

# TECHNICAL SPECIFICATIONS

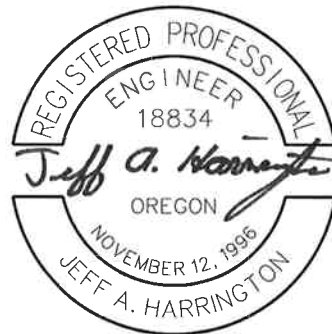
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## Columbia River Estuary Study Task Force Elk Flats Stream Restoration Project

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October 2009



RENEWAL DATE: JUNE 30, 2011

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# CREST – Elk Flats Stream Restoration

## Table of Contents

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<i>Title</i>	<i>Page</i>
<b>TECHNICAL SPECIFICATIONS:</b>	
<b>DIVISION ONE: GENERAL REQUIREMENTS</b>	
Section 101 - Summary of Work .....	TS - 1
Section 104 - Coordination .....	TS - 1
Section 106 - Regulatory Requirements .....	TS - 3
Section 120 - Project Meetings .....	TS - 3
Section 130 - Submittals .....	TS - 3
Section 151 - Temporary Facilities and Controls.....	TS - 4
Section 157 - Traffic Regulation.....	TS - 5
Section 160 - Materials and Equipment .....	TS - 6
Section 170 - Contract Closeout.....	TS - 7
<b>DIVISION TWO: SITEWORK</b>	
Section 201 - Mobilization .....	TS - 9
Section 210 - Clearing and Grubbing .....	TS - 10
Section 220 - Earthwork.....	TS - 11
Section 227 - Erosion Control.....	TS - 12
Section 292 - Grass Reseeding (Wetland Mix) .....	TS - 14
Section 294 - Large Woody Debris (LWD) .....	TS - 15



CREST – Elk Flats Stream Restoration

DIVISION ONE

GENERAL REQUIREMENTS

**101 SUMMARY OF WORK**

101.1 SCOPE OF WORK:

In general, the elements of the work for this project include:

- a. Temporary construction staging area
- b. Erosion control including turbidity curtain in creek
- c. General excavation to restore wetland/stream channel
- d. Clearing of trees, reuse of larger trees as large woody debris and mulching of all trees not reused
- e. Restoration of disturbed soil using wetland seeding mix

101.2 WORK SEQUENCE:

The Contractor shall schedule work to maintain the continuous operation of the state highway, city streets, and adjacent recycling and wastewater treatment operations. This requirement also applies to the property owners of all affected properties along the route of the work to be constructed. The Contractor shall include in the contract sum sufficient funds as may be required for delays and interruptions of work caused by the Owner's continuous operation of the facility. No additional payment to the Contractor will be allowed on account of the Contractor's failure to anticipate such costs.

The Contractor shall schedule work on this project such that it be executed in an orderly manner.

101.3 OWNER'S RIGHTS UPON THE PREMISES:

The Owner reserves the right to enter upon the premises, to use same, or to use parts of the work before substantial or final completion of the work, it being understood that such use by the Owner in no way relieves the Contractor from full responsibility for the entire work until final completion of the contract.

**104 COORDINATION**

104.1 PROJECT COORDINATION:

ATTENTION: Oregon law requires you to follow rules adopted by the Oregon Utility Notification Center. Those rules are set forth in OAR 952-001-0010 through OAR 952-001-0090. You may obtain copies of the rules by calling the center. (Note: The telephone number for the Oregon Utility Notification Center is (800) 332-2344.)

### CREST – Elk Flats Stream Restoration

The work of this project involves underground and overhead utilities, public rights-of-way and private land. The Contractor shall coordinate all work with the following agencies prior to beginning the project.

104.1.01 - City Right-of-Way; Water System; Sanitary Sewer System, etc., Mark See, (503) 436-8066

104.1.02 - CATV; Charter Communications, Lowell Williams, (503) 338-7702.

104.1.03 - Telephone Facilities; Qwest Communications, Mike Meisner, (503) 242-7676.

104.1.04 - Electric Facilities; Pacific Power, Eric Johnson, (503) 861-6005

104.1.05 – Gas Facilities; Northwest Natural, Teresa Accuardi, (503) 325-1632 ext. 8430

104.1.06 – ODOT Right-of-way; Refer to ODOT Permit

#### 104.2 CUTTING AND PATCHING:

104.2.01 Notification - The Contractor shall notify the Engineer at least 3 days prior to any cutting which affects:

- a. the structural integrity of any completed or existing work, or
- b. the weatherproof integrity of any weather-exposed or moisture-resistant work.

104.2.02 Preparation - Prior to any cutting, the Contractor shall provide and maintain adequate temporary support and protection necessary to assure the structural and weatherproof integrity of the affected work. The Contractor shall protect from damage all portions of the exposed work and other portions of the project.

104.2.03 Existing Conditions - After uncovering work, the Contractor shall inspect the existing conditions and report to the Engineer any unsatisfactory or questionable conditions to the Engineer. The Contractor shall not proceed with further work until the Engineer provides further instructions.

#### 104.3 MEASUREMENTS:

Before ordering any materials or doing any work, the Contractor shall verify all measurements at the site and shall be responsible for the correctness of the same. No additional payment to the Contractor will be allowed on account of difference between actual dimensions and measurements indicated on the plans.

CREST – Elk Flats Stream Restoration

**106 REGULATORY REQUIREMENTS**

106.1 PERMITS AND FEES:

The Contractor shall procure all construction permits, performance bonds and licenses required by all approving agencies. The work of this project falls under the jurisdiction of the City of Cannon Beach, the Oregon Department of Transportation (ODOT), the Division of State Lands (DSL), and the Army Corps of Engineers (ACOE). The Contractor shall conform to all jurisdiction requirements when working within the public right-of-way. The following requirements shall apply to this project:

1. ACOE/DSL Permit
2. ODOT Permit
3. City of Cannon Beach Business License – must be obtained by contractor prior to start of construction
4. City of Cannon Beach Tree Permit
5. City of Cannon Beach Conditional Use Permit

**120 PROJECT MEETINGS**

120.1 PRECONSTRUCTION CONFERENCE:

Immediately after signing the Agreement and prior to the start of any work, the Contractor, the Engineer and the Project Supervisor shall meet together to review procedures for ensuring the smooth progress of the work and to discuss any other items requiring clarification.

120.2 CONSTRUCTION PROGRESS MEETINGS:

Periodic project meetings shall be scheduled by the Project Supervisor throughout the construction process to discuss coordination and scheduling of construction activities.

**130 SUBMITTALS**

130.1 GENERAL:

The Contractor shall be required to submit the following submittals.

- 1) Construction Schedule\*
- 2) Spill Protection Plan, per 40 CFR 112, Environmental Protection
- 3) Seed mix product information

\* If Contractor's submitted schedule and the prosecution of work varies by 2 weeks or more, Contractor shall re-submit a new schedule, and a work plan to complete project on time.

CREST – Elk Flats Stream Restoration

130.2 CONSTRUCTION SCHEDULE:

Prior to commencing work on the project, the Contractor shall submit to the Project Supervisor for review, a complete construction schedule detailing the order in which the work will proceed together with an estimated time schedule.

**151 TEMPORARY FACILITIES AND CONTROLS**

151.1 TEMPORARY ELECTRICITY:

The Contractor will provide and pay all charges for a source of power. The Contractor shall provide his own extension cords, temporary lighting lamps and wiring for his work. Heavy or special power sources required for welders, etc., shall be provided by the Contractor by the use of generators or making his own arrangements with the Power Company and pay all costs for same.

151.2 TEMPORARY WATER:

151.2.01 Temporary Water for Construction Use - The Contractor shall be responsible for providing temporary water for the project.

151.3 TEMPORARY SANITARY FACILITIES:

151.3.01 Temporary Facilities for Workers - The Contractor shall furnish, install, and maintain adequate sanitary facilities for the workers. All such facilities shall comply with governing health regulations.

151.4 TEMPORARY FIRE PROTECTION:

The Contractor shall maintain adequate access for fire fighting and other emergency equipment to those properties abutting the project. Where the Contractor is working in a public roadway or private driveways, as a minimum requirement, at the end of each day of work on the project, the Contractor shall construct, rough grade and keep clear a 10 foot wide lane upon the existing ground surface over the roadway or driveway.

151.5 TEMPORARY SIGNS:

All signs posted on the job site shall be approved by the Engineer. All signs shall conform to applicable Oregon Department of Transportation (ODOT) standards.

151.6 ENVIRONMENTAL CONTROLS:

The Contractor shall provide and maintain the necessary facilities and equipment to eliminate noise, dust, obnoxious fumes, water and debris at or within areas occupied and in use by the Owner, or areas of the work which may be subject to damage by the above items.

CREST – Elk Flats Stream Restoration

151.7 MEASUREMENT AND PAYMENT:

All temporary facilities and construction will be paid for as a single lump sum item at the contract price for "Mobilization". Payment shall constitute full compensation for supplying all labor, equipment and materials, constructing, installing, maintaining and removing all temporary facilities and construction specified herein.

**157 TRAFFIC REGULATION**

157.1 BARRICADES, WARNING SIGNS, AND FLAGGERS:

The Contractor shall at his expense and without further or other order provide, erect and maintain at all times during the progress or temporary suspension of the work suitable barricades, fences, signs, or other adequate warnings or protection, and shall provide, keep and maintain such danger lights, signals, and Flaggers as may be necessary or as may be ordered by the Engineer to insure the safety of the public as well as those engaged in connection with the work. All barricades and obstructions shall be protected at night by signal lights which shall be suitably distributed across the roadway and which shall be kept burning from sunset to sunrise. Barricades shall be of substantial construction and shall be suitably painted to increase their visibility at night. Failure of the Engineer to notify the Contractor to maintain barriers, lights, signals, or Flaggers shall not relieve the Contractor from this responsibility.

If Flaggers are necessary for the purpose of protection and safety to traffic, such Flaggers shall be furnished at the Contractor's expense. The signs to be furnished and used by the Contractor in directing, controlling and safeguarding traffic shall conform with the standard sign designs in use by the ODOT.

157.2 TRAFFIC ON HIGHWAY #101:

A portion of the work will be conducted within the right-of-way of Highway #101. The Contractor shall so conduct all operations within the right-of-way of Highway #101 as to not restrict, impede, detour or otherwise disrupt normal vehicular traffic on Highway #101 without the written permission of the ODOT and the Engineer.

157.3 TRAFFIC DRIVE – 2<sup>ND</sup> STREET

Access to the project site will be off of 2<sup>nd</sup> Street adjacent to the City of Cannon Beach Wastewater Treatment Plant. The Contractor shall so conduct his operations as to cause the least possible obstruction of this access road. The City Public Works Department shall be notified of any activities that will interrupt the use of this access road.

## CREST – Elk Flats Stream Restoration

### 157.4 PEDESTRIAN ACCESS:

The Contractor shall so conduct his operations as to cause the least possible obstruction and inconvenience to the public and the Owners and occupants of abutting properties and their visitors. The Contractor shall maintain convenient pedestrian access at all times along all sidewalks abutting the project.

### 157.5 MEASUREMENT AND PAYMENT:

The Contractor shall include in the contract bid sum, sufficient funds as may be required for supplying all labor, equipment and materials necessary for the proper regulation of traffic. This will be paid for under the bid item for "Mobilization."

## **160 MATERIALS AND EQUIPMENT**

### 160.1 TRANSPORTATION AND HANDLING:

The Contractor shall arrange for all product deliveries in accordance with the product schedule to avoid any unnecessary delays. Products shall be delivered undamaged, in the manufacturer's original packaging, and with legible identifying labels intact. Immediately upon delivery, the Contractor shall inspect all products for compliance with the contract documents.

### 160.2 STORAGE AND PROTECTION:

The Contractor shall store all products according to manufacturer's instructions. Before and after installation, the Contractor shall protect all products from damage and discoloration.

The Project Supervisor will designate a storage area within the project limits for use by the Contractor for storing equipment and material. The Contractor shall be responsible for security within the designated storage area.

### 160.3 DISPOSAL AREA:

The Owner will NOT provide a disposal areas for any waste material. The Contractor shall provide a disposal site for all waste materials, including but not limited to, excavated material and vegetative material removed from the site. This project has been designed to balance excavation and fill. All materials from the site are expected to remain on site with the exception of small quantities of unsuitable material, including vegetation.

### 160.4 PRODUCT SUBSTITUTIONS AND OPTIONS:

160.4.01 Substitutions - Only substitutions approved by the Engineer shall be incorporated in the work. Each request for product substitution shall be made to the Engineer in writing and shall include:

### CREST – Elk Flats Stream Restoration

- a. The identification of the specified product.
- b. The identification of the proposed substitution complete with manufacturer's literature and other information necessary for evaluation.
- c. All changes required in other work as a result of the proposed substitution.
- d. All cost increases as a result of the proposed substitution.

The Engineer shall be the sole judge of the acceptability of each proposed substitution.

#### 160.4.02 Contractor's Options:

160.4.02A - For products specified by general standards, such as ASTM, etc., the Contractor shall select any product meeting the specified standard.

160.4.02B - For products specified by naming several manufacturers, the Contractor shall select any product manufactured by a specified manufacturer meeting the specifications.

160.4.02C - For products specified by "or approved equal", the Contractor shall submit requests for substitution as specified above.

160.4.03 Inappropriate Products and Methods - If the Contractor believes that any specified product, method, or system is inappropriate for use the Contractor shall so notify the Engineer before performing the work in question. Start of work shall constitute acceptance on the part of the Contractor that the specified products, methods, and systems are appropriate for the specified use.

## **170 CONTRACT CLOSEOUT**

### 170.1 FINAL INSPECTION:

When all on-site construction work is completed, the Contractor shall notify the Engineer in writing that the project is ready for final inspection. The Engineer will make an inspection within 15 calendar days of receiving notification. The Engineer will notify the Contractor, in writing, within 10 calendar days thereafter. If all construction work required by the contract is found complete and satisfactory, this inspection will constitute the final inspection.

If any work is found incomplete or unsatisfactory, the Engineer will give written instructions as to what shall be done to satisfactorily complete the work. After complying with the Engineer's instructions, the Contractor shall follow the above procedures of notification, requesting a final inspection.

The Engineer will issue a notice to the Contractor when all the following work is satisfactorily completed:

- a. All work required under the contract;

*CREST – Elk Flats Stream Restoration*

- b. All change order work;
- c. The final trimming and cleanup work; and,
- d. All required certifications, bills, forms, and other documents are received from the Contractor.

170.2 PROJECT SITE CLEAN-UP:

Prior to the release of the retainer, the project site shall be cleared of any debris, trash, construction materials, or any other materials left on the site as a result of construction of the project.

As the work progresses and immediately after completion of the work, the Contractor shall clean up and remove all refuse and unused materials of any kind resulting from the work. If the Contractor fails to commence the cleanup within 24 hours after directed by the Engineer, the Engineer may have the work performed by others. The cost shall be borne by the Contractor and may be deducted from payments due or to become due to the Contractor.

After work is completed and before final acceptance of the work, all areas affected by the work shall be neatly finished and all equipment, temporary structures, rubbish and waste shall be removed from the work area.

CREST – Elk Flats Stream Restoration

DIVISION TWO

SITework

**201 MOBILIZATION**

201.1 DESCRIPTION:

Mobilization shall consist of preparatory work and operations, including but not limited to, those necessary for the movement of personnel, equipment, supplies and incidentals to the project site; for the establishment of offices, buildings and other facilities necessary for work on the project for traffic control; for premiums on bond and insurance for the project, for traffic regulation and for other work and operations which the Contractor must perform or costs he must include before beginning work on the project.

201.2 MATERIALS:

The Contractor shall provide all materials required to accomplish the work as specified.

201.3 CONSTRUCTION:

201.3.01 General - The Contractor shall set up construction facilities in a neat and orderly manner within designated or approved work areas.

201.4 MEASUREMENT AND PAYMENT:

201.4.01 Lump Sum Basis - Payment for the performance of the mobilization work as above specified will be made at the contract lump sum amount for the item "Mobilization". The amounts to be allowed for "Mobilization" in the progress payment to be made under the contract will be made as follows:

1. When 5% of the total contract amount, as modified by change order, is earned from other bid items, not including advances on materials, 50% of the amount bid for mobilization, or 5% of the total original contract amount, whichever is the least, less normal retainage, will be paid.
2. When 10% of the total contract amount, as modified by change order, is earned from other bid items, not including advances on materials, 100% of the amount bid for mobilization, or 10% of the total original contract amount, whichever is the least, less normal retainage, will be paid.
3. Upon completion of all work on the project, payment of any amount bid for mobilization in excess of 10% of the total original contract amount will be paid.

The above schedule of progress payments for mobilization shall not limit or preclude progress payments otherwise provided by the contract.

CREST – Elk Flats Stream Restoration

**210 CLEARING AND GRUBBING**

210.1 DESCRIPTION:

This item includes all work necessary to clear, remove and dispose of all debris and vegetation such as stumps, trees, logs, roots and brush within the designated limits as shown on the plans so as to leave the areas that have been disturbed with a neat and finished appearance free from vegetative debris. Larger trees designated for use as large woody debris shall be stockpiled on site. All other material, including trees under 12” dbh, shall be either mulched for use as erosion control or removed from the site.

210.1.01 Clearing is defined as the cutting and removal of trees, snags, high stumps, brush and branches, and the removal of down trees, logs and loose brush and debris at or above the surface of the ground.

210.1.02 Grubbing is defined as the removal of wood items remaining at or below the ground surface following the clearing operation to a depth of one foot below the existing grade. All stumps and roots thereof shall be completely removed.

210.2 MATERIAL:

210.2.01 A disposal site will NOT be provided by the Owner.

210.2.02 All cleared and grubbed materials not used on the project shall become the property of the Contractor. The Contractor shall be responsible for the disposal of all cleared and grubbed materials not used on the project.

210.2.03 Private disposal sites may be used at the option of the Contractor. All details for the use of such sites shall be the responsibility of the Contractor. Written permission to place material on private property or on land not owned or controlled by the Owner shall be obtained by the Contractor from the property owner or other responsible party prior to placing the material thereon, and evidence of such permission shall be furnished to the Engineer. The permit shall be in writing and shall be so phrased as to absolve the Owner from any and all responsibilities in connection with the placing of material on said property.

210.3 CONSTRUCTION:

210.3.01 Areas to be Cleared and Grubbed - The areas on which clearing and grubbing is to be performed shall be the areas indicated by the clearing limit areas shown on the plans and as staked by the Project Supervisor.

210.3.02 Ownership and Disposal of Materials - Clearing and grubbing material not designated for either use as Large Woody Debris (LWD) or mulch material shall become the property of the Contractor and shall be disposed of by the Contractor in compliance with all federal, state, and local laws, regulations, rules, and ordinances.

## CREST – Elk Flats Stream Restoration

### 210.4 MEASUREMENT AND PAYMENT:

210.4.01 Measurement and payment for clearing and grubbing will be made on an acreage basis for the area cleared and grubbed within the specified limits; measured to the nearest 0.1 acre. Clearing and grubbing will be considered together as one payment item. Payment will constitute full compensation for all work specified herein.

## **220 EARTHWORK**

### 220.1 DESCRIPTION:

This item includes all work necessary for the excavation and grading of all side channels, shallow excavation zones and all other grading shown on the project plans. This item also includes the placement of all excavated material as fill to construct the bioswale shown on the project plans.

All excavation covered in this item shall be unclassified excavation regardless of the type, nature or condition of the materials encountered. The Contractor shall assume full responsibility to estimate the kind and extent of the various materials to be encountered in order to accomplish the work.

### 220.2 MATERIALS:

220.2.01 Disposal of Unsuitable and Excess Material - The Contractor shall dispose of all unsuitable and excess material not required elsewhere on the project according to Section 210.

### 220.3 CONSTRUCTION:

220.3.01 Excavation and Grading shall be to a configuration approximating the channel cross section shown in the project plans. All surfaces shall be left in a neat and well-finished condition prior to the time the project is completed and accepted. Immediately prior to completion of the earthwork, the Contractor shall clean the entire 2<sup>nd</sup> Street area of debris and foreign matter of all kinds and dispose of as directed.

220.3.02 Grading Limits – The exact grading limits will be field determined by the Project Supervisor. Excavation quantities will approximate those stated in the project bid list, but should be anticipated to vary as a result of field adjustments. This item also includes the excavation and stockpile of native topsoil in the area designated on the project plans.

220.3.03 Depth of grading – Side channels shall be excavated to a depth that will be below the mean site water level. The Contractor should therefore anticipate inundation of the side channel excavation during construction.

220.3.04 Bioswale Compaction - No specific density requirements will be specified herein. Excavated material shall be placed in a manner that protects existing trees identified to remain as determined in the field by the Project Supervisor. Fill material shall be compacted

## CREST – Elk Flats Stream Restoration

lightly to facilitate water retention and to minimize potential erosion. Irregularities in fill slopes due to the presence of tree roots, bedrock intrusions, or other features, will be acceptable.

220.3.05 Protection of Stumps and Trees – Stumps, logs and conifer trees within the excavation limits shall be left undisturbed unless otherwise indicated by the Project Supervisor. The Contractor shall use orange construction fencing to delineate trees and stumps as deemed necessary by the Project Supervisor.

220.3.06 Transporting Excavated Material – Saturated spoil material shall be transported in a manner that prevents spillage onto access roads, City Street or Hwy 101. Any material spilled with the exception of clean water shall be removed immediately.

220.3.07 Special Conditions - The Contractor shall comply with all conditions of the Project Permits (defined in Section 106 – REGULATORY REQUIREMENTS) that apply to construction activities.

### 220.4 MEASUREMENT AND PAYMENT:

220.4.01 Excavation Quantities will be measured on a cubic yard in-place basis by cross section measurement of the surface of the ground prior to the start of construction and after the excavation work has been completed within the specified limits. Excavation quantity shall include excavated material used to construct embankments.

220.4.02 Embankment Quantities will not be a pay item and the cost thereof shall be included in the unit contract price for "Excavation". On-site excavated material shall be used for embankments.

220.4.03 Payment will be at the contract price per cubic yard for each specified material and shall constitute full compensation for all work specified herein, including haul off of all material not used on-site.

## **227 EROSION CONTROL**

### 227.1 DESCRIPTION:

This item includes all work necessary to furnish and place silt fence, mulch mounds, and turbidity curtain for the project including prosecution of mulch from onsite vegetation. The Contractor shall construct temporary erosion control structures as shown on the plans and specified herein. The Contractor shall maintain these structures throughout the course of construction as set forth in these specifications.

### 227.2 SUBMITTALS:

The Contractor shall submit manufacturer's data on all materials to the Engineer prior to ordering materials.

## CREST – Elk Flats Stream Restoration

### 227.3 MATERIAL:

227.3.01 Silt fence system shall be the "Envirofence" silt fence system manufactured by Mirafi, Inc., or equal. The height of a silt fence shall not exceed 36 inches (higher fences may impound volumes of water sufficient to cause failure of the structure).

227.3.02 Turbidity Curtain shall be designed to prevent the migration of silt and sediment from entering Ecola Creek. The Contractor shall be responsible for providing adequate protection to prevent turbidity levels in excess of those allowed under the conditions of the enclosed Army Corp. of Engineers Permit. The turbidity curtain shall be made of high quality woven geotextile with a high grab strength (250 lbs min.) and double stitched seams. Curtain shall have adequate flotation foam and anchor chain heavy enough to hold bottom of curtain against the stream bed. Sand bag anchors shall be used as required to hold in place.

227.3.03 Mulch Mounds shall be produced from on-site vegetation not designated for use as large woody debris. The Project Supervisor shall give direction regarding acceptable material to be used.

### 227.4 CONSTRUCTION:

227.4.01 - All erosion control products and materials will be installed in accordance with the manufacturer's recommendations and as shown on the plans.

227.4.02 - All erosion control measures shall be left in place until all reseeding efforts are completed and vegetation has taken root, or as directed by the Project Supervisor.

227.4.03 Silt Fences - The filter fabric shall be purchased in a continuous roll cut to the length of the barrier to avoid the use of joints. Where joints are necessary, filter cloth shall be spliced together only at a support post, with a minimum 6 inch overlap, and securely sealed. Posts shall be spaced a maximum of 10 feet apart at the barrier location and driven securely into the ground (minimum of 24 inches). A trench shall be excavated approximately 6" (wide) x 6" (deep) along the line of posts and upslope from the barrier. The trench shall be backfilled and the soil compacted over the filter fabric. Silt fences shall be removed when they have served their useful purpose, but not before the upslope area has been permanently seeded and stabilized.

227.4.04 Mulch Mounds shall be installed flush against the ground with ends butted tight. Placement shall prevent the passing of sediment laden water and excavated materials from the site. The Project Supervisor shall determine need and location during construction.

227.4.05 Maintenance of Silt Fences - Silt fences and filter barriers shall be inspected immediately after each rainfall and at least daily during prolonged rainfall by the Contractor. Any required repairs shall be made immediately by the Contractor. Should the fabric on a silt fence or filter barrier decompose or become ineffective prior to the end of the expected usable life and the barrier still be necessary, the fabric shall be replaced promptly. Sediment

### CREST – Elk Flats Stream Restoration

deposits should be removed after each storm event. They must be removed when deposits reach approximately ½ the height of the barrier.

227.4.06 Removal of Turbidity Curtain – During removal of sediment curtain care shall be taken to assure that minimal sediment is allowed to enter the water column.

227.4.07 Removal of Erosion Control Structures - Any material remaining in place after the fence or barrier is no longer required shall be graded to conform to the existing grade and reseeded.

#### 227.5 MEASUREMENT AND PAYMENT:

227.5.01 - Measurement of the silt fence shall be on a lineal foot basis of the fence installed at the site.

227.5.02 - Measurement of mulch mounds shall be on a lump sum basis.

227.5.03 – Measurement of the turbidity curtain shall be on a lump sum basis.

227.5.04 - Payment shall be made at the contract price and shall constitute full compensation for the purchase, installation, maintenance, removal and disposal of all erosion control structures.

### **292 GRASS RESEEDING (WETLAND MIX)**

#### 292.1 DESCRIPTION:

This item includes all work necessary to provide and apply native wetland seed mix to all bare soils resulting from construction.

#### 292.2 MATERIALS:

292.2.01 Native topsoil shall be the existing native topsoil material excavated from the surrounding vicinity consisting of fertile, loamy, natural surface soil consisting of sands, silts, clays and organic matter in combination and free from substances toxic to plant growth, noxious weeds, roots, refuse, sticks and lumps. Sticks and roots greater than 2 inches in diameter shall be removed from the topsoil.

292.2.02 Seed shall be from a reputable source approved by the Project Supervisor.

Each lot of seed shall be subject to inspection, sampling and testing on delivery to the project. Seed not meeting the requirements of these specifications or not labeled as specified, will be rejected and shall be replaced with seed conforming to the specifications. Grass seed may be delivered to the project as a mixture providing each variety of grass seed in the mixture is identified and labeled as specified or a certification from the supplier is

CREST – Elk Flats Stream Restoration

attached giving the percentage of each variety of grass seed in the mixture and the percentage of purity, germination, and weed content. Grass seed mixture shall be as follows:

**Grass Mixture Table**

<i>Seed Type</i>	<i>Lbs. of Seed per Acre</i>
Slough sedge (Carex obnupta)	3 lbs./acre
Soft rush (Juncus effuses)	1lbs./acre
Tufted hairgrass (Deschampsia cespitosa)	1lbs./acre
Small-fruited bulrush (Scirpus microcarpus)	1lbs./acre
Red fescue (Festuca rubra)	1lbs./acre

292.3 CONSTRUCTION:

292.3.01 Preparation of Areas - Seeding areas shall be in a loose, friable, condition for a minimum depth of 6 inches and suitable for fine grading. Seeding areas shall be made substantially free of vegetative matter, stones, clods, roots, sticks debris and other matter detrimental or toxic to the germination and growth of grass seed. Seeding areas shall be at the established grades and shall be finished to provide good drainage.

292.3.02 Seeding - Seed, as a mixture, shall be sown uniformly on the prepared areas at the rates set forth in the special provisions, using such methods as the Contractor may select. Seed shall then be worked into the soil to a depth not exceeding 4 inches. Upon completion of the seeding, the ground surface shall be made free of ruts, footprints or other irregularities and uniformly covered with a light application of clean, aged sawdust, peat moss, organic mulch pellets or wood cellulose. Areas that settle and collect water shall be brought to grade and reseeded as originally specified.

292.4 MEASUREMENT AND PAYMENT:

292.4.01 Seeded grass construction shall be measured on a per acre basis. Payment will be made at the contract unit price per per acre for the item "Grass Reseeding", and shall constitute full compensation for all work and materials specified herein.

**294 LARGE WOODY DEBRIS (LWD)**

294.1 DESCRIPTION:

This item includes all work necessary to haul and place large woody debris. Large woody debris shall be either with or without a root ball and will be from the project site.

CREST – Elk Flats Stream Restoration

294.2 MATERIALS:

294.2.01 Large woody debris will consist of trees from the project site identified by the Project Supervisor as appropriate for the intended use.

294.2.02 Stakes for LWD shall be untreated 4 x 4 wooden stakes.

294.3 CONSTRUCTION:

294.3.01 Contractor will be allowed to temporarily stockpile large woody debris within the project limits in areas designated by the Project Supervisor.

294.3.02 Contractor shall use 4 x 4 wooden stakes or 4 x 4 wooden support structures as required to adequately anchor LWD when natural features do not provide adequate support.

294.4 MEASUREMENT AND PAYMENT:

Measurement and payment for large woody debris will be made on a per each basis for the actual number of large woody debris placed. Payment will be made at the contract price and shall constitute full compensation for hauling and placing large woody debris of the type specified and anchoring the LWD (including 4 x 4 stakes) as required.