ITEM 620.30010001 - ROCK OR CROSS VANES

DESCRIPTION

This work shall consist of installing Rock Vanes or Cross Vanes in accordance with the contract documents and as directed by the Engineer.

MATERIALS

Rock Vanes and Cross Vanes shall be constructed of stone meeting the requirements of §620-2.01 of the Standard Specifications. Consideration should be given to obtaining stone that is similar in color and texture to the native stone in the project area. Unless otherwise specified on the plans, stone used for the construction of Rock Vanes and Cross Vanes shall be shaped as nearly as practicable in the form of right rectangular prisms. Unless there is a table on the plans specifying stone sizes for individual rock or cross vanes, stones shall meet the following size requirements:

<table>
<thead>
<tr>
<th></th>
<th>A-axis</th>
<th>B-axis</th>
<th>C-axis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Size</td>
<td>4 ft.</td>
<td>3 ft.</td>
<td>2 ft.</td>
</tr>
<tr>
<td>Maximum Size</td>
<td>8 ft.</td>
<td>6 ft.</td>
<td>5 ft.</td>
</tr>
</tbody>
</table>

CONSTRUCTION DETAILS

A Cross Vane, if specified, shall consist of two Rock Vanes on either side of the stream, the upstream ends of which are joined by a sill constructed in the stream channel. Details of sill construction apply only to Cross Vanes.

Rock Vanes shall be constructed so that adjoining rocks slope down, in an upstream direction, from the stream bank full elevation to the stream invert. The Rock Vane is typically set at an angle of 20-30 degrees to the stream bank, with the upstream end located approximately one third the channel width from the stream bank. The downstream end of the Rock Vane shall be keyed into the stream bank a minimum of 8 feet. The upstream end of the Rock Vane is keyed into the stream bed at the design invert elevation of the stream bed.

Cross Vanes and Rock Vanes are comprised of two layers of rock: footer rocks and vane rocks. Footer rocks shall be the same size or larger than the vane rocks which rest on them, and shall be set to provide a stable base for the vane rocks. Consideration shall be given to the available sizes of footer and vane rocks to ensure the vane rocks shall have a smooth finished grade. To ensure proper placement, the Contractor shall have an excavator of a suitable size, and containing a thumb, or other equipment acceptable to the Engineer, capable of carefully placing rocks at precise locations. The contractor shall chink all voids between rocks such that no voids greater than 4 inches in size will be present.
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Sills shall be constructed similarly to the upstream ends of the Rock Vanes. Sills are typically set perpendicular to the flow of the stream, and are approximately one third the channel width in length. The footer rocks and vane rocks shall be keyed into the stream bed, with the finished grade of the sill at the design invert of the proposed stream bed.

Vane rocks shall be placed in a linear fashion so as to produce a smooth finished grade for the Rock Vane or Cross Vane, and shall be placed so as to minimize void spaces between the adjacent rocks. The spaces between vane rocks, and between the vane rocks and footer rocks, shall be filled with spalls of suitable size.

Excavation and backfill necessary to complete the construction of Rock or Cross Vanes is included in the Rock or Cross Vane items, and shall meet the requirements of Section 206 of the Standard Specifications. All unsuitable and surplus rocks will be removed from the site. Excavation of scour pools on the downstream sides of the Rock or Cross Vanes is not included in these items, and shall be paid for under the appropriate trench and culvert excavation item.

METHOD OF MEASUREMENT

The quantity of Rock or Cross Vanes shall be the number of cubic yards computed from the payment lines shown on the plans, or as directed by the Engineer.

BASIS OF PAYMENT

The unit price bid shall include the cost of furnishing all labor, materials, and equipment necessary to satisfactorily complete the work, and shall include all incidental work necessary to the construction, including, but not limited to: excavation, de-watering, backfill and disposal of excess and unsuitable materials.