STANDARD SPECIFICATIONS
SECTION 01570
TEMPORARY EROSION AND SEDIMENT CONTROL

PART 1 GENERAL

1.1 DESCRIPTION

A. Section includes requirements, procedures, and methods related to responsibilities for providing temporary erosion and sediment control for land-disturbing activities.
   1. Land-disturbing activity: Earth movement and land change that may result in soil erosion from water, wind, or movement of sediments into State waters or onto State lands, including but not limited to tilling, clearing, stripping, grading, excavating, filling, and related activities, and covering of land with impermeable material.

1.2 PERMIT

A. Contractor will be issued Erosion and Sediment Control Permit for Utility Construction, pursuant to Department of the Environment Regulations COMAR 26.17.01.
   1. Follow requirements and procedures of issued Erosion and Sediment Control Permit for Utility Construction, Drawings, Washington Suburban Sanitary Commission Standards and Specifications for soil erosion and sediment control with specific jurisdictional requirements, as modified by these Specifications.
   2. Apply and maintain measures to control erosion of disturbed areas and minimize sedimentation of adjacent watercourses and lands throughout life of Contract.

B. Permit Issuance: Following Information for Bidders.

C. Permit Procedures.
   1. Give 48 hours advance notice to WSSC Environmental Group before beginning construction.
   2. Field Inspection and Enforcement: Conducted by WSSC Environmental Group, Erosion and Sediment Control Inspector (ESP Inspector).
   3. ESC Inspector will issue Stop Work Order when failure to follow with previous violation notice and/or notices for non-compliance with permit requirements.
      a. Failure to follow Stop Work Order issued by ESC Inspector can result in suspension of permit.
   4. Engineer will issue Field Order to direct Contractor to stop utility construction activities and work directly on sediment control compliance issues.
   5. Only permit violation correction work is permitted until Stop Work Order is lifted.
   6. Contractor is subject to daily civil fines if found working under suspended permit.

D. Additional Permits: Secure additional permits for work outside indicated right of way, construction strips, or work limits for County or Municipal sediment control or grading

permits, State Waterway Construction, or Wetlands Permits, or other environmental permits.

1. Secure arrangements in writing, including statement that requirements and standards of restabilization and restoration for access ways and other disturbed areas shall meet or exceed restabilization and restoration standards for the Commission's right-of-way.
2. Send copy of final access agreement and copy of additionally required State or County permits to Engineer, before beginning work in areas outside work limits.

PART 2 PRODUCTS

2.1 SEED AND SOD

A. Seed, Sod, Mulches, Fertilizer, Topsoil, Soil Conditioner, and Other Materials for Seeding and Sodding: See Section 02920.

2.2 MATERIAL FOR EROSION AND SEDIMENT CONTROL DEVICES

A. Geotextiles: See Section 02070.

B. Silt Fence: Sediment Control Geotextile, see Section 02070.

C. Surge Stone and Riprap: See Section 02370.

D. Stone:
   1. 2 inch to 3 inch stone: AASHTO M-43, size no. 1.
   2. 3/4 inch to 1-1/2 inch stone: AASHTO M-43, size no. 57.

E. Straw Bale Dike:
   1. Straw or hay bales with minimum of two bale bindings securely in place.
   2. Stakes of 2-inch diameter or square wood, or equal, with length sufficient to be driven minimum of 1-1/2 feet in ground and be flush with top of bale.

F. Timber, Lumber, and Pipes for Bridges and Culverts: Sufficient size and strength to accommodate loads to be imposed.

G. Silt Fence Posts: Minimum 36 inches long, 2 by 2 hardwood posts, with minimum cross sectional area of 3 square inches.

H. Chain Link Fence for Super Silt Fence: Type I fabric, 42 inches high, and posts 6 feet long. See Section 02820.

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

A. Clear only areas designated on Drawings within indicated limits of rights of way, easements, or work limits.

B. Protect excavated material and disturbed areas from erosion into waters or onto adjacent land.
   1. Stockpile excavated material on high side of trench.
   2. Stockpiled material left on paved surfaces must be covered with impermeable material if left overnight.

C. Install sediment control devices following Drawings or as directed by ESC Inspector, during initial clearing and grubbing operations. Complete installation before trenching or performing other construction.

D. Maintain erosion and sediment control measures and devices until final restabilization and restoration are complete, unless otherwise directed by ESC Inspector.

3.2 STABILIZATION OF DISTURBED AREAS

A. Following Initial Disturbance or Redisturbance, Completion of Permanent or Temporary Stabilization:
   1. Within 7 days for surfaces of dikes, swales, ditches, perimeter controls and slopes greater than 3:1.
   2. Within 14 days for other disturbed or graded areas.
   3. Maintained to ensure that areas meet requirements of Washington Suburban Sanitary Commission General Conditions & Specifications and Standard Details.

B. Stabilization.
   1. Temporary: Consisting of vegetation, anchored straw mulch, mulch netting, jute, excelsior blankets, wood chips, surge stone or stone mulch.
   2. Permanent: Following restoration schedule on Drawings.

C. Requirements do not apply to areas currently used for material storage or on which actual construction activities are currently performed.

D. Restabilize areas disturbed by utility construction in kind or as directed in restoration schedule shown on approved drawings..

3.3 EROSION AND SEDIMENT CONTROL DEVICES

A. Install devices shown on Drawings, or at Engineer’s direction, and following Standard Details.

1. Maintain sediment control devices to contain surface drainage and prevent sediment from leaving confines of work site.

B. Silt Fence (Standard Detail SC/1.0).
   1. Definition: Temporary continuous barrier constructed of sediment control geotextile supported by posts used to trap sediment but allow surface runoff to filter through.
   2. Construction: See Standard Detail.
   3. Maintenance: Remove sediment deposits when it reaches approximately 1/2 of height of silt fence or install a second silt fence as directed by ESC Inspector.
      a. Replace geotextile when silt fence is in place longer than 12 months unless ESC Inspector directs otherwise.
      b. Areas where construction activities have changed natural contour and drainage runoff: Review daily silt fence locations to ensure effectiveness.
         1) Where deficiencies exist, install additional silt fences under ESC Inspector's direction.
         2) Promptly repair or replace damaged or otherwise ineffective silt fence.
      c. Areas where construction activities have not changed natural contour and drainage runoff: Periodically, inspect and repair damage to silt fence to ensure effectiveness.
   4. Removal and Restoration: ESC Inspector will determine when silt fence is to be removed, after removal, fill depressions and restore area following restoration schedule.

C. Super Silt Fence (Standard Detail SC/2.0).
   1. Definition: Temporary continuous barrier of sediment control geotextile placed over chain link fencing used to intercept sediment.
   2. Construction: Follow Standard Detail and as specified.
      a. Fasten geotextile securely to fence post.
      b. Wire tie geotextile spaced every 24 inch horizontally to chain link fence at top and mid section.
   3. Maintenance: See silt fence specification.
   4. Removal and Restoration: Follow silt fence specification and replace with silt fence when directed by ESC Inspector.

D. Stream Bank Protection at Utility Stream Crossing (Standard Detail SC/3.0).
   1. Definition: Placement of ungrouted riprap on stream banks for permanent stabilization at each utility stream crossing.
   2. Construction: Follow Standard Detail and as specified below.
      a. Install stream diversion when flow is impacted by excavation or fill.
      b. Riprap as specified in Section 02370.
   3. Restoration: Within 7 days after utility is installed crossing stream, restore banks of stream with riprap following Drawings and Standard Details.

E. Stream Invert Protection for Shallow Utility Stream Crossing (Standard Detail SC/3.1).

1. Definition: Placement of ungrouted armor stones on excavated stream bottom for permanent stabilization at each utility stream crossing when there is 3 feet or less cover from bottom of stream channel to top of pipe.
2. Construction: Follow Standard Detail and as specified below.
    a. Install stream diversion as shown on Drawings or directed by ESC Inspector.
    b. Cover stream bottom with erosion control geotextile, See Section 02070.
    c. Place ungrouted riprap (See Section 02370) on erosion control geotextile lined stream banks.
    d. Place armor stones (See Section 02370) on excavated erosion control geotextile lined stream bottom with top of stone even with existing stream bottom or under ESC Inspector's direction.
3. Restoration: Within 7 days after utility is installed crossing stream, restore banks with riprap and bed of stream with armor stone following Drawings and Standard Details.

F. Riprap Outlet Sediment Trap (Standard Detail SC/4.0).
1. Definition: Temporary basin similar to stone outlet sediment trap except that basin is larger and capable of accommodating up to 10 acres of drainage area and outlet is channel lined with surge stone, underlain with erosion control geotextile, type B.
2. Construction: See Standard Detail.
3. Maintenance, Removal, and Restoration: See stone outlet sediment trap specification.

G. Stone Outlet Sediment Trap (Standard Detail SC/5.0).
1. Definition: Temporary basin formed by excavating a depression in ground or by building earth embankment or dike that collects runoff and traps sediment allowing filtered runoff to leave site through stone outlet. Trap limited to a 5 acre maximum drainage area.
2. Construction: Follow Standard Detail and as specified below.
    a. Erosion control geotextile may be substituted for stone face by placing it on inside face of outlet. Place erosion control geotextile, type B, on a smoothly graded surface so overlaying material will not excessively stretch or tear the geotextile.
    b. Make length of stone outlet in feet equal to 4 times drainage area in acres, or as determined by ESC Inspector.
    c. Direct stone outlet sediment trap onto well-stabilized surface area or, stabilized channel.
3. Maintenance:
    a. Periodically remove accumulated sediment. Inspect and repair damage after each rainfall.
    b. Remove sediment immediately from basin area when 1/2 of wet storage is filled.
    c. Repair or replace stone outlet if washed out or clogged with sediment.
    d. Promptly remove sediment discharged due to trap failure and dispose of offsite.
4. Removal and Restoration: When no longer required, remove all materials, fill depressions, and restore area following restoration schedule.

H. Stone Outlet Structure (Standard Detail SC/6.0).
   1. Definition: Stone berm used in conjunction with earth or straw bale dike to provide sediment filtering device for runoff and discharge onto well stabilized area.
   2. Construction: Follow Standard Detail and as specified below.
      a. Place stone at location shown on Drawings.
      b. Construct outlet structure with 2-inch to 3-inch stone.
      c. Construct optional baffle board following Standard Details and embedded 1 foot into outlet structure.
      d. Drainage area: Less than 1/2 acre.
   3. Maintenance:
      a. Periodically inspect for damage. Inspect after each rainfall.
      b. Replace or reconstruct if structure becomes clogged with sediment or is damaged.
   4. Removal and Restoration: When no longer required, remove and restore area following restoration schedule.

I. Stabilized Construction Entrance (Standard Detail SC/7.0).
   1. Definition: Temporary construction entrance constructed of aggregate on top of roadway geotextile, type B, used to reduce or eliminate tracking of soils material onto paved streets and other paved areas.
   2. Location: Install where construction traffic enters and leaves construction site from or onto paved street or paved area.
   3. Construction: Follow Standard Detail and as specified below.
      a. Place roadway geotextile, type B, over entire graded area and cover with layer of 2-inch to 3-inch stone minimum 6 inches thick or recycled concrete of the same size.
   4. Maintenance:
      a. Periodically apply layer of stone or recycled concrete to maintain entrance or as directed by ESC Inspector.
      b. Immediately remove soils material or debris tracked onto areas of adjacent street or paved areas.
   5. Removal and Restoration: When no longer required, remove and restore area following restoration schedule.

J. Earth Dike (Standard Detail SC/8.0).
   1. Definition: Temporary dike of machine compacted soils material used to divert clean water flow and channel sediment laden runoff to specific location.
   2. Location: Place earth dike at site perimeter.
   3. Dimensions: Follow Standard Detail and as specified below.
      a. Drainage areas greater than 10 acres, submit Engineering Design to Engineer.
   4. Type: Follow Drawings.
   5. Flow Area Stabilization: Follow Drawings.
   6. Construction: Follow Standard Detail and as specified below.
      a. Mound compactable soil materials to form continuous dike and machine compact.

b. Stabilize top, slopes, and flow channel of dike temporarily with anchored mulch and grass seed within 7 days of installation.

7. Maintenance:
   a. Periodically inspect for damage. Inspect after each rainfall.
   b. Repair washouts, eroded slopes, and flow areas.
   c. Remove accumulated sediment in order to maintain positive drainage to outlets.
8. Removal and Restoration: When no longer required, remove and restore area following restoration schedule.

K. Straw Bale Dike (Standard Detail SC/9.0).
1. Definition: Temporary continuous barrier constructed of straw or hay bales placed and anchored together, used to trap sediment but allow rainfall runoff to filter through.
2. Construction: See Standard Detail.
3. Maintenance:
   a. Periodically inspect for damage and sediment accumulation. Inspect after each rainfall.
   b. Repair or replace straw bales and remove sediment accumulation.
   c. Unless otherwise directed, replace entire straw bale dike with new bales after 90 days.
4. Removal and Restoration: When no longer required, remove and restore area following restoration schedule.

L. Pump Around (Standard Detail SC/10.0).
1. Definition: See Standard Detail for description.
2. Installation and Maintenance: See Standard Detail.

M. Temporary Access Bridge (Standard Detail SC/11.0).
1. Definition:
   a. Temporary bridge structure spanning stream channel less than 40 feet without pier supports, installed and dismantled within 2 months, and not reused at same location.
   b. Submit Working Drawings following Section 01330 when bridges are to be in place longer than 2 months or require piers.
2. Construction: Follow Standard Detail and as specified below.
   a. Bridge:
      1) Bridge must span greater than 10 feet beyond top of bank.
      2) Do not extend bottom of bridge below waterway banks.
      3) Width of bridge: Twelve feet minimum, 20 feet maximum.
      4) Abutments: Do not excavate stream banks; design and locate so that expected loads do not cause stream bank instability.
      5) No footing, pier, or bridge support permitted within channel for waterways less than 8 feet wide.
   b. Access ramps:

1) If required to the bridge deck from the approach road, space supports no closer than 5 feet on center.
2) If gravel is used for access ramps: ASTM C33, Coarse Aggregate, size number 3.
3) Place drainage pipes on ground through gravel ramps where thickness of ramp exceeds 3 feet.
4) Where multiple pipes are required, place no closer than 1 foot apart.
5) Gravel for ramps and drainage pipes shall be placed on geotextile.
6) Use pipe diameters that need no more than 1 foot of cover.

c. Curbs: Prevent soil and other debris from entering stream from bridge.
d. Anchorage:
1) Bridges: See Maryland Department of Environment standards.
2) Bridge and appurtenances: Secure to prevent channel obstruction or floatation downstream.
3) Acceptable manufacturers or suppliers of portable bridges:
a) A.D.M. Welding and Fabrication, Warren, PA.
b) Mabey Bridge and Shore, Inc., Elkridge, MD.
c) Acrow Corporation of America, Carlstadt, NJ.
d) Or equal.

3. Maintenance:
a. Periodically remove soil buildup from decking and inspect after each rainfall.
b. Remove trapped debris and repair damage.
c. Temporarily stabilize land and bank areas within 7 days after initial disturbance.
4. Removal and Restoration: When no longer required, remove bridge, supports, approach roads and permanently restore area within 7 days following restoration schedule.

N. Temporary Access Culvert (Standard Detail SC/12.0).
1. Definition: Structure consisting of 1 or more pipe sections placed on roadway geotextile, type B, and covered with aggregate to provide access for crossing waterway where anticipated loading may be too heavy for bridge or waterway channel too wide and remaining in place for not longer than one year.
2. Restrictions: Culverts may not be placed in or removed, but may be left in place in Class III waterways between October 1 and April 30, Class IV waterways between March 1 and May 31, and Class I waterways between March 1 and June 15.
3. Construction: Follow Standard Detail and as specified below.
a. Roadway geotextile, type B:
1) Place on natural streambed and banks of waterway.
2) Extend approximately 8 inches beyond end of culvert pipe and aggregate fill.
b. Pipes:
1) Place on top of geotextile in streambed utilizing largest diameter that fits into existing waterway channel without excavating.
2) Use minimum 12 inch diameter with minimum length of 14 feet and maximum length of 40 feet.

3) When channel width exceeds 3 feet, use culvert pipes with cross sectional area greater than 60 percent of cross sectional area of existing channel. Additional pipes may be used to meet required cross sectional area.
4) Extend minimum of 1 foot beyond toe of aggregate both upstream and downstream.
5) Make cross sectioned area of pipes large enough to accommodate waterway flow and strong enough to support anticipated loading.
6) Cover pipes with minimum of 1 foot of surge stone. If multiple pipes are used, place at least 12 inches of aggregate between pipes.

4. Maintenance:
   a. Periodically remove soil buildup from road surface and inspect after each rainfall.
   b. Repair damage and remove trapped debris.
   c. Temporarily stabilize land and bank areas within 7 days after initial disturbance.
5. Removal and Restoration: When no longer required, remove all materials from stream bed and approach roads and permanently restore area within 7 days following restoration schedule.

O. Open Diversion (Standard Detail SC/13.0) and Culvert Diversion (Standard Detail SC/14.0).
   1. Definition: Devices used when installing utility under waterways, designed to prevent erosion and sediment from entering flow of waterway. Diversions used to divert waterway flow around work site within waterway channel.
   2. Construction: Following Standard Detail and as specified below.
      a. Remove large stones, woody plants, and debris from site.
      b. If culvert diversion is to be used, place filter geotextile, type B, on streambed and banks where culvert will be placed.
      c. Extend geotextile minimum of 6 inches beyond ends of culvert.
      d. Use minimum 12 inch diameter culvert placed on geotextile with surge stone around and over culvert.
      e. Form cofferdam with sandbags, diverting flow around and away from area to be excavated. Height of dam and size and number of culverts will depend on water flow and size of work area and right of way.
      f. After utility is installed and backfilled in cofferdam area, repeat same procedure to direct flow to opposite side of waterway to complete utility installation under waterway.
   3. Maintenance.
      a. Inspect after each rainfall.
      b. Repair or replace damaged materials.
      c. Temporarily stabilize land and bank areas within 7 days after initial disturbance.
   4. Removal and Restoration.
      a. Remove all materials from waterway when installation of utility is completed.
      b. Permanently stabilize and restore disturbed areas within 7 days following restoration schedule.

P. Portable Sediment Tank (Standard Detail SC/15.0).

1. Definition: Compartmental tank through which sediment laden water is pumped to trap and retain sediment.
2. Construction: Following Standard Detail.
    a. Tanks may be connected in series.
    b. Storage volume: 1 cubic foot of storage for each gallon per minute of pump discharge capacity.

Q. Curb Inlet Protection (Standard Detail SC/16.0).
1. Definition: Device used to prevent sediment from entering existing storm drains.
2. Construction: Following Standard Detail and as specified below.
    a. Install 2 by 4 weir, spacer and anchors, wire mesh, and sediment control geotextile on inlet.
    b. Use wire mesh and geotextile 30 inches long with minimum width of opening in curb inlet plus 2 feet each side.
    c. Fasten wire mesh to 2 by 4 frame and wire tie geotextile to wire mesh.
    d. Place 2 inch stone over geotextile and wire mesh so water will pass through and not around geotextile.
    e. Use sand bags or alternate weight on 2 by 4 anchors.
3. Maintenance.
    a. Inspect daily.
    b. Replace or repair damaged materials.
    c. Remove deposited sediment and replace clogged stone.
4. Removal and Restoration: Removed and restored to original condition when no longer required.

3.4 CONSTRUCTION OPERATIONS

A. Do not begin construction operations until required erosion and sediment control devices are in place and functioning.

B. Do not violate requirements of Erosion and Sediment Control Permit during construction operations.

C. If permit violation is observed, ESC Inspector will issue notice stating violation and date by which violation must be corrected.
1. If violation is not corrected by date stated, ESC Inspector may issue civil citation, or Stop Work Order to bring site into compliance with Utility Erosion and Sediment Control Permit requirements and/or approved sediment control plan..

D. Stop Work orders will not be lifted until violations are corrected and brought into compliance with Permit, and Contractor has requested inspection of site.
1. Cost or Time extensions requested as result of delays occasioned by Stop Work orders will not be granted.

E. ESC Inspector must approve changes to approved sediment control plan.

3.5 FIELD CONDITIONS

A. Immediately notify Engineer if conditions arise in field that renders Drawings, these specifications, or requirements of Erosion and Sediment Control Permit inappropriate or inadequate.

B. Engineer will furnish additional Drawings or modifications, when required, which will become part and condition of Erosion and Sediment Control Permit.

PART 4 MEASUREMENT AND PAYMENT

4.1 SEDIMENT CONTROL DEVICE FOR UNGROUTED RIPRAP AT STREAM CROSSINGS

A. Measurement: None, except for sediment control device for ungrouted riprap at stream crossings which will be measured following Section 02370.

B. Payment: None, except for sediment control device for ungrouted riprap at stream crossings which will be paid following Section 02370.

4.2 SILT FENCE AND STRAW BALE DIKE ADJUSTMENTS

A. Measurement: When directed by Engineer measure following Section 02370.

B. Payment: At fixed contingent unit price for each listed in Bid Schedule.

WSSC