

LOG CROSS 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 and to provide grade control.

The quantity of log cross vanes to be installed will be affected by the actual conditions that occur during the construction of the project. The quantity of log cross 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 Log Cross Vane Detail.

Refer to Division 10

Item	Section
No. 57 Stone	1005
Geotextile for Drainage, Type 2	1056

Construction Methods

Log cross vanes shall be constructed according to the Log Cross Vane Detail shown on the plans or as directed. Two vanes 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 both vanes will decrease from 1/2 bankfull elevation toward the center of the channel at a slope of 4 to 20 percent. A vane running perpendicular to the stream's flow and at the streambed elevation will connect the two outside vanes on the upstream end. The perpendicular vane log and the vane arm logs shall be anchored together by pinning with rebar or cabling and anchored to the streambed as directed. The vane shall be anchored to the streambed with cabled earth anchors. Earth anchors shall have a minimum bearing capacity of 500 pounds. Install the upstream end of the vane arms, secure to the perpendicular vane log, and bury them under the streambed according to the detail. 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. The downstream end of the log at the 1/2 bankfull elevation

shall be anchored to the rootwad by pinning with rebar or cabling as directed. The log cross vane shall be keyed into the bank at the downstream end using the rootwads as shown on the Log Cross Vane Detail. Cable used to secure and anchor vane logs and rootwads shall be a minimum of 7x7, 1/8" diameter, stainless steel wire rope. 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 by 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 log cross 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.

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

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 log cross vanes.

Payment will be made under:

Pay Item	Pay Unit
Rootwad	Each
Log	Each