SECTION 354200 - WATERWAY BANK PROTECTION

PART 1 GENERAL
1.1 SUMMARY
A. Section Includes:
   1. Stabilization #1: Erosion Control Fabric.
   2. Stabilization #2: Erosion Control Fabric with Boulder Toe.
   4. Riprap Stabilization
   5. Interlocked Boulder and Floodplain Overflow Stabilization
   6. Log Vane

1.2 SUBMITTALS
A. Contractor must provide the following to the Engineer for approval:
   1. Material specifications for the following:
      a. Geotextile fabric – Coir Mat 700 series or approved equal.
      b. Boulder toe rock.

PART 2 PRODUCTS
2.1 MATERIALS
A. Satisfactory Soil Material: Soil for stabilization treatments #1, #2, #3, shall be clean fill from onsite as available. Obtain approved borrow soil material off-site when satisfactory soil material is not available on-site. Requirements for topsoil are specified in Section 329200 Turf and Grasses.
B. Dead wooden stakes to anchor fabric wrapped soil layers.
C. Geotextile fabric – Coir Mat 700 series or approved equal.
D. Boulder Toe – 24” diameter, rounded with the natural color of the surrounding geology
E. Riprap Stabilization – angular rock with a D50 = 24” diameter.
F. Floodplain overflow stabilization rock
   1. Rounded Stone: 18” to 30” diameter (d50=24”)
   2. Boulder Toe: 36” diameter, rounded

PART 3 EXECUTION
3.1 PREPARATION
A. Protect existing site improvements to remain from damage during construction.
   1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 DISPOSAL OF SURPLUS AND WASTE MATERIALS
A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner’s property.
B. Separate recyclable materials produced during site clearing from other nonrecyclable materials. Store or stockpile without intermixing with other materials and transport them to recycling facilities. Do not interfere with other project work.

3.3 LOG VANE
A. The log vane(s) shall be constructed utilizing the trees which were removed with root wad.
B. The log vane(s) shall be installed to direct flow away from the banks and toward the center of the stream channel.
C. These shall be installed in accordance with the details on the design plans.

3.4 INTERLOCKED BOULDER AND FLOODPLAIN OVERFLOW STABILIZATION
A. This shall include the excavation for and the placement of the boulder toe and the stabilization material. Both shall be installed in accordance to the design plans.
   1. Floodplain Overflow Stabilization (base layer): Subsurface stone may be composed of concrete fragments from dam or riprap (18-30 inch diameter).
   2. Floodplain Overflow Stabilization (top layer): Surface stone shall be composed of rounded stone (18-30 inch diameter).
   3. Interlocked Boulder Stabilization: Boulders with a minimum dimension of 36-inches, to be installed in two rows, in compression as per plan and detail.

PART 4 – MEASUREMENT AND PAYMENT
4.1 METHOD OF MEASUREMENT
Prices shall include all materials, labor, equipment and all else necessary to complete the work. Payment schedule shall be based on the percentage of total contract work completed per the contract price.
A. The line item for the erosion control fabric shall be estimated in the following manor:
   1. Stabilization #1 & 2: (Length of bank) X [(Slope Length) + (4 feet for embedment)]
   2. Stabilization #3: [(Length of bank) X (Length of Fabric (~20'))] X (Number of Lifts)

4.2 BASIS OF PAYMENT
Payment will be made under:

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>EROSION CONTROL FABRIC (Coir Mat 700)</td>
<td>SQUARE FOOT</td>
</tr>
<tr>
<td>BOULDER TOE</td>
<td>TON</td>
</tr>
<tr>
<td>FLOODPLAIN OVERFLOW STABILIZATION (base layer)</td>
<td>TON</td>
</tr>
<tr>
<td>FLOODPLAIN OVERFLOW STABILIZATION (top layer)</td>
<td>TON</td>
</tr>
<tr>
<td>INTERLOCKING BOULDER STABILIZATION</td>
<td>TON</td>
</tr>
<tr>
<td>LOG VANE</td>
<td>EACH</td>
</tr>
<tr>
<td>DEAD STAKES</td>
<td>LUMP SUM</td>
</tr>
<tr>
<td>RIPRAPP STABILIZATION</td>
<td>TON</td>
</tr>
</tbody>
</table>

END OF SECTION 354200