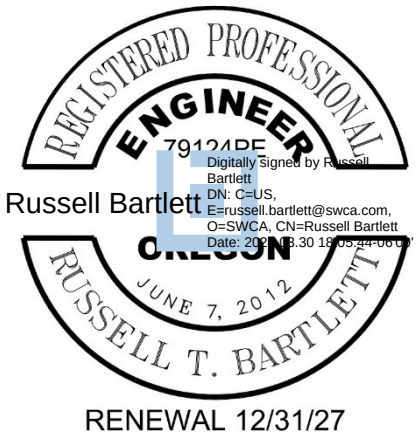
Mill Creek Culvert Replacement
#1136 (Private Crossing)

Project Specifications

Prepared for
Tillamook Estuaries Partnership
613 Commercial Street
Garibaldi, OR 97118
503-322-2222

Engineering Design, Drawings, and Technical Specifications Prepared by
SWCA Environmental Consultants
Contact: Russell Bartlett, PE
311 SW Jefferson Avenue
Corvallis, Oregon 97333

541.738.2920



March 30, 2026

TECHNICAL SPECIFICATIONS

The technical specifications that follow are included in and considered a part of the Contract Documents.

SECTION 01300
SUBMITTALS

PART 1 – GENERAL

1.1 SCOPE

A. Submittals covered by these requirements include manufacturers' information, work area isolation plans, schedules, test procedures, samples, requests for substitutions, and miscellaneous work-related submittals. Submittals shall also include, but not be limited to, schedules, schedule of values, shop drawings for precast concrete sluiceway, rock sources, and upland disposal sites. The Contractor shall furnish all drawings, specifications, descriptive data, certificates, samples, tests, methods, and schedules and other instructions as specifically required in the Contract Documents to demonstrate fully that the materials and equipment to be furnished and the methods of work comply with the provisions and intent of the Contract Documents.

1.2 CONTRACTOR'S RESPONSIBILITIES

A. The Contractor shall be responsible for the accuracy and completeness of the information contained in each submittal and shall assure that the material, equipment or method of work shall be as described in the submittal. The Contractor shall verify that all features of all products conform to the specified requirements. Submittal documents shall be clearly edited to indicate only those items which are being submitted for review. All extraneous materials shall be crossed out or otherwise obliterated.

B. The Contractor shall coordinate submittals with the work so that work will not be delayed. He/she shall coordinate and schedule different categories of submittals, so that one will not be delayed for lack of coordination with another. No extension of time will be allowed because of failure to properly schedule submittals. The Contractor shall not proceed with work related to a submittal until the submittal process is complete. This requires that submittals for review and comment shall be returned to the Contractor stamped "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED."

C. The Contractor shall certify on each submittal document that he has reviewed the submittal, verified field conditions, and complied with the Contract Documents.

D. The Contractor may authorize in writing a material or equipment supplier to deal directly with the Engineer with regard to a submittal. These dealings shall be limited to contract interpretations to clarify and expedite the work.

1.3 STANDARD COMPLIANCE

A. When materials or equipment must conform to the standards of organizations such as, but not limited to, the American National Standards Institute (ANSI), American Society for Testing and Materials (ASTM), National Electrical Manufacturers Association (NEMA) and Underwriter's Laboratories (UL) documents showing, or proving, conformance shall be submitted.

B. If an organization uses a label or listing to indicate compliance with a particular standard, the label or listing will be acceptable evidence, unless otherwise specified in the individual Sections. In lieu of the label or listing, the Contractor shall submit a certificate from an independent testing organization, which is competent to perform acceptable tests, and is approved by the Engineer. The certificate shall state that the item has been tested in accordance with the specified organization's standard. For materials and equipment whose compliance with organizational standards or specifications is not regulated by an organization using its own listing or label as proof of compliance, a certificate of compliance from the manufacturer shall be submitted for approval. The certificate shall identify the manufacturer, the product, and the referenced standard and shall state that the manufacturer certifies that the product conforms to all requirements of the project Specification and of the referenced standards listed.

1.4 MANUFACTURER'S DATA

A. Submittals for each manufactured item shall be comprised of manufacturer's descriptive literature, drawings, diagrams, performance and characteristic curves, and catalog cuts. Manufacturer's name, trade name, model or catalog number, nameplate data, size, layout dimensions, capacity, project specification references, and any other additional information necessary to establish contract compliance shall be clearly indicated.

1.5 SUBMITTAL PROCEDURE

A. At least seven (7) calendar days prior to the Contractors need for approval, contractor shall forward to the Contracting Agent and Engineer all submittals required by the individual Sections of the Specifications.

B. All submittals shall be identified by submittal number and specification section number on the letter of transmittal. Submittals shall be numbered consecutively and resubmittals shall have a letter suffix. For example:

1. 1st submittal: 2
2. 1st resubmittal: 2A
3. 2nd resubmittal: 2B, etc.

1.6 CONTRACTOR SUBMITTALS

A. The Contractor shall prepare and keep current, for the Contracting Agent and Engineer, a schedule and list of submittals which is coordinated with the Contractor's construction schedule and allows for reasonable time to review submittals.

B. Submittals that are related to, or affect, each other shall be forwarded simultaneously as a package to facilitate coordinated review. Uncoordinated submittals will be rejected. Do not combine unrelated materials in the same submittal. Items shall be clearly marked with the same identification number as indicated on the drawings or within the Specifications. The Contractor shall include submittal time appropriate within each item of work on the Construction Schedule.

1. Submittals required per the Project Specifications:
    i. Temporary contractor's utilities – **Section 01510**
    ii. Temporary access route plan – **Section 01550**
    iii. Pollution and erosion control plan – **Section 01560**
    iv. Work area isolation plan – **Section 02140**
    v. Utility protection plan – **Section 02222**
    vi. Seed supplier information and materials data – **Section 02900**
    vii. Weed-free certified straw documentation – **Section 02900**
    viii. Project fills supplier and materials data – **Section 05001**
2. Submittals required for **Bridge structure**:
    i. Provide Design Drawings and Calculations to Contracting Agent and Engineer for approval prior to fabrication.

C. Shop Drawings:
    a. Show layout, location, and identification of materials provided by Contractor for installation of Project elements that require Shop Drawings.
    b. For each item within the drawing include; manufacture, part number, and size and length as applicable.

1.7 REVIEW OF CONTRACTOR'S INFORMATION

A. When review and checking for acceptance is required of any drawing, or information regarding materials and equipment, the Contractor shall prepare or secure, and submit for review, two (2) copies. The Contracting Agent, will return (1) marked copy to the Contractor. Within seven (7) calendar days after receipt of said submittal copies, the Contracting Agent will return the marked copies indicating one of the following four (4) actions:

1. If review and checking indicates no exceptions, copies will be returned marked "NO EXCEPTIONS TAKEN" and work may begin immediately on incorporating the material and equipment covered by the submittal into the work.
2. If review and checking indicates limited corrections are required, copies will be returned marked "MAKE CORRECTIONS NOTED". Work may begin immediately on

incorporating into the work the material and equipment covered by the corrected submittal.

3. If review and checking indicates insufficient, or incorrect data, has been submitted, copies will be returned marked, “AMEND AND RESUBMIT”. No work may begin on incorporating the material and equipment covered by this submittal into the work until the submittal is revised, resubmitted, and returned marked either “NO EXCEPTIONS TAKEN” or “MAKE CORRECTIONS NOTED”.
4. If review and checking indicates the material and equipment submittal is unacceptable, copies will be returned marked “REJECTED-RESUBMIT”. No work may begin on incorporating the material and equipment into the work until a new submittal is made and returned marked either “NO EXCEPTIONS TAKEN” or “MAKE CORRECTIONS NOTED”.

C. Approval by the Contracting Agent shall not relieve Contractor from responsibility for any errors or omissions in such drawings, nor from responsibility for complying with requirements of this Contract.

1.8 EFFECT OF REVIEW OF CONTRACTOR’S SUBMITTALS

A. Review of contract drawings, methods of work, or information regarding materials or equipment the Contractor proposes to provide, shall not relieve the Contractor of his responsibility for errors therein and shall not be regarded as an assumption of risks or liability by the Engineer or the Contracting Agent, or by any officer or employee thereof, 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 Contracting Agent has no objection to the Contractor, upon his own responsibility, using the plan or method of work proposed, or providing the materials or equipment proposed.

PART 2 – PRODUCTS – Not Used

PART 3 – EXECUTION – Not Used

END OF SECTION

SECTION 01320

CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 – GENERAL

1.1 SCOPE

A. The Contractor shall complete a daily field report each work day and submit one copy of a progress report with all appropriate daily field reports to the Contracting Agent once each week in a format approved by the Contracting Agent. Field report to be reviewed by Contracting Agent and discussed with Contractor prior to starting work the following week. Each topic shall include a brief narrative with use of charts, graphs, etc., as appropriate. The following topics shall be included as applicable:

1. Progress of work and accomplishments for the week,
2. Construction schedule and adherence to project milestones,
3. Estimate of placed/excavated quantities,
4. Potential areas of conflict,
5. Potential project delays,
6. Potential extra work beyond items listed in Contractor's Proposal, and
7. Work to be performed during the next week.

PART 2 – PRODUCTS – Not Used

PART 3 – EXECUTION – Not Used

END OF SECTION

SECTION 01400
CONSTRUCTION STAKING

GENERAL

1.1 CONSTRUCTION STAKING

A. The Engineer will provide construction control and an initial staking of the project in consultation with the Contractor constituting the field control from which the Contractor shall execute the work and shall be left in place until the Engineer approves removal.

B. The Engineer will flag the location of temporary construction entrance, access roads, staging and stockpiling areas, and location of sensitive areas to be left undisturbed. Staging, storage, and stockpile areas shall be a minimum of 150 feet from all water bodies.

C. If any construction control or initial stakes have been destroyed or displaced, or are erroneous, the Contractor shall promptly notify the Engineer. If these points are destroyed or displaced due to Contractor's negligence or operation, the cost for replacing them will be charged to the Contractor.

1.2 LAYOUT AND MEASUREMENT TO BE PERFORMED BY CONTRACTOR

A. The Contractor shall do all further reference staking to establish the horizontal and vertical control necessary to result in having the finished work comply with the lines and grades shown on the drawings or stated in the specifications and shall be responsible for all measurements required for the execution of the work.

B. The Contractor shall furnish at the Contractor’s own expense, such stakes, equipment, tools, materials, and all labor as required in stakeout of any parts of the work from the control points and initial stakes provided by the Engineer.

C. The Engineer may require that work be suspended at any time when stakes established by the Contractor are not reasonably adequate to permit checking of the work.

PART 2 – PRODUCTS – Not Used

PART 3 – EXECUTION – Not Used

A. Horizontal and vertical tolerances for grading and general earthwork shall be ±0.2 feet.

B. Horizontal and vertical tolerances for structures and all other items shall be 1 inch.

END OF SECTION

SECTION 01450
INSPECTIONS

PART 1 – GENERAL

1.1 QUALITY ASSURANCE INSPECTIONS

A. All work is subject to quality assurance inspection by Contracting Agent and/or Engineer to ensure compliance with the Contract Documents.

B. The quality assurance inspections do not:

1. Relieve Contractor of responsibility for providing adequate quality control measures; or
2. Constitute or imply acceptance.

C. The presence or absence of a quality assurance inspector does not relieve Contractor from any Contract requirements.

D. Contracting Agent may charge Contractor for any additional cost of inspection when work is not ready at the time specified by Contractor for inspection, or when prior rejection makes re-inspection necessary. Quality assurance inspections will be performed in a manner that will not unnecessarily delay the work.

1.2 CONSTRUCTION INSPECTIONS

A. Contracting Agent and Engineer shall have access to the Work at all times.

B. Inspection of the Work will be made by the Contracting Agent and Engineer at their discretion. They will have authority to reject Work that does not conform to the Contract Documents. Any Work found to be not in conformance with the Contract Documents, in the discretion of the Contracting Agent or Engineer, shall be removed and replaced at the Contractor's expense.

C. Contractor shall make or obtain at the appropriate time all tests, inspections and approvals of portions of the Work required by the Contract Documents or by laws, ordinances, rules, regulations or orders of public authorities having jurisdiction. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Contracting Agent, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work. The Contractor shall give the Contracting Agent/Engineer timely notice of when and where tests and inspections are to be made so that the Contracting Agent/Engineer may be present for such procedures. Required certificates of testing, inspection or approval

shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Contracting Agent.

1. Bridge Structure Anticipated Inspections:
    2. Foundation Preparation – Two (2) site visits (one per bent) by Geotechnical Engineer to observe the subgrade and foundation preparation.
    3. Structural – As required per Contractor selected bridge structure.

D. As required by the Contract Documents, Work done or material used without inspection by the Contracting Agent/Engineer may be ordered removed at the Contractor's expense.

E. If directed to do so any time before the Work is accepted, the Contractor shall uncover portions of the completed Work for inspection. After inspection, the Contractor shall restore such portions of Work to the standard required by the Contract. If the Work uncovered is unacceptable or was done without sufficient notice to the Contracting Agent/Engineer, the uncovering and restoration shall be done at the Contractor's expense. If the Work uncovered is acceptable and was done with sufficient notice to the Engineer, the uncovering and restoration will be paid for as a Change Order.

F. If any testing or inspection reveals failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Engineers services and expenses, shall be at the Contractor’s expense.

G. When the United States government participates in the cost of the Work, or the Contracting Agent has an agreement with other public or private organizations, or if any portion of the Work is being performed for a third party or in close proximity to third party facilities, representatives of these organizations have the right to inspect the Work affecting their interests or property. Their right to inspect shall not make them a party to the Contract and shall not interfere with the rights of the parties of the Contract. Instructions or orders of such parties shall be transmitted to the Contractor, through the Contracting Agent.

PART 2 – PRODUCTS – Not Used

PART 3 – EXECUTION – Not used

*****END OF SECTION*****

SECTION 01505
MOBILIZATION AND DEMOBILIZATION

PART 1 – GENERAL

1.1 MOBILIZATION

A. Mobilization shall consist of preparatory work and operations, including, but not limited to, those necessary for the movement of personnel, equipment, supplies, and incidentals to the site; for the establishment of all facilities necessary for work on the project; and for all other work and operations which must be performed, or costs incurred prior to beginning work, on the various items on the project site.

B. Mobilization may also include the construction of temporary ramps and access ways, temporary roads, grading, temporary fencing, and the necessary preparatory work required to allow for the safe and stable movement of all vehicles that are required to construct the improvements outlined in the Contract Documents.

C. Equipment

1. All construction equipment shall be staged in a location and manner to minimize air, soil and water pollution. All equipment shall be washed prior to mobilization to the site to minimize the introduction of foreign materials and fluids to the project site. All equipment shall be free of oil, hydraulic fluid, and diesel fuel leaks. To prevent invasion of noxious weeds or the spread of whirling disease spores, all equipment shall be power washed or cleaned to remove mud and soil prior to mobilization into the project area. It will be the contractor's responsibility to ensure that adequate measures have been taken.
2. Equipment shall be in a well-maintained condition to minimize the likelihood of a fluid leak. At all times during the construction phase, fluid spill containment equipment shall be present on-site and ready for deployment should an accidental spill occur.
3. Storage of fuel and lubricants - all fuel and lubricants shall be stored in containers and areas that are in conformance with the State Department of Environmental Quality, biological opinion or biological assessment terms and conditions, and local, state and federal regulations.
4. Stationary Equipment – all stationary equipment or equipment servicing shall occur over oil absorbing mats.
5. Servicing and refueling equipment - all fuel and lubricants used in the servicing of construction equipment shall be done in a manner that avoids spills and over filling and shall be done away from all waterbodies. The State Department of

Environmental Quality shall be notified immediately of any spill and the operator shall contain the spillage.

6. If a spill of chemical pollutants such as fuel or hydraulic fluid should occur, immediately attempt to contain the spilled material. Then follow the following action plan:
   (a) Notify the Contracting Agent and State Department of Environmental Quality.
   (b) For spillage on land, construct earthen berms or use other suitable barricade material of sufficient size to contain the spill and keep it from spreading.
   (c) For spillage on water, attempt to isolate and contain the spilled material. Commercial booms or other suitable materials shall be kept on site during construction to contain fuel and oil spills on water.
   (d) Sanitary facilities - sanitary facilities such as chemical toilets shall be located away from water bodies to prevent contamination of surface or subsurface water.

1.2 DEMOBILIZATION

A. Demobilization shall consist of work and operations necessary to disband all mobilized items. The removal of all temporary erosion control measures, construction debris including rock chips, wood debris, construction stakes, and other construction-related refuse, 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.

PART 2 – PRODUCTS

A. Materials and product specifications are included on Drawings and in related specifications.

PART 3 – EXECUTION – Not Used

END OF SECTION

SECTION 01510
CONTRACTOR'S UTILITES

PART 1 – GENERAL

1.1 SUMMARY

A. Before starting the work, the Contractor shall submit to the Contracting Agent a proposed plan and layout for all sanitary facilities, storage and staging areas, and temporary utility service and distribution within the project bounds located during project stakeout.

1.2 SUBMITTALS

A. Submit in accordance with **Section 01300, Submittals**.
   1. Temporary Contractor's Utility Plan.

1.3 STAGING AREA

A. Vehicle and equipment staging area to be at least 150 feet from any stream, waterbody, or wetland. 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 Contracting Agent a copy of the letter of authorization for storage from the property owner.

1.4 JOBSITE CONTACT POINT

A. During the performance of this contract, the Contractor shall maintain a designated location or box at or near the site of the work, which shall be the headquarters of his representative authorized to receive drawings, instructions, or other communications or articles. Any communication given to the said representative or delivered at the contact point at the site of the work in his absence shall be deemed to have been delivered to Contractor. Copies of the drawings, specifications, and other contract documents shall be kept at the designated jobsite contact point for use at all times.

B. No habitation or overnight dwelling by employees of Contractor will be permitted.

1.5 SANITARY FACILITY

A. The Contractor shall provide toilet facilities for his work force and approved visitors at the site of work. They shall comply with applicable laws, ordinances, and regulations pertaining to the public health and sanitation of construction field offices, dwelling, and camps.

PART 2 – PRODUCTS – Not Used

PART 3 – EXECUTION – Not Used

END OF SECTION

SECTION 01550
TEMPORARY CONSTRUCTION ACCESS ROUTES

PART 1 – GENERAL

1.1 SUMMARY

A. The method, means, and equipment required to access the construction areas shall be the responsibility of the Contractor. The Contractor shall become familiar with the existing site conditions, structures, proposed bypass road, and staging and storage areas detailed in Contract Documents and show on Drawings.

B. Site access will be through private property. Temporary construction access routes may entail the use of both existing roads and the development of temporary access roads as directed by the Contract Documents and Drawings and are to be confined to limits staked in the field by Engineer and agreed upon by Owners. Any damage to property shall be the responsibility of the Contractor.

C. Once established the Contractor shall maintain temporary construction access routes within the project boundaries as required, including improvements of existing roads and providing cross drainage to complete the project. Contractor shall conduct its work to interfere as little as possible with public roads. Contractor shall provide and maintain suitable and safe detours, temporary crossings, or other temporary expedients, for the accommodation of public and private travel. Contractor shall restore public roads to a condition equal or exceeding their original condition.

1.2 SUBMITTALS

A. Submit in accordance with **Section 01300, Submittals**.

1. Temporary access route plan.

PART 2 – PRODUCTS

2.1 MATERIALS

A. The Contractor shall provide material sufficient to meet Section 3.2 of this specification.

PART 3 – EXECUTION

3.1 TRAFFIC CONTROL AND PUBLIC ROADS

A. Contractor shall conduct work to interfere as little as possible with public travel. If interference to public roads in addition to that anticipated within the Contract

Documents, Contractor shall develop a Traffic Control Plan for review and approval by the Contracting Agent.

3.2 PERFORMANCE REQUIREMENTS

A. Performance

1. Access routes (roads) shall withstand the effects of hauling equipment, materials, personnel, and all property access traffic as required to complete the work. If improvements are necessary, Contractor shall submit planned improvements to Contracting Agent for approval.
2. Were it is necessary to remove vegetation from along temporary access routes, cut a ground level (no grubbing).
3. Contractor shall protect, shore, brace, support, and maintain all underground pipes, drains, utilities, and other underground construction uncovered or otherwise affected by construction operations. All pavements, streets, roads, highways, parking areas, ditches, embankments, bridges, surfaces, driveway, buildings, utility poles, guy wires, fences and other surface structures, public or private affected by construction operations, shall be restored their original conditions. All replacements shall be made with new materials.
4. Contractor shall make satisfactory and acceptable arrangements with the Contracting Agency concerning damaged property repair or replacement or payment of costs incurred in connection with the damage.

3.3 CLEANUP

A. After completion of work, restore temporary construction roads, temporary crossing, and all roadways to preconstruction conditions.

*****END OF SECTION*****

SECTION 01560

ENVIROMENTAL CONTROLS

PART 1 – GENERAL

1.1 SITE MAINTENANCE

A. The Contractor shall keep the work site, staging areas, and Contractor's facilities clean and free from rubbish and debris. The Contractor staging area is noted on the Drawings. Materials and equipment shall be removed from the site when they are no longer necessary. Upon completion of the work and before final acceptance, the work site shall be cleared of equipment, unused materials, and rubbish to present a clean and neat appearance.

1. Clean-Up:

(a) Waste material of any kind will not be permitted to remain on the site of the work or on adjacent roads. Immediately upon such materials becoming unfit for use in the work, they shall be collected, carried off the site, and properly disposed of by the Contractor.

(b) The Contractor shall provide temporary restroom and cleanup facilities for Contractor's employees and keep these areas clear of all refuse, rubbish, and debris that may accumulate from any source and shall keep them in a neat condition to the satisfaction of the Contracting Agent.

(c) In the event that waste material, refuse, debris, and/or rubbish are not so removed from the work by the Contractor, the Contracting Agency reserves the right to have the waste material, refuse, debris, and/or rubbish removed and the expense of the removal and disposal charged to the Contractor.

1.2 AIR POLLUTION CONTROL

A. The Contractor shall not discharge smoke, dust, and other contaminants into the atmosphere that violate the air pollution regulations for the area. The Contractor shall maintain construction vehicles and equipment in good repair. Exhaust emissions that are determined to be excessive by the Contracting Agent shall be repaired or replaced.

1.3 DUST ABATEMENT

A. Contractor employ dust abatement measures commensurate with soil type, equipment use, wind conditions, and the effects of other erosion control measures.

1.4 NOISE CONTROL

A. The Contractor shall comply with all local controls and noise level rules, regulations, and ordinances which apply to any work performed pursuant to the Contract. If the requirements of this Section are more restrictive than those of the local regulations, the requirements of this Section shall govern.

B. Each internal combustion engine, used for any purpose related to this Contract, shall be enclosed and be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine shall be operated on the project without said muffler and enclosure.

1.5 VEGETATION PRESERVATION

A. The Contractor shall not remove, deface, injure, or destroy trees, shrubs, or similar natural features not designated for treatment. The Contractor shall confine operations to within the clearing limits or other areas designated in the contract documents, and prevent the depositing of rocks, excavated materials, or other debris outside of these limits. Material which falls outside of these limits shall be retrieved, disposed of, or incorporated in the work as directed by the Contracting Agent.

B. No objectionable material shall be allowed to enter any stream, river, lake, or other body of water. Material which falls in these areas shall be retrieved and disposed of, or incorporated in the work as directed by the Engineer, and damage to vegetation or structures outside the project limits shall be repaired as directed by the Contracting Agent.

C. The Contractor shall not operate equipment or otherwise disturb the natural vegetation and soil beyond the areas flagged on the ground or beyond two feet from edge of channel restoration, top of cuts, or toe of fills.

D. The Contractor will make every reasonable attempt to preserve the scenic and natural environment along this construction project.

E. Prior to the start of construction the Contractor shall submit to the Contracting Agent and Engineer for approval a schedule and plan for temporary pollution control measures.

1.6 WORK AREA ISOLATION PLAN

A. Before starting work on the project, the Contractor shall submit, for acceptance by the Contracting Agent and Engineer, a “Work Area Isolation Plan” developed in accordance with the Drawings and **Section 02140, Work Area Isolation and Fish Salvage**. The plan

shall be implemented during construction of the project to control water and aquatic organism access to the Project Site.

B. The Contractor shall not perform any excavation, or earthwork of any type on the project until a written acceptance of the "Work Area Isolation Plan" has been received from the Contracting Agent. If in the opinion of the Engineer, the plan does not sufficiently address the objectives outlined in this Section and **Section 02140**, the Contractor shall revise the plan accordingly to the satisfaction of the Engineer.

C. Full compensation for conforming to the requirements of this Section shall be considered as included in the lump sum price paid for the various items of work, and no additional compensation will be allowed therefore.

1.7 EROSION CONTROL

A. A Pollution and Erosion Control Plan including at a minimum measures detailed in Drawings for construction activities shall be prepared and submitted to the Contracting Agent. The plan shall include pre-construction installations, maintenance during construction, and post-construction removal. Once approved the Contractor shall implement plan to prevent pollution related to construction operations. The plan will include:

1. Practices to prevent erosion and sedimentation associated with access roads, stream crossings, construction sites, borrow pit operations, haul roads, equipment and material storage sites, fueling operations and staging areas.
2. A spill containment and control plan with notification procedures, specific clean up and disposal instructions for different products, quick response containment and clean up measures that will be available on the site, proposed methods for disposal of spilled materials, and employee training for spill containment.
3. Practices to prevent construction debris from dropping into any stream or water body, and to remove any material that does drop with a minimum disturbance to the streambed and water quality.

B. Erosion control measures shall be in place prior to commencing construction. During construction, all erosion controls shall be inspected by the contractor daily to ensure they are working adequately.

1. If inspection shows that the erosion controls are ineffective, work crews will be mobilized immediately to make repairs, install replacements, or install additional controls as necessary.

C. Contractor shall provide measures to prevent movement of soil into waterways or wetlands, e.g. filter bags, sediment traps or catch basins, vegetative strips, berms, jersey barriers, fiber blankets, bonded fiber matrices, geotextiles, mulches or compost, wattles

and sediment fences. All vegetative materials shall be sterile with no invasive species or non-native seeds or plant materials.

D. Contractor shall provide measures to prevent stockpile erosion during rain events or when the stockpile site is not moved or reshaped for more than 48 hours, by surrounding piles with compost berms, covering piles with impervious materials or other equally effective methods.
E. Contractor shall provide measures to prevent construction vehicles from tracking sediment offsite or onto roadways where it is subject to washing into storm drains, waterways, or wetlands; including gravel access pads, wheel wash stations, or other equally effective methods.
F. Contractor shall install removable pads or mats to prevent soil compaction in all temporary construction access points and staging areas in riparian or wetland areas if deemed necessary by the Contracting Agent.
G. Contractor shall have an emergency supply of sediment control materials on hand (silt fence, straw bales, etc.), an oil adsorbing floating boom, and absorbent pads.
H. Stationary power equipment, such as generators, within 150 feet of the water shall be diapered to prevent leaks.
I. All power equipment within 150 feet of the water shall be inspected daily for fluid leaks and repaired. The contractor must keep daily inspection reports in a diary.

1.8 SUBMITTALS

A. Submit in accordance with **Section 01300, Submittals**.
   1. Pollution and Erosion Control Plan.

PART 2 – PRODUCTS – Not Used

PART 3 – EXECUTION

3.1 DUST ABETMENT

A. Application of water shall control dust to prevent excessive loss of soil from exposed surfaces and road materials from equipment traffic and provide for user safety. Provide at a frequency and rate which controls dust such that vehicle taillights and turn signals remain visible. Vary rates of application as needed but remain low enough to avoid forming rivulets. Accomplish the abatement by sufficient frequency of application without saturating and softening the traveled way.

3.2 MAINTENANCE

A. Inspect, repair, and replace as necessary erosion control measures during the time period from start of construction to completion of construction.

3.3 FIELD QUALITY CONTROL

A. Immediately take all reasonable steps to address the condition so that material will not discharge in subsequent storm events. Replace or repair failed or overloaded control measures within 24 hours after observation of failure or overload.

3.4 CLEANUP

A. Dress sediment deposits remaining after removed of control measures to conform to existing grade

*****END OF SECTION*****

SECTION 01600

PROTECTION OF MATERIALS

PART 1 – GENERAL

A. Contractor-furnished materials shall be shipped, handled, stored, and installed in ways that will prevent damage to the items. Damaged items will not be permitted as part of the work, except in cases of minor damage that have been satisfactorily repaired and are acceptable to the Engineer.

B. Distinct gradations of rock materials shall be maintained until incorporated into the work.

PART 2 – PRODUCTS – Not Used

PART 3 – EXECUTION

3.1 DELIVERY OF MATERIAL

A. Contracting Agent's and Engineer's personnel will not accept material deliveries for the Contractor.

END OF SECTION

SECTION 01720
RECORD DRAWINGS

PART 1 – GENERAL

1.1 SCOPE

A. This section describes requirements for the preparation and maintenance of the project record drawings.

PART 2 – PRODUCTS

2.1 PROJECT RECORD DRAWINGS

A. The Contractor shall maintain a neat and accurate marked set of record drawings showing the final locations and layout of all excavations, fill, and treatments. Drawings shall be kept current weekly, with all work instructions, change orders, and construction adjustments. Drawings shall be subject to the inspection of the Contracting Agent, and/or Engineer and progress payments, or portions thereof, may be withheld if drawings are not accurate and current. Prior to acceptance of the work, the Contractor shall deliver to the Engineer one (1) set of neatly marked record drawings, accurately showing all the information required above.

PART 3 – PRODUCTS – Not Used

PART 4 – EXECUTION – Not Used

END OF SECTION

SECTION 02140

WORK AREA ISOLATION AND FISH SALVAGE

PART 1 – GENERAL

1.1 DESCRIPTION

A. This section provides performance standards for the means of work area isolation including provisions for care and diversion of water.

B. The project will be implemented during the Oregon Department of Fish and Wildlife (ODFW) in-water work window.

C. Fish salvage provisions are included in this section. **For this project, fish salvage will be performed by others, and the contractor is responsible for work area isolation and control of water.**

D. The Contractor shall comply with all federal, state, and local laws and regulations concerning environmental pollution arising from construction activities.

E. All permit conditions must be adhered to by the Contractor. The Contractor is responsible for all site monitoring and reporting associated with permit conditions.

1.2 SUBMITTALS

A. Before work area isolation is commenced, the Contractor shall obtain the acceptance of the Contracting Agent and Engineer for the method, installation, and details of the proposed work area isolation plan. The "work area isolation" shall provide layout and methods of isolating Project Area from active flow using industry standard techniques. The Contractor shall submit plan in accordance with **Section 01300, Submittals**. The work area isolation plans, at a minimum, shall indicate the following:

1. Proposed means of work area isolation: The preferred means is to be a temporary coffer dam placed upstream of the work area as depicted on the Drawings. Means to provide an adequate work area sufficient to perform all construction activates conforming to means, methods, and material specifications presented in the Drawings and Specifications.
2. Materials necessary for isolation.
3. Size of pumps, discharge piping, and piping appurtenances as necessary to isolate work area from active flow. Expected only if ground water is found to be in excavations.
4. The personnel responsible for monitoring the work area isolation system and isolated work areas. The contact person must be available at all times or a designated person must be specified in their absence.
5. Provisions to confine fuel and oil spills in the event of their occurrence.

6. Plans to segregate construction water (contaminated with/form oils, concrete residues, *etc*.) from clean water.
7. Plans to dispose of the construction water and residue solids.
8. Plan for all site monitoring and reporting resultant of permit conditions, including equipment to be used and documentation methodology.
9. A **contingency plan** must be provided as part of the approved plan that outlines next steps

B. The Contractor's work area isolation plan must be approved by the Engineer, and those provisions in place, prior to fish salvage and in-water excavation.

1.3 QUALITY ASSURANCE

A. The Contracting Agency and Engineer shall be notified at least 7 days in advance of commencing isolation activities.
B. The Contracting Agent and Engineer shall be present during initial isolation.
C. The Contracting Agency and Engineer shall be notified at least 7 days in advance of commencing fish salvage operations.
D. Fish salvage operations shall not commence until isolation measures are in place.

PART 2 – PRODUCTS

2.1 MATERIALS

A. General: Contractor shall be responsible for sizing and design of temporary work area isolation measures. Comply with Drawings and regulatory requirements.
B. Bulk bags: Reusable components of bulk bags if used shall be clean and free of potential exotic species.

PART 3 – EXECUTION

3.1 GENERAL

A. Work areas shall be isolated to trap silt and sediment, completely isolating work areas from active flow.
B. The Contractor shall furnish, install, operate, and maintain all machinery, appliances, and equipment in addition to the above isolation measures to maintain all excavations free from active flow, and shall as necessary dewater and dispose of the water so as not to cause injury to public or private property, or to cause a nuisance or menace to the public.
    1. Maintain a fish screen on the pump intake to avoid juvenile fish entrainment (NMFS 2011 or most recent version). NMFS approval is required for pumping that exceeds 3 cfs.

C. Dewatering systems as necessary shall operate continuously until project construction has been completed, or at a minimum, excavation within isolated areas has been completed.
D. The Contractor shall be fully responsible and liable for all damages which may result from failure to adequately keep excavations isolated from active flow.

3.2 DISPOSAL OF WATER

A. The Contractor shall dispose of water resulting from dewatering operations in a suitable manner without damage to adjacent property and in accordance with all federal, state, and local laws and regulations. Sediment-laden water should be discharged to adjacent ground and not allowed to return to the stream until sediments have been removed from the sediment-laden water.
B. Clean, uncontaminated water resulting from dewatering operations must be returned to the stream.

3.3 WATER QUALITY

A. Contractor is responsible for water quality monitoring and documentation per permit conditions, and subsequent modification of BMPs and construction operations to ensure that any increase in suspended sediment meets Permit conditions.

3.4 FISH SALVAGE

A. Fish Salvage for this project will be performed by others and is not the responsibility of the Contractor. The Contractor shall assist salvage operations thought coordinating isolation and dewatering activities.

*****END OF SECTION*****

SECTION 02160
SITE PREPARATION

PART 1 – GENERAL

1.1 DESCRIPTION

A. This section specifies site preparation which consists of clearing, grubbing, and disposal of materials.

1.2 JOB CONDITIONS

A. Existing Conditions: The Contractor shall determine the actual condition of the site as it affects this portion of work.

B. Protection of Existing Facilities: Site preparation shall not damage any non-project related existing infrastructure, paved areas, landscaping or vegetation adjacent to the areas designated for site preparation. The Contractor shall repair or replace any damaged property.

PART 2 – NOT USED

PART 3 – EXECUTION

3.1 CLEARING AND GRUBBING

A. General: All areas comprising the work shall be cleared and grubbed in accordance with the requirements of this section.

B. Clearing and Grubbing: Preservation of existing vegetation and trees is of utmost importance. The Engineer will flag and walk the entire site with the Contractor's representative to clearly mark the clearing limits and vegetation to be saved or salvaged. Within the limits of clearing, the areas below the natural ground surface shall be grubbed to a depth necessary to remove all stumps, roots, buried logs and all other objectionable material of any kind.

3.2 PROTECTION

A. The Contractor shall provide protection devices or demarcation of areas outside the project site to be avoided and protected.

3.3 CLEANUP

A. Debris, rubbish, and excess material resulting from the clearing and grubbing process shall be removed from the site in a manner that will prevent spillage on streets or

adjacent areas. Spillage shall be removed from streets and adjacent areas. Federal, State, and local hauling disposal regulations shall be complied with. Cleanup shall be an on-going activity throughout the contract period.

3.4 DISPOSAL OF MATERIALS

A. All debris, rubbish, and excess material removed during clearing and grubbing work shall be removed, salvaged, or disposed of per **Section 02180, Structure Removal, Salvage, and Disposal**.

*****END OF SECTION*****

SECTION 02180
STRUCTURE REMOVAL, SALVAGE, AND DISPOSAL

PART 1 – GENERAL

1.1 DESCRIPTION

A. This section describes wholly or partially removing existing structures, trash or debris, and disposing of the resulting materials, or if required, salvaging and storing designated materials.

B. Structures and materials to be **removed and staged on-site if integrity is maintained**. These include, but are not limited to, the following:
   1. Existing stream crossing culverts (2x 36” CPP pipes).

C. Materials to be salvaged and used as part of Project:
   1. Select native streambed and general soils encountered during site excavations as reference in the Drawings.

D. General Requirements: The work in this section is to be performed in a manner that maximizes salvage and recycling of materials. The work includes demolition, construction, salvage, and stockpiling of identified items and materials, and removal of resulting rubbish and debris. The Drawings indicate the assumed location of existing infrastructure. The full extent and nature of the work shall be determined by a thorough inspection of the site.

PART 2 – PRODUCTS

2.1 OWNERSHIP OF MATERIALS

A. Upon removal, disassembled materials become the property of the Contractor, unless designated in the Contract Documents as salvageable.

2.2 SALVAGE PROVISIONS

A. Contractor to stockpile select materials encountered to be used in development of Project.

PART 3 – EXECUTION

3.1 DISPOSAL

A. Disposal of manmade debris encountered in excavation is to conform to all regulations governing solid waste disposal. Obtain written permission for this disposal from the

owner of the property where placing the material, unless disposing of the material at a licensed waste disposal operation. Furnish permits or permissions to the Contracting Agent before disposal begins.

*****END OF SECTION*****

SECTION 02200
EARTHWORK

PART 1 – GENERAL

1.1 DESCRIPTION

A. The Contractor shall furnish all labor, materials, equipment, and incidentals necessary to perform all excavation, backfill, grading, hauling, and compaction required to complete the work shown on the Drawings, and specified herein. The work shall include, but not necessarily be limited to excavation for structures, backfilling and fill; embankment and grading; disposal of surplus and unsuitable materials; and all incidental related work.

1.2 APPLICABLE PUBLICATIONS

A. Reference Specifications, Codes, and Standards:
ASTM D2488-09A, Standard Practice for Description and Identification of Soils, Visual-Manual Procedure
ASTM D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12400 ft-lbf/ft3)

1.3 QUALITY ASSURANCE

A. Inspection: The Contracting Agent and/or Engineer shall inspect excavation, backfill, and re-graded surfaces, and will either approve or reject grading based on conformance with design surface, the Drawings, and these specifications.

PART 2 – PRODUCTS

2.1 EXCAVATION AND BACKFILL VOLUME ESTIMATES

A. All volumes reported on the Drawings are based on estimates from electronic surface terrain models. Earthwork quantities reported on the Drawings do not include adjustment factors to account for moisture or compaction. The Contractor shall use their professional judgement to confirm earthwork quantities.

PART 3 – EXECUTION

3.1 GENERAL

A. Control of Water: The Contractor shall keep excavations free from moving water during construction. Additional requirements for dewatering are specified in **Section 02140, Work Area Isolation and Fish Salvage.**

B. Over-excavation of unsuitable soils: Where organic materials, yielding subgrade, or other deleterious materials are encountered during excavations, they shall be removed as directed by the Engineer. The resulting excavation shall be backfilled with a 6-inch minus quarry rock or an equivalent as approved by the Engineer. The Contractor shall promptly notify the Engineer if these materials are encountered and over-excavation shall not proceed without approval of the Engineer. Unsuitable soils shall be disposed of as surplus material.

C. Surplus Material: Unless otherwise specified, surplus excavated material shall be disposed of at the Contractor's expense.

   The Contractor shall confirm that there is sufficient material available for the completion of the work before disposing of any material offsite at the designated disposal location. Shortage of material, caused by premature disposal of any material by the Contractor, shall be replaced by the Contractor at their expense.

D. Hauling: When hauling is done over highways or streets, the loads shall be trimmed and the vehicle shelf areas shall be cleaned to avoid spillage.

E. Maintenance of Roadways: Unless road closures are planned for the project, all earthwork operations shall be performed in a manner which does not disrupt the continuous flow of traffic on existing roadways. All public streets and paved areas shall be swept clean daily where dirt and debris result from Contractor's operations.

F. Survey Control Protection: Contractor to protect survey control points from excavating equipment and vehicular traffic.

G. Finish Grading: Finish grades and existing or natural grades in the area of work are indicated on the Drawings. The Contractor shall do all grading, filling, or excavating as required to completely grade the site to lines and grades shown. Where finished grade corresponds practically with existing grade, the ground shall be worked up and graded off evenly with existing grade. Filled areas shall be compacted so as to prevent settlements and the Contractor shall be responsible for a period of one year after final acceptance of the project to provide additional fill as necessary to bring to grade any areas which settle below the indicated grades and to replace or repair any planting or work damaged by such settlement.

H. Tolerances: Finished grade shall be to the line and grade shown on the plans to within a tolerance of plus or minus 0.2 ft for general earthwork if not specified within the Drawings or other sections of these specifications. Allowance for topsoil, base and leveling course aggregate, and/or streambed matrix where applicable shall be made so that the specified thickness can be applied to attain the finished grade.

I. Control of Erosion: The Contractor shall protect partially constructed surfaces from erosion.

3.2 EXCAVATION

A. Excavation shall be in accordance with Drawings and as required for construction. Excavations shall be kept free from water while construction is in progress. The Engineer shall be notified immediately in writing in the event that it becomes necessary to remove soft, weak, or wet material.

B. Soil disturbed or weakened by the Contractor's operations and soils permitted to soften from exposure to weather shall be excavated to firm foundation and refilled with 6-inch minus quarry rock or an equivalent as approved by the Engineer. All work of this nature will be at the Contractor's expense.

3.3 SUBGRADE PREPARATION

A. Ground surfaces receiving fill shall be prepared by clearing and grubbing as specified drawings and by removing soil which is high in organic content and other deleterious material.

3.4 FILLING OPERATIONS

A. Filling operations shall comply with the Drawings. Backfill materials shall comply with specified gradations identified in the Drawings and specifications. Fill operations shall not be done when the ground is frozen, excessively wet, or in a condition that prevents appropriate compaction.

3.5 COMPACTION

A. Compaction requirements for individual fill components shall comply with specifications listed on the Drawings, in the specifications, or within other Contract Documents.

3.6 CLEAN UP

A. After completing all earthwork, the Contractor shall leave the site in a neat and clean condition, doing such grading as is required by the Drawings. Any existing features, structures, and other facilities damaged or affected by the work shall be replaced, repaired, or restored to their original condition or better.

*****END OF SECTION*****

SECTION 02222
UTILITY PROTECTION

PART 1 – GENERAL

1.1 DESCRIPTION

A. This section includes provisions to protect existing underground utilities at the project site.

1.2 SUBMITTALS

A. The following information shall be submitted for approval in accordance with **Section 01300, Submittals**:

1. Utility Protection Plan:
   Before work begins, the Contractor shall obtain the acceptance of the Contracting Agent and Engineer for a Utility Protection Plan. The plan shall outline the Contractor's approach to preserve and protect existing utilities. The plan must meet criteria shown in the Drawings and these specifications. At a minimum, the plan shall include:

   (a) Contractor's approach to preserve and protect public and private utilities (water, sewer, irrigation, franchise utilities) during construction, and to restore utilities after construction, if necessary.

   (b) Contractor's approach to preserve, protect, and maintain franchise and/or other utilities during construction, including items of work the contractor will be required to perform in coordination with franchise utility providers.

PART 2 – PRODUCTS

2.1 REPLACEMENT IN KIND

A. Except as indicated or as specifically authorized by the Contracting Agent, reconstruct utilities with new material of the same size, type, and quality as that removed.

2.2 CONTRACTOR SUPPLIED TEMPORARY MATERIALS

A. Contractor shall supply all materials, including but not limited to, steel beams and bracing, support straps, sheeting and shoring, timbers, and all other items necessary to protect existing underground utilities.

PART 3 – EXECUTION

3.1 GENERAL

A. Replace in kind street improvements, such as curbs and gutters; fences; signs; paved surfaces; etcetera, that are cut, removed, damaged, or otherwise disturbed by the construction.

B. Where utilities are parallel to or cross the work area but do not conflict with the permanent work to be constructed, follow the procedures given below and as indicated on the Drawings. Notify the utility owner 48 hours in advance of the crossing construction and coordinate the construction schedule with the utility owner's requirements. For utility crossings not shown on the Drawings, refer to the instructions of the Contracting Agency or Engineer for guidance.

C. Determine the true location and depth of utilities and service connections which may be affected by or affect the work. Determine the type, material, and condition of these utilities. In order to provide sufficient lead time to resolve unforeseen conflicts, order materials and take appropriate measures to ensure that there is no delay in work.

3.2 PROCEDURES

A. Protect in Place: Protect utilities in place, unless abandoned, and maintain the utility in service, unless otherwise specified.

B. Cut and Plug Ends: Cut abandoned utility lines and plug the ends with concrete plug. Pour a concrete lug completely around the plugged end of the abandoned utility line such that the line is encapsulated with a minimum of 6 inches of concrete on all sides. Dispose of the cut pipe as unsuitable material.

C. Remove and Reconstruct: Where necessary or as required by the Contracting Agent, remove the utility and, after passage, reconstruct it with new materials. Provide temporary service for the disconnected utility.

3.3 ADJACENT PARALLEL UTILITIES

A. Protect existing parallel utilities from any disturbances and repair utilities and associated appurtenances if they are damaged in any way. All costs incurred for protection of utilities, whether or not they lie within the new construction, shall be borne in full by the Contractor.

*****END OF SECTION*****

SECTION 02900
VEGETATIVE TREATMENTS

PART 1 – GENERAL

1.1 DESCRIPTION

A. This section specifies vegetative treatments as it pertains to reclamation of areas disturbed during construction to pre-project conditions or better.

B. This section does not pertain to revegetation beyond that noted within the Drawings which will be completed by the Contracting Agent.

1.2 QUALITY ASSURANCE

A. The Contracting Agent and/or Engineer will mark by flags or stakes the outer extent of each area to be reclaimed prior to treatment.

1.3 SUBMITTALS

A. Submit in accordance with **Section 01300, Submittals**.

1. Seed supplier information and materials data, and
2. Weed-free certified straw documentation.

PART 2 – PRODUCTS

2.1 EROSION CONTROL SEED

A. Contractor to provide constituents of erosion control seed mix (non-invasive annual grass) for review and approval by Contracting Agent.

PART 3 – EXECUTION

3.1 DELIVERY AND STORAGE

A. Materials shall be delivered to the site and stored in a manner that preserves the viability of plant propagation material.

B. Plant materials shall be delivered in a disease- and weed-free condition. All plant material shall be handled, stored, and shipped with care and skill to prevent injury due to molding, rotting, drying or other damage to the vegetation.

3.2 EROSION CONTROL SEEDING

A. Erosion Control seed to be applied per supplier recommended application rate.
B. Weed-free certified straw use only. Placed at an approximate 2-inch thickness.
C. No surface fertilizer application within 50 feet of any wetland or water body.

*****END OF SECTION*****

SECTION 05001
PROJECT FILL

PART 1 – GENERAL

1.1 DESCRIPTION

A. This section specifies use of salvaged or imported fill used to create stable fills throughout the project, including the sourcing and delivery of materials, excavation, hauling, placement, and compaction.

1.2 QUALITY ASSURANCE

A. Material sourcing and selection shall be approved by the Engineer.
B. The Engineer shall be notified at least 48 hours in advance of materials delivery to project site.
C. The Engineer shall be notified at least 48 hours in advance of initial streambed gravel placement.

1.3 SUBMITTALS

A. Supplier information and Materials data: Submit the following in accordance with **Section 01300, Submittals**:
   1. Material source, size, description, and gradation.
   2. Rock density and absorption tests results.

1.4 APPLICABLE PUBLICATIONS

ASTM Method C-127, Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate

Oregon Department of Transportation 2005, Chapter 15 Bank Protection

PART 2 – PRODUCTS

2.1 ROCK – GENERAL

A. Individual rock fragments shall be dense, sound and free from cracks, seams and other defects conducive to accelerated weathering.
B. The rock shall have the following properties:
   1. Bulk specific gravity (saturated surface-dry basis) not less than 2.6.
   2. Absorption not more than 2 percent by weight.

2.2 STREAMBED MATRIX ROUND ROCK FILL

A. Anticipated source: Procured by Contractor.

B. Streambed matrix round rock fill is primarily natural round river rock and cobbles, free from organic materials, wood, and deleterious materials conforming to gradations specified in the Drawings. The least dimension of an individual rock fragment shall be approximately one-third the greatest dimension of the fragment. Streambed gavels fill is placed to the extents and grades indicated on the Drawings.

2.3 HABITAT BOULDERS

A. Anticipated source: Procured by Contractor.

B. Habitat boulders shall be rounded to sub-rounded in shape and approximately cuboidal. The size listed on the Drawings is the intermediate or "B-Axis" rock dimension. Habitat boulders are to be placed to the extents and grades indicated on the Drawings and at the direction of the Engineer.

2.4 ANGULAR ROCK

A. Anticipated source: Procured by Contractor.

B. RIPRAP

1. RIPRAP is to be angular rock, originating as broken quarry stone or rubble. Individual rock fragments shall be hard, sound, and durable, free from seams, cracks and other defects. For individual rock fragments, the least dimension of any stone shall not be less than 1/3 of its greatest dimension. Riprap is to conform to Oregon Department of Transportation (ODOT) sizing classifications presented in Drawings. RIPRAP fill is to be placed to the extents and grades indicated on the Drawings.

C. Angular rock – General

1. Originating as broken quarry stone or rubble. Individual rock fragments shall be hard, sound, and durable, free from seams, cracks and other defects. For individual rock fragments, the least dimension of any stone shall not be less than 1/3 of its greatest dimension. Angular rock is to conform to sizing classifications presented in Drawings. Angular rock is to be placed to the extents and grades indicated on the Drawings.

2.5 ROADWAY BASE AND LEVELING COURSE AGGREGATE

A. Anticipated source: Procured by Contractor.

B. Aggregate gradation as specified in Drawing. Aggregate is to be placed to the extents and grades indicated on Drawings and at the direction of Engineer.

2.6 SALVAGED FILL

A. Anticipated source: Fill salvaged from structure removal as designated in **Section 02180, Structure Removal, Salvage, and Disposal.**

B. Salvaged fill are anticipated to be streambed and angular material salvaged during the removal of the existing crossing. Salvaged fill shall conform to product specifications presented in the preceding sections.

PART 3 – EXECUTION

3.1 DELIVERY AND STORAGE

A. Materials shall be delivered to the site and stored in a manner that preserves the gradation and identity of each material to be incorporated into the work. The Engineer will measure and inspect the materials upon delivery to determine compliance with these specifications and the Drawings. Engineer may reject any or all construction materials that do not satisfactorily meet requirements.

3.2 MIXING

A. If fill material originates from different sources or different size classes that do not meet specified gradation, rock materials of varying gradations and angularity shall be mixed to create mixture specific to that rock type in conformance with rock material gradations shown on Drawings prior to placement.

3.3 STREAMBED MATRIX PLACEMENT

A. Streambed gravels shall be placed by equipment to the full course thickness designated in Drawings in lifts of 12 inches or less. When placed, streambed gravel fill shall be “clast supported” such that gravel and cobble elements of the fill are in contact with gravel and cobble elements after placement, they are not separated by layers of fine soil. Clast support must be assured either by material composition or by placement method, or a combination thereof. Each lift shall be thoroughly tracked with equipment weighing at least 15 tons and tracks shall traverse the entire surface of each layer.

B. Streambed gravels shall be sealed with fines as each lift is constructed. Small gravels and sand shall be broadcast over the lift surface and “washed-in” with water to allow the fines to fill void spaces within the matrix. Continue washing sand into the matrix until voids in the rock matrix are completely filled with sand.

3.4 BOULDER PLACEMENT

A. Habitat boulders are to be placed per Drawings.

3.5 ANGULAR ROCK PLACEMENT

A. Angular shall be placed by equipment to the full course thickness designated in Drawings in lifts of 12 inches or less. When placed, fill shall be “clast supported” such that elements of the fill are in contact with each other after placement, they are not separated by layers of fine soil. Clast support must be assured either by material composition or by placement

method, or a combination thereof. Each lift shall be thoroughly tracked with equipment weighing at least 15 tons and tracks shall traverse the entire surface of each layer.

B. Subgrade and finish grade of crossing shall be proof-rolled, Engineer may be preset, with a fully loaded 10 cubic yard dump truck or other vehicle with equivalent weight to verify no deflection and no rutting.

3.6 SALVAGED FILL PLACEMENT

A. Course thickness and placement technique of salvaged fill are to be per previous sections. Each lift shall be thoroughly tracked with equipment weighing at least 15 tons and tracks shall traverse the entire surface of each layer as deemed feasible by Engineer.

*****END OF SECTION*****