Vegetation Specification VS -01	LIVE FASCINES

1. Description

Live fascines are a standard bio-engineering technique which involves the bundling and planting of dormant plant cuttings. Work under this specification includes the harvesting, transporting and installation of Live Fascines on streambanks and other areas as applicable to each site plan.

2. Harvest & Construction Schedule

2.1 The success of Live Fascines is dependent upon completing the harvesting and planting operations during the plant material's dormant period. Contractors shall conduct harvesting of the plant material and preparation/planting of the Live Fascines during the time periods set forth in the Special Conditions section of this specification.

2.2 Prior to execution of a contract, the Contractor shall submit a harvesting and planting plan for the Contracting Officers approval. The plan shall include identification of the plant material source, the method of harvesting, storage and transportation plans, and installation methods. Harvesting and Planting Plans must address all requirements set forth in this specification. No work shall commence until the Contracting Officer has reviewed and approved the plan.

3. Materials:

3.1 Live Branch Cuttings

a. Live branch cuttings shall be approximately one half inch (½") in diameter. Cuttings will not exceed two inches (2") in diameter

b. Cuttings shall be three feet (3') to six feet (6') in length.

c. Live branch cuttings shall consist of a mix of two (2) or more of the approved plant species as set forth in Section 6 Special Conditions Each will consist of no more than 60%, and no less than 40%, of the mix.

3.2 Live Pegs

a. Live cuttings for live pegs shall be one half (½") to one and one half inches (1 ½") in diameter and between two feet (2') and four feet (4') in length. Side branches shall be removed and the bark left intact prior to installation.

b. Buds on the pegs shall be orientated in an upward position. The basal (bottom) ends shall be tapered to a point to facilitate insertion into the soil. The top shall be cut smooth and square.

c. Live pegs shall consist of the same species listed above for live branch cuttings

3.3 Dead Stakes

a. Dead Stakes shall be constructed of new, sound, unused and untreated, 2x4 lumber.

b. Dead Stakes shall be constructed from two and one-half foot (2 ½') long sections of lumber. Each length shall be cut again diagonally across the 4-inch face to make two stakes of the correct length.

b. Any stakes that split, shatter or are otherwise damaged during installation shall be replaced.

3.4 Mulch Materials

a. Upon installation of the live fascines, the exposed soils between fascines shall be mulched to protect from soil erosion.

b. Mulch material shall be long straw or other similar material. Cellulose hydro-mulch without grass seed is also acceptable.

3.5 Twine

a. Twine used for tying live branch cuttings in fascines shall be natural jute twine or an approved equal.

b. Twine shall be untreated and free from preservatives.

3.6 Backfill

a. Backfill materials for the fascine shall consist of a moist topsoil. Backfill shall be free of cobbles and excessive gravel. Backfill material shall be approved by the Contracting Officer prior to its use.

4. Construction Methods

Placement of the Live Fascines shall be completed as set forth in the following section.

4.1 General

All proposed construction techniques must be approved by the Contracting Officer prior to implementation by the Contractor. Construction techniques shall be presented in the Harvesting Plan prepared by the Contractor.

4.2 Harvesting

a. The Contractor shall locate and secure dormant plant materials of the species indicated in 3.1 above or as set forth in the Section 6: Special Conditions.

b. Live materials shall be obtained from a source that is located within thirty five (35) miles of the project site. The Contractor shall locate and flag the proposed harvest sites and will conduct a joint inspection of the plant material with the Contracting Officer and/or Project Engineer. Alternate sites may be used if approved by the Contracting Officer.

c. The Contractor is responsible for obtaining the necessary approvals for harvesting and for obtaining the permission of all landowners of the harvest sites.

d. The Contractor is responsible for all requirements as set forth in their approved Harvesting and Planting Plan.

4.3 Live Material Preparation

a. Plant material shall be harvested such that maximum survival is obtained. All cuts shall be smooth and the cut surface shall be kept small. Harvesting may be done using hand tools (pruning shears) or power tools (chainsaws, power trimmers w/blades). Plant material with excessive damage or oblique cuts, or with excessive damage to the bark, will not be acceptable.

b. All live materials shall be properly stored to insure viability. Plant material must be moved from the harvest site to storage within eight (8) hours of cutting, or must be planted.

c. Contractors shall protect plant materials from drying and overheating at the time of harvest, during transport and during the construction process. Contractors shall be responsible to follow the procedures set forth in their approved Harvest and Planting Plan.

d. Live plant material shall receive continuous shade and well as protection from the wind. Shade fabric, heeling, mulches, plastic and watering are all techniques that may be used. Misting and watering shall not be done with water that exceeds 15° C.

e. Live materials shall be planted the same day as harvested, or stored for a period of no longer than two (2) days. Storage of fascine materials shall be

approved by the Contracting Officer.

f. Shrubs and young trees used in preparation of live pegs shall be cut directly above the ground. Trees that are more than three (3") inches in diameter shall be topped.

g. Fascines shall be constructed as bundles of cuttings that are staggered with the plant tops distributed evenly along the length of the fascine. All growing tips shall be orientated in one direction.

h. Live fascines shall be bundles of ten to twenty feet (10'-20') and six to eight inches (6"-8") in diameter.

4.4 Live Fascine Placement

a. Live Fascines shall be installed according to the Harvesting and Planting Plan and in accordance with the plans, details and following specifications.

b. The Live Fascine shall be placed so that one-quarter to one third (1/4 - 1/3) of the fascine's face is exposed at the final grade. The fascines shall not extend above the grade.

c. Fascines shall be placed in trenches on the slope. Trenches shall be approximately one foot (1') wide and six to eight inches (6-8") deep based on diameter of the fascines.

d. Live Stakes are placed on the downslope side of the Live Fascine. Live Stakes shall be driven below and against the Live Fascine between the previously installed Dead Stakes. Live Stakes shall protrude two to three inches (2-3") inches above the top of the fascine

e. Fascine bundles shall be overlapped a minimum of one foot (1') where two fascines meet in a row.

f. Dead pegs shall be driven into and through the Live Fascine as shown on Standard Drawing VS-01. Dead Pegs shall be placed no more than every two (2') feet and no less than every three (3') along the length of the Live Fascine. Extra stakes shall be used at the ends of each Live Fascine.

g. Fascines will be spaced in parallel rows as shown in the project drawings.

4.5 Backfilling

a. All Live Fascine trenches shall be backfilled to insure good soil/cutting contacts. Backfilling shall be done so as to minimize voids in the fascines.

b. All Live Fascines shall be covered with clean, moist soil. Backfill will be

gently tamped and watered during placement to fill voids. The top of the fascine (1/4-1/3 of bundle diameter) shall be exposed, but flush with the surface, when completed.

4.6 Jute Covering

a. Upon completion of the planting, all surfaces shall be covered with a single layer of jute mesh. Mesh openings shall be a minimum of one half inch (½") and no larger than one and one half inches (1 ½ “).

b. The Contractor shall secure the Jute Mesh in a matter approved by the manufacturer of the Jute Mesh. The Contractor will provide details on the material to be used (brand and source) as well as installation plans in their Harvesting and Planting Plan.

4.7 Clean-up

a. During installation, reasonable efforts will be taken to protect surrounding sod and vegetation. The work area shall be kept clean and free of debris such as unusable plant materials.

b. Final cleanup shall be the responsibility of the Contractor. Upon completion of the project, and prior to the issue of the final payment, the Contractor shall remove all debris and trash from the site and dispose of such materials off site.

4.7 Site Inspection

a. Upon completion of the planting, the Contractor and Contracting Officer/Project Engineer will inspect all plantings. Inspections will be competed prior to placement of the Jute Mesh.

b. The Contractors shall correct all deficiencies within ten 910) calender days of the inspection.

4.8 Warranty

a. The Contractors shall maintain a one (1) year repair and replacement warranty for the Live Fascines. Plant mortality of 80% must be achieved.

5. Method of Payment

Method #1 Unit Bid Cost - The Contractor shall be paid at the Unit Bid Cost as set forth in this contract. The Contractor and Contracting Officer shall jointly measure total fascine quantities for payment certification.

Method #2 Lump Sum - Live Fascines shall be paid at the bid lump sum price.

Under each method, payment shall be considered full compensation for the item of work, and shall include the cost for harvesting, storage, preparation and planting. The price shall include the Jute Mesh cover as well as equipment, labor and incidental costs associated with meeting the design specifications, plans and drawings.

6. Special Conditions

6.1 Plant Materials

The following plant species are authorized for use in this project;

Cornus amomum (Silky Dogwood)
Salix bonplandiana (Pussy Willow)
Cornus sericea stolonifera (Red Osier Dogwood)
Salix purpurea (Streamco Willow)
Salix nigra (Black Willow)

6.2 Mulch Materials

Prior to placement of the jute mesh, the Contractor shall apply a temporary mulch to all disturbed areas. Mulching shall be in the form of hydro-mulch, and shall be applied as set forth in construction specification CS-03 Pollution Control.

6.3 General

All construction of Live Fascines shall be completed in the presence of the Contracting Officer, Project Engineer or their designated representatives.