Greenville County Technical Specification for:

SC-08 Rock Sediment Dikes

1.0 Rock Sediment Dikes

1.1 Description

Rock sediment dikes are semi-circular temporary control structures constructed across drainage ditches, swales, low areas or other areas that receive concentrated flow to provide sediment control. A rock sediment dike consists of a half-circular shaped rock embankment with a sump area constructed for sediment storage.

Rock sediment dikes shall be designed to have an 80 percent design removal efficiency goal of the total suspended solids (TSS) in the inflow.

1.2 Design Criteria

Rock sediment dikes shall be used for drainage areas no greater than 2.0 acres. Rock sediment dikes should not be placed in Waters of the State (unless approved by Greenville County, State, or Federal authorities).

The Design Aids located in Figures 8-14 through 8-16 in Appendix K may be used to properly design rock sediment dikes. Sedimot III, SEDCAD, Pond Pack and other computer models may also be utilized to route flows through sediment dikes and calculate the resulting trapping efficiency.

1.2.1 Requirements

a. Maximum Drainage Area – 2 acres

b. Maximum Design Life – 18 months

c. Maximum Rock Dike Height – 2-feet

d. Discharge and treatment capacity for the 10-year 24-hour storm event.

e. 80 percent design removal efficiency goal for TSS

f. Determine the required sediment storage volume and ensure rock sediment dike sump provides this volume.

g. If the rock sediment dike is not properly sized to effectively handle the receiving peak flow rates, the flow will overtop the structure and the Trapping Efficiency is assumed to be 0 percent when this failure takes place.

1.2.2 When and Where to Use It

Rock sediment dikes are most effective in areas where sediment control is needed with minimal disturbance. They can be used as sediment control structures for the outfalls of diversion swales, diversion dikes, in low areas or other areas where concentrated sediment laden flow is expected. Rock sediment dikes should not be placed in Waters of the State or any other streams that have a base flow.

1.3 Installation

A non-woven geotextile fabric shall be installed over the soil surface where the rock sediment dike is to be placed. The body of the rock sediment dike shall be composed of minimum 9-inch D50 Riprap.

The upstream face of the rock sediment dike shall be composed of a 1-foot thick layer of ¾-inch to 1-inch D50 washed stone placed at a slope of 2H:1V.

Rock sediment dikes shall have a minimum top flow length of 3-feet (two-foot flow length through the riprap and one-foot flow length through the washed stone).

The rock must be placed by hand or mechanical placement (no dumping of rock to form the sediment dike) to achieve the proper dimensions.

A sediment sump shall be located on the upstream side of the structure to provide sediment storage. The upstream side of the sediment sump shall have a slope of 5H:1V to inhibit erosion of the sediment storage area. The minimum depth of the sediment sump shall be 2-feet.

Mark the sediment cleanout level of the sediment dike with a stake in the field.

Seed and mulch all disturbed areas.

1.4 Inspection and Maintenance

The key to a functional rock sediment dike is continual monitoring, regular maintenance and regular sediment removal.

Regular inspections should be done every 7 calendar days and inspections are recommended within 24-hours after each rainfall event that produces ½-inches or more of precipitation until final stabilization is achieved.

Remove sediment when it reaches 50 percent of the sediment storage volume or when it reaches the top of the cleanout stake. Removed sediment from the sump should be removed from, or stabilized on site.

All rock sediment dikes should be removed within 30 days after final site stabilization is achieved or after they are no longer needed. Disturbed areas resulting from the removal of rock sediment dikes should be permanently stabilized.