site by means of pumping. | Generally no. Contact Army Corp and Va. DEQ. | |
| Turbidity Curtain* (Spec 3.27) | Where intrusion into a watercourse by construction activities and sediments is unavoidable. | Depends on wetland disturbance. Contact Army Corp and Va. DEQ. | In most cases do not install across channel flows. |

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*Allow 6-12 hours for sediments to settle prior to removal. The risk of probable re-suspension of sediments is a concern with any dredging operation. Submit a dredging site plan under separate cover and receive agency approval from the Army Corp of Engineers, Virginia DEQ and Virginia Marine Resource Commission.