

Technical Specifications

For

White Creek Road Crossing Improvement Project

**Prepared for
Yakama Nation Fisheries**

100% Design Submittal

August 5, 2021

FOR USE IN CONNECTION WITH
**WASHINGTON STATE DEPARTMENT OF TRANSPORTATION STANDARD
SPECIFICATIONS, CURRENT EDITION**

**White Creek Road Crossing Improvement Project
Technical Specifications
100% Submittal**

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SECTION 015000
TEMPORARY FACILITIES AND CONTROLS
(A.K.A. MOBILIZATION & DEMOBILIZATION)

1. GENERAL

1.1 DESCRIPTION

- A. The work covered by this section consists of the construction facilities and temporary controls, including mobilization and demobilization, as specified, as shown on the Drawings, or as otherwise directed by the Engineer. Work includes traffic control and erosion control items not specifically addressed under other pay items.
- B. 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 offices, and other 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.
- C. 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 024100, Demolition
- D. Section 311100, Clearing and Grubbing
- E. Section 312323, Engineered Fill

2. PRODUCTS – NOT USED

3. EXECUTION

3.1 CONTRACTOR'S PLANT AND EQUIPMENT

- A. Security. Contractor shall, at all times, be responsible for security of their plant and equipment. Owner shall not be responsible for missing or damaged equipment, tools, or personal belongings.
- B. Construction Power and Communication Facilities. Contractor shall be responsible for providing sufficient electrical power and communication facilities to construct the work.
- C. Storage Facilities.
 - 1. Provide storage facilities for the protection of materials and supplies from weather, and shall keep the facilities clean and in proper order at all times.
 - 2. Provide a storage area for lubricants, oils, and hazardous materials with sufficient means to contain spills. Facilities, handling, and any required cleanup will comply with all current

local, state, and federal standards. Petroleum products stored on the site shall be secured from vandalism.

- D. Sanitary Facilities. Maintain adequate toilet facilities at or near the work site.
- E. Solid Waste Handling. Provide sufficient solid waste handling facilities to maintain site in a clean, orderly condition.
- F. Water. Owner will provide a water source for use by the Contractor. Contractor shall transport all water from the source to the project site as necessary for construction and maintenance as specified.

3.2 MOBILIZATION AND DEMOBILIZATION

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

3.3 STAGING AREAS

- A. General. Staging areas at the project site are provided for the Contractor's use. By making this area available to the Contractor, the Engineer, and any other person or agency connected with the properties shall in no way be responsible or liable for any activity of the Contractor, subcontractors, or any individual or organization connected with the project.
- B. Alternative Staging Areas. Alternative sites must be acceptable to Owner, and the Contractor must make all arrangements for their use at the Contractor's expense, and in accordance with all local, State and Federal regulations.
- C. Additional Storage Areas. Should the Contractor require space in addition to that available on-site, the Contractor shall make arrangements for storage of materials and equipment in locations off the construction site, and shall provide the Engineer a copy of the letter of authorization for storage from the Owner.

3.4 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 provisions for preventing hazardous materials from contaminating soil or entering water courses and shall establish a 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. If concrete work is proposed, provide a lined pit for concrete washdown, located where spills or overflow cannot enter nearby watercourses or storm drains. The pit shall be located a minimum of 75 feet from any flowing watercourse.
- C. Equipment Maintenance. Clean and maintain equipment to prevent any leakage of fuel and lubricants. Establish a designated equipment refueling area. All fueling and maintenance of vehicles and other equipment and staging area shall occur at least 150 feet from any riparian habitat or water body.
- D. Spills Countermeasures. Isolate work areas during in-water construction activities by using oil containment booms. Maintain a supply of oil booms, sorbent pads and other supplies to contain and clean spills. Contain and cleanup any hazardous material spills immediately and notify Engineer.

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

3.6 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.

3.7 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. 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.

3.8 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.

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 contract lump sum price for Construction Facilities and Temporary Controls, also known as Mobilization and Demobilization, will include full compensation for the furnishing of all labor, materials, tools, equipment, administrative costs, and incidentals for mobilization; demobilization; and temporary facilities and controls.
- B. Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Mobilization & Demobilization	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.
- B. Fiber Roll shall be furnished, installed, and maintained at the locations shown on the Drawings and as specified. Fiber Roll shall be installed on excavation and embankment slopes and other disturbed soil areas, active or non-active.

1.2 RELATED SECTIONS

- A. Section 015000, Mobilization
- B. Section 015713, Temporary Erosion Control and BMPs
- C. Section 312316, Stripping and 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 Certifications:
 - 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. Fiber Roll (a.k.a. Straw Wattle). Fiber Roll shall be:
 - 1. A pre-manufactured roll made from 100% weed free straw and wrapped in a 100% natural fiber 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 /biodegradable plastic netting will not be accepted as an alternate.
 - 2. 9-inch rolls shall have a minimum weight of approximately 1.6 pounds per foot.
 - 3. 12-inch rolls shall have a minimum weight of approximately 3.8 pounds per foot.
- B. Stakes. Wood stakes shall be a minimum of 1" x 1" x 24" for Type 1 installation or a minimum of 1" x 2" x 24" in size 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.

3. EXECUTION

3.1 INSTALLATION

- A. Fiber Roll shall be installed as follows:
- B. Furrows shall be constructed to a depth between three inches and four inches, and to a sufficient width to hold the Fiber Roll. Soil excavated from the trench shall be placed on the uphill or flow side of the roll to prevent water from undercutting the roll. Stakes shall be driven on both sides of the roll at an angle and crossing each other between two and three inches above the top of the roll at 36 inch spacing along the length of the Fiber Roll and stopped at 12 inches from each end of the rolls. Stakes shall be driven overlap each other.
- C. Fiber Roll shall be placed at the spacing shown in the Drawings.
- D. The bedding area for the Fiber Roll shall be cleared of obstructions including rocks, clods, and debris greater than one inch in diameter before installation.
- E. Fiber Roll shall be installed approximately parallel to the slope contour and the terminus of rows shall be angled up-slope at 45 degrees for a distance of three feet. Where fiber rolls meet, provide an overlap of two feet, with adjacent rolls tightly abutting each other.
- F. Fiber Roll shall be installed prior to seeding where used without slope protection fabric.

3.2 MAINTENANCE

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

3.3 REMOVAL

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

4. MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

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

4.2 PAYMENT

- A. Straw Wattles will be paid for at the contract price per linear foot, which price will be payment in full for furnishing all labor, materials, tools, equipment, and incidentals necessary to install, maintain the Straw Wattles throughout the construction.
- B. Straw Wattles required or used on a short-term basis that are not permanently staked in place or are anticipated to be moved on a daily or routine basis (such as areas immediately adjacent to trench excavations, temporary stockpiles, active areas for soil processing/screening operations, spill containment devices, etc.) shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.
- C. Payment shall be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Straw Wattle	Linear Foot (LF)

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 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 as directed by the Engineer during the life of the contract. Temporary erosion control measures and other BMPs will also be required at staging/storage areas utilized during project construction. Said work is intended to provide prevention, control, and abatement of water and air pollution within the limits of the project and to minimize damage to the work, adjacent properties, streams or other bodies of water.
- B. Installation and maintenance of temporary erosion control measures, devices and BMPs shall conform to the requirements as shown on the Drawings stated within this section, and Yakama Nation requirements.

1.2 RELATED SECTIONS

- A. Section 015000, Mobilization
- B. Section 015713.01, Fiber Roll
- C. Section 312319, Dewatering
- D. Section 312323, Engineered Fill

1.3 REFERENCES

- A. Washington State Department of Transportation (WSDOT) Standard Specifications for Road, Bridge, and Municipal Construction, current edition.
- B. Washington State Department of Transportation (WSDOT) Standard Plans for Road, Bridge, and Municipal Construction, current edition.
- C. Washington State Department of Transportation (WSDOT) Temporary Erosion and Sediment Control Manual M 3109, current edition.
- D. Washington Administrative Code (WAC), current edition.

1.4 SUBMITTALS

- A. Dirt Bag. Submit a material specification for the 'Dirtbag' device, for acceptance of the Engineer, prior to placement in the work.

2. PRODUCTS

- A. Dirt Bag. The 'Dirtbag' shall be a commercially manufactured nonwoven geotextile fabric bag (polypropylene or equivalent) intended for such use, with a minimum grab tensile strength of 200 psi in any principal direction (ASTM D4632), and permittivity of 0.05 sec (ASTM D4491). For project area soils (source of sediment in waters) with more than 15% by weight passing a No. 200 sieve the fabric shall have an apparent opening size between 50 and 140, and for project area soils (source of sediment in waters) with less than 15% by weight passing a No. 200 sieve the fabric shall have an apparent opening size between 20 and 50. If no determination can be
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readily made in regards to the target area soil characteristics, the more restrictive condition shall prevail. The geotextile fabric material shall contain ultraviolet ray inhibitors and stabilizers to provide an expected usable life comparable to the anticipated construction period; ultraviolet stability shall exceed 70% after 500 hours of exposure (ASTM D4355). The 'Dirtbag' device shall have a fill spout large enough to accommodate a pump four (4) inch discharge hose and attachment straps to secure the hose in place. The 'Dirtbag' device shall be sized to accommodate the applicable flow rates and prohibit release of the target effluent. Location of any 'Dirtbag' device requires acceptance of the Engineer, equipment access for removal and off-site disposal, and the area shall be stable to prevent erosion. Placement of drain rock, fabric, or other suitable substance to create a stable discharge site is the responsibility of the Contractor. Any 'Dirtbag' device shall be fitted with straps strong enough for lifting and the device removed from the Project site and properly disposed of.

3. EXECUTION

3.1 GENERAL

- A. Install temporary soil stabilization materials 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.

3.2 MAINTENANCE

- A. Maintain all temporary erosion control measures, devices, and BMPs placed in the work for the duration of the project. Maintenance includes all Manufacturer 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 course of the project at the Contractor's expense.
 - 2. Inspect temporary erosion control devices and 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 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. Should the filter fence fabric decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, replace fabric promptly.
 - 6. Should a sediment log decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, replace sediment log promptly.
 - 7. 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.
 - 8. Routinely inspect stakes and/or rope used to secure a sediment log in place and repair as necessary if found to be loose or ineffective.

9. Repair or replace damaged temporary gravel bag berm (or other measures which require gravel bags per the Project Drawings, Project Permits, these Technical Specifications and the Standard Specifications) on the same day when the damage occurs or is discovered.
10. 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 the Standard Specifications.
11. Maintain temporary gravel bag berm (or other measures which require gravel bags per the Project Drawings, Project Permits, these Technical Specifications and the Standard Specifications) to provide a sediment holding capacity of approximately one-third the height of the gravel bag berm above the ground. When sediment exceeds this height or when directed by the Engineer, remove and dispose of sediment in a manner acceptable to the Engineer, and in conformance with the Standard Specifications.
12. Remove and dispose of 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 Standard Specifications.

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, provisions and requirements as stated in the Erosion Control Plan, stockpile management, sweeping, and maintenance of all such water pollution control measures that may be shown on the Project Drawings, and as specified in the Contract Documents, Project Permit(s), Standard Specifications, these Technical Specifications, and as directed by the Engineer, and no additional compensation shall be allowed therefore.
- B. Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Temporary Erosion Control and BMPs	Lump Sum (LS)

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. Use of explosives will not be permitted.
- D. 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.
- E. 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 as a result of any cutting, removal, or demolition work performed.

3.3 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. 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 culverts and other similar permanent improvements specified on the Drawings.

3.4 DEBRIS REMOVAL

- A. Remove all trash, rubble and debris generated by demolition activities from the site at the conclusion of construction.

3.5 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. 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 on a lump sum basis.

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 024100, Demolition and Reuse of Materials
- C. Section 312316, Excavation
- D. Section 312323, Engineered Fill

1.3 REFERENCES

- A. Washington State Department of Transportation (WSDOT) Standard Specifications for Road, Bridge, and Municipal Construction, current edition.

2. PRODUCTS (Not Used)

3. EXECUTION

3.1 CLEARING

- A. General. All work shall comply with Section 2-01, Clearing, Grubbing, and Roadside Clearance of the Standard Specifications.
- B. All trees, stumps, down timber, snags, brush, vegetation, old piling, stone, concrete rubble, abandoned structures, and similar debris shall be cleared within the limits of the construction extents, unless otherwise shown on the Drawings or directed by the Engineer.
- C. In areas where grubbing is not required, the clearing operations shall consist of the complete removal of all obstructions above the ground surface.
- D. Trees. Where trees are approved by the Owner's Representative for removal, trees shall be felled in such a manner as to avoid damage to trees left standing, to the existing structures and installations, as well as with due regard for the safety of employees and others. Stumps shall be removed to minimum depth of 4 feet, or to a point where remaining roots are less than 1.5 inches in diameter, whichever depth is greater. Trees located beyond the limits for clearing and grubbing that are not marked for removal, shall be protected from damage, as indicated on the Drawings and as specified.
- E. Vegetation. 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.

- F. 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, Stripping and 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 culvert replacement shall be thoroughly grubbed.
- C. Filling of Holes. All holes caused by grubbing operations, except in borrow areas, shall be excavated with 3 to 1 (horizontal to vertical) side slopes in conformance with Section 312316, Stripping and Excavation. The excavation shall then be backfilled with compacted embankment material in conformance with Section 312323, Engineered Fill.

3.3 DISPOSAL OF DEBRIS

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

4. MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

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

4.2 PAYMENT

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

<u>Pay Item</u>	<u>Pay Unit</u>
Clearing and Grubbing	Lump Sum (LS)

END OF SECTION

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SECTION 312316
STRIPPING AND EXCAVATION

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SECTION 312316 STRIPPING AND 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 Stripping and Excavation, as specified, as shown on the Drawings, or as directed by the Engineer. Work includes, but is not limited to the following:
 - 1. Stripping for removal of vegetation and surface organics.
 - 2. Excavation for removal of unsuitable material.
 - 3. Control of groundwater during excavation.
 - 4. Channel Excavation.
 - 5. Other miscellaneous excavation incidental to the construction of the improvements.
- B. Over-excavation for placement of RSP and bridge components 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 017123.16, Construction Surveying
- C. Section 311100, Clearing and Grubbing
- D. Section 312323, Engineered Fill
- E. Section 321540, Aggregate Base
- F. Section 323423, Precast Concrete Bridge
- G. Section 329200, Seeding
- H. Section 354237, Rock Slope Protection

1.3 REFERENCES

- A. Washington State Department of Transportation (WSDOT) Standard Specifications for Road, Bridge, and Municipal Construction, current edition.
 - B. Washington State Department of Transportation (WSDOT) Temporary Erosion and Sediment Control Manual M 3109, current edition.
 - C. Washington Administrative Code (WAC), current edition
 - D. Geotechnical Engineering Investigation by:
 - Geotechnics, LLC
 - 7629 SE Harrison Street
 - Portland, OR 97215
 - (503) 730-2469
 - Job No. 20-002-1
 - Dated: July 23, 2021
-

1.4 QUALITY ASSUANCE

- 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 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 STRIPPING

- A. Stripping. Strip surfaces of excavations and fill foundations of heavy growth of crops, grass, weeds and other vegetation as specified in Section 311100, Clearing and Grubbing. Greater depths of stripping may be necessary in selected areas to remove vegetation, as determined by the Engineer.
- B. Unless otherwise specified, the stripped materials shall be disposed of off-site, at locations to be arranged between the Contractor and the Owner's Representative.

3.3 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. In the event that 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 Dewatering, Section 312319 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 in excess of 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, Engineered 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.

3.4 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. Stream Simulation Material, Rock Slope Protection, Footings, and Abutments) or the removal of unsuitables, as described below under Excavation of Unsuitables, is not included in Unclassified Excavation.

3.5 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. Stream Simulation Material, Rock Slope Protection, Footings, and Abutments) 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 Engineered Fill in accordance with 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, Engineered 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 at a location agreed upon by the Owner's Representative.

3.6 ROCK EXCAVATION

- A. Rock Excavation. Rock excavation consists of the removal of hard igneous, metamorphic, and/or sedimentary rock in solid beds or masses in original or stratified position which can be removed only by continuous drilling, blasting or the use of pneumatic tools, and all boulders of 5 cubic yards in volume or larger. Material which can be loosened with a pick, frozen materials, soft laminated shale and hardpan, which for convenience or economy is loosened by drilling, blasting, wedging or the use of pneumatic tools, removal of concrete pavement and retaining walls, shall not be classified as rock excavation. When rock is encountered within the limits of the excavation, immediately notify the Owner's Representative and Engineer and do not proceed further until instructions are received and measurements made for the purpose of establishing the volume of rock excavation. Contractor shall note that blasting is not approved

for this project. The need for specialized rock excavating equipment should be anticipated if rock is encountered.

3.7 SOIL OFF-HAUL

- A. All excess material excavated at the project site shall be off-hauled and disposed of at a location pre-approved by the Owner's Representative. 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.

4. MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Stripping. Stripping will not be separately measured for payment.
- B. Unclassified Excavation. Unclassified Excavation will be measured by the cubic yard of Unclassified Excavation, based on the Dimensions shown on the Drawings. This is a neat-line quantity and does not take into account the loose volume of the excavated material. Where the dimensions of any portion of the work are revised by the Engineer, or a portion of the work is eliminated, the change will be measured by the cubic yard.
- C. Excavation - Unsuitable Materials. Excavation - Unsuitable Materials is an optional bid item for materials that are designated by the Engineer as unsuitable for reuse. This will be measured by the cubic yard of material excavated from the stripped foundation dimensions shown on the Drawings and replaced with Engineered Fill. Measurement will be
- D. Rock Excavation. Rock Excavation is an optional bid items for rock surfaces that are designated by the Engineer as meeting the specifications for Rock Excavation. This will be measured by the cubic yard of rock excavation, based on the calculated neat-line quantity from surveyed cross sections before and after the excavation.
- E. Miscellaneous Construction. Miscellaneous construction is an optional bid item for other site work to be performed by the Contractor at the direction of the Owner's Representative or Engineer. This will be measured for payment by the hour of time the Contractor's staff and equipment are used for work at the site that is not included in the Drawings or Technical Specifications.

4.2 PAYMENT

- A. Stripping. No separate payment will be made for stripping. All costs in connection with this work will be considered incidental to the contract price per cubic yard for Excavation.
- B. 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.
- C. 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 as specified, including dewatering, all handling of materials, and disposal of unsuitable materials.

- D. Rock 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 the Rock Excavation as specified, including dewatering, all handling of materials, and disposal of unsuitable materials.
- E. Miscellaneous Construction, measured as specified above, will be paid for at the contract unit price per hour, which price will be payment in full for furnishing all labor, materials, tools, equipment and incidentals, and doing all work necessary to complete the Miscellaneous Construction of work not in the Drawings or Technical Specifications as directed by the Owner's Representative or the Engineer.
- F. 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.
- G. Mixing and transport of suitable materials for reuse shall be paid for under Engineered Fill, Section 316323.
- H. Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Unclassified Excavation	Cubic Yard (CY)
Excavation – Unsuitable Materials	Cubic Yard (CY-O)
Rock Excavation	Cubic Yard (CY-O)
Miscellaneous Construction	Hourly (HR-O)

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 (as necessary) and to design, construct, operate, maintain, and remove all cofferdams, diversions, 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 BMPs
- B. Section 015713.01, Fiber Roll
- C. Section 354237, Rock Slope Protection

1.3 REFERENCES

- A. Washington State Department of Transportation (WSDOT) Temporary Erosion and Sediment Control Manual M 3109, current edition.
- B. Washington Administrative Code (WAC), current edition.
- C. Geotechnical Engineering Investigation by:
 - Geotechnics, LLC
 - 7629 SE Harrison Street
 - Portland, OR 97215
 - (503) 730-2469
 - Job No. 20-002-1
 - Dated: July 23, 2021

1.4 SUBMITTALS

- A. The Contractor shall submit the following for review and approval of the Engineer:
 - 1. A Fish Removal and Dewatering Plan (for if flowing water in the channel is present at any time during construction) 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
 - g. Block nets for excluding fish

1.5 QUALITY ASSURANCE

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

2. PRODUCTS

2.1 MATERIALS

- A. Imported Rock. Use only clean washed gravel. Sand will not be allowed.
- B. Dewatering Facilities. Provide and operate dewatering facilities of suitable size and capacity. The use of equipment shall be consistent with the manufacturer's recommendations.
- C. 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. Contractor is responsible for providing Fish Removal by a qualified fisheries biologist as specified on the Drawings and as outlined in the project permits in the event that flowing water is present in the work area at the time of construction.

3.3 SEDIMENT CONTROL

- A. General. Comply with the provisions of the Project Permits and the WAC Chapters 173-200 and 173-201A.
- B. Materials. Earthen materials shall not be used within the flowing channel, with the exception of 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 "Dirt Bag" or hay bales around pumps for surface flow.
- F. Discharge pumped water into adjacent gravel bars, isolated local depressions, or temporary sediment basins, as shown on the Erosion Control and Dewatering Plan. Where discharging water into the river will create excessive turbidity, route water through a sediment interceptor or other facilities to remove sediment from water.
- G. Isolation of Construction Area. Place straw wattles, hay bale barriers, or cofferdams between construction area and flowing river channel, at all locations, as shown on the Erosion Control and Dewatering Plan.

3.4 HAZARDOUS MATERIAL CONTROL

- A. General. Comply with the approved Spill Prevention, Control and Countermeasures Plan (SPCC Plan) in accordance with Temporary Water Pollution Prevention, Section 01-07.15.
- 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 SPCC Plan 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 Washington, 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. Construction water shall be segregated from seepage water and 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. Refer to the Geotechnical Report.
- 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, to allow for visual inspection of the work, if requested by the Engineer. 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. Creek Diversion is an optional bid item to be used at the discretion of the Owner’s Representative or the Engineer based on if flowing water is present in the project area at the time of construction, and will be measured on a lump sum basis.
- B. Fish Removal is an optional bid item to be used at the discretion of the Owner’s Representative or the Engineer based on if fish are present in the project area at the time of construction, and will be measured on a lump sum basis.
- C. Dewatering will not be separately measured for payment.

4.2 PAYMENT

- A. Creek Diversion will be paid for at the lump sum contract price for Creek Diversion, which price will include payment in full for furnishing all labor, materials, tools, equipment, and incidentals necessary to complete the diversion 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.
- B. Fish Removal will be paid for at the lump sum contract price for Fish Removal, which price will include payment in full for furnishing all labor, materials, tools, equipment, and incidentals necessary to complete the fish removal operations, as specified.
- C. No separate payment will be made for Dewatering . Full compensation for all costs associated with this work, as shown on the Drawings, or as specified, shall be included for related work .

<u>Pay Item</u>	<u>Pay Unit</u>
Creek Diversion	Lump Sum (LS)
Fish Removal	Lump Sum (LS)

END OF SECTION

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ENGINEERED FILL

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SECTION 312323 ENGINEERED 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 Engineered fills, including subgrade preparation, furnishing, loading, and on-site and off-site hauling of materials, processing, screening placement and compaction of Engineered Fill materials, construction of ramps, and other incidental earthwork as may be necessary to complete the Engineered Fills, as specified in the Geotechnical Report, as shown on the Drawings, as specified, or as otherwise directed by the Engineer.
- B. All grading shall comply with Sections 2 of the Standard Specifications, and with the recommendations of the Geotechnical Investigation. Prior to beginning work, the Contractor shall be familiar with the geotechnical investigation. In the event of discrepancy between the report and the notes herein, the report shall prevail. 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 BMPs shall be installed and approved by the Engineer prior to beginning Engineered Fill Construction.
- D. The Contractor is responsible to locate, identify, and protect all existing utilities from damage.

1.2 RELATED SECTIONS

- A. Section 015000, Mobilization
- B. Section 015713, Temporary Erosion Control and BMPs
- C. Section 017123.16, Surveying
- D. Section 311100, Clearing and Grubbing
- E. Section 312316, Stripping and Excavation
- F. Section 321540, Aggregate Base
- G. Section 323423, Precast Concrete Bridge
- H. Section 329200, Seeding

1.3 REFERENCES

- A. Geotechnical Engineering Investigation by:
 - Geotechnics, LLC
 - 7629 SE Harrison Street
 - Portland, OR 97215
 - (503) 730-2469
 - Job No. 20-002-1
 - Dated: July 23, 2021

2. PRODUCTS

2.1 MATERIALS

- A. Water. Refer to Section 015000, Mobilization
- B. Engineered Fill Materials. To the extent they are needed, all suitable materials from the specified excavations shall be used in the construction of required permanent engineered fill. The suitability of materials for specific purposes will be subject to the approval of the Engineer, in conformance with these specifications.
- C. Surplus Materials. All surplus or unsuitable excavated materials will be designated as waste and shall be disposed in accordance with Section 312316, Stripping & Excavation.
- D. Imported Engineered Fill. Importing of Engineered Fill material shall be approved by the Geotechnical Engineer and supplied by the Owner. The Contractor shall be responsible for hauling the material from the source location to the project area.

3. EXECUTION

3.1 ENGINEERED FILL CONSTRUCTION

- A. General. Compacted Engineered Fill in Engineered Fills shall be placed in the dry and compacted as specified herein.
- B. Borrow Areas. Refer to Section 312316, Stripping and Excavation.
- C. 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 6 inches. The moisture content of the loosened material shall be controlled as specified for the Engineered Fill, and the surface materials of the subgrade shall be compacted and bonded with the first layer of Engineered Fill.
- D. Prepared subgrade surface shall be free of loose, uncompacted earth in excess of six inches in depth normal to the slope and shall be at such a moisture content that the Engineered Fill can be compacted against it ensure a good bond between the engineered fill and the subgrade. Subgrade surfaces shall not be steeper than 1 horizontal to 1 vertical.
- E. Fill shall not be placed until the required subgrade preparation has been completed and approved by the Geotechnical Engineer.
- F. 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.
- G. Compaction. Comply with the recommendations of the Geotechnical Engineering Report and the structural design plans for the Bridge
- H. At the discretion of the Engineer, the top 18 inches of fill, within areas specified to receive revegetation treatments, may be compacted to between 80% and 85% of the maximum dry density, to facilitate plant establishment. Prior to seeding, the surface shall be prepared as specified in Section 329200, Seeding.
- I. Dressing. Engineered 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 Engineered 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 Engineered Fill materials shall be homogeneous. The Engineered Fill shall be free of pockets, lenses, streaks, layers, etc. of different materials.

3.3 FINISH

- A. The finished 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 engineered 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 Engineered 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. Engineered Fills 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 Engineered 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 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. Engineered Fill. Engineered Fill will not be separately measured for payment.

4.2 PAYMENT

- A. No separate payment will be made for Engineered Fill. The cost for this work shall be included in contract lump sum price for Precast Concrete Bridge Installation, Section 323423.

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

1.3 REFERENCES

- A. Washington State Department of Transportation (WSDOT) Standard Specifications for Road, Bridge, and Municipal Construction, current edition.

1.4 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 used for the Road Surface will be supplied by the Owner and hauled from the source to the project site by the Contractor.

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. Aggregate base course material shall be compacted with mechanical tampers.

4. MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Crushed Rock Road Surface will be measured for payment by the square foot, to the nearest 10 square feet
- 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. Crushed Rock Road Surface will be paid for at the contract price per square foot, which price will be payment in full for furnishing all labor, materials, tools, equipment and incidentals, and for doing all work involved in constructing the Crushed Rock Road Surface , 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>
Crushed Rock Road Surface	Square Foot (SF)

END OF SECTION

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SECTION 323423
PRECAST CONCRETE BRIDGE

1. GENERAL

1.1 DESCRIPTION

- A. The Work covered by this section consists of moving and installing of a precast concrete bridge, abutments, and wingwalls, complete, in place, as specified, as shown on the Plans, and as directed by the Engineer. The precast concrete bridge, precast concrete abutment blocks, connecting steel and hardware shall be supplied by the Owner.
 - B. Coordinate delivery of the bridge materials with the supplier. The bridge material supplier is Pacific Bridge and Construction of Sandy, Oregon:
 - Pacific Bridge and Construction
 - 40800 SE Coalman Road
 - Sandy, OR 97055
 - 503-668-4798
- 1. Verify road condition requirements with the bridge material supplier and make any necessary road improvements to get materials as close to the project site as possible. The Contractor shall arrange and pay for any necessary hauling of bridge materials from the bridge supplier drop-off location to the project site.

1.2 SUBMITTALS

- A. Submit to the Engineer, for review, the following:
 - 1. Geotextile material used in the backfill behind the abutments and wingwalls.

1.3 PRODUCT HANDLING

- A. General. Comply with the notes on the Drawings and Bridge Manufacturer's Installation Guidelines.

1.4 QUALITY ASSURANCE

- A. Inspection and Acceptance. Owner will inspect and accept bridge.

2. PRODUCTS

2.1 MATERIALS

- A. General. Comply with the material specifications listed on the Drawings.

3. EXECUTION

3.1 GENERAL

- A. Comply with the notes and details on the Drawings.

4. MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Deliver Modular Concrete Bridge will be measured for payment on a lump sum basis.
- B. Install Modular Concrete Bridge will be measured for payment on a lump sum basis.
- C. Engineered Fill, geotextiles, grout, and other materials supplied and installed by the Contractor for the Precast Bridge construction and backfill will not be independently measured for payment.

4.2 PAYMENT

- A. Deliver Modular Concrete Bridge 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 to deliver the modular concrete bridge components to the staging area from where the Bridge Supplier delivers the materials. This will include making any road improvements to facilitate delivery.
- B. Install Modular Concrete 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 to furnish and complete installation of the Precast Concrete Bridge, including but not limited to over excavation for abutments and footings, foundation and structural backfill, and installation of Fabricated Concrete Bridge including abutments, wing walls, as specified, as shown on the Drawings, or as directed by the Engineer.
- C. Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Deliver Modular Concrete Bridge	Lump Sum (LS)
Install Modular Concrete Bridge	Lump Sum (LS)

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 and Mulching, as specified, as shown on the Drawings, or as directed by the Engineer.

1. Seed and mulch will be supplied by the Owner for installation by the contractor.

1.2 RELATED SECTIONS

- A. Section 015713.01, Fiber Roll
- B. Section 312316, Excavation
- C. Section 312323, Engineered Fill

2. PRODUCTS – Not Used

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.
- 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 October 1st and November 15 of the year construction begins. The seeding operation shall be halted when, in the opinion of the Engineer, conditions of high winds, excessive moisture or other factors are not conducive to satisfactory results. Upon written request of the Contractor, and upon written approval of the Engineer, seeding may be done during off seasons provided that:

1. The resulting stand of grass shall be at least equal to the stand that might be expected from planting during the normal season; and
 2. The establishment period shall be lengthened, as required, to produce the above specified stand at no additional cost to the Owner.
 3. Perform seeding prior to placement of erosion control fabric, where erosion control fabric is specified.
- D. Broadcast Seeding. Seed shall be dry-applied by the following method:
1. Broadcast seed at the rates specified on the Drawings, uniformly by hand, mechanical hand seeder, combination seed spreader and cultipacker, or other approved equipment. Where seed is broadcast by hand or mechanical hand seeder, half the seed shall be sown with the sower moving in one direction, and the remainder sown with the sower moving at right angles to the first sowing. Broadcast seeding shall not be done during windy weather.
 2. Rake seed into the soil to achieve a sowing depth of approximately 1/8 inch to 1/4 inch.
 3. Following the application of seed, straw mulch shall be pneumatically applied or hand broadcast at the rate of 3,000 pounds per acre (typically 1.5 to 2 tons/acre).

3.3 REPAIR

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

3.4 FIELD QUALITY CONTROL

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

4. MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Seeding will be measured for payment on a lump sum basis.
- B. Straw Mulch will not be separately measured for payment.

4.2 PAYMENT

- A. Seeding will be paid for at the contract lump sum price, 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. No separate payment will be made for straw mulch. All costs in connection with this work will be considered incidental to the cost of Seeding.

C. Payment will be made under:

Pay Item

Seeding

Pay Unit

Lump Sum (LS)

END OF SECTION

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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) and Stream Substrate 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 his/her bid for this work, as no additional compensation will be allowed therefore.
- D. The Contractor is hereby notified that the Engineer may direct the Contractor to place additional stone materials (not shown on the Drawings) at select locations within the project work treatment areas to fit existing conditions at the time of construction. Any such additional stone materials and placement shall be considered as included in the contract prices paid for the designated stone materials as described elsewhere in these Technical Specifications and no additional compensation shall be allowed for

1.2 RELATED SECTIONS

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

1.3 REFERENCES

- A. Washington State Department of Transportation (WSDOT) Standard Specifications for Road, Bridge, and Municipal Construction, current edition.

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, and placement of fabric for rock. Where backing is shown on the Drawings, Engineer shall verify subgrade preparation and backing placement prior to placement of outer rock course.

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.
- B. Imported Rock Material used for the stream channel will be supplied by the Owner and hauled from the source to the project site by the Contractor.

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. 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 "Stream Substrate", 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 STREAM SUBSTRATE

- A. Stream Substrate 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. Subgrade shall be uniform with no soil clumps or rocks greater than two inches.
- B. Following placement of the Stream Substrate, the finished surface shall be jetted with water until fines (material with a diameter less than 2mm) have been washed into the interstices of the mix to form a uniform plane of embedment, to the satisfaction of the Engineer. Turbid water resulting from jetting operations shall be pumped to a local depression or other sediment treatment facility, in accordance with the Permits.

4. MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Rock Slope Protection will be measured by the cubic yard calculated to the nearest cubic yard.
- B. Stream Substrate Material. Stream Substrate Material will not be separately measured for payment.
- C. Excavation and backfill for rock slope protection 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. Stream Substrate Material, 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.
- C. 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 "Stream Substrate" is specified as the backfill material, supply and stockpile of materials shall be considered incidental to the cubic yard price paid for associated Rock Slope Protection work.
- D. Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Rock Slope Protection	Cubic Yard (CY)
Stream Substrate Material	Cubic Yard (CY)

END OF SECTION