ROOTWAD/LOG VANE:

Description

This work consists of the construction and maintenance of physical barriers placed in and along the stream at locations designated on the plans to direct the stream flow (thalweg) toward the center of the channel.

The quantity of rootwad/log vanes to be installed will be affected by the actual conditions that occur during the construction of the project. The quantity of rootwad/log vanes may be increased, decreased, or eliminated entirely as directed. Such variations in quantity will not be considered as alterations in the details of construction or a change in the character of the work.

Materials

Rootwads: Hardwood tree species with a minimum trunk diameter of 12" and should have 15 to 20 ft. of the trunk length remaining.

Logs: Hardwood tree species with a minimum trunk diameter of 12". The length of each log shall be sufficient to allow proper construction in accordance with the Rootwad/Log Vane Detail.

Refer to Division 10

Item	Section
Boulder	1042 and SP for Structure Stone
No. 57 Stone	1005
Riprap, Class A	1042-1
Geotextile for Drainage, Type 2	1056

Boulders shall be used as header and footer rocks for this device.

Construction Methods

Rootwad/log vanes shall be constructed according to the Rootwad/Log Vane Detail shown on the plans or as directed. A vane each approximately 1/3 of the stream channel's bankfull width will form a 20°– 30° angle out from the streambank toward upstream. The top elevation of the vane will decrease from ½ bankfull elevation toward the center of the channel at a slope of 4 to 20 percent. Install header and footer rocks and bury the upstream end of the log under the streambed according to the detail and plate the upstream side of the vane with Type 2 Geotextile and No. 57 stone. The Geotextile shall be securely fastened to the back of the log using galvanized roofing nails on approximately 8" centers. Voids between the header and footer rocks can be filled with hand-placed Class A riprap as directed. Footer rocks shall be placed such that the header

rock is at streambed elevation. The downstream end of the log at the ½ bankfull elevation shall be anchored to the rootwad by pinning with rebar or cabling as directed. Cable used to secure and anchor vane logs and rootwads shall be a minimum of 7x7, 1/8" diameter, stainless steel wire rope. The log vane shall be keyed into the bank at the downstream end as shown on the Rootwad/Log Vane Detail. The Contractor shall furnish and install all rootwads per the plans or as directed. Hardwood trees encountered during clearing and grubbing may be identified and stockpiled for use as rootwads or logs. The Contractor, upon removal of the trunk and root, shall remove soil to the extent acceptable to the Engineer. Care shall be taken to preserve the root structure on the harvested trees to be used as rootwads as shown on the detail in the plans.

Measurement and Payment

Rootwads will be measured and paid for as the actual number of rootwads of each acceptable species and size, which have been installed as part of the rootwad/log vane and accepted.

Logs will be measured and paid for as the actual number of logs of each acceptable species and size, which have been incorporated into the work, or have been delivered to and stockpiled on the project as directed. Logs that have been stockpiled will not be measured a second time.

Boulders will be measured and paid for as provided elsewhere in this contract.

No. 57 Stone will be measured and paid for as provided elsewhere in this contract.

Riprap, Class __ will be measured and paid for in accordance with Article 876-4 of the *Standard Specifications*.

Geotextile for Drainage will be measured and paid for in accordance with Article 876-4 of the *Standard Specifications*.

Such price and payment will be full compensation for all work covered by this section, including, but not limited to, furnishing all materials, labor, equipment and incidentals necessary to construct the rootwad/log vanes.

Payment will be made under:

Pay Item	**Pay Unit**
Rootwad	Each
Log	Each