

## **ITEM #0202223A – J-HOOK VANE**

**Description:** Work under this item shall consist of furnishing and placing boulders to create a j-hook vane within an existing or proposed channel to direct flow away from streambanks and improve or create aquatic habitat through the formation of scour pools. This item shall also include maintaining a stockpile of the material on the Site, placement of the stockpiled material in the channel, and the removal and proper disposal of all unused and unacceptable material.

**Materials:** The individual boulder type and size used shall be as noted on the plans or as directed by the Engineer. The mineral composition and color of the boulders selected shall replicate to the extent possible the existing boulders on-Site.

Individual boulder material for this item shall be sound, durable and free from decomposed stones or other defects impairing durability, and shall be resistant to the action of air and water.

Material the Contractor proposes to use must be inspected and approved by the Engineer or their authorized delegate prior to the excavation of existing on-Site material within the Project limits or hauling of material from an off-Site source. The Contractor shall provide the Engineer at least 10 work days' notice for the inspection and approval of the individual boulders.

The following will **NOT** be accepted for the top layer of the j-hook vane:

- individual boulders consisting of sandstone, shale, or other rock material prone to disintegration
- boulders with visible cracks or spalling
- rock excavated from ledge (bedrock) formations or broken from larger boulders
- boulders with sharp corners, angular edges, or edges as a result of cutting or crushing operations
- broken concrete.

Footer rocks shall serve as the foundation of the vane. The footer rocks shall have reasonable flat tops and bottoms to enable better placement of the top layer of the vane. Rock excavated from ledge (bedrock) and boulders with sharp corners, angular edges as a result of cutting are acceptable to use for footer rocks.

The following will **NOT** be accepted for footer rocks:

- individual boulders consisting of sandstone, shale, or other rock material prone to disintegration
- boulders with visible cracks or spalling
- broken concrete

**Construction Methods:** The Contractor shall submit for the Engineer's approval a proposed location plan for stockpiling the boulders. The proposed location shall be suitable in size and upland of the channel to minimize disruption to the channel or impact to wetland areas caused by moving the materials to and from the stockpile during the placement of material. The stockpile

area shall be prepared in accordance with the “Required Best Management Practices” in Article 1.10.03.

Prior to installation, the Contractor shall stake out the location of the j-hook vane by indicating each end and shall notify the Engineer for a field review. The final location will be at the discretion of the Engineer or their authorized delegate.

The Contractor shall provide the Engineer at least 10 work days’ notice prior to initiating the placement of the individual boulders to create a j-hook vane. The work and placement of the boulders shall be in accordance with the plans or as directed by the Engineer or their authorized delegate. No work on the j-hook vane will be allowed on-Site without the presence of the Engineer or their authorized delegate in order to oversee the construction activities.

Equipment: When placing and maneuvering the individual boulders within the channel or embedding boulders into the streambank, the Contractor shall use an excavator with a bucket and thumb. Any other equipment proposed to be used shall be reviewed and approved in advance by the Engineer or their authorized delegate.

All disturbed areas, including the stockpile area, shall be permanently stabilized using approved erosion and sedimentation control measures and in accordance with the required “Erosion and Sedimentation Control Plan.”

**Method of Measurement:** This work will be measured for payment by the number of each j-hook vane installed and accepted, including disposal of unacceptable and surplus materials.

**Basis of Payment:** This work will be paid for at the Contract unit price each for "J-Hook Vane," completed and accepted. The price shall include all materials, equipment, tools and labor incidental to the preparation of the stockpile area, excavation of channel bottom, hauling of the material to the stockpile, separation of any rock ledge or concrete debris, and storing and protecting (including sedimentation controls and covering) of excavated material.

Pay Item	Pay Unit
J-Hook Vane	ea.