

REQUEST FOR BIDS FOR WOODWARD 2X CULVERT REPLACEMENT & TRIBUTARY FISH PASSAGE IMPROVEMENT PROJECT



Requested by: Emily Kolkemo



390 N. Central Blvd
Coquille, OR 97423

Published October 30, 2025

Request for Bids for Woodward 2x Culvert Replacement & Tributary Fish Passage Improvement Project

Bidders shall submit their bid pursuant to the provisions of this solicitation as a single PDF document via email to:

Emily Kolkemo

ekolkemo@coquillewatershed.org

Subject line: Woodward 2x Culvert & Fish Passage Bid

MANDATORY PRE-BID SITE VISIT

November 20, 2025 at 12:00 PM at CoqWA

office: 390 N Central Blvd, Coquille, OR 97423

Please RSVP to the site visit no later than 4 PM on November 19, 2025.

SOLICITATION CLOSING

December 12, 2025 at 4:00 PM

(LATE BIDS WILL NOT BE ACCEPTED)

Bidders are solely responsible for ensuring that the Coquille Watershed Association (CoqWA) receives the proposal. Bidders shall familiarize themselves with this entire Bid Document.

This Bid document and engineering designs are available for request online at www.coquillewatershed.org/join-us/contracting-opportunities or by email (ekolkemo@coquillewatershed.org)

All questions and comments about this solicitation shall be directed IN WRITING to Emily Kolkemo, CoqWA Restoration Project Manager
Email to: ekolkemo@coquillewatershed.org

INVITATION TO BID

Notice is hereby given pursuant to this Request for Bids (“RFB”) that sealed bids (a “Bid”) are requested for the Woodward 2x Culvert Replacement & Tributary Fish Passage Improvement Project (“Project”). Funds are provided by the Bureau of Land Management and administered by the Oregon Watershed Enhancement Board to help restore fish passage within the Woodward Creek Basin.

Work is expected to start July 2026 through September 2026, with all instream work completed within the In-Water Work Period (IWWP) from July 1-September 15, 2026. Extensions to the IWWP are not guaranteed. The contract documents (including special provisions and specifications) are available online at www.coquillewatershed.org/join-us/contracting-opportunities or requested via email: ekolkemo@coquillewatershed.org. Those receiving this RFB who wish to submit a Bid (in each case, a “Bidder”) shall furnish labor, materials and equipment necessary for completion of work in accordance with the specifications provided herein.

Deadline, no later than **4:00 p.m., December 12, 2025**. Bids received after this date and time will not be considered. Bid shall be emailed to Emily Kolkemo, Restoration Project Manager at: ekolkemo@coquillewatershed.org.

Included in this Request for Bids (RFB) is:

Exhibit A: Bid Prospectus that includes project background, scope of work, requirements for Bidders, and proposal instructions, and required Bid Form.

Exhibit B: Project Maps

Exhibit C: Project Photos

Exhibit D: Project Specifications & Engineering Designs

Exhibit A: BID PROSPECTUS

LOCATION: Woodward Creek is located near Fairview, Oregon. The project is located on BLM managed land on Road 27-12-14.0. **See project maps in Exhibit B for locations.**

MANDATORY SITE TOUR: November 20, 2025 at 12:00 PM. RSVP by November 19, 2025. Tour will start at the Coquille Watershed Association office at 390 N. Central Blvd, Coquille OR.

BID DEADLINE: December 12, 2025 at 4 p.m.

ESTIMATED START DATE: July 1, 2026

PROJECT COMPLETE: September 30, 2026

PROJECT BACKGROUND

Woodward Creek is a major tributary to the North Fork Coquille River and has important spawning and rearing areas for coho and Chinook salmon, steelhead, cutthroat and Pacific lamprey. The project area is occupied and designated as critical habitat for the ESA listed Oregon Coast coho and salmon and contains 8.5 miles of coho habitat. The North Fork is designated as a Priority Watershed for the Oregon/Washington Bureau of Land Management and this project was selected as a priority in the Coquille Basin Coho Strategic Action Plan.

The Woodward Creek watershed is suffering from the legacy of historic land use practices, such as road building and logging the riparian areas. Previous projects within the sub-basin have included large wood structure placements in Woodward Creek, noxious weed removal and planting of trees in riparian areas, replacement of 3 culverts (Sites A/B/C), and a road realignment project that involved re-routing a road away from the creek, installation of bank protection structures, and upgrading a culvert on a tributary to Woodward Creek.

In an effort to continue improving the forest road network within the Woodward Creek drainage, CoqWA and BLM are proposing to replace two undersized culverts along the BLM section of road 27-12-14.0. The tributaries provide a high volume of cool water to Woodward Creek, even during summer low flow periods. Additionally, these tributaries are well-shaded with intact riparian zones. However, both of these culverts are undersized, not embedded properly, and are forming perches that juvenile salmonids and lamprey cannot access. The culvert at Site 1 is currently 4 foot in diameter and 40 feet long, and the culvert at Site 2 is currently 4 foot in diameter and 60 feet long.

The goal for this project is to replace Site 1 and Site 2 culverts on Road 27-12-14.0, both built at 1.5 times bankfull width and upsized to at least 8 foot in diameter. The culverts will improve 0.5 miles of in-stream habitat and secure aquatic organism passage to 1.1 miles of high-quality habitat on two tributaries to Woodward Creek.

Please see Exhibit C – Project Photos for depictions of site conditions.

SCOPE OF WORK:

The Proposal will require the contractor to perform construction necessary to replace two culverts, as supported by engineering designs and technical specifications from Waterways Consulting Inc. The contractor will work closely with the Coquille Watershed Association (CoqWA) Project Manager, BLM, and the contracted engineer to ensure construction actions adequately follow engineered designs/technical specifications and are compliant with federal and state permit requirements. This project is planned to be implemented July 1, 2026 and completed by September 30, 2026. Contractors are required to propose a work schedule that meets all of the project objectives and fits within this timeline. The following tasks will be met and included with cost estimates in the bidding:

Objective 1) Mobilization, temporary erosion control and BMPs, seeding, spreading weed-free straw, and demobilization at both Site 1 and 2 as necessary to complete project objectives and in accordance with project designs and technical specifications.

Objective 2) Site 1 culvert removal and upgraded culvert installation within the 2026 IWWP (July 1-September 15, 2026) at Road 27-12-14.0, as described in engineering designs and in consultation with the contracted onsite engineer. Site 1 culvert is currently 4 foot in diameter and 40 feet long. The new culvert at Site 1 will be a pipe arch culvert upsized to 10-foot 3-inch span and 6-foot 9-inch rise, and 42 feet long. The Contractor will be responsible for the purchase and delivery of materials for the replacement of the culvert. Work will include, but is not limited to: Project work area isolation, construction of diversion dam, dewatering, clearing and grubbing, excavation, demolition, installation of structural plate culvert, installation of rock slope protection materials, installation of streambed material, placement of road boulders, and installation of habitat logs.

Objective 3) Site 2 culvert removal and upgraded culvert installation within the 2026 IWWP (July 1-September 15, 2026) at Road 27-12-14.0, as described in engineering designs and in consultation with the contracted onsite engineer. Site 2 culvert is currently 4 foot in diameter and 60 feet long. The new culvert at Site 2 will be a pipe arch culvert upsized to 10-foot 3-inch span and 6-foot 9-inch rise, and 62 feet long. The Contractor will be responsible for the purchase and delivery of materials for the replacement of the culvert. Work will include, but is not limited to: Project work area isolation, construction of diversion dam, dewatering, clearing and grubbing, excavation, demolition, installation of structural plate

culvert, installation of rock slope protection materials, installation of streambed material, placement of road boulders, and installation of habitat logs.

Please see Exhibit D – Engineering Designs and Technical Specifications for more details

BUILD AMERICA BUY AMERICA ACT

On November 15, 2021, the Infrastructure Investment and Jobs Act (“IIJA”) was signed into law, Pub. L. No. 117-58, which includes the Build America, Buy America Act (“the Act”). Pub. L. No. 117-58, §§ 70901-52. The Act requires that, no later than May 14, 2022, the head of each covered Federal agency shall ensure that “none of the funds made available for a Federal financial assistance program for infrastructure, including each deficient program, may be obligated for a project unless all of the iron, steel, manufactured products, and construction materials used in the project are produced in the United States.” By May 14, 2022, agencies must ensure that all applicable programs comply with section 70914 of the Act, including by the incorporation of a Buy America preference in the terms and conditions of each award with an infrastructure project.

EQUIPMENT CHOICE, STAGING and CLEANING

Heavy equipment will be commensurate with the project and operated in a manner that minimizes adverse effects to the environment and cultural resources (e.g., minimally-sized, low pressure tires, minimal hard turn paths for tracked vehicles).

- A.** All equipment used for work will be cleaned for petroleum accumulations, dirt, plant material (to prevent the spread of noxious weeds), and leaks repaired prior to entering the project area. Such equipment includes large machinery, stationary power equipment (e.g., generators, canes), and gas powered equipment with tanks larger than five gallons.
- B.** Store and fuel equipment on existing gravel roads after daily use.
- C.** Inspect daily for fluid leaks before leaving the vehicle staging area for operation.
- D.** Thoroughly clean equipment before operation below ordinary high water or within 50 feet of any natural water body or areas that drain directly to streams or wetlands and as often as necessary during operation to remain grease free.

SITE ACCESS

Minimize the number of temporary access roads and travel paths to lessen soil disturbance and compaction and impacts to vegetation. Access sites must be de-compacted, seeded, and mulched before departure.

FIRE RESTRICTIONS

The Contractor shall know and adhere to all fire rules and restrictions that apply to the project area, during implementation of the project. Contractor shall provide adequate tools and equipment to meet fire restriction requirements. Contractor shall be in default of contract should project be delayed for lack of required fire equipment preventing work that could

have otherwise been completed.

SPILL PLAN

The Contractor shall have and be ready to deploy a spill kit in response to any leaks/spills of petroleum products or other contaminants. A spill plan will be provided, but spill kits must be provided by the Contractor. If equipment is found to be leaking during project work, all activity shall immediately cease until mechanical issues are addressed.

INADVERTENT DISCOVERY PLAN

An Inadvertent Discovery Plan (IDP) will be provided for directions in case of uncovering cultural resources during ground disturbing activities. Prior to commencing work, a meeting with the Project Manager must occur to overview the IDP protocols. The IDP will also be attached as an exhibit within the contract.

EXAMINATION OF SITE, BID DOCUMENTS, PERMITS, ETC.

Before submitting a Bid, each Bidder shall be responsible for: (i) becoming fully acquainted with the site and the conditions relating to the work, in order to understand fully the facilities, difficulties, and restrictions attending the execution of the Work; (ii) carefully examining each component of the Bid Documents and any other available supporting data, in order to become thoroughly familiar with all of the requirements; and (iii) obtaining for itself, at its own cost and expense, copies of all agency and association guidelines and standards cited in the proposed Contract and necessary to perform the Work. No failure or omission of any Bidder to receive or examine any such information or to visit the Site and become acquainted with the conditions existing at the Site shall in any way relieve such Bidder from obligations with respect to its Bid, any Contract entered into with such Bidder, or the Work, and the submission of a Bid shall be taken as *prima facie* evidence of compliance by the submitting Bidder with the requirements of this paragraph.

SELECTION AND EVALUATION CRITERIA

Bids will be evaluated by a Selection Committee that, after a review of written proposals, may choose to also conduct a personal interview. Selection Committee may include CoqWA Director/Executive Board President, CoqWA Restoration Program Coordinator, CoqWA Restoration Project Manager, and BLM Fish Biologist. Bid evaluation will be based on the ability of the Bidder to meet the specifications for the tasks described in this RFB in a timely fashion. Selection will also be based on the ability of the Bidder to work in a cooperative manner with CoqWA staff and project partners on the Project. CoqWA will generally not disclose the status of any award until the appropriate authority at CoqWA has approved the award of a Contract. Normally, the awarding of a Contract or Bid rejection will occur within 10 calendar days after Bid opening. If the selected Bidder and CoqWA agree, this deadline may be extended, but CoqWA reserves the right: (i) to award multiple Contracts for parts of the Work; (ii) to consider such criteria as it may deem appropriate with respect to the Project; (iii) to reject any or all Bids; and/or (iv) not to proceed with the

Work and/or the Project (or any part thereof); all in the exercise of its sole and absolute discretion. CoqWA will provide a written notice of its intent to award a Contract to the successful Bidder(s) (in each case, a “Notice of Intent to Award Contract”), and any submittals required to be submitted to CoqWA within a certain number of days after award is made will count from the day that the Notice of Intent to Award Contract is given. The actual award shall, however, be dependent on full execution of the Contract(s) and submission by the successful Bidder(s) of all other required documents.

EVIDENCE OF RESPONSIBILITY

Upon the request of CoqWA, a Bidder whose Bid is under consideration for the award of a Contract shall submit promptly to CoqWA satisfactory evidence showing the Bidder’s financial resources, construction experience, and organization available for the performance of the Work.

RIGHT TO AWARD OR REJECT

This RFB does not obligate CoqWA to award a contract, CoqWA reserves the right to reject any and all bids and to further amend or refine a proposal and negotiate a contract with one of the proposers. CoqWA reserves the right to offer a contract to other than the lowest cost bidder based on other evaluation criteria.

CONTRACT REQUIREMENTS

It is the desire of CoqWA to enter into a contract that includes all of the services necessary to achieve the goal of the project, whether or not those services are specifically outlined or described in this RFB. This project includes federal funds, therefore the selected firm must be able to comply with any specific federal provisions and regulations that may apply to such a federally funded contract and may be required to sign certain assurances related to applicable federal or state laws.

WAIVER OF INFORMALITIES

CoqWA reserves the right to waive minor informalities contained in Bids, when in the Association’s sole judgment; it is in the best interest of CoqWA to do so. CoqWA reserves the right to waive minor informalities in the Bids received. CoqWA may also reject any Bid not in compliance with all prescribed requirements, including the requirement to demonstrate the Bidder’s responsibility and may reject for good cause any or all Bids upon a finding by CoqWA that it is in the public interest to do so, in accordance with OAR 137-049-0440.

BID ERRORS AND WITHDRAW

A Bidder may withdraw its Bid at any time prior to the date and time that Bids are due, by means of written notice which is given to CoqWA before the date and time that Bids are due, at the address for submission of Bids which is given above. A Bidder may also modify and/or resubmit its Bid at any time prior to the date and time that Bids are due.

BIDDERS INTERESTED IN MORE THAN ONE BID

No person, firm, or corporation shall be allowed to make, file, or be interested in more than one Bid for the Work. However, a person, firm, or corporation which has submitted a sub-proposal to a Bidder, or which has quoted prices of materials to a Bidder, is not thereby disqualified from submitting a sub- proposal or quoting prices to other Bidders or making its own Bid.

COSTS INCURRED

CoqWA accepts no liability for any costs incurred by respondents in the preparation or presentation of Bids.

INQUIRES

Questions concerning this Request for Bids should be directed in writing to: Restoration Project Manager – Emily Kolkemo, ekolkemo@coquillewatershed.org

Each Bidder shall promptly notify CoqWA of any discovered conflicts, ambiguities, or discrepancies in or between, or omissions from, the Bid Documents. Bidders should note that questions received less than two calendar days prior to the deadline of the Bids may not be answered. A Proposal Review Rubric is available upon request. Any interpretation or correction of the Bid Documents will be made only by Addendum, and a copy of such Addendum will be sent directly to each Bidder. No oral interpretations of any provision in the Bid Documents will be made to any Bidder.

MILESTONES

Bid publishing date:	October 30, 2025
Mandatory pre-bid site visit:	November 20, 2025
All questions related to bid are due by email:	November 25, 2025
Bid due date:	December 12, 2025 4pm
Anticipated opening of Bids:	December 12, 2025
Contract award by:	December 30, 2025
Successful Bidder(s) to provide contract/all paperwork to CoqWA:	January 9, 2026
Site visit with selected contractor and technical advisory team:	TBD
Estimated Start date:	July 1, 2026
Completion date:	September 30, 2026

PROPOSAL INSTRUCTIONS: Bids must be received on or before 4 p.m., December 12, 2025: Bids shall be emailed to **Emily Kolkemo** at **ekolkemo@coquillewatershed.org**.

Proposals shall include, at a minimum, the following items:

- A. Completed Bid Form
- B. Please provide a work plan to accomplish the Project goals and objectives as described in the RFB. The work plan shall include the following sections:
 - a. A Summary of Work to Accomplish Objectives
 - b. Timeline
 - c. Equipment
 - d. Personnel to be assigned (where possible, individual staff members and titles should be provided), and costs, taking into account the proposed timeline for completion of the Work indicated in the RFB.
 - e. Insurance Certificate
 - f. Other Information
- C. A signed statement that you can and shall provide the Insurance requirement as listed.
- D. A written statement affirming your ability to undertake and complete specific phases of this work in a timely fashion from July 1, 2026 to September 15, 2026.

Bids must not contain any erasures, interlineations, or other corrections unless each such correction is suitably authenticated by affixing in the margin immediately opposite the correction the surname or surnames of the person or persons signing the Bid, in the named person's own handwriting. In order for a Bid to be considered responsive, it must contain all of the documents and information which are required by this RFB, with signatures as indicated, and it must: (i) cover the complete scope of work as defined in the RFB; (ii) not include any exclusions or qualifications and (iii) include additive, alternate, unit and lump sum costs as listed on the bid forms. Bid prices must (where applicable) be free on board at the site, with all transportation and handling charges paid by the Bidder.

BID FORM

Request for Bids for Woodward 2x Culvert Replacement & Tributary Fish Passage Improvement Project

Coquille Watershed Association
Attn: Emily Kolkemo
390 N. Central Blvd.,
Coquille OR 97423
ekolkemo@coquillewatershed.org

This Bid is being made to The Coquille Watershed Association, a State of Oregon non-profit corporation (“CoqWA” or “Owner”) in the form of a sealed Bid (the “Bid”) with respect to the project known as the “Woodward 2x Culvert Replacement & Tributary Fish Passage Improvement Project (the “Project”), located near Fairview, Oregon in Coos County (the “Site”). The undersigned (“Bidder”) is making this Bid pursuant to the terms of the Request for Bids for the Project, dated October 30, 2025 (the “RFB”), a copy of which was supplied to Bidder by or on behalf of CoqWA and has been reviewed in its entirety by Bidder. The RFB and all of the documentation required of a potential bidder on the Project under the terms of the RFB are sometimes hereinafter referred to collectively as the “Bid Documents”.

Name of Bidder: _____

Business License Number: _____ Federal Tax Id No: _____

Contact Person(s): _____

Place of Residence (if individual): _____

State of Incorporation/Formation (for entities): _____

Business Mailing Address: _____

Shipping Address (if different): _____

Telephone Number: _____ Fax Number: _____

Email: _____

Pursuant to and in compliance with the RFB, the undersigned Bidder, having become familiar with the conditions at the Site and otherwise affecting the performance of the Project; the cost of the work to be done in carrying out the Project (collectively, the “Work”); the terms of the Bid Documents; and the form of the Contract to be awarded to the successful bidder (the “Contract”); hereby proposes and agrees to perform the Work within the time stipulated in the Bid Documents and to provide and furnish any and all labor, materials, equipment, transportation, utilities, and services necessary to perform and complete the Work in a workmanlike manner and in strict conformity with the requirements contained in the Bid Documents, including any addenda referenced below, for the amount(s) and/or at the rates indicated below (collectively, the “Bid Price”).

By signing and submitting this Bid to CoqWA, Bidder hereby represents, warrants, acknowledges, and agrees to and with CoqWA, or certifies to CoqWA (as applicable), as follows:

1. Bid. Bidder hereby offers to carry out and complete the Work for the Bid Price, made up of the price(s) and/or rates, and according to the budget, which are more particularly described in Schedule 1 to this Bid, and Bidder has checked all of the figures contained in this Bid carefully and understands that CoqWA will not be responsible for any errors or omissions on the part of Bidder in making this Bid.
2. Quantities. Bidder understands that the quantities mentioned in the RFB are approximate only and are subject to increase or decrease, and hereby proposes to perform all quantities of work as either increased or decreased in accordance with the terms of the Contract.
3. Bid to Remain Open. This Bid, unless withdrawn prior to the scheduled closing time for receipt of Bids, or thereafter when permitted under the terms of the RFB, shall remain valid and will not be withdrawn by the undersigned Bidder for a period of thirty (30) days after the scheduled closing time for receipt of Bids.
4. Responses to CoqWA Concerns. Bidder hereby responds to CoqWA's concerns about the following issues as indicated below, with such responses being continued/contained on attached schedules to the extent indicated below in each case:

- (a) Minority- and Women- Owned Business Enterprises. Is the Bidder's firm at least 51% minority- or women-owned, controlled and operated: ____ Yes ____ No

If the answer is "yes", identify the % of minority- or women-ownership, control and operation:

5. License(s). By execution of this Bid, the undersigned Bidder declares that Bidder holds the following license(s) relevant to the Work, in accordance with the applicable licensing laws where the Project is to take place, as follows:

Classification: _____

License number: _____

Expiration date: _____

6. Interested Persons. The names of all persons interested in this Bid as principals are as follows:

If Bidder or another interested person is a corporation, state the legal name of the corporation, its state of incorporation, and the names of the president, secretary, treasurer, and manager thereof.

If Bidder or another interested person is a partnership or other form of legal entity, state the name and form of the entity, its state of formation, and the names of all the individual partners, members, joint venturers or others with an interest in the entity.

If Bidder or another interested person is an individual, the person's state of legal residence, and the first and last names in full, and give all fictitious names under which the individual does business.

7. Notices. Bidder understands that, except as noted below, notice of acceptance of this Bid, any requests for additional information, and any other notices to Bidder with respect to this Bid shall be given in writing and addressed to Bidder at the business address for Bidder which is set out above. Each such

notice or request shall be deemed given either upon actual delivery (or attempted delivery) to such address (whether personally or via courier), or three calendar days after being placed in the US mail, postage prepaid, addressed to Bidder at such address. However, Bidder understands that CoqWA may, if it chooses, elect to respond by email to questions from Bidder, at the email address provided in this Bid.

8. Attachments. Attached to these Bid cover pages and incorporated into this Bid by this reference are the following required items, in the forms required under the RFB:

- (a) **Schedule 1** – Bid Price sheet with the details of the Bid Price (an Excel spread sheet may be used instead of the form provided);
- (b) **Schedule 2** – List of references for similar projects completed;
- (c) **Schedule 3** – List of proposed subcontractors and suppliers;
- (d) **Schedule 4** – Insurance requirements

9. Requirements Upon Award. If this Bid is accepted by CoqWA and notice of such acceptance is timely delivered to the undersigned, then the undersigned shall, within ten (10) days after receipt of such notice, execute and deliver to CoqWA:

- (a) the Contract, in the form required under the RFB, as prepared by CoqWA;
- (b) the insurance certificates required under the RFB and the Contract; and
- (c) such other documentation as may be required under the Contract.

Thereafter, the undersigned will commence and complete the Work within the time required by the Contract.

10. Bidder's Acknowledgment, Certification, and Agreement as to its Bid. By submitting this Bid, Bidder shall be deemed to acknowledge, certify, and agree to and with CoqWA that Bidder:

- (a) has taken steps reasonably necessary to ascertain the nature of and location of the Work;
- (b) has investigated and satisfied itself as to the general and local conditions that can affect the Work or its cost, including but not limited to:
 - (1) conditions bearing upon acquisitions, transportation, disposal, handling, and storage of materials;
 - (2) the availability of labor, materials, water, electric power, and access via roads or waterway;
 - (3) uncertainties of weather, river stages, tides, or similar physical conditions at the Site;
 - (4) the conformation and condition of the ground and any shoreline or riparian area;
 - (5) the character of equipment and facilities needed preliminary to and during Work performance; and
 - (5) the Site's biological, chemical, and associated physical hazards;
- (c) has satisfied itself as to the character, quality, and quantity of surface and subsurface materials or obstacles to be encountered, insofar as this information is reasonably ascertainable from an inspection of the Site as well as from the Bid Documents and other information made a part of the RFB; and
- (d) has satisfied itself as to the adequacy of time allowed for the completion of the Work.

11. Addenda. Bidder has received, reviewed, and understands, the following Addenda to the original Bid Documents (list all Addendums associated with this Bid packet):

Addendum Number	Date of Addendum

In witness whereof, this Bid is being executed and delivered by Bidder as of the date(s) set forth below

If Bidder consists of or includes one or more corporations, partnerships, or other forms of legal entity, the full legal name of the entity shall be set forth in the signature block below, together with the signature(s) of the officers, partners, or other individuals authorized to sign contracts on behalf of and to bind the entity.

By: _____
(Signature)

Print Name: _____

Print Title: _____

Print Date: _____

If Bidder consists of or includes one or more individuals, the following form of signature block is to be used for each of such individuals:

Signature: _____

Print Name: _____

Print Date: _____

Schedule 1

Bid Price Sheet: Please provide cost estimates for each Bid item. A total cost estimate is required. If more line items are needed, please attach a budget with breakdowns for each cost.

Job No: 23-068

1/31/2025

ITEM NO.	SPECIFICATION	ITEM	ESTIMATED QUANTITY	UNIT	UNIT COST	TOTAL
1	015000	MOBILIZATION	1	LS		
2	015723	TEMPORARY EROSION CONTROL AND BMPS	1	LS		
3	329000	SEEDING	1	LS		
SITE 1						
4	024100	DEMOLITION	1	LS		
5	311100	CLEARING AND GRUBBING	1	LS		
6	312319	DEWATERING	1	LS		
7	312316	UNCLASSIFIED EXCAVATION	63	CY		
8	312316	SOIL OFF-HAUL	1	LS		
9	312323	EARTH FILL	1	LS		
10	312323	GENERAL STRUCTURAL FILL	234	CY		
11	321123	AGGREGATE BASE	18	CY		
12	354237	ROCK SLOPE PROTECTION	57	CY		
13	354237	ENGINEERED STREAMBED MATERIAL	147	CY		
14	354237	ROAD BOULDER	8	EA		
15	334000	STRUCTURAL PLATE CULVERT	42	LF		
16	354200	EMBEDDED LOG	4	EA		
17	354200	SURFACE LOG	8	EA		
18	015713.01	FIBER ROLL	313	LF		
SITE 2						
19	024100	DEMOLITION	1	LS		
20	311100	CLEARING AND GRUBBING	1	LS		
21	312319	DEWATERING	1	LS		
22	312316	UNCLASSIFIED EXCAVATION	206	CY		
23	312316	SOIL OFF-HAUL	1	LS		
24	312323	EARTH FILL	1	LS		
25	312323	GENERAL STRUCTURAL FILL	361	CY		
26	321123	AGGREGATE BASE	25	CY		
27	354237	ROCK SLOPE PROTECTION	25	CY		
28	354237	ENGINEERED STREAMBED MATERIAL	203	CY		
29	354237	ROAD BOULDER	8	EA		
30	334000	STRUCTURAL PLATE CULVERT	62	LF		
31	354200	EMBEDDED LOG	6	EA		
32	354200	SURFACE LOG	8	EA		
33	015713.01	FIBER ROLL	356	LF		
OPTIONAL BID ITEM:						
34	312316	EXCAVATION - UNSUITABLE MATERIALS	10	CY		
TOTAL						

NOTES:

- Quantities shown are approximate only; the Contractor shall be responsible for all work indicated on the Drawings and prescribed in the Specifications.
- In the event that the product of a unit price and an estimated quantity does not equal the extended amount stated, the unit price will govern and the correct product of the unit price and the estimated quantity shall be deemed to be the bid amount.
- Optional bid items are not shown on the Drawings, but may be required due to unforeseen circumstances at the discretion of the Engineer.

Schedule 2

Bidder's References for Similar Projects Completed

Please list references, including name, address, and telephone number of those who have personal knowledge of Bidder's abilities to undertake and complete projects of similar scope and complexity.

Project Name	Reference	Address	Telephone Number

References will be contacted. If possible, provide a brief description of each project.

Schedule 3

List of Proposed Subcontractors and Suppliers

Please list the name and the location of the place of business of each proposed subcontractor or supplier who will perform work or labor or render service or materials to the prime contractor as part of the Work. List only one subcontractor for each such portion as is defined by the prime contractor in this Bid. Bidder understands and agrees that, if its Bid is accepted, Bidder shall not: (i) substitute any subcontractor for one that was listed in its Bid; (b) permit any subcontract to be voluntarily assigned or transferred by the original subcontractor or allow it to be performed by anyone other than the original subcontractor listed here; or (c) subcontract any portion of the Work to any subcontractor except as listed here, except as authorized by CoqWA in writing.

Portion of Work	Name of Subcontractor	Address of Subcontractor

☐ Check this box if no subcontractors will be used.

Material Supplied	Name of Supplier	Address of Supplier

Schedule 4

Insurance and Security

*Contractor is responsible to comply with all federal, state, county and local laws, ordinances and regulations applicable to this contract. At the time or request for Bid the information listed below was known additional coverages may be required or change.

INSURANCE: The CoqWA shall have no obligation to CONTRACTOR until CONTRACTOR has fully complied with the following requirements. CONTRACTOR must carry insurance policies offering the following minimum coverage levels and provide Certificates of Coverage to the CoqWA and landowner(s) before work commences.

_____ General Liability

- \$1,000,000 Each Occurrence
- \$2,000,000 Annual Aggregate

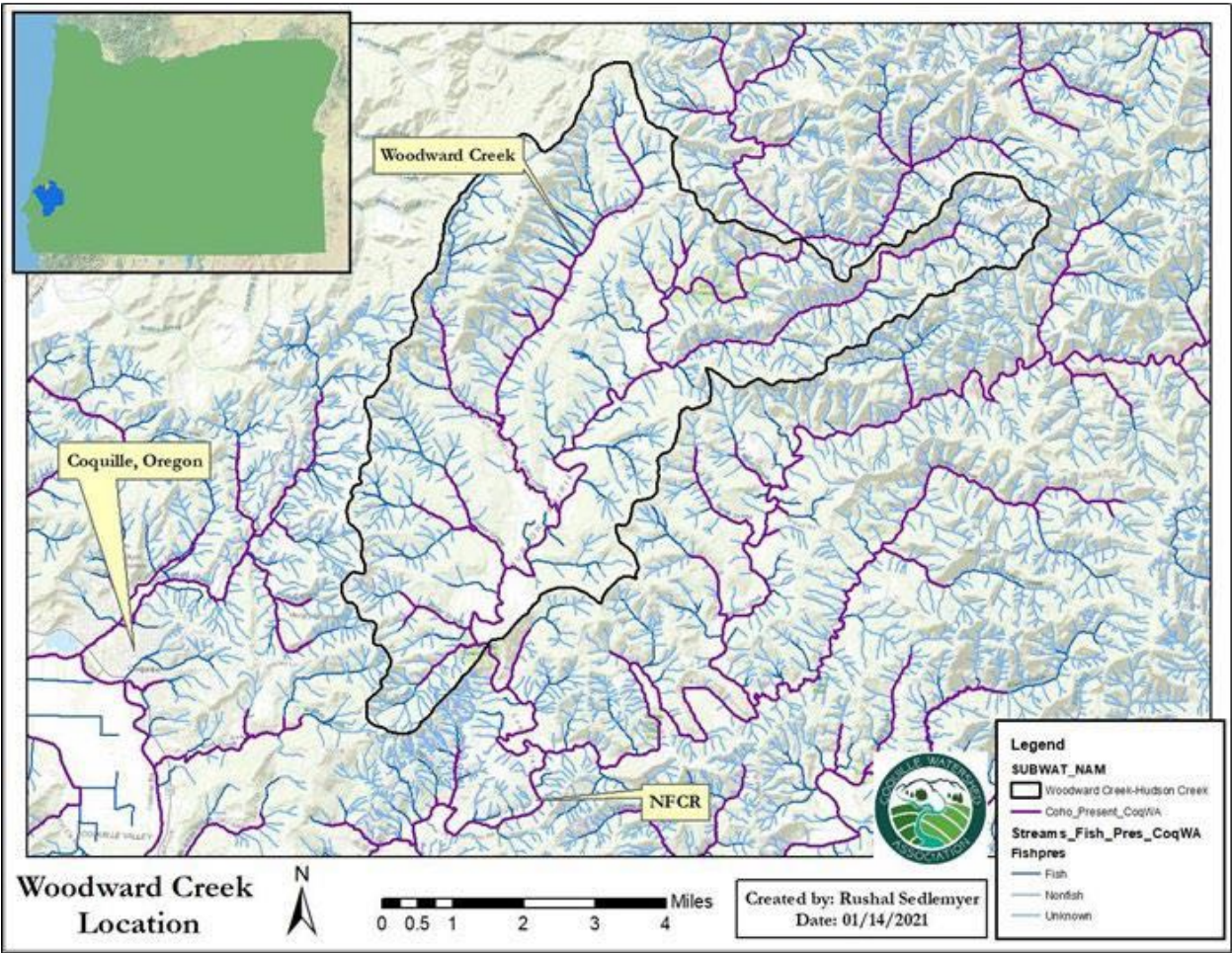
_____ Automobile –Liability covering owned, hired and non-owned vehicles.

- \$1,000,000 combined single limit

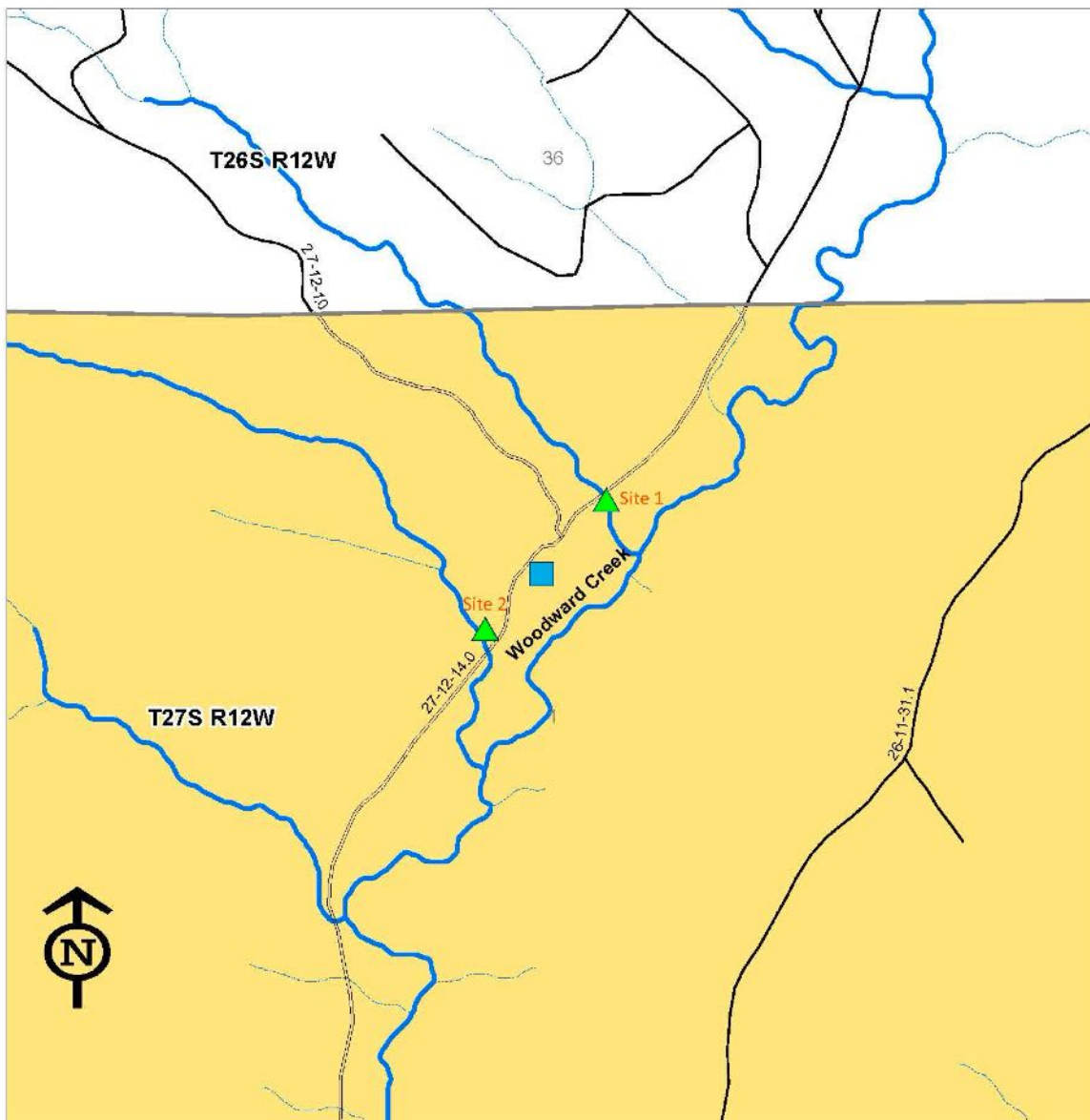
The above policies as shall reference as additional insured as follows and copies be provided to:

Coquille Watershed Association
390 N Central Blvd.
Coquille, OR 97423

Exhibit B: PROJECT MAPS



Woodward Creek Culverts



Map Features

- | | |
|---|--|
|  Waste Area |  Gravel Road |
|  Culvert Replacement |  Natural/Unk Surface Road |
|  Stream - fishbearing |  BLM Administered Land |
|  Stream - No Fish (or unknown) |  Private or Other Lands |

Date Saved: 3/30/2022

US DEPARTMENT OF THE INTERIOR Bureau of Land Management



Coos Bay District Office
Myrtlewood Resource Area
1300 Airport Lane
North Bend, OR 97459



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources and may be updated without notification.

Exhibit C: PROJECT PHOTOS

Woodward Creek 2X Culvert Replacement Project Pre-Project Photos 2024



Photopoint 1: Culvert Site 1 Outlet
43.265240 -124.06817



Photopoint 2: Culvert Site 1 Inlet
43.26556 -124.06833



Photopoint 3: Culvert Site 2 Inlet
43.264404 -124.06935



Photopoint 4: Culvert Site 2 Outlet
43.26406 -124.06951



Photopoint 5: Culvert Site 2 Outlet From Side
43.26411 -124.06958

Exhibit D: PROJECT SPECIFICATIONS & ENGINEERING DESIGNS

WOODWARD CREEK TRIBUTARY FISH PASSAGE
IMPROVEMENT PROJECT

100% DESIGN SUBMITTAL

WATERWAYS
CONSULTING INC.

509A SWIFT ST.
SANTA CRUZ, CA 95060
PH: (831) 421-9291 // FAX: (888) 819-6847
WWW.WATWAYS.COM

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NOT FOR CONSTRUCTION

PREPARED AT THE REQUEST OF:
COQUILLE WATERSHED
ASSOCIATION

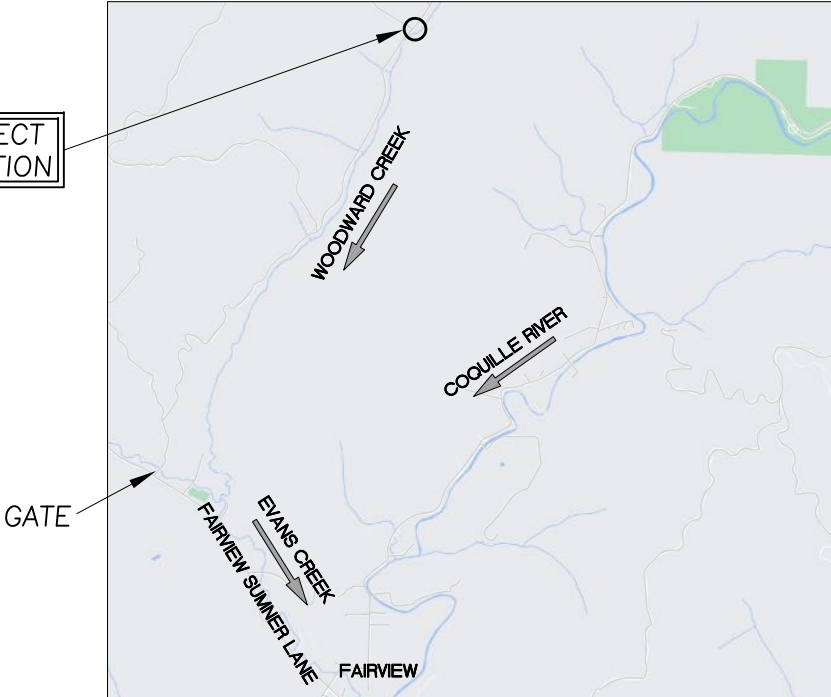
COVER

WOODWARD CREEK
TRIBUTARY PASSAGE
IMPROVEMENT PROJECT
100% DESIGN SUBMITTAL

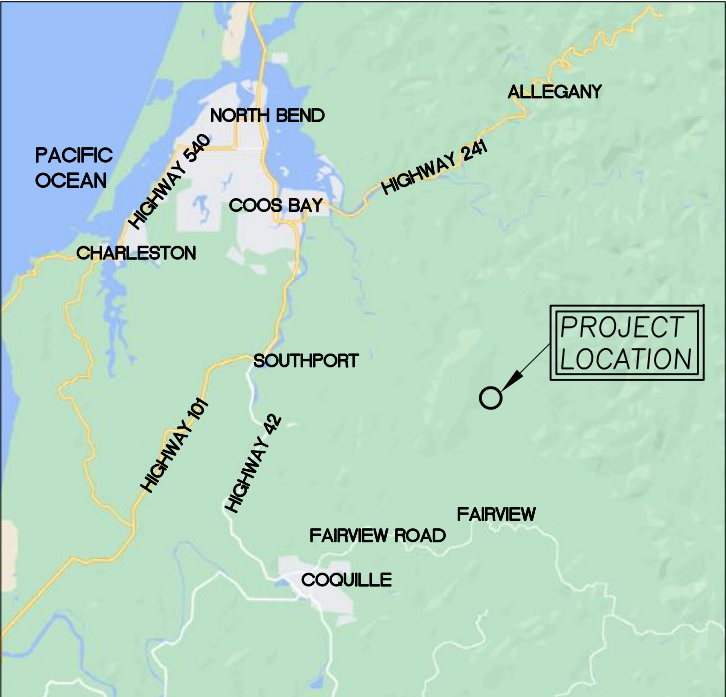
DESIGNED BY: A.S.
DRAWN BY: D.H.
CHECKED BY: J.H.
DATE: 1/31/2025
JOB NO.: 23-068

BAR IS ONE INCH ON
ORIGINAL DRAWING,
ADJUST SCALES FOR
REDUCED PLOTS
0 1"

C1
1
OF
13



VICINITY MAP
N.T.S. (GOOGLE)



REGIONAL MAP
N.T.S. (GOOGLE)

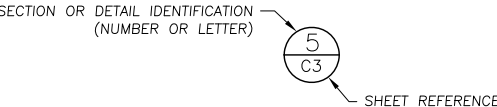
GENERAL NOTES

- TOPOGRAPHIC MAPPING WAS PERFORMED BY:
WATERWAYS CONSULTING, INC.
1020 SW TAYLOR STREET, SUITE 380
PORTLAND, OR 97205
SURVEY DATE: NOVEMBER 13-14, 2023.
- ELEVATION DATUM: AN ASSUMED ELEVATION OF 100.00' WAS ESTABLISHED AT SURVEY CONTROL POINT #2 (1/2"X24", IRON ROD) SHOWN ON SHEET C2.
- BASIS OF BEARINGS: AN ASSUMED PROJECT AZIMUTH BETWEEN POINTS #2 AND #1, AS SHOWN ON SHEET C2.
- CONTOUR INTERVAL IS ONE FOOT. ELEVATIONS AND DISTANCES SHOWN ARE IN DECIMAL FEET.
- THIS IS NOT A BOUNDARY SURVEY. PROPERTY LINES ARE NOT SHOWN HEREON.
- ALL CONSTRUCTION AND MATERIALS SHALL CONFORM TO THE OREGON DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, (HEREAFTER REFERRED TO AS "STANDARD SPECIFICATIONS").
- THESE DESIGNS ARE INCOMPLETE WITHOUT THE FINAL STAMPED TECHNICAL SPECIFICATIONS PREPARED BY WATERWAYS CONSULTING, INC. REFER TO TECHNICAL SPECIFICATIONS FOR DETAILS NOT SHOWN HEREON.

ABBREVIATIONS

ALUM	ALUMINUM	T	TREE
AVG.	AVERAGE	T.B.D.	TO BE DETERMINED
CC	CONCRETE	TYP	TYPICAL
CY	CUBIC YARDS	UNK	UNKNOWN
DIA.	DIAMETER	WSE	WATER SURFACE ELEVATION
E	EXISTING	YR	YEAR
EG	EXISTING GROUND		
ELEV.	ELEVATION	TREE SPECIES	
ESM	ENGINEERED STREAMBED MATERIAL	A	ALDER
DI	DRAINAGE INLET	DF	DOUGLAS FIR
FG	FINISHED GRADE		
FT	FEET		
INV	INVERT		
MIN	MINIMUM		
N	NEW		
NIC	NOT IN CONTRACT		
N.T.S.	NOT TO SCALE		
O.C.	ON CENTER		
RC	RELATIVE COMPACTION		
RSP	ROCK SLOPE PROTECTION		
SPK	SPIKE		
SQ.FT.	SQUARE FOOT		

SECTION AND DETAIL CONVENTION



PROJECT DESCRIPTION

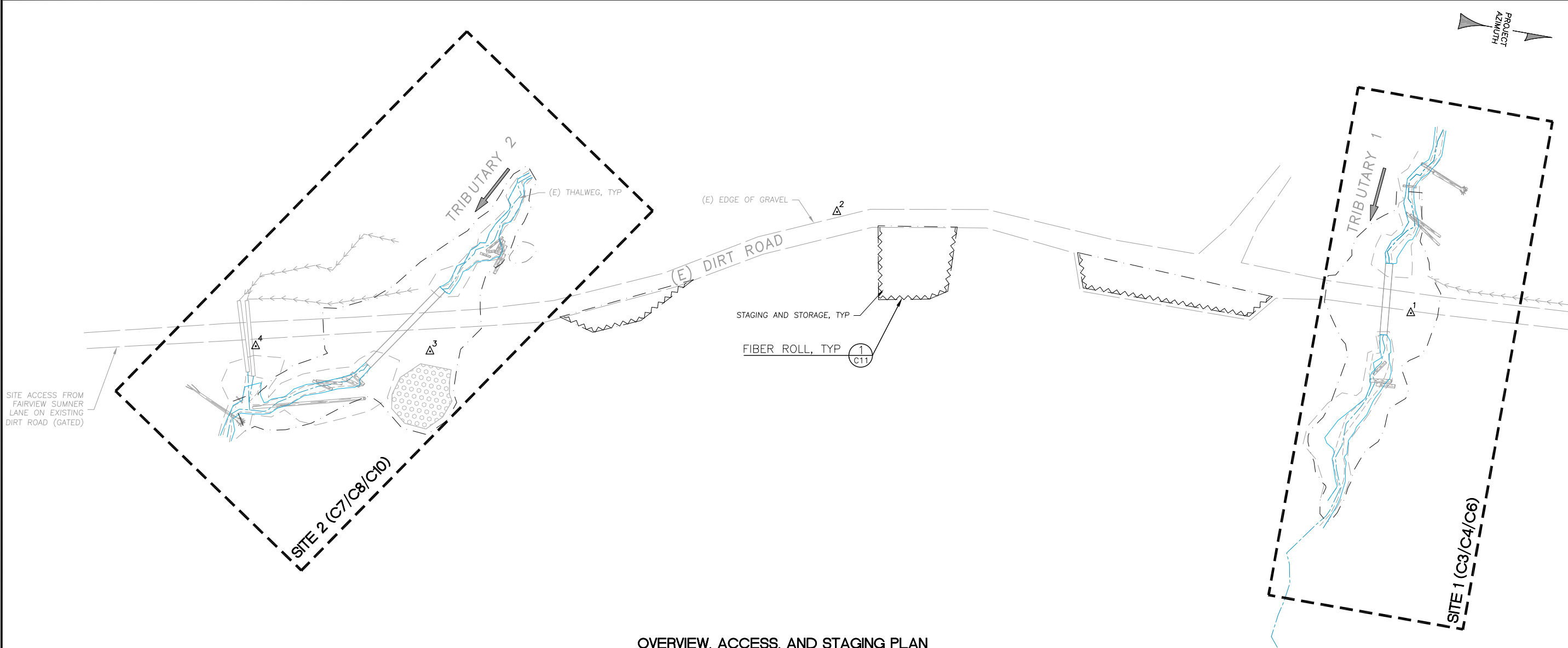
THESE DRAWINGS PROVIDE DESIGN DETAILS FOR THE REPLACEMENT OF TWO (2) CULVERTED CROSSINGS TO IMPROVE FISH PASSAGE CONDITIONS ALONG UNNAMED TRIBUTARIES OF WOODWARD CREEK IN COOS COUNTY, OREGON.

WORK SHALL CONSIST OF REMOVAL AND DISPOSAL OF THE EXISTING CULVERT CROSSINGS AND REPLACEMENT WITH STRUCTURAL PIPE ARCH CULVERTS WITH ENGINEERED STREAMBED MATERIAL.

SHEET INDEX

C1	COVER
C2	OVERVIEW, ACCESS, AND STAGING PLAN
C3	SITE 1 EXISTING CONDITIONS AND TREE REMOVAL PLAN
C4	SITE 1 PLAN AND PROFILE
C5	SITE 1 SECTIONS
C6	SITE 1 DIVERSION AND EROSION CONTROL PLAN
C7	SITE 2 EXISTING CONDITIONS AND TREE REMOVAL PLAN
C8	SITE 2 PLAN AND PROFILE
C9	SITE 2 SECTIONS
C10	SITE 2 DIVERSION AND EROSION CONTROL PLAN
C11	DIVERSION AND EROSION CONTROL DETAILS AND NOTES
C12	LOG STRUCTURE DETAILS AND NOTES
C13	NOTES

* CALL BEFORE YOU DIG *
CONTACT UNDERGROUND SERVICE ALERT (USA)
PRIOR TO ANY CONSTRUCTION WORK 1-800-332-2344



OVERVIEW, ACCESS, AND STAGING PLAN
SCALE: 1" = 30'

LEGEND

	EXISTING CONTOURS
	(E) FLOW LINE
	(E) EDGE OF GRAVEL ROAD
	(E) DITCH
	(E) ORDINARY HIGH WATER (MODELED)
	(E) ROCK STOCKPILE
	(E) CULVERT
	(E) LOG, DIMENSIONS AS SHOWN
	(E) FALLEN TREE
	(E) TREE
	LIMITS OF DISTURBANCE
	TEMPORARY FIBER ROLL
	STAGING AND STORAGE AREA
	SURVEY CONTROL POINT

ACCESS AND STAGING AREA NOTES

1. UTILIZE ONLY THE APPROVED ACCESS POINTS, AS SHOWN ON THE DRAWINGS.
2. CONTRACTOR MAY CHOOSE TO CLOSE THE EXISTING DIRT ROAD BETWEEN SITES 1 AND 2.
3. ACCESS PLAN IS SCHEMATIC. CONTRACTOR SHALL SUBMIT A SITE ACCESS PLAN AND TRAFFIC CONTROL PLAN FOR APPROVAL BY THE ENGINEER.
4. THE DOWNSLOPE PERIMETER OF STAGING OR STOCKPILE AREAS SHALL BE CONTAINED WITH FIBER ROLL OR SILT FENCE AS SHOWN ON THIS DRAWING.
5. ALL EQUIPMENT AND MATERIALS SHALL BE STORED, MAINTAINED AND REFUELED IN ONE OF THE DESIGNATED AREAS SHOWN ON THE DRAWINGS.

CONTROL POINTS

POINT	NORTHING	EASTING	ELEV.	DESC.
1	1332.63'	2000.00'	93.23'	REBAR
2	1000.00'	2000.00'	100.00'	REBAR
3	785.09'	2118.78'	91.73'	REBAR
4	686.58'	2133.11'	89.97'	REBAR

WATERWAYS CONSULTING INC.
509A SWIFT ST.
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WWW.WATWAYS.COM

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PREPARED AT THE REQUEST OF:

COQUILLE WATERSHED ASSOCIATION

OVERVIEW, ACCESS, AND STAGING PLAN

WOODWARD CREEK TRIBUTARY PASSAGE IMPROVEMENT PROJECT

100% DESIGN SUBMITTAL

DESIGNED BY: A.S.
DRAWN BY: D.H.
CHECKED BY: J.H.
DATE: 1/31/2025
JOB NO.: 23-068

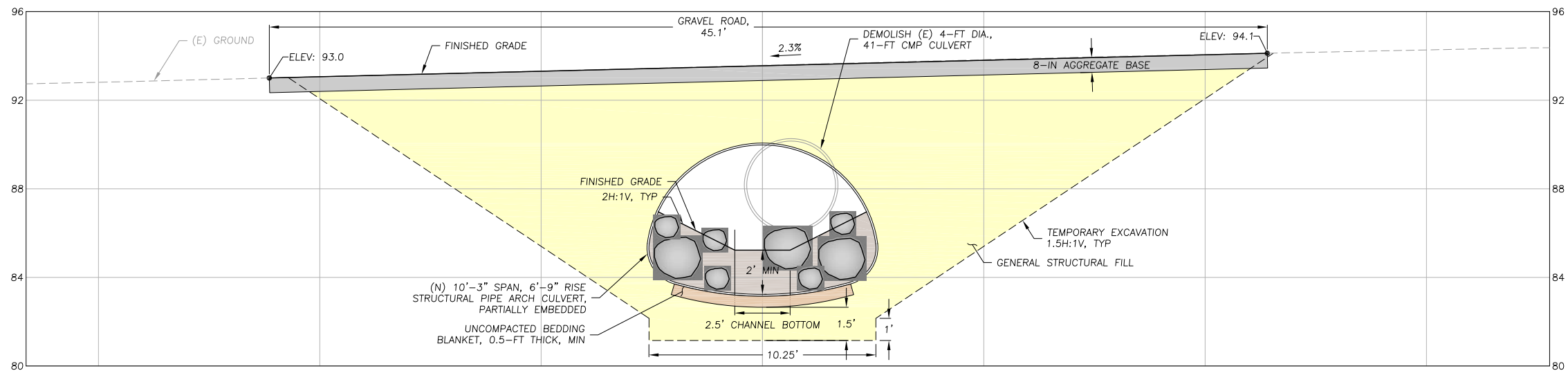
BAR IS ONE INCH ON ORIGINAL DRAWING, ADJUST SCALES FOR REDUCED PLOTS

0 1"

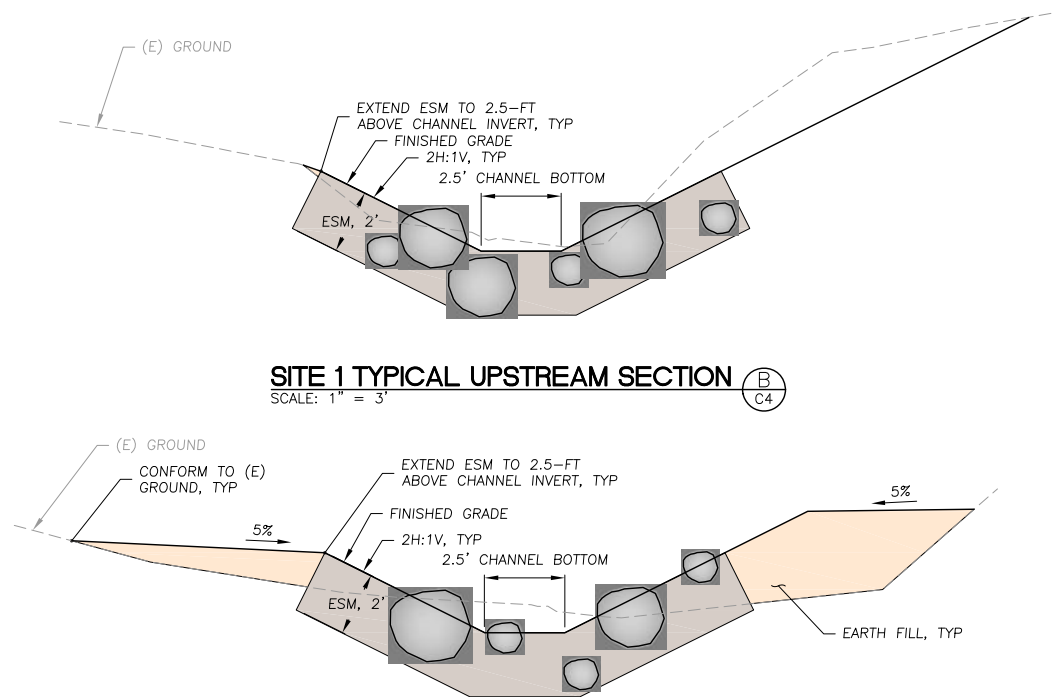
C2

2 OF 13

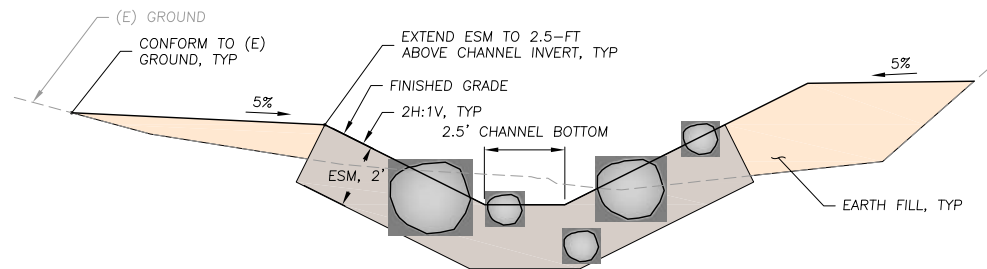
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SITE 1 CULVERT SECTION (A)
SCALE: 1" = 3'

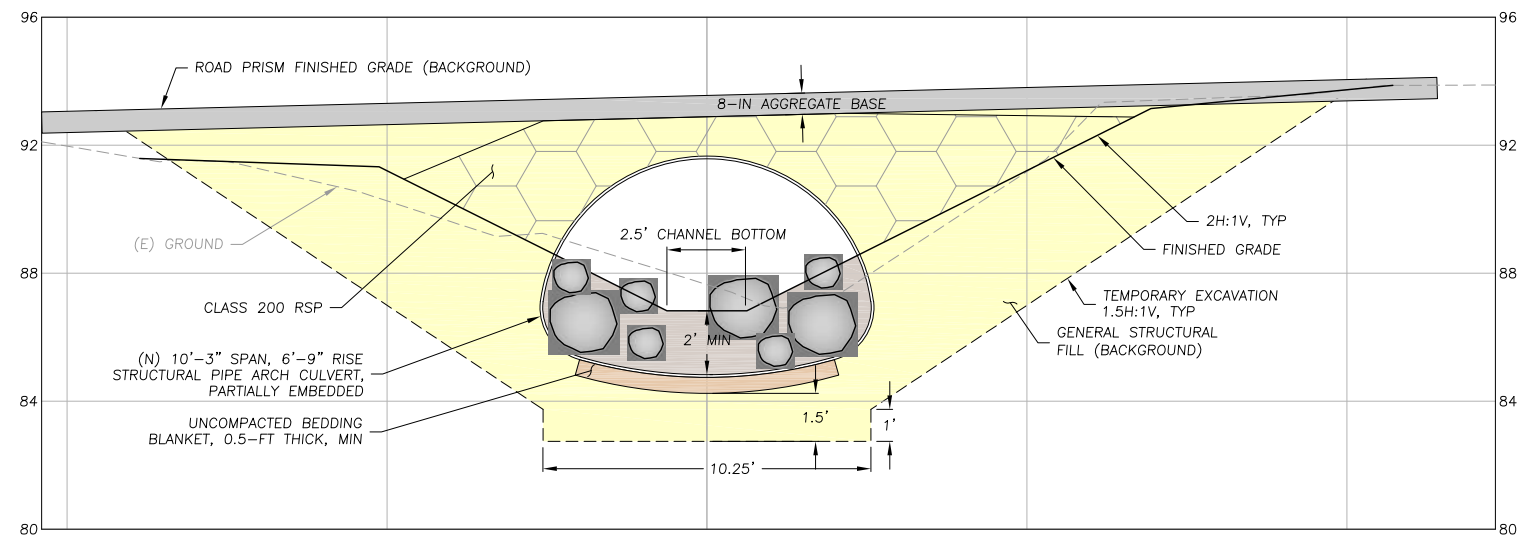


SITE 1 TYPICAL UPSTREAM SECTION (B)
SCALE: 1" = 3'



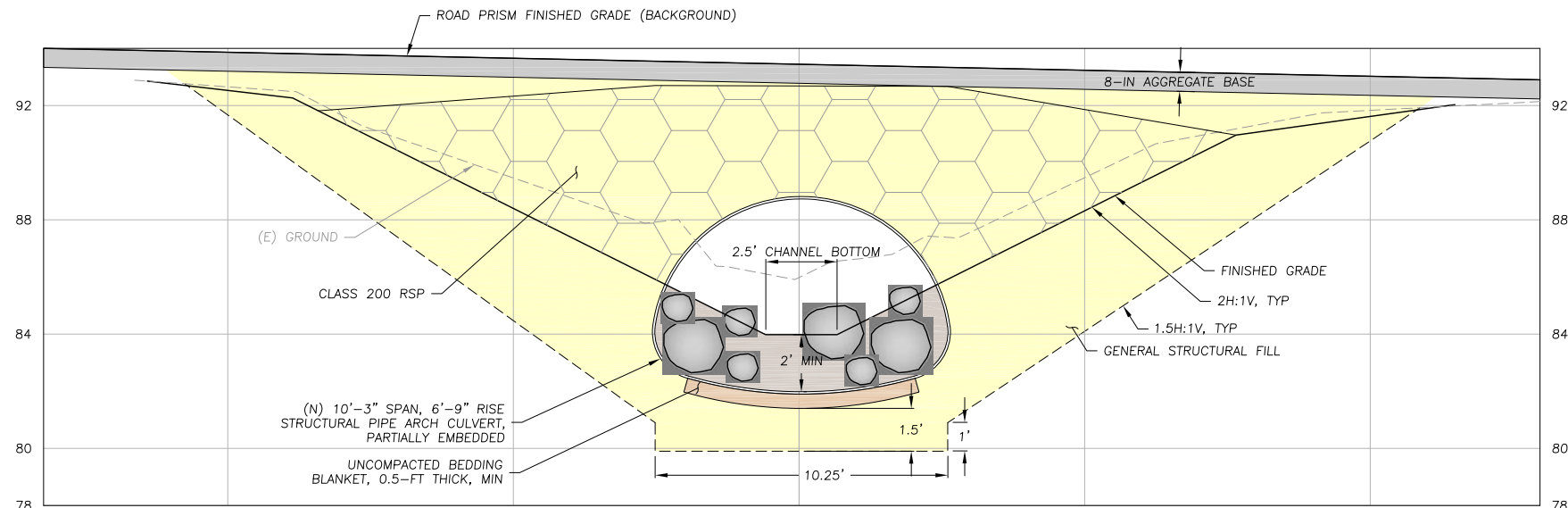
SITE 1 TYPICAL DOWNSTREAM SECTION (C)
SCALE: 1" = 3'

NOTE:
1. LOGS NOT SHOWN FOR GRAPHICAL CLARITY.



SITE 1 CULVERT INLET SECTION (D)
SCALE: 1" = 3'

NOTE:
1. EXISTING CULVERT NOT SHOWN FOR GRAPHICAL CLARITY.



SITE 1 CULVERT OUTLET SECTION (E)
SCALE: 1" = 3'

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PREPARED AT THE REQUEST OF:
COQUILLE WATERSHED ASSOCIATION

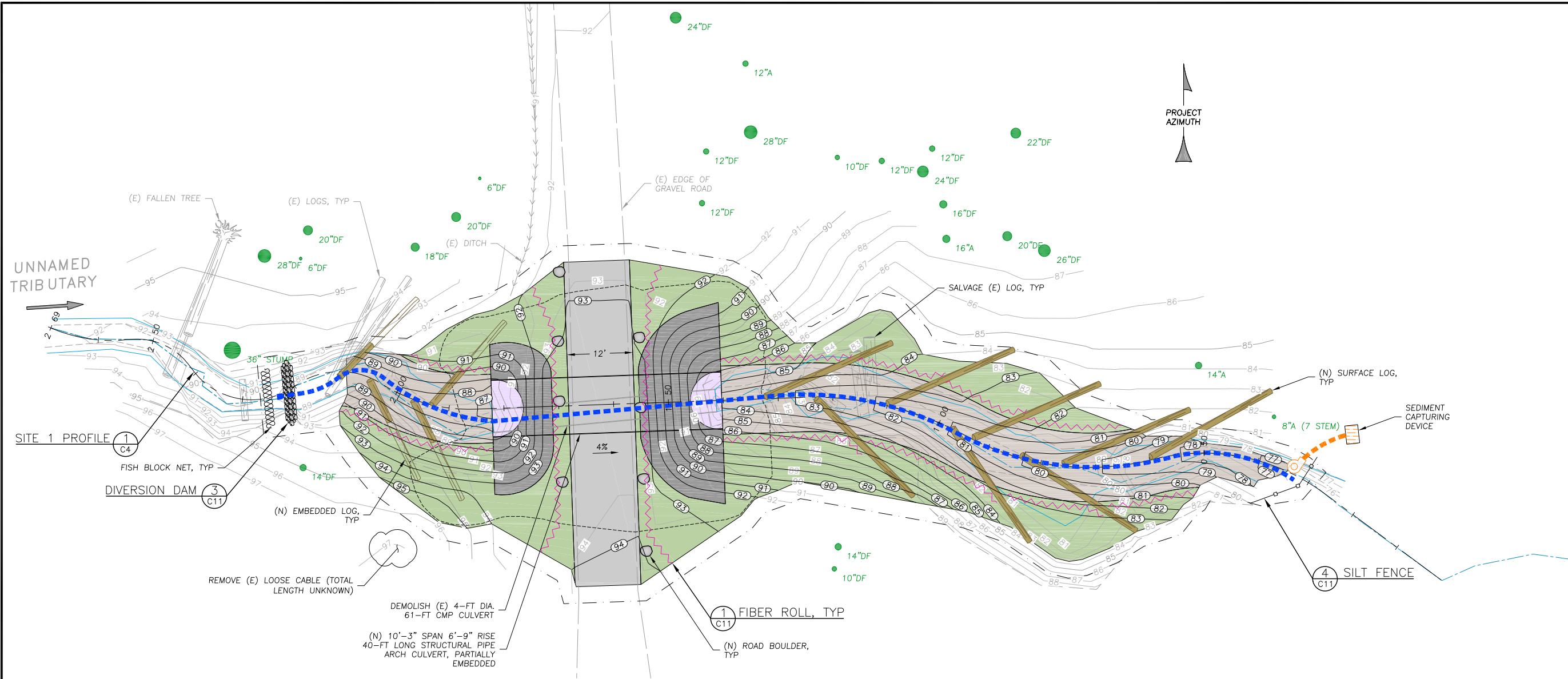
SITE 1 SECTIONS

**WOODWARD CREEK
TRIBUTARY PASSAGE
IMPROVEMENT PROJECT
100% DESIGN SUBMITTAL**

DESIGNED BY: A.S.
DRAWN BY: D.H.
CHECKED BY: J.H.
DATE: 1/31/2025
JOB NO.: 23-068

BAR IS ONE INCH ON
ORIGINAL DRAWING,
ADJUST SCALES FOR
REDUCED PLOTS
0 1"

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LEGEND

	EXISTING CONTOURS		(N) CULVERT (SIZE AS SHOWN ON PLANS)
	PROPOSED CONTOURS		(N) ROAD BOULDER
	(E) FLOW LINE		(N) SURFACE LOG
	(E) EDGE OF GRAVEL ROAD		(N) EMBEDDED LOG
	(E) DITCH		(N) SILT FENCE
	(E) CHANNEL TOE		(N) FISH BLOCK NET
	(E) CHANNEL TOP		(N) DIVERSION PIPE
	(E) ORDINARY HIGH WATER		(N) DEWATERING PIPE
	(E) CULVERT (SIZE AS SHOWN ON PLANS)		(N) PERMANENT FIBER ROLL
	(E) LOG, DIMENSIONS AS SHOWN		LIMITS OF DISTURBANCE
	(E) FALLEN TREE		(N) DIVERSION DAM
	(E) TREE		(N) PUMP
	(N) LIMITS OF CULVERT EXCAVATION		(N) SEDIMENT CAPTURING DEVICE
	(N) ESM		
	(N) SLOPE GRADING		
	(N) AGGREGATE BASE		
	(N) RSP (CLASS 200)		
	(N) PROJECTING PIPE		

SITE 1 DIVERSION AND EROSION CONTROL PLAN

SCALE: 1" = 10'

DEWATERING NOTES

1. INSTALL A CREEK DIVERSION AND DEWATERING MEASURES AS SHOWN ON THESE DRAWINGS IN CONFORMANCE WITH PERMIT CONDITIONS. SEE NOTES ON C11.
2. DISCHARGE TURBID WATER CAPTURED FROM SITE DEWATERING TO SEDIMENT CAPTURING DEVICE. CLEARWATER MAY BE DISCHARGED DIRECTLY DOWNSTREAM INTO THE UNNAMED TRIBUTARY.

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PREPARED AT THE REQUEST OF:
COQUILLE WATERSHED ASSOCIATION

SITE 1 DIVERSION AND EROSION CONTROL PLAN

WOODWARD CREEK TRIBUTARY PASSAGE IMPROVEMENT PROJECT
100% DESIGN SUBMITTAL

DESIGNED BY: A.S.
DRAWN BY: D.H.
CHECKED BY: J.H.
DATE: 1/31/2025
JOB NO.: 23-068

BAR IS ONE INCH ON ORIGINAL DRAWING, ADJUST SCALES FOR REDUCED PLOTS
0 1"

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LEGEND

	EXISTING CONTOURS
	(E) FLOW LINE
	(E) EDGE OF GRAVEL ROAD
	(E) DITCH
	(E) TOP OF DEPRESSION
	(E) ORDINARY HIGH WATER (MODELED)
	(E) ROCK STOCKPILE
	(E) CULVERT
	(E) LOG, DIMENSIONS AS SHOWN
	(E) FALLEN TREE
	(E) TREE
	(E) TREE REMOVAL

SITE 2 TREE REMOVAL

NUMBER	DBH (INCHES)	SPECIES
1	6	ALDER (DEAD)
1	8	ALDER (DEAD)
1	12	ALDER
4	14	ALDER
2	18	ALDER
1	22	ALDER

SITE 2 EXISTING CONDITIONS AND TREE REMOVAL PLAN

SCALE: 1" = 10'

UNNAMED
TRIBUTARY

(E) TOP OF DEPRESSION

(E) LOG, TYP

(E) EDGE OF GRAVEL ROAD

(E) 4-FT DIA. 61-FT ALUM.
CMP CULVERT AT 42.5° SKEW
INV. ELEV (IN): 86.52 (NORTHWEST)
INV. ELEV (OUT): 85.44 (SOUTHEAST)

(E) DITCH, TYP

(E) DOWNED ALDER

(E) 6-IN DIA. HDPE
DIRECTION, LENGTH, AND
SLOPE UNKNOWN
INV. ELEV (OUT): 76.97 (NE)

(E) 2-FT DIA.
41-FT HDPE
INV. ELEV (IN): 85.73 (W)
INV. ELEV (OUT): 82.23 (E)

(E) 2-FT DIA.
43-FT HDPE
INV. ELEV (IN): 85.85 (WEST)
INV. ELEV (OUT): 81.72 (EAST)

PROJECT
AZIMUTH



509A SWIFT ST.
SANTA CRUZ, CA 95060
PH: (831) 421-9291 // FAX: (888) 819-6847
WWW.WATWAYS.COM

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PREPARED AT THE REQUEST OF:
COQUILLE WATERSHED
ASSOCIATION

SITE 2 EXISTING
CONDITIONS
AND TREE
REMOVAL PLAN

WOODWARD CREEK
TRIBUTARY PASSAGE
IMPROVEMENT PROJECT
100% DESIGN SUBMITTAL

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DRAWN BY: D.H.
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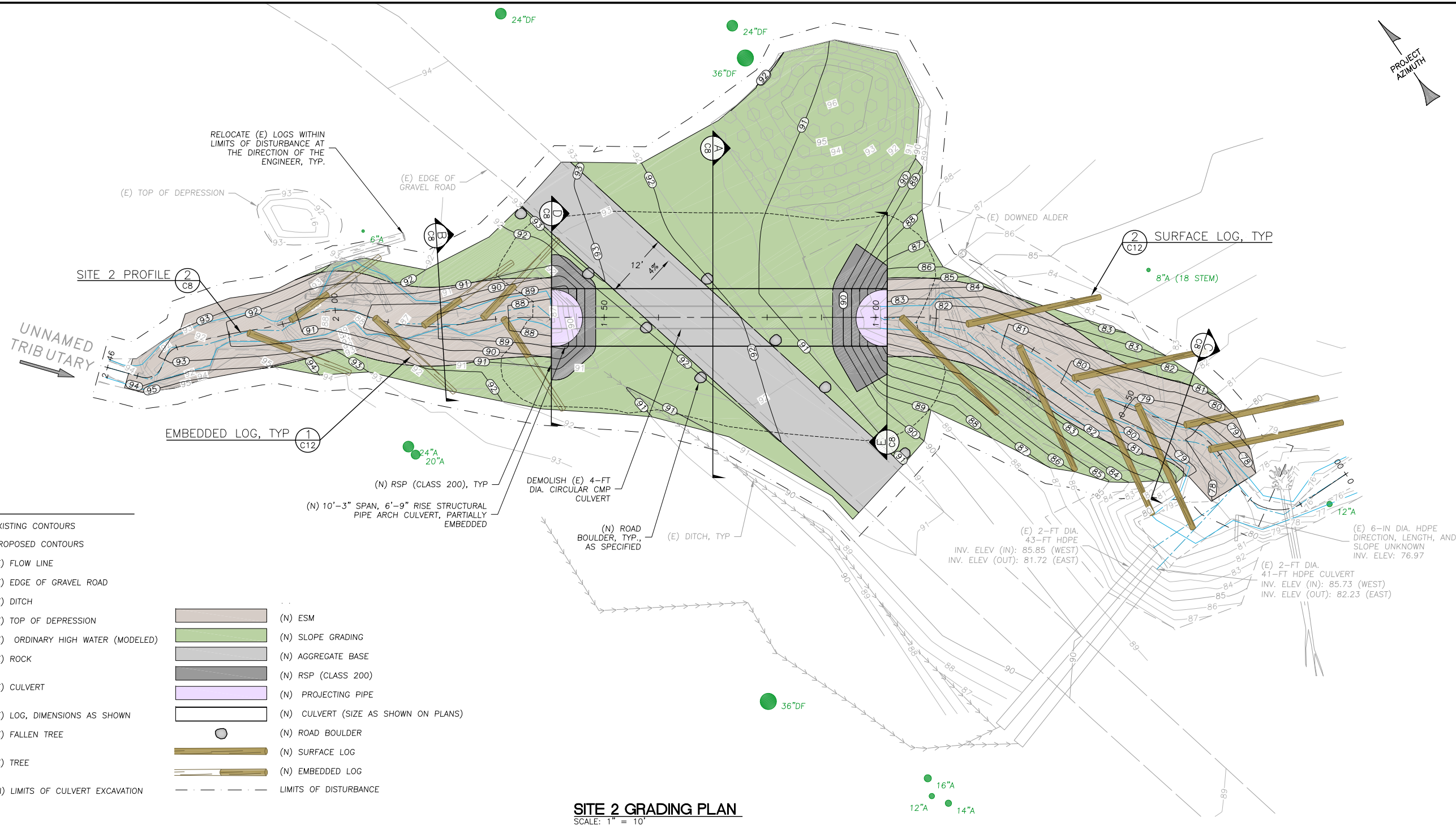
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7
OF
13

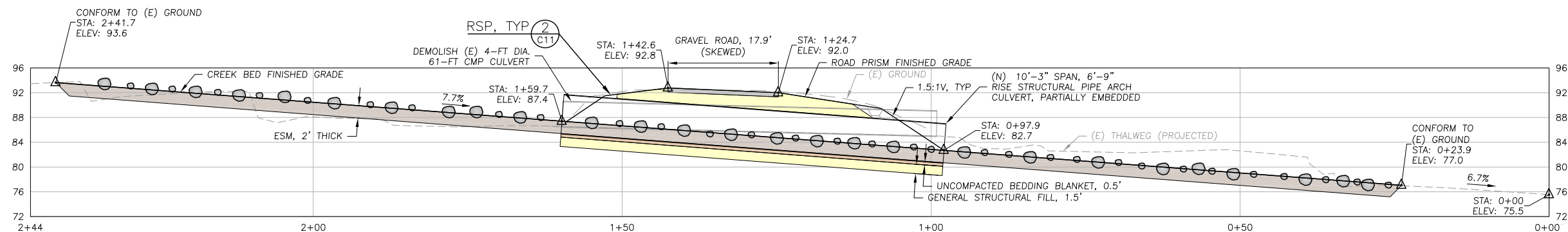
LEGEND

	EXISTING CONTOURS
	PROPOSED CONTOURS
	(E) FLOW LINE
	(E) EDGE OF GRAVEL ROAD
	(E) DITCH
	(E) TOP OF DEPRESSION
	(E) ORDINARY HIGH WATER (MODELED)
	(E) ROCK
	(E) CULVERT
	(E) LOG, DIMENSIONS AS SHOWN
	(E) FALLEN TREE
	(E) TREE
	(N) LIMITS OF CULVERT EXCAVATION

	(N) ESM
	(N) SLOPE GRADING
	(N) AGGREGATE BASE
	(N) RSP (CLASS 200)
	(N) PROJECTING PIPE
	(N) CULVERT (SIZE AS SHOWN ON PLANS)
	(N) ROAD BOULDER
	(N) SURFACE LOG
	(N) EMBEDDED LOG
	LIMITS OF DISTURBANCE



SITE 2 GRADING PLAN
SCALE: 1" = 10'



SITE 2 PROFILE
SCALE: 1" = 10'

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COQUILLE WATERSHED ASSOCIATION

SITE 2 PLAN AND PROFILE

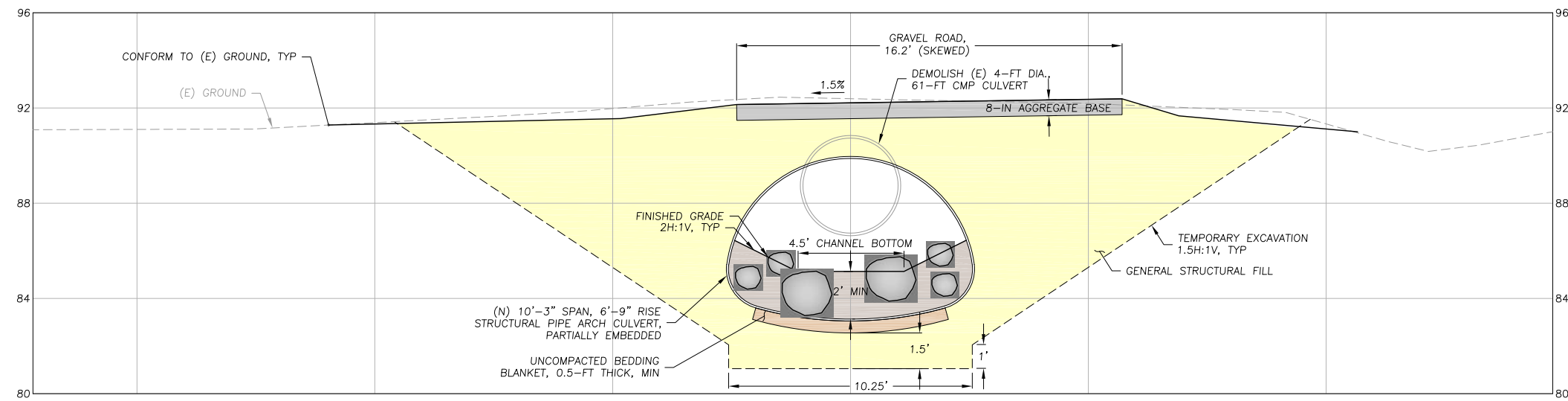
WOODWARD CREEK TRIBUTARY PASSAGE IMPROVEMENT PROJECT
100% DESIGN SUBMITTAL

DESIGNED BY: A.S.
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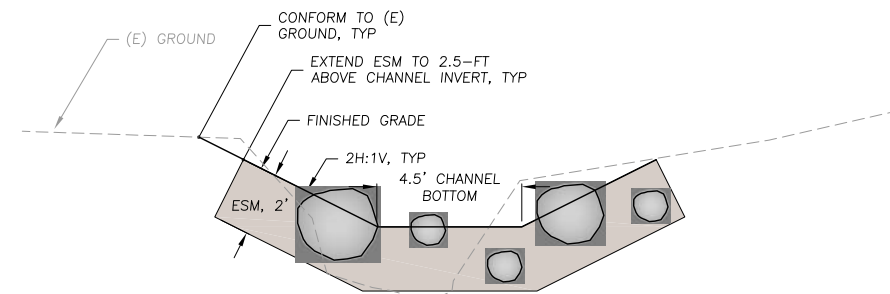
BAR IS ONE INCH ON ORIGINAL DRAWING, ADJUST SCALES FOR REDUCED PLOTS
0 1"

C8

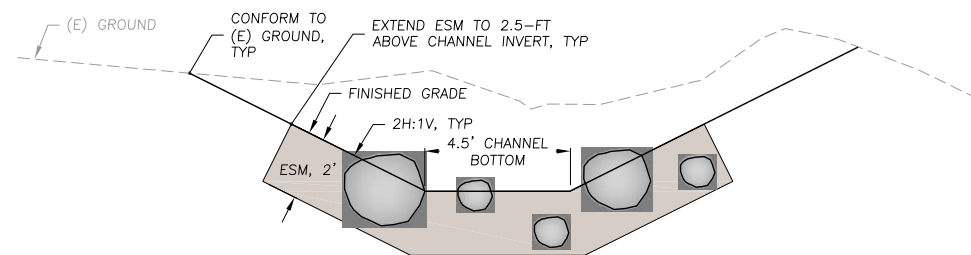
8 OF 13



SITE 2 TYPICAL CULVERT SECTION (A)
SCALE: 1" = 3' (C8)

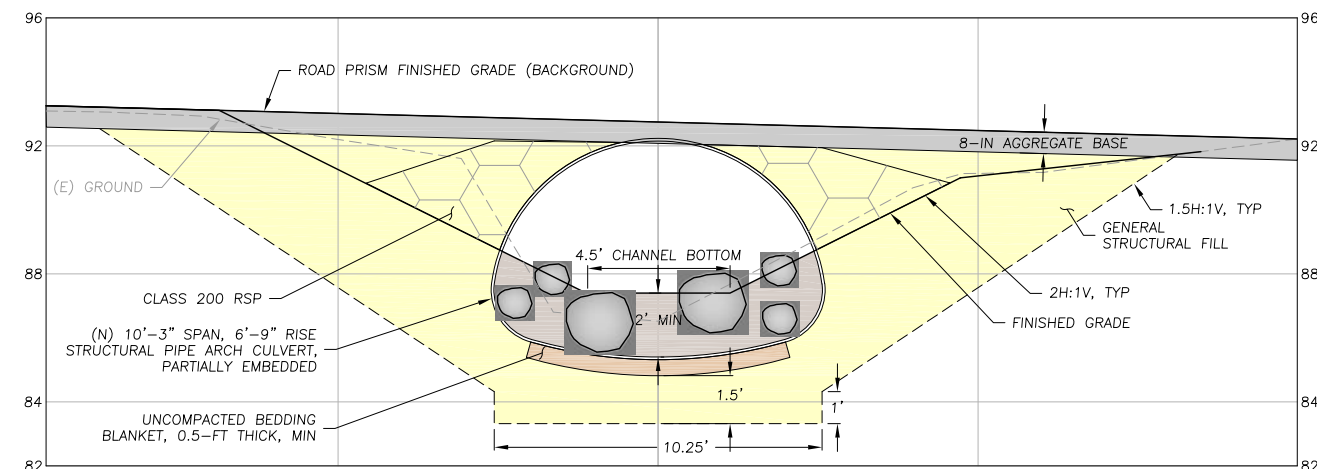


SITE 2 TYPICAL UPSTREAM SECTION B
C8
SCALE: 1" = 3'



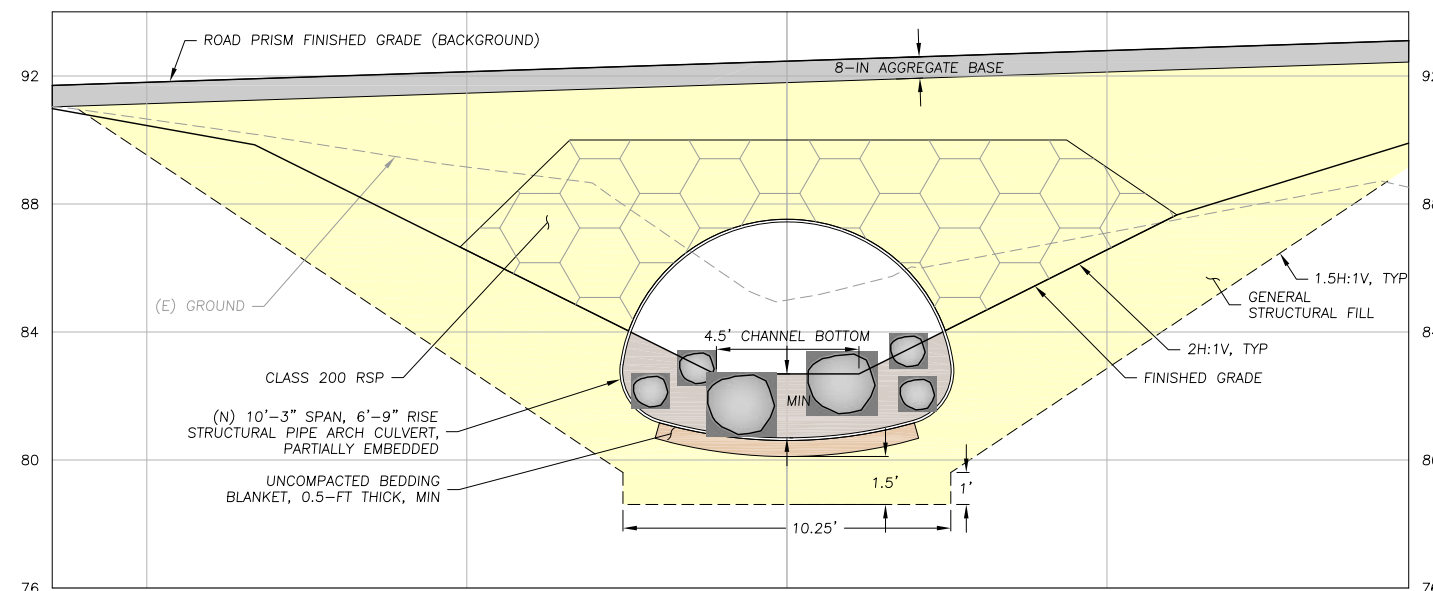
SITE 2 TYPICAL DOWNSTREAM SECTION (C
SCALE: 1" = 3' C8

NOTE:
1. LOGS NOT SHOWN FOR GRAPHICAL CLARITY.



SITE 2 CULVERT INLET SECTION D
SCALE: 1" = 3' C8

NOTE:
1. EXISTING CULVERT NOT SHOWN
FOR GRAPHICAL CLARITY.



SITE 2 CULVERT OUTLET SECTION E
C8
SCALE: 1" = 3'

DRAFT

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PREPARED AT THE REQUEST OF:
**COQUILLE WATERSHED
ASSOCIATION**

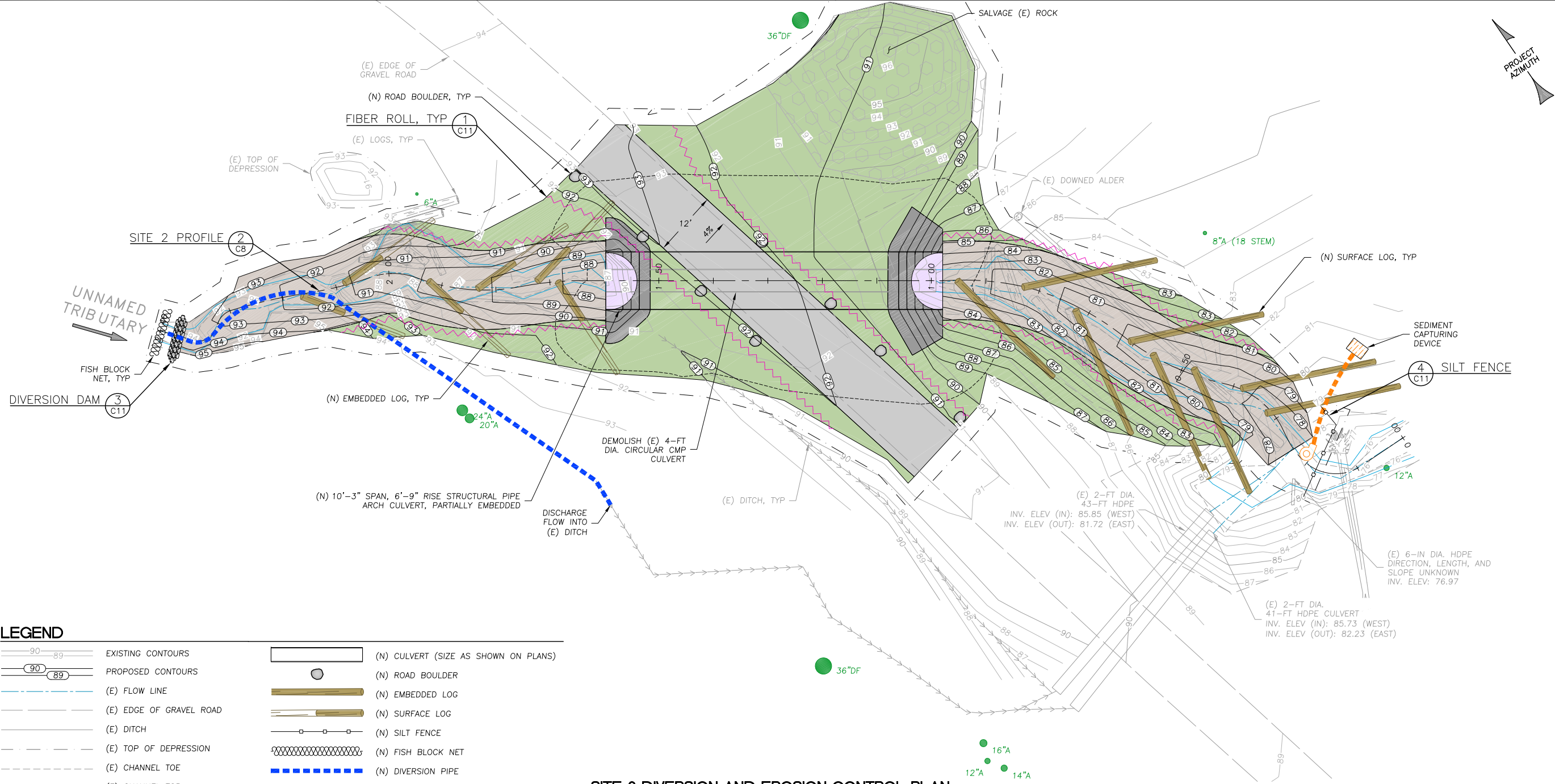
SITE 2 SECTIONS

**WOODWARD CREEK
TRIBUTARY PASSAGE
IMPROVEMENT PROJECT**

DESIGNED BY: A.S.
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DATE: 1/31/2025
JOB NO.: 23-068

BAR IS ONE INCH ON
ORIGINAL DRAWING,
ADJUST SCALES FOR
REDUCED PLOTS

0  1"



LEGEND	
	EXISTING CONTOURS
	PROPOSED CONTOURS
	(E) FLOW LINE
	(E) EDGE OF GRAVEL ROAD
	(E) DITCH
	(E) TOP OF DEPRESSION
	(E) CHANNEL TOE
	(E) CHANNEL TOP
	(E) ORDINARY HIGH WATER
	(E) ROCK STOCKPILE
	(E) CULVERT (SIZE AS SHOWN ON PLANS)
	(E) LOG, DIMENSIONS AS SHOWN
	(E) FALLEN TREE
	(E) TREE
	(N) LIMITS OF CULVERT EXCAVATION
	(N) ESM
	(N) SLOPE GRADING
	(N) AGGREGATE BASE
	(N) RSP (CLASS 200)
	(N) PROJECTING PIPE
	(N) CULVERT (SIZE AS SHOWN ON PLANS)
	(N) ROAD BOULDER
	(N) EMBEDDED LOG
	(N) SURFACE LOG
	(N) SILT FENCE
	(N) FISH BLOCK NET
	(N) DIVERSION PIPE
	(N) DEWATERING PIPE
	(N) PERMANENT FIBER ROLL
	LIMITS OF DISTURBANCE
	(N) DIVERSION DAM
	(N) PUMP
	(N) SEDIMENT CAPTURING DEVICE

SITE 2 DIVERSION AND EROSION CONTROL PLAN
SCALE: 1" = 10'

DEWATERING NOTES

1. INSTALL A CREEK DIVERSION AND DEWATERING MEASURES AS SHOWN ON THESE DRAWINGS AND IN CONFORMANCE WITH PERMIT CONDITIONS. SEE NOTES ON C11.
2. DISCHARGE TURBID WATER CAPTURED FROM SITE DEWATERING TO SEDIMENT CAPTURING DEVICE. CLEARWATER MAY BE DISCHARGED DIRECTLY DOWNSTREAM INTO THE UNNAMED TRIBUTARY.

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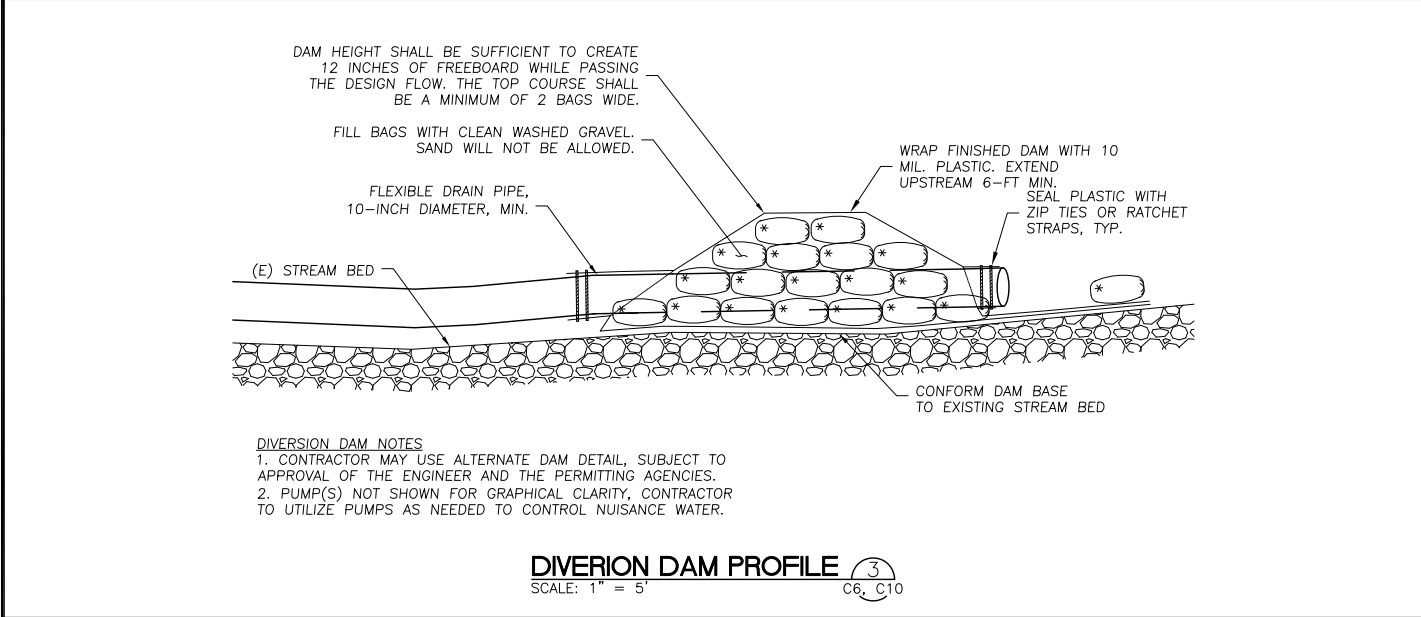
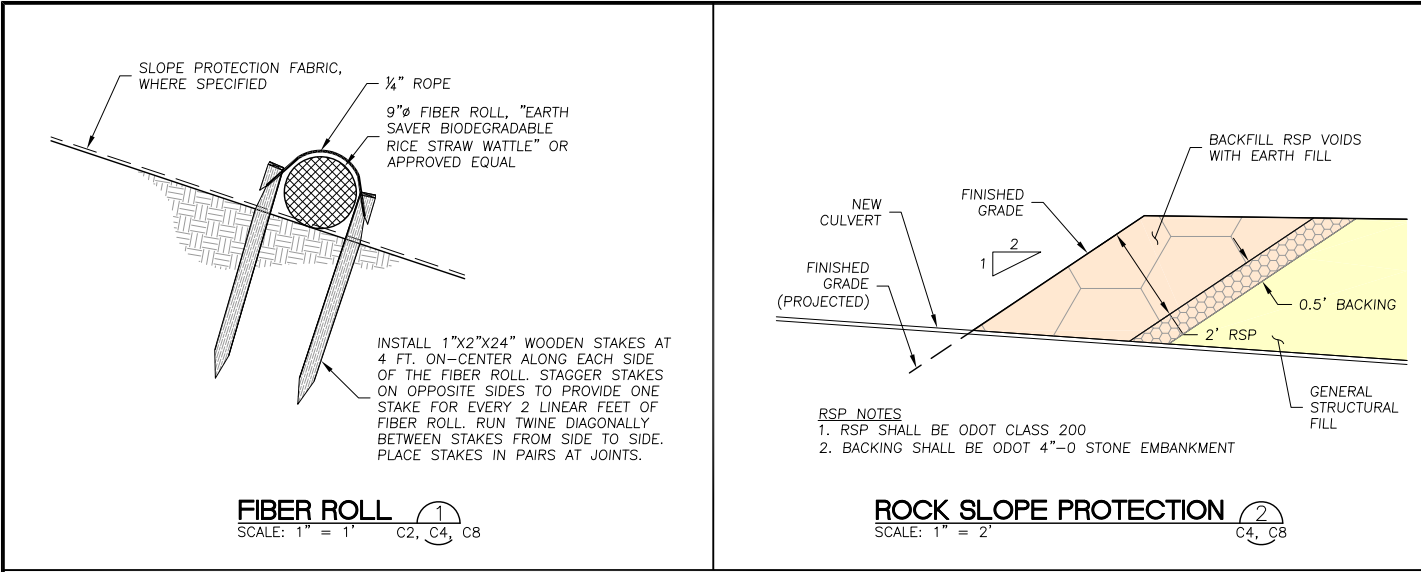
SITE 2
DIVERSION AND
EROSION
CONTROL PLAN

WOODWARD CREEK
TRIBUTARY PASSAGE
IMPROVEMENT PROJECT
100% DESIGN SUBMITTAL

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0 1"

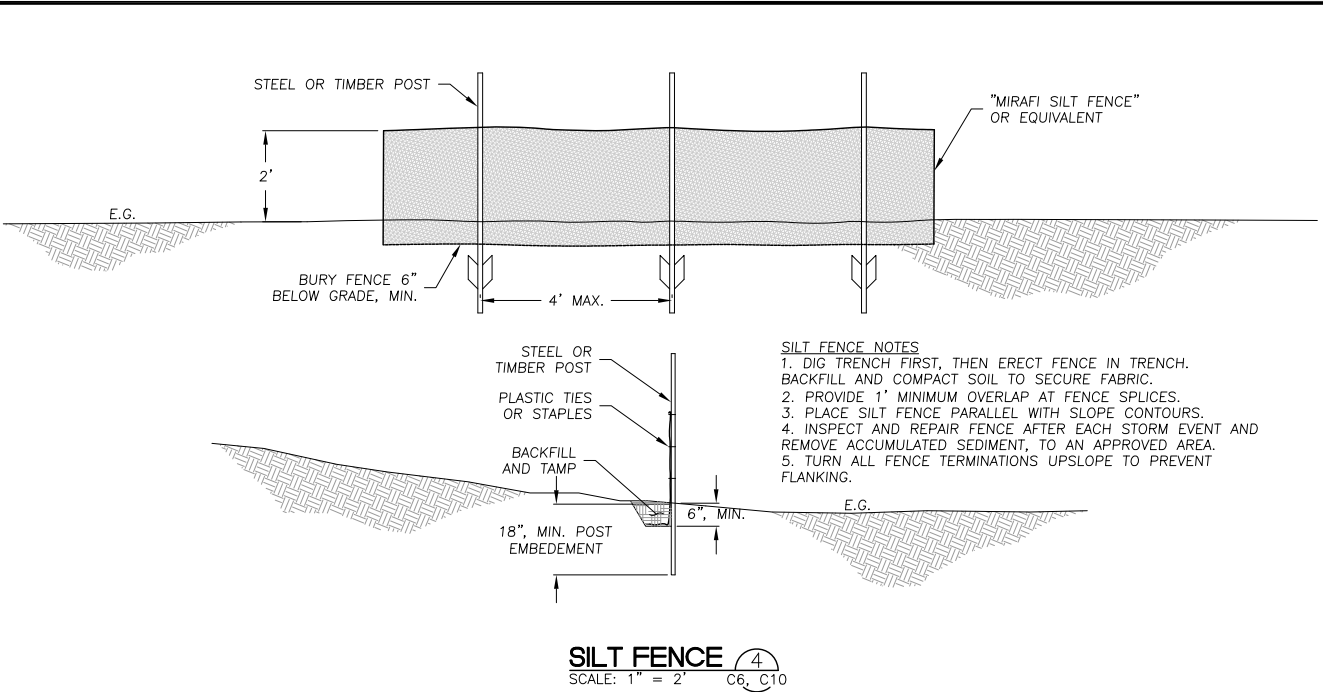
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DIVERSION NOTES

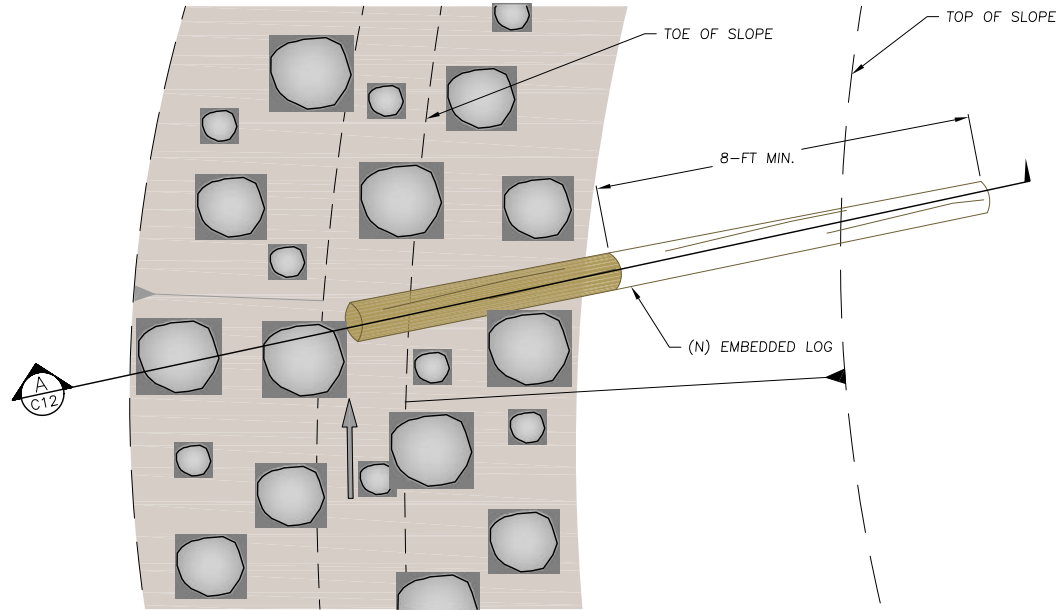
THE DIVERSION PLAN SHOWN IS SCHEMATIC. GENERAL REQUIREMENTS ARE PROVIDED BELOW. THE FULL REQUIREMENTS OF THE DIVERSION AND DEWATERING PLAN ARE SPECIFIED IN THE PROJECT TECHNICAL SPECIFICATIONS AND PERMIT CONDITIONS.

1. GENERAL
 - 1.1. DEWATER THE PROJECT SITE AS REQUIRED TO FACILITATE IN-STREAM CONSTRUCTION AND REDUCE POTENTIAL IMPACTS TO WATER QUALITY DOWNSTREAM OF THE PROJECT SITE.
 - 1.2. CONFIRM THAT A FAVORABLE LONG TERM WEATHER FORECAST (1 WEEK, MIN.) IS OBSERVED PRIOR TO PLACEMENT OF DIVERSION STRUCTURES.
 - 1.3. PRIOR TO PLACEMENT OF DIVERSION STRUCTURE, REMOVE FISH FROM THE PROJECT REACH, IN ACCORDANCE WITH SECTION 2.
 - 1.4. DIVERT FLOW ONLY WHEN THE DIVERSION CONSTRUCTION IS OTHERWISE COMPLETE. FOLLOWING ENGINEER'S APPROVAL OF THE COMPLETED WORK, REMOVE DIVERSION BEGINNING AT THE DOWNSTREAM LIMIT, IN AN UPSTREAM DIRECTION.
2. FISH RELOCATION
 - 2.1. SEE STREAM/WETLAND CONSTRUCTION BEST MANAGEMENT PRACTICES ON SHEET C13.
3. DEWATERING/BYPASS FLOWS
 - 3.1. SEE STREAM/WETLAND CONSTRUCTION BEST MANAGEMENT PRACTICES ON SHEET C13.
4. DIVERSION SYSTEM
 - 4.1. INSTALL A SEALED, TEMPORARY DIVERSION DAM CONSTRUCTED USING SAND BAGS FILLED WITH CLEAN WASHED PEA GRAVEL. THE DAM AND METHOD OF SEALING SHALL BE PLACED AT AN APPROPRIATE DEPTH TO CAPTURE SUBSURFACE STREAM FLOW, AS NEEDED TO DEWATER THE STREAMBED. THE USE OF SAND WILL NOT BE ALLOWED. NO OTHER DIVERSION METHOD SHALL BE USED WITHOUT AUTHORIZATION OF THE ENGINEER. IF AN ALTERNATE DIVERSION METHOD IS PREFERRED BY THE CONTRACTOR, THE CONTRACTOR SHALL SUBMIT A PLAN TO THE ENGINEER FOR APPROVAL, DETAILING THE DESIRED DIVERSION METHOD.
 - 4.2. THE DIVERSION STRUCTURE SHALL BE CONSTRUCTED AS SHOWN ON THE DRAWINGS, OR AS DIRECTED BY THE ENGINEER IN THE FIELD.
 - 4.3. IN THE EVENT OF A SIGNIFICANT STORM FORECAST, THE CONTRACTOR SHALL BE PREPARED TO TAKE NECESSARY MEASURES TO ENSURE SAFE PASSAGE OF STORM WATER FLOW THROUGH THE PROJECT AREA, WITHOUT DAMAGE TO EXISTING STRUCTURES, OR INTRODUCTION OF EXCESSIVE SEDIMENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY EROSION CONTROL B.M.P.'S.
 - 4.4. THE DIVERSION SHALL BE CAPABLE OF CONVEYING ANTICIPATED FLOWRATES WITH LESS THAN 6 INCHES OF HEAD OVER THE TOP OF PIPE AT THE INLET, AND SHALL BE A MINIMUM DIAMETER OF 8", WITH A MANNING'S ROUGHNESS NOT EXCEEDING .012.
5. DEWATERING OF CONSTRUCTION AREAS
 - 5.1. THE CONTRACTOR SHALL SUPPLY ALL NECESSARY PUMPS, PIPING, FILTERS, SHORING, AND OTHER TOOLS AND MATERIALS NECESSARY FOR DEWATERING. IF A PUMPED SYSTEM IS RELIED UPON TO ENSURE DOWNSTREAM WATER QUALITY, A BACKUP PUMP OF EQUAL CAPACITY SHALL BE PROVIDED AT ALL TIMES AND THE PUMP MUST BE CONTINUOUSLY MONITORED.
 - 5.2. DEWATERING ACTIVITIES WHICH MAY BE REQUIRED FOR CONSTRUCTION PURPOSES SHALL COMPLY WITH WATER QUALITY STANDARDS ISSUED BY THE CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD.
 - 5.3. DISCHARGE OF WATER FROM THE DEWATERED CONSTRUCTION SITE, EITHER BY GRAVITY OR PUMPING, SHALL BE PERFORMED IN A MANNER THAT PREVENTS EXCESSIVE TURBIDITY FROM ENTERING THE RECEIVING WATERWAYS AND PREVENTS SCOUR AND EROSION OUTSIDE OF THE CONSTRUCTION SITE. PUMPED WATER SHOULD BE PRE-FILTERED WITH A GRAVEL PACK AROUND SUMPS FOR SUBSURFACE FLOWS AND A SILT FENCE AROUND PUMPS FOR SURFACE FLOW. PUMPED WATER SHALL BE DISCHARGED INTO ISOLATED LOCAL DEPRESSIONS, FILTER BAGS, SETTLING (BAKER) TANKS, OR TEMPORARY SEDIMENT BASINS, AS NECESSARY TO MEET WATER QUALITY REQUIREMENTS. WHERE WATER TO BE DISCHARGED INTO THE CREEK WILL CREATE EXCESSIVE TURBIDITY, THE WATER SHALL BE ROUTED THROUGH A SEDIMENT INTERCEPTOR OR OTHER FACILITIES TO REMOVE SEDIMENT FROM WATER.

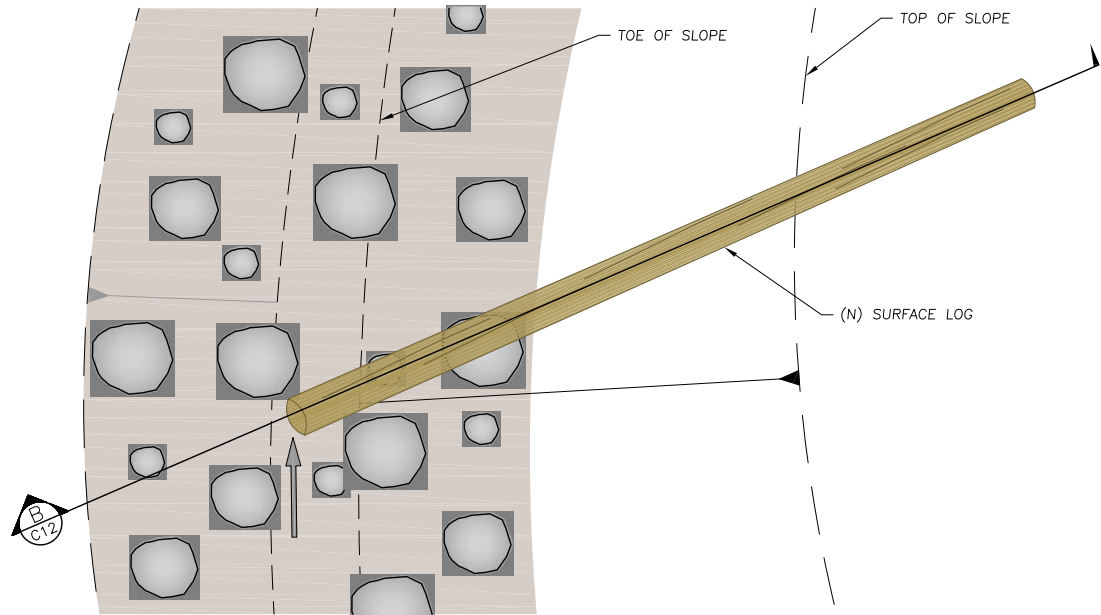


EROSION CONTROL NOTES

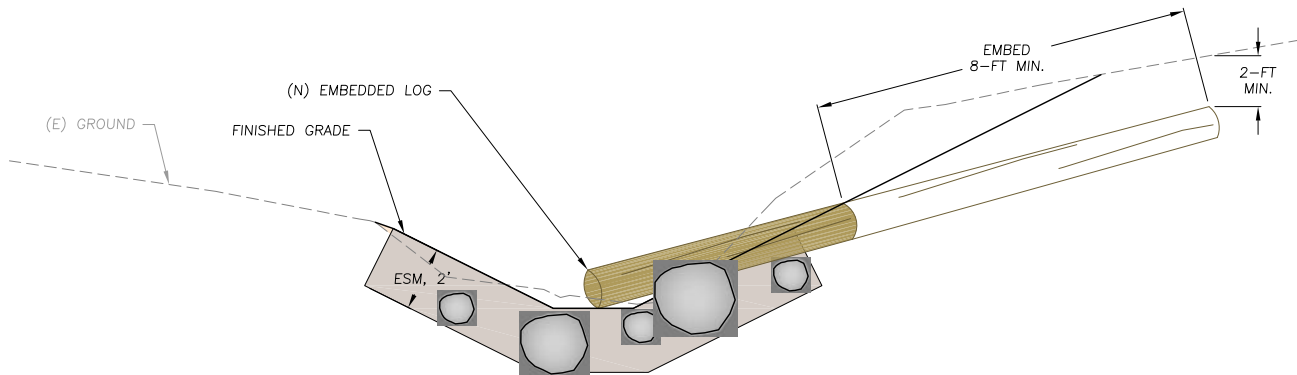
1. ALL WORK MUST BE IN ACCORDANCE WITH ISSUED PERMITS.
2. THE ESCP MEASURES SHOWN ON THIS PLAN ARE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, UPGRADE THESE MEASURES AS NEEDED TO COMPLY WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL EROSION AND SEDIMENT CONTROL REGULATIONS.
3. PHASE CLEARING AND GRADING TO THE MAXIMUM EXTENT PRACTICAL TO PREVENT EXPOSED INACTIVE AREAS FROM BECOMING A SOURCE OF EROSION.
4. IDENTIFY, MARK, AND PROTECT (BY FENCING OFF OR OTHER MEANS) CRITICAL RIPARIAN AREAS AND VEGETATION INCLUDING IMPORTANT TREES AND ASSOCIATED ROOTING ZONES, AND VEGETATION AREAS TO BE PRESERVED. IDENTIFY VEGETATIVE BUFFER ZONES BETWEEN THE SITE AND SENSITIVE AREAS (E.G., WETLANDS), AND OTHER AREAS TO BE PRESERVED, ESPECIALLY IN PERIMETER AREAS.
5. PRESERVE EXISTING VEGETATION WHEN PRACTICAL AND RE-VEGETATE OPEN AREAS. RE-VEGETATE OPEN AREAS WHEN PRACTICABLE BEFORE AND AFTER GRADING OR CONSTRUCTION. IDENTIFY THE TYPE OF VEGETATIVE SEED MIX USED.
6. EROSION AND SEDIMENT CONTROL MEASURES INCLUDING PERIMETER SEDIMENT CONTROL MUST BE IN PLACE BEFORE VEGETATION IS DISTURBED AND MUST REMAIN IN PLACE AND BE MAINTAINED, REPAIRED, AND PROMPTLY IMPLEMENTED FOLLOWING PROCEDURES ESTABLISHED FOR THE DURATION OF CONSTRUCTION, INCLUDING PROTECTION FOR ACTIVE STORM DRAIN INLETS AND CATCH BASINS AND APPROPRIATE NON-STORMWATER POLLUTION CONTROLS.
7. APPLY TEMPORARY AND/OR PERMANENT SOIL STABILIZATION MEASURES IMMEDIATELY ON ALL DISTURBED AREAS AS GRADING PROGRESSES AND FOR ALL ROADWAYS INCLUDING GRAVEL ROADWAYS.
8. ESTABLISH MATERIAL AND WASTE STORAGE AREAS, AND OTHER NON-STORMWATER CONTROLS.
9. PREVENT TRACKING OF SEDIMENT ONTO PUBLIC OR PRIVATE ROADS USING BMPS SUCH AS: GRAVELED (OR PAVED) EXITS AND PARKING AREAS, GRAVEL ALL UNPAVED ROADS LOCATED ONSITE, OR USE AN EXIT TIRE WASH. THESE BMPS MUST BE IN PLACE PRIOR TO LAND-DISTURBING ACTIVITIES.
10. WHEN TRUCKING SATURATED SOILS FROM THE SITE, EITHER USE WATER-TIGHT TRUCKS OR DRAIN LOADS ON SITE.
11. USE BMPS TO PREVENT OR MINIMIZE STORMWATER EXPOSURE TO POLLUTANTS FROM SPILLS; VEHICLE AND EQUIPMENT FUELING, MAINTENANCE, AND STORAGE; OTHER CLEANING AND MAINTENANCE ACTIVITIES; AND WASTE HANDLING ACTIVITIES. THESE POLLUTANTS INCLUDE FUEL, HYDRAULIC FLUID, AND OTHER OILS FROM VEHICLES AND MACHINERY, AS WELL AS DEBRIS, LEFTOVER PAINTS, SOLVENTS, AND GLUES FROM CONSTRUCTION OPERATIONS.
12. FUELING ACTIVITIES MUST BE LOCATED A MINIMUM OF 150 FEET FROM ORDINARY HIGH WATER AND SENSITIVE WATERS, INCLUDING WETLANDS.
13. IMPLEMENT THE FOLLOWING BMPS WHEN APPLICABLE: WRITTEN SPILL PREVENTION AND RESPONSE PROCEDURES, EMPLOYEE TRAINING ON SPILL PREVENTION AND PROPER DISPOSAL PROCEDURES, SPILL KITS IN ALL VEHICLES, REGULAR MAINTENANCE SCHEDULE FOR VEHICLES AND MACHINERY, MATERIAL DELIVERY AND STORAGE CONTROLS, TRAINING AND SIGNAGE, AND COVERED STORAGE AREAS FOR WASTE AND SUPPLIES.
14. USE WATER, SOIL-BINDING AGENT OR OTHER DUST CONTROL TECHNIQUE AS NEEDED TO AVOID WIND-BLOWN SOIL.
15. ONSITE VEHICLE SPEED ON UNPAVED SURFACES SHALL BE LIMITED TO 5 MPH.
16. IF A STORMWATER TREATMENT SYSTEM (FOR EXAMPLE, ELECTRO-COAGULATION, FLOCCULATION, FILTRATION, ETC.) FOR SEDIMENT OR OTHER POLLUTANT REMOVAL IS EMPLOYED, SUBMIT AN OPERATION AND MAINTENANCE PLAN (INCLUDING SYSTEM SCHEMATIC, LOCATION OF SYSTEM, LOCATION OF INLET, LOCATION OF DISCHARGE, DISCHARGE DISPERSION DEVICE DESIGN, AND A SAMPLING PLAN AND FREQUENCY) BEFORE OPERATING THE TREATMENT SYSTEM. OBTAIN PLAN APPROVAL BEFORE OPERATING THE TREATMENT SYSTEM. OPERATE AND MAINTAIN THE TREATMENT SYSTEM ACCORDING TO MANUFACTURER'S SPECIFICATIONS.
17. TEMPORARILY STABILIZE SOILS AT THE END OF THE SHIFT BEFORE HOLIDAYS AND WEEKENDS, IF NEEDED. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT SOILS ARE STABLE DURING RAIN EVENTS AT ALL TIMES OF THE YEAR.
18. AT THE END OF EACH WORKDAY SOIL STOCKPILES MUST BE STABILIZED OR COVERED, OR OTHER BMPS MUST BE IMPLEMENTED TO PREVENT DISCHARGES TO SURFACE WATERS OR CONVEYANCE SYSTEMS LEADING TO SURFACE WATERS.
19. CONSTRUCTION ACTIVITIES MUST AVOID OR MINIMIZE EXCAVATION AND CREATION OF BARE GROUND DURING WET WEATHER.
20. SEDIMENT FENCE: REMOVE TRAPPED SEDIMENT BEFORE IT REACHES ONE THIRD OF THE ABOVE GROUND FENCE HEIGHT AND BEFORE FENCE REMOVAL.
21. WITHIN 24 HOURS, SIGNIFICANT SEDIMENT THAT HAS LEFT THE CONSTRUCTION SITE, MUST BE REMEDIATED. INVESTIGATE THE CAUSE OF THE SEDIMENT RELEASE AND IMPLEMENT STEPS TO PREVENT A RECURRENCE OF THE DISCHARGE WITHIN THE SAME 24 HOURS. ANY IN-STREAM CLEAN UP OF SEDIMENT SHALL BE PERFORMED ACCORDING TO THE OREGON DIVISION OF STATE LANDS REQUIRED TIMEFRAME.
22. THE INTENTIONAL WASHING OF SEDIMENT INTO STORM SEWERS, DRAINAGE WAYS, OR WETLANDS MUST NOT OCCUR. VACUUMING OR DRY SWEEPING AND MATERIAL PICKUP MUST BE USED TO CLEANUP RELEASED SEDIMENTS.
23. THE ENTIRE SITE MUST BE TEMPORARILY STABILIZED USING VEGETATION OR A HEAVY MULCH LAYER, TEMPORARY SEEDING, OR OTHER METHOD SHOULD ALL CONSTRUCTION ACTIVITIES CEASE FOR 30 DAYS OR MORE.
24. PROVIDE TEMPORARY STABILIZATION FOR THAT PORTION OF THE SITE WHERE CONSTRUCTION ACTIVITIES CEASE FOR 14 DAYS OR MORE WITH A COVERING OF BLOWN STRAW AND A TACKIFIER, LOOSE STRAW, OR AN ADEQUATE COVERING OF COMPOST MULCH UNTIL WORK RESUMES ON THAT PORTION OF THE SITE.
25. PROVIDE PERMANENT EROSION CONTROL MEASURES ON ALL EXPOSED AREAS AS THEY ARE COMPLETED. DO NOT REMOVE TEMPORARY SEDIMENT CONTROL PRACTICES UNTIL PERMANENT VEGETATION OR OTHER COVER OF EXPOSED AREAS IS ESTABLISHED. HOWEVER, DO REMOVE ALL TEMPORARY EROSION CONTROL MEASURES AS EXPOSED AREAS BECOME STABILIZED, UNLESS DOING SO CONFLICTS WITH LOCAL REQUIREMENTS. PROPERLY DISPOSE OF CONSTRUCTION MATERIALS AND WASTE, INCLUDING SEDIMENT RETAINED BY TEMPORARY BMPS.
26. SEED AND MULCH ALL DISTURBED AREAS EXCLUDING ENGINEERED STREAMBED MATERIAL, ROCK SLOPE PROTECTION, AND AGGREGATE BASE ROADWAY IMMEDIATELY FOLLOWING GROUND DISTURBING ACTIVITIES. SEED MIX WILL BE PROVIDED BY THE OWNER'S AUTHORIZED REPRESENTATIVE.



EMBEDDED LOG
SCALE: 1" = 3' 1
C4, C8

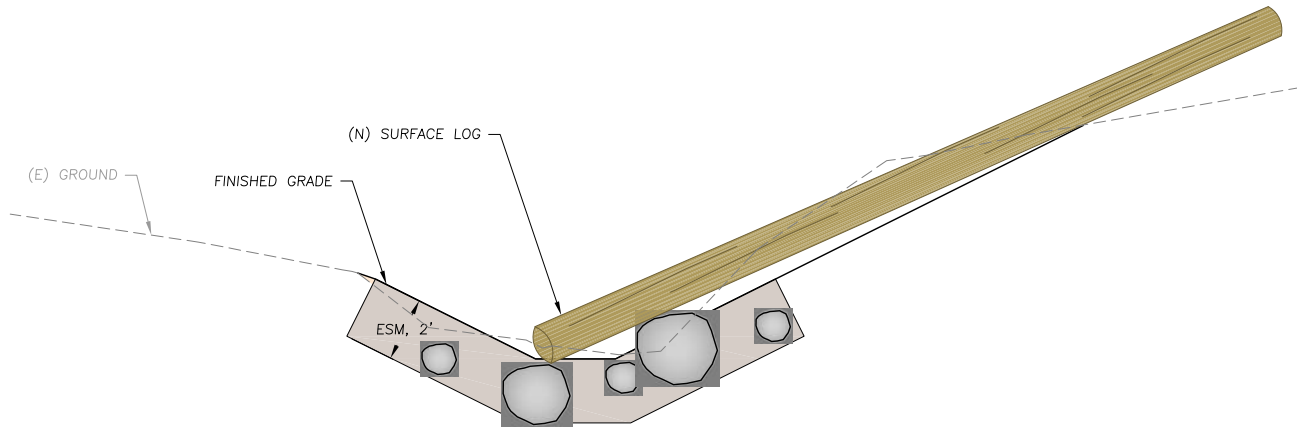


SURFACE LOG
SCALE: 1" = 3' 2
C4, C8



EMBEDDED LOG TYPICAL SECTION
SCALE: 1" = 3' A
C12

NOTE:
1. CHANNEL BASE WIDTH VARIES PER PLAN.



SURFACE LOG TYPICAL SECTION
SCALE: 1" = 3' B
C12

NOTE:
1. CHANNEL BASE WIDTH VARIES PER PLAN.

LOG STRUCTURE NOTES

- PLACEMENT LOCATIONS:** LOG AND BOULDER LOCATIONS SHOWN ON DRAWINGS ARE APPROXIMATE. EXACT LOCATIONS SHALL BE AS DIRECTED BY THE ENGINEER.
- LOGS:** LOGS SHALL BE DOUGLAS FIR, SOUND AND FREE OF SIGNIFICANT DECAY. FOR CLARITY, MOST LOGS ARE SHOWN WITHOUT BRANCHES INTACT. HOWEVER, IT IS PREFERABLE THAT LOGS BE SUPPLIED WITH THE MAXIMUM NUMBER OF BRANCHES AND ROOTS INTACT, TO MAXIMIZE PERFORMANCE OF THE STRUCTURES. MATERIALS FOR USE IN THE STRUCTURES SHALL MEET THE FOLLOWING SIZE CRITERIA:
- QUANTITIES:**

ITEM	*DIAMETER (IN.)	**LENGTH (FT.)	TOTAL COUNT
EMBEDDED LOG (10 TOTAL)			
EMBEDDED LOG	12-16	25-35	10
SURFACE LOG (16 TOTAL)			
SURFACE LOG	12-16	25-35	10

*ALL LOGS SHALL MEET THE MINIMUM DIAMETER LISTED IN THE TABLE ABOVE AT ANY POINT ALONG THE LENGTH OF THE LOG,
- 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, AND BACKFILLING. ANY LOG STRUCTURES CONSTRUCTED WITHOUT THE ENGINEER PRESENT ON-SITE MAY RESULT IN REJECTION OF THE WORK BY THE ENGINEER.

DRAFT
NOT FOR CONSTRUCTION

PREPARED AT THE REQUEST OF:
**COQUILLE WATERSHED
ASSOCIATION**

**LOG STRUCTURE
DETAILS AND
NOTES**

**WOODWARD CREEK
TRIBUTARY PASSAGE
IMPROVEMENT PROJECT**
100% DESIGN SUBMITTAL

DESIGNED BY: A.S.
DRAWN BY: D.H.
CHECKED BY: J.H.
DATE: 1/31/2025
JOB NO.: 23-068

BAR IS ONE INCH ON
ORIGINAL DRAWING,
ADJUST SCALES FOR
REDUCED PLOTS
0 1"

GENERAL NOTES

1. PREPARED AT THE REQUEST OF:
COQUILLE WATERSHED ASSOCIATION
390 N CENTRAL BLVD
COQUILLE, OR 97423
PHONE: (541) 396-2541

2. AFFECTED APN'S:
27S12W00-100

3. EXISTING UNDERGROUND UTILITY LOCATIONS:

A. CALL UNDERGROUND SERVICE ALERT (1-800-642-2444) TO LOCATE ALL UNDERGROUND UTILITY LINES PRIOR TO COMMENCING CONSTRUCTION.

B. PRIOR TO BEGINNING WORK, CONTACT ALL UTILITIES COMPANIES WITH REGARD TO WORKING OVER, UNDER, OR AROUND EXISTING FACILITIES AND TO OBTAIN INFORMATION REGARDING RESTRICTIONS THAT ARE REQUIRED TO PREVENT DAMAGE TO THE FACILITIES.

C. EXISTING UTILITY LOCATIONS SHOWN ARE COMPILED FROM INFORMATION SUPPLIED BY THE APPROPRIATE UTILITY AGENCIES AND FROM FIELD MEASUREMENTS TO ABOVE GROUND FEATURES READILY VISIBLE AT THE TIME OF SURVEY. LOCATIONS SHOWN ARE APPROXIMATE. THE CONTRACTOR IS CAUTIONED THAT ONLY ACTUAL EXCAVATION WILL REVEAL THE DIMENSIONS, SIZES, MATERIALS, LOCATIONS, AND DEPTH OF UNDERGROUND UTILITIES.

D. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE LOCATION AND/OR PROTECTION OF ALL EXISTING AND PROPOSED PIPING, UTILITIES, TRAFFIC SIGNAL EQUIPMENT (BOTH ABOVE GROUND AND BELOW GROUND), STRUCTURES, AND ALL OTHER EXISTING IMPROVEMENTS THROUGHOUT CONSTRUCTION.

E. PRIOR TO COMMENCING FABRICATION OR CONSTRUCTION, DISCOVER OR VERIFY THE ACTUAL DIMENSIONS, SIZES, MATERIALS, LOCATIONS, AND ELEVATIONS OF ALL EXISTING UTILITIES AND POTHOLE THOSE AREAS WHERE POTENTIAL CONFLICTS ARE LIKELY OR DATA IS OTHERWISE INCOMPLETE.

F. TAKE APPROPRIATE MEASURES TO PROTECT EXISTING UTILITIES DURING CONSTRUCTION OPERATIONS. CONTRACTOR IS SOLELY RESPONSIBLE FOR THE COST OF REPAIR/REPLACEMENT OF ANY EXISTING UTILITIES DAMAGED DURING CONSTRUCTION.

G. UPON LEARNING OF THE EXISTENCE AND/OR LOCATIONS OF ANY UNDERGROUND FACILITIES NOT SHOWN OR SHOWN INACCURATELY ON THE PLANS OR NOT PROPERLY MARKED BY THE UTILITY OWNER, IMMEDIATELY NOTIFY THE UTILITY OWNER AND THE CITY BY TELEPHONE AND IN WRITING.

H. UTILITY RELOCATIONS REQUIRED FOR THE CONSTRUCTION OF THE PROJECT FACILITIES WILL BE PERFORMED BY THE UTILITY COMPANY, UNLESS OTHERWISE NOTED.

4. IF DISCREPANCIES ARE DISCOVERED BETWEEN THE CONDITIONS EXISTING IN THE FIELD AND THE INFORMATION SHOWN ON THESE DRAWINGS, NOTIFY THE ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.

5. ALL TESTS, INSPECTIONS, SPECIAL OR OTHERWISE, THAT ARE REQUIRED BY THE BUILDING CODES, LOCAL BUILDING DEPARTMENTS, OR THESE PLANS, SHALL BE DONE BY AN INDEPENDENT INSPECTION COMPANY. JOB SITE VISITS BY THE ENGINEER DO NOT CONSTITUTE AN OFFICIAL INSPECTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE REQUIRED TESTS AND INSPECTIONS ARE PERFORMED.

6. PROJECT SCHEDULE: PRIOR TO COMMENCEMENT OF WORK, SUBMIT TO THE ENGINEER FOR REVIEW AND APPROVAL A DETAILED CONSTRUCTION SCHEDULE. DO NOT BEGIN ANY CONSTRUCTION WORK UNTIL THE PROJECT SCHEDULE AND WORK PLAN IS APPROVED BY THE ENGINEER. ALL CONSTRUCTION SHALL BE CLOSELY COORDINATED WITH THE ENGINEER SO THAT THE QUALITY OF WORK CAN BE CHECKED FOR APPROVAL. PURSUE WORK IN A CONTINUOUS AND DILIGENT MANNER TO ENSURE A TIMELY COMPLETION OF THE PROJECT.

7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGN, PERMITTING, INSTALLATION, AND MAINTENANCE OF ANY AND ALL TRAFFIC CONTROL MEASURES DEEMED NECESSARY.

8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR GENERAL SAFETY DURING CONSTRUCTION. ALL WORK SHALL CONFORM TO PERTINENT SAFETY REGULATIONS AND CODES. THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR FURNISHING, INSTALLING, AND MAINTAINING ALL WARNING SIGNS AND DEVICES NECESSARY TO SAFEGUARD THE GENERAL PUBLIC AND THE WORK, AND PROVIDE FOR THE PROPER AND SAFE ROUTING OF VEHICULAR AND PEDESTRIAN TRAFFIC DURING THE PERFORMANCE OF THE WORK. THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR COMPLIANCE WITH ALL APPLICABLE PROVISIONS OF OSHA IN THE CONSTRUCTION PRACTICES FOR ALL EMPLOYEES DIRECTLY ENGAGED IN THE CONSTRUCTION OF THIS PROJECT.

9. CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD DESIGN PROFESSIONAL HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTION LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF DESIGN PROFESSIONAL. NEITHER THE PROFESSIONAL ACTIVITIES OF CONSULTANT NOR THE PRESENCE OF CONSULTANT OR THEIR OR HER EMPLOYEES OR SUB-CONSULTANTS AT A CONSTRUCTION SITE SHALL RELIEVE THE CONTRACTOR AND ITS SUBCONTRACTORS OF THEIR RESPONSIBILITIES INCLUDING, BUT NOT LIMITED TO, CONSTRUCTION MEANS, METHODS, SEQUENCE, TECHNIQUES OR PROCEDURES NECESSARY FOR PERFORMING, SUPERINTENDING OR COORDINATING ALL PORTIONS OF THE WORK OF CONSTRUCTION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND APPLICABLE HEALTH OR SAFETY REQUIREMENTS OF ANY REGULATORY AGENCY OR OF STATE LAW.

10. MAINTAIN A CURRENT, COMPLETE, AND ACCURATE RECORD OF ALL AS-BUILT DEVIATIONS FROM THE CONSTRUCTION AS SHOWN ON THESE DRAWINGS AND SPECIFICATIONS, FOR THE PURPOSE OF PROVIDING THE ENGINEER OF RECORD WITH A BASIS FOR THE PREPARATION OF RECORD DRAWINGS.

11. MAINTAIN THE SITE IN A NEAT AND ORDERLY MANNER THROUGHOUT THE CONSTRUCTION PROCESS. STORE ALL MATERIALS WITHIN APPROVED STAGING AREAS.

12. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO BE FULLY INFORMED OF AND TO COMPLY WITH ALL PERMIT CONDITIONS, LAWS, ORDINANCES, CODES, REQUIREMENTS AND STANDARDS, WHICH IN ANY MANNER AFFECT THE COURSE OF CONSTRUCTION OF THIS PROJECT, THOSE ENGAGED OR EMPLOYED IN THE CONSTRUCTION AND THE MATERIALS USED IN THE CONSTRUCTION.

13. PROVIDE, AT CONTRACTOR'S SOLE EXPENSE, ALL MATERIALS, LABOR AND EQUIPMENT REQUIRED TO COMPLY WITH ALL APPLICABLE PERMIT CONDITIONS AND REQUIREMENTS.

14. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION STAKING AND LAYOUT, UNLESS OTHERWISE SPECIFIED.

15. FIELD INSPECTIONS AND OR THE PROVISION OF CONSTRUCTION STAKES DO NOT RELIEVE THE CONTRACTOR OF THEIR SOLE RESPONSIBILITY FOR ESTABLISHING ACCURATE CONSTRUCTED LINES AND GRADES, AS SPECIFIED.

16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION AND PRESERVATION OF ALL SURVEY MONUMENTS OR PROPERTY CORNERS. DISTURBED MONUMENTS SHALL BE RESTORED BACK TO THEIR ORIGINAL LOCATION AND SHALL BE CERTIFIED BY A REGISTERED CIVIL ENGINEER OR LAND SURVEYOR AT THE SOLE EXPENSE OF THE CONTRACTOR.

17. THE OWNER SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION OF ALL PROPERTY LINES AND EASEMENTS AND CONFIRMING THAT PROPOSED PROJECT ELEMENTS ARE LOCATED ON BLM OWNED LANDS OR ARE COORDINATED WITH OWNERS AND APPROPRIATE PERMISSIONS ARE GRANTED FOR THE WORK.

18. TREE DIMENSIONS: TRUNK DIAMETERS SHOWN REPRESENT DIAMETER AT BREAST HEIGHT (DBH), MEASURED IN INCHES. DBH IS MEASURED 4.5 FT ABOVE GROUND FOR SINGLE TRUNKS AND TRUNKS THAT SPLIT INTO SEVERAL STEMS
- CLOSE TO THE GROUND. THE DBH FOR TREES THAT SPLIT INTO SEVERAL STEMS CLOSE TO THE GROUND MAY BE CONSOLIDATED INTO A SINGLE DBH BY TAKING THE SQUARE ROOT OF THE SUM OF ALL SQUARED STEM DBH'S, UNLESS OTHERWISE NOTED. WHERE TREES FORK NEAR BREAST HEIGHT, TRUNK DIAMETER IS MEASURED AT THE NARROWEST PART OF THE MAIN STEM BELOW THE FORK. FOR TREES ON A SLOPE, BREAST HEIGHT IS REFERENCED FROM THE UPPER SIDE OF THE SLOPE. FOR LEANING TREES, BREAST HEIGHT IS MEASURED ON THE SIDE THAT THE TREE LEANS TOWARD. TREES WITH DBH LESS THAN 8" ARE TYPICALLY NOT SHOWN.
- 12"P = 12" DBH PINE
19. TREE SPECIES ARE IDENTIFIED WHEN KNOWN. HOWEVER, FINAL DETERMINATION SHOULD BE MADE BY A QUALIFIED BOTANIST. REFER TO THE LEGEND FOR TREE SPECIES SYMBOLS.

20. TREE TRUNK DIMENSIONS MAY BE SHOWN OUT-OF-SCALE FOR PLOTTING CLARITY. CAUTION SHOULD BE USED IN DESIGNING NEAR TREE TRUNKS. THERE ARE LIMITATIONS ON FIELD ACCURACY, DRAFTING ACCURACY, MEDIUM STRETCH AS WELL AS THE "SPREAD" OR "LEANING" OF TREES. REQUEST ADDITIONAL TOPOGRAPHIC DETAIL WHERE CLOSE TOLERANCES ARE ANTICIPATED. INDIVIDUAL TREES ARE NOT TYPICALLY LOCATED WITHIN DRIPLINE CANOPY AREAS SHOWN.

21. ALL PERMANENT MONUMENTS DISTURBED DURING THE PROCESS OF CONSTRUCTION SHALL BE REPLACED AND A RECORD OF SURVEY OR CORNER RECORD PER OREGON ADMINISTRATIVE RULES, OREGON REVISED STATUTES 209.150 BEFORE ACCEPTANCE OF THE IMPROVEMENTS. COPIES OF ANY RECORD OF SURVEY OR CORNER RECORDS SHALL BE SUBMITTED TO COOS COUNTY.

22. CONTRACTOR IS REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.

23. THE CONTRACTOR SHALL CONFORM TO THE CONSTRUCTION RULES OF THE OREGON OCCUPATIONAL SAFETY AND HEALTH DIVISION, INCLUDING THOSE PERTAINING TO EXCAVATION AND TRENCHES.

24. CULTURAL RESOURCES: IN THE EVENT THAT HUMAN REMAINS AND/OR CULTURAL MATERIALS ARE FOUND, ALL PROJECT-RELATED CONSTRUCTION SHALL CEASE WITHIN A 100-FOOT RADIUS. THE CONTRACTOR SHALL, PURSUANT TO SECTION 7050.5 OF THE HEALTH AND SAFETY CODE, AND SECTION 5097.94 OF THE PUBLIC RESOURCES CODE OF THE STATE OF OREGON, NOTIFY THE COOS COUNTY CORONER IMMEDIATELY.
- EARTHWORK NOTES
1. ALL GRADING SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS OF THE COOS COUNTY GRADING ORDINANCE.

PRIOR TO PERFORMING ANY WORK, THE CONTRACTOR SHALL BE FAMILIAR WITH SITE CONDITIONS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VISIT THE SITE AND MAKE THEIR OWN INTERPRETATIONS WITH REGARD TO MATERIALS, METHODS AND EQUIPMENT NECESSARY TO PERFORM THE WORK REQUIRED FOR THIS PROJECT.

2. GRADING SUMMARY:

SITE 1:

CUT VOLUME = 63 CY

FILL VOLUME = 62 CY

NET (CUT) = 1 CY

SITE 2:

CUT VOLUME = 206 CY

FILL VOLUME = 62 CY

NET (CUT) = 144 CY

THE ABOVE QUANTITIES ARE APPROXIMATE IN-PLACE VOLUMES CALCULATED AS THE DIFFERENCE BETWEEN EXISTING GROUND AND THE PROPOSED FINISH GRADE, PREPARED FOR PERMITTING PURPOSES ONLY. EXISTING GROUND IS DEFINED BY THE TOPOGRAPHIC CONTOURS AND/OR SPOT ELEVATIONS ON THE PLAN. PROPOSED FINISH GRADE IS DEFINED AS THE DESIGN SURFACE ELEVATION OF WORK TO BE CONSTRUCTED. THE QUANTITIES HAVE NOT BEEN FACTORED TO INCLUDE ALLOWANCES FOR BULKING, CLEARING AND GRUBBING, SUBSIDENCE, SHRINKAGE, OVER EXCAVATION, AND RECOMPACTION, UNDERGROUND UTILITY AND SUBSTRUCTURE SPOILS AND CONSTRUCTION METHODS.

THE CONTRACTOR SHALL PERFORM AN INDEPENDENT EARTHWORK ESTIMATE FOR THE PURPOSE OF PREPARING BID PRICES FOR EARTHWORK. THE BID PRICE SHALL INCLUDE COSTS FOR ANY NECESSARY IMPORT AND PLACEMENT OF EARTH MATERIALS OR THE EXPORT AND PROPER DISPOSAL OF EXCESS OR UNSUITABLE EARTH MATERIALS.

3. PRIOR TO COMMENCING WORK, PROTECT ALL SENSITIVE AREAS TO REMAIN UNDISTURBED WITH TEMPORARY FENCING, AS SHOWN ON THE DRAWINGS, AS SPECIFIED, OR AS DIRECTED BY THE ENGINEER.

4. DO NOT DISTURB AREAS OUTSIDE OF THE DESIGNATED LIMITS OF DISTURBANCE, UNLESS AUTHORIZED IN WRITING BY THE ENGINEER. THE COST OF ALL ADDITIONAL WORK ASSOCIATED WITH RESTORATION AND REVEGETATION OF DISTURBED AREAS OUTSIDE THE DESIGNATED LIMITS OF DISTURBANCE, AS SHOWN ON THE DRAWINGS, SHALL BE BORNE SOLELY BY THE CONTRACTOR.

5. REMOVE ALL EXCESS SOILS TO AN APPROVED DUMP SITE OR DISPOSE OF ON SITE AT A LOCATION TO BE APPROVED BY THE ENGINEER, IN A MANNER THAT WILL NOT CAUSE EROSION.

6. CLEARING AND GRUBBING, SUBGRADE PREPARATION AND EARTHWORK SHALL BE PERFORMED IN ACCORDANCE WITH THESE DRAWINGS AND THE TECHNICAL SPECIFICATIONS.

7. PRIOR TO STARTING WORK ON THE PROJECT, SUBMIT FOR ACCEPTANCE BY THE ENGINEER A HAZARDOUS MATERIALS CONTROLS AND SPILL PREVENTION PLAN. INCLUDE PROVISIONS FOR PREVENTING HAZARDOUS MATERIALS FROM CONTAMINATING SOIL OR ENTERING WATER COURSES, AND ESTABLISH A SPILL PREVENTION AND COUNTERMEASURE PLAN.

8. UNLESS AUTHORIZED BY THE ENGINEER, THE FOLLOWING MATERIALS SHALL NOT BE INCORPORATED INTO THE WORK:

A. ORGANIC MATERIALS SUCH AS PEAT, MULCH, ORGANIC SILT OR SOD.

B. SOILS CONTAINING EXPANSIVE CLAYS.

C. MATERIAL CONTAINING EXCESSIVE MOISTURE.

D. POORLY GRADED COURSE MATERIAL

E. PARTICLE SIZES IN EXCESS OF 6 INCHES.

F. MATERIAL WHICH WILL NOT ACHIEVE SPECIFIED DENSITY OR BEARING.

9. FINE GRADING ELEVATIONS, CONFORMS, AND SLOPES NOT CLEARLY SHOWN ON THE DRAWINGS SHALL BE DETERMINED BY THE CONTRACTOR IN THE FIELD TO DIRECT DRAINAGE TO PROTECTED DRAINAGE CONTROL STRUCTURES OR NATURAL WATERWAYS IN A MANNER THAT SUPPORTS THE INTENT OF THE DESIGN. ALL FINAL GRADING SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER.

10. SPREAD FILL MATERIAL IN LIFTS OF APPROXIMATELY 8 INCHES, MOISTENED OR DRIED TO NEAR OPTIMUM MOISTURE CONTENT AND RECOMPACTED. THE MATERIALS FOR ENGINEERED FILL SHALL BE APPROVED BY A REGISTERED CIVIL ENGINEER. ANY IMPORTED MATERIALS MUST BE APPROVED BEFORE BEING BROUGHT TO THE SITE. THE MATERIALS USED SHALL BE FREE OF ORGANIC MATTER AND OTHER DELETERIOUS MATERIALS.

11. ALL CONTACT SURFACES BETWEEN ORIGINAL GROUND AND RECOMPACTED FILL SHALL BE EITHER HORIZONTAL OR VERTICAL. ALL ORGANIC MATERIAL SHALL BE REMOVED AND THE REMAINING SURFACE SCARIFIED TO A DEPTH OF AT LEAST 12 INCHES, UNLESS DEEPER EXCAVATION IS REQUIRED BY THE ENGINEER.

12. REGULATORY AGENCIES MAY REQUIRE A FINAL GRADING COMPLIANCE LETTER. WE CAN ONLY OFFER THIS LETTER IF WE ARE CALLED TO THE SITE TO OBSERVE AND TEST, AS NECESSARY, ANY GRADING AND EXCAVATION OPERATIONS FROM THE START OF CONSTRUCTION. WE CANNOT PREPARE A LETTER IF WE ARE NOT AFFORDED THE OPPORTUNITY OF OBSERVATION FROM THE BEGINNING OF THE GRADING OPERATION. THE CONTRACTOR MUST BE MADE AWARE OF THIS AND EARTHWORK TESTING AND OBSERVATION MUST BE SCHEDULED ACCORDINGLY. PLEASE CONTACT OUR OFFICE: (503) 227-5979.

STREAM/WETLAND CONSTRUCTION BEST MANAGEMENT PRACTICES

1. ALL WORK WITHIN THE WETTED CHANNEL SHALL BE COMPLETED WITHIN THE IN-WATER WORK WINDOW AS LISTED IN THE PERMITS.

2. FISH RELOCATION

2.1. SHALL BE PERFORMED BY THE CONTRACTOR (UNLESS STATED OTHERWISE IN THE CONTRACT DOCUMENTS) PRIOR TO PERFORMING ANY CONSTRUCTION WITHIN THE WETTED CHANNEL. ALL FISH RELOCATION WORK SHALL BE SUPERVISED BY A QUALIFIED FISHERIES BIOLOGIST WITH EXPERIENCE IN WORK AREA ISOLATION, AND A VALID ODFW SCIENTIFIC TAKE PERMIT. PERFORM THE FOLLOWING STEPS IN THE ORDER LISTED FOR FISH RELOCATION:

2.2. CONDUCT FISH RELOCATION ACTIVITIES DURING PERIODS OF THE DAY WITH THE COOLEST AIR AND WATER TEMPERATURES POSSIBLE.

2.3. ISOLATE THE WETTED STREAM CHANNEL AT THE UPSTREAM END OF THE LIMITS OF DISTURBANCE WITH BLOCK NETS. CLOSELY MONITOR ALL BLOCK NETS THROUGHOUT CONSTRUCTION TO ENSURE THEY STAY SECURED TO THE BANKS AND FREE OF ORGANIC ACCUMULATION.

2.4. CONDUCT AN INITIAL SWEEP OF THE WETTED CHANNEL WITH SEIN NETS WITHIN THE WORK ZONE FROM UPSTREAM TO DOWNSTREAM.

2.5. ISOLATE THE DOWNSTREAM END OF THE WETTED CHANNEL WITH BLOCK NETS.

2.6. INSTALL DEWATERING EQUIPMENT AND BEGIN SLOWLY DEWATERING WHILE CONTINUING FISH RELOCATION ACTIVITIES.

2.7. ELECTROFISHING SHALL FOLLOW NMFS (2000) GUIDELINES

2.8. FISH TRANSPORT

2.8.1. MINIMIZE THE TIME FISH ARE IN TRANSPORT CONTAINERS.

2.8.2. KEEP TRANSPORT CONTAINERS IN SHADED AREA.

2.8.3. LIMIT THE NUMBER OF FISH WITHIN CONTAINERS AND ONLY KEEP FISH OF RELATIVELY COMPARABLE SIZE WITHIN A GIVEN CONTAINER.

2.8.4. USE AERATORS OR REPLACE THE WATER IN THE CONTAINERS AT LEAST EVERY 15 MINUTES WITH COLD CLEAR WATER.

2.8.5. RELEASE FISH IN AN AREA UPSTREAM OF THE CONSTRUCTION AREA WITH ADEQUATE COVER AND FLOW REFUGE. DOWNSTREAM IS ACCEPTABLE PROVIDED THE RELEASE SITE IS BELOW THE INFLUENCE OF CONSTRUCTION.

2.8.6. MONITOR AND RECORD FISH PRESENCE, HANDLING, AND INJURY/MORTALITY DURING ALL PHASES OF FISH RELOCATION AND SUBMIT A FISH SALVAGE REPORT AS REQUIRED BY PERMITS WITHIN 60 DAYS.

3. DEWATERING/BYPASS FLOWS

3.1. PUMPS: WHENEVER A PUMP IS USED TO DEWATER THE ISOLATION AREA AND ESA-LISTED FISH MAY BE PRESENT, A FISH SCREEN WILL BE USED THAT MEETS THE MOST CURRENT VERSION OF NMFS'S FISH SCREEN CRITERIA (NMFS 2011A). NMFS APPROVAL IS REQUIRED FOR PUMPING AT A RATE THAT EXCEEDS 3 CFS.

3.2. TREAT ALL DISCHARGE WATER FROM DEWATERING ACTIVITIES WITHIN THE CONSTRUCTION AREA USING BEST MANAGEMENT PRACTICES TO REMOVE DEBRIS, SEDIMENT, PETROLEUM PRODUCTS, AND ANY OTHER POLLUTANTS LIKELY TO BE PRESENT.DEWATER THE SHORTEST LINEAR EXTENT OF WORK AREA PRACTICABLE.

3.3. FLOW BYPASS SHALL BE PERFORMED AS SHOWN ON THE DRAWINGS, OR AS DIRECTED BY THE ENGINEER IN THE FIELD.

3.4. RE-WATERING OF THE WORK AREA FOLLOWING CONSTRUCTION SHALL BE PERFORMED SLOWLY TO PREVENT LOSS OF SURFACE FLOW DOWNSTREAM AND ANY SUDDEN INCREASE IN STREAM TURBIDITY.

4. DUST CONTROL NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTINUOUS DUST CONTROL, THROUGHOUT THE CONSTRUCTION, IN ACCORDANCE WITH THE PERMIT CONDITIONS OF APPROVAL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REGULAR CLEANING OF ALL MUD, DIRT, DEBRIS, ETC., FROM ANY AND ALL ADJACENT ROADS AND SIDEWALKS, AT LEAST ONCE EVERY 24 HOURS WHEN OPERATIONS ARE OCCURRING.

2. ALL DISTURBED AREAS, INCLUDING UNPAVED ACCESS ROADS OR STORAGE PILES, NOT BEING ACTIVELY UTILIZED FOR CONSTRUCTION PURPOSES, SHALL BE EFFECTIVELY STABILIZED OF DUST EMISSIONS USING WATER, CHEMICAL STABILIZER/SUPPRESSANT, OR VEGETATIVE GROUND COVER.

3. ALL GROUND-DISTURBING ACTIVITIES (E.G., CLEARING, GRUBBING, SCRAPING, AND EXCAVATION) SHALL BE EFFECTIVELY CONTROLLED OF FUGITIVE DUST EMISSIONS UTILIZING APPLICATION OF WATER OR BY PRE-SOAKING.

4. ALL MATERIALS TRANSPORTED OFFSITE SHALL BE COVERED OR EFFECTIVELY WETTED TO LIMIT DUST EMISSIONS.

5. FOLLOWING THE ADDITION OF MATERIALS TO, OR THE REMOVAL OF MATERIALS FROM, THE SURFACES OF OUTDOOR STORAGE PILES, SAID PILES SHALL BE EFFECTIVELY STABILIZED OF AGAINST FUGITIVE DUST EMISSIONS UTILIZING SUFFICIENT WATER OR PHYSICAL COVERING SUCH AS WITH SECURED TARPS.

6. WATER IS NOT AVAILABLE ON SITE; CONTRACTOR SHALL LOCATE A SOURCE OF WATER. SEE SPECIFICATIONS.

7. ONSITE VEHICLE SPEED ON UNPAVED SURFACES SHALL BE LIMITED TO 5 MPH.

8. ALL DISTURBED AREAS (EXCLUDING PAVEMENT AND ROADWAY SHOULDERS) ABOVE ORDINARY HIGH WATER SHALL BE SEEDED PRIOR TO OCTOBER 15TH OR EARLIER AS REQUIRED BY THE APPLICABLE PERMIT CONDITIONS.

CONSTRUCTION OBSERVATION SCHEDULE

REQUIRED OBSERVATIONS BY OWNER'S REPRESENTATIVES	INSPECTION FREQUENCY			INSPECTOR
	INITIAL INSPECTION	CONTINUOUS	PERIODIC	
BMP'S INCLUDING DIVERSION AND DEWATERING SYSTEMS	PRIOR TO SITE DISTURBING ACTIVITIES		X	ENGINEER AND OWNER REPRESENTATIVE
CLEARING LIMITS	PRIOR TO SITE DISTURBING ACTIVITIES		X	OWNER REPRESENTATIVE
LIMITS OF GRADING, EXCAVATION, AND SPOILS PLACEMENT	PRIOR TO SOIL DISTURBING ACTIVITIES		X	ENGINEER AND OWNER REPRESENTATIVE
STRUCTURE SUBGRADE	PRIOR TO FOUNDATION CONSTRUCTION		X	ENGINEER
RSP, ESM, AND SSM PLACEMENT AND COMPACTION		X		ENGINEER
LOG STRUCTURE PLACEMENT		X		ENGINEER

NOTES:

1. NOTIFY ENGINEER 72 HOURS IN ADVANCE OF FILL PLACEMENT TO INSPECT THE CULVERT FOUNDATION SUBGRADE.

509A SWIFT ST.
SANTA CRUZ, CA 95060
PH: (831) 421-9291 // FAX: (888) 815-6847
WWW.WATWAYS.COM

DRAFT
NOT FOR CONSTRUCTION

PREPARED AT THE REQUEST OF:
COQUILLE WATERSHED
ASSOCIATION

NOTES

WOODWARD CREEK
TRIBUTARY PASSAGE
IMPROVEMENT PROJECT
100% DESIGN SUBMITTAL

DESIGNED BY: A.S.
DRAWN BY: D.H.
CHECKED BY: J.H.
DATE: 1/31/2025
JOB NO.: 23-068

BAR IS ONE INCH ON ORIGINAL DRAWING, ADJUST SCALES FOR REDUCED PLOTS
0 1" = 1"

C13
13 OF 13

Technical Specifications

For

Woodward Creek Tributary Fish Passage Improvement Project

Prepared for

Coquille Watershed Association

100% Submittal

01/31/2025

**FOR USE IN CONNECTION WITH
STATE OF OREGON, DEPARTMENT OF TRANSPORTATION
STANDARD SPECIFICATIONS FOR CONSTRUCTION, 2024 EDITION**

Woodward Creek Tributary Fish Passage Improvement Project
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 011010 SUMMARY OF WORK

1. GENERAL

1.1 SECTION INCLUDES

- A. This Section includes a general description of the Work required for this Contract.

1.2 CONTRACT DOCUMENTS

- A. This Project shall be constructed in accordance with the following:
 - 1. Woodward Creek Tributary Fish Passage Improvement Project – Construction Drawings, dated 1/31/2025.
 - 2. Woodward Creek Tributary Fish Passage Improvement Project – Technical Specifications, dated 1/31/2025.
 - 3. Any Addendum included in the Contract Documents.
 - 4. Standard Plans or Specifications, when referenced in this Project Manual, shall mean Oregon Standard Specifications for Construction, current edition. A copy of this document shall be on site during construction.

1.3 PROJECT DESCRIPTION

- A. Contractor shall provide all necessary expertise, labor, equipment, materials, incidentals, and permits required to perform the Woodward Creek Tributary Fish Passage Improvement Project including but not limited to:
 - 1. Project work area isolation and dewatering.
 - 2. Excavation as indicated on the Plans.
 - 3. Demolition as indicated on the Plans
 - 4. Installation of structural plate culvert as indicated on the Plans.
 - 5. Installation of rock slope protection materials in the channel as indicated on the Plans.
 - 6. Installation of habitat logs as indicated on the Plans.
 - 7. Stream bank revegetation.
- B. The Work to be performed under this Contract shall consist of furnishing tools, equipment, materials, supplies, and manufactured articles and for furnishing transportation and services, including fuel, power, water, and essential communications, and for the performance of all labor, work, or other operations required for the fulfillment of the Contract in strict accordance with the Contract Documents. Refer to work by Owner in paragraph 1.4 below.

1.4 WORK BY OWNER

- A. The Owner will furnish the following items as noted on the Drawings:
 - 1. None.

1.5 LABOR AND SAFETY STANDARDS

- A. All Work shall be done in accordance with these Specifications and requirements of the State of Oregon and OSHA standards.

1.6 TEMPORARY FACILITIES

- A. The Contractor shall furnish all temporary facilities such as portable toilets, job office, security fencing, and temporary power as needed to perform the Work.

1.7 PROJECT CONDITIONS

- A. The Contractor shall coordinate the Work with the Owner's Authorized Representative to minimize disturbance of neighboring property owners.

1.8 WORK AND STORAGE AREA

- A. The primary Work, storage, and staging areas are designated on the Drawings and shall be available to the Contractor for Work including all functions incidental to the Work and storage areas during the construction period. All operations and storage of materials by the Contractor shall be confined to the immediate Work area and other approved areas as directed by the Owner's Representative.

1.9 ACCESS TO THE WORK AREA

- A. The Contractor shall repair any damage to access facilities and roadways for which the Contractor is responsible and shall restore them to conditions at least equaling preconstruction conditions.
- B. The Contractor shall take reasonable measures to limit entry of unauthorized persons and vehicles to the Work areas and to allow for access for employees, agents, etc. required for the performance of this Contract, and to authorized personnel of federal, state, and local agencies, and to others having a right thereto.

1.10 RESTORATION OF EXISTING FACILITIES

- A. The Contractor shall perform all Work to lines, grades, and cross sections shown on the Drawings. Final grades shall match existing grades unless otherwise noted on the Drawings. Where final grades are indicated on the Drawings, grades shall slope uniformly between elevations shown. All final grades shall be free of hollows which would pond water and sloped to allow for surface drainage. All earthwork shall have finish surfaces which have neat, reasonably uniform appearance.

1.11 EASEMENTS AND RIGHTS-OF-WAYS

- A. Confine construction operations to the immediate vicinity of the locations indicated on Drawings and use due care in placing construction tools, equipment, excavated materials, and pipeline materials and supplies so as to cause the least possible damage to property and interference with traffic.

1.12 PERMITS

- A. The Contractor shall be responsible for obtaining and paying for all permits necessary to complete the Work.

1.13 SUBSTANTIAL COMPLETION

- A. Substantial completion dates are listed in the ITB.

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. Preinstallation conferences.
 - 5. 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 landowner 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 all arrangements for meetings, prepare agenda with copies for participants, and preside over 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 the 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 the record documents.
 - b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
 - c.
 - d. Preparation of Contractor's punch list.
 - e. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
 - f. Submittal procedures.
 - g.
 - 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 all cost or schedule delays if RFI is not answered in a timely manner.
 3. Coordinate and submit RFIs in a prompt manner 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 the 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.
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 the 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. Rock slope protection.
 - g. Log Structure construction.
 - h. Substantial Completion of improvements.
 - i. Final cleanup.
- 3. The construction schedule shall be a series of line diagrams 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 013513 PROJECT PROCEDURES

1. GENERAL

1.1 SUMMARY

- A. Provide coordination of Work.
 - 1. Project Supervisor: Employee that has authority to give instruction to others, be held responsible for the Work and actions of others, and to make decisions on behalf of the General Contractor. Project supervisor is to be onsite during all times when Work is being performed on the Project either by Contractor's crew or subcontractors.
 - 2. Pre-construction conference.
 - 3. Detailed Construction Progress Schedule.
 - 4. Monthly meetings; distributed minutes.
 - 5. Other meetings.
- B. Prior to start of construction, submit a construction progress schedule for the entire construction process from start to final occupancy. Schedule can be in any standard format such as Gantt chart, bar chart, CPM flowcharts, or other acceptable format. The Contractor shall review and update this schedule weekly.
- C. Prepare submittal schedule.
- D. Submit schedule of values consisting of a line-item valuation for each section of Work.
- E. Submit and post a list of emergency telephone numbers and address for individuals to be contacted in case of emergency.
- F. Submit a record of changes from construction drawings and Specifications; to be maintained and annotated by Contractor as work progresses.
- G. Perform quality control during installation.
- H. Clean and protect the Work.

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 shall consist of compensation for bonds, insurance, required permits and fees, shop drawings, project phasing, supervision, traffic control, temporary chain link or other fencing and gates, temporary construction entrance and tracking control, tree protection, 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 015713, Temporary Erosion Control and BMPs
- B. Section 015713.01, Fiber Roll
- C. Section 015713.02, Silt Fence
- D. Section 311100, Clearing and Grubbing

1.3 SUBMITTALS

- A. Hazardous Materials and Spill Prevention Plan, per Section 3.10.

2. PRODUCTS – NOT USED

3. EXECUTION

3.1 CONTRACTOR'S PLANT AND EQUIPMENT

- A. Security. The Contractor shall always be responsible for security of their plant and equipment. The Owner shall not be responsible for missing or damaged equipment, tools, or personal belongings.
- B. Water & Power. The Contractor shall provide all water and electrical power necessary for construction as specified.
- C. Communication Facilities. The Contractor shall be responsible for providing sufficient communication facilities to complete the work.
- D. Storage Facilities.

1. Provide storage facilities for the protection of materials and supplies from weather and shall always keep the facilities clean and in proper order.
 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 the 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 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 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 the Owner's Authorized Representative, 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's Authorized Representative.

3.8 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 Owner's Authorized Representative during the pre-bid walk.

3.9 DUST CONTROL

- A. General. 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.

3.10 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. 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. Concrete. Provide a lined pit for concrete washdown, located where spills or overflow cannot enter nearby watercourses or storm drains. The pit shall be located the greater of 75 feet from any flowing watercourse, or as specified in the permit conditions.
- D. 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 75 feet from any riparian habitat or water body.
- E. 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.
- F. 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.

- G. 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.

3.11 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. Cleanup and dispose of all concrete debris and washings when concrete work is complete.

3.12 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.

3.13 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 the actions of the Contractor, shall be restored, including roadside drainage ditches, as nearly as possible, to their original conditions.

3.14 STORAGE OF MATERIALS AND EQUIPMENT

- A. Materials and equipment shall be stored to ensure the preservation of their quality and fitness for the work. Stores of equipment and materials shall be located 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.

3.15 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. Work includes furnishing, placing, maintaining, and removing signs and temporary supports or barricades for the signs; posting parking restrictions; pilot car including driver, radios, and any other equipment and labor required to operate a pilot car; 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 of Uniform Traffic Control Devices," by the Federal Highway Administration and the "Oregon Supplement to the Manual on Uniform Traffic Control Devices," 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.
- D. All work shall comply with the current edition the "Manual of Uniform Traffic Control Devices," by the Federal Highway Administration and the "Oregon Supplement to the Manual on Uniform Traffic Control Devices," by the Oregon Department of Transportation, available on the internet at: <https://www.oregon.gov/ODOT/Engineering/Pages/MUTCD.aspx>

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	Lump Sum (LS)

END OF SECTION

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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), 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 berms, dikes, dams, sediment basins, gravel or rock surfacing, mulches, grasses, slope drains, filtration devices, silt fencing or fiber rolls, slope protection fabric, 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 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. The Contractor shall be responsible for turbidity monitoring and reporting as required by all permit conditions.

1.2 RELATED SECTIONS

- A. Section 015000, Mobilization
- B. Section 015713.01, Fiber Roll
- C. Section 015713.02, Silt Fence
- D. Section 311100, Clearing and Grubbing
- E. Section 312319, Dewatering
- F. Section 312323, 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

2.1 MATERIALS

- 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.
- C. Soil conditioners shall be approved by Engineer and in accordance with local regulations prior to installation.

3. EXECUTION

3.1 GENERAL

- A. Install temporary soil stabilization for water pollution control in all disturbed work areas 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 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. Replace single or group of gravel bag(s) when the bag material is ruptured or when the yarn has failed, allowing the bag contents to spill out.
7. Routinely inspect stakes and/or rope used to secure fiber rolls in place and repair as necessary if found to be loose or ineffective.
8. 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.
9. 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.

3.3 PROTECTION OF ADJACENT PROPERTIES

- A. Properties adjacent to the site of a land disturbance shall be protected from sediment deposition.
- B. In addition to the erosion control measures required on the DRAWINGS, perimeter controls may be required if damage to adjacent properties is likely, and may include, but is not limited to:
 1. Vegetated buffer strip around the lower perimeter of the land disturbance. a. Vegetated buffer strips may be used only where runoff in sheet flow is expected and should be at least twenty (20) feet in width.
 2. Sediment barriers such as straw bales, erosion logs, and silt fences.
 3. Sediment basins and porous landscape detention ponds.
 4. Combination of above measures.

3.4 CONSTRUCTION ACCESS ROUTE

- 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 DUST CONTROL

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

3.6 HAZARDOUS MATERIALS CONTROL AND SPILL PREVENTION PLAN

- A. General. Refer to Section 015000, Mobilization

3.7 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.

3.8 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 the Owner's Authorized Representative.
- B. Trapped sediment and other disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion.

3.9 TURBIDITY MONITORING AND REPORTING

- A. In addition to permit requirements to monitor the receiving stream to identify water quality issues, during Work in Waters of the State or U.S., implement best management practices (BMPs) to minimize turbidity, and monitor turbidity using a turbidity meter that has been maintained and calibrated according to the manufacturer's specifications and according to the following:
 - 1. Measure up current and downcurrent turbidity at two-hour intervals and perform work based on turbidity measurements according to the following:
 - a. Take upcurrent samples at a location representative of background turbidity approximately 100 feet from the work area.
 - b. Take downcurrent samples at a location approximately 100 feet from the work area at approximately mid-depth of the water body and within any visible turbidity plume.
 - c. If the downcurrent reading is less than 5 nephelometric turbidity units (NTU) higher than the upcurrent reading, continue to Work and take readings every two hours.
 - d. If the downcurrent reading is greater than or equal to 5 and less than 30 NTU higher than the upcurrent reading, modify work procedures and repair or upgrade BMPs, continue Work, and continue to take readings every two hours. If after four hours the downcurrent reading is still greater than or equal to 5 NTU higher than the upcurrent reading, stop all work in water and repair or upgrade BMPs. Resume work in water only after the downcurrent reading is less than 5 NTU above the upcurrent reading.
 - e. If the downcurrent reading is greater than or equal to 30 and less than 50 NTU higher than the upcurrent reading, modify work procedures, repair or upgrade BMPs and continue Work. If, at the subsequent two-hour reading, the downcurrent reading is still more than 30 NTU higher than the upcurrent reading, stop all work in water and repair or upgrade BMPs. Resume work in water only after the downcurrent reading is less than 5 NTU above the upcurrent NTU reading.
 - f. If the downcurrent reading is 50 NTU or more higher than the upcurrent reading, stop all work in water, repair or upgrade BMPs, and inform the Engineer. Resume work in water

only after the downcurrent reading is less than 5 NTU above the upcurrent NTU, as determined by continued readings made no more than two hours apart.

- g. Document all turbidity monitoring observations on ODOT form 734-2755, "Turbidity Monitoring Report", or another form approved by the Engineer. Submit reports to the Engineer weekly during work in water and keep copies of the reports at the Project Site.
- h. Meter turbidity monitoring may be temporarily suspended if all of the following conditions are met:
 - i. Temporary water management and work area isolation measures have been installed and are functioning as designed.
 - ii. The Engineer, after consultation with DEQ, has authorized the suspension of turbidity monitoring. The Engineer will provide information to be documented on the turbidity monitoring form, including the date of the DEQ authorization and the name of the DEQ employee providing the authorization.
- a. Resume the turbidity monitoring protocol if Work during a temporary suspension of meter turbidity monitoring causes a release of a visible turbidity plume.

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.

Payment shall be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Temporary Erosion Control and BMPs	Lump Sum (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 herein, or as otherwise directed by the Engineer.

1.2 RELATED SECTIONS

- A. Section 015000, Mobilization
- B. Section 015713, Temporary Erosion Control and BMP's
- 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 Roll. Straw Roll 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 alternative.
 - 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 1" x 24" for Type 1 installation or a minimum of 1" x 2" x 24" with notches for twine for Type 2 installation. 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 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.
- B. 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, 20 feet apart along the slope for slope inclination between 4:1 and 10:1, and a maximum of 50 feet apart along the slope for slope inclination of 10:1 and flatter.
- C. The bedding area for the Fiber Roll shall be cleared of obstructions including rocks, clouds, and debris greater than one inch in diameter before installation.
- D. 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 three feet. Where fiber rolls meet, provide an overlap of two feet, with adjacent rolls tightly abutting each other.
- E. Fiber Roll shall be installed prior to seeding where used without slope protection fabric.
- F. 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. Fiber Roll will be measured by the linear foot of permanent fiber roll installed at the locations indicated on the Drawings, as specified, or as directed by the Engineer.
- B. Temporary Fiber Roll that the Contractor installs for the implementation of Temporary Erosion and Sediment Control, 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 permanent fiber rolls.
- B. Temporary Fiber Roll that the Contractor installs for the implementation of Temporary Erosion and Sediment Control, in addition to that shown on the Drawings, shall be paid for under Temporary Erosion Control and BMPs, Section 015713.
- C. Payment shall be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Fiber Roll	Linear Foot (LF)

END OF SECTION

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SILT FENCE

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SECTION 015713.02

SILT FENCE

1. GENERAL

1.1 DESCRIPTION

- A. Work under this Section includes furnishing all labor, materials, equipment, and incidentals to install, maintain, and remove silt fence, as shown on the Drawings, as specified herein, or as directed by the Engineer.
- B. This Specification is applicable to the use of a geotextile as a vertical, permeable interceptor designed to remove suspended soil from overland water flow. The function of a temporary silt fence is to filter and allow settlement of soil particles from sediment-laden water. The purpose is to prevent the eroded soil from being transported off the construction site by water runoff.

1.2 RELATED SECTIONS

- 1. Section 015000, Mobilization
- 2. Section 015713, Temporary Erosion Control and BMP's
- 3. Section 312316, Excavation
- 4. Section 312319, Dewatering

1.3 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. D 4355 - Test Method for Deterioration of Geotextiles from Exposure to Ultraviolet Light and Water (Xenon-Arc Type Apparatus).
 - 2. D 4491 - Test Methods for Water Permeability of Geotextiles by Permittivity.
 - 3. D 4632 - Test Method for Grab Breaking Load and Elongation of Geotextiles.
 - 4. D 4751 - Test Method for Determining Apparent Opening Size of a Geotextile.
 - 5. D 4873 - Guide for Identification, Storage, and Handling of Geotextiles.

1.4 SUBMITTALS

- A. Submit to the Engineer for review, the following:
- B. Manufacturer's Data and Certification:
 - 1. The Contractor shall provide the Engineer with a certificate stating the name of the silt fence manufacturer, product name, style, chemical compositions of filaments or yarns and other pertinent information to fully describe the silt fence fabric.
 - 2. The Manufacturer is responsible for establishing and maintaining a quality control program to assure compliance with the requirements of the Specification. Documentation describing the quality control program shall be made available upon request.
 - 3. Manufacturing Quality Control (MQC) test results shall be provided upon request.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Silt fence fabric labeling, shipment and storage shall follow ASTM D 4873.
- B. Product labels shall clearly show the manufacturer or supplier name, style name, and roll number.

- C. Each shipping document shall include a notation certifying that the material is in accordance with the manufacturer's certificate.
- D. Each silt fence roll shall be wrapped with a material that will protect the silt fence from damage due to shipment, water, sunlight, and contaminants.
- E. The protective wrapping shall be maintained during periods of shipment and storage. If the wrapping is damaged prior to installation, the outer wrap of silt fence material must be discarded before installation.
- F. During storage, silt fence rolls shall be elevated off the ground and adequately covered to protect them from the following: Site construction damage, extended exposure to ultraviolet (UV) radiation, precipitation, chemicals that are strong acids or strong bases, flames, sparks, temperatures in excess of 71 deg C (160 deg F) and any other environmental condition that might damage the silt fence .

2. PRODUCTS

2.1 MATERIALS

- A. At the Contractor's option, temporary silt fence shall be prefabricated or constructed with silt fence fabric, posts, and fasteners.
- B. Silt Fence Fabric. Silt fence fabric shall be geotextile manufactured from woven polypropylene or polymer material. Silt fence fabric may be virgin, recycled, or a combination of virgin and recycled polymer materials. No virgin or recycled polymer materials shall contain biodegradable filler materials that can degrade the physical or chemical characteristics of the finished fabric. Silt fence fabric shall conform to the following requirements:

Specification	Requirements
Width, inches, min.	36
Grab breaking load, 1-inch grip in each direction (min, lb) ASTM Designation: D 4632	120, min.
Apparent Elongation, percent minimum in each direction ASTM Designation: D 4632*	15, min.
Permittivity, 1/sec., min. ASTM Designation: D 4491	0.05, min.
UV resistance, retained grab breaking load, 500 hours, (min., percent) ASTM Designation: D 4355 (xenon-arc lamp and water spray weathering method)	70, min.

*or appropriate test method for specific polymer

- C. Posts. Posts for temporary silt fence shall be one of the following:
 - 1. Untreated fir or pine, a minimum of 2" x 2" in size, and four feet in length. One end of the post shall be pointed.
 - 2. Steel and have a "U," "T," "L," or other cross-sectional shape that can resist failure from lateral loads. The steel posts shall have a minimum weight of 0.8-pound per foot and a minimum length of 4 feet. One end of the steel posts shall be pointed, and the other end shall be capped with an orange or red plastic safety cap which fits snugly to the steel post. The Contractor shall submit to the Engineer for approval a sample of the capped steel post prior to installation.
- D. Fasteners. Fasteners for attaching silt fence fabric to posts shall be as follows:
 - 1. When prefabricated silt fence is used, posts shall be inserted into sewn pockets.

2. Silt fence fabric shall be attached to wooden posts with nails or staples as shown on the Drawings or as recommended by the manufacturer or supplier. Tie wire or locking plastic fasteners shall be used to fasten the silt fence fabric to steel posts. The maximum spacing of fasteners shall be eight inches along the length of the steel post.

3. EXECUTION

3.1 FIELD ASSEMBLY

- A. The silt fence fabric shall be installed on the side of the posts facing the slope.
- B. The silt fence fabric at the bottom of the fence shall be buried in a “J” configuration to a minimum depth of 150 mm (six inches) in a trench so that no flow can pass under the silt fence. Mechanically pushing 12 inches of the silt fence fabric vertically through the soil may be allowed if the Contractor can demonstrate to the Engineer that the silt fence fabric will not be damaged and will not slip out of the soil resulting in sediment passing under the silt fence fabric.
- C. The trench shall be backfilled, and the soil compacted over the upslope side of the silt fence fabric.
- D. When joints are necessary, filter fence fabric shall be spliced together only at a support post, with a minimum twelve (12) inches overlap and securely sealed or stitched.
- E. The Contractor must demonstrate to the satisfaction of the Engineer that the silt fence fabric can withstand a sediment load of $\frac{1}{3}$ the height of the fence.
- F. The posts shall be placed at the spacing as shown on the Drawings. A post should be driven or placed a minimum of 450 mm (18 inches) into the ground. Depth shall be increased to 600 mm (24 inches) if fence is placed on a slope of 3:1 or greater. Where 450 mm (18 inches) depth is impossible to attain, the posts should be adequately secured to prevent overturning of the fence due to sediment loading.
- G. Support fence, if required, shall be fastened securely to the upslope side of the fence post. The support fence shall extend from the ground surface to the top of the silt fence fabric.
- H. When a self-supported fence is used, the silt fence fabric shall be securely fastened to fence posts.
- I. Temporary silt fence shall be installed parallel with the slope contour in reaches not to exceed 500 feet. A reach is considered a continuous run of temporary silt fence from end to end or from an end to an opening, including joined panels. Each reach shall be constructed so that the elevation at the base of the fence does not deviate from the contour more than $\frac{1}{3}$ of the fence height. The fence shall be placed such that water cannot runoff around the end of the fence; this may be accomplished by constructing end-returns that angle up the slope.
- J. The silt fence should be limited to handle an area equivalent to 90 square meters (100 sy) per three meters (ten feet) of fence. Caution should be used where the site slope is greater than 1:1 and water flow rates exceed three liters (0.8 gallons) per second per three meters (ten feet) of fence.

3.2 INSPECTION

- A. The Contractor shall inspect all temporary silt fences 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 silt fences in areas where construction activities have altered the natural contour and drainage runoff to ensure that the silt fences are properly located for effectiveness. Where deficiencies exist as determined by the Engineer, additional silt fence shall be installed as directed by the Engineer. Damaged or otherwise ineffective silt fences shall be repaired or replaced promptly.
- C. Should the filter fence fabric decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, the fabric shall be replaced promptly.
- D. Sediment deposits shall either be removed when the deposit reaches one third the height of the fence, or a second silt fence shall be installed as directed by the Engineer.

3.3 REMOVAL

- A. The silt fence shall remain in place for the complete duration of the project as necessary to conform to the Project Permit(s), or until the Engineer directs it to be removed. Upon removal, the Contractor shall remove and dispose of any excess sediment accumulations, use hand tools to grade disturbed areas to drain in the pre-disturbance direction, and revegetate all bare areas in accordance with contract requirements. Trimming the silt fence fabric and leaving it in place will not be allowed.
- B. Removed silt fence may be used at other locations provided the silt fence fabric and other material requirements continue to be met to the satisfaction of the Engineer.
- C. Ground disturbance caused by the installation and removal of the temporary silt fence shall be backfilled and repaired in conformance with the provisions in Section 15-1.02, "Preservation of Property," of the Standard Specifications.

4. MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Temporary silt fence will not be separately measured for payment.

4.2 PAYMENT

- A. No separate payment will be made for Temporary Silt Fence. Full compensation for all costs associated with this work shall be included in the contract price for Temporary Erosion Control and BMPs in accordance with Section 015713.

END OF SECTION

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SECTION 016000 PRODUCT REQUIREMENTS

1. GENERAL

1.1 SUMMARY

- A. Provide products only from manufacturers and vendors specified unless alternate products are approved. Products submitted for approved alternate consideration shall be submitted to the Owner's Authorized Representative with acceptable documentation.
- B. Substitutions are not permitted without acceptable justification supplied by the Contractor to the Owner's Authorized Representative. Conditions for substitutions are listed below.
- C. Conditions necessary for approval of a substitution include at least one of the following:
 - 1. Specified material cannot be coordinated with other work.
 - 2. Specified material is unavailable or has unacceptable lead times.
 - 3. Specified material is not acceptable to authorities having jurisdiction.
 - 4. Substantial advantage is offered Owner in terms of cost, time, or other valuable consideration.
 - 5. Product is equivalent or superior to specified item as determined by the Owner's Authorized Representative.
- D. Submission of substituted manufacturer's shop drawings, product data, or samples is not to be construed as a substitution approval. Approval will only be in the form of written communication from the Owner's Authorized Representative.
- E. Substitution made without written consent of the Owner's Authorized Representative shall be considered non-conforming work and subject to removal and replacement at contractor's expense.

2. PRODUCTS – NOT USED

3. EXECUTION – NOT USED

4. MEASUREMENT AND PAYMENT – NOT USED

END OF SECTION

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PROJECT CLOSEOUT

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SECTION 017000 PROJECT CLOSEOUT

1. GENERAL

1.1 SUBSTANTIAL COMPLETION

- A. General: When the Contractor considers that the Work, or a designated portion thereof which is acceptable to the Owner's Authorized Representative, is substantially complete, the Contractor shall prepare for submission to the Owner's Authorized Representative a list of items to be completed or corrected. The failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with Contract Documents. When the Owner's Authorized Representative based on an inspection determines that the Work or designated portion thereof is substantially complete, he will then prepare a certificate of Substantial Completion which shall establish the date of substantial completion. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion. The Certificate of Substantial Completion shall be submitted to the Owner's Authorized Representative and the Contractor for their written acceptance of the responsibilities assigned to them in such certificates.

1.2 WRITTEN GUARANTEES

- A. Written guarantees, in duplicate, addressed to the Owner, but submitted to the Owner's Representative.
1. Guarantee by Contractor: Guarantee by Contractor covering the entire work for the one year period from the date of Certificate of Substantial Completion as specified hereinbefore. Letter to be substantially as follows:

(Re: Project)
(Owner) (Address)

To the Owner's Authorized Representative:

I (We) the undersigned do hereby guarantee for a period of one year(s) from date of Certificate of Substantial Completion all Work performed under the terms of the Contract Documents. I (We) will remedy at my (our) expenses any defects appearing during that period due to poor materials or workmanship and will pay for any damage to other Work resulting from occurrence of said defects or the correction of same. The Contractor agrees to maintain the Performance Bond through the guarantee period.

This guarantee shall not be interpreted as holding the Contractor responsible for any deterioration of the Work due to normal use or the abuse of the Work by the Owner.

Regards,

_____ Contractor

- B. A Performance Bond for the face value of the Contract shall be provided to the Owner for the one-year guaranteed period.

1.3 FINAL CLEANUP

- A. Completion of the Work: At the completion of the Work, leave the site of Work in a neat, unobstructed condition.
- B. Removal: Remove all tools, appliances, materials, and equipment from the site of Work as soon as possible, upon completion of the Work of the Contract.
- C. Directions: When directed, just before the Project is turned over to the Owner, remove stains, excess glazing compounds, protective tape, and other foreign material from both surfaces of glass installed under this contract, and wash and polish glass on both sides. Wash and polish mirrors.
- D. Final cleanup: The final cleanup of the Project shall be done with care and all ductwork, cubicles, cabinets, motor control centers, control panels, rooms, and enclosures shall be clean and dust free prior to final acceptance of the Work.

2. PRODUCTS – NOT USED

3. EXECUTION – NOT USED

4. MEASUREMENT AND PAYMENT – NOT USED

END OF SECTION

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CONSTRUCTION SURVEYING

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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.

1.2 WORK INCLUDED

- A. The Contractor shall be responsible for procuring professional land surveying services as necessary to construct this project. An Oregon licensed Land Surveyor, or Civil Engineer authorized to practice land surveying as defined in Section 820 of the Oregon Administrative Rules, shall be in responsible charge of all survey work to be performed in conjunction with the scope of work of this project.
- B. The Contractor shall preserve and protect all project survey control and reference points shown on the Drawings and located outside the limits of disturbance. Monuments disturbed by the Contractor shall be reestablished by the Contractor at their sole expense.
- C. The Contractor shall be solely responsible for the protection and maintenance of all existing and Contractor-established survey marks and monuments.
- D. Engineers site observations do not relieve the Contractor of their sole responsibility for the accuracy of all constructed lines and grades.

1.3 RELATED SECTIONS

- A. Section 312316, Stripping and Excavation

1.4 REFERENCES

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

1.5 SUBMITTALS

- A. 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.

1.6 QUALITY ASSURANCE

- A. All Work shall 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. The 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 needed to complete the work.

- C. If 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 a minimum of three survey control monuments, as shown on the Drawings. 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 to use the electronic files. Civil 3D information does not transfer to base AutoCAD or older versions of AutoCAD and therefore will not be available to Land Surveyors who do not have this program.
- B. From this information, the Contractor shall establish the baseline control points and reference points for horizontal and vertical control and make all additional detailed surveys and measurements and establish markings or monuments necessary for the construction of the work as dimensioned on the Drawings.
- C. At a minimum, construction staking shall include the following:
 - 1. Proposed clearing and grubbing limits,
 - 2. Proposed channel alignment (centerline),
 - 3. Proposed grading and contours for earthwork,
 - 4. Proposed channel treatments, structures, and modifications,
 - 5. Any other items required for a full, complete, and accurately built project.
- D. All stakes and survey markers will be conspicuously marked with flagging tape or paint by the Contractor. The Contractor shall be responsible for protecting and maintaining all stakes from destruction.

4. MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Construction Surveying will not be separately 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. The cost of resetting 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.

END OF SECTION

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SECTION 024100 DEMOLITION

1. GENERAL

1.1 DESCRIPTION

- A. Perform all demolition and disposal work as shown on the Drawings, as specified herein, or as otherwise directed by the Engineer.

1.2 RELATED SECTIONS

- A. Section 015000, Mobilization
- B. Section 311100, Clearing and Grubbing

2. PRODUCTS - NOT USED

3. EXECUTION

3.1 GENERAL

- A. Before beginning any work, carefully inspect the work and examine the Drawings and Specifications to determine the extent of the work to be performed. In the company of the Engineer, visit the site and verify the extent of the demolition and other work to be performed.
- B. Contact all appropriate utilities and agencies to coordinate and verify all abandonments and relocations.
- C. Provide a minimum of 48 hours of notice to any residences affected by a planned utility disruption.
- D. Use of explosives will not be permitted.
- E. Prevent dust from becoming a nuisance to the public, to neighbors, and to other work being performed on or near the site.
- F. Comply with all local regulations regarding dust generation, hauling and disposal.
- G. Materials projecting above-ground shall be cut off at a minimum of one foot below finished grade. Backfill and compact all holes caused by removal of materials. Areas of site not detailed on the Drawings shall be filled and graded to drain, generally matching existing conditions.
- H. Rock removed from the site may be re-used if it meets the materials specifications of the work item for which it is proposed.

3.2 PROTECTION OF EXISTING WORK

- A. Take all necessary precautions to ensure against damage to existing work to remain in place, or to be salvaged. Any damage to such work shall be repaired or replaced as directed by the Engineer.
- B. Construct and maintain shoring, bracing, and supports, as required. Ensure that structural elements are not overloaded and increase structural supports, or add new supports, as may be required because of any cutting, removal, or demolition work performed.

- C. Existing signs and mailboxes shall be temporarily relocated and replaced at completion of work, at locations to be approved by the Engineer.

3.3 UTILITY DISCONNECTS

- A. Coordinate utility disconnections with responsible utilities as designated on the Drawings.

3.4 DEMOLITION

- A. General. Extent of removal of existing facilities shall be as shown on the Drawings. Materials not identified as being salvaged by Owner shall be removed and disposed.
- B. Hazardous Materials. Comply with all local rules, regulations, ordinances, and statutes for handling and disposal of hazardous materials encountered.
- C. Utilities. Remove all abandoned above and below ground utilities, of six-inch diameter or greater, as shown on the drawings or as directed by the Engineer.
- D. Demolition. Demolish all specified structures in accordance with all local regulations. Completely remove footings, foundation, and above-ground construction as shown on the Drawings. Demolition includes all outbuildings, walkways, retaining walls, patios and associated structures, porches, any hard landscaping, utilities (and associated structures), posts, piping, conduits, access driveways, culverts, and other similar permanent improvements specified on the Drawings.

3.5 SELECTIVE DEMOLITION

- A. Pavement, Concrete and Masonry. Where portions of pavement, concrete or masonry facilities and foundations are to be selectively demolished, areas to be removed shall first be sawcut in neat and square lines for the full depth of the section. Pavement removal shall extend beyond limits of planned activities to extent required to maintain integrity of adjacent surfaces. If the straight edge or other immediate adjacent area of the saw cut concrete and/or asphalt pavement section is damaged prior to replacement of the structural section and surfacing, it shall be the Contractor's responsibility to re-cut any damaged, broken, or uneven portion prior to paving at his own expense. Under no circumstance shall the Contractor be allowed to pave against a joint with a broken, jagged, or uneven line.
- B. Fences, Walls and Gates. Preserve access control where fencing, walls and gates are removed during construction. Repair damage caused by work under this contract to the satisfaction of the Engineer.

3.6 DEBRIS REMOVAL

- A. Remove all trash, rubble and debris generated by demolition activities from the site on a regular basis.

3.7 DISPOSITION OF MATERIALS

- A. Salvaged Materials. Salvage of materials for reuse by the Owner shall include removal of the material, equipment, etc., from its present location and transporting, bundling, protecting, cleaning, and storing it in a designated location on the work site, as approved by the Engineer. Items which are specified to be reused, and are damaged during removal or storage, shall be repaired to the Engineer's satisfaction, or replaced with new matching materials, at no cost to the Owner.

- B. Wasted Materials. Title to all debris to be wasted and demolished materials is vested to the Contractor upon receipt of the Notice-to-Proceed. Contractor shall assume responsibility for any loss or damage to such property after the Notice-to-Proceed. The condition of such material is not guaranteed and the Contractor shall assume all liability for reuse of any such material.
- C. Disposal. All materials removed under this section which are not salvaged by the facility owner for reuse or otherwise recycled, shall be disposed of off-site at appropriate disposal areas approved in advance by the Owner. The material shall be removed from the job site before completion of the contract. Material shall not be sold on the site. All loading, hauling, dumping, and disposal fees are the responsibility of the Contractor.
- D. Hauling. Debris shall be removed and transported by approved haul routes in a manner as to prevent spillage on streets or adjacent areas.

4. MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Demolition work will be measured for payment as a lump sum pay item.

4.2 PAYMENT

- A. Demolition 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 necessary to complete the demolition, salvage, disposal, and reuse of materials, as specified.
- B. Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Demolition	Lump Sum (LS)

END OF SECTION

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CLEARING AND GRUBBING

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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 312316, Excavation
- C. 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. The Contractor shall flag all vegetation to be removed for approval by the Owner's Authorized Representative. Once the flagging is completed, the Owner's Authorized Representative will walk the vegetation removal areas and approve them prior to Contractor initiating clearing and grubbing activities.
- E. The Contractor shall use hand-operated equipment for clearing and grubbing within the creek channel, (except where mechanized equipment access is provided, as shown on the Drawings) and at any protected natural resource area or tree protection zone.
- F. Downed plant materials shall be removed from tree protection zones and protected natural resource areas by hand or with equipment located outside fencing. The Contractor shall extract debris by lifting the material out, not skidding it across the soil surface.

- G. Trees. Where trees are approved by the Owner's Authorized 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.
- H. Vegetation. Vegetation to be removed shall consist of all heavy growth of brush and woody vegetation, unless shown otherwise on the Drawings or directed by the Engineer.
- I. Debris Removal. Abandoned foundations, rip rap, drainage materials, debris, and other unsuitable material and any other debris designated for removal on the Drawings shall be removed and disposed of in accordance with this section. Buried unsuitable debris encountered during excavations shall be removed and disposed of in accordance with Section 312316, Excavation.

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 in-stream work, including placement of rock slope protection materials and construction of log structures.
- 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, Stripping and Excavation. The excavation shall then be backfilled with compacted embankment material in conformance with Section 312323, Fill.

3.3 DISPOSAL OF DEBRIS

- A. Cleared and Grubbed Materials. Except as hereinafter specified or otherwise indicated on the Drawings, all logs, brush, stripping, 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:

Pay Item

Clearing and Grubbing

Pay Unit

Lump Sum (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. Channel Excavation
 - 4. Topsoil salvage, storage, and replacement
 - 5. Construction Staking
 - 6. Other miscellaneous excavation incidental to the construction of the improvements.
- B. Over-excavation for culvert demolition and replacement and placement of RSP is not included within this section but is considered incidental to the work for which it is required.

1.2 RELATED SECTIONS

- A. Section 015713.01, Fiber Roll
- B. Section 015713.02, Silt Fence
- C. Section 017123.16, Construction Surveying
- D. Section 311100, Clearing and Grubbing
- E. Section 312323, Fill
- F. Section 321540, Aggregate Base
- G. Section 329200, Seeding
- H. Section 354200, Log Structures
- I. Section 334213, Structural Plate Culvert
- J. Section 354237, Rock Slope Protection

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 and Section 312319, Dewatering of 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, per Section 312323, Fill.
- 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, which is not otherwise classified and paid for under

Excavation of Unsuitables or Rock Excavation described below. Unclassified Excavation includes excavation required to reach finished grade. Over-excavation for the placement of materials (e.g., Engineered Streambed Material, Pipes, Log Structures) or the removal of unsuitables, as described below under Excavation of Unsuitables, is not included in Unclassified Excavation.

3.4 EXCAVATION OF UNSUITABLES

- A. Excavation of Unsuitables. Areas of unsuitable in-place soils, as determined by the Engineer, may also be encountered. Material shall not be classified as unsuitable solely based on moisture content. Material within the limits of Excavation, as described above under Unclassified Excavation, or within the limits of over-excavation for the placement of materials (e.g. Engineered Streambed Material, Weir Boulders, Log Structures) shall not be classified as unsuitable. The Contractor shall anticipate having to over-excavate areas of unsuitables as directed by the Geotechnical Engineer, dispose of these materials, and replace them with General Structural Fill in accordance with Section 7.6.1 of the Geotechnical Report. The actual locations of these excavations will be determined in the field by the Engineer. The side slopes of the excavations shall be no steeper than 1 to 1 (horizontal to vertical). The over-excavations shall be backfilled with embankment materials in accordance with Section 312323, General Structural Fill.
- B. Disposition of Unsuitable Materials. The excavated materials that are considered unsuitable based solely on moisture content shall be processed as necessary to meet specification requirements for suitability and used as embankment material. Materials which are unsuitable based on organic content will be ordered wasted and shall be disposed of off-site in accordance to Section 7-1.13, "Disposal of Material Outside the Highway Right of Way", of the State Standard Specifications.

3.5 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 Owner 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. Unclassified Excavation is a Final Pay Item. 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. Excavation - Unsuitable Materials. Excavation to remove materials that are designated by the Engineer as unsuitable for reuse will be measured by the cubic yard of material excavated from the stripped foundation dimensions shown on the Drawings and replaced with General

Structural Fill. Measurement will be based on the calculated neat-line quantity from surveyed cross sections before and after the excavation.

- C. Soil Off-Haul. Soil Off-Haul will be measured on a lump sum basis.
- D. Other Miscellaneous Excavations. All other excavations will not be measured for payment.
- E. Surveys: Construction staking will not be separately 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. Excavation - Unsuitable Materials, 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 the excavation and backfill the excavation with General Structural Fill, as specified, including dewatering, all handling of materials, and disposal of unsuitable materials.
- C. Soil Off-haul, measured as specified above, 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 Soil Off-haul, as specified, including loading and transporting.
- 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. Surveys: No separate payment will be made for surveys or construction staking. All costs in connection with this work will be considered incidental to the contract price per cubic yard for Excavation.
- F. Mixing and transport of suitable materials for reuse shall be paid for under Fill, Section 02226.
- G. Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Unclassified Excavation and Off-Haul	Lump Sum (LS)
Excavation – Unsuitable Materials	Cubic Yard (CY)

END OF SECTION

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DEWATERING

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SECTION 312319 DEWATERING

1. GENERAL

1.1 DESCRIPTION

- A. Furnish all labor, materials, equipment, and incidentals necessary to relocate fish and to design, construct, operate, maintain, and remove all cofferdams, flumes shoring, diversions, turbidity curtains, filtration systems and/or other measures, including pumping, to dewater the construction site and to divert streamflow and other surface waters and groundwater through or around the project area 24 hours a day during the entire field construction period, as shown on the Drawings, as specified, or as directed by the Engineer.
- B. Dewatering details on the Drawings (if provided) are schematic. The design and implementation of the Dewatering Plan is solely the responsibility of the Contractor. Contractor shall make their own independent evaluation of water sources (surface and groundwater) in preparing their Dewatering Plan.
- C. Dewatering shall comply with all project permit conditions, applicable laws and local ordinances.

1.2 RELATED SECTIONS

- A. Section 015713, Temporary Erosion Control and BMP's
- B. Section 015713.01, Fiber Roll
- C. Section 015713.02, Silt Fence
- D. Section 354237, Rock Slope Protection

1.3 SUBMITTALS

- A. The Contractor shall submit the following for review and approval of the Engineer:
 - 1. A Fish Removal and Dewatering Plan listing materials, method of work, equipment to be used, methods for disposal of pumped water, provisions to prevent scour and erosion, and the proposed schedule shall be submitted to the Engineer. Approval of the Engineer shall be required before the Contractor proceeds with water control measures.
 - 2. Product data for:
 - a. Pumps
 - b. Silt control filter fabric
 - c. Washed rock
 - d. Impervious liners
 - e. Cofferdam material
 - f. Other materials used in dewatering

1.4 QUALITY ASSURANCE

- A. Comply with all applicable permits and regulations and NRCS Construction Specification 909 - Control of Water.

- B. Comply with approved Hazardous Materials Control and Spill Prevention Plan, in accordance with Section 015000 paragraph 3.10.
- C. Notify Engineer 48 hours in advance of installation of temporary cofferdam(s) or diversion.
- D. Notify Engineer 48 hours in advance of removal of temporary cofferdam(s) or diversion.

2. PRODUCTS

2.1 MATERIALS

- A. Pipe. Pipe used for the clearwater diversion must meet or exceed the minimum dimensions shown on the Drawings and shall have water-tight joints. Single-walled corrugated HDPE pipe with split couplers will not be accepted.
- B. Imported Rock. Use only clean washed gravel. Sand will not be allowed.
- C. Dewatering Facilities. Provide and operate dewatering facilities of suitable size and capacity. The use of equipment shall be consistent with the manufacturer's recommendations.
- D. Silt Fence. Comply with Section 015713.02, Silt Fence.
- E. Block Nets. Block Nets shall be 1/4-inch opening nylon mesh net.

3. EXECUTION

3.1 GENERAL

- A. Contractor is solely responsible for the design, construction, and maintenance and monitoring of the diversion and dewatering facilities. Comply with the Drawings, Specifications, and applicable permit conditions.

3.2 FISH REMOVAL

- A. Fish relocation will be provided by others, contracted directly through the Owner's Authorized Representative (NIC). Fish relocation will typically be performed prior to and during installation of the diversion and dewatering system, so that fish may be removed as water levels drop and isolated pools form in the channel bed. The fish removal will need to be closely coordinated with the Contractor's schedule for installation and operation of the diversion. The Contractor will be required to allow access for the fish removal team during these operations and may be required to implement the dewatering of the channel in a phased manner to allow for safe removal of fish.
- B. Provide the Owner's Authorized Representative with a minimum of 96 hours' notice, prior to commencing dewatering operations, to allow for removal of fish from the project area. Coordinate construction work with the Owner's Authorized Representative's fish relocation experts.

3.3 SEDIMENT CONTROL

- A. General. Comply with Section 401 Water Quality Certification.
- B. Materials. Earthen materials shall not be used within the flowing channel, except for clean, washed rock.
- C. Cofferdam Construction. During construction of the cofferdam, install silt barrier(s) along the water side of the installation, as necessary to minimize mobilization and entrainment of

disturbed soils within the active flowing channel, to a level in accordance with the permit conditions.

- D. Discharge of diverted flow. Unless otherwise specified, a diversion must discharge into the same natural drainage way in which its headworks are located. Where feasible, discharge to existing pools or onto bedrock or otherwise erosion resistant surfaces. Construct energy dissipators at diversion outlets, where necessary to prevent scour at point of discharge.
- E. Discharge of Seepage/Groundwater. Discharge water from the dewatered construction site either by gravity or pumping in a manner to prevent excessive turbidity from entering the receiving waters and to prevent scour and erosion outside of the construction site. Pumped water should be pre-filtered with a gravel pack around sumps for subsurface flows and a silt fence, hay bales, or approved equivalent around pumps for surface flow.
- F. Discharge pumped water into adjacent gravel bars, isolated local depressions, or temporary sediment basins, as shown on the Plans. Where discharge of pumped water will create excessive turbidity in receiving waters, route water through a sediment interceptor, filter, or other facilities to remove sediment from water.
- G. Isolation of Construction Area. Where feasible, limit water quality impacts by isolating the work area from surface waters using coffer dams, in accordance with the project permits.

3.4 HAZARDOUS MATERIAL CONTROL

- A. General. Comply with the approved Hazardous Materials Control and Spill Prevention Plan (HMC&SPP) in accordance with Construction Facilities and Temporary Controls, Section 015000.
- B. Equipment and Lubricants. Steam-clean all equipment prior to its use. Inspect all equipment for cleanliness and fluid leaks prior to use and monitor during its use. Maintain equipment as required. Equipment refueling shall only take place in a designated, contained area.
- C. Isolation of Construction Area. Prior to performing work within flowing water, outside of cofferdams, install oil containment booms downstream of the work area. Maintain booms until completion of the work within the channel is complete.
- D. Spills. Maintain a supply of oil spill booms, sorbent pads, and other supplies to contain and clean spills. Comply with approved HMC&SPP should spills occur.

3.5 COFFERDAMS

- A. General. The Contractor is solely responsible for the design, construction, maintenance, and monitoring of cofferdams, dikes and other isolation facilities. Cofferdams with an exposed height greater than 10 feet shall be designed by a Professional Engineer registered in the State of Oregon, based on available soil data.
- B. Configuration. Cofferdam alignments, as shown on the Drawings, reflect the maximum allowable encroachment into the channel. Construct cofferdam alignments as shown on the Drawings, unless otherwise approved by Engineer. Provide cofferdams high enough to account for water surface fluctuations.
- C. Secondary Dikes/Seepage Control. Secondary dikes within the isolated construction area can be used to control seepage and groundwater around excavations, provided all dike materials are removed from the exposed channel upon completion, prior to re-watering the work area.

3.6 FLOW BYPASS

- A. Capacity. Bypass water around construction site using a cofferdam and bypass pipe as shown on the Drawings or equivalent facility, as approved by the Engineer. The bypass system shall be capable of passing the flows present at the time construction begins, with a minimum of 12 inches of freeboard (measured vertically from water surface to lowest point on dam). Bypass pipes shall have a minimum diameter of 10 inches to minimize the likelihood of clogging by debris.
- B. Storm Events. During the designated period for instream work, the Contractor shall be solely responsible for the integrity of the dewatering system. If rain is predicted, the Contractor shall perform flood fighting activities as directed by the Engineer and regulatory agencies.
- C. The diversion system may require adjustment to accommodate the sequence of work. No additional compensation shall be provided for any adjustments, revisions, or reinstallations of diversion elements.
- D. The diversion shall result in conditions that allow the required compaction to be achieved and shall prevent sediment-laden water that exceeds the effluent discharge limits from entering the drainage ways.
- E. Unless otherwise specified, a diversion must discharge into the same natural drainage way in which its headworks are located.

3.7 DEWATERING

- A. General. Remove water from construction area using pumping, well points, drains, or other approved methods. Discharge of water shall comply with 3.3.D. Turbid water from active construction areas shall be retained on site and allowed to infiltrate or routed through sediment interceptors or other facilities to remove contaminants and sediment. Excavated slopes in the saturated soils may need to be retained, tied back, or otherwise stabilized.
- B. Well Points. Well points shall be designed to preclude the loss of fine soil by gravel packing or other suitable means.
- C. Pumping Facilities. All pump intakes shall be screened to prevent the entrainment of fish, in accordance with project permit conditions. Pumps and discharge piping shall be suitable for the type of service provided and shall be a sufficient size and capacity to satisfactorily dewater work areas. Engines shall be muffled to avoid excess noise and pump intakes shall be fitted with screens as required.
- D. Power Supply. Consider the availability and reliability of power sources for dewatering operation in dewatering system design and make provisions for temporary or backup power supply as deemed necessary. Where the primary diversion is operated by pumping, provide a backup system with automatic controls capable of starting the backup upon failure of the primary system.
- E. Groundwater. Dewatering shall maintain water surfaces below the base of temporary excavations or trenches as necessary to ensure groundwater does not flow through disturbed areas, or as required to allow for visual inspection of the work by the Engineer. This requirement shall apply at all times, including nights, weekends, or periods work is stopped. Lower groundwater tables within excavations for structures to a minimum of two (2) feet below foundations or as otherwise required to establish a firm, stable foundation. Control groundwater within excavation until completion of backfill operations.

3.8 WATER LEVELS DURING THE CONSTRUCTION PERIOD

- A. The Contractor shall be responsible for making an independent evaluation of site conditions. The Contractor's dewatering plan shall address all potential sources of surface and groundwater, including but not limited to streamflow (natural or managed), backwatering of the channel from downstream blockages, domestic water lines, storm drain outfalls, irrigation tailwater, industrial discharges, seepage, and direct rainfall.

3.9 CLEANUP

- A. Thoroughly clean up area to remove debris and contaminated materials. Remove fine sediments and restore disturbed area prior to removal of the dewatering facilities. Clean and round river run gravels or cobbles, if used in cofferdam construction, may be spread in the creek channel in lieu of removal, provided grading will not interfere with facility operation.

3.10 REMOVAL OF DEWATERING FACILITIES

- A. Prior to removal of the dewatering facilities, complete the following activities:
 - 1. Complete required tests and inspections.
 - 2. Thoroughly cleanup work site.
 - 3. Perform final walkthrough with Engineer.
- B. Prior to removal of cofferdams and diversion, equalize the water surface levels on both sides of the dams.

3.11 REMOVAL OF BLOCK NETS

- A. Block Nets shall be removed by the fisheries biologist after the dewatering facilities are removed and the in-channel work area is re-watered.

4. MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Dewatering will be measured on a lump sum basis .

4.2 PAYMENT

- A. Dewatering will be paid for at the lump sum contract price for Dewatering, which price will include payment in full for furnishing all labor, materials, tools, equipment, and incidentals necessary to complete the dewatering operations, as specified, including temporary cofferdams, pumping, silt control, filter fabric, sediment control, erosion control, removal of muck, disposal of materials, and removal of dewatering facilities.

Pay Item

Dewatering

Pay Unit

Lump Sum (LS)

END OF SECTION

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SECTION 312323
FILL

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SECTION 312323

FILL

1. GENERAL

1.1 DESCRIPTION

- A. The work covered by this section consists of furnishing all plant, labor, and materials, and performing all operations necessary for the construction of earth fills, earth backfills, and earth embankments, including surveying, subgrade preparation, furnishing, loading, and on-site and off-site hauling of materials, processing, screening placement and compaction of earth fill materials, construction of ramps, and other incidental earthwork as may be necessary to complete the earth fills, as shown on the Drawings, as specified, or as otherwise directed by the Engineer.
- B. All grading shall comply with Section 00300 of the Standard Specifications. It shall be the responsibility of the Contractor to visit the site and make his own interpretations with regard to materials, methods and equipment necessary to perform the work required for this project.
- C. Temporary erosion control and BMP's shall be installed and approved by the Engineer prior to beginning earth fill construction.
- D. The Contractor is responsible to locate, identify, and protect all existing utilities from damage.
- E. Surveys. All construction staking shall be performed by the Contractor. Survey control points are shown on the Drawings.

1.2 RELATED SECTIONS

- A. Section 015000, Mobilization
- B. Section 015713, Temporary Erosion Control and BMPs
- C. Section 017123.16, Construction Surveying
- D. Section 311100, Clearing and Grubbing
- E. Section 312316, Excavation
- F. Section 321540, Aggregate Base
- G. Section 329200, Seeding
- H. Section 334213, Structural Plate Culvert

1.3 REFERENCES

- A. Oregon Standard Specifications for Construction, Oregon Department of Transportation, current edition.
- B. NRCS Construction Specification 23 – Earthfill, current edition.

1.4 DEFINITIONS

- A. Earth fill: Natural earth materials placed and compacted by construction equipment operated in a conventional manner.

1.5 SUBMITTALS

- A. Submit to the Engineer the following for approval:
 - 1. A grain-size-distribution test from the quarry for each of the proposed imported Fill materials specified herein shall be provided to the Engineer for approval, ten days prior to delivery of the remainder of material to the project site. The Engineer reserves the right to reject said materials.
 - 2. Documentation for use of fill material from required excavations and designated borrow areas.
- B. Sampling Assistance. Any difference of opinion between the Engineer and the Contractor shall be resolved by dumping and checking the gradation of the two random truckloads of Fill. Mechanical equipment, a sorting site and labor needed to assist in checking gradation shall be provided by the Contractor at no additional cost to the Client.

1.6 QUALITY ASSURANCE

- A. All work must be inspected and approved by the Engineer before proceeding with subsequent phases.

2. PRODUCTS

2.1 MATERIALS

- A. Water. Refer to Section 015000, Mobilization
- B. Fill Materials. To the extent they are needed, all suitable materials from the specified excavations shall be used in the construction of required fill. The selection, blending, routing, and disposition of material to the various fills shall be subject to approval by the Engineer. The suitability of materials for specific purposes will be subject to the approval of the Engineer, in conformance with these specifications.
 - 1. General Structural Fill. General Structural Fill shall consist of clean, durable, crushed angular rock, conforming to ODOT Standard Specification 2630.10 for $\frac{3}{4}$ -inch minus dense-graded aggregate.
 - 2. Uncompacted Bedding Blanket. The Uncompacted Bedding Blanket shall consist of uncompacted General Structural Fill.
 - 3. Earth Fill. Materials used for earth fill shall conform to the quality and gradation requirements as follows:
 - a. Shall contain no rock or clods greater than 6-inches in diameter;
 - b. Shall contain no sod, brush, roots, or other perishable or unsuitable material;
 - c. On-site clay soils shall not be used for earth fill
- C. Surplus Materials. All surplus or unsuitable excavated materials will be designated as waste and shall be disposed in accordance with Section 312316, Excavation.
- D. Imported Fill. Importing of Earth Fill material, if necessary or required to meet the grades and elevations shown on the plans, shall be considered included in the Contractor's bid for the various items of work involved and no additional compensation will be made therefore. Should such imported material be required, the Contractor shall notify the Engineer of the borrow site location at least 72 hours in advance and provide an adequate sample size so the Engineer can verify the suitability of the material. All imported materials shall be proposed by the Contractor in writing in accordance with the submittal requirements of these Technical Specifications and the Standard Specifications. Any proposed earth fill that deviates from the criteria stated

herein, shall have written acceptance from the Engineer prior to import or placement in the work.

- E. If a disagreement between the Contractor and the Engineer occurs over the suitability of materials, the Contractor shall perform laboratory testing to demonstrate compliance with the specifications. The failure of the Contractor to perform the testing shall not relieve the Contractor from the obligation to provide suitable materials.

3. EXECUTION

3.1 FILL CONSTRUCTION

- A. General. Compacted Fill shall be placed in the dry and compacted as specified herein.
- B. Subgrade Preparation. Following Clearing and Grubbing, the subgrade surfaces shall be graded to remove surface irregularities and shall be scarified parallel to the axis of the fill and loosened to a minimum depth of 2 inches. The moisture content of the loosened material shall be controlled as specified for the Fill, and the surface materials of the subgrade shall be compacted and bonded with the first layer of Fill.
- C. Prepared subgrade surface shall be free of loose, uncompacted earth in excess of two inches in depth normal to the slope and shall be at such a moisture content that the Fill can be compacted against it ensure a good bond between the Fill and the subgrade. Subgrade surfaces shall not be steeper than 1 horizontal to 1 vertical.
- D. Fill shall not be placed until the required subgrade preparation has been completed and approved by the Engineer.
- E. Fill shall not be placed on or in standing water, nor upon a frozen surface, nor shall snow, ice, or frozen material be incorporated in the Fill.
- F. Moisture Content
 - 1. If the material is not within the required moisture content, the Contractor will be required to moisture condition the soil. The moisture conditioning of fill materials shall be performed prior to placement in the section. The final minor moisture conditioning may be made on the fill, as required.
 - 2. Harrowing, or other approved methods will be required to work the moisture into the material until a uniform distribution of moisture is obtained. Water applied on a layer of fill shall be accurately controlled in amount and distribution so that free water will not appear on the surface during or subsequent to rolling.
 - 3. Unless otherwise specified, the moisture content of the fill material shall be maintained within the range required to permit maximum compaction. The moisture content in plastic clays and silts should be such that when kneaded in the hand it will form a ball which does not readily separate when struck sharply with a pencil or which refuses to separate when pressed between the hands. When working with sandy materials, the moisture content should be such that the material tends to form a weak ball under pressure but breaks apart easily.
 - 4. If the material is too wet for proper compaction or soft and yielding sub-grade is experienced (pumping), the Contractor will be required to aerate the material to a moisture content within the desired limits prior to compaction. If the top surface of the preceding layer of compacted fill or a subgrade or abutment surface in the zone of contact with the fill becomes too dry to permit suitable bond, it shall either be removed or scarified and moistened to an acceptable moisture content prior to placement of the next layer of Earth Fill.

5. If the top surface of the preceding layer of compacted Earth Fill or a foundation or abutment surface in the zone of contact with the Earth Fill becomes too dry to permit suitable bond, it shall either be removed or scarified and moistened by sprinkling to an acceptable moisture content before placement of the next layer of Earth Fill.
- G. Horizontal Layer Construction. The compacted Fill shall be constructed to a sufficient section so as to achieve the required compaction throughout the finished section. Materials to be compacted shall be placed or spread in layers not more than eight (8) inches in loose thickness prior to compaction. Materials excavated to form keyways or over-excavations, and suitable for use as Fill, shall be blended uniformly with other excavated soils or disposed of. All fill placed on slopes steeper than 5 horizontal to 1 vertical shall be keyed and benched such that soils are placed on a level surface. If the surface of any layer becomes too hard and smooth for proper bond with the succeeding layer, it shall be scarified parallel to the axis of the fill to a depth of not less than 2 inches before the next layer is placed. Fill placed around structures will be brought up at approximately uniform height on all sides of the structure.
- H. Compaction
 1. Each layer of Fill shall be compacted by the specified number of passes of the type and weight of roller or other equipment as specified or by one of the following methods:
 - i. Control movement of the hauling and spreading equipment over the area so that the entire surface area of each lift will be traversed by not less than 1 tread track of the loaded earth-moving equipment traveling in a direction parallel to the axis of the fill.
 - ii. Each lift shall be compacted by not less than two complete passes of a padfoot/tamping foot style roller exerting a minimum pressure of 100 pounds per square inch.
 2. Backfill
 - a. Heavy compaction equipment shall not be operated within 2 feet of any structure. Fill adjacent to structures, pipe, conduits, and anti-seep collars shall be compacted to a density equivalent to that of the surrounding fill by means of hand tampers or plate vibrators. Hand directed tampers or compactors shall be used on areas not accessible to heavy compaction equipment. Fills compacted in this manner shall be placed in layers not greater than 4 inches in thickness before compaction and shall meet the same density requirement as for the adjacent area.
- I. Reworking or Removal and Replacement of Defective Fill
 1. Rework or remove and replace Earth Fill not meeting density, moisture content, or other specification requirements.
 2. Fill placed at densities lower than the specified minimum density or at moisture contents outside the specified acceptable range of moisture content or otherwise not conforming to the requirements of the specifications shall be reworked to meet the requirements or removed and replaced by acceptable Fill. The replacement Fill and the foundation, abutment, and Fill surfaces upon which it is placed shall conform to all requirements of this specification for foundation preparation, approval, placement, moisture control, and compaction.
- J. Dressing. Fill slopes shall be dressed by over-building and cutting back to the required grade. The Contractor may compact the shoulder of each lift during the placement of fill materials to assist in the subsequent dressing of the slopes.

3.2 CROSS SECTIONS AND ZONING OF MATERIALS

- A. Standard Earth Fill Sections. The dimensions, slopes, and zoning of materials shall conform to the sections shown on the Drawings and specified herein.
- B. Zoning of Materials. Unless otherwise specified, the Earth Fill materials shall be homogeneous. The Earth Fill shall be free of pockets, lenses, streaks, layers, etc. of different materials.

3.3 FINISH

- A. The finish grades shall transition naturally into adjacent existing grades to provide a functional and naturalistic finished surface. Due to the complex nature of the project and the desired aesthetic and functional features, not all details can be accurately represented on the Drawings. As a result, the Contractor may be directed by the Engineer to make minor adjustments to finish grades to best achieve these results. These adjustments may include smoothing or rounding conforms, or changing slope angles or daylight points as necessary to conform to the variable geometry inherent in natural topography. Compensation for this work shall be considered as included in the price paid for the various contract items of work involved, and no additional compensation will be allowed.
- B. After the placement of the earth fills and spoils, the sides and top shall be dressed by final passage of compaction equipment or by dragging to give a smooth surface. The surface area shall be graded to provide surface drainage to flow to desired locations.

3.4 ROADS AND RAMPS

- A. Maintain Access. At locations where access roads to existing facilities are destroyed because of the work required under this contract, the Contractor shall provide temporary roads, if directed by the Engineer, to give access to fields and buildings during the construction period. Such facilities shall be removed to the extent required by the Engineer.
- B. Temporary Haul Roads. Temporary haul roads shall be constructed as required to transport materials from borrow source or excavation to Earth Fill site. Temporary ramps to be constructed for the Contractors convenience need not comply with these foundation preparation and Engineered Fill construction requirements. Unless otherwise directed by the Engineer, temporary ramps shall be removed prior to completion of the work and original grades restored.
- C. Refer to Section 015000, Mobilization, for additional requirements related to establishment of temporary access.

3.5 GRADE TOLERANCES

- A. General. Earth Fill shall be constructed to the net grade and cross section shown on the Drawings.
- B. Grade Tolerances. At all points a tolerance of 0.2 (two-tenths) foot above, and 0.1 (zero) foot below the prescribed grade will be permitted in the final dressing, provided that any excess material is so distributed that the crown of the Earth Fill drains in the desired direction and that there are no abrupt humps or depressions in surfaces. However, this tolerance above grade may be modified at locations where, in the opinion of the Engineer, such modifications will not impair the design or appearance of the project.

3.6 SLIDES

- A. In the event of the sliding of any part of the Fill during its construction, or during the one-year period after acceptance, the Contractor shall, upon written order of the Engineer, cut out and remove the slide and then rebuild that portion of the Fill.

3.7 SPECIAL MEASURES

- A. Measures and construction methods shall be incorporated as needed and practical that enhances fish and wildlife values. Special attention shall be given to protecting visual resources and maintaining key shade, food, and den trees.

4. MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. General Structural Fill. General Structural Fill will be measured by the cubic yard of General Structural Fill placed based on the Dimensions shown on the Drawings. This is a finished surface and does not take into account the loose volume of the material prior to compaction.
- B. Earth Fill. Earth Fill will be measured on a lump sum basis.

4.2 PAYMENT

- A. General Structural Fill, 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 construct compacted General Structural Fill as specified, including hauling of excavated materials from the source.
- B. Earth Fill, measured as specified above will be paid for at the contract lump sum price, which price will be payment in full for furnishing all labor, materials, tools, equipment and incidentals, and doing all work necessary to construct compacted Earth Fills as specified, including hauling of excavated materials from the source.
- C. No payment will be made for the Fill foundation preparation, shrinkage of material or materials placed above the net grades and slopes as allowance for shrinkage.
- D. No separate payment will be made for incidental grading beyond the projected toe of the Earth Fill cross section. The cost for this work shall be included in contract unit price for compacted Fill.
- E. No payment will be made for construction or removal of temporary roads or ramps.
- F. No additional payment will be made for costs associated with stabilizing unstable materials. The cost for this work shall be included in contract Lump Sum price for compacted Fill.
- G. Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
General Structural Fill	Cubic Yard (CY)
Earth Fill	Lump Sum (LS)

END OF SECTION

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AGGREGATE BASE

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SECTION 321540 AGGREGATE BASE

1. GENERAL

1.1 DESCRIPTION

- A. The work covered by this section consists of furnishing all plant, labor, and material and performing all operations necessary for placing aggregate base as specified, as shown on the Drawings, or as otherwise directed by the Engineer.

1.2 RELATED SECTIONS

- A. Section 312316, Excavation
- B. Section 312323, Fill

1.3 REFERENCES

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

1.4 SUBMITTALS

- A. Submit to the Engineer for review, the following:
 - 1. Source of aggregates
 - 2. Test results, performed within the last six (6) months, showing that the aggregates conform to all the material requirements specified herein.
 - 3. Certified weights of aggregate base rock delivered to the site.

1.5 PROJECT CONDITIONS

- A. Aggregate shall be placed when the atmospheric temperature is above 35 degrees Fahrenheit. Areas of completed base course that are damaged by freezing, rainfall, or other weather conditions shall be corrected to meet specified requirements.

2. PRODUCTS

2.1 MATERIALS

- A. Aggregate Base Course shall be Aggregate Base, 3/4 inch maximum, conforming to Section 00640 of the State Standard Specifications and is not required to be lime treated.

3. EXECUTION

3.1 PLACING, COMPACTING, AND FINISHING

- A. Preparation of Subgrade. Prior to constructing the aggregate base course, the sub-grade shall be cleaned of all foreign substances. The sub-grade then shall be scarified to a depth of 6 inches, moisture conditioned, and compacted. Ruts or soft, yielding spots shall be corrected by loosening and removing soft or unsatisfactory material and by adding approved material, reshaping to line and grade, and recompacting.

- B. Grade Control. During construction, the lines and grades including crown and cross slope indicated for the aggregate base course shall be maintained by means of line and grade stakes placed by the Contractor.
- C. Placing. The mixed material shall be placed on the prepared subgrade in layers of uniform thickness with a suitable spreader. No layer shall exceed 6 inches or be less than 3 inches when compacted. The layers shall be so placed that when compacted they will be true to the grades or levels required with the least possible surface disturbance. Such adjustments in placing procedures or equipment shall be made as may be directed to obtain true grades, to minimize segregation and degradation, to adjust the water content, and to insure an acceptable base course.
- D. Compaction. In all places not accessible to the rollers, the aggregate base course material shall be compacted with mechanical tampers.
- E. Finishing. The surface of base course shall be finished after final compaction by cutting any overbuild to grade and rolling with a steel-wheeled roller. In no case shall thin layers of material be added to the top layer of base course to meet grade. If the elevation of top layer of base course is one inch or more below the grade, the top layer of base shall be scarified to a depth of at least three inches, new material shall be added, and the layer shall be blended and recompactd to bring to grade. Adjustments in rolling and finishing procedures shall be made as may be directed to obtain grades, to minimize segregation and degradation of aggregate base coarse material, to adjust the water content, and to insure an acceptable aggregate base course. Material found unacceptable shall be removed and replaced, with acceptable material.

3.2 FIELD QUALITY CONTROL

- A. Smoothness. The surface of the aggregate base course shall not deviate more than one inch when tested with a ten-foot straightedge applied parallel with and at right angles to the centerline of the area covered. Deviations exceeding 2 inch shall be corrected as directed.
- B. Thickness. The completed thickness of the aggregate base course shall be within one half inch of the thickness indicated on the Drawings. The thickness of the aggregate base course will be measured at intervals providing at least one measurement for at least each 150 linear feet of aggregate base course. The depth measurement will be made by test holes at least three inches in diameter. Where the measured thickness of the aggregate base course is more than one half inch deficient, such areas shall be corrected by excavating and placing with additional material as specified in Subsection 3.2.C. The average job thickness shall be the average of the job measurements as specified above but within 3 inches of the thickness indicated.
- C. Rework. Where tests indicate the base course does not meet specified relative compaction, the material represented by the test shall be reworked and recompactd to the specified relative compaction. Reworked areas will be retested until they meet the specified relative compaction. The costs of all retests will be deducted from monies due or to become due the Contractor.

4. MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Aggregate base will be measured for payment by the cubic yard, to the nearest full cubic yard. Quantities of aggregate base to be paid for by the cubic yard will be calculated based on the dimensions shown on the Drawings, adjusted by the amount of any change ordered by the Engineer.

- B. Aggregate base for repair of roadways outside of construction footprint that are damaged by construction activities will not be separately measured for payment.

4.2 PAYMENT

- A. Aggregate Base will be paid for at the contract price per cubic yard, which price will be payment in full for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all work involved in constructing aggregate base, including subgrade preparation and subgrade compaction, as shown on the Drawings, and as specified, and as directed by the Engineer.
- B. Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Aggregate Base	Cubic Yard (CY)

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.
- B. Seed mix will be supplied and delivered to the project site by the Owner's Authorized Representative. The Contractor shall be responsible for coordinating delivery.

1.2 RELATED SECTIONS

- A. Section 015713.01, Fiber Roll

2. PRODUCTS

2.1 MATERIALS

- A. Quantities shown on the Drawings represent pure live seed (pls).
- B. Seed Mix. The seed mix and application rates are as shown on the Drawings. No substitutions are allowed without written consent of the Engineer.
- C. 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.
- D. Straw Mulch. Straw mulch for non-hydroseeding applications shall meet Section 01030.15.b of the Standard Specifications.
- E. Hydromulch Fiber. Fiber for hydroseeding applications shall meet Section 01030.15.a of the Standard Specifications.
- F. Water. Water shall be furnished by the Contractor and shall be free of chemicals detrimental to the seed mixture.
- G. 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 between September 30th and October 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.

3.3 METHOD OF SEEDING

- A. Seeding may be performed mechanically in a dry condition or with hydro-seeding equipment, at the Contractor's option.

3.4 HYDRO-SEEDING

- A. Hydro-seeding. Hydro-seeding shall be performed in accordance with Standard Specification Section 01030.18(a).

3.5 BROADCAST SEEDING.

- A. 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).

3.6 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.

3.7 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 lump sum basis.
- 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 lump sum contract price for Seeding, 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

Lump Sum (LS)

END OF SECTION

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STRUCTURAL PLATE CULVERT

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SECTION 334213

STRUCTURAL PLATE CULVERT

1. GENERAL

1.1 DESCRIPTION

- A. Work within this section shall include furnishing and installing precast concrete culverts, including coordinating delivery and acceptance with Owner and Culvert Supplier, removal of culverts from delivery truck, installation of culverts, and fabrication and installation of culvert appurtenances not clearly specified under other pay items, complete, in place, as specified, as shown on the Drawings, and as directed by the Engineer.

1.2 RELATED SECTIONS

- A. Section 312316, Excavation
- B. Section 312319, Dewatering

1.3 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. ASTM A307 - Standard Specification for Carbon Steel Bolts and Studs.
 - 2. ASTM A123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - 3. ASTM A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
- B. American Association of State Highway and Transportation Officials (AASHTO):
 - 1. AASHTO M167 - Standard Specification for Corrugated Steel Structural Plate, Zinc-Coated, for Field-Bolted Pipe, Pipe-Arches, and Arches.
- C. National Corrugated Steel Pipe Association (NCSPA) Design Manual

1.4 SUBMITTALS

- A. Submit to the Engineer for review, the following:
 - 1. Manufacturer's product data and installation instructions.
 - 2. Detailed shop drawings including dimensions, plate thickness, bolt size, coating type, and layout.
 - 3. Indicate the location of each structural plate culvert unit by the same identification mark place on the plates.
 - 4. Design submittal: Signed and sealed drawings by the qualified professional engineer(s) responsible for their preparation.
 - 5. Certification that materials comply with specifications.
 - 6. Results of factory tests.
 - 7. Documentation of inspections.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For manufacturer and installer.

B. Closeout:

1. Warranty: Signed copy of manufacturer's warranty
2. Manufacturer's Certificate: Original certificate indicating compliance with requirements

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications. Manufacturer must have a minimum of five years' experience in the fabrication of structural plate culverts.
- B. Installer Qualifications. Installation contractor must have successfully completed at least three projects of similar scope and complexity.
- C. Pre-Installation Meeting. Conduct a meeting with representatives from the owner, engineer, contractor, and manufacturer to review the project requirements.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials in manufacturer's original, unopened, and undamaged containers with identification labels intact.
- B. Storage: Store materials in a clean, dry area in accordance with manufacturer's instructions.
- C. Handling: Handle materials to prevent damage.

1.8 WARRANTY

- A. Manufacturer's Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of structural plate culverts that fail in materials or workmanship within specified warranty period.
- B. Warranty Period for Precast Concrete Structures: One year from date of substantial completion.

2. PRODUCTS

2.1 MANUFACTURER

- A. Basis of Design: Provide structural plate culverts manufactured and furnished by Contech, info@conteches.com, <https://www.conteches.com/>, or approved equivalent. Drawings are based on designs provided by:

Contech Engineered Solutions, LLC
Contact: Alex Keenan, Regional Bridge Consultant (Oregon and SW Washington)
Contech Engineered Solutions LLC
Phone: 303-817-4198

2.2 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design structural plate culverts, including engineering analysis by a qualified professional engineer, using specified performance requirements and design criteria.
- B. Structural Performance: Provide structural plate units and connections capable of withstanding the following design loads within limits and under conditions indicated, in accordance with the following:
 1. Ultimate strength load factors, strength reduction factors, shear equations, and crack control criteria per AASHTO Standard Specification for Highway Bridges
 2. AASHTO HS-20-44

2.3 STRUCTURAL PLATE CULVERTS

A. General:

1. Traffic Live Loading: AASHTO HS-20 live load in accordance with AASHTO LRFD Bridge Design Specifications
2. Minimum plate thickness: 12 gage
3. Minimum bolt diameter: ¾-inch
4. Depth of Bury: As indicated on the Plans.
5. Lateral Soil Pressure: 60 lbs/cft
6. Earth Dead Load: 120 lbs/cft plus 1.15 Soil Interaction Factor

2.4 MATERIALS

A. Structural Plate Culvert:

1. Steel Plates: ASTM A1011, Grade 36.
2. Bolts and Nuts: ASTM A307, galvanized in accordance with ASTM A153.
3. Coating: Hot-dip galvanize all plates, bolts, and nuts in accordance with ASTM A123.

B. Accessories:

1. Gaskets and Seals: As recommended by the manufacturer for watertight joints.
2. End Treatments: Wingwalls, headwalls, and other end treatments as detailed in the contract documents.

2.5 FABRICATION

- A. Fabricate structural plate culverts according to the NCSPA Manual.

2.6 SOURCE QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to evaluate precast structural concrete fabricator's quality-control and testing methods.
- B. Testing: Test and inspect precast structural concrete according to referenced design standards.
- C. Defective Units: Discard and replace precast structural concrete units that do not comply with requirements.

3. EXECUTION

3.1 EXAMINATION

- A. Verify that site conditions are suitable for installation.
- B. Verify dimensions, alignment and elevations of existing structures.

3.2 PREPARATION

- A. Excavate to the lines and grades shown on the Plans. Refer to Section 312316, Excavation for general and trench excavation and backfilling.
- B. Prepare bedding and foundation as specified.

3.3 INSTALLATION

- A. Assemble structural plate culvert sections in accordance with manufacturer's instructions.

- B. Install culvert to the lines and grades shown on the drawings. Reset units not in true alignment, which show settlement, or are damaged.
- C. Ensure all bolts are tightened to the manufacturer's recommended torque.
- D. Backfill around the culvert with suitable material in layers not exceeding 6 inches and compact to 95% of the maximum density.

3.4 FIELD QUALITY CONTROL

- A. Inspect each section of the culvert for proper assembly and alignment.
- B. Perform field testing as specified to ensure compliance with project requirements.
- C. Remove and replace components of the structural plate culverts that do not pass tests and inspections and retest as specified above.
- D. Repairing Minor Defects:
 - 1. Steel Plates: Structural Plate Culvert units that are cracked, checked or damaged shall not be placed and will be removed from the work unless appropriate repair procedures are submitted and approved.

3.5 PROTECTION

- A. Protect installed culvert from damage during construction.
- B. Repair any damage to the coating in accordance with manufacturer's instructions.

3.6 CLEANUP

- A. Remove all debris and excess material from the site.
- B. Restore adjacent areas to their original condition.

4. MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Structural Plate Culverts will be measured on a lump sum basis.

4.2 PAYMENT

- A. Structural Plate Culverts will be paid for at the lump sum contract price, which price will be considered payment in full for furnishing all labor, materials, tools, equipment, and incidentals necessary for the complete installation of the Structural Plate Culverts, including but not limited to delivery and installation, and sealing.
- B. Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Structural Plate Culvert	Lump Sum (LS)

END OF SECTION

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SECTION 354200
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 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 embedded logs and surface logs as shown on the Drawings.

1.2 RELATED SECTIONS

- 1. Section 311100, Clearing and Grubbing
- 2. Section 312319, Dewatering
- 3. Section 0312316, Excavation
- 4. Section 354237, Rock Slope Protection

1.3 SUBMITTALS

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

2. PRODUCTS

2.1 MATERIALS

- A. Logs.
 - 1. Logs may be imported or salvaged from the construction site 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.
- B. Backfill. Backfill shall consist of earth fill or native material to match surrounding surfaces shown on the Drawings.

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 selection, placement, 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 logs in precise locations. An excavator of a suitable size and containing a thumb is suggested.
- D. Log Placement. Log placement locations shown on the Drawings are approximate. Exact locations shall be as approved by the Engineer, or his authorized representative.

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. Embedded Logs will be measured by the number of Embedded Logs installed, as shown on the Drawings, as specified, and as directed by the Engineer.
- B. Surface Logs will be measured by the number of Surface Logs installed, as shown on the Drawings, as specified, and as directed by the Engineer.

4.2 PAYMENT

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

<u>Pay Item</u>	<u>Pay Unit</u>
Embedded Log	Each (EA)
Surface Log	Each (EA)

END OF SECTION

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SECTION 354237
ROCK SLOPE PROTECTION

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SECTION 354237

ROCK SLOPE PROTECTION

1. GENERAL

1.1 DESCRIPTION

- A. Work within this section shall include furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in placing, Rock Slope Protection (RSP), Engineered Streambed Material, Stream Substrate, backing layers and backfill, where shown on the Drawings, as specified herein, or as otherwise directed by the Engineer. Stone protection, rock slope protection, and riprap are interchangeable in these Specifications and Drawings.
- B. All loading, transport, temporary stockpiling, processing and mixing of stone materials to achieve designated gradations, washing, on-site hauling, excavation, preparation of sub-grade, placement, embedment, backfill, grading, compaction, finish grading, clean-up, and off-haul and disposal of excess materials needed to install all Rock Slope Protection work, where incorporated in the work, shall be considered as included in the applicable bid item unit price, and no additional compensation will be allowed.
- C. The location, alignment, angles, elevations, grades, slopes, dimensions, etc. of the proposed rock structures as described in this section are shown on the Drawings to provide a basis for construction and bidding purposes. The Engineer is expected to make minor revisions and provide direction in the field to fit any varying field conditions. The Contractor shall include all costs for working under the direction of the Engineer in their bid for this work, as no additional compensation will be allowed.

1.2 RELATED SECTIONS

- A. Section 312316, Excavation
- B. Section 312319, Dewatering
- C. Section 334213, Structural Plate Culvert
- D. Section 354200, Log Structures

1.3 SUBMITTALS

- A. Submit to the Engineer for review, the following:
 - 1. A grain-size-distribution test from the quarry for each of the proposed Rock Materials specified herein shall be provided to the Engineer for approval, ten days prior to delivery of the remainder of material to the project site. The Engineer reserves the right to reject said materials.
- B. Sampling Assistance. Any difference of opinion between the Engineer and the Contractor shall be resolved by dumping and checking the gradation of the two random truckloads of rock. Mechanical equipment, a sorting site and labor needed to assist in checking gradation shall be provided by the Contractor at no additional cost to the Client.

1.4 QUALITY ASSURANCE

- A. Tolerances. Place rock to a vertical tolerance of minus 2 to plus 3 inches.

- B. Subgrade Preparation. Prior to placement of rock, Engineer shall verify subgrade preparation, for rock. Where backing is shown on the Drawings, Engineer shall verify subgrade preparation and backing placement prior to placement of outer rock course.

1.5 REFERENCES

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

2. PRODUCTS

2.1 MATERIALS

- A. Salvaged Rock Material. Native rock found on site may be salvaged for reuse, subject to compliance with the material requirements for the intended use, and subject to the approval by the Engineer. The Engineer may require the Contractor to provide testing (e.g., gradation curve, hardness, etc.) to ensure that materials are suitable for reuse. Salvaged creek bed material shall be placed on a hardened surface or other suitable material (i.e., steel plate, pavement, filter fabric) to protect the said material from contamination or mixing with other soils, earthen material, and debris. The Engineer may, at their sole discretion, waive certain testing requirements to facilitate the Contractor's use of locally salvaged materials.
- B. All Rock materials and gradation shall conform to Section 00390.11 Materials of the State Standard Specifications. Stones shall be sound, durable, hard, resistant to abrasion and free from laminations, weak cleavage planes, and the undesirable effects of weathering. It shall be of such character that it will not readily disintegrate from the action of air, water, or the typical conditions experienced during handling and placing. All aggregate material shall be clean and free from deleterious impurities, including alkali, earth, clay, refuse, and adherent coatings.
- C. Rock size classes not designated below shall be as shown on the Drawings, or as directed by the Engineer. All stone, rock, aggregate materials, and soil imported to the site shall be from a "weed free" source.
 - 1. RSP. Comply with Section 00390.11 of the State Standard Specifications for the rock classes indicated on the Drawings. RSP shall be sub-rounded to angular.
 - 2. Road Boulders. Road boulders shall be sub-rounded to angular with a minimum y-axis dimension of 2 ft. and a minimum weight of 250 pounds.
 - 3. Backing. Comply with Section 00390.11 of the State Standard Specifications for the backing class indicated on the Drawings.
 - 4. Backfill. Backfill within RSP voids shall consist of "Earth Fill" material, see Section 31 23 23, Fill.
- D. Engineered Streambed Material. Engineered Streambed material shall consist of dense, hard, durable non-friable stone free of organic debris and other deleterious substances. The rock shall have a minimum specific gravity of 2.5. Volcanic cinder material shall not be acceptable. The material shall be washed (at the point of supply) to reduce the percentage of fines (sieve #200 or less) and protected during all associated operations (i.e., loading, transport, stockpiling, on-site hauling, placement, etc.) to minimize or eliminate the potential for contamination.
- E. Engineered Streambed Material shall conform to the gradation requirements of Table 1, below.

Table 1: Gradation requirements for Engineered Streambed Material, inches or sieve size	
Percent of Mix (by weight)	Size Range (inches)
20	24-36
30	12-24
30	4-12
12	.08-4
8	< .08

3. EXECUTION

3.1 GENERAL

- A. Rounded and smooth gravel, cobbles, and boulders shall not be placed on slopes steeper than 2:1 (horizontal: vertical) unless otherwise directed by the Engineer.
- B. All rock materials shall be placed in such a manner as to smoothly conform with adjacent graded areas. Smaller rock shall be chinked into the margins of larger rock placements, as necessary to conform to earthwork and prevent migration of fines from adjacent graded areas into the rock matrix.

3.2 ROCK SLOPE PROTECTION

- A. Install Rock Slope Protection in accordance with Section 00390.44(b) of the State Standard Specifications, as modified below, and to the lines and the minimum dimensions shown on the Drawings. Place Backing per Section 00390.42 of the State Standard Specifications. Use equipment to place rock on slopes, or below the water. Place rock to minimize the number of voids. Rock shall be placed in lifts with a thickness not exceeding the D100 of the specified stone. Each lift shall be backfilled to half its depth with "Earth Fill", prior to placement of the subsequent lift. Backfill shall be placed in a manner that does not interfere with direct rock to rock contact of successive lifts. Backfill shall be placed to match the finished surface of the RSP and water-jetted to fill all voids, as directed by the Engineer.

3.3 ENGINEERED STREAMBED MATERIAL

- A. Engineered Streambed Material shall be placed to the lines, grades and depths shown on the Drawings, or as directed by the Engineer. Uniformly distribute large stones to produce the required gradation of rock. Prevent contamination of rock materials by excavation and/or earth materials. The subgrade shall be uniform with no soil clumps or rocks greater than two inches. Where the specified depth of placement exceeds twelve inches, the material shall be placed in lifts not exceeding twelve inches depth and water jetted after each lift is placed, as outlined below.
- B. Following placement of each ESM lift, the rock surface shall be jetted with water to improve compaction and embed the fines within the mix. Jetting shall start at the upstream limits of placement and progress downstream. Jetting shall continue until water ponds at the surface, and until the turbidity levels of runoff produced from the jetting process have reached an acceptable level. All sediment-laden runoff generated by the jetting operations shall be pumped to a settling tank or similar device to reduce turbidity to acceptable levels, in compliance with permit conditions, prior to discharge to the creek. Comply with Section 312319, Dewatering.

- C. The finished grade surface of the Engineered Streambed Material shall be coarse. The Contractor shall anticipate placement of select boulders of D50 or larger dimensions such that 50% to 90% of their diameter protrudes above the finished grade surface to promote hydraulic roughness and complexity. These placements shall occur at approximately 8 ft. on center spacing, as directed by the Engineer. To achieve this condition, the contractor shall anticipate placement of Engineered Streambed Material volume up to 10% greater than the volume indicated by the neatline dimensions shown on the Drawings.
- D. If the Engineered Streambed Materials are manipulated after placement, there is the potential for segregation by size class, which typically results in the larger fraction rising to the surface and fines being lost to the base of the lift. If in the opinion of the Engineer, there is excessive segregation of materials, the contractor shall remove all Engineered Streambed Materials, re-mix to a uniform gradation, and replace as specified.

3.4 ROAD BOULDER

- A. Road Boulders shall be placed as shown on the Drawings individually at the direction of the Engineer, flat side down.

4. MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Rock Slope Protection. Rock Slope Protection will be measured by the cubic yard of Rock Slope Protection, based on the dimensions shown on the Drawings. Where backing is shown, dimensions used to calculate volume for payment shall omit backing layers and shall be based only on the outer course of rock. 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. Engineered Streambed Material. Engineered Streambed Material will be measured by the cubic yard of Engineered Streambed Material, based on the dimensions shown on the Drawings. 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.
- C. Road Boulder. Road Boulder will be measured by each Road Boulder, based on the placement as shown on the Drawings.
- D. Volumetric measurements will be determined from the dimensions as shown on the Drawings or the dimensions constructed as directed by the Engineer. Materials placed in excess of these dimensions will not be included in the measurement for payment. Surface areas will be measured to the horizontal limits parallel to the ground surface.
- E. Weights will be determined in conformance with the provisions in Section 9-1.01, "Measurement of Quantities" of the State Standard Specifications.
- F. Excavation and backfill for rock slope protection will not be separately measured for payment.
- G. Backing will not be separately measured for payment.

4.2 PAYMENT

- A. Rock Slope Protection, measured as specified above, will be paid for at the contract price per cubic yard, which price will be payment in full for furnishing all labor, materials, tools, equipment, and incidentals necessary to complete the riprap placement, including subgrade

preparation, geotextile fabric, processing work, backing, rock placement, backfill of voids, Planting Tubes, excavation, and fill.

- B. Engineered Streambed Material, measured as specified above, will be paid for at the contract unit price cubic yard, which price will be payment in full for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in placing the Engineered Streambed Material, complete in place, including subgrade preparation, processing work, excavation, and jetting, as shown on the Drawings, as specified herein, or as directed by the Engineer.
- C. Road Boulder, measured as specified above, will be paid for at the contract unit price each, which price will be payment in full for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in placing the Road Boulder, complete in place, as shown on the Drawings, as specified herein, or as directed by the Engineer.
- D. No separate payment will be made for excavation and backfill incidental to slope protection work. All costs in connection with this work will be considered incidental to the cost of construction of the associated slope protection work. Where embankment is shown to be placed over completed rock slope protection, the embankment shall be considered incidental to the cubic yard price paid for associated Rock Slope Protection work.
- E. No separate payment will be made for rock backing materials. All costs in connection with this work will be considered incidental to the cost of construction of the associated improvement.
- F. Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Rock Slope Protection	Cubic Yard (CY)
Engineered Streambed Material	Cubic Yard (CY)
Road Boulder	Each (EA)

END OF SECTION