SP-090115
(New)

Iowa Department of Transportation

SPECIAL PROVISION
FOR
LONGITUDINAL FILL STONE TOE PROTECTION

Guthrie County
FSSN-025-4(38)—3T-39

Effective Date
April 19, 2011

THE STANDARD SPECIFICATIONS, SERIES 2009, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

090115.01 DESCRIPTION.

A. A continuous stone dike placed longitudinally at, or slightly streamward of, the toe of the eroding bank. Longitudinal Fill Stone Toe Protection (LFSTP) is placed to form a smoothed alignment through a bend.

B. Tie-backs are short dikes connecting the LFSTP to the bank at regular intervals. Tie-backs are the same height as the LFSTP or elevated slightly toward the bank end, and are keyed into the bank.

C. Wood excelsior mat and grass seed will be used to stabilize the banks.

090115.02 MATERIALS.

A. Longitudinal Fill Stone Toe Protection.

1. Class E Revetment used in the construction of the stone toe protection, keyway trenches, and tiebacks shall meet the requirements of Article 2507.02, A, of the Standard Specifications. Recycled PCC pavement or broken concrete will not be accepted.

2. Class B Revetment used in the construction of the weirs shall meet the requirements of Article 2507.02, A, of the Standard Specifications. Recycled PCC pavement or broken concrete will not be accepted.

3. Macadam stone used in the construction of the keyways and tie backs shall meet the requirements of Article 2210.02 of the Standard Specifications.

B. Streambank Grading.
Fill material shall meet the requirements of Article 2102.02 of the Standard Specifications for Class 10 material. Material available on site will be inspected and deemed suitable by the Engineer prior to use.

C. Live Stake Cuttings.

1. Live stake cuttings shall be healthy, true to species, well branched, disease free stock approximately 0.5 inch to 1.5 inch in diameter. Cuttings shall not exceed 2.0 inch in diameter. Cuttings shall be between 6.0 feet to 8.0 feet in length and reasonably straight. Cuttings shall have a minimum of two undamaged bud tips while the side branches shall be removed and the bark left intact prior to installation. Live stake cuttings shall consist of a mix of three or more of the approved plant species.

2. The following plant species are authorized for use as live stake cuttings:
- **a.** Salix exigua or Salix interior (Sandbar Willow)
- **b.** Cornus amomum (Silky Dogwood)
- **c.** Salix bonplandiana (Pussy Willow)
- **d.** Cornus sericea or Cornus stolonifera (Red Osier Dogwood)
- **e.** Salix nigra (Black Willow)

090115.03 CONSTRUCTION.
The LFSTP, weirs, keyways and tiebacks shall be constructed according to the details shown on the plans.

A. Longitudinal Fill Stone Toe Protection.

1. Contractor may redirect the water for construction. A plan shall be submitted to the Engineer for approval prior to implementation.

2. Excavated material will be inspected by the Engineer. Any material deemed unsuitable shall be removed from the project site.

3. Class E Revetment will be placed at 3 tons per linear foot for the LFSTP.

4. Class B Revetment will be placed at 1.5 tons per linear foot for the weirs.

5. Willows shall be planted at the same time as the construction of the keyways and tiebacks.

6. The streambank grading may be preformed after or in conjunction with the placement of the LFSTP.

7. Installation of the native grass seed and wood excelsior mat shall be installed to comply with Article 4169.10, C, of the Standard Specifications.

B. Streambank Grading.
Streambank grading work consists of grading the existing vertical streambank on the south side of Mason Creek to a more stable slope at an approximate grade of 1.5:1 to 3:1 using the soil available on-site. Streambank grading shall be performed in accordance with Article 2104.03 of the Standard Specifications.

C. Live Stake Cuttings.

1. General.
The Contractor shall submit construction techniques in a planting plan to the Engineer a minimum of 14 calendar days prior to beginning of work. The planting plan shall include:

a. Method of harvesting dormant plant materials
b. Method of storing plant material
c. Schedule of work (including seeding and wood excelsior mat placement)
d. Method of installation of live stakes

2. Harvesting & Storing.

a. The Contractor shall harvest dormant plant materials of the species indicated in Section D. Authorized Plant Species, Material, of this Special Provision, between November 15, 2011 and March 15, 2012. Contractor shall use refrigeration as necessary to maintain the temperature of harvested dormant plant materials below 41°F and a humidity greater than 90% while in storage. Contractor shall have a thermometer and hygrometer affixed in the refrigeration unit.

b. Equipment such as chainsaws, bush axes, loppers, and pruners may be used for harvesting provided that they leave clean cuts. Cuts typically should be made 0.5 feet to 1.0 foot from the ground and should be flat or at a slight angle to ensure that the source sites will regenerate rapidly.

c. Live materials shall be obtained from an Iowa DOT identified source within 5.0 miles of the project site. The Contractor may request use of a substitute source. The Contractor shall locate and flag any proposed substitute harvest sites and conduct a joint inspection of the plant material with the Engineer. The Contractor is responsible for obtaining the necessary approvals for harvesting and obtaining landowner's permission for any substitute harvest sites.

3. Live Material Preparation.

Dormant plant material harvested shall have smooth 30 to 45 degree cuts. Once the Contractor is ready to place dormant plant materials and removes the materials from refrigeration, the contactor shall protect plant materials from drying and overheating until installed. The dormant plant materials shall be entirely immersed and stored in water or moist soil (healed in) for a maximum of 2 days. Outside storage locations shall be continually shaded and protected from the wind. If the temperature is 50°F or greater, the dormant plant material shall not be stored on site but installed the day removed from refrigeration. Dormant plant materials that do not meet these requirements shall not be used.

4. Live Stake Placement.

a. The live stakes shall be installed in conjunction with the construction of the keyways and tiebacks. The live stakes shall be installed so that the stake is approximately 4 foot in the ground. Caution shall be taken to ensure the live stake has full contact to the adjacent soil. The live stakes shall be planted upright along the inside walls with a minimum of two undamaged bud tips exposed above ground.

b. Spacing for live stakes shall be 3 per linear foot on each side of the keyway and tiebacks. See plans for locations of live stakes.

c. Live stakes which are split shall be removed and replaced, or if the split is less than 1/6 of the cutting length, the top may be re-trimmed after installation to remove the damaged portion as long as two undamaged buds remain.

5. Schedule .

Live stakes shall be placed prior to May 31, 2012. Changes proposed by the Contractor due to unforeseen circumstances shall be submitted to the Engineer for review and approval.

6. Clean-up.

During harvest and installation of dormant plant materials, reasonable efforts shall be taken to protect surrounding soil and vegetation. The work area shall be kept clean and free of debris such as unused plant materials. Final clean-up shall be the responsibility of the Contractor. Upon completion of the project to issue of final payment, the Contractor shall remove all debris and trash from the site and dispose of such materials off site.

7. Site Inspection.
Upon completion of the planting, the Contractor and Engineer will inspect all plantings. The Contactor shall correct all deficiencies within ten calendar days of the inspection.

090115.04 METHOD OF MEASUREMENT.

A. Longitudinal Fill Stone Toe Protection.

1. Measurement of Class B and Class E Revetment will be in accordance with Article 2507.04, B of the Standard Specifications.

2. Measurement of Macadam stone will be in accordance with Article 2210.04, A of the Standard Specifications.

B. Streambank Grading.
Measurement of Excavation, Class 10, Channel will be in accordance with Article 2104.04 of the Standard Specifications.

C. Live Stake Cuttings.
The Engineer will determine the number of units of each from actual count.

D. Slope Protection, Wood Excelsior Mat.
Measurement of Slope Protection, Wood Excelsior Mat will be in accordance with Article 2601.04, D of the Standard Specifications.

090115.05 BASIS OF PAYMENT.

A. Longitudinal Fill Stone Toe Protection.

1. Payment for Class B and Class E Revetment will be in accordance with Article 2507.05 of the Standard Specifications.

2. Payment for Macadam stone will be in accordance with Article 2210.05 of the Standard Specifications.

B. Streambank Grading.
Payment of Excavation, Class 10, Channel will be in accordance with Article 2104.05 of the Standard Specifications.

C. Live Stake Cuttings.
The Contractor will be paid the contract unit price for Live Stake Cuttings successfully planted according to the contract documents.

D. Slope Protection, Wood Excelsior Mat.
Payment of Slope Protection, Wood Excelsior Mat will be in accordance with Article 2601.05 of the Standard Specifications.