## SPSRW-XX: BRANCH PACKING

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### Description

ENGINEER TO UPDATE PLANTING SEASON. THIS WARRANTY SECTION IS BASED ON A PLANTING SEASON BEING DEFINED.

The work covered by this section consists of preparation, excavation and installation of all materials required for proper installation of branch packing, as specified in the Contract Document or as directed by the Engineer. Branch packing is used to repair slumps and holes in stream banks. Branch packing is a stand-alone bank stabilization technique that can be integrated into existing undisturbed vegetation and/or other stream bank stabilization techniques.

The quantity of branch packing to be constructed will be affected by actual conditions that occur during the construction of the project. The type and quantity of branch packing may be increased or decreased at the direction of the Engineer. 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

ENGINEER TO UPDATE IF THEY FEEL THAT THIS SPECIFICATION IS INADEQUATE FOR SITE CONDITIONS.

Branch packing shall be performed using live dormant cuttings of woody plant species (trees and/or shrubs) specified by the Engineer. The cuttings shall be of a specified length and diameter.

Stakes should be untreated hardwood, with a size and length, as specified in the Contract Documents. Live stakes may be used in lieu of stakes pending review and approval by the Engineer.

Materials shall be installed the same day as prepared or stored in a refrigerated area and kept moist for no longer than two weeks. Bundles of harvested live material should be kept with cut ends submerged in water to keep cut ends moist at all times.

Protect plants at all times from sun, drying winds, and frost. Plants that cannot be planted immediately on delivery shall be kept well protected from winds and frost. Bundles of harvested live material should be kept with cut ends submerged in water to keep cut ends moist at all times. Care shall be taken to keep bundles moist during transportation from the harvest site to the planting site. Live cuttings that appear to be dried out or damaged during transportation will not be accepted. Rejected live cuttings may be marked by the Engineer.

Live dormant cuttings shall be fabricated in accordance with the Contract Documents.

### Methods

ENGINEER TO UPDATE IF THEY FEEL THAT THIS SPECIFICATION IS INADEQUATE FOR SITE CONDITIONS.

The scoured stream bank area shall be graded to allow the first layer of live dormant woody cuttings to be placed perpendicular to the proposed stream bank slope.

Wooden stakes shall be driven vertically into the graded area at a specified depth and spacing to form a grid, with the top of the stake at the elevation of the proposed stream bank. Wooden stakes projecting from the finished installed branch packing stream bank slope shall be driven flush with the ground or hand-cut flush and flat with the surface of the slope. Stakes shall be cut flat (at a 90 degree angle) to prevent a hazard to the public and/or wildlife.

The first layer of live dormant cuttings shall be pressed between the vertical stakes and perpendicular to the proposed stream bank slope. Cuttings shall be placed to a specified thickness, in a crisscross or alternative configuration, with the growing tips generally oriented toward the proposed stream bank slope surface. The length of the live cuttings shall be sufficient to touch the back of the existing scour face. Site conditions may require a slight variation in design length to maintain back of scour contact. Trim the basal ends of the live cuttings as the length needed to properly install the live cuttings changes due to scour face irregularity at each additional layer and the proposed design slope.

A layer of live cuttings shall be covered by a layer of soil of a specified thickness. Hand tamp or lightly compact the soil as necessary to ensure contact with the live cuttings. The placed and compacted soil shall be graded to allow the next layer of live dormant woody cuttings to be placed perpendicular to the proposed stream bank slope.

Repeat steps until the branch packing installation area is in compliance with the plan design slopes and grades.

Wooden stakes projecting from the finished installed branch packing stream bank slope shall be driven flush with the ground or hand-cut flush and flat with the surface of the slope. Cut stakes shall be flat (at a 90 degree angle) to prevent a hazard to the public and/or wildlife.

Site conditions may require slight deviation from the planting plan and shall be approved by the Engineer.

### Warranty

All branch packing installed by the Contractor shall be assessed by the Engineer or representative thereof at the end of the same planting season they were installed. One hundred percent of the branch packing areas must be installed correctly and still be alive at the time this assessment is completed. If dead plant material is found, the Contractor is responsible for replacing that material before the end of that planting season. At the end of one full growing season following planting, each branch packing area installed by the Contractor will be assessed by the Engineer or representative thereof again. The branch packing area must have at least 70 percent of the surface area covered with healthy, established (green) live cuttings. If a branch packing area does not meet these criteria as determined by the Engineer, the Contractor shall remove the existing branch packing (plant material, stakes, and other materials) and install a new branch packing area at the Contractor’s expense. The new branch packing will also be under warranty, and be assessed at the conclusion of the next full growing season.

The Contractor shall be responsible for furnishing equipment, materials, labor, incidentals and water to maintain plant survival in accordance with these specifications during the construction contract and during the warranty period.

The Contractor shall be responsible for traffic control through the construction contract and warranty period.

### Measurement

The quantity of branch packing measured shall be the actual number of square yards measured horizontally along the surface of the ground over which the branch packing is properly installed and accepted by the Engineer. Material not properly installed shall not be paid.

There shall be no separate measurement for grading, stakes or live stakes, dormant woody cuttings, and the placement and compaction of soil or amendment to the soil.

### Payment

The quantity of branch packing, measured as provided above, will be paid for at the contract unit price per square yard of branch packing installed and accepted by the City. Such payment will be full compensation for all work covered in this special provision, including, but not limited to grading, installation, harvesting, preparation, hauling, staking, storing, repair, replacements, maintenance, and for furnishing all materials, labor, equipment, tools and incidentals necessary to complete the work as specified in the Contract Documents or as directed by the Engineer.

Payment will be made under:

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