

Clear Creek Habitat Improvement Project

Final Design

Prepared for:
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Project Drawings

Acronyms and Abbreviations

ABA	Acid-Base Accounting
AMS	Agricultural Marketing Service
BMP	Best Management Practice
CGP	Construction General Permit
cm	centimeter
DBH	Diameter at Breast Height
EC	electrical conductivity
ESP	exchangeable sodium percentage
H	horizontal
ISPWC	Idaho Standards for Public Works Construction
Max	maximum
Min	minimum
mm	millimeter
mmhos	millimhos
MUTCD	Manual of Uniform Traffic Control Devices
n/a	not applicable
No.	number
NTU	nephelometric turbidity units
OSHA	Occupational Safety and Health Administration
PPE	personal protective equipment
TerraGraphics	TerraGraphics Environmental Engineering, Inc.
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
V	vertical

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SPECIAL PROVISIONS

This section of the Construction Documents describes the Project and details the Work required to implement the Clear Creek Habitat Improvement Project (Project) as shown on the Drawings. The Technical Specifications for each component of the Project are referenced below and are taken from the Idaho Standards for Public Works Construction (ISPWC), 2012 Edition. Refer to Appendix A of this document for all applicable Technical Specifications. Any special conditions applicable to this Project are also identified. Addenda issued after these documents have been published shall supplement and/or supersede these construction documents. For any discrepancies between the Special Provisions and the Technical Specifications, the Special Provisions will govern. For any discrepancies between the Special Provisions or the Drawings, the most stringent and detailed provisions shall govern.

Section 1.0 Project Description

The Project, referred to as the Clear Creek Habitat Improvement Project, is located on the Nez Perce Tribe Indian Reservation in Idaho County, Idaho, near Kooskia, Idaho, just downstream of the Kooskia National Fish Hatchery. The purpose of the Project is to enhance in-stream fish habitat in Clear Creek, a tributary of the Middle Fork Clearwater River, and to provide improved trails for user access to Clear Creek during all times of the year. Removal of Japanese knotweed, an invasive plant which currently exists within the Project boundary, is an additional goal.

In general, the Project consists of: Japanese knotweed removal and disposal, construction of an aggregate surfaced Primary Access Trail along an existing berm, construction of Side Trails from the Primary Access Trail to streambank of Clear Creek, installation of four types of in-stream habitat structures, and revegetation of the Project Site.

Section 2.0 Health and Safety Plan

Contractor and all on-site personnel, including all Subcontractors and their employees, under Contractor's supervision shall comply with all U.S. Department of Labor Occupational Safety and Health Administration (OSHA) Regulations.

Contractor shall prepare and submit to Owner a site-specific Health and Safety Plan in accordance with the Special Provisions, Section 16.0 Submittals. Contractor shall prepare the Health and Safety Plan in accordance with the following OSHA standard practices: Safety and Health Standards 29 CFR 1926 (General Industry and Construction Industry). At a minimum, the Health and Safety Plan shall address the following elements: staff organization, responsibilities, and authorities; site description and identification of hazards; hazard analysis for each Project task and operation; required general and site-specific training; personal protective equipment (PPE); medical surveillance; personal and environmental exposure monitoring; standard operating safety procedures, engineering controls, and work practices (including a prohibition of single person work crews); communications; illumination; site control measures; personnel hygiene; emergency equipment and first aid; emergency response and contingency procedures; and logs, reports, and record keeping. The Health and Safety Plan shall include a discussion of training, safety procedures, training certificates, and other requirements necessary to educate all workers and Subcontractors used on the Project.

Contractor shall address all specific safety and operational issues in the site-specific Health and Safety Plan. At a minimum, Contractor shall comply with the following general safety requirements at all times:

- Contractor's employees and Subcontractor's employees shall not operate cell phones while driving.
- Contractor's employees and Subcontractor's employees shall obey all posted speed limits when driving on public roads.
- Contractor's employees and Subcontractor's employees shall wear safety belts at all times when driving a vehicle or operating equipment.
- First aid kits and fire extinguishers are required in all field vehicles and equipment.
- No drugs, alcohol, or firearms are allowed on-site or in employees' vehicles.

Section 3.0 Site Controls and Stormwater Management

Construction equipment shall be inspected daily for leaks, seeps, and general condition. Any leaks of fuel, oil, lubricants, hydraulic fluid, or other fluids will be repaired before equipment is used for further work. Every vehicle used on the construction site will have absorbent materials capable of absorbing a minimum of 10 gallons of fuel, oil, or hydraulic fluid on board.

Contractor shall document, provide, install, and maintain all necessary Best Management Practices (BMPs) that will be used during construction activities for erosion control and stormwater management purposes. All BMPs installed by Contractor shall meet the applicable requirements of the Drawings, Special Provisions, Technical Specifications, and permits. Depending on actual Site conditions encountered during construction, additional BMPs may be necessary to adequately complete the Work. Contractor shall install any additional BMPs at Engineer's discretion and in accordance with the guidance documents listed below:

- Idaho Department of Environmental Quality, Catalog of Stormwater Best Management Practices for Idaho Cities and Counties, September 2005.
- U.S. Environmental Protection Agency (USEPA), Storm Water Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practices, October 1992.

Contractor shall obtain and comply with all provisions of the USEPA 2012 Construction General Permit (CGP). Refer to the following website for information on the 2012 CGP, including guidelines on how to apply for and obtain permit coverage:

<http://cfpub.epa.gov/npdes/stormwater/cgp.cfm>.

Section 4.0 Quality Control/Quality Assurance

Quality control in order to assure that construction complies with the requirements of the Project Drawings, Special Provisions, and Technical Specifications is the responsibility of Contractor. Quality assurance is the responsibility of Owner. Owner or Engineer will perform quality assurance in the form of construction oversight and additional testing, as necessary, to ensure that the Work performed by Contractor meets all applicable requirements.

Specific Contractor quality control testing, samplings, and analysis requirements, if applicable, are described for each Work Item in the Work Description paragraph of these Special Provisions and/or in the Technical Specifications. Contractor shall be responsible for overall management of the construction quality. All submittals shall be reviewed and approved by Owner or Engineer in accordance with Section 16.0 Submittals of these Special Provisions.

Construction grade and alignment tolerances shall be as specified below, unless noted otherwise in the Plans. Final grade for rock and/or topsoil surfaces shall be plus or minus 0.2 feet. It is Contractor's responsibility to construct to the established tolerances. Work resulting in grades and alignment not within the specified tolerances will be rejected. Contractor shall remove the rejected or defective Work and complete the Work to the specified requirements or tolerances at Contractor's expense.

Section 5.0 General Work Description

General:

Contractor assumes full and sole responsibility for the capability of selected construction techniques to complete the Work in accordance with the Contract Documents. Contractor also assumes full and sole responsibility for safety and environmental protection with the selected construction techniques. Review of submittals by Owner or Engineer in no way relieves Contractor of these responsibilities.

Contractor shall respect all right-of-way boundaries and shall protect from damage all monuments, utility poles, wells, culverts, bridges, gates, and other features existing in or near the Site. Contractor shall protect property corners, section corners, highway monuments, survey monuments, benchmarks, and any other Idaho Transportation Department highway controls. All such disturbed survey monuments shall be reset by a Professional Land Surveyor licensed in the State of Idaho at no additional cost to Owner.

Contractor shall maintain all existing drainage patterns unless otherwise specified in the Drawings or these Special Provisions.

Existing improvements, surfaces, and vegetation that are to be protected or are to remain, which are subsequently disturbed or removed, shall be replaced to conditions as good as or better than those encountered at Contractor's expense.

Contractor shall contain and store all solid and liquid wastes generated by or used during construction activities in a neat and orderly manner at an approved storage area. Contractor shall dispose all liquid wastes off-site in a legal manner. Liquid wastes may include, but are not limited to: grease, used motor oil, and sanitary waste. Store and handle all wastes in accordance with applicable regulations. All spills shall be reported to Owner and cleaned up immediately. Contractor shall remove all solid wastes from the construction area upon completion of the Work and dispose at a licensed landfill.

No littering will be allowed on the construction area (see Special Provisions, Section 10.0, Site Cleanup). Contractor shall provide and maintain suitable garbage receptacles at the staging area and other locations within the construction area as appropriate. The garbage receptacles shall be covered and physically secured to prevent loss of contents by weather or wildlife. Contractor shall empty the garbage receptacles as needed and ensure that the garbage is properly disposed at

a licensed landfill facility. Contractor shall inform employees and Subcontractors of the locations of the garbage receptacles, instruct them not to litter, and require that all garbage generated on Site is properly disposed.

For public safety purposes, gates, signs, barriers, and other control measures shall be in place during construction stoppages greater than four (4) hours.

Permits:

Owner shall be responsible for all stream construction related permits and will provide copies of all relevant information prior to the start of construction. Contractor shall obtain all required general construction permits for the Work prior to starting construction. All costs necessary to obtain and comply with all applicable permits are considered incidental to the Work. Copies of all permits shall be submitted to Owner prior to initiating construction activities.

Facilities:

Contractor shall provide all necessary mobile office and sanitation facilities for Contractor's operations. Contractor shall locate these facilities at the Site as approved by Owner.

Utility Protection:

Overhead power lines, overhead telephone lines, buried power lines, buried telephone lines, buried water lines, and buried sewer and septic lines may be present within the construction area. Utilities identified on the Drawings are in approximate locations and may not identify all utilities present at the Site. Contractor shall locate all utilities within the Work area prior to starting construction. Call Idaho Dig Line, Inc. at 800-342-1585 or 811 at least two (2) working days prior to starting construction. Contractor shall locate and protect all utilities and repair at Contractor's expense any damage to utilities caused by Contractor or Subcontractor(s).

Contractor shall provide copies of all written communications with the utility owner(s) to Owner. Contractor shall notify the appropriate utility owner(s) at least five (5) days in advance of excavating near any utility within the construction area. Contractor shall meet and coordinate with the appropriate utility representatives to determine exact locations, crossing requirements, and schedules. Contractor shall provide Owner at least two (2) days advance notice of meetings scheduled with utility owner(s).

Contractor shall notify Owner of all buried utilities encountered during the Work and shall not backfill the area until the type, size, and location of the utility is recorded and mapped.

Section 6.0 General Measurement and Payment

General:

The total price for each Bid Item of the Contract shall cover all Work shown on the Drawings and required by the Special Provisions, Technical Specifications, and other Contract Documents. All costs in connection with the Work (including furnishing all materials, equipment, supplies, and appurtenances; providing all construction equipment, tools, and incidentals; and performing all necessary labor and supervision to fully complete the Work) shall be included in the unit and lump sum prices bid. No item that is required by the Contract Documents for the proper and successful completion of the Work will be paid for outside of or in addition to the prices submitted in the bid.

Measurement of all unit price Bid Items will be made by Owner and/or Engineer.

Contractor shall backfill unauthorized excavation in accordance with the appropriate Technical Specifications at Contractor's expense. Unauthorized excavation consists of removal of materials beyond the indicated removal areas, subgrade elevations, or dimensions without approval of Owner.

Estimated Quantities:

All estimated quantities stipulated in the Bid Form or other Contract Documents are approximate and are to be used only (i) as a basis for estimating the probable cost of the Work, and (ii) for the purpose of comparing the bids submitted for the Work. Actual quantities may differ from estimated quantities. The basis of payment for unit price Work shall be the actual quantity of unit price items supplied. Contractor will make no claim for damages, anticipated profits, or otherwise on account of any difference between the amounts of Work actually performed and materials actually furnished and the estimated amounts herein.

Lump sum Bid Items based upon estimated quantities are not subject to adjustment for actual quantities. The lump sum bid price is a fixed price and reflects a reasonable compromise of Owner and Contractor's risk that the actual quantity of services/material supplied may be higher or lower than the estimate.

All estimated quantities designated as cubic yard shall be considered "bank" cubic yard unless otherwise noted. An excavated "bank" cubic yard is the quantity of material removed as measured in its original position.

Incidentals:

The Work Description section (Section 7.0) does not necessarily name all the incidental items and tasks required by the Contract Documents to complete the Work. Incidentals are work activities, labor, materials and/or tools, and equipment necessary to complete the Work for which there is no additional charge. The cost of all such incidentals shall be included in the various related Bid Item(s).

Section 7.0 Work Description

Contractor shall perform the Project Work described below.

7.1 Bid Item No. 1: Mobilization, Demobilization, Bonding, and Insurance

Applicable Technical Specifications:

Section 1001 – Construction Site Management

Section 1002 – Construction Site Housekeeping

Section 2010 – Mobilization

Applicable Drawings:

Sheet CS – Cover Sheet

Sheet C1 – Existing Site Layout, Survey Control, and Project Limits

Work Description:

This Bid Item includes all the Work necessary for the movement of personnel, equipment, supplies, and incidentals to and from the Site. This Bid Item includes preparing, moving, and setting up all structures and equipment for on-site facilities; establishing and decommissioning the staging area(s) and Contractor's facilities; removing all garbage, equipment, leftover material, and incidentals from the Site; cleaning up the Site; decontaminating equipment at time of demobilization; and all other Work and operations that must be performed or costs incurred before beginning Work on the various items on the construction area. Mobilization and demobilization costs for subcontracted Work shall be included in this Bid Item. Contractor's cost for administration, bonding, insurance, and other documents shall be included in Mobilization, and no separate payment will be made.

This Bid Item also includes all the Work necessary to prepare, implement, maintain, and conduct all the provisions discussed below in (1) Staging Areas, (2) Road Protection and Maintenance, (3) Weed Control, and (4) Site Controls. Contractor shall include the cost for all materials, labor, and equipment necessary to complete the Work for this Bid Item, and no separate payment will be made.

- (1) Staging Areas: Equipment and materials staging areas shall be established in locations approved by Owner. Any additional space needed or modifications to the boundaries of the staging areas shall be subject to approval by Owner. Contractor shall limit equipment and materials storage to the staging areas, unless specifically approved by Owner. Contractor will be responsible for security of the staging area, hazardous material containment and cleanup, weed control, and drainage and erosion control. Contractor shall designate a refueling area within the staging area that is a minimum of 100 feet from Clear Creek. Immediately following completion of the Project, the staging area shall be thoroughly cleaned of all trash and debris and restored to pre-project condition and approved by Owner. Staging areas are to be established and decommissioned at location(s) identified in writing by Contractor to Owner at least five (5) days prior to commencement of staging.
- (2) Road Protection and Maintenance: Contractor shall take all necessary precautions to prevent damage to all roads including city, state, and county roads during construction due to heavy vehicle loading (including bridges and cattle guards). All such precautions shall be approved by Owner and Idaho County. Contractor shall repair any such damage resulting from construction activities (including grading the road to eliminate ruts caused by heavy vehicle loading).
- (3) Weed Control: Contractor shall control the spread of noxious weeds onto and from the Site. Contractor shall:
 - Establish a weed decontamination area at each entrance to the Site.
 - Decontaminate all construction equipment to prevent the spread of noxious weeds by cleaning with high-pressure water before moving equipment into or away from the Site.

- Decontaminate each piece of equipment used coming from established haul and access routes each time it enters the Site if it has been used at sites other than the construction area since it was last decontaminated.
- Clean all wheels, tracks, undercarriages, fenders, blades, buckets, and the exterior body of vehicles/equipment prior to entering the Site.
- Decontaminate all equipment if used in area with noxious weeds (for example, if a dozer is used to strip cover from an area with noxious weeds it should be decontaminated before being used elsewhere on the Site).
- Owner will mark areas within and adjacent to the Site having large weed populations and Contractor shall restrict vehicle travel through these areas, including walking traffic and light duty vehicles.
- Provide a parking area for Contractor, employees, suppliers, Owner, and other persons in an area free from weed infestations.
- Provide training for all employees on weed control methods and vehicle decontamination procedures.

(4) Site Controls: Contractor shall inspect all equipment and vehicles daily and repair any seeping or leaking grease, oil, and/or other petroleum products prior to entering the Project Site.

Materials:

- Contractor shall provide all materials necessary to complete the Work as specified.

Execution:

Work includes, at a minimum:

- Mobilize to and demobilize from the Site with all necessary materials, equipment, and personnel to complete the Work;
- Provide insurance and bonding for the Contract;
- Mobilize and demobilize for subcontracted Work;
- Protect and maintain public roads during construction;
- Coordinate with all other Work items, as necessary;
- Construct, maintain, and decommission staging area(s);
- Install and maintain decontamination area(s);
- Establish and maintain appropriate refueling areas;
- Clean equipment prior to transport to and from the Site to prevent importation of noxious weeds;
- Install and maintain decontamination area(s);
- Inspect all equipment daily, repair any leaks/seeps, and remove as necessary all grease, oil, or contaminated material;
- Properly dispose of liquid and solid wastes from the construction area;
- Provide, maintain, and remove Contractor structures and sanitation facilities;
- Provide, maintain, and remove trash receptacles;

- Dispose of all trash, garbage, and other waste materials generated by Contractor;
- Repair all property damage caused by Contractor; and
- Provide all labor, tools, equipment, materials, and incidentals necessary to complete the Work as specified.

Measurement:

No direct measurement for Bid Item No. 1, Mobilization, Demobilization, Bonding, and Insurance will be made.

Payment:

Payment for Bid Item No. 1, Mobilization, Demobilization, Bonding, and Insurance will be based on the lump sum price bid as shown on the Bid Form of the Contract Documents. Fifty percent (50%) payment for this Bid Item will be allowed once Contractor submits Bonds and Insurance Certificates, fully mobilizes to the Site, and obtains approval on all submittals required before starting construction. Full payment for this Bid Item will be allowed once Contractor completes the Work for the remainder of the Contract, completes final cleanup work, and fully demobilizes equipment and materials from the Site. THE LUMP SUM BID PRICE FOR THIS BID ITEM MUST NOT EXCEED TEN PERCENT (10%) OF THE TOTAL BID PRICE.

7.2 Bid Item No. 2: Traffic Control

Applicable Technical Specifications:

Section 1103 – Construction Traffic Control

Applicable Drawings:

Sheet G2 – Project Overview

Work Description:

This Bid Item includes all work necessary to establish traffic controls during construction. Contractor is responsible for implementation of traffic control measures throughout the Site and other areas as necessary to safely complete the Work and facilitate required construction operations. Contractor shall be responsible for providing adequate safe guards, safety devices, temporary signs, protective equipment, flaggers, and any other needed actions to protect the life, health, and safety of the public and to protect property in connection with the performance of Work covered by the Contract. Contractor shall provide traffic controls appropriate to the type, size, and usage of equipment employed by Contractor and maintain all public roads and travel ways in a safe and passable condition. Contractor shall implement and maintain traffic control throughout the Project, but shall not leave traffic control in place to affect traffic flow when not required for construction. All signs and other traffic control devices shall be in accordance with Manual of Uniform Traffic Control Devices (MUTCD) requirements.

Contractor shall prepare and submit a Traffic Control Plan in accordance with Section 16.0, Submittals. The Traffic Control Plan shall include lighting, signage, and navigation issues as needed. The Traffic Control Plan shall be approved by Owner before any Work on the Project commences.

Materials:

- Contractor shall be responsible for providing adequate safe guards, safety devices, temporary signs, protective equipment, flaggers, and any other needed materials in accordance with MUTCD requirements.

Execution:

Work includes, at a minimum:

- Prepare, submit, and implement a Traffic Control Plan;
- Provide and maintain traffic control measures throughout the Project as necessary to safely complete the Work;
- Remove traffic control measures if not needed during any Work shutdown and upon completion of the Work; and
- Provide all labor, tools, equipment, materials, and incidentals necessary to complete the Work as specified.

Measurement:

There will be no direct measurement for Bid Item No. 2, Traffic Control.

Payment:

Payment for Bid Item No. 2, Traffic Control, shall be made at the lump sum price as shown on the Bid Form of the Contract Documents. This lump sum price shall constitute full compensation for all labor, equipment, tools, supplies, materials, and incidentals necessary to accomplish the Work.

7.3 Bid Item No. 3: Stormwater BMPs

Applicable Technical Specifications:

Section 1001 – Construction Site Management

Section 1002 – Construction Site Housekeeping

Section 1003 – Sediment Collection

Section 1007 – Slope Stabilization

Applicable Drawings:

n/a

Work Description:

This Bid Item includes all the Work necessary for installation of all BMPs as identified by applicable permits, jurisdictions, and as requested by Owner. Contractor shall prepare and submit an Erosion Control Plan to Owner at least fourteen (14) days prior to the start of construction in accordance with Section 16.0, Submittals. Contractor shall perform this Work in accordance with the Technical Specifications, Division 1000 – Construction Stormwater Best Management Practices (BMPs). BMPs shall be inspected at least once every work day and within 24 hours of a storm event that results in runoff. BMPs shall be immediately maintained and repaired, as necessary, to remain in compliance with their intended function and capacity as

specified in Contractor's Erosion Control Plan. Contractor shall remove all BMPs at the end of the Work, unless otherwise requested by Owner or specified herein. **Contractor shall maintain all BMPs that are installed for the duration of the Project. A stop work order may be issued if Contractor fails to install and maintain adequate sediment control BMPs.**

Materials:

- Contractor shall provide all materials necessary to complete the Work as specified.

Execution:

Work includes, at a minimum:

- Prepare, submit, and implement an Erosion Control Plan to Owner;
- Supply, install, and maintain BMPs as needed;
- Remove all BMPs (unless permanent structures) upon completion of the Project or when requested by Owner; and
- Provide all labor, tools, equipment, materials, and incidentals necessary to complete the Work.

Measurement:

There will be no direct measurement for Bid Item No. 3, Stormwater BMPs.

Payment:

Payment for Bid Item No. 3, Stormwater BMPs shall be made at the lump sum price as shown on the Bid Form of the Contract Documents. This lump sum price shall constitute full compensation for all labor, equipment, tools, supplies, materials, and incidentals necessary to accomplish the Work.

7.4 Bid Item No. 4: Japanese Knotweed Removal

Applicable Technical Specifications:

Section 201 – Clearing and Grubbing and Removal of Obstructions

Applicable Drawings:

Sheet C2 – Access Trail Plan and Profile

Sheet C3 – Stream Habitat Improvement Plan View

Sheet C4 – Revegetation Plan

Sheet D5 – Pool Excavation, Planting, and Weed Control Fabric Details

Work Description:

This Bid Item includes all Work necessary to identify, remove, treat, and dispose of Japanese knotweed inhabiting the Project Site prior to or during construction. Contractor shall be able to positively identify Japanese knotweed (*Polygonum cuspidatum*). Contractor shall provide adequate training to any employee or Subcontractor working within the Project limits to positively identify Japanese knotweed and prevent further contamination throughout the Site. During construction, Contractor shall take special care not to track equipment over areas

containing Japanese knotweed, and shall not spread pieces of the plant across the Site in any way.

Japanese knotweed removal shall be implemented using two different techniques according to site location.

7.4.1 Bid Item No. 4a: Japanese Knotweed Excavation

For the excavation removal areas, Contractor shall first trim all Japanese knotweed stems as close as possible to the ground surface. Trimmed Japanese knotweed stems shall be bagged in heavy duty trash bags for transportation to a disposal area so that no seeds, pieces of stem, or any plant particles are spread anywhere on or offsite. During construction, Contractor shall excavate and remove Japanese knotweed rootmass to the minimum depth below existing ground as shown in the Drawings. Approximate extents of Japanese knotweed rootmass excavation are shown in the Drawings but actual excavation extents will be staked in the field by Owner prior to construction. Excavated material is to be disposed of offsite in a licensed landfill or other location approved by Owner. Excavated material shall be treated with extreme caution to avoid spreading the material across the Project Site or other locations. Excavated material containing Japanese knotweed in any form shall not be suitable for use anywhere on Site.

In those areas marked on the Drawings (Sheet C3) as Japanese knotweed excavation areas, weed control fabric and topsoil shall be installed in accordance with Bid Item No. 13, Provide and Place Weed Control Fabric and Bid Item No. 10, Provide and Place Topsoil. These areas shall also be revegetated with native plantings placed through the weed control fabric as specified in Bid Item No. 11, Revegetation. All other excavation removal areas staked in the field will only require excavation and removal of Japanese knotweed and not installation of weed control fabric, topsoil, or native plantings.

The anticipated area of this treatment is approximately 6500 square feet.

Materials:

- Contractor shall supply the materials necessary to excavate and remove Japanese knotweed rootmass, and to dispose of the material at a licensed landfill or other location approved by Owner.
- Weed control fabric and metal stakes in accordance with Bid Item No. 13, Provide and Place Weed Control Fabric.
- Topsoil in accordance with Bid Item No. 10, Provide and Place Topsoil.
- Native live plantings in accordance with Bid Item No. 11, Revegetation.

Execution:

Work includes, at a minimum:

- Properly identify the plant Japanese knotweed (*Polygonum cuspidatum*);
- Provide training for all employees and Subcontractors working within the Project limits to identify Japanese knotweed;
- Trim all Japanese knotweed stems at or near ground surface prior to any construction activities as needed;

- Properly dispose of Japanese knotweed stems by burning completely (at an Owner-approved location) or disposing of at a licensed landfill or other location deemed appropriate by Owner;
- In staked excavated removal locations, excavate and remove Japanese knotweed rootmass to a minimum depth as shown on the Drawings;
- Properly dispose of Japanese knotweed rootmass and excavated material at a licensed landfill or other location deemed appropriate by Owner;
- Ensure that no seeds, pieces of the plant, rootmass, or material containing any Japanese knotweed are spread around the Project Site during construction; and
- For the Japanese knotweed excavation areas designated on the Drawings (Sheet C3), topsoil, native plantings, and weed control fabric shall be provided and placed in accordance with Bid Item No. 10, Provide and Place Topsoil, Bid Item No. 11, Revegetation, and Bid Item No. 13, Provide and Place Weed Control Fabric.

Measurement:

Measurement for Bid Item No. 4a, Japanese Knotweed Excavation will be by the actual number of square feet (to the nearest square foot) of Japanese Knotweed Excavation completed, as measured by Owner.

Payment:

Payment for Bid Item No. 4a, Japanese Knotweed Excavation will be based on the unit price bid per square foot as shown on the Bid Form of the Contract Documents.

7.4.2 Bid Item No. 4b: Japanese Knotweed Trimming and Spraying

For all other areas within the construction limits not treated under Bid Item No. 4a, Japanese Knotweed Excavation Contractor shall remove all Japanese knotweed from the Site by trimming and spraying the plant stems as close as possible to the existing ground prior to any construction activities. Upon trimming the stem, Contractor shall spray the remaining live piece of the stem within 30 seconds of the time of trimming with a weed killer that is suitable for Japanese knotweed control. Contractor shall submit to Owner for approval the type and safety data sheet of the weed killer intended for this use in accordance with Section 16.0, Submittals. When using weed killer, Contractor shall maintain significant caution that no native plants in the area come in contact with the weed killer. Native plants destroyed or maimed by use of the weed killer shall be replaced at Contractor's expense. Contractor shall burn removed Japanese knotweed stems completely at an Owner-approved location or dispose offsite in a licensed landfill or other location approved by Owner. Removed Japanese knotweed stems shall be bagged in heavy duty trash bags for transportation to disposal area so that no seeds, pieces of stem, or any plant particles are spread anywhere on or offsite.

The anticipated area of this treatment is approximately 0.68 acres.

Materials:

- Contractor shall supply the materials necessary to trim Japanese knotweed stems and to dispose of stems by burning them completely or at a licensed landfill or other location approved by Owner.
- Weed killer shall be suitable for Japanese knotweed control and shall be submitted for approval by Owner in accordance with Section 16.0, Submittals.

Execution:

- Properly identify the plant Japanese knotweed (*Polygonum cuspidatum*);
- Provide training for all employees and Subcontractors working within the Project limits to identify Japanese knotweed;
- Trim all Japanese knotweed stems at or near ground surface prior to any construction activities as needed;
- Treat the remaining live portion of stem (outside the excavated removal limits) with approved weed killer within 30 seconds of trimming the plant stem;
- Properly dispose of Japanese knotweed stems by burning completely (at an Owner-approved location) or disposing of at a licensed landfill or other location deemed appropriate by Owner; and
- Ensure that no seeds, pieces of the plant, rootmass, or material containing any Japanese knotweed are spread around the Project Site during construction.

Measurement:

There will be no direct measurement for Bid Item No. 4b, Japanese Knotweed Trimming and Spraying.

Payment:

Payment for Bid Item No. 4b, Japanese Knotweed Trimming and Spraying shall be made at the lump sum price as shown on the Bid Form of the Contract Documents. This lump sum price shall constitute full compensation for all labor, equipment, tools, supplies, materials, and incidentals necessary to accomplish the Work.

7.5 Bid Item No. 5: Tree Removal and Material Salvage

Applicable Technical Specifications:

Section 201 – Clearing and Grubbing and Removal of Obstructions

Applicable Drawings:

Sheet C2 – Access Trail Plan and Profile

Work Description:

This Bid Item includes all Work necessary to extract mature trees within the Project Site on top of the existing berm as shown on the Drawings. Trees that shall be removed will be marked in the field by Owner prior to construction. Contractor shall remove these trees from existing ground keeping the rootwad and entire trunk of the tree intact. Removed trees 8 inches or greater in Diameter at Breast Height (DBH) and with an intact rootwad 3 feet or greater in diameter shall be stockpiled on-site to be used for In-Stream Habitat Structures, in accordance with Bid Item No. 9, In-Stream Habitat Structures. Removed trees that do not meet the above requirements and/or dimensions shall be used for floodplain microtopography, as part of Bid Item No. 12, Floodplain Microtopography.

Materials:

- Contractor shall supply the materials necessary to extract and stockpile live, mature trees.

Execution:

Work includes, at a minimum:

- Extract eight (8) live, mature trees from existing ground, keeping rootwads intact;
- Extract only those trees marked by Owner prior to removal;
- Stockpile extracted trees on-site whose dimensions meet the requirements indicated on the Drawings and specified herein to be used for Bid Item No. 9, In-Stream Habitat Structures; and
- Stockpile extracted trees on-site whose dimensions do not meet the requirements stated above to be used for floodplain microtopography as part of Bid Item No. 12, Floodplain Microtopography.

Measurement:

Measurement for Bid Item No. 5, Tree Removal and Material Salvage will be by the actual number of marked, mature trees removed, as measured by Owner.

Payment:

Payment for Bid Item No. 5, Tree Removal and Material Salvage, shall be made per each tree removed and stockpiled, as shown on the Bid Form of the Contract Documents. This price shall constitute full compensation for all labor, equipment, tools, supplies, materials, and incidentals necessary to accomplish the Work.

7.6 Bid Item No. 6: Primary Access Trail

Applicable Technical Specifications:

Section 201 – Clearing and Grubbing and Removal of Obstructions

Section 202 – Excavation and Embankment

Section 204 – Structural Excavation and Compacting Backfill

Applicable Drawings:

Sheet C2 – Access Trail Plan and Profile

Sheet C5 – Cross-Sections

Sheet D1 – Access Trail Details

Sheet D2 – Side Trail Details

Sheet D5 – Pool Excavation, Planting, and Weed Control Fabric Details

Work Description:

This Bid Item includes all Work necessary to construct three typical cross-sections of an aggregate surfaced trail with geoweb reinforcement along the top of an existing berm, as shown on the Drawings and specified herein. Contractor shall construct the Primary Access Trail to the neat and clean grades shown on the Drawings. Contractor shall use excavated material from the existing berm and other on-site sources to fill and level areas of the berm as necessary to construct a trail along a leveled surface that matches the dimensions, elevations, and grades shown on the Drawings. Where berm construction requires filling, fill material shall be

compacted such that compacted soil deflects less than 0.5 inches when rolled or tamped with rammer or similar compaction equipment and as approved by Engineer or Owner to ensure structural integrity. Soils or materials contaminated with Japanese knotweed shall not be suitable for backfill or use anywhere at the Project Site.

Locations of the three Primary Access Trail typicals are shown on the Drawings, Sheet C2 and Sheet C4. The three typical details of the Primary Access Trail are shown on the Drawings, Sheet D1.

7.6.1 *Bid Item No.6a: Primary Access Trail Typical 1*

Primary Access Trail Typical 1 includes filling with material above existing ground to construct an elevated trail to the grades, elevations, dimensions as shown on the Drawings. The finished Primary Access Trail Typical 1 is to be surfaced with crushed aggregate that is reinforced with geoweb and placed on top of geotextile overlying native fill material. Contractor shall perform clearing and grubbing in accordance with Technical Specification Section 201 - Clearing and Grubbing and Removal of Obstructions and Bid Item No. 5, Tree Removal and Material Salvage. Contractor shall take special care not to harm existing native vegetation outside of the limits needed for the trail construction. Contractor shall place native fill material on top of existing ground to the elevation at which geotextile, geoweb, and crushed aggregate surfacing shall be placed. Native fill material may be material present and/or generated on-site from other construction activities. Native fill material sources include material excavated from the existing berm, material from an existing rock and soil pile as shown on the Drawings, and/or excavated stream channel bed material from construction of Bid Item No. 9, In-Stream Habitat Structures, providing the compaction specification can be met. If the source material is poorly graded, not suitable for structural fill, or cannot achieve the specified compaction, different material or augmentation shall be used. Native fill material shall be placed in loose 6-inch lifts and compacted such that compacted soil deflects less than 0.5 inches when rolled or tamped with rammer or similar compaction equipment and as approved by Engineer or Owner. The top surface of the native fill material shall be leveled prior to placement of geotextile. Geotextile shall be placed on top of the leveled native fill material centered along the trail centerline and to the dimensions indicated on the Drawings. Contractor shall install geoweb over the geotextile centered along the trail centerline. The geoweb shall be staked and finished as per the geoweb manufacturer's instructions and specifications. Contractor shall place crushed aggregate surfacing over geoweb to a compacted finished grade in the locations and to the elevations indicated on the Drawings. Crushed aggregate surfacing shall be compacted with roller or plate compactor such that gravel is tightly interlocked as approved by Owner or Engineer. Topsoil shall be placed along both sides of the fill slopes to extend from the finished grade elevation and tie into existing ground. Topsoil shall be installed to the dimensions indicated on the Drawings and as specified in Bid Item No. 10, Provide and Place Topsoil. Topsoil shall be seeded with a native seed mix as specified in Bid Item No. 11, Revegetation. Extending halfway up the new trail side slopes, Contractor shall install live plantings as shown on the Drawings and in accordance with Bid Item No. 11, Revegetation.

Materials:

- Contractor shall provide the necessary materials to complete the Work as described above.
- Woven geotextile shall be 180 pound tensile strength that is rated for material separation.

- Geoweb shall be Contech EGA20 with a 4-inch cell depth, or approved equal. Geoweb shall be cut in half lengthwise at a 45 degree angle by the manufacturer. The opposite side shall also be trimmed lengthwise at a 45 degree angle to obtain a trapezoidal shape with an approximate bottom width of 4.2 feet.
- Crushed aggregate surfacing shall be well-graded angular 1-inch minus with 100% passing a 1-inch sieve and no more than 5% passing a No. 200 sieve.
- Rebar stakes shall be ½-inch diameter and 12 inches long, or approved equal.
- Topsoil as specified in Bid Item No. 10, Provide and Place Topsoil.
- Seed is to be a native seed mixture as specified in Bid Item No. 11, Revegetation.
- Live plantings shall be those specified in Bid Item No. 11, Revegetation.
- Native fill material may be material present and/or generated on Site, providing the compaction requirements noted above can be met. If there is not enough suitable material present on Site to complete the Work as described, Contractor shall use offsite material as specified in Add Alternative No. 1, Provide Structural Fill.

Execution:

Work includes, at a minimum:

- Procure geotextile, geoweb, crushed aggregate, and rebar stakes as specified;
- Clear and grub only the trail area in accordance with Technical Specification Section 201 - Clearing and Grubbing and Removal of Obstructions and Bid Item No. 5, Tree Removal and Material Salvage;
- Place native fill material in 6-inch loose lifts and compact to satisfaction of Engineer or Owner over existing ground to create a base for the trail in the locations shown on the Drawings;
- Smooth and prepare native fill material top surface to the lines and grades shown on the Drawings in preparation for trail surfacing and finishing;
- Place woven geotextile on top of native fill material to the width shown on the Drawings and secure in place;
- Install and stake geoweb on top of the geotextile in accordance with the Drawings and manufacturer's instructions and specifications;
- Place 1-inch minus crushed aggregate surfacing material within geoweb to the dimensions shown on the Drawings and compact to satisfaction of Owner or Engineer;
- Furnish and place topsoil on edges of the trail surface and side slopes to the dimensions and in the manner shown on the Drawings in accordance with Bid Item No. 10, Provide and Place Topsoil.
- Loosely compact topsoil to prevent erosion and allow for adequate seeding and planting;
- Furnish native seed mixture and seed topsoil in accordance with Bid Item No. 11, Revegetation; and
- Install live plantings to extend halfway up the fill side slopes in accordance with Bid Item No. 11, Revegetation.

Measurement:

Measurement for Bid Item No. 6a, Primary Access Trail Typical 1 will be by the actual number of linear feet (to the nearest foot) of Primary Access Trail installed, as measured by Owner.

Payment:

Payment for Bid Item No. 6a, Primary Access Trail Typical 1 will be based on the unit price bid per linear foot as shown on the Bid Form of the Contract Documents.

7.6.2 Bid Item No.6b: Primary Access Trail Typical 2

Primary Access Trail Typical 2 includes grading and leveling the top of the existing berm to construct an aggregate surfaced trail. The finished Primary Access Trail Typical 2 shall be to the dimensions, grades, and in the locations indicated on the Drawings. Contractor shall perform clearing and grubbing in accordance with Technical Specification Section 201 - Clearing and Grubbing and Removal of Obstructions and Bid Item No. 5, Tree Removal and Material Salvage. Contractor shall take special care not to harm existing native vegetation outside of the limits needed for the Work. Contractor shall excavate, fill, and level the top of the existing berm to the minimum width shown on the Drawings. Any fill material required to meet the dimensions and grades shall be that excavated from the top of the berm. Native soil containing Japanese knotweed shall not be suitable for fill or other use anywhere at the Project Site. Geotextile shall be placed centered along the centerline of the leveled berm top to the dimensions shown on the Drawings. Contractor shall install geoweb over geotextile centered along the leveled berm top, which shall be staked and finished as per the geoweb manufacturer's instructions. Contractor shall place crushed aggregate surfacing over geoweb to a compacted finished grade in the locations and to the elevations indicated on the Drawings. Crushed aggregate surfacing shall be compacted with roller or plate compactor such that gravel is tightly interlocked as approved by Owner or Engineer. Topsoil shall be placed along both sides of the crushed aggregate surfacing to extend from the finished grade elevation and tie into existing ground. Areas of the berm that require fill along one or both sides shall have topsoil placed on these fill slopes until finished grade matches with the existing ground at the slope as specified in the Drawings. Topsoil shall be placed as specified in Bid Item No. 10, Provide and Place Topsoil. Topsoil shall be seeded with a native seed mix as specified in Bid Item No. 11, Revegetation. Contractor shall take precautions to preserve and protect existing mature vegetation along the sides of the berm.

Materials:

- Contractor shall provide the necessary materials to excavate, fill, and level the top of the existing berm.
- Woven geotextile shall be 180 pound tensile strength that is rated for material separation, or approved equal.
- Geoweb shall be Contech EGA20 with a 4-inch cell depth, or approved equal. Geoweb shall be cut in half lengthwise at a 45 degree angle by the manufacturer. The opposite side shall also be trimmed lengthwise at a 45 degree angle to obtain a trapezoidal shape with an approximate bottom width of 4.2 feet.
- Crushed aggregate surfacing shall be well-graded angular 1-inch minus with 100% passing a 1-inch sieve and no more than 5% passing a No. 200 sieve.
- Rebar stakes are ½-inch diameter and 12 inches long, or approved equal.
- Topsoil as specified in Bid Item No. 10, Provide and Place Topsoil.
- Seed is to be a native seed mixture as specified in Bid Item No. 11, Revegetation.
- Native fill material may be material present and/or generated on Site, providing the compaction requirements noted above can be met. If there is not enough suitable

material present on Site to complete the Work as described, Contractor shall use offsite material as specified in Add Alternative No. 1, Provide Structural Fill.

Execution:

Work includes, at a minimum:

- Procure geotextile, geoweb, crushed aggregate, and rebar stakes as specified;
- Clear and grub the area in accordance with Technical Specification Section 201 - Clearing and Grubbing and Removal of Obstructions and Bid Item No. 5, Tree Removal and Material Salvage;
- Excavate, fill, level, and compact the top of an existing berm to the dimensions and locations shown on the Drawings;
- Smooth and prepare berm top in preparation for trail surfacing and finishing;
- Place and secure woven geotextile on top of leveled surface to the width shown on the Drawings;
- Install and stake geoweb on top of the geotextile in accordance with the Drawings and manufacturer's instructions and specifications;
- Place 1-inch minus crushed aggregate surfacing material within geoweb to the dimensions shown on the Drawings and compact to satisfaction of Owner or Engineer;
- Furnish and place topsoil on both sides of the geoweb and crushed aggregate as shown on the Drawings and in accordance with Bid Item No. 10, Provide and Place Topsoil;
- Furnish native seed mixture and seed topsoil as specified in Bid Item No. 11, Revegetation; and
- Preserve and protect existing mature vegetation during the Work.

Measurement:

Measurement for Bid Item No. 6b, Primary Access Trail Typical 2 will be by the actual number of linear feet (to the nearest foot) of Primary Access Trail installed, as measured by Owner.

Payment:

Payment for Bid Item No. 6b, Primary Access Trail Typical 2 will be based on the unit price bid per linear foot as shown on the Bid Form of the Contract Documents.

7.6.3 Bid Item No.6c: Primary Access Trail Typical 3

Primary Access Trail Typical 3 includes filling with native material above existing ground on one side of the existing berm to construct an elevated Primary Access Trail to the grades, elevations, dimensions, and in the manner as shown on the Drawings. The finished Primary Access Trail Typical 3 is to be overlain with geotextile placed on top of native fill material, reinforced with geoweb, and surfaced with compacted crushed aggregate. Contractor shall perform clearing and grubbing in accordance with Technical Specification Section 201 - Clearing and Grubbing and Removal of Obstructions and Bid Item No. 5, Tree Removal and Material Salvage. Contractor shall take special care not to harm existing native vegetation outside of the limits needed for the Work. Contractor shall place native fill material in loose 6-inch lifts and compact such that compacted soil deflects less than 0.5 inches when rolled or tamped with rammer or similar compaction equipment and as approved by Engineer or Owner to create a base for the Primary Access Trail. Fill material required to meet the dimensions and

grades shall be that excavated from the top of the existing berm or other approved on-site sources. Material containing Japanese knotweed shall not be suitable for fill or use anywhere at the Project Site. Native fill material shall be installed to the grades and elevations indicated on the Drawings, and smoothed and prepared for trail finishing. Geotextile shall be placed centered along the centerline of the leveled and prepared surface to the dimensions as shown on the Drawings. Contractor shall install geoweb over geotextile centered along the leveled top surface. Geoweb shall be staked and finished as per the geoweb manufacturer's instructions. Contractor shall place crushed aggregate surfacing over geoweb to a compacted, finished grade in the locations and to the elevations indicated on the Drawings. Crushed aggregate surfacing shall be compacted with roller or plate compactor such that gravel is tightly interlocked as approved by Owner or Engineer. Topsoil shall be placed along both sides of the crushed aggregate surfacing to extend from the finished grade elevation and tie into existing ground. Topsoil shall be placed to the dimensions shown on the Drawings and as specified in Bid Item No. 10, Provide and Place Topsoil. Topsoil shall be seeded with a native seed mix as specified in Bid Item No. 11, Revegetation. Extending halfway up the new trail side slope, Contractor shall install live plantings as shown on the Drawings and in accordance with Bid Item No. 11, Revegetation. Contractor shall take precautions to preserve and protect existing mature vegetation along the sides of the berm.

Materials:

- Contractor shall provide the necessary materials to complete the Work as described above.
- Woven geotextile shall be 180 pound tensile strength that is rated for material separation, or approved equal.
- Geoweb shall be Contech EGA20 with a 4-inch cell depth, or approved equal. Geoweb shall be cut in half lengthwise at a 45 degree angle by the manufacturer. The opposite side shall also be trimmed lengthwise at a 45 degree angle to obtain a trapezoidal shape with an approximate bottom width of 4.2 feet.
- Crushed aggregate surfacing shall be well-graded angular 1-inch minus with 100% passing a 1-inch sieve and no more than 5% passing a No. 200 sieve.
- Rebar stakes are ½-inch diameter and 12 inches long, or approved equal.
- Topsoil as specified in Bid Item No. 10, Provide and Place Topsoil.
- Seed is to be a native seed mixture as specified in Bid Item No. 11, Revegetation.
- Live plantings shall be those specified in Bid Item No. 11, Revegetation.
- Native fill material may be material present and/or generated on Site, providing the compaction requirements noted above can be met. If there is not enough suitable material present on Site to complete the Work as described, Contractor shall use offsite material as specified in Add Alternative No. 1, Provide Structural Fill.

Execution:

Work includes, at a minimum:

- Procure geotextile, geoweb, crushed aggregate, and rebar stakes as specified;
- Clear and grub only the area needed for trail construction in accordance with Technical Specification Section 201 - Clearing and Grubbing and Removal of Obstructions and Bid Item No. 5, Tree Removal and Material Salvage;

- Place native fill material alongside existing berm to create a base for the trail. Native fill material shall be placed in 6-inch loose lifts and compacted to satisfaction of Owner or Engineer in the locations and manner shown on the Drawings;
- Smooth and prepare top of native fill material in preparation for trail surfacing and finishing;
- Place and secure geotextile centered on top of native fill material to the dimensions indicated on the Drawings;
- Install and stake geoweb on top of the geotextile in accordance with the Drawings and manufacturer's instructions and specifications;
- Place 1-inch minus crushed aggregate surfacing material within geoweb to the dimensions shown on the Drawings;
- Compact 1-inch minus crushed aggregate surfacing to satisfaction of Owner or Engineer;
- Place topsoil on both sides of the geoweb and crushed aggregate as shown on the Drawings;
- Furnish and place topsoil on the fill slope of the new trail to tie into existing ground at the slope and dimensions indicated on the Drawings, in accordance with Bid Item No. 10, Provide and Place Topsoil;
- Loosely compact topsoil to prevent erosion and allow for adequate seeding and planting;
- Furnish native seed mixture and seed topsoil as specified in Bid Item No. 11, Revegetation;
- Install live plantings to extend halfway up the side slopes as specified in Bid Item No. 11, Revegetation; and
- Preserve and protect existing mature vegetation during the Work.

Measurement:

Measurement for Bid Item No. 6c, Primary Access Trail Typical 3 will be by the actual number of linear feet (to the nearest foot) of Primary Access Trail installed, as measured by Owner.

Payment:

Payment for Bid Item No. 6c, Primary Access Trail Typical 3 will be based on the unit price bid per linear foot as shown on the Bid Form of the Contract Documents.

7.7 Bid Item No. 7: Side Trails

Applicable Technical Specifications:

Section 201 – Clearing and Grubbing and Removal of Obstructions

Section 204 – Structural Excavation and Compacting Backfill

Applicable Drawings:

Sheet C2 – Access Trail Plan and Profile

Sheet C5 – Cross-Sections

Sheet D1 – Access Trail Details

Sheet D2 – Side Trail Details

Sheet D5 – Pool Excavation, Planting, and Weed Control Fabric Details

Work Description:

This Bid Item includes all Work necessary to construct Side Trails as shown on the Drawings and specified herein. Side Trails shall extend from the top edge of the Primary Access Trail to existing ground in the locations and at the grades shown on the Drawings. Contractor shall perform clearing and grubbing in accordance with Technical Specification Section 201 - Clearing and Grubbing and Removal of Obstructions and Bid Item No. 5, Tree Removal and Material Salvage. Contractor shall take special care not to harm existing native vegetation outside of the limits needed for the Work. Contractor shall use native fill material removed from the top of the existing berm, pool excavation as part of Bid Item No. 9, In-Stream Habitat Structures, or from other approved on-site sources to backfill and create a base for the Side Trails. Soils or materials contaminated with Japanese knotweed shall not be used for backfill or any other use at the Project Site. Native fill material shall be placed in loose 6-inch lifts and compacted such that compacted soil deflects less than 0.5 inches when tamped with rammer or similar compaction equipment and as approved by Engineer or Owner. Native fill material shall be installed to the grades and elevations indicated on the Drawings, and smoothed and prepared for trail finishing. Geotextile shall be placed and secured along the centerline of the leveled and prepared surface to the dimensions as shown on the Drawings. Contractor shall install geoweb over geotextile centered along the leveled Side Trail top. Geoweb shall be staked and finished as per the geoweb manufacturer's instructions. Contractor shall place crushed aggregate surfacing over geoweb to a compacted finished grade in the locations and to the elevations indicated on the Drawings. Crushed aggregate surfacing shall be compacted with roller or plate compactor such that gravel is tightly interlocked as approved by Owner or Engineer. At the interface with existing ground, the geoweb, geotextile, and crushed aggregate shall be buried in a key trench as shown on the Drawings. Contractor shall place topsoil on both side slopes of the trails from the top of the finished Side Trail down to existing ground. Topsoil is to be placed to the dimensions and slope shown on the Drawings and as specified in Bid Item No. 10, Provide and Place Topsoil. Topsoil shall be seeded with a native seed mix as specified in Bid Item No. 11, Revegetation. Extending halfway up the Side Trail side slopes, Contractor shall install live plantings as shown on the Drawings and in accordance with Bid Item No. 11, Revegetation.

Materials:

- Contractor shall provide the necessary materials to complete the Work as described above.
- Woven geotextile shall be 180 pound tensile strength that is rated for material separation, or approved equal.
- Geoweb shall be Contech EGA20 with a 4-inch cell depth, or approved equal. Geoweb shall be cut in half lengthwise at a 45 degree angle by the manufacturer. The opposite side shall also be trimmed lengthwise at a 45 degree angle to obtain a trapezoidal shape with an approximate bottom width of 4.2 feet.
- Crushed aggregate surfacing shall be well-graded angular 1-inch minus with 100% passing a 1-inch sieve and no more than 5% passing a No. 200 sieve.
- Rebar stakes are ½-inch diameter and 12 inches long, or approved equal.
- Topsoil as specified in Bid Item No. 10, Provide and Place Topsoil.
- Seed is to be a native seed mixture as specified in Bid Item No. 11, Revegetation.
- Live plantings shall be those specified in Bid Item No. 11, Revegetation.

- Native fill material may be material present and/or generated on Site, providing the compaction requirements noted above can be met. If there is not enough suitable material present on Site to complete the Work as described, Contractor shall use offsite material as specified in Add Alternative No. 1, Provide Structural Fill.

Execution:

Work includes, at a minimum:

- Procure geotextile, geoweb, crushed aggregate, and rebar stakes as specified;
- Clear and grub only the Side Trail areas in accordance with Technical Specification Section 201 - Clearing and Grubbing and Removal of Obstructions and Bid Item No. 5, Tree Removal and Material Salvage;
- Place native fill material over existing ground to create a base for the Side Trail;
- Place native fill material in loose 6-inch lifts and compact to satisfaction of Owner or Engineer;
- Smooth and prepare top of native fill material in preparation for trail surfacing and finishing;
- Place and secure geotextile centered on top of native fill material to the dimensions indicated on the Drawings;
- Install and stake geoweb on top of the geotextile in accordance with the Drawings and manufacturer's instructions and specifications;
- Place 1-inch minus crushed aggregate surfacing material within geoweb to the dimensions shown on the Drawings;
- Compact 1-inch minus crushed aggregate surfacing to satisfaction of Owner or Engineer;
- Excavate key trench to dimensions shown on the Drawings and bury ends of geoweb, geotextile, and crushed aggregate surfacing in key trench;
- Furnish and place topsoil in accordance with Bid Item No. 10, Provide and Place Topsoil on fill slope sides to tie into existing ground as shown on the Drawings, and to the dimensions indicated on the Drawings;
- Furnish native seed mixture and seed topsoil as specified in Bid Item No. 11, Revegetation;
- Install live plantings to extend halfway up the side slopes as specified in Bid Item No. 11, Revegetation; and
- Preserve and protect existing mature vegetation during the Work.

Measurement:

Measurement for Bid Item No. 7, Side Trail Construction will be by the actual number of linear feet (to the nearest foot) of Side Trail installed, as measured by Owner.

Payment:

Payment for Bid Item No. 7, Side Trail Construction will be based on the unit price bid per linear foot as shown on the Bid Form of the Contract Documents.

7.8 Bid Item No. 8: Cleared Foot Paths

Applicable Technical Specifications:

Section 201 – Clearing and Grubbing and Removal of Obstructions

Applicable Drawings:

Sheet C2 – Access Trail Plan and Profile

Sheet C5 – Cross-Sections

Sheet D2 – Side Trail Details

Work Description:

This Bid Item includes all Work necessary to construct Cleared Foot Paths in the locations shown on the Drawings. Cleared Foot Paths shall extend from the end of the Side Trails to the top of the existing streambank, as shown on the Drawings. Contractor shall remove existing vegetation to the width shown on the Drawings to create an open, walkable path to Clear Creek. Mature trees greater than 4 inches in diameter shall not be removed and the trail shall be routed around this vegetation. Contractor shall scarify existing ground and seed with a native seed mix as specified in Bid Item No. 11, Revegetation. Removed woody vegetation shall be stockpiled for use in accordance with Bid Item No. 12, Floodplain Microtopography.

Materials:

- Contractor shall supply the materials necessary to remove vegetation and scarify existing ground.
- Seed shall be a native seed mixture as specified in Bid Item No. 11, Revegetation.

Execution:

Work includes, at a minimum:

- Construct Cleared Foot Paths in the staked locations from the bottom of the Side Trails to the top of the streambank, as shown on the Drawings;
- Remove existing vegetation to create an open pathway to the minimum width indicated on the Drawings;
- Scarify existing ground and seed with native seed mix as specified in Bid Item No. 11, Revegetation; and
- Stockpile removed woody vegetation to be used in accordance with Bid Item No. 12, Floodplain Microtopography.

Measurement:

Measurement for Bid Item No. 8, Cleared Foot Paths will be by the actual number of linear feet (to the nearest foot) of Cleared Foot Paths installed, as measured by Owner.

Payment:

Payment for Bid Item No. 8, Cleared Foot Paths will be based on the unit price bid per linear foot as shown on the Bid Form of the Contract Documents.

7.9 Bid Item No. 9: In-Stream Habitat Structures

Applicable Technical Specifications:

Section 201 – Clearing and Grubbing and Removal of Obstructions

Section 202 – Excavation and Embankment

Section 204 – Structural Excavation and Compacting Backfill

Section 205 – Dewatering

Applicable Drawings:

Sheet C3 – Stream Habitat Improvement Plan View

Sheet C4 – Revegetation Plan

Sheet C5 – Cross-Sections

Sheets D3 and D4 – Habitat Structure Details

Sheet D5 – Pool Excavation, Planting, and Weed Control Fabric Details

Work Description:

This Bid Item includes all Work necessary for the construction of four (4) different In-Stream Habitat Structures. Contractor shall install the In-Stream Habitat Structures in the locations and manner as shown on the Drawings. Construction of In-Stream Habitat Structures includes the installation of large boulders and logs in the channel bed and the streambank. Prior to any in-stream construction activities, the Work area shall be netted off and all fish shall be relocated from the Work area by a qualified technician and at the direction of Owner. Netting shall remain in place during all in-stream construction activities and shall be removed only as approved by Engineer or Owner.

The four types of In-Stream Habitat Structures are as follows: Boulder/Log Structure #1, Boulder/Log Structure #2, Boulder Structure #1, and Boulder Structure #2. Contractor shall procure boulders for the construction of these features from an off-site source. Logs with rootwads shall be those removed from the Project Site in accordance with Bid Item No. 5, Tree Removal and Material Salvage assuming they meet the size requirements specified. If, upon removal, logs do not have rootwads intact or otherwise do not meet the contract requirements, Contractor shall procure logs that meet the specifications on the Drawings and herein at no additional cost to the Project. **Owner or Engineer must be present when habitat features are constructed.**

7.9.1 *Bid Item No. 9a: Boulder/Log Structure #1*

Boulder/Log Structure #1 includes installing one (1) large diameter boulder, one (1) log with rootwad, two (2) anchor rocks keyed into the existing streambank, and excavating the channel bed downstream of the structure to create an in-stream pool. Contractor shall excavate the streambank to place the large diameter boulder, the buried log with rootwad, and the anchor rocks as shown on the Drawings. The two (2) anchor rocks shall be placed on top of the log and Contractor shall backfill around the log and boulders with native alluvial material. Native alluvial backfill shall be placed in 6-inch loose lifts and compacted such that compacted soil

deflects less than 0.5 inches when tamped with rammer or similar compaction equipment and as approved by Engineer or Owner. Material that is contaminated with Japanese knotweed shall not be suitable for backfill or any other use at the Project Site. Topsoil shall be placed over the native alluvial material to the dimensions indicated on the Drawings and in accordance with Bid Item No. 10, Provide and Place Topsoil. Backfill shall be placed to match the existing ground at the tie-ins and so the log with rootwad is buried to the specified minimum length as shown on the Drawings. The large diameter boulder shall be buried as shown on the Drawings in the channel bed and streambank on the downstream side of the newly installed log. Contractor shall place the log such that the rootwad is facing upstream at the angle and elevation specified on the Drawings and such that the end of the rootwad extends waterward beyond the edge of the large boulder. Minimum cover over the installed log and anchor rocks shall be as indicated on the Drawings. Contractor shall excavate the channel bed downstream of the boulder to create a pool to the dimensions as shown on the Drawings. All edges of the pool excavation shall be smoothly graded and tapered to the existing channel bed and have a slope no greater than shown on the Drawings. Excavated material from the pool can be used for native fill material, in accordance with Bid Item No. 6, Primary Access Trail, providing the compaction specification can be met. Special care shall be taken by Contractor not to disturb existing native vegetation around the newly placed structure. Contractor shall install native live plantings around the structure in accordance with Bid Item No. 11, Revegetation.

Materials:

- One (1) log with intact rootwad of the dimensions indicated below:
 - 25-foot minimum length,
 - 12-inch minimum DBH, and
 - 3-foot minimum rootwad diameter.
- One (1) 54-inch minimum diameter boulder.
- Two (2) 24-inch minimum diameter anchor rocks.
- Topsoil in accordance with Bid Item No. 10, Provide and Place Topsoil.
- Native plantings as specified in Bid Item No. 11, Revegetation.
- Native alluvial material shall be that material excavated from the streambank to install the boulders and logs, providing that it does not contain Japanese knotweed.
- If there is not enough suitable backfill material present on Site to complete the Work as described, Contractor shall use offsite material as specified in Add Alternative No. 1, Provide Structural Fill.

Execution:

Work includes, at a minimum:

- Provide boulders and logs of the type and dimensions noted in the Materials above and specified on the Drawings;
- Provide native plantings in accordance with Bid Item No. 11, Revegetation;
- Excavate an area in the existing streambank large enough to place one (1) log with rootwad and two (2) anchor rocks;
- Place one (1) large diameter boulder to be keyed into the streambank and streambed to the bury requirements and in the manner indicated on the Drawings;
- Place one (1) log with rootwad on upstream side of the large diameter boulder with rootwad facing upstream at the angle and elevation specified on the Drawings;

- Place the log such that the log's length is buried to the minimum dimensions shown on the Drawings, and the end of the rootwad is contacting the streambed and extending waterward beyond the edge of the boulder;
- Backfill around the log with its rootwad and the anchor rocks with native alluvial material;
- Compact native alluvial backfill in loose 6-inch lifts to satisfaction of Engineer or Owner;
- Place topsoil over native alluvial backfill to the dimensions indicated on the Drawings and as specified in Bid Item No. 10, Provide and Place Topsoil;
- Tie in native alluvial backfill and topsoil with existing ground such that the minimum bury depth shown on the Drawings is provided;
- Loosely compact topsoil to prevent erosion and allow for adequate seeding and planting;
- Excavate the channel bed downstream of the boulder to create a pool of the dimensions shown on the Drawings;
- Smoothly taper pool excavation to the existing channel bed with slopes no greater than shown on the Drawings;
- Move excavated channel bed material as part of pool excavation to be used on Site; and
- Install native plants around the structure of the species and densities noted in Bid Item No. 11, Revegetation and as shown on the Drawings.

Measurement:

Measurement for Bid Item No. 9a, Boulder/Log Structure #1 shall be per each structure installed, as measured by Owner.

Payment:

Payment for Bid Item No. 9a, Boulder/Log Structure #1 shall be per each structure installed as shown on the Bid Form of the Contract Documents. This price shall constitute full compensation for all labor, equipment, tools, supplies, materials, and incidentals necessary to accomplish the Work.

7.9.2 Bid Item No. 9b: Boulder Structure #1

Boulder Structure #1 includes installing several boulders to be partially buried in the existing channel bed and excavating the channel bed downstream of the boulders to create an in-stream pool. The structure contains a total of approximately nine (9) boulders: two (2) large and seven (7) small. Contractor shall install Boulder Structure #1 to the orientation, dimensions, and manner shown on the Drawings and specified herein. The structure shall be located so that it is centered within the existing stream thalweg. Boulders are to be placed such that one (1) small boulder is between the two large boulders with a minimum of six (6) small boulders on the downstream side, as shown on the Drawings. All boulders shall be buried to an approximate depth of 12 inches. Contractor shall excavate the channel bed downstream of the boulder structure to the depth and dimensions shown on the Drawings. All edges of the pool excavation shall be smoothly tapered to the existing channel bed with slopes no greater than shown on the Drawings. Excavated material from the pool can be used as native fill material in accordance with Bid Item No. 6, Primary Access Trail providing that it can meet the compaction specification.

Materials:

- Two (2) 36-inch to 42-inch diameter boulders.
- A minimum of seven (7) 18-inch to 24-inch diameter boulders.

Execution:

Work includes, at a minimum:

- Provide boulders of the quantity and dimensions noted in the Materials above;
- Install the boulder structure centered and aligned with the existing stream thalweg;
- Place and secure boulders in the stream channel bed to the orientation and bury depth shown on the Drawings and noted above;
- Excavate the channel bed downstream of the boulders to form a pool of the dimensions shown on the Drawings;
- Smoothly taper all edges of the excavated pool to the existing channel bed; and
- Move excavated channel bed material for reuse on Site.

Measurement:

Measurement for Bid Item No. 9b, Boulder Structure #1 shall be per each structure installed, as measured by Owner.

Payment:

Payment for Bid Item No. 9b, Boulder Structure #1 shall be per each structure installed as shown on the Bid Form of the Contract Documents. This price shall constitute full compensation for all labor, equipment, tools, supplies, materials, and incidentals necessary to accomplish the Work.

7.9.3 Bid Item No. 9c: Boulder Structure #2

Boulder Structure #2 includes installing two (2) boulders in the channel bed at an existing pool. Contractor shall install Boulder Structure #2 to the orientation, dimensions, and manner as shown on the Drawings and specified herein. One (1) boulder shall be placed abutting the streambank toe on the downstream side of the existing boulders and woody debris such that it supports the existing structure. A second boulder shall be placed waterward from the first boulder to the dimensions shown on the Drawings to create a flow constriction point. Both boulders shall be buried to the depth and in the manner shown on the Drawings. Contractor shall install native live plantings on the left streambank around the structure in accordance with Bid Item No. 11, Revegetation. Special care shall be taken by Contractor during construction to preserve and protect existing boulders, woody debris, and mature trees, as well as the existing in-stream pool itself.

Materials:

- Two (2) 36-inch minimum diameter boulders.
- Native plantings as specified in Bid Item No. 11, Revegetation.

Execution:

Work includes, at a minimum:

- Provide boulders of the quantity and dimensions noted in the Materials above;

- Place one (1) boulder on the downstream side of the existing boulders and woody debris to secure existing boulders and woody debris;
- Place one (1) boulder waterward of the boulder securing existing features to the dimension shown on the Drawings;
- Bury boulders in stream channel bed to the depths indicated on the Drawings;
- Install native plantings in the locations shown on the Drawings and in accordance with Bid Item No. 11, Revegetation; and
- Preserve and protect existing boulders, woody debris, mature trees, and existing pool during the Work.

Measurement:

Measurement for Bid Item No. 9c, Boulder Structure #2 shall be per each structure installed, as measured by Owner.

Payment:

Payment for Bid Item No. 9c, Boulder Structure #2 shall be per each structure installed as shown on the Bid Form of the Contract Documents. This price shall constitute full compensation for all labor, equipment, tools, supplies, materials, and incidentals necessary to accomplish the Work.

7.9.4 Bid Item No. 9d: Boulder/Log Structure #2

Boulder/Log Structure #2 includes installing four (4) boulders, two (2) logs with rootwads, two (2) anchor rocks to be keyed into the existing streambank, and excavating the channel bed downstream of the boulders and logs to create a pool. Contractor shall excavate the streambank in order to place the boulders, the buried logs with rootwads, and the anchor rocks in the orientation and to the dimensions as shown on the Drawings. The four (4) boulders shall be arranged to pin the upstream log between them. The largest of the boulders shall be placed upstream of the log and keyed into the stream channel bed and streambank to the bury requirements indicated on the Drawings. The upstream log shall be placed such that the bottom of the log is in direct contact with the existing channel bed, with the end of the log buried in the streambank to the depths and bury requirements shown on the Drawings. The bottom of the rootwad shall be trimmed as necessary to allow the log bottom to lie flat against the stream channel bed. The minimum rootwad diameter indicated on the Drawings shall not be reduced in the horizontal direction. The angle of the log with respect to the streambank shall be such that the rootwad is facing upstream at the angle specified on the Drawings. Two (2) boulders shall be installed on the downstream side of the upstream log so that the log is wedged tightly between them. One of these boulders shall be placed waterward of the other leaving a gap between them of the dimension indicated on the Drawings. These boulders shall be buried in the stream channel bed such that the top of the most waterward boulder is lower than that of the boulder nearest the streambank by the amount shown on the Drawings, and to the bury requirements shown on the Drawings. An additional boulder shall be placed on top of the log at the interface with the streambank and keyed into the streambank as indicated on the Drawings. Two anchor rocks shall be placed on top of the end of the upstream log to secure. Contractor shall install a second log with rootwad on the downstream side of the furthest downstream boulder. This downstream log shall be the smaller of the two logs and shall be placed such that the entire trunk is embedded in the streambank, and the entire rootwad is exposed beyond the streambank. At the streambank, the downstream log shall be placed such that the top of the log is below the top

of the bank by the amount indicated on the Drawings. Native alluvial backfill shall be placed such that the streambank resembles its prior natural geometry and so that the logs with rootwads and boulders are buried to the specified amounts as shown on the Drawings. Native alluvial backfill shall be placed in 6-inch loose lifts and compacted such that compacted soil deflects less than 0.5 inches when rolled or tamped with rammer or similar compaction equipment and as approved by Engineer or Owner. Material that is contaminated with Japanese knotweed shall not be suitable for backfill or any use on Site. Minimum cover over the installed logs and anchor rocks shall be as indicated on the Drawings. Contractor shall excavate the channel bed downstream of the newly constructed structure to create an in-stream pool to the dimensions shown on the Drawings. All edges of the pool excavation shall be smoothly tapered to the existing channel bed with slopes no greater than shown on the Drawings. Excavated material from the pool excavation can be used as native fill material in accordance with Bid Item No. 6, Primary Access Trail providing that the compaction specification can be met. Special care shall be taken by Contractor not to disturb existing mature native vegetation around the structure. Contractor shall install native live plantings around the structure in accordance with Bid Item No. 11, Revegetation.

Materials:

- Two (2) logs with intact rootwads as noted below:
 - Upstream-most log with rootwad shall have the dimensions indicated below:
 - 25-foot minimum length,
 - 12-inch minimum DBH, and
 - 3-foot minimum diameter rootwad.
 - Downstream-most log with rootwad shall have the dimensions indicated below:
 - 15-foot minimum length,
 - 8-inch minimum DBH, and
 - 3-foot minimum diameter rootwad.
- One (1) 42-inch minimum diameter boulder.
- Two (2) 36-inch minimum diameter boulders.
- One (1) 24-inch minimum diameter boulders.
- Two (2) 18-inch minimum diameter anchor rocks.
- Native plantings as specified in Bid Item No. 11, Revegetation.
- Native alluvial material shall be that material excavated from the streambank to install the boulders and logs.
- If there is not enough suitable backfill material present on Site to complete the Work as described, Contractor shall use offsite material as specified in Add Alternative No. 1, Provide Structural Fill.

Execution:

Work includes, at a minimum:

- Provide boulders and logs of the type and dimensions noted in the Materials above and specified on the Drawings;
- Provide native plantings in accordance with Bid Item No. 11, Revegetation;
- Excavate trenches in the existing streambank to place logs with rootwads and two (2) anchor rocks on the upstream log;

- Place largest diameter boulder to be keyed into the streambank and streambed to the bury requirements and in the manner indicated on the Drawings;
- Place one (1) log with rootwad on downstream side of the largest diameter boulder with rootwad facing upstream at the angle specified on the Drawings and such that the entire rootwad is extending waterward beyond the edge of the upstream most boulder. This log with rootwad shall be placed such that the log's length is buried to the minimum dimensions shown on the Drawings;
- Trim the bottom of rootwad of the upstream-most log such that it lies in direct contact with the bottom of the streambed, but without reducing the minimum rootwad diameter indicated on the Drawings in the horizontal direction;
- Install two (2) boulders on the downstream side of the upstream-most log such that the log is wedged tightly between all the boulders and in the orientation as shown on the Drawings. Place these two (2) boulders such that one is waterward of the other by the amount indicated on the Drawings, and the top of the waterward boulder is lower than the top of the boulder at the streambank by the amount shown on the Drawings;
- Place one (1) boulder on top of the upstream log at the interface with the streambank as indicated on the Drawings;
- Place two (2) anchor rocks on top of the upstream log;
- Install second log on the downstream side of the furthest downstream boulder with the entire trunk embedded in the streambank, the entire rootwad exposed beyond the streambank, and the top of the log below the top of the streambank to the dimensions shown on the Drawings;
- Backfill around logs and anchor rocks with native alluvial material;
- Compact native alluvial backfill in loose 6-inch lifts to satisfaction of Owner or Engineer;
- Place topsoil over native alluvial backfill to the dimensions indicated on the Drawings and as specified in Bid Item No. 10, Provide and Place Topsoil;
- Tie in native alluvial backfill and topsoil with existing ground such that the minimum bury depth shown on the Drawings is provided;
- Excavate the channel bed downstream of the newly installed structure to create an in-stream pool to the dimensions shown on the Drawings;
- Smoothly taper pool excavation to the existing channel bed with slopes no greater than shown on the Drawings;
- Move channel bed material excavated from pool for reuse on Site; and
- Install native plants around the structure in accordance with Bid Item No. 11, Revegetation and as shown on the Drawings.

Measurement:

Measurement for Bid Item No. 9d, Boulder/Log Structure #2 shall be per each structure installed, as measured by Owner.

Payment:

Payment for Bid Item No. 9d, Boulder/Log Structure #2 shall be per each structure installed as shown on the Bid Form of the Contract Documents. This price shall constitute full compensation for all labor, equipment, tools, supplies, materials, and incidentals necessary to accomplish the Work.

7.10 Bid Item No. 10: Provide and Place Topsoil

Applicable Technical Specifications:

Section 202 – Excavation and Embankment

Applicable Drawings:

Sheet D1 – Access Trail Details

Sheet D2 – Side Trail Details

Sheets D3 and D4 – Habitat Structure Details

Sheet D5 – Pool Excavation, Planting, and Weed Control Fabric Details

Work Description:

This Bid Item includes all Work necessary to provide and install topsoil as necessary to complete the Project. Under this Bid Item, Contractor shall procure the needed loose quantity of topsoil, and install to the neat and clean grades, and in the locations shown on the Drawings. Contractor shall submit to Owner all product data and information from suppliers regarding furnished topsoil utilized for the Work.

Topsoil to be used as cover soil shall be fertile, friable material of an organic composition and characterized as loam, sandy loam, sandy clay loam, clay loam, silty clay loam, or silt loam in accordance with the U.S. Department of Agriculture (USDA) Soil Conservation Service textural classification. Topsoil material shall be reasonably free of trash, rocks, hard lumps of soil, stumps, and brush. Contractor’s proposed topsoil source shall not contain any noxious weeds. If noxious weeds are found on the topsoil source site, the topsoil will be rejected and not used on the Project. Clay textured soils with more than 10% clay shall be unsuitable. Topsoil shall meet the following requirements:

Table 1. Table of Topsoil Gradation Requirements

Fraction	Particle Size (mm)	Max % of Soil (#10 Mesh) Fraction
Clay	Less than 0.0023	10
Silt	0.002 – 0.05	70
Sand	0.05 – 2.0	70
Gravel	2.0 – 8.0	*Max % of total sample
Large Gravel	Larger than 8.0	0

**A maximum of 20% of the total soil sample is allowable; however, any quantity greater than 5% will not be included in the basis for payment.*

The soil pH shall be between 5.5 and 8.0, except that the maximum limit may be extended to 8.5 if the exchangeable sodium percentage (ESP) is less than 10%. The soil ESP shall not be greater than 15%. Soil saturation percent shall be between 25% and 85%. The soil shall have an

electrical conductivity (EC) less than 4 millimhos per centimeter (mmhos/cm). The organic content of the topsoil shall be within a range of values of 1% to 20%. The Acid-Base Accounting (ABA) shall indicate that no acid-forming materials are present.

Contractor shall install topsoil to the dimensions and in the locations indicated on the Drawings and specified in the Special Provisions for each applicable Bid Item. Contractor shall lightly compact the topsoil to prevent erosion but still allow for seeding and planting. Special care shall be taken by Contractor not to drive or track heavy equipment across the topsoil once it has been installed. Topsoil that is heavily compacted, and/or driven or tracked on with equipment, shall be rejected and Contractor shall re-install topsoil at Contractor's expense. All locations bearing topsoil shall be seeded with native seed mix in accordance with Bid Item No. 11, Revegetation unless otherwise noted.

Materials:

- Contractor shall provide all of the necessary materials to complete the Work described above.
- Topsoil shall be as described above.
- Native seed mix in accordance with Bid Item No. 11, Revegetation.

Execution:

- Furnish topsoil that is of the quantity, type, and gradation, and that meets the description above;
- Ensure that the topsoil is free of any noxious weeds;
- Haul topsoil to the Project Site;
- Install topsoil to the neat and clean grades indicated on the Drawings;
- Install topsoil in the locations shown on the Drawings and specified in all applicable Special Provisions;
- Lightly compact topsoil to prevent erosion and sediment migration during a rain event but still maintain a loose material conducive for seed and plant growth;
- Do not heavily compact, track, or drive equipment over topsoil once it has been placed; and
- Furnish native seed mix and seed all areas bearing topsoil in accordance with Bid Item No. 11, Revegetation.

Measurement:

Measurement for Bid Item No. 10, Provide and Place Topsoil will be by the actual number of cubic yards (to the nearest cubic yard) of topsoil provided. This volume will be measured by Contractor provided loaded truck receipts and verified by Owner based on truckloads of loose material hauled to the Project Site.

Payment:

Payment for Bid Item No. 10, Provide and Place Topsoil will be based on the unit price bid per cubic yard as shown on the Bid Form of the Contract Documents.

7.11 Bid Item No. 11: Revegetation

Applicable Technical Specifications:

Section 206 – Permanent Erosion Control

Applicable Drawings:

Sheet C4 – Revegetation Plan

Sheet D1 – Access Trail Details

Sheet D2 – Side Trail Details

Sheets D3 and D4 – Habitat Structure Details

Sheet D5 – Pool Excavation, Planting, and Weed Control Fabric Details

Work Description:

This Bid Item includes all Work necessary to revegetate all areas disturbed as a result of the Project. Under this Bid Item, Contractor shall perform planting and seeding in those areas indicated on the Drawings and specified above. All Work shall be completed in accordance with the Technical Specifications, Section 206 – Permanent Erosion Control and as specified herein. Owner will provide the containerized plants to Contractor for planting the Project Site.

7.11.1 *Bid Item No. 11a: Planting*

Contractor shall plant a variety of live containerized plants at the Project Site according to the zone-specific specifications in the tables below, which correspond to the different areas delineated on Sheet C4 of the Drawings. Contractor shall install the plants indicated in the table below in the correct planting zone shown on Sheet C4 of the Drawings. These planting zones include: Riparian, Floodplain, and Upland.

Contractor shall install plants in a manner to meet the provided density and spacing requirements across the landscape; however, rows and regular patterns shall be avoided. Install plants in clusters of approximately three (3) to five (5) individuals of the same species. Trees and shrubs shall be planted in accordance with Detail 2 (Planting Detail) within Sheet D5 of the Drawings. No fertilizers, pesticides, or herbicides of any kind or amount will be applied on-site except as specified in Bid Item No. 4, Japanese Knotweed Removal.

In areas where weed control fabric is to be placed, plants are to be installed through heavy duty weed control fabric in accordance with Bid Item No. 13, Provide and Place Weed Control Fabric. Contractor shall cut an “X” in the weed control fabric and install plants through the puncture as shown on the Drawings. Contractor shall make these “Xs” in the weed control fabric as small as possible to still allow for placing the plant through the hole. Any weed control fabric that is damaged or torn shall be patched or repaired. The finished weed control fabric shall be free of any punctures with the exception of the “Xs” where plantings are installed.

Within one hour after planting, each plant shall be thoroughly watered with a minimum of 1 gallon of water per plant. Water for soaking the plants shall be the responsibility of Contractor and considered incidental to this Bid Item. Water shall be clean, free of contaminants, and have a turbidity less than 20 nephelometric turbidity units (NTU).

The following tables list the containerized species, and the quantity and associated plant spacing for each specific planting zone. These containerized plants **will be provided** to Contractor on-site by Owner.

Table 2. Containerized Native Plants by Zone

Planting Zone	Plant Spacing	No. of Plants	Plant Size	Common Name	Species Name
Riparian	3 FT	250	Tall 1 gal	Scouler Willow	<i>Salix scouleriana</i>
		250	1 gal	Thinleaf Alder	<i>Alnus incana</i>
		100	Tall 1 gal	Douglas Hawthorn	<i>Crataegus douglasii</i>
		100	Tall 1 gal	Golden Currant	<i>Ribes aureum</i>
		50	Tall 1 gal	Chokecherry	<i>Prunus virginiana</i>
		50	Tall 1 gal	Serviceberry	<i>Amelanchier alnifolia</i>
Floodplain	3 FT	150	Tall 1 gal	Douglas Hawthorn	<i>Crataegus douglasii</i>
		100	Tall 1 gal	Golden Currant	<i>Ribes aureum</i>
		80	Tall 1 gal	Nootka Rose	<i>Rosa nutkana</i>
		75	Tall 1 gal	Woods Rose	<i>Rosa woodsii</i>
		18	Tall 1 gal	Common Snowberry	<i>Symphoricarpos albus</i>
		130	Tall 1 gal	Chokecherry	<i>Prunus virginiana</i>
		170	Tall 1 gal	Serviceberry	<i>Amelanchier alnifolia</i>
Upland	4 FT	20	Tall 1 gal	Nootka Rose	<i>Rosa nutkana</i>
		25	Tall 1 gal	Woods Rose	<i>Rosa woodsii</i>
		200	Tall 1 gal	Common Snowberry	<i>Symphoricarpos albus</i>
		20	Tall 1 gal	Chokecherry	<i>Prunus virginiana</i>
		30	Tall 1 gal	Serviceberry	<i>Amelanchier alnifolia</i>
TOTAL		1818			

Materials:

- Containerized plants as described above will be provided by Owner.

Execution:

Work includes, at a minimum:

- Install trees and shrubs as provided by Owner in the zone-specific locations indicated on the Drawings;
- Install trees and shrubs through weed control fabric in accordance with Bid Item No. 13, Provide and Place Weed Control Fabric;
- Water trees and shrubs upon completion of installation;
- Water seeded area by saturating top 6 inches of soil with gentle spray so as not to create runoff or gullies; and
- Provide all labor, tools, equipment, materials, and incidentals necessary to complete the Work as specified.

Measurement:

Measurement for Bid Item No. 11a, Planting shall be by the total number of plants installed, as measured by Owner.

Payment:

Payment for Bid Item No. 11a, Planting will be based on the unit price bid per installed plant as shown on the Bid Form of the Contract Documents

7.11.2 Bid Item No. 11b: Seeding

Work required under this Bid Item includes seeding operations of all disturbed areas, as indicated on the design Drawings and specified herein. Because container plants are present and other Site constraints, drill seeding and hydro-seeding applications are not viable options. Hand broadcasting is preferable due to the variety of seed types and weights to be applied, the irregular ground surface developed, and the sporadic placement of container plants. The rate at which seed is broadcast shall be 80 pounds of seed per acre.

Seed of the latest season's crop shall be provided in original sealed packages bearing the producer's guaranteed analysis for percentages of mixture, purity, germination, hard seed, weed seed content, and inert material. All seed shall be certified weed-free and labels shall be in conformance with the Agricultural Marketing Service (AMS) Seed Act and applicable State seed laws.

The required native seed mix is shown in Table 3 below, including appropriate proportions by weight. Variations to these mixtures may be used with prior approval by Owner. **As many species as possible should be incorporated.**

Some of the native seeds germinate best on the ground surface, while others prefer to be slightly buried (1/4-inch or less). Therefore, ground surface conditions and anticipated weather patterns should dictate whether to lightly rake the seed into the ground surface. If the ground surface is moist, the seed will not need raking. If light rain or snow is forecast, such conditions should incorporate the seed naturally with no raking necessary. If moderate to heavy rain is predicated within a week, the seed should not be broadcast at all as it could be washed out during precipitation events. Lastly, if the ground is dry and no rain is predicted, the seed should be lightly raked and rolled into the ground surface to prevent wind dispersal away from the desired areas.

Table 3. Native Upland Seed Mix

Common Name	Species Name	Required Percentage	
		Min	Max
Blue Wildrye	<i>Elymus glaucus</i>	10%	50%
Bluebunch Wheatgrass	<i>Pseudoroegneria spicata</i>	20%	50%
Red Columbine	<i>Aquilegia formosa</i>	0%	50%
Big Leaf Lupine	<i>Lupinus polyphyllus</i>	0%	50%
Pearly Everlasting	<i>Anaphalis margaritacea</i>	0%	50%
Mountain Brome	<i>Bromus marginatus</i>	0%	50%
Idaho Fescue	<i>Festuca idahoensis</i>	20%	60%
Blanketflower	<i>Gaillardia aristata</i>	0%	50%
Western Yarrow	<i>Achillea millefolium</i>	0%	50%

Materials:

- Native seed mixture as described above.

Execution:

Work includes, at a minimum:

- Prepare the topsoil and seedbed;
- Perform native seed operations by hand broadcasting at a rate of 80 pounds of seed per acre;
- Coordinate with other construction activities; and
- Provide all labor, tools, equipment, materials, and incidentals necessary to complete the Work as specified.

Measurement:

There will be no direct measurement for Bid Item No. 11b, Seeding.

Payment:

Payment for Bid Item No. 11b, Seeding shall be made at the lump sum price as shown on the Bid Form of the Contract Documents. This lump sum price shall constitute full compensation for all labor, equipment, tools, supplies, materials, and incidentals necessary to accomplish the Work.

7.12 Bid Item No. 12: Floodplain Microtopography

Applicable Technical Specifications:

n/a

Applicable Drawings:

Sheet C4 – Revegetation Plan

Work Description:

This Bid Item includes installation of woody material and final grading of disturbed areas in the Clear Creek floodplain. Disturbed areas consist of those locations where equipment and vehicles have driven or tracked over existing ground and altered the existing ground surface and existing native vegetation.

Contractor shall leave disturbed areas in the Project Site with an irregular surface with humps and small swales. This treatment creates areas to trap seed and organic matter for new plant growth. Approximately 20% of the total surface area shall consist of high points (ridges) and approximately 20% shall consist of low points (furrows). Typical horizontal spacing from the highest points to the lowest points should be in the range of 3 feet to 10 feet but the pattern should be irregular rather than gridded. Low areas should not be continuous. Maximum deviation from the designed finished grade should be no more than 0.5 feet. The total area of ridges above finished grade shall roughly equal the total area of furrows below finished grade.

Contractor shall place salvaged Coarse Wood and Brush to create additional roughness in the disturbed areas and provide shelter and organic matter for reestablishing plants. Coarse Wood consists of salvaged tree and shrub trunks and tree and shrub branches larger than 3 inches in diameter at the larger end and longer than 8 feet. It also includes shrub clumps longer than 8 feet. Brush consists of all smaller tree and shrub parts not within the definition of Coarse Wood. These materials are available from woody material stockpiled under Bid Item No. 5, Tree Removal and Material Salvage and Bid Item No. 8, Cleared Foot Paths.

Contractor shall place Coarse Wood at a rate of approximately 100 pieces per acre in those disturbed areas within the Riparian and Floodplain Planting Zones shown on Sheet C4 of the Drawings. Pieces of Coarse Wood longer than 20 feet in length shall be cut in half prior to installation. Coarse Wood shall be spaced at a typical distance of 20 feet from other Coarse Wood. Coarse Wood material shall be buried within the floodplain with one half of the length buried to a depth of 2 feet and one half exposed.

Contractor shall place brush, without burial, within those disturbed areas within the Riparian and Floodplain Planting Zones shown on Sheet C4 of the Drawings. Contractor shall place brush over 50% of the disturbed area.

Materials:

- Contractor shall provide all labor, equipment, tools, materials and incidentals necessary to complete the Work as specified.

Execution:

- Leave disturbed areas at the Project Site with a finished irregular surface including ridges and furrows as described above;
- Cut pieces of Coarse Wood longer than 20 feet in length in half prior to installation;
- Install Coarse Wood in disturbed areas within the Riparian and Floodplain planting zones indicated on the Drawings at a rate of 100 pieces per acre and to be spaced 20 feet between Coarse Wood pieces;
- Bury Coarse Wood pieces with one half of the length buried to a depth of 2 feet and one half of the length exposed;
- Install Brush without burial in the disturbed areas to cover 50% of the disturbed area; and

- Use woody material stockpiled as specified in Bid Item No. 5, Tree Removal and Material Salvage and Bid Item No. 8, Cleared Foot Paths for Coarse Wood and Brush.

Measurement:

Measurement for Bid Item No. 12, Floodplain Microtopography will be by the actual number of square feet (to the nearest square foot) of Floodplain Microtopography installed, as determined by Owner.

Payment:

Payment for Bid Item No. 12, Floodplain Microtopography will be based on the unit price bid per square foot as shown in the Bid Form of the Contract Documents.

7.13 Bid Item No. 13: Provide and Place Weed Control Fabric

Applicable Technical Specifications:

n/a

Applicable Drawings:

Sheet C3 – Stream Habitat Improvement Plan View

Sheet D5 – Pool Excavation, Planting, and Weed Control Fabric Details

Work Description:

This Bid Item includes the Work necessary to procure and install weed control fabric at the Project Site. Contractor shall procure weed control fabric and metal stakes of the type noted in the Materials below. Weed control fabric shall be installed in those areas on the Drawings (Sheet C3) marked as Japanese knotweed excavation areas. Weed control fabric shall be overlapped to the dimensions shown on the Drawings (Sheet D5). Contractor shall stake the weed control fabric in the manner and to the staking spacing indicated on the Drawings (Sheet D5). Weed control fabric shall overlay topsoil that is placed to the depth shown on the Drawings. Topsoil shall be installed in accordance with Bid Item No. 10, Provide and Place Topsoil. Contractor shall install native plantings through the weed control fabric by cutting an “X” in the fabric and placing a single plant through each puncture, as described in Bid Item No. 11, Revegetation.

Materials:

- Weed control fabric shall be heavy duty with a longevity rating of approximately ten (10) years.
- Weed fabric stakes shall be 12-inch metal stakes and either single point with head or double point staples.
- Topsoil in accordance with Bid Item No. 10, Provide and Place Topsoil.
- Native plantings in accordance with Bid Item No. 11, Revegetation.

Execution:

- Install topsoil to the depth as indicated on the Drawings (Sheet D5) and in accordance with Bid Item No. 10, Provide and Place Topsoil;

- Place weed control fabric to overlay topsoil and overlap edges of weed fabric as shown on the Drawings (Sheet D5);
- Stake weed control fabric with metal stakes to the dimensions and in the manner shown on the Drawings (Sheet D5); and
- Cut “Xs” in the weed fabric and install native live plantings through the puncture in accordance with Bid Item No. 11, Revegetation.

Measurement:

Measurement for Bid Item No. 13, Provide and Place Weed Control Fabric will be by the actual number of square feet (to the nearest square foot) of weed control fabric installed completed, as measured by Owner.

Payment:

Payment for Bid Item No. 13, Provide and Place Weed Control Fabric will be based on the unit price bid per square foot as shown on the Bid Form of the Contract Documents.

7.14 Add Alternative No. 1: Provide Structural Fill

Applicable Technical Specifications:

n/a

Applicable Drawings:

Sheet C2 – Access Trail Plan and Profile

Sheet C3 – Stream Habitat Improvement Plan View

Sheet D1 – Access Trail Details

Sheet D2 – Side Trail Details

Sheets D3 and D4 – Habitat Structure Details

Work Description:

This Add Alternative includes all Work necessary to provide structural fill to all areas requiring native backfill under Bid Item No. 6, Primary Access Trail, Bid Item No. 7, Side Trails, and Bid Item No. 9, In-Stream Habitat Structures. Locations requiring native backfill are as shown on the Drawings. The need for structural fill will depend on the amount of acceptable material present or generated on Site during construction. Acceptable on Site material will be free of Japanese knotweed, and as described in the respective Bid Items above. In the event that there are not enough on Site sources for native fill Contractor shall procure additional material as described below. However, all suitable native fill material located on Site shall be used prior to procuring any offsite structural fill.

Contractor shall procure granular borrow pit run rock from a local source as needed to replace native fill material if needed. Contractor’s proposed pit run shall be approved by the Owner and shall be free of organic matter and weed seed. Structural fill containing either organic matter or weed seed will be rejected and the material will not be used on the Project. This pit run rock material shall be compactable and typical of granular borrow pit run stone used for structural applications. The pit run rock material shall be gravel as found in natural deposits and having a

sand equivalency of greater than 30%. The selected material shall be free of rocks larger than 6 inches in diameter with no more than 50% of the total volume exceeding 4 inches in diameter based on visual classification by the Owner.

Materials:

- Native fill material replacement shall be pit run rock as described above.

Execution:

- Provide structural fill as described above;
- Ensure that the structural fill is free of weeds and weed seed;
- Only procure the minimum amount of structural fill needed to complete the Work;
- Haul structural fill to the Project Site as needed; and
- Provide all labor, tools, equipment, materials, and incidentals necessary to complete the Work as specified.

Measurement:

Measurement for Add Alternative No. 1, Provide Structural Fill will be by the actual number of cubic yards (to the nearest cubic yard) of material provided. This volume will be measured by Contractor provided loaded truck receipts and verified by Owner based on truckloads of loose material hauled to the Project Site.

Payment:

Payment for Add Alternative No. 1, Provide Structural Fill will be based on the unit price bid per cubic yard as shown on the Bid Form of the Contract Documents.

Section 8.0 Construction Staking

Owner will provide all initial construction staking. Contractor shall preserve all primary and other control coordinate stakes. Surveyor costs for resetting control stakes carelessly or willfully destroyed or disturbed by Contractor will be charged to Contractor and such costs will be deducted from the payment for the Work. Control points located within areas that must be disturbed can be removed without replacement at Owner's discretion.

Section 9.0 Use of Premises

Contractor shall confine equipment, storage materials, and construction operations to the areas approved by Owner (staging, excavation, haulage, etc.) or as set forth in this Design. Contractor shall store only equipment and materials used for the Work on the Project at the Site. Contractor shall not unreasonably encumber the construction area or public rights-of-way with materials and construction equipment. Contractor shall obtain written approval from Owner to work outside the designated Project limits shown on the Drawings. Contractor shall comply with all reasonable instructions of Owner and the ordinances and codes of government agencies regarding signs, traffic, fire restrictions, burning, explosives, danger signals, and barricades.

Section 10.0 Site Cleanup

Periodically, or as requested by Owner during the course of the Work, Contractor shall remove and dispose of all surplus construction materials, debris, and garbage and keep the Project and public rights-of-way reasonably clean. No littering is allowed on the Site. Upon completion of the Work, Contractor shall remove all temporary construction facilities, debris, garbage, and unused materials provided for or generated by the Project leaving the Site in a neat and clean condition. Contractor's costs for all cleanup work are incidental to the Work, and no separate payment will be made. Contractor shall dispose of all construction related debris and wastes generated by Contractor off-site in a licensed waste management facility.

Section 11.0 Restoration of Disturbed Areas by Contractor

Contractor shall restore all areas disturbed by Contractor's operations such as, but not limited to, access locations and staging areas, to the original contours as set forth in the Contract Documents. Contractor's costs for restoring disturbed areas is incidental to the Work, and no separate payment will be made unless specifically provided for elsewhere in the Contract Documents.

Section 12.0 Maintenance of Fences

Fences are present on Site. Fences are to be maintained to the satisfaction of the abutting property owners. Any adjacent fence removed or destroyed during the course of this Contract that is not shown on the Drawings or specified in the Special Provisions to be removed or destroyed during the Work shall be reinstalled or reconstructed in like kind at no cost to the property owners. The existing chain link fence shown on the Drawings on the northeast side of the Project Site can be removed and replaced as needed for construction access. The cost for this Work shall be considered incidental, and no separate payment will be made.

Section 13.0 Use of Explosives

The use of explosives is prohibited under this Contract.

Section 14.0 Weed Control

Prior to mobilizing equipment on the construction area, Contractor shall clean all equipment and vehicles with a high-pressure washer to ensure no weeds are imported to the Work areas. Equipment components requiring cleaning include: wheels, tracks, undercarriages, fenders, blades, and buckets. Weeds are present at the Project Site. Contractor shall clean all equipment prior to moving to leaving the Site.

Section 15.0 Undiscovered and Undocumented Historic Properties

Contractor shall adhere to the following procedures for all undiscovered and undocumented historic properties encountered during construction.

During construction activities, previously undiscovered and undocumented historic properties may be encountered. In such an event, Contractor shall notify Owner, and stop construction activities in the immediate area of the find to the extent such stoppage will not create an undue risk of harm to human health or the environment. Owner will then contact the Community Historic Preservation Officer, a qualified historian, or an archaeologist to examine the find, verify its significance, and conduct preliminary recordation as necessary. Any changes to the Work (other than construction sequencing) will be made in writing by Change Order.

Section 16.0 Submittals

Contractor shall submit all shop drawings, laboratory sample results, product samples, plans, and other submittals required by the Contract to Owner in accordance with the Contract Documents. Contractor shall provide material specifications, product cut sheets, and manufacturers' installation instructions to Owner for all products and materials installed as a portion of the Work. The list below is provided as an aid to Contractor; this list is not considered to be exhaustive and additional submittals may be requested by Owner.

<u>Submittal</u>	<u>Submittal Description</u>
Health and Safety Plan	Contractor is responsible for developing and enforcing a site-specific Health and Safety Plan as described in Section 2.0 of these Special Provisions.
Material Submittals	Contractor must provide submittals at the time of the Preconstruction Conference for all materials imported to the construction area that are not provided by Owner. This includes, but is not limited to: aggregate material, topsoil, geoweb, geotextile, boulders, weed control fabric, and native seed.
Traffic Control Plan	Contractor must submit a Traffic Control Plan for the Project as described in Bid Item No. 2, Traffic Control Plan.
Site Control Plan	Contractor must submit a Stormwater Plan for the Project as described in Bid Item No. 3, Stormwater BMPs.
Weed Control	Contractor must submit the type of weed killer to be used to treat Japanese knotweed at the Project Site as described in Bid Item No. 4, Japanese Knotweed Removal.

All submittals shall be provided to Owner on or within five (5) days of the Preconstruction Conference unless otherwise noted in these Contract Documents.