

# **Technical Specifications**

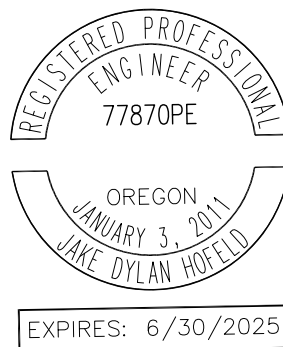
**For**

## **South Scappoose Creek Restoration Management Zone F**

**Prepared for  
Scappoose Bay Watershed Council**

**100% Submittal**

**February 21, 2024**



FOR USE IN CONNECTION WITH  
**STATE OF OREGON, DEPARTMENT OF TRANSPORTATION STANDARD  
SPECIFICATIONS FOR CONSTRUCTION, 2021**

**South Scappoose Creek Restoration Management Zone F**  
**Technical Specifications**  
**100% Submittal**

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## **SECTION 010910**

### **REFERENCE STANDARDS**

#### **1. GENERAL**

##### **1.1 QUALITY ASSURANCE**

- A. Titles of sections and paragraphs: Captions accompanying specification sections and paragraphs are for convenience of reference only and are not to be used to define the limits of subcontracts.
- B. Applicable publications: Whenever in these Technical Specifications references are made to published specifications, codes, standards, or other requirements, it shall be understood that wherever no date is specified, only the latest specifications, standards, or requirements of the respective issuing agencies which have been published as of the date that the Work is advertised for bids, shall apply; except to the extent that said standards or requirements may be in conflict with applicable laws, ordinances, or governing codes. No requirements set forth herein or shown on the Drawings shall be waived because of any provision of, or omission from, said standards or requirements.
- C. Without limiting the generality of other requirements of the Technical Specifications, all Work specified herein shall conform to or exceed the requirements of applicable codes and the applicable requirements of the following documents to the extent that the provisions of such documents are not in conflict with the requirements of these Technical Specifications nor the applicable codes.
- D. In case of conflict between codes, reference standards, Drawings and the other Contract Documents, the most stringent requirements shall govern. Conflicts shall be brought to the attention of the Owner's Authorized Representative for written clarification and directions prior to ordering or providing any materials or labor.
- E. Applicable Requirements: The Contractor shall construct the Work specified herein in accordance with the requirements of the Contract Documents and the referenced portions of those referenced codes, standards, and specifications listed herein (except, that wherever references to "Standard Specifications" are made, the provisions therein for measurement and payment shall not apply).
- F. References herein to "OSHA Regulations for Construction" shall mean Title 29, Part 1926, Construction Safety and Health Regulations, Code of Federal Regulations (OSHA), including all changes and amendments thereto.
- G. References herein to "OSHA Standards" shall mean Title 29, Part 1910, Occupational Safety and Health Standards, Code of Federal Regulations (OSHA), including all changes and amendments thereto.

##### **1.2 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS**

- A. The following documents or agencies may be referenced in the contract documents:
  - AA                Aluminum Association
  - AABC            Associated Air Balance Council
  - AAMA            Architectural Aluminum Manufacturer's Association
  - AAR             Association of American Railroads

AASHTO	American Association of State Highway and Transportation Officials
AATCC	American Association of Textile Chemists and Colorists
ACI	American Concrete Institute
ADC	Air Diffusion Council
AEIC	Associated Edison Illumination Companies
AFBMA	Anti-Friction Bearing Manufacturer's Association, Inc.
AGA	American Gas Association
AGC	Associated General Contractors of America
AGMA	American Gear Manufacturer's Association
AHAM	Association of Home Appliance Manufacturer's
AI	The Asphalt Institute
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
AMCA	Air Moving and Conditioning Association
ANS	American Nuclear Society
ANSI	American National Standards Institute, Inc.
APA	American Plywood Association
API	American Petroleum Institute
APWA	American Public Works Association
AREA	American Railway Engineering Association
AHRI	Air-Conditioning, Heating, and Refrigeration Institute
ASA	Acoustical Society of America
ASAE	American Society of Agricultural Engineers
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating, and Air Conditioning Engineers
ASLE	American Society of Lubricating Engineers
ASME	American Society of Mechanical Engineers
ASPA	American Sod Producers Association
ASQC	American Society of Quality Control
ASSE	American Society of Sanitary Engineers
ASTM	American Society for Testing and Materials
AWPA	American Wood Preservers Association
AWPI	American Wood Preservers Institute
AWS	American Welding Society
AWWA	American Water Works Association
BBC	Basic Building Code, Building Officials and Code Administrators International
BHMA	Builders Hardware Manufacturer's Association
CBM	Certified Ballast Manufacturers
CDA	Copper Development Association
CEMA	Conveyors Equipment Manufacturer's Association
CGA	Compressed Gas Association
CLPCA	California Lathing and Plastering Contractors Association
CLFMI	Chain Link Fence Manufacturer's Institute
CMA	Concrete Masonry Association
COE	Corp of Engineers
CRSI	Concrete Reinforcing Steel Institute

CSI	Construction Specifications Institute
DCDMA	Diamond Core Drill Manufacturer's Association
DOE	Department of Ecology
DOT	Department of Transportation
EEL	Edison Electric Institute
EIA	Electronic Industries Association
EJCDC	Engineer's Joint Contract Documents Committee
EJMA	Expansion Joint Manufacturer's Association
EPA	Environmental Protection Agency
ETL	Electrical Test Laboratories
FGMA	Flat Glass Marketing Association
FM	Factory Mutual
FS	Federal Specification
GA	Gypsum Association
IBC	International Building Code
ICBO	International Conference of Building Officials
ICC	Interstate Commerce Commission
IEEE	Institute of Electrical and Electronics Engineers
IES	Illuminating Engineering Society
IME	Institute of Makers of Explosives
IMIA	International Masonry Industry All-Weather Council
IP	Institute of Petroleum (London)
IPC	Institute of Printed Circuits
IPCEA	Insulated Power Cable Engineers Association
ISA	Instrument Society of America
ISO	International Organization for Standardization
ITE	Institute of Traffic Engineers
MBMA	Metal Building Manufacturer's Association
MFMA	Maple Flooring Manufacturer's Association
MIL	Military Specification
ML/SFA	Metal Lath/Steel Framing Association
MPTA	Mechanical Power Transmission Association
MTI	Marine Testing Institute
NAAMM	National Association of Architectural Metal Manufacturer's
NACE	National Association of Corrosion Engineers
NBS	National Bureau of Standards
NCCLS	National Committee for Clinical Laboratory Standards
NEBB	National Environmental Balancing Bureau
NEC	National Electrical Code
NEMA	National Electrical Manufacturer's Association
NESC	National Electric Safety Code
NFPA	National Fire Protection Association
NGLI	National Lubricating Grease Institute
NMA	National Microfilm Association
NWMA	National Woodwork Manufacturers Association
OAC	Oregon Administrative Code
ODOT	Oregon Department of Transportation
OSSC	Oregon Structural Specialty Code
OSEPA	Oregon State Environmental Protection Agency
OSHA	Occupational Safety and Health Administration

PCA	Portland Cement Association
PCI	Prestressed Concrete Institute
PS	Product Standard
RCO	Revised Code of Oregon
RIS	Redwood Inspection Service
RVIA	Recreational Vehicle Industry Association
RWMA	Resistance Welder Manufacturer's Association
SAE	Society of Automotive Engineers
SAMA	Scientific Apparatus Makers Association
SDI	Steel Deck Institute
SDI	Steel Door Institute
SIS	Swedish Standards Association
SJI	Steel Joist Institute
SMA	Screen Manufacturers Association
SMACCNA	Sheet Metal and Air Conditioning Contractors National Association
SPR	Simplified Practice Recommendation
SSBC	Southern Standard Building Code, Southern Building Code Congress
SSPC	Steel Structures Painting Council
SSPWC	Standard Specifications for Public Works Construction
TAPPI	Technical Association of the Pulp and Paper Industry
TFI	The Fertilizer Institute
UL	Underwriters Laboratories, Inc.
WCLIB	West Coast Lumber Inspection Bureau
WCRSI	Western Concrete Reinforcing Steel Institute
WIC	Woodwork Institute of California
WRI	Wire Reinforcement Institute, Inc.
WWPA	Western Wood Products Association

### **1.3 SPECIFICATIONS**

- A. Where indicated in these Contract Documents, Work shall be in accordance with the referenced sections of the most current edition of the Oregon Standard Specifications for Construction, hereinafter referred to as "Standard Specifications."
- B. The Technical Specifications of the Contract Documents shall supersede any provisions of the Standard Specifications in conflict herewith.
- C. Reference to measurements and payment in the Standard Specifications do not apply to this Contract.
- D. References to department, secretary, State, or other similar terms in the Technical and Standard Specifications shall mean Owner's Authorized Representative.

### **2. PRODUCTS – NOT USED**

### **3. EXECUTION – NOT USED**

### **4. MEASUREMENT AND PAYMENT – NOT USED**

**END OF SECTION**

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## **SECTION 013100**

### **PROJECT MANAGEMENT AND COORDINATION**

#### **1. GENERAL**

##### **1.1 SECTION INCLUDES**

- A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
  - 1. Project Coordination.
  - 2. Preconstruction meeting.
  - 3. Progress meetings.
  - 4. Requests for Information (RFI).

##### **1.2 RELATED SECTIONS**

- A. Section 01 40 00 - Quality Control.
- B. Section 01 70 00 - Project Closeout.

##### **1.3 DEFINITIONS**

- A. RFI: Request from Contractor seeking information required by or clarifications of the Contract Documents.

##### **1.4 PROJECT COORDINATION**

- A. Coordinate scheduling, submittals, and the Work of the various Sections of the Specifications to assure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- B. Verify that utility requirement characteristics of operating equipment are compatible with available utilities, existing or provided by the Contractor. Coordinate Work of various Sections having interdependent responsibilities for installing, connecting to, and placing in service, all such equipment, temporary or permanent.
- C. Coordinate completion and cleanup of Work of separate Sections in preparation for Substantial Completion and for portions of Work designated for Owner occupancy.
- D. After Owner occupancy of site, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner activities.
- E. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.

#### **2. PRODUCTS – NOT USED**

#### **3. EXECUTION**

##### **3.1 PRECONSTRUCTION MEETING**

- A. Owner's Authorized Representative will schedule a meeting after Notice to Proceed.

B. Attendance Required:

1. Owner's Authorized Representative.
2. Contractor.
3. Contractor's Superintendent.
4. Major Subcontractors.
5. Major Suppliers when requested; others as appropriate.

C. Typical Agenda:

1. Introductions.
2. Distribution of Contract Documents.
3. Submission of list of Subcontractors, list of Products, Schedule of Values, and progress schedule.
4. Designation of personnel representing the parties to Contract and Owner.
5. Procedures and processing of field decisions, submittals, substitutions, applications for payments, BOLI requirements, proposal request, Change Orders, and Contract closeout procedures.
6. Project overview.
7. Schedule review.
8. Critical work sequencing.
9. Related work by Owner and coordination with Contractor.
10. Owner's requirements.
11. Construction facilities and controls.
12. Security and housekeeping procedures.
13. Procedures for sampling and testing.
14. Procedures for maintaining record documents.
15. Status of permits.
16. Waste management plan.
17. Temporary utilities.
18. Use of premises and on-going facility operations.

D. Owner's Authorized Representative will prepare a memorandum and distribute copies within two (2) days after meeting to participants, with copies to participants, and those affected by decisions made.

E. Persons designated by the Contractor to attend and participate shall have all required authority to commit the Contractor to solutions as agreed upon in the meeting.

### **3.2 PROGRESS MEETINGS**

A. Owner's Authorized Representative will schedule and administer meetings throughout progress of the Work at maximum weekly intervals.

B. Owner's Authorized Representative will make arrangements for meetings, prepare agenda with copies for participants, and preside at meetings.

C. Attendance Required: Job superintendent, Owner's Authorized Representative, and major Subcontractors and suppliers, as appropriate to agenda topics for each meeting.

D. Agenda:

1. Corrections to previous minutes.
2. Outstanding old business items.
3. New business items.
4. Submittals.

5. Requests for Information.
  6. Change Order Proposals.
  7. Schedule review.
  8. Record Document review.
- E. Record minutes and distribute copies within two (2) days after meeting to participants, with one copy to Contractor, participants, and those affected by decisions made.
1. Minutes shall number topics in a manner that reflects when each topic was first raised.
  2. Each topic shall reflect who is responsible for acting on the topic and date by which resolution is required.
  3. No topic shall be dropped from the minutes until the method of resolution is recorded.
- F. Persons designated by the Contractor to attend and participate shall have all required authority to commit the Contractor to solutions as agreed upon in the meeting.

### **3.3 PROJECT CLOSEOUT CONFERENCE**

- A. Owner's Authorized Representative will schedule and conduct a Project closeout conference, at a time convenient to Owner, but no later than 60 days prior to the scheduled date of Substantial Completion.
1. Conduct the conference to review requirements and responsibilities related to Project closeout.
  2. Attendees: Owner's Authorized Representative, and Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
  3. Typical Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
    - a. Preparation of record documents.
    - b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
    - c. Submittal of written warranties.
    - d. Requirements for preparing operations and maintenance data.
    - e. Preparation of Contractor's punch list.
    - f. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
    - g. Submittal procedures.
    - h. Responsibility for removing temporary facilities and controls.
  4. Minutes: Entity conducting meeting will record and distribute meeting minutes.

### **3.4 REQUESTS FOR INFORMATION (RFIS)**

- A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, prepare and submit an RFI in the form specified.
1. RFIs shall originate with Contractor. Owner's Authorized Representative will return RFIs submitted to Owner's Authorized Representative by other entities controlled by Contractor with no response.

2. Limit topics on each RFI to a single topic to expedite response. If more than a single topic is covered in an RFI the Contractor accepts full responsibility for any and all cost or schedule delays if RFI is not answered in a timely manner.
  3. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
  4. Coordinate Work in field and ensure Work involving RFIs being reviewed by the Owner's Authorized Representative does not proceed without direction from the Owner's Authorized Representative. Costs for corrective Work shall be the responsibility of the Contractor.
  5. If Contractor disagrees with Owner's Authorized Representative response to Contractor's RFI, Contractor shall notify Owner's Authorized Representative within seven (7) days of receipt of response. Lack of such notification shall be understood to mean that Contractor agrees with response.
- B. Content of the RFI: Include a detailed, legible description of item needing information, or interpretation and the following:
1. Date.
  2. RFI number, numbered sequentially.
  3. RFI subject.
  4. Specification Section number and title and related paragraphs, as appropriate.
  5. Drawing number and detail references, as appropriate.
  6. Field dimensions and conditions, as appropriate.
  7. Contractor's suggested resolution. If proposed solution impacts the Contract Time or the Contract Sum, state impact in the RFI.
  8. The following statement:
    - a. "This reply is not an authorization to proceed with work involving additional cost, time or both. If any reply requires a change to the Contract Documents, a Change Order must be executed in accordance with the Contract Documents prior to implementation of the reply. Proceeding with the Work in accordance with this RFI response indicates Contractor's acknowledgement that there will be no change in the Contract Sum or Contract Time."
  9. Contractor's signature.
  10. Attachments: Include sketches, descriptions, measurements, photos, Product data, shop drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
- C. Contractor shall utilize the Owner's Authorized Representative email to submit and receive RFIs and their responses.
- D. Owner's Authorized Representative will review each RFI, determine action required, and respond. Allow seven (7) working days for Owner's Authorized Representative response for each RFI. RFIs received by Owner's Authorized Representative after 1:00 p.m. will be considered as received the following working day.
1. The following RFIs will be returned without action:

- a. Requests for approval of substitutions.
  - b. Requests for adjustments in the Contract Time or the Contract Sum.
  - c. Requests for interpretation of Owner's Authorized Representative actions on submittals.
  - d. Incomplete RFIs or inaccurately prepared RFIs.
2. Owner's Authorized Representative action may include a request for additional information, in which case Owner's Authorized Representative time for response will date from time of receipt of additional information.
3. Owner's Authorized Representative action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit a Change Order Request according to the General Conditions.
- a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Owner's Authorized Representative in writing within ten (10) days of receipt of the RFI response.
  - b. A response to an RFI is not direction or approval of a change to either Contract Time or Contract Sum.
  - c. Proceeding with the Work in accordance with an RFI response, without such written notification and an approved Change Order, indicates Contractor's acknowledgement that there is no change to the Contract Time or the Contract Sum.
- E. On receipt of Owner's Authorized Representative action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Owner's Authorized Representative within three (3) days if Contractor disagrees with response.

**4. MEASUREMENT AND PAYMENT – NOT USED**

**END OF SECTION**

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## **SECTION 013300 SUBMITTAL PROCEDURES**

### **1. GENERAL**

#### **1.1 SUBMITTAL REQUIREMENTS**

##### **A. General:**

1. All submittals shall be transmitted via email with attachments as PDFs or JPGs.
2. All submittals shall be identified by Project title and number and shall include Contractor's name, date, and revision date. In addition, shop drawings, product data and samples shall include names of subcontractor and supplier, applicable specification section number and Contractor's stamp, initialed or signed, certifying to review of submittal, verification of field measurements, and compliance with Contract Documents.
3. All submittals shall be accompanied by a submittal transmittal form. Equipment numbers shall be listed for items being submitted. A separate form shall be used for each specific item, class of material, equipment, and items specified in separate, discrete sections, for which the submittal is required. Submittals for various items shall be made with a single form when the items taken together constitute a manufacturer's package or are so functionally related that expediency indicates checking or review of the group or package as a whole.
4. A unique number, sequentially assigned, shall be noted on the transmittal form accompanying each item submitted. Original submittal numbers shall have the following format: "###"; where "###" is the sequential number assigned by the Contractor. Resubmittal shall have the following format: "###-Y"; where "###" is the originally assigned submittal number and "Y" is a sequential letter assigned for resubmittals; i.e., A, B, or C being the 1st, 2nd, and 3rd resubmittals, respectively. Submittal 25B, for example, is the second resubmittal of Submittal 25.

- B. Product Data: Submit electronic copies of each item of product data required by the Specifications. Modify product data by deleting information which is not applicable to the Project or by marking each copy to identify pertinent products. Supplement standard information, if necessary, to provide additional information applicable to Project. It is recognized that in some cases manufacturer's product data will be adequate and further shop drawings as stated in the Specifications may not be required, unless requested by the Owner's Authorized Representative.

- C. Review Procedure: Unless otherwise specified, within 10 to 14 days after receipt of the submittal, the Owner's Authorized Representative will review the submittal. The returned submittal will indicate one of the following actions:

1. If the review indicates that the material, equipment, or work method is in general conformance with the design concept and complies with the Drawings and Specifications, submittal copies will be marked "NO EXCEPTION TAKEN". In this event the Contractor may begin to implement the work method or incorporate the material or equipment covered by the submittal.
2. If the review indicates that limited corrections are required, copies will be marked "MAKE CORRECTIONS NOTED". The Contractor may begin implementing the work method or incorporating the material and equipment covered by the submittal in accordance with the

- noted corrections. Where submittal information will be incorporated in O&M data, a corrected copy shall be provided; otherwise, no further action is required.
3. Submittal Completeness: Submittals which do not have all the information required to be submitted are not acceptable and will be marked "SUBMIT SPECIFIED ITEM". Except at its own risk, the Contractor shall not undertake Work covered by this submittal until the attached comments have been either confirmed by a separate written communication or the submittal has been revised, resubmitted, and returned marked with "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED."
  4. If the review reveals that the submittal is insufficient or contains incorrect data, copies will be marked "REVISE AND RESUBMIT". Except at its own risk, the Contractor shall not undertake Work covered by this submittal until the attached comments have been either confirmed by a separate written communication or the submittal has been revised, resubmitted, and returned marked with "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED."
  5. If the review indicates that the material, equipment, or work method is not in general conformance with the design concept or in compliance with the Drawings and Specifications, copies of the submittal will be marked "REJECTED". Except at their own risk, the Contractor shall not undertake Work covered by such submittals until a new submittal is made and returned marked either "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED."
- D. Effects of Review of Contractor's Submittals: Review of Drawings, method of work, or information regarding materials or equipment the Contractor proposes to provide, shall not relieve the Contractor of its responsibility for errors therein and shall not be regarded as an assumption of risks or liability by the Owner, and the Contractor shall have no claim under the Contract on account of the failure, or partial failure, of the method of work, material, or equipment so reviewed. A mark of "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED" shall mean that the Owner's Authorized Representative has no objection to the Contractor, upon the Contractor's own responsibility, using the plan or method of work proposed, or providing the materials or equipment proposed.

## **1.2 SCHEDULE**

- A. The Contractor shall provide the following schedules and submit them not later than 7 days after notice to proceed.
1. Contractor's construction schedule:
    - a. The Contractor shall prepare and submit to the Owner's Authorized Representative for review an overall construction schedule covering all Work to be performed.
    - b. The schedule shall indicate the sequence of the Work, the time of starting and completion of each part, and the installation dates for major items.
    - c. The schedule shall be submitted to the Owner's Authorized Representative for review. This schedule shall be revised and resubmitted as necessary until it is acceptable to the Owner's Authorized Representative. Action on payment requests will be contingent upon receipt of an acceptable construction schedule.
  2. The construction schedule shall include, but not be limited to the following items:



- d. Material and equipment order, delivery and installation, and check out.
  - e. Dewatering.
  - f. Demolition.
  - g. Rock slope protection.
  - h. Grading.
  - i. Substantial Completion of improvements.
  - j. Final cleanup.
- 3. The construction schedule shall be a series of line diagram showing a step-by-step sequence of each construction activity. Construction activities proceeding simultaneously should be shown as parallel lines. Each activity shall be labeled and the estimated number of days to complete the activity shall be shown on the schedule.
  - 4. Should the Contractor fail to meet any critical dates within the schedule, the Contractor shall immediately undertake appropriate action which shall assure an acceptable return to the approved construction schedule.
  - 5. The Contractor accepts the risk of any delays caused by the rate of progress of the Work to be performed under the Contract, and that in the event the Contractor is delayed in the prosecution and completion of its Work because of such conditions; Contractor shall have no claim for damages or contract adjustment.
- B. Contractor's list of subcontractors: Establish the items of Work proposed to be accomplished by subcontractors, the name and address of each proposed subcontractor, and the date proposed to award each subcontract.
  - C. Schedule of Submittals: Establish for each item for which shop drawings, product data, or samples are required, the date of submission will be made, and the date approval is required for the installation to be completed in accordance with the Construction Schedule.
  - D. The Contractor's list of subcontractors and schedule of submittals shall be based upon the Contractor's progress schedule so that the Work can progress in accordance with the approved progress schedule.
  - E. The Contractor shall immediately advise the Owner's Authorized Representative of any proposed changes in his submitted schedules. If, in the opinion of the Owner's Authorized Representative, any submitted schedule is inadequate to ensure completion of Work within the time limit, or is otherwise not in accordance with the Specification, or if the Work is not being adequately or properly prosecuted in any respect, the Owner's Authorized Representative shall have the right to require the Contractor to submit new schedules providing for proper and timely completion of the Work.
  - F. During the term of this Contract, the Owner's Authorized Representative may require any schedule to be modified so that the changes in the Work of this Contract or related contracts (if any) are properly reflected in the schedule.

**2. PRODUCTS – NOT USED**

**3. EXECUTION – NOT USED**

**4. MEASUREMENT AND PAYMENT – NOT USED**

**END OF SECTION**

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## **SECTION 015000 MOBILIZATION**

### **1. GENERAL**

#### **1.1 DESCRIPTION**

- A. The work covered by this section consists of compensation for bonds, insurance, required permits and fees, shop drawings, project phasing, supervision, traffic control, temporary chain link or other fencing and gates, coordination of concurrent work with other contractors, meetings, pre-construction documentation of project area (photos and video), "as-built" plans or record drawings, cleanup of the work area, , movement of personnel, equipment, supplies, and incidentals to and from the project site; for the establishment of all other facilities necessary for work on the project; for all other work and operations which must be performed or costs incurred prior to beginning work on the various contract items of work on the project site; and work and improvements called for or implied by the Contract Documents, which are not included in the other bid items but are required to complete the Work.
- B. Demobilization shall consist of work and operations necessary to disband all mobilized items and cleanup the site. The removal of all temporary crossings, ramps, access ways, roads, signs, and fencing; dewatering facilities; and temporary facilities or works, and the restoration of surfaces to an equal or better than existing condition shall also be included as part of demobilization.

#### **1.2 RELATED SECTIONS**

- A. Section 015626, Temporary Fence – Type ESA
- B. Section 015713, Temporary Erosion Control and BMPs
- C. Section 015713.01, Fiber Roll
- D. Section 024100, Demolition
- E. Section 311100, Clearing and Grubbing
- F. Section 312316, Excavation
- G. Section 312319, Dewatering
- H. Section 312323, Engineered Fill

#### **1.3 SUBMITTALS**

- A. Dust Suppression Plan, per Section 3.10.
- B. Hazardous Materials and Spill Prevention Plan, per Section 3.11.
- C. Traffic Control Plan, per Section 3.16.

### **2. PRODUCTS**

#### **2.1 TEMPORARY CHAIN LINK FENCING**

- A. Unless otherwise indicated, type of temporary chain link fencing shall be Contractor's option. Following types are acceptable:

1. New materials or previously used salvaged chain link fencing in good condition.
2. Posts: Galvanized steel pipe of diameter to provide rigidity. Post shall be suitable for setting in concrete footings, driving into ground, anchoring with base plates, or inserting in precast concrete blocks.
3. Fabric: Woven galvanized steel wire mesh. Provide in continuous lengths to be wire tied to fence posts or prefabricated into modular pipe-framed fence panels.

## **2.2 GATES**

- A. Provide personnel and vehicle gates of the quantity and size required for functional access to site.
- B. Fabricate gates of same material as used for fencing.
- C. Vehicle gates: minimum width of 20 feet to allow access for emergency vehicles. Capable of manual operation by one person.

## **3. EXECUTION**

### **3.1 CONTRACTOR'S PLANT AND EQUIPMENT:**

- A. Security. Contractor shall, at all times, be responsible for security of their plant and equipment. Owner shall not be responsible for missing or damaged equipment, tools, or personal belongings.
- B. Water & Power. Contractor shall provide all water and electrical power necessary for construction as specified.
- C. Communication Facilities. Contractor shall be responsible for providing sufficient communication facilities to construct the work.
- D. Storage Facilities.
  1. Provide storage facilities for the protection of materials and supplies from weather, and shall keep the facilities clean and in proper order at all times.
  2. Provide a storage area for lubricants, oils, and hazardous materials with sufficient means to contain spills. Facilities, handling, and any required cleanup will comply with all current local, state, and federal standards. Petroleum products stored on the site shall be secured from vandalism.
- E. Sanitary Facilities. Maintain adequate toilet facilities at or near the work site.
- F. Solid Waste Handling. Provide sufficient solid waste handling facilities to maintain site in a clean, orderly condition.

### **3.2 MOBILIZATION AND DEMOBILIZATION**

- A. General. Perform mobilization and demobilization activities in accordance with the Drawings, and as specified.

### **3.3 PROJECT SIGNS**

- A. General. Erect project, safety and hard hat signs at each work site prior to the commencement of work.

### **3.4 EXCAVATION**

- A. The Contractor, and any subcontractor, is required to notify U.S.A. forty-eight hours in advance of performing excavation work, by calling the toll-free number (800) 332-2344.

### **3.5 PROTECTIVE BARRIERS**

- A. Protective barriers shall be erected around sensitive areas as designated on the Drawings or as directed by the Engineer. Barriers shall be constructed using bright orange plastic safety fencing (type ESA), per Section 015626, Temporary Fence – Type ESA.
- B. Temporary chain link fencing shall be maintained to isolate the work area from the roadway during construction, as shown on the Drawings.
- C. Tree protection. Tree protection shall consist of bright orange plastic safety fencing (type ESA), per Section 015626, Temporary Fence – Type ESA, or as directed by the Engineer.

### **3.6 BULLETIN BOARD**

- A. Provide a bulletin board at the project site, or in a location approved by the Engineer. The bulletin board shall be easily accessible at all times and shall contain wage rates, equal opportunity notice, and other items required to be posted.

### **3.7 CHAIN LINK FENCING**

- A. Chain link posts:
  - 1. Space as 10 foot on center, maximum.
  - 2. Drive posts, set in holes and backfill, or anchor in precast concrete blocks.
  - 3. For soft and unstable ground conditions, cast concrete plug around post.
  - 4. Posts over pavement: Use steel post plates or precast concrete blocks.
  - 5. Gate posts: Use bracing or concrete footings to provide rigidity for accommodating size of gate.
- B. Fabric: Securely attach to posts.
- C. Gates: Install with required hardware.
- D. Maintain fencing in good condition. If damaged, immediately repair.
- E. Removal:
  - 1. When Temporary Fence is no longer required, as determined by the Engineer, it shall be removed and disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the State Specifications, except when reused as provided in this section.
  - 2. Holes caused by the removal of Temporary Fence shall be backfilled in conformance with the provisions in Section 15-1.02, "Preservation of Property," of the State Specifications.

### **3.8 STAGING AREAS**

- A. General. Staging areas at the project site are provided for the Contractor's use. By making this area available to the Contractor, the Engineer, and any other person or agency connected with the properties shall in no way be responsible or liable for any activity of the Contractor, subcontractors, or any individual or organization connected with the project.
- B. Alternative Staging Areas. Alternative sites must be acceptable to Owner, and the Contractor must make all arrangements for their use at the Contractor's expense, and in accordance with all local, State and Federal regulations.

- C. Additional Storage Areas. Should the Contractor require space in addition to that available on-site, the Contractor shall make arrangements for storage of materials and equipment in locations off the construction site, and shall provide the Engineer a copy of the letter of authorization for storage from the Owner.
- D. Spoils. Contractor shall not place spoils where they could enter a stream or other sensitive habitat, such as riparian, or place over vegetation except as specifically noticed to and accepted by CDFW, in writing. Spoil shall be hauled offsite or stockpiled in an upland location where they shall be covered with plastic sheeting whenever it is evident that rainy conditions threaten to erode loose soils into sensitive habitats.

### **3.9 PARKING**

- A. General. Limited parking shall be available alongside the roadway in the vicinity of the work area. Parking shall be restricted to only those spaces identified by the City during the pre-bid walk.

### **3.10 DUST CONTROL**

- A. General. Before starting work on the project, submit a Dust Suppression Plan for acceptance by the Engineer. The Contractor shall be responsible for the control of dust within the limits of the project at all times. The Contractor shall take whatever steps are necessary to eliminate the nuisance of blowing dust. Responsibility for any damage to property, crops, or orchards from dust caused by the Contractor's operations shall be borne by the Contractor.
- B. Dust Control. Periodically, water or otherwise treat access roads, or graded areas as required to suppress dust. Cover or control water content of earthen materials being hauled, as required to control dust emissions. Cover or otherwise stabilize soil stockpiles to prevent erosion by wind.
- C. Cleanup. The Contractor shall keep all streets, roadways, and easements, as well as all ground adjacent to the project site, clean and free of dust, mud and debris resulting from the Contractor's operations. Daily cleanup throughout the project shall be required as the Contractor progresses with the work. Spillage of earth, gravel, concrete, asphalt, or other materials resulting from hauling operations along or across any public street or private driveway or access road shall be removed immediately by the Contractor.

### **3.11 HAZARDOUS MATERIALS CONTROL AND SPILL PREVENTION PLAN**

- A. General. Before starting work on the project, the Contractor shall submit for acceptance by the Engineer a Hazardous Materials Controls and Spill Prevention Plan compliant with the permit requirements. The Plan shall include:
  - 1. Names and contact information for personnel responsible for spill response or general site cleanup and maintenance.
  - 2. Written description of proposed provisions for preventing hazardous materials from contaminating soil or entering water courses.
  - 3. Written narrative of proposed Spill Prevention and Countermeasure Plan.
- B. Facilities. Provide staging and storage areas for equipment, as required to contain contaminants away from water courses. Provide a contained, locked storage facility for fuels, lubricants, construction chemicals and other hazardous materials and supplies stored at site.
- C. Equipment Maintenance. Clean and maintain equipment to prevent any leakage of fuel and lubricants. Establish a designated equipment refueling area. All fueling and maintenance of

vehicles and other equipment and staging area shall occur at least 150 feet from any riparian habitat or water body.

- D. Spills Countermeasures. Isolate work areas during in-water construction activities by using oil containment booms. Maintain a supply of oil booms, sorbent pads and other supplies to contain and clean spills. Contain and cleanup any hazardous material spills immediately and notify Engineer.
- E. Equipment over Drip Pans. Stationary equipment such as motors, pumps, generators, compressors and welders, located within or adjacent to the stream and riparian areas shall be positioned over drip-pans.
- F. Check Equipment for Leaks. Any equipment or vehicles driven and/or operated adjacent to the stream and riparian corridor shall be checked and maintained daily to prevent leaks of materials that if introduced to water could be deleterious to aquatic life, wildlife or riparian habitat. Vehicles shall be moved away from the stream prior to refueling and lubrication.

### **3.12 CONSTRUCTION SITE HOUSEKEEPING**

- A. Remove rubbish, trash, and debris from site on a regular basis. Transport and dispose of all rubbish and debris in accordance with all local regulations. Maintain staging area in an orderly manner. Regularly clean mud and debris, resulting from work at the site, from roadways.

### **3.13 PROTECTION OF EXISTING IMPROVEMENTS**

- A. Existing facilities, utilities, and property shall be protected from damage resulting from the Contractor's operations. Roadways and other improved surfaces shall be protected from damage by vehicles with tracks or lugs. Any damage resulting from the Contractor's operations shall be repaired by the Contractor to the condition which existed prior to the damage, and to the satisfaction of the Engineer, at no additional cost to the Owner.

### **3.14 RESTORATION OF STRUCTURES AND SURFACES**

- A. Structures, Equipment, and Pipework. The Contractor shall remove such existing structures, equipment, and pipework as may be necessary for the performance of the work, and shall rebuild, or replace, the items thus removed in as good a condition as found. Contractor shall repair any existing structures that were damaged as a result of the Work.
- B. Roads and Streets. Roadways used by the Contractor for hauling materials, equipment, supplies, etc., shall be cleaned and repaired if the condition of the roadway is damaged, or otherwise affected, due to the Contractor's operations.
- C. Curbs, Gutters, Driveways, and Sidewalks. All curbs, gutters, driveways, sidewalks, and similar structures that are broken, or damaged, by the installation of the work shall be reconstructed by the Contractor. Reconstruction shall be of the same kind of materials with the same finish, and in not less than the same dimensions as to original work. Repairs shall be made by removing and replacing the entire portions between joints or scores, and not merely refinishing any damaged part. All restoration work shall match the appearance of the existing improvements, as nearly as possible.
- D. Cultivated Areas and Other Surface Improvements. All cultivated and natural areas, either agricultural or lawns, and other surface improvements which are damaged by actions of the Contractor, shall be restored, including roadside drainage ditches, as nearly as possible, to their original conditions.

### **3.15 STORAGE OF MATERIALS AND EQUIPMENT**

- A. Materials and equipment shall be stored so as to ensure the preservation of their quality and fitness for the work. Stores of equipment and materials shall be located so as to facilitate inspection. The Contractor shall be responsible for all damages that occur in connection with the care and protection of all materials and equipment, supplied by the Contractor, until completion and final acceptance of the Work by the Owner.

### **3.16 TRAFFIC CONTROL**

- A. General. The Contractor shall be responsible for public safety and traffic control at all times.
- B. The Contractor shall furnish, install, and maintain temporary construction warning signs, flaggers, barricades, and other devices necessary to safeguard the general public and the work, and to provide for the safe and proper routing of all vehicular and pedestrian traffic within and through the limits of the project during the performance of the work.
- C. Maintain Access. Contractor shall generally maintain access to existing driveway entrance at all times. Temporary road closures for materials or equipment delivery shall be limited to 20 minutes.
- D. Work includes furnishing, placing, maintaining, and removing signs and temporary supports or barricades for the signs; posting parking restrictions; furnishing and operating the flashing arrow sign trucks, including drivers and any other equipment or labor required to operate the flashing arrow sign trucks; barricades, flaggers, temporary pavement, trench plates, and temporary facilities required for the safe handling of pedestrian and vehicular traffic for 24 hours per calendar day in accordance with the "Manual on Uniform Traffic Control Devices" and "Oregon Temporary Traffic Control Handbook" by the Oregon Department of Transportation and the approved project traffic control plans for the duration of the Work, complete. If, due to a change in the Contractor's work schedule a change in sign posting is required, all labor, equipment, and materials required for second and subsequent postings shall be furnished at the Contractor's sole expense.
- E. Traffic Control Plan. The Contractor will provide a traffic control plan to the Engineer for review and approval prior to project construction including; access points to the Site, staging areas, dump sites, operating hours, project duration, scheduling and phasing, and total number of construction vehicles and their respective haul routes, per project phase.

## **4. MEASUREMENT AND PAYMENT**

### **4.1 MEASUREMENT**

- A. Work under this section will be measured for payment on a lump sum basis.

### **4.2 PAYMENT**

- A. The lump sum contract price for Mobilization will include full compensation for the furnishing of all labor, materials, tools, equipment, administrative costs, and incidentals for mobilization; demobilization; and temporary facilities and controls.
- B. Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Mobilization & Demobilization	LS



**END OF SECTION**

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**SECTION 015626**  
**TEMPORARY FENCE – TYPE ESA**

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## **SECTION 015626**

### **TEMPORARY FENCE – TYPE ESA**

#### **1. GENERAL**

##### **1.1 DESCRIPTION**

- A. Work under this section includes furnishing all labor, materials, equipment, and incidentals to install, maintain, and remove Temporary Fence – Type ESA , as shown on the Drawings, as specified, or as otherwise directed by the Engineer.

##### **1.2 RELATED SECTIONS**

- A. Section 015000, Mobilization
- B. Section 015713, Temporary Erosion Control and BMPs
- C. Section 311100, Clearing and Grubbing
- D. Section 312316, Excavation

##### **1.3 REFERENCES**

- A. Oregon Department of Transportation (ODOT) State Standard Specifications, current edition

##### **1.4 SUBMITTALS**

- A. Submit to the Engineer, for review, the following:
  - 1. Manufacturer's data for proposed fencing fabric.
  - 2. Manufacturer's data or descriptive literature for proposed fence posts.

#### **2. PRODUCTS**

##### **2.1 MATERIALS**

- A. High Visibility Fabric. High visibility fabric shall be machine produced, orange colored mesh manufactured from polypropylene or polyethylene. High visibility fabric may be made of recycled materials. Materials shall not contain biodegradable filler materials that can degrade the physical or chemical characteristics of the finished fabric. High visibility fabric shall be fully stabilized ultraviolet resistant and a minimum of four feet in width with a maximum mesh opening of 2" x 2". High visibility fabric shall be furnished in one continuous width and shall not be spliced to conform to the specified width dimension.
- B. Posts. Posts for temporary fence (Type ESA) shall be of one of the following:
  - 1. Wood posts shall be fir or pine, shall have a minimum cross section of 2" x 2", and a minimum length of 5.25 feet. The end of the post to be embedded in the soil shall be pointed. Wood posts shall not be treated with wood preservative.
  - 2. Steel posts shall have a "U," "T," "L," or other cross sectional shape that resists failure from lateral loads. Steel posts shall have a minimum weight of 0.75 pounds per linear foot and a minimum length of 5.25 feet. One end of the steel post shall be pointed and the other end shall have a high visibility colored top.
- C. Fasteners. Fasteners for attaching high visibility fabric to the posts shall be as follows:

1. The high visibility fabric shall be attached to wooden posts with commercial quality nails or staples, or as recommended by the manufacturer or supplier.
  2. Tie wire or locking plastic fasteners shall be used for attaching the high visibility fabric to steel posts. Maximum spacing of tie wire or fasteners shall be 24 inches along the length of the steel post.
- D. Used materials may be installed provided the used materials conform to these Specifications.

### **3. EXECUTION**

#### **3.1 INSTALLATION**

- A. All fence construction activities shall be conducted from the work side of the ESA as shown on the Drawings or as flagged in the field by the Engineer.
- B. Posts shall be embedded in the soil a minimum of 16 inches. Post spacing shall be eight feet maximum from center to center and shall at all times support the fence in a vertical position.
- C. Temporary fence (Type ESA) shall be constructed prior to clearing and grubbing work, shall enclose the foliage canopy (drip line) of protected plants, and shall not encroach upon visible roots of the plants.
- D. Temporary fence (Type ESA) shall be located so that it is clearly visible, as determined by the Engineer.

#### **3.2 MAINTENANCE**

- A. Temporary fence (Type ESA) that is damaged during the progress of the work shall be repaired or replaced by the Contractor the same day the damage occurs.

#### **3.3 REMOVAL**

- A. When Type ESA fence is no longer required, as determined by the Engineer, it shall be removed and disposed of in conformance with the provisions in State Standard Specifications, except when reused as provided in this section.
- B. Holes caused by the removal of temporary fence (Type ESA) shall be backfilled in conformance with Section 312323, Engineered Fill.

### **4. MEASUREMENT AND PAYMENT**

#### **4.1 MEASUREMENT**

- A. Temporary Fence – Type ESA will be measured by the linear foot of Temporary Fence – Type ESA installed at the locations indicated on the Drawings, as specified, or as directed by the Engineer.

#### **4.2 PAYMENT**

- A. Temporary Fence – Type ESA will be paid for at the contract price per linear foot, which price will be payment in full for furnishing all labor, materials, tools, equipment, and incidentals necessary to install, maintain throughout the construction, and to remove Temporary Fence – Type ESA after site stabilization.
- B. Payment shall be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Temporary Fence – Type ESA	FT

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**TEMPORARY EROSION CONTROL AND BMPS**

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## **SECTION 015713**

### **TEMPORARY EROSION CONTROL AND BMPS**

#### **1. GENERAL**

##### **1.1 DESCRIPTION**

- A. This work shall consist of all temporary erosion control and water or air quality control measures, devices, and BMPs that may be shown on the Drawings, and as specified in the Contract Documents, Project Permit(s), Project Erosion and Sediment Control Plan (ESCP), Standard Specifications, these Technical Specifications, or shall be required to control erosion and protect air and water quality during the life of the contract, and that are not separately specified within other sections.
- B. These measures shall typically include, but not be limited to construction entrances, fiber rolls, turbidity curtains, plastic covers or tarps, or other devices or methods required to control water or air pollution.
- C. Temporary erosion control measures and other BMPs will be required within the work area and at temporary staging, storage, and access areas utilized during project construction. Said work is intended to provide prevention, control, and abatement of water and air pollution and to minimize damage to the work, adjacent properties, receiving streams or other bodies of water.
- D. The erosion control elements shown on the Drawings and the Erosion and Sediment Control Plan serve as a minimum for the requirements of erosion control during construction. Contractor has the ultimate responsibility for providing adequate erosion control and water quality throughout the duration of the project. Therefore, if the provided plan is not working sufficiently to protect project areas, then the Contractor shall provide additional as required to obtain the required protection. Contractor shall include in the bid price for Temporary Erosion Control and BMPs a minimum of all items shown on the Drawings or specified and any additional items that may be needed to control erosion and water or air pollution.
- E. Installation and maintenance of temporary erosion control measures, devices and BMPs shall conform to the requirements as shown on the Drawings stated within these Technical Specifications, and as required by all permit conditions. In the event of conflict between these requirements and erosion and pollution control laws, rules, or regulations of other Federal, State, or local agencies, the more restrictive laws, rules, or regulations shall apply.
- F. Attention is directed to the Erosion and Sediment Control Plan. The Contractor shall apply for a 1200-C construction permit with the Oregon Department of Environmental Quality prior to construction. As part of the application submittal process, the Contractor shall submit on any proposed revisions to the applicable Project Plan sheets for Temporary Erosion Control and the Dewatering and Diversion operations. Do not start work until the ESCP, applicable plan sheets, schedules and methods of operation for temporary pollution control are reviewed and accepted by the Engineer and DEQ. During the course of project construction, cooperate with the Engineer and other regulatory officials and take immediate action as directed to protect water bodies and sensitive areas, and provide for erosion or other pollution control.

##### **1.2 RELATED SECTIONS**

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- A. Section 015000, Mobilization
- B. Section 015626, Temporary Fence – Type ESA
- C. Section 015713.01, Fiber Roll
- D. Section 015713.02, Silt Fence
- E. Section 311100, Clearing and Grubbing
- F. Section 312319, Dewatering
- G. Section 312323, Engineered Fill

### **1.3 SUBMITTALS**

- A. Submit the following for favorable review by the Engineer:
  - 1. Product data for all proposed imported BMP materials, including rock, geotextile fabric, stockpile covers, mulch, tackifier, straw, seed, fencing, rope, or other items, whether shown on the Drawings, specified herein, or proposed by the Contractor.
  - 2. Schedule and sequencing plan for Temporary Erosion Control.

## **2. PRODUCTS**

- A. Refer to material specifications on the Drawings.
- B. Seed: All seed shall be approved by the Engineer and in accordance with local regulations prior to installation per Section 329300, Seeding.
- C. Fertilizer and soil conditioners shall be approved by Engineer and in accordance with local regulations prior to installation per Section 329300, Seeding.

## **3. EXECUTION**

### **3.1 GENERAL**

- A. Install temporary soil stabilization for water pollution control in all disturbed work areas above ordinary high water that are considered inactive (i.e., excess of 14 days) or before forecast storm events. Should any temporary erosion control of this nature be required elsewhere as directed by the Engineer and/or regulatory agencies, install them within 48 hours of notification. Where applicable and upon acceptance of the Engineer, furnish and apply/install temporary mulch, temporary hydraulic mulch, temporary erosion control blankets, or temporary covers in conformance with the Standard Specifications and these Technical Specifications. Materials and construction methods shall comply with the Standard Specifications and these Technical Specifications.
- B. Maintain a temporary cover on all stockpiles at all times and install and maintain appropriate BMPs (fiber rolls or wattles, filter fence, check dams, etc.) around the perimeter at the base of stockpile to control the potential runoff of any loose sediments and pollutants. Whenever a temporary cover is removed to perform other work, replace, and secure the temporary cover within one (1) hour of stopping work.

### **3.2 TURBIDITY MONITORING**

- A. Maintain copies of all turbidity monitoring in accordance with the permits and submit copies to the Owner's Representative at the conclusion of construction.



### **3.3 MAINTENANCE**

- A. Contractor shall be responsible for maintaining temporary erosion control measures as specified in the Drawings and Contract Documents until such time as Work has been accepted by Owner. Maintain all temporary erosion control measures, devices, and/or BMPs placed in the work for the duration of the project.
- B. Maintenance includes all Manufacturer's recommendations, and includes but is not limited to the following:
  - 1. Immediately repair upon discovery damage to any temporary erosion control devices and/or BMPs during the project at the Contractor's expense.
  - 2. Inspect temporary erosion control devices and/or BMPs routinely, immediately after each rainfall event, and at least daily during prolonged rainfall events. Make required repairs immediately.
  - 3. Inspect construction limit and tree protection fencing daily and repair, secure, and/or replace as necessary to maintain and preserve its intended purpose.
  - 4. Routinely inspect all signage as required for the project and repair or replace upon discovery of damage, vandalism, and/or missing parts.
  - 5. If BMP materials decompose or become ineffective prior to the end of the expected usable life and while still necessary, replace promptly.
  - 6. Routinely inspect stakes and/or rope used to secure fiber rolls in place and repair as necessary if found to be loose or ineffective.
  - 7. Remove sediment deposits and other debris when they reach approximately one-half the height of the sediment barrier (or as recommended by the Manufacturer) and dispose of in a manner acceptable to the Engineer, and in conformance with project permits.
  - 8. Remove and dispose of all sediment deposits remaining in place after the temporary erosion control measure and/or BMPs is no longer required in a manner acceptable to the Engineer, and in conformance with the project permits.

### **3.4 CONSTRUCTION ACCESS ROUTES**

- A. Wherever construction vehicles enter or leave a construction site, a Stabilized Construction Entrance is required.
- B. Where sediment is transported onto a public road surface, the roads shall be cleaned thoroughly at the end of each day.
- C. Sediment shall be removed from roads by shoveling or sweeping and be transported to a sediment-controlled disposal area.
- D. Street washing shall be allowed only after sediment is removed in this manner.

### **3.5 STABILIZED CONSTRUCTION ENTRANCE**

- A. Construct Rocked construction entrance/exit pads for each phase of the work at each entrance and exit access road onto the project site as shown on the Project Drawings. Work under this item shall consist of clearing and grubbing, excavation, furnishing and placing reinforcement mat and rock at each entrance/exit access road, maintenance (i.e., removal of large quantities of captured sediment, and/or placement of additional rock during course of construction), removal, disposal of excess materials, and restoration of disturbed area.

- B. Each Rocked construction entrance/exit shall be of adequate size to prevent the tracking of sediment and materials onto any public right-of-way. At a minimum, show the size of each Rocked construction entrance/exit on the Project Drawings.
- C. Maintain each Rocked construction entrance/exit to minimize tracking of soil and sediment onto existing public roads and rights-of-way. While the Rocked construction entrance/exit is in use, clean pavement and remove sediment at least once a day and as often as necessary when directed by the Engineer. Soil and sediment or other extraneous material tracked onto existing pavement shall not be allowed to enter any existing or proposed drainage facilities.
- D. In the event the Contractor's operations are causing excessive tracking of materials, the Engineer may direct the Contractor to replace the Rocked construction entrance/exit, expand the size (area – length and/or width) of the Rocked construction entrance/exit, and/or expand the depth of the Rocked construction entrance/exit. In the event this is required the Contractor will not be entitled to any additional payment.
- E. When no longer required as shown on the Project Drawings or as determined by the Engineer (where applicable to each Phase of the work), each Rocked construction entrance/exit shall become the property of the Contractor and be removed and disposed of in conformance with the Contract Documents, Standard Specifications, and these Technical Specifications. Under no circumstance shall any of the materials used for Rocked construction entrance/exit be re-used on the project. Grade and restore all areas disturbed by the placement and use of each Rocked construction entrance/exit to its pre-existing condition, including any provisions for revegetation found elsewhere in these Technical Specifications.

### **3.6 DUST CONTROL**

- A. General. Refer to Section 015000, Mobilization.

### **3.7 HAZARDOUS MATERIALS CONTROL AND SPILL PREVENTION PLAN**

- A. General. Refer to Section 015000, Mobilization.

### **3.8 CONSTRUCTION SITE HOUSEKEEPING**

- A. Remove rubbish, trash, and debris from site on a regular basis. Transport and dispose of all rubbish and debris in accordance with all local regulations. Maintain staging area in an orderly manner. Regularly clean mud and debris, resulting from work at the site, from roadways; per SWRCB General Permit governing pollution from construction activities, sweeping and washing construction site sediment tracked onto roadways into roadside ditches is a violation. Cleanup and dispose of all concrete debris and washings when concrete work is complete.

### **3.9 DISPOSITION OF TEMPORARY MEASURES**

- A. All temporary erosion and sediment control measures shall be disposed of within thirty (30) days after final site stabilization is achieved or after the temporary measures are no longer needed as determined by OWNER.
- B. Trapped sediment and other disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion.

#### **4. MEASUREMENT AND PAYMENT**

##### **4.1 MEASUREMENT**

- A. Temporary Erosion Control and BMPs will be measured on lump sum basis.

##### **4.2 PAYMENT**

- A. The lump sum contract price for Temporary Erosion Control and BMPs will include full compensation for the furnishing of all labor, materials, tools, equipment, administrative costs, and incidentals for temporary erosion control measures, devices, and BMPs, including but not limited to stockpile management, dust control, sweeping, installation maintenance and - where appropriate - removal of all such water pollution control measures that may be shown on the Project Drawings, and as specified in the Contract Documents, Project Permit(s), , Standard Specifications, these Technical Specifications, and as directed by the Engineer, and no additional compensation shall be allowed therefore.

- B. Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Temporary Erosion Control and BMPs	LS

**END OF SECTION**

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**FIBER ROLL**

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## **SECTION 015713.01**

### **FIBER ROLL**

#### **1. GENERAL**

##### **1.1 DESCRIPTION**

- A. Work under this Section includes furnishing all labor, materials, equipment, and incidentals to install, maintain, remove and dispose of Fiber Roll, as shown on the Drawings, as specified in the Erosion and Sediment Control Plan, as specified herein, or as otherwise directed by the Engineer.

##### **1.2 RELATED SECTIONS**

- A. Section 015000, Mobilization
- B. Section 015713, Temporary Erosion Control and BMPs
- C. Section 312316, Excavation
- D. Section 312319, Dewatering
- E. Section 329200, Seeding

##### **1.3 SUBMITTALS**

- A. Submit to the Engineer, for review, the following manufacturer's data and Certification's:
  - 1. A certificate stating the name of the Fiber Roll manufacturer, product name, style compositions of filaments or yarns and other pertinent information to fully describe the geotextile, along with the manufacturer's certification of compliance with the material specifications contained herein.

#### **2. PRODUCTS**

##### **2.1 MATERIALS**

- A. Straw Wattle. Straw Wattle shall be:
  - 1. A pre-manufactured roll made from 100% weed free rice straw and wrapped in a 100% biodegradable tubular 7 oz. Plain Burlap liner. The burlap is Medium Weight Natural Burlap with a 9 X 8 Warp & Fill, and a minimum weight of 7 oz. per square yard. Plastic netting will not be accepted as an alternate.
  - 2. 9-inch rolls shall have a minimum weight of approximately 1.6 pounds per foot.
  - 3. 12-inch rolls shall have a minimum weight of approximately 3.8 pounds per foot.
- B. Stakes. Wood stakes shall be a minimum of 1" x 2" x 24" with notches for twine. Wood stakes shall be untreated fir, redwood, cedar, or pine and cut from sound timber. They shall be straight and free of loose or unsound knots and other defects which would render them unfit for the purpose intended. Metal stakes shall not be used.
- C. Rope. Rope shall be natural and biodegradable, such as sisal or manila, with a minimum diameter of 1/4 inch.

### **3. EXECUTION**

#### **3.1 INSTALLATION**

- A. Fiber Roll shall be installed as follows:
  - 1. Rope and notched stakes shall be used to restrain the Fiber Rolls against the slope. Stakes shall be driven into the slope until the notch is even with the top of the Fiber Roll. Rope shall be knotted at each stake and laced between stakes. After installation of the rope, stakes shall be driven into the slope such that the rope will hold the Fiber Roll tightly to the slope. Furrows will not be required.
  - 2. Fiber Roll shall be placed 10 feet apart along the slope for slope inclination (horizontal:vertical) of 2:1 and steeper, 15 feet apart along the slope for slope inclination between 2:1 and 4:1, and 20 feet apart along the slope for slope inclination between 4:1.
  - 3. The bedding area for the Fiber Roll shall be cleared of obstructions including rocks, clods, and debris greater than one inch in diameter before installation.
  - 4. Fiber Roll shall be installed approximately parallel to the slope contour and the terminus of rows shall be angled up-slope at 45 degrees for a distance of three feet. Where fiber rolls meet, provide an overlap of two feet, with adjacent rolls tightly abutting each other.
  - 5. Fiber Roll shall be installed prior to seeding where used without slope protection fabric.
  - 6. Fiber roll shall be installed over fabric (after seeding) where slope protection fabric is specified.

#### **3.2 MAINTENANCE**

- A. The Contractor shall inspect all Fiber Roll immediately after each rainfall, and at least daily during prolonged rainfall. Any deficiencies shall be immediately corrected by the Contractor.
- B. The Contractor shall also make a daily review of the location of Fiber Roll in areas where construction activities have altered the natural contour and drainage runoff to ensure that the Fiber Rolls are properly located for effectiveness. Where deficiencies exist as determined by the Engineer, additional Fiber Rolls shall be installed as directed by the Engineer.
- C. Damaged or otherwise ineffective Fiber Roll shall be repaired or replaced promptly. Fiber Roll shall be maintained to disperse concentrated water runoff and to reduce runoff velocities. Split, torn, or unraveling rolls shall be repaired or replaced. Broken or split stakes shall be replaced. Sagging or slumping Fiber Roll shall be repaired with additional stakes or replaced. Locations where rills and other evidence of concentrated runoff have occurred beneath the rolls shall be corrected. Fiber Roll shall be repaired or replaced within 24 hours of identifying the deficiency.

#### **3.3 REMOVAL**

- A. Fiber Rolls shown on the Drawings shall remain in place after project completion, unless otherwise specified, and be allowed to naturally degrade.

### **4. MEASUREMENT AND PAYMENT**

#### **4.1 MEASUREMENT**

- A. Straw Roll will be measured by the linear foot of Straw Roll installed at the locations indicated on the Drawings, as specified, or as directed by the Engineer.

- B. Fiber Roll that the Contractor installs for the implementation of the ESCP, in addition to that shown on the Drawings, shall not be separately measured for payment.

#### **4.2 PAYMENT**

- A. Fiber Roll will be paid for at the contract price per linear foot, which price will be payment in full for furnishing all labor, materials, tools, equipment, and incidentals necessary to install, maintain throughout the construction, and, where specified, to remove Fiber Roll after site stabilization.
- B. Fiber Roll that the Contractor installs for the implementation of the ESCP, in addition to that shown on the Drawings, shall be paid for under Temporary Erosion Control and BMP's, Section 015713.
- C. Fiber Rolls required or used on a short term basis that are not permanently staked in place or are anticipated to be moved on a daily or routine basis (such as areas immediately adjacent to trench excavations, temporary stockpiles, active areas for soil processing/screening operations, spill containment devices, etc.) shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.
- D. Payment shall be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
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Straw Wattle	FT
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**END OF SECTION**

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## **SECTION 017123.16**

### **CONSTRUCTION SURVEYING**

#### **1. GENERAL**

##### **1.1 DESCRIPTION**

- A. The work required under this Section shall include, but is not limited to, all labor, tools, materials, equipment and incidentals required to perform construction surveying necessary to establish the lines and grades of the proposed work, as shown on the Drawings, as specified, or as directed by the Engineer.
- B. The Engineer of record will provide survey control points and specific reference stakes, as detailed below. The Contractor shall preserve and protect all project survey control, construction stakes and reference points shown on the Drawings and located outside the limits of disturbance. Monuments or control points disturbed by the Contractor shall be reestablished by the Contractor at their sole expense. The Contractor shall be responsible for procuring professional land surveying services as necessary to provide additional surveying or grade-setting required to construct this project.
- C. If the existing survey control network is disturbed, the Contractor's replacement of control points shall be performed by a California licensed Land Surveyor, or Civil Engineer authorized to practice land surveying as defined in the Professional Land Surveyors Act.
- D. The Contractor's surveyor will be provided with the northing, easting and elevation of the control points existing in the field, as shown on the Drawings. In addition, the Engineer of Record will also provide the Contractor's surveyor with the final linework file developed in AutoCAD Civil 3D. The Contractor's surveyor will be required to access AutoCAD in order to use the electronic files.
- E. The Contractor shall be solely responsible for the protection and maintenance of all existing and Contractor-established survey marks and monuments.
- F. The Engineer's provision of survey control and/or construction reference stakes does not relieve the Contractor of their sole responsibility to construct all work to the specified lines and grades.

##### **1.2 RELATED SECTIONS**

- A. Section 312316, Stripping and Excavation
- B. Section 312323, Engineered Fill

##### **1.3 SUBMITTALS**

- A. Submit to the Engineer for review, the following:
- B. The Contractor shall provide the name, license number, and documentation for the required minimum qualifications of the Land Surveyor to be employed by the Contractor for the Project, prior to any work being completed by the Contractor or Surveyor.

##### **1.4 QUALITY ASSURANCE**

- A. All Work must be performed to the satisfaction of the Engineer.

- B. The Engineer may, at their sole discretion, perform their own surveys for: verification of project control points, verification of lines and grades, and inspection of survey monument preservation. Contractor shall provide unrestricted access for the Engineer to spot-check the work. This does not relieve the Contractor of their responsibility to perform additional independent surveying, as need to complete the work.
- C. In the event that the construction staking reveals a design inconsistency or error, Contractor shall notify the Engineer immediately and shall not proceed with the work until directed by the Engineer.

## **2. PRODUCTS (NOT USED)**

## **3. EXECUTION**

- A. The Engineer will establish the following reference points for the work shown on the Drawings.
  - 1. Staking to identify Staging Area limits.
  - 2. Offset stakes for referencing the tops and toes of slopes.
  - 3. Stakes for referencing the log structure locations.
- B. These points will be set once.
- C. Staking diagrams will be provided to the Contractor (.pdf) showing the location and elevation of all reference monuments.
- D. From this information, the Contractor shall establish all additional detailed surveys and measurements and establish markings or monuments necessary for their construction of the work, as dimensioned on the Drawings.

## **4. MEASUREMENT AND PAYMENT**

### **4.1 MEASUREMENT**

- A. Construction Surveying will not be independently measured for payment.

### **4.2 PAYMENT**

- A. No separate payment will be made for the work covered under this section. Full compensation for all costs in connection with Construction Surveying shall be included in the contract price for related work.
- B. In the event that that Owner is required to replace control points disturbed by the Contractor in order to verify the accuracy of the Contractor's work, the cost of establishing and verifying control points disturbed by the Contractor will be borne by the Contractor. The cost of any such verification or replacement of bench marks and/or control survey points will be deducted from any monies due to the Contractor. The Contractor will not be allowed any adjustment in working days for such verification or replacement of survey control points.

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## **SECTION 311100 CLEARING AND GRUBBING**

### **1. GENERAL**

#### **1.1 DESCRIPTION**

- A. The work covered by this section consists of furnishing all labor, equipment, and materials necessary to perform the clearing and grubbing, the removal or disposal of all cleared and grubbed materials, and the filling of all grubbing holes, as specified, as shown on the Drawings, or as directed by the Engineer.

#### **1.2 RELATED SECTIONS**

- A. Section 015000, Mobilization
- B. Section 015626, Temporary Fence – Type ESA
- C. Section 015713, Temporary Erosion Control and BMPs
- D. Section 312316, Excavation
- E. Section 312323, Engineered Fill
- F. Section 354200, Log Structures

#### **1.3 REFERENCES**

- A. Oregon Standard Specifications for Construction, Oregon Department of Transportation (current edition).

### **2. PRODUCTS (NOT USED)**

### **3. EXECUTION**

#### **3.1 CLEARING**

- A. General. All work shall comply with Section 00320, Clearing and Grubbing of the Standard Specifications.
- B. All trees, stumps, down timber, snags, brush, vegetation, old piling, stone, concrete rubble, abandoned structures, and similar debris shall be cleared within the limits of the construction extents, unless otherwise shown on the Drawings or directed by the Engineer.
- C. In areas where grubbing is not required, the clearing operations shall consist of the complete removal of all obstructions above the ground surface.
- D. Trees. Where trees are approved by the Owners' representative for removal, trees shall be felled in such a manner as to avoid damage to trees left standing, to the existing structures and installations, as well as with due regard for the safety of employees and others. Stumps shall be removed to minimum depth of 4 feet, or to a point where remaining roots are less than 1.5 inches in diameter, whichever depth is greater. Trees located beyond the limits for clearing and grubbing that are not marked for removal, shall be protected from damage, as indicated on the Drawings and as specified.

- E. Vegetation. Woody vegetation from noninvasive species shall be salvaged and stockpiled for use in the log structures as directed by the Engineer. Vegetation to be removed shall consist of all blackberry brush and invasive woody vegetation, unless shown otherwise on the Drawings or directed by the Engineer.

### **3.2 GRUBBING**

- A. General. Grubbing shall consist of the removal of all stumps, roots, buried logs, old piling, old paving, concrete, abandoned utilities, timbers, fencing, and other objectionable matter encountered.
- B. Limits. Except as noted on the Drawings, the entire area within the limits of the footprint of proposed bank laybacks, floodplain benches, and floodplain alcove, shall be thoroughly grubbed.
- C. Filling of Holes. All holes caused by grubbing operations, except in borrow areas, shall be excavated with 3 to 1 (horizontal to vertical) side slopes in conformance with Section 312316, Excavation. The excavation shall then be backfilled with compacted embankment with native soil and compacted as directed by the Engineer.

### **3.3 DISPOSAL OF DEBRIS**

- A. Cleared and Grubbed Materials. Except as hereinafter specified or otherwise indicated on the Drawings, all logs, brush, strippings, concrete, asphalt, timbers, slash, and other non-organic debris which are the products of the clearing and grubbing operations shall be disposed of. Remove any or all of the products of clearing and grubbing operations from the site and dispose of the material at other locations or through other sources arranged for, by, and at the expense of the Contractor, in accordance with applicable laws and ordinances.
- B. Clean woody plant material products of the clearing and grubbing operations not designated for salvage may be chipped and disposed of on site at the location shown on the Drawings, or as specified by the Engineer, subject to approval of the Owner.

## **4. MEASUREMENT AND PAYMENT**

### **4.1 MEASUREMENT**

- A. Clearing and Grubbing will be measured as a lump sum pay item.

### **4.2 PAYMENT**

- A. Clearing and Grubbing will be paid for at the lump sum contract price, which price will be payment in full for furnishing all labor, materials, tools, equipment and incidentals, and doing all work necessary to complete the clearing and grubbing operation as specified, including disposal or salvage of materials, and restoration of ground surfaces.
- B. Removal and disposal of buried debris, not encountered during grubbing operations, will be paid for in accordance with Section 312316, Excavation.
- C. Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Clearing and Grubbing	LS

**END OF SECTION**

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**EXCAVATION**

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## **SECTION 312316 EXCAVATION**

### **1. GENERAL**

#### **1.1 DESCRIPTION**

- A. The work covered by this section consists of furnishing all labor, equipment, materials, and performing all operations necessary to complete Excavation, as specified, as shown on the Drawings, or as directed by the Engineer. Work includes, but is not limited to the following:
  - 1. Excavation for removal of unsuitable material.
  - 2. Control of groundwater during excavation.
  - 3. Bank and floodplain Excavation
  - 4. Construction Staking
  - 5. Other miscellaneous excavation incidental to the construction of the improvements.

#### **1.2 RELATED SECTIONS**

- A. Section 015000, Mobilization
- B. Section 015626, Temporary Fence – Type ESA
- C. Section 015713.01, Fiber Roll
- D. Section 017123.16, Construction Surveying
- E. Section 311100, Clearing and Grubbing
- F. Section 312323, Engineered Fill
- G. Section 329200, Seeding
- H. Section 354200, Log Structures

#### **1.3 REFERENCES**

- A. Oregon Standard Specifications for Construction, Oregon Department of Transportation (current edition).
- B. Surveys. Refer to Section 017123.16, Construction Surveying.

#### **1.4 QUALITY ASSURANCE**

- A. Comply with all applicable permits and regulations.
- B. Contractor shall provide necessary construction staking and references points, as required to meet the specified tolerances for the work.

### **2. PRODUCTS (NOT USED)**

### **3. EXECUTION**

#### **3.1 GENERAL**

- A. The Contractor shall protect existing utilities in performing any excavation work.



- B. The Contractor shall comply with all permit conditions in performing any excavation work.
- C. Contractor shall perform an independent earthwork estimate for the purpose of preparing bid prices for earthwork. Quantities indicated on the Drawings are approximate estimates provided only for permitting purposes, do not represent all efforts required to complete the work, and are not suitable for bidding purposes.
- D. The bid price shall include costs for any necessary export and proper disposal of excess or unsuitable earth materials off-site, at locations to be arranged and paid for by the Contractor.

### **3.2 EXCAVATION**

- A. General. Excavations shall extend into firm, undisturbed native soils. Excavation shall consist of removal of material for embankment foundation preparation, mass excavation and finish grading of the channel and slope improvements, and other miscellaneous excavations to the lines and grades shown on the Drawings, or as directed by the Engineer. If organic materials, yielding sub-grade (pumping) or other deleterious materials are encountered during foundation excavations, they shall be removed as directed by the Engineer.
- B. Control of Water. Water control shall be performed in accordance with project permit conditions, the approved Erosion and Sediment Control Plan, and these Specifications. When water is encountered, either ground water or surface runoff, the Contractor shall furnish, install, maintain, and operate all necessary machinery and equipment required to keep the excavation reasonably free from water, as approved by the Engineer, until the placement of concrete or backfill material has been completed, inspected, and approved, and all danger of flotation and other damage is removed. Water pumped from the excavation shall be disposed of in such manner as will not cause injury to public or private property, or constitute a nuisance or menace to the public, and the disposal method shall be subject to the approval of the Engineer. Water shall be controlled until work is complete.
- C. Excess Excavation. Care shall be exercised by the Contractor not to excavate below the grades shown on the Drawings, except as specified herein, and as directed by the Engineer. All excavations extending below the grades shown on the Drawings, which are not directed by the Engineer, shall be backfilled with compacted embankment at the Contractor's expense.
- D. Temporary Excavations. With exposure and drying, on-site soils may experience progressive sloughing if excavated near vertical and left un-shored during construction. Engineer suggests that the soils on-site should be considered Type C when applying OSHA regulations.
- E. Tolerances. The excavation tolerance shall typically be +0.1 feet to -0.2 feet from the grades shown on the Drawings, except within the low flow channel, where excavation tolerance shall be +0.1 feet to -0.1 feet from the elevations shown on the Drawings.

### **3.3 UNCLASSIFIED EXCAVATION**

- A. Unclassified Excavation. Unclassified excavation shall consist of the excavation and disposal of all material, regardless of its nature. Unclassified Excavation includes excavation required to reach finished grade. Over-excavation for the placement of materials (e.g., Log Structures) or the removal of unsuitables, as described below under Excavation of Unsuitables, is not included in Unclassified Excavation.

### **3.4 SOIL OFF-HAUL**

- A. All excess material excavated at the project site shall be off-hauled and disposed of at a facility pre-approved by the City in accordance with all applicable regulations. This includes material

generated to reach finished grade and excess material generated during any over-excavation required for project construction. Contractor shall make all arrangements and pay all fees associated with this work.

- B. Adequately cover haul trucks to protect against the generation of dust and spillage onto private or public roadways.

#### **4. MEASUREMENT AND PAYMENT**

##### **4.1 MEASUREMENT**

- A. Unclassified Excavation. Unclassified Excavation will be measured by the cubic yard of Unclassified Excavation, based on the Dimensions shown on the Drawings. This is a neat-line quantity and does not take into account the loose volume of the excavated material. Where the dimensions of any portion of the work are revised by the Engineer, or a portion of the work is eliminated, the change will be measured by the cubic yard.
- B. Soil Off-haul. Soil Off-haul will not be separately measured for payment.
- C. Other Miscellaneous Excavations. All other excavations will not be measured for payment.

##### **4.2 PAYMENT**

- A. Unclassified Excavation, measured as specified above, will be paid for at the contract unit price per cubic yard, which price will be payment in full for furnishing all labor, materials, tools, equipment and incidentals, and doing all work necessary to complete Unclassified Excavation, as specified, including mass excavation and finish grading of channel banks and floodplains, to the lines and grades shown on the Drawings.
- B. No separate payment will be made for soil off-haul. All costs in connection with this work will be considered incidental to the cost of construction of unclassified excavation.
- C.
- D. No separate payment will be made for other miscellaneous grading incidental to the work. All costs in connection with this work will be considered incidental to the cost of construction of associated improvement.
- E. Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Unclassified Excavation	CY (F)

**END OF SECTION**

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**SEEDING**

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## **SECTION 329200**

### **SEEDING**

#### **1. GENERAL**

##### **1.1 DESCRIPTION**

- A. Work covered under this section consists of furnishing all labor, tools, materials, equipment and incidentals required to perform Seeding, as specified, as shown on the Drawings, or as directed by the Engineer.

##### **1.2 RELATED SECTIONS**

- A. Section 015713.01, Fiber Roll
- B. Section 312316, Excavation

##### **1.3 SUBMITTALS**

- A. Submit to the Engineer for review:
  - 1. Product data sheet listing the species, ratios, and purity of the seed mixture.
  - 2. Product data sheets for fertilizer, fiber, straw mulch, hydromulch fiber, and tackifier.

##### **1.4 QUALITY ASSURANCE**

- A. All seed shall be labeled in accordance with State Standard Specifications, Section 01030.13(a). Seed treated with mercury compounds shall not be used.
- B. Fertilizer shall be delivered in containers labeled in accordance with applicable state regulations and bearing the warranty of the producer for the grade furnished.
- C. Seed which has become wet, moldy, or otherwise damaged in transit or in storage, will not be acceptable.

#### **2. PRODUCTS**

##### **2.1 MATERIALS**

- A. Quantities shown on the Drawings represent pure live seed (pls).
- B. Seed shall be mixed on-site in the presence of the Engineer. At no time shall the seed mix contain noxious weed seed. Seed shall be maintained in optimal health and be protected at all times from animal damage; vandalism; inclement weather conditions, including drought, wind, and frost; toxic water; sunlight; moisture; or contact with vehicles, equipment, and tools and any other conditions that would damage or reduce the viability of the seed.
- C. Seed Mix. The seed mix and application rates are as shown on the Drawings. No substitutions are allowed without written consent of the Engineer.
- D. Fertilizer. Fertilizer shall meet Section 01030.14.b.3 (Statewide, Near Water) of the Standard Specifications.
- E. Fiber. Fiber shall comply with State specification 01030.15 Erosion Control (Hydroseed), as modified below. Fiber shall be colored with a water-soluble, biodegradable, nontoxic green

coloring agent free from copper, mercury, and arsenic, to provide a visual gauge for metering of material over the ground surfaces. Fiber shall be produced from natural or recycled (pulp) fiber, such as wood chips or sawdust. Newsprint, chipboard, or corrugated cardboard shall NOT be allowed. Fiber shall be free of synthetic or plastic materials.

- F. Straw Mulch. Straw mulch for non-hydroseeding applications shall meet Section 01030.15.b of the Standard Specifications.
- G. Hydromulch Fiber. Fiber for hydroseeding applications shall meet Section 01030.15.a of the Standard Specifications.
- H. Water. Water shall be furnished by the Contractor and shall be free of chemicals detrimental to the seed mixture.
- I. Stabilizing Emulsion (Tackifier). Tackifier shall meet Section 01030.16 (dry or liquid) of the Standard Specifications.

### **3. EXECUTION**

#### **3.1 PREPARATION**

- A. General. Seed the areas disturbed by construction activities, as specified herein or as directed by the Engineer.
- B. Debris Removal. Prior to ground surface preparation operations remove and dispose of all wire, rubbish, stones, and other material which might hinder proper grading, and subsequent maintenance.
- C. Surface Preparation. Surfaces which are too hard or smooth to accept the seeding, as determined by the Engineer, shall be broken up to a minimum depth of 3 inches, by disking or other methods approved by the Engineer, until the condition of the soil is acceptable. When conditions are such, by reason of excessive moisture or other factors, that satisfactory results are not likely to be obtained, the work shall be stopped and shall be resumed only when directed. Slopes in excess of 25% shall be prepared by track-walking or equivalent method approved by the Engineer.

#### **3.2 APPLICATION OF SEED**

- A. Existing Features. During seeding operations, care shall be taken to avoid damaging existing facilities, vegetation to remain, or any other items on or around the planting areas. This includes cautiously moving hoses and not coating plants to remain with hydroseed slurry.
- B. Seeding Areas: Apply seed to areas indicated on the Drawings, or as directed by the Engineer.
- C. Time of Seeding: Perform all seeding after September 15th of the year construction begins. The seeding operation shall be halted when, in the opinion of the Engineer, conditions of high winds, excessive moisture or other factors are not conducive to satisfactory results. Upon written request of the Contractor, and upon written approval of the Engineer, seeding may be done during off seasons provided that:
  - 1. The resulting stand of grass shall be at least equal to the stand that might be expected from planting during the normal season; and
  - 2. The establishment period shall be lengthened, as required, to produce the above specified stand at no additional cost to the Owner.
  - 3. Perform seeding prior to placement of erosion control fabric, where erosion control fabric is specified.

- D. Method of Seeding: Hydro-seeding shall be performed in accordance with Standard Specification Section 01030.18(a).
- E. Broadcast Seeding. Broadcast seeding may be used in lieu of hydro-seeding or to reseed any previously hydro-seeded areas disturbed during planting operations. Seed shall be dry-applied in accordance with Standard Specification Section 01030.48 (b).
- F. Mulching. All areas receiving broadcast seeding treatment shall be covered with straw mulch and tackifier following seeding.

### **3.3 REPAIR**

- A. General. When any portion of the ground surface becomes gullied or otherwise damaged following seeding within the period of Contractor's responsibility, repair the affected portion to re-establish the condition and grade of the soil prior to planting and then reseed as specified for initial planting, all at no cost to the Owner.
- B. Reseeding. When it becomes evident that the seeding has been unsuccessful, the Engineer will require that these areas be reseeded with the same seed and quantity as specified for the initial seeding. Complete reseeding within fifteen (15) days following notification and these areas shall be maintained by watering, as specified above, until the successful grass is established. Prepare the area to be reseeded as directed by the Engineer, to receive the reseeding.

### **3.4 FIELD QUALITY CONTROL**

- A. During the course of work or upon completion of the project, a check of the quantities of materials will be made against the areas treated, and if the minimum rates of application have not been met, the Engineer will require the distribution of additional quantities of those materials to make up the minimum applications specified.

## **4. MEASUREMENT AND PAYMENT**

### **4.1 MEASUREMENT**

- A. Seeding will be measured on a per acre basis for each acre of seed furnished and installed by the Contractor and approved by the Engineer (as shown on the Drawings).
- B. Areas disturbed by the Contractor and requiring seeding outside the designated limits of disturbance shall not be measured for payment.

### **4.2 PAYMENT**

- A. Seeding will be paid for at the contract unit price for each acre seeded, which price will include furnishing all labor, materials, tools, equipment, and incidentals necessary to complete the Seeding as specified, as shown on the Drawings, or as directed by the Engineer.
- B. The cost of seeding areas outside the designated limits of disturbance shall be solely borne by the Contractor.
- C. Payment will be made under:

Pay Item

Seeding

Pay Unit

AC

**END OF SECTION**

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**LOG STRUCTURES**

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## **SECTION 354200 LOG STRUCTURES**

### **1. GENERAL**

#### **1.1 DESCRIPTION**

- A. Work within this section includes furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing the Log Structures, complete in place, including excavation, and backfilling, connection hardware, log and ballast boulder supply, preparation, and placement, and backfill of voids, as specified, as shown on the Drawings, or as otherwise directed by the Engineer.
- B. Log structures include all logs shown on the Drawings.

#### **1.2 RELATED SECTIONS**

- A. Section 311100, Clearing and Grubbing
- B. Section 312316, Excavation

#### **1.3 REFERENCES**

- A. American Society for Testing and Materials (ASTM):
  - 1. A29 – Standard Specification for General Requirements For Steel bars, Carbon and Alloy, Hot-Wrought
  - 2. A36 - Standard Specification For Carbon Structural Steel
  - 3. A153 – Standard Specification for Zinc Coating (Hot-Dip) On Iron and Steel Hardware
  - 4. A193 – Standard Specification for Alloy Steel and Stainless Steel Bolting for High Temperature or Pressure Service and Other Special Purpose Applications
  - 5. A194 – Standard Specification for Carbon Steel, Alloy Steel, and Stainless Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both
  - 6. A615 – Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
  - 7. B695 – Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel

#### **1.4 SUBMITTALS**

- A. Submit to the Engineer, for review and approval, the following, prior to delivering materials to the work site:
  - 1. Product data sheet for cable and connection hardware
  - 2. Photos of all logs. Each log shall be tagged with a number, referenced in the photos.

### **2. PRODUCTS**

#### **2.1 MATERIALS**

- A. Fasteners. Cable fasteners shall be forged and galvanized single-saddle wire rope clips, sized to match the cable diameter.
- B. Threaded Rod and Nuts. Threaded Rod and shall be composed of one of the following at the Contractor's option:



1. Grade 75 all-thread rebar conforming to ASTM A615, bar designation #8. Nuts shall be H1F heavy hex nuts conforming to ASTM 194 Grade 2H.
  2. B12 Coil Rod conforming to ASTM A29, diameter 1 inch. Nuts shall be B25 heavy coil nuts.
- C. Steel Plates. Steel plates shall conform to ASTM A36 and meet the dimensions shown on the Drawings.
- D. Logs.
1. Logs may be imported and shall meet the material specifications shown on the Drawings.
  2. All logs shall be inspected for approval by the Engineer, prior to installation.
  3. Refer to for the Drawings for trees available for salvage.
- E. Slash. Slash shall consist of logs, rootwads, and branches of native trees salvaged from the construction site during clearing and grubbing as directed by the engineer, as well as material imported by the Contractor as necessary to satisfy the volume requirements indicated on the Drawings. No invasive species or materials containing seeds of invasive species shall be used. Slash material volume shall be comprised of a minimum of 50 percent logs and rootwads with diameters larger than 6 inches in diameter, 40 percent branches between 1 and 6 inches and 10 percent small woody vegetation.

### **3. EXECUTION**

#### **3.1 GENERAL**

- A. Prior to the start of work, the Engineer shall designate representatives authorized to observe the Contractor's placement of Log Structures. Contractor shall notify the authorized representative 72 hours prior to placement of Log Structures. Construct all Log Structures in the presence of the authorized representative.
- B. Log structure designs are shown conceptually due to the inherent variability of material properties. The design requires that the Engineer will observe construction of the log structures to ensure the intent of the design is met. Observations must include log and boulder selection, placement, connections for ballasting, and placement of backfill. Any log structures constructed without the Engineer present may result in rejection of the work by the Engineer.
- C. The construction of Log Structures requires equipment which can place rock and logs in precise locations. An excavator of a suitable size and containing a thumb is suggested.
- D. Pile logs shall be driven into the ground with the narrower end of the log oriented downward to the depths shown in the drawings. Roughen Exposed pile log ends by splintering the ends.
- E. Log to Log connections. Each rebar connection shall be secured with two bolts, tightened to the manufacturer's recommended torque. Cut off excess rebar flush with surface of the log.
- F. Log Placement. Log placement locations shown on the Drawings are approximate. Exact locations shall be as approved by the Engineer, or his authorized representative.
- G. Place rootwads of Bank Log Structure at an elevation where the majority of the root mass is below ordinary low water, as approved by the Engineer.
- H. Slash. Slash material shall be incorporated into the voids of the log structure as the structure is built. Ensure the quantities of slash material are on-site before starting Log Structure construction.

#### **3.2 FIELD QUALITY CONTROL**

- A. Tolerances. Log and boulder placements shall be as approved by the Engineer.
-

- B. Logs. All logs shall be inspected for approval by the Engineer, prior to installation.

#### **4. MEASUREMENT AND PAYMENT**

##### **4.1 MEASUREMENT**

- A. Bank Log Structures will be measured by the number of Bank Log Structures installed, as shown on the Drawings, as specified, and as directed by the Engineer.
- B. Floodplain Log Structures will be measured by the number of Floodplain Log Structures installed, as shown on the Drawings, as specified, and as directed by the Engineer.

##### **4.2 PAYMENT**

- A. Log Structures will be paid for at the contract unit price for each Log Structure installed including all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing each Log Structures, complete in place, including excavation and backfill and connections, as shown on the Drawings, as specified herein, or as directed by the Engineer.
- B. Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Bank Log Structure	EA
Floodplain Log Structure	EA

**END OF SECTION**