

# Asotin Creek Project Area 06 Fish Habitat Restoration

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## Special Provisions



Prepared for:



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## Acronyms and Abbreviations

AMS	Agricultural Marketing Service
BF	Brush Fascine
BMP	Best Management Practice
CWGP	Construction Stormwater General Permit
NPDES	National Pollutant Discharge Elimination System
PA-06	Asotin Creek Project Area 06
PALS	Post-Assisted Log Structures
USEPA	U.S. Environmental Protection Agency
WSDA	Washington State Department of Agriculture

## Units

CY	cubic yard
LF	linear foot
SF	square foot

This section of the Construction Documents describes the Project and details the Work required to implement the Asotin Creek Project Area 06 Fish Habitat Restoration Project (Project) as shown on the Drawings. The Washington Standard Specifications for each component of the Project are referenced below and are taken from the Washington Standard Specifications for Road Bridge and Municipal Construction M 41-10, 2022 Edition. 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 Washington Standard Specifications, the Special Provisions will govern. For any discrepancies between the Special Provisions or the Drawings, the most stringent and detailed provisions shall govern.

Throughout the Special Provisions, reference to 'Project Sponsor or Project Sponsor's Representative' refers to Asotin County Conservation District and/or their authorized representatives.

## **Section 1 Construction Staking**

Project Sponsor's Representative will provide initial construction staking of project features. Contractor shall be responsible for elevation control throughout the project. Contractor shall keep a set of drawings on site during construction and record any deviations from design in the form of mark ups to be reviewed by Project Sponsor. Contractor shall preserve all primary and other control coordinate stakes. Control points located within areas that must be disturbed can be removed without replacement at Project Sponsor's discretion.

## **Section 2 Quality Control/Quality Assurance**

Quality control to assure that construction complies with the requirements of the project Drawings and Special Provisions is the responsibility of Contractor. Quality assurance is the responsibility of Project Sponsor. Project Sponsor will perform quality assurance in the form of construction oversight to ensure that the work performed by Contractor meets all applicable requirements.

Acceptance of the Work will be made when the Work is completed and will be determined by the Project Sponsor through a Work area inspection. Work acceptance will be based on adherence to the Work special provisions stated herein.

Construction grade tolerances shall be as specified below, unless otherwise noted in the plans. Final grade for the floodplain surfaces shall be plus or minus 0.5 feet to allow for topographic variability and preservation of high-value vegetation as stated herein. Healthy native vegetation within 1 foot of final grade may be preserved. Final elevations shall be plus or minus 0.5 feet for in-stream and streambank structures. Structure locations noted on the plans are approximate and can be field-fitted to accommodate existing mature vegetation and site conditions as approved by Project Sponsor. It is Contractor's responsibility to construct to the established tolerances. Work resulting in grades and alignments 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 3 General Measurement and Payment**

The total price for each bid item shall cover all work shown on the Drawings and described herein. Costs in connection with the work include: furnishing materials, equipment, supplies, and appurtenances; providing construction equipment, tools, and incidentals; and performing

necessary labor and supervision to fully complete the work, all of which shall be included in the unit and lump sum bid prices listed on the bid form. No item that is required by the contract documents for the proper and successful work completion will be paid for outside or in addition to the prices submitted in the bid.

**Estimated Quantities:**

All estimated quantities provided on the bid form and sheet S8 of the Drawings are approximate and are to be used only as a basis for estimating the probable cost of work and for the purpose of comparing the bids submitted for the work. The actual quantity of work performed may differ from the estimated quantities. The measurement method for determining final payment for each bid item will be by the Actual, Design, or Lump Sum Quantities, as described below and as shown on the bid form. Contractor will make no claim for damages, cost of materials, anticipated profits, or otherwise on account of any difference between the amount of work actually performed and the estimated amount herein, unless disputing a Design Quantity bid item.

Design Quantities denote the final number of units to be paid for under the terms of the Contract. They are based upon the original design data available prior to the project's advertisement. Original design data include the preliminary survey information, design assumptions, calculations, Drawings, and the presentation in the contract.

Actual quantities are determined from measurements of completed work. Measurement will be made by Project Sponsor and/or authorized representative.

Lump Sum quantities denote one complete unit of work as required by or described in the contract, including necessary materials, equipment, and labor to complete the job. Lump Sum bid items based upon estimated quantities are not subject to adjustment for actual quantities.

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

If the quantity of a unit-priced item **designated as a "design quantity"** in this contract is an estimated quantity and the actual quantity of the unit-priced item varies more than 15 percent above or below the estimated quantity, an equitable adjustment in the contract price shall be made only upon submittal by either party of verifiable evidence of the variance. **The equitable adjustment shall be based upon any increase or decrease in costs due solely to the variation above 115 percent or below 85 percent of the estimated quantity.**

## **Section 4      Incidentals**

The work description, measurement, and payment section below 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 to Project Sponsor. The cost of all such incidentals shall be included in the various related bid item(s).

Several known incidentals to the work are described as follows.

**Slash:**

Slash, when laid on the ground surface, creates roughness, provides shelter and organic matter for reestablishing plants, and deters future use of decommissioned travelways. Slash shall be used on all disturbed areas, including excavation and regrade areas on floodplain,



decommissioned travelways, staging areas, and in the brush fascine, key structures, and Post-Assisted Log Structures (PALS).

Suitable slash is defined as any woody material smaller than 24 inches in diameter and 15 feet in length. Slash also contains live or dead vegetation and other miscellaneous vegetative material (e.g., wood, stumps, brush, roots, branches, and bushes). Slash does not include stripped topsoil or herbaceous vegetative material (e.g., grasses, weeds, and non-woody plants). Slash shall be obtained from Project Sponsor-marked stockpiles within 30 miles of the site. Contractor shall place slash at the spacing and densities described herein and as shown on the Drawings (Sheet D1). Contractor shall place slash at a 50 to 70 percent coverage rate over slash areas.

Contractor shall place slash on the floodplain area temporary access routes (Bid Item 4), on and within the brush fascine (Bid Item 8), within and around the key structures (Bid Item 10), within PALS (Bid Item 14), within off-channel habitat area (Bid Item 15), floodplain roughness (Bid Item 16), and on all disturbed areas. Slash will be paid for under each of these respective Bid Items and/or other Bid Items which require slash to cover disturbed areas.

**Logs:**

Logs are used in the brush fascine (Bid Item 8), habitat structures (Bid Item 9), key structures (Bid Item 10), and off-channel habitat area (Bid Item 15). The definition of logs is included in the respective bid items. Logs shall be obtained from Project Sponsor-marked stockpiles within 30 miles of the site. Logs will be paid for under each of the respective Bid Items and/or other Bid Items which logs.

**Material Spoiling:**

Any material generated shall be spoiled according to these Special Provisions. Haul and spoiling of material shall be paid for under the bid item under which it is generated.

**Permits:**

Project Sponsor shall be responsible for stream construction-related permits and will provide copies of relevant information prior to the start of construction. Contractor shall obtain required Construction General Permit for the work prior to starting construction. This project may qualify for a Low Erosivity Waiver under the National Pollutant Discharge Elimination System (NPDES), Contractor shall coordinate with Project Sponsor. All costs necessary to obtain and comply with applicable permits are considered incidental to the work.

Contractor assumes full and sole responsibility for the capability of selected construction techniques to complete the Work specified herein. Contractor assumes full and sole responsibility for safety and environmental protection with the selected construction techniques.

**Fish Salvage:**

ESA-listed species are not anticipated to be near the work area during the construction window and no known spawning habitats are nearby. If fish salvage is needed, the Project Sponsor will be responsible for coordinating fish salvage according the HIPIV guidelines and the General Conservation Measures.

**Section 5 Work Description, Measurement, and Payment**

The work, measurement methods, and payment methods for each bid item are discussed below. The Drawings, in their entirety, are applicable to the work. Contractor shall perform the work described in this section. Contractor shall adhere to HIP General Conservation Measures

shown on Sheets G2 to G4. A list of materials to be generated and used on this project is shown on Sheet S8 of the Drawings.

All materials and equipment shall be approved by Project Sponsor prior to their use.

## **5.1 Bid Item 1 – Mobilization and Demobilization**

### **Applicable WA Standard Specifications:**

Division 1 General Requirements

Division 1-09.7 Mobilization

### **Description:**

Contractor shall perform the preparatory work and operations necessary for the movement of personnel, equipment, supplies, and incidentals to and from the project 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; performing site control measures; providing construction vehicles and equipment that are free of weeds and weed seeds; controlling fuel, oil, and other fluids on the site in accordance with the HIP General Conservation Measures; removing all garbage, debris, equipment, leftover materials, and incidentals from the site; cleaning up the site; and all other work and operations that must be performed before beginning work on the various other bid items. Mobilization and demobilization costs for subcontracted work shall be included in this Bid Item. Contractor's cost for administration, bonding, insurance, permitting, and site documents is included in this bid item 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, and (3) Weed Control. 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.

HIP General Construction Conservation Measures and General Notes and Specifications provided on the drawings shall be followed for refueling, use of biodegradable hydraulic oil, spill prevention, control, and countermeasures. In addition, the Contractor shall follow the provisions below.

#### **1) Staging Area(s):**

Equipment and materials staging areas shall be established by Contractor in locations approved by Project Sponsor. One possible staging location is the existing parking area off of the private driveway, as shown on the plans. Staging areas and any additional space needed or modifications to the staging area(s) boundaries shall be subject to approval by Project Sponsor. Staging area will be located in upland area, potentially within 150 feet of the Asotin Creek side channel. Contractor shall designate a refueling area within the staging area that is a Project Sponsor-approved distance from Asotin Creek. All refueling will be located as far as possible from the creek channel (a minimum of 25 feet). Secondary containment will be utilized during refueling/equipment washing activities as well as any hazardous materials storage that may occur at the staging area within 150 feet of the creek. Refueling and staging shall be done in accordance with HIP General Construction Conservation Measures provided on Sheets G2 to G3.

Contractor shall limit equipment and materials storage to the staging area(s), unless specifically approved otherwise by Project Sponsor. Materials staging within the site must not impact the riparian environment or interfere with other work.

A portable toilet shall be located at or near staging area for the project's duration. Portable toilet shall be positioned on a level surface to prevent tipping and shall be serviced on a regular basis throughout the duration of the contract.

Immediately following construction completion, the staging area(s) shall be thoroughly cleaned of all trash, debris, and construction materials, decompacted, and re-graded to match adjacent topography. Any construction debris and/or domestic waste shall be disposed of off-site at an approved landfill by Contractor. Contractor's costs for all cleanup work are incidental to the Work, and no separate payment will be made.

### **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). Contractor shall repair any damage resulting from construction activities (including grading the road to eliminate ruts caused by heavy vehicle loading).

### **3) Weed Control:**

During construction operations, Contractor shall control the spread of noxious weeds within, onto, and from the site in accordance with the following stipulations and General Conservation measures for Invasive Species Control on Sheet G3. Specifically, Contractor shall:

- Clean all wheels, tracks, undercarriages, fenders, blades, buckets, and the exterior body of vehicles/equipment to remove any weed seeds, fuel, and oil prior to entering the site.
- Decontaminate all equipment if used in area with invasive weeds (for example, if a dozer is used to strip cover from an area with invasive weeds, it should be decontaminated before being used elsewhere on the Site).

### **Materials:**

Contractor shall provide all labor, equipment, tools, materials, and incidentals 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 public roads during construction.
- Coordinate with all other Work items, as necessary.
- Construct, maintain, and decommission staging area(s) as needed.
- Establish and maintain appropriate refueling areas.



- Clean equipment prior to transport to and from the Site to prevent importation or exportation of invasive weeds.
- Inspect all equipment daily, repair any leaks, 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 sanitation facilities.
- Dispose of all trash, garbage, and other waste materials generated by Contractor.
- Repair any property damage caused by Contractor.
- Provide all labor, tools, equipment, materials, and incidentals necessary to complete the Work as specified.

**Measurement:**

No measurement for Bid Item 1 – Mobilization and Demobilization will be made.

**Payment:**

Payment for Bid Item 1 – Mobilization and Demobilization will be based on the lump sum price bid as shown on the bid form. Fifty percent (50%) payment for this bid item will be allowed once Contractor submits Bonds and Insurance Certificates and fully mobilizes to the site. Full payment for this item will be allowed once Contractor completes the specified work and fully demobilizes equipment and materials from the site. **The lump sum bid price for this item must not exceed ten percent (10%) of the total bid price.**

## **5.2 Bid Item 2 – Provide Water**

**Applicable WA Standard Specifications:**

Division 2-07 Watering

**Description:**

This bid item covers all work necessary to obtain, provide, and apply water for dust control and moisture conditioning for compaction during filling operations; installation of the Brush Fascine (Bid Item 8) to keep live stakes in the Brush Fascine damp as required; and to water surfaces prior to live stake installation (Bid Item 8). Contractor shall indicate the source of water to be used to the Project Sponsor prior to start of construction. All necessary permits must be obtained if water is to be obtained from a non-commercial local source. If necessary, Contractor shall obtain a temporary water use permit from Washington Department of Ecology. Quantity of water and duration will be dependent on current weather conditions during construction.

**Materials:**

- Contractor shall provide equipment that provides capacity and water supply sufficient to complete the work specified herein.
- Contractor shall provide a pump with a screened inlet for pumping water from Asotin Creek or any other surface water body. Pump water inlet must have a 3/32-inch mesh screen or other approved device to prevent fish entrainment or impingement.
- Contractor shall ensure that all water supplies and watering equipment are prepared and readied for use prior to beginning any work and remain available continuously throughout the project.

**Execution:**

Work includes, at a minimum:

- Contractor shall propose and Project Sponsor shall approve the water source location(s) prior to start of construction. Contractor may use alternative water source locations upon approval from Project Sponsor.
- Contractor shall obtain all necessary permits, in coordination with Project Sponsor, if water is to be obtained from a non-commercial local source.
- Contractor shall provide dust control during the work to Project Sponsor's satisfaction. Contractor shall apply water for dust control on dust-generating surfaces as often as necessary to prevent visible dust. Water shall be applied on all gravel and/or dirt haul roads and routes and at locations identified by Project Sponsor or specified elsewhere in these special provisions.
- Contractor shall apply water at the locations and in the amounts needed to properly complete the work. Over-watering or under-watering, as determined by Project Sponsor, shall not be permitted.
- Contractor shall apply water to subgrades, embankments, and backfill in the correct quantity and in a manner that ensures subgrade, embankment, and backfill are compacted in accordance with these special provisions.
- Contractor shall apply water to live stakes as needed to ensure moisture in accordance with Bid Item 8 – Brush Fascine.
- Contractor shall apply water to brush fascine (Bid Item 8) as requested by Project Sponsor prior to and after live stake placement.

**Measurement:**

No measurement will be made for Bid Item 2 – Provide Water.

**Payment:**

Payment for Bid Item 2 – Provide Water will be made at the lump sum price as shown on the bid form. This lump sum price shall constitute full compensation for all labor, equipment, tools, supplies, materials, and incidentals necessary to accomplish the work.

**5.3 Bid Item 3 – Stormwater Best Management Practices**

**Applicable WA Standard Specifications:**

Division 1-07.15 Temporary Water Pollution Prevention

Division 8-01 Erosion Control and Water Pollution Control

**Description:**

Contractor shall be responsible for securing a Construction General Permit for this work.

HIP General Construction Conservation Measures and General Notes and Specifications provided on the drawings shall be followed for refueling, use of biodegradable hydraulic oil, spill prevention, control, and countermeasures.

This Bid Item includes all the Work necessary for installation of all Best Management Practices (BMPs) as identified by applicable permits, HIP General Conservation Measures, jurisdictions, and as requested by Project Sponsor.

Contractor shall maintain on site at all times adequate numbers of certified weed-free biodegradable straw wattles and/or certified weed-free straw bales to provide sediment control for exposed surfaces in the event of rainfall.

Contractor shall be responsible for installation, maintenance, and removal of BMPs for stormwater control if precipitation is predicted or expected during the project work window. At a minimum, Contractor shall have 600 linear feet (LF) of sediment control measures on site available for use at all times, and an oil-absorbing floating boom per the emergency control measures per HIP General Conservation Measures.

Contractor shall inspect BMPs at least once every workday 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 and Sediment Control Plan. Contractor shall remove all BMPs at the end of the Work, unless otherwise requested by Project Sponsor 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.**

All spills shall be reported to Project Sponsor's Representative and cleaned up immediately.

If turbidity requirements on Sheet G3 of the design drawings are not met, Contractor shall stop work until turbidity requirements can be met.

Contractor shall document, provide, install, and maintain all necessary 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, 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 Project Sponsor's discretion and in accordance with the guidance documents listed below:

- State of Washington Department of Ecology, Stormwater Management Manual for Eastern Washington, August 2019.
- 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 State of Washington Department of Ecology Construction Stormwater General Permit (CSWGP). Refer to the following website for information on the 2022 CGP, including guidelines on how to apply for and obtain permit coverage: <https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Stormwater-general-permits/Construction-stormwater-permit>

**Materials:**

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

**Execution:**

Work Includes, at a minimum:

- Contractor shall comply with the HIP Conservation Measures as shown on the Drawings.
- Supply, install, and maintain BMPs as needed.
- Remove all BMPs (unless permanent structures) upon completion of the Project or when requested by Project Sponsor.

- Provide all labor, tools, equipment, materials, and incidentals necessary to complete the Work.

**Measurement:**

No measurement for Bid Item 3 – Stormwater Best Management Practices will be made.

**Payment:**

Payment for Bid Item 3 – Stormwater Best Management Practices will be based on the lump sum price bid as shown on the bid form.

## **5.4 Bid Item 4 – Temporary Construction Access Road**

**Applicable WA Standard Specifications:**

N/A

**Description:**

In the project area, the location and layout of temporary access routes to the project features shall be selected by the Contractor and approved by Project Sponsor. The Drawings provide a site access plan on Sheet S7. For these temporary access routes, minimal to no construction by the Contractor is expected. Decompaction of access routes may be necessary after construction. Contractor shall decompact all access routes if equipment has used the route more than 20 times.

No vehicles of any kind shall be permitted in the riparian area after rain when the soil is wet.

Travel along the project Site is restricted to the northern-most side of the mainstem of Asotin Creek. Contractor shall minimize travel through treed areas as much as possible.

Once the side channel is fully connected and flowing water is introduced into the design channel, pending the level of the Asotin Creek, Contractor shall provide some method for temporary river crossing as approved by the Project Sponsor. The use of a temporary crossing structure can be avoided by removing the jersey barriers at the side channel entrance as one of the last items to be completed. One crossing in live water shall be permitted at the location of Livestock Crossing 1 (Sheet S7). No other crossing of live water shall be permitted.

Contractor is responsible for preservation and protection of existing vegetation. Contractor shall make every effort to minimize disturbance and impacts to existing vegetation during the work. Existing vegetation that is to be protected or is to remain, which is subsequently disturbed or removed, shall be replaced to a condition as good as or better than that encountered at Contractor's expense.

**Materials:**

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

**Execution:**

Work includes, at a minimum:

- Contractor shall use the location and layout of temporary access routes to the project features as show on Sheet S7. Additional access routes and/or deviations from the design access routes shall be selected by Contractor and approved by Project Sponsor's Representative.

- Contractor shall minimize the total length of temporary access routes in an effort to prevent unnecessary disturbance of existing fields and riparian areas. Temporary access routes shall be utilized only as required for adequate movement around the Site to complete the specified Work and shall be approved by Project Sponsor's Representative prior to use.
- Contractor may reinforce soft spots, as needed, in the access route using imported or on-site materials.
- Upon completion of the project, Contractor shall decompact the full length and width of temporary access routes within the riparian area, as requested by Project Sponsor. Decompaction shall consist of loosening of the soil in the utilized construction access road and temporary access route footprint to a minimum depth of 6 inches.
- No decompaction work shall be done during wet weather or when the ground is frozen or otherwise unsuitable as determined by the Project Sponsor.
- Access route segments within the riparian area shall be covered with slash in accordance with Bid Item 16 – Floodplain Roughness and Microtopography and seeded in accordance with Bid Item 17 – Hydroseeding and Mulching.

**Measurement:**

No measurement for Bid Item 4 –Temporary Construction Access Road will be made.

**Payment:**

Payment for Bid Item 4 –Temporary Construction Access Road will be made at the lump sum price as shown on the Bid Form. This lump sum price shall constitute full compensation for all labor, equipment, tools, supplies, materials, and incidentals necessary to accomplish the Work.

## **5.5 Bid Item 5 – Remove Concrete Barricades**

**Applicable WA Standard Specifications:**

Division 2-02 – Removal of Structures and Obstructions

Division 2-03 – Roadway Excavation and Embankment

**Description:**

Removing the concrete barriers and reshaping the side channel entrance (Bid Item 7) will allow for reactivation of the side channel and floodplain at annual flows. Refer to Sheet S1 of the Drawings for the location of the concrete barricades to be removed under this Bid Item. Contractor shall remove concrete barriers as shown on the Drawings (Sheet S1). All tie-ins with existing ground shall be gradual and smooth. Contractor shall haul excavated material to a Project Sponsor-approved location. Coordination of this Bid Item with Bid Item 7 – Side Channel Entrance Reshaping will be necessary.

Removal of concrete barricades shall occur after all log structures (Bid Item 9 and 10) and brush fascine (Bid Item 8) have been installed in the side channel.

Haul and disposal of materials generated from this bid item shall be incidental to this Bid Item and shall be accounted for by the Contractor as appropriate in their bid.

**Materials:**

Contractor shall supply the materials necessary to remove and dispose of concrete barricades at a licensed landfill or other location approved by Project Sponsor.



**Execution:**

Work includes, at a minimum:

- Contractor shall refer to Drawing S1 for concrete barricade location.
- Provide all labor, tools, equipment, materials, and incidentals necessary to complete the Work as specified.
- Remove concrete barricades in accordance with Washington Standard Specifications Division 2-03 – Roadway Excavation and Embankment.
- Haul and dispose of excavated material to an Project Sponsor-approved location.

**Measurement:**

Measurement for Bid Item 5 – Remove Concrete Barricades will be by the actual number of LF (to the nearest LF) of barricades removed, as measured by the Project Sponsor’s Representative.

**Payment:**

Payment for Bid Item 5 – Remove Concrete Barricades will be based on the unit price bid per LF 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.

**5.6 Bid Item 6 – Remove Rock Crossing**

**Applicable WA Standard Specifications:**

Division 2-03 – Roadway Excavation and Embankment

**Description:**

Refer to Sheet S1 of the Drawings for the location of the existing rock crossing to be removed under this Bid Item. This Work consists of rock crossing removal, excavation, hauling, and all other activities required to complete the Work. The existing rock crossing will be removed to allow for unimpeded flow in the side channel and will be replaced with a rock ford (Bid Item 12). Topsoil and structural rock/soil fill material excavated from the rock crossing shall be spoiled on Site out of the 100-year floodplain, at a location approved by the Project Sponsor. Coordination of this Bid Item with Bid Item 12 – Rock Ford will be necessary. Haul of excess soils generated from off-rock crossing removal shall be incidental to this Bid Item and shall be accounted for by the Contractor as appropriate in their bid.

**Materials:**

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

**Execution:**

Work includes, at a minimum:

- Contractor shall refer to Drawing S1 for rock crossing removal location.
- Provide all labor, tools, equipment, materials, and incidentals necessary to complete the Work as specified.

- Excavate and remove existing rock crossing in accordance with Washington Standard Specifications Division 2-03 – Roadway Excavation and Embankment.

Excavated material shall be used as fill material for the rock/soil berm (Bid Item 13) or disposed of. Unsuitable material shall be disposed of at a Project Sponsor-approved location out of the 100-year floodplain. Haul of excess material generated by this bid item to other project locations shall be incidental to this bid item and shall be accounted for by Contractor as appropriate in their bid.

**Measurement:**

Measurement for Bid Item 6 – Remove Rock Crossing will be by the actual number of LF (to the nearest LF) of rock crossing removed, as measured by the Project Sponsor’s Representative.

**Payment:**

Payment for Bid Item Bid Item 6 – Remove Rock Crossing will be based on the unit price bid per LF 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.

## **5.7 Bid Item 7 – Side Channel Entrance Reshaping**

**Applicable WA Standard Specifications:**

Division 2-03 – Roadway Excavation and Embankment

**Description:**

Side channel reconnection increases channel length of Asotin Creek through the project area and activates the floodplain. Angular rock was used to stabilize the concrete barriers at the side channel entrance.

If any of the rock is not angular, and has a fines content less than 15%, it can be placed in the side channel to lessen the steep slope at the entrance to the side channel if approved by Project Sponsor. Key structures (Bid Item 10) will be placed in the side channel entrance to reduce the potential for downcutting where a steeper channel slope exists.

Side channel entrance reshaping shall occur after all log structures have been installed in the side channel.

Contractor shall regrade side channel entrance to tie in smoothly with existing channel invert. This work consists of side channel entrance excavation, grading, hauling and all other activities required to complete the work. Excess material excavated from the side channel entrance will be sorted for use in the rock/soil berm (Bid Item 13) and/or spoiled on Site outside of the 100-year floodplain, at a location approved by the Project Sponsor. Coordination with Bid Item 6 – Remove Rock Crossing and Bid Item 10 – Key Structures will be necessary.

**Materials:**

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

**Execution:**

Work includes, at a minimum:

- Contractor shall refer to the Drawings (Sheet S1 and S3) for side channel entrance location and profile.

- All construction activities shall occur when water levels in the main channel are below the side channel elevation or within the in-water work window. Side channel entrance reshaping shall occur after all key structures (Bid Item 10), habitat structures (Bid Item 9), and brush fascine (Bid Item 8) have been installed in the side channel.
- Trees (if any) selected for removal shall be pushed over with rootwads attached. Contractor shall re-contour ground surface to smooth and fill holes left by tree removal. Haul and utilize trees in habitat structures (Bid Item 9), key structures (10), post-assisted log structures (Bid Item 14), and/or as slash (Bid Item 16).
- Side channel entrance regrade shall be as shown on the Drawings (Sheet S3).
- Usable material shall be sorted into:
  - Topsoil for surfaces of rock/soil berm (Bid Item 13). Topsoil shall consist of natural, friable soil that is representative of soils in the vicinity that produce heavy vegetation growth and is reasonably free from underlying subsoil, clay lumps, cobbles or boulders, noxious weeds, litter, brush, and matted roots.
  - Rock/soil structural fill (Bid Item 13). Rock/soil fill shall be structural, compactable material. Rock/soil fill shall have rocks up to a maximum size of 6 inches, with a fines content that is suitable for compaction.
- Unsuitable material shall be hauled to a Project Sponsor-approved location for spoiling. Haul of unsuitable materials generated from side channel entrance reshaping to other project locations shall be incidental to this bid item and shall be accounted for by Contractor as appropriate in their bid.
- Non-angular rock material generated from the side channel entrance regrade, with a fines content less than 15%, can be placed in the side channel to lessen the steep slope at the entrance to the side channel as approved by Project Sponsor.
- Grade side channel entrance to match existing channel invert as closely as possible without leaving areas subject to erosion or degradation. Starting side channel invert elevation shall match the elevation specified in the Drawings on Sheet S3, or as approved by Project Sponsor. The sides of the side channel shall taper to existing ground elevation at a maximum slope of 2:1 (horizontal:vertical) and to tie in smoothly with the existing ground.

**Measurement:**

Measurement for Bid Item 7 – Side Channel Entrance Reshaping will be by the actual number of LF of side channel regraded (to the nearest LF), as measured by Project Sponsor’s Representative.

**Payment:**

Payment for Bid Item 7 – Side Channel Entrance Reshaping will be based on the unit price bid per LF as shown on the bid form.

**5.8 Bid Item 8 – Brush Fascine**

**Applicable WA Standard Specifications:**

Division 8-02.3(15)C Brush Layer

Division 8-02.3(8) Planting

**Description:**

This Work covers Brush Fascine (BF) streambank treatment including excavation, backfill, and all other tasks associated with completing the Work as specified. BF streambank treatment is used along the side channel alignment to stabilize the channel streambank and provide roughness. It promotes rapid development of vegetation within the streambanks and provides habitat and cover for aquatic organisms.

Contractor will be required to purchase and transport live cuttings from a source approved by the Project Sponsor.

Procurement of logs is incidental to this bid item.

BF location is shown on the Drawings (Sheet S1). Coordination of BFs with Bid Item 2 – Provide Water will be necessary. Project Sponsor shall stake location of BF treatment.

**Materials:**

- Contractor shall provide all labor, equipment, tools, materials, and incidentals necessary to complete the Work as specified.
- Small logs shall meet the following criteria:
  - Minimum of 4 inches in diameter.
  - Maximum of 15 feet in length.
  - Minimum of 8 feet in length.
  - With or without branches, but branches are preferred.
  - Rootwads are optional.
- Floodplain soil material (topsoil) excavated during construction of Brush Fascine.
- 6- to 8-foot live cuttings shall be dormant, native willow (*Salix exigua* and *Salix amygdaloides*) and/or dogwood cuttings (*Cornus sericea*) sourced locally to ensure resilience and acclimation to the area. Cuttings up to 4 months old can be used if stored in refrigerated, dry storage and soaked prior to placement.
  - 0.5- to 1.5-inch diameter cuttings.
  - 6 to 8 feet in length.
  - Soak cuttings for a minimum of 24 hours in cool, aerated water prior to placement.
  - Space along treatment as shown on the Drawings.

**Execution:**

Work includes, at a minimum:

- Contractor shall construct BF streambank treatment in the location shown on Sheet S1 of the Drawings. Sheet S3 of the Drawings provides the side channel profile that indicates the stationing where the BFs occur.
- Contractor shall excavate streambank to subgrade elevations as shown on the Drawings (Sheet D5, Detail 2).

- Place small logs in streambank at skewed angles to the streambank (angles and density shown on Drawings). Logs shall be placed below the top of bank elevation and shall overlap as much as possible. If logs are cut with saw, no cut ends shall be showing.
- Place slash within the voids and gaps of small logs to the density shown on the Drawings and bucket compact. Slash may extend above the top of bank, but only by a maximum of 1 foot.
- Soak cuttings for a minimum of 24 hours in cool, aerated water prior to placement. Water for soaking the stakes shall be the responsibility of Contractor and considered incidental to this Bid Item. Water shall be clean and free of contaminants.
- Contractor shall place live cuttings into the log/slash voids and gaps to the density shown on the Drawings. Lower ends (unpainted) of live cuttings shall extend a minimum of 6 inches below the base flow elevation. Painted or top ends shall extend a minimum of 6 inches above the finished soil surface. Contractor shall minimize exposure of cuttings to heat or direct sunlight. Water cuttings prior to backfilling.
- Within one hour after planting, each stake shall be thoroughly watered with a minimum of 0.25 gallons of water per stake in accordance with Bid Item 2 – Provide Water.
- Contractor shall backfill streambank with excavated floodplain material and bucket compact.
- Contractor shall wash fines and water from on Site into the streambank fill to seal voids in the backfill in accordance with Bid Item 2 – Provide Water.
- Contractor shall ensure that BF streambank treatments tie in smoothly with upstream and downstream existing streambank.
- The top of bank shall be graded to match the surrounding floodplain.
- Contractor shall water BF whenever soil is dry at a 6 inch depth for duration of construction, or until September 15<sup>th</sup>, whichever occurs first, in accordance with Bid Item 2 – Provide Water. Contractor shall hydroseed and mulch in accordance with Bid Item 17 – Hydroseeding and Mulching.
- Excavated material shall be used as material for the rock/soil berm (Bid Item 13) or be disposed of. Unsuitable material shall be disposed of at a Project Sponsor-approved location out of the 100-year floodplain. Haul of excess material generated by this bid item to other project locations shall be incidental to this bid item and shall be accounted for by Contractor as appropriate in their bid.

**Measurement:**

Measurement for Bid Item 8 – Brush Fascine (BF) will be by the actual number of LF (to the nearest LF) of BF constructed, as measured by the Project Sponsor’s Representative.

**Payment:**

Payment for Bid Item 8 – Brush Fascine (BF) will be based on the unit price bid per LF 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.



## 5.9 Bid Item 9 – Habitat Structures

### Applicable WA Standard Specifications:

N/A

### Description:

This work consists of providing materials for and constructing log habitat structures at the Site. Habitat structure installation includes procuring logs, excavation, moving and placing logs, backfill and compaction, and all other tasks associated with habitat structure installation. Habitat structures are composed of logs with rootwads and racked woody material. This wood combination provides resting areas and cover for aquatic organisms and allows for floodplain activation. Procurement of logs is considered incidental to this bid item (See Section 4 – Incidentals).

Refer to the Drawings (Sheets S1 to S4) for approximate habitat structure locations. Final locations shall be adjusted, staked, and approved by the Project Sponsor's Representative.

### Contractor must notify Project Sponsor at least 48 hours prior to Habitat Structure installation.

### Materials:

- Contractor shall provide all labor, equipment, tools, materials, and incidentals necessary to complete the Work as specified.
- Each habitat structure shall utilize one large anchor log which meets the following criteria:
  - 18 inches to 24 inches in diameter.
  - A minimum of 40 feet in total length.
  - Intact rootwad.
- Racked logs (minimum of two per structure) should be:
  - Smaller in size than the anchor logs.
  - 4-inch minimum diameter.
  - A maximum of 15 feet in total length.
  - With or without rootwads.
  - With or without branches, but branches are preferred.
  - Varied in both length and diameter.
- Log posts (as needed where compaction cannot be achieved and live trees are not present) should be:
  - A minimum of 12 inches in diameter.
  - A minimum of 7 feet in total length.
- Structural fill (if needed) shall be a pit run (crushed basalt ranging in size from 1 inch to 6 inch with a minimum of 15% fines). Excavated material from onsite generated at the side channel reshaping (Bid Item 7) and Livestock Crossings (Bid Item 12) may also be used if it meets these size and compaction requirements. All materials are subject to approval by the Project Sponsor.

**Execution:**

Work includes, at a minimum:

- Contractor shall refer to the Drawings (Sheets S1 to S4) for approximate habitat structure locations. Exact installation locations shall be as staked by the Project Sponsor's Representative.
- All construction activities shall occur during dry or low-water conditions. If the habitat structure locations are not completely dry, water management shall conform to all permit and environmental requirements and be approved by the Project Sponsor.
- If needed, Contractor shall provide isolation dewatering as specified in HIP General Conservation Measures (Drawing Sheets G2 to G4). Excavation trench can be constructed such that a small "berm" or high spot is left at the entrance of the trench prior to placement of the anchor log so that the trench remains dry and compaction can be achieved without the need for dewatering.
- BMPs shall be implemented as necessary and in accordance with Bid Item 3 – Stormwater Best Management Practices to ensure that sediment or excavated material are not discharged into Asotin Creek during the Work.
- Habitat structures shall be constructed in a manner that meets the requirements specified herein and as shown on the Drawings (Sheet D1).
- Habitat structure installation shall be completed at the direction of the Project Sponsor's Representative, and the Project Sponsor's Representative must be present during habitat structure construction.
- To the extent possible, Contractor shall protect existing vegetation and resources during the habitat structure construction.
- Contractor shall excavate trench to allow for anchor log placement. Minimize trench dimensions to the smallest dimensions practical to allow for secure placement of the anchor log.
- Contractor shall position anchor log in excavated trench with the rootwad facing upstream as shown on the Drawings (Sheet D1).
- Contractor shall ensure that the anchor log is buried a minimum of 75% of its total length and to the minimum depth specified on the Drawings (Sheet D1).
- Contractor shall weave and stack two or three logs against the rootwad and beneath the anchor log's trunk. Habitat structures shall be constructed densely, with racked logs carefully interlocked with the anchor log and each other.
- The trench shall be backfilled in 6-inch maximum lifts and compacted to the pre-excavation grades. Adjust the backfill material to a moisture content that is suitable for compaction. Operate vibratory trench roller (or other approved compaction equipment) over the full width of each lift with three complete passes minimum or until visual displacement ceases. Fill trench to same elevation as adjacent floodplain to account for approximately 3 inches of anticipated settling.
- If compaction requirements above cannot be met, Contractor may mix structural fill with native material until compaction is achieved.
- Contractor is responsible for ensuring that compaction requirements are met as specified herein.

- The top 12 inches of topsoil shall be loosely placed and distributed to a uniform thickness to facilitate revegetation.
- Where unable to bury anchor log, Contractor shall wedge anchor log between live trees or log posts as specified on the Drawings (Sheet D1). Log posts shall be driven a minimum of 1 foot below the elevation of the lowest point in the channel and extend a minimum of 2.5 feet above ground.
- Contractor shall hydroseed and mulch in accordance with Bid Item 17 – Hydroseeding and Mulching.

**Measurement:**

Measurement for Bid Item 9 – Habitat Structures will be by the actual number of Habitat Structures installed, as measured by the Project Sponsor’s Representative.

**Payment:**

Payment for Bid Item 9 – Habitat Structures will be based on the unit price bid for each Habitat Structure installed as shown on the Bid Form.

**5.10 Bid Item 10 – Key Structures**

**Applicable WA Standard Specifications:**

N/A

**Description:**

This Work consists of providing materials for and constructing log key structures at the Site. Key structure installation includes procuring logs, excavation, moving and placing logs, backfill and compaction, and all other tasks associated with key structure installation. A key structure spans the channel and contains logs, slash and small logs, and logs with rootwads wedged together and pinned by existing trees on the bank or excavator pile-driven logs. Log ends on the near bank will be buried as site conditions allow. The structure acts as a flow dissipater that decreases energy in the stream channel, promotes floodplain access, and provides habitat for fish and other aquatic organisms.

Refer to the Drawings (Sheets S1 to S4) for approximate key structure locations. Final locations shall be staked and approved by the Project Sponsor’s Representative. Project Sponsor’s Representative must be present during channel spanning key structure installation.

Procurement of logs and slash is incidental to this bid item. See Section 4 for details on slash.

**Contractor must notify Project Sponsor at least 48 hours prior to Key Structure installation.**

**Materials:**

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

- Anchor logs (minimum of 4 per structure) should be:
  - 18-inch minimum diameter.
  - A minimum of 60 feet in total length.
  - Intact rootwads on a minimum of 2 of the anchor logs.

- Racked logs (minimum of 4 per structure) should be:
  - Smaller in size than the anchor logs.
  - 4-inch minimum diameter.
  - A maximum of 15 feet in total length.
  - With or without rootwads.
  - With or without branches, but branches are preferred.
  - Varied in both length and diameter.
- Log posts should be:
  - A minimum of 12 inches in diameter.
  - A minimum of 7 feet in total length.
- Slash.
- 30-inch minimum diameter boulders (minimum of 1 per buried anchor log, 2 per key structure).
- Structural fill (if needed) shall be a pit run (crushed basalt ranging in size from 1 inch to 6 inch with a minimum of 15% fines). Excavated material from onsite generated at the side channel reshaping (Bid Item 7) and Livestock Crossings (Bid Item 12) may also be used if it meets these size and compaction requirements.
- All materials are subject to approval by the Project Sponsor.

**Execution:**

Work includes, at a minimum:

- If needed, Contractor shall provide isolation dewatering as specified in HIP General Conservation Measures (Drawing Sheets G2 to G4). Excavation trench can be constructed such that a small “berm” or high spot is left at the entrance of the trench prior to placement of the anchor log so that the trench remains dry and compaction can be achieved without the need for dewatering.
- BMPs shall be implemented as necessary and in accordance with Bid Item 3 – Stormwater Best Management Practices to ensure that sediment or excavated material are not discharged into Asotin Creek during the Work.
- Contractor shall refer to the Drawings (Sheets S1 to S4) for approximate key structure locations. Exact installation locations shall be as staked by the Project Sponsor’s Representative.
- Refer to the Drawings (Sheet D2) for typical key structure design.
- Install logs in the channel at the direction of the Project Sponsor’s Representative.
- Pin logs against existing trees with a minimum diameter of 6 inches on the far streambanks. No crossing of the live water shall be permitted for key structure installation, so key structure locations will make use of existing live trees on the far bank.
- Wedge logs together inside the stream channel. Bury a minimum of 2 large anchor logs in the near stream bank to anchor other logs. If burial and compaction requirements cannot be met, Contractor shall mix structural fill with native material until compaction is achieved.

- Contractor shall excavate trench to allow for anchor log placements. Minimize trench dimensions to the smallest dimensions practical to allow for secure placement of the anchor log.
- Contractor shall ensure that the anchor log is buried a minimum of 50% of its total length and to the minimum depth specified on the Drawings (Sheet D1).
- Contractor shall weave and stack small logs and slash beneath and between the anchor logs' trunks. Key structures shall be constructed densely, with logs carefully interlocked with the anchor log and each other. Slash shall be in contact with the channel bottom.
- The trench shall be backfilled in 6-inch maximum lifts and compacted to the pre-excavation grades. Adjust the backfill material to a moisture content that is suitable for compaction. Operate vibratory trench roller (or other approved compaction equipment) over the full width of each lift with three complete passes minimum or until visual displacement ceases. Fill trench to same elevation as adjacent floodplain to account for approximately 3 inches of anticipated settling.
- Drive log posts into the streambank as needed and as shown in the Drawings (Sheet D2) to aid in the pinning and wedging of in-stream logs.
- Anchor logs that are buried in the near streambank shall be installed to put downward pressure on the anchor logs and slash that are not buried.
- Place boulders on top of buried anchor logs and bury within anchor log trench.
- Drive log posts along anchor logs at location and frequency shown in Drawings (Sheet D2).
- Contractor shall hydroseed and mulch in accordance with Bid Item 17 – Hydroseeding and Mulching.

**Measurement:**

Measurement for Bid Item 10 – Key Structures will be by the actual number of Key Structures installed, as measured by the Project Sponsor's Representative.

**Payment:**

Payment for Bid Item 10 – Key Structures will be based on the unit price bid for each Key Structure installed as shown on the Bid Form.

**5.11 Bid Item 11 – Livestock Fence with Removable Fence Sections (Water Gates)**

**Applicable WA Standard Specifications:**

Division 8-12 Chain Link Fence and Wire Fence

Division 9-16.2 Wire Fence and Gates

This work covers all fencing activities at the site. This bid item includes new livestock fence and removable fence sections (water gates).



### **5.11.1 New Livestock Fence**

#### **Description:**

This work consists of all items relating to four-wire livestock fence installation including materials and fence installation.

Refer to the Drawings (Sheet S1) for new livestock fence locations. Fence line will be staked by Project Sponsor.

Install fence in a manner that meets the requirements specified herein and as shown on the Drawings (Sheet D4).

Removable water gates are required at locations shown on the Drawings (Sheet S1) and identified by Project Sponsor. Water gates shall be installed in the manner detailed on the Drawings (Sheet D4).

Project Sponsor must approve all materials used in new livestock fence construction prior to use. Contractor shall submit information to Project Sponsor for review and obtain approval from Project Sponsor prior to ordering materials.

#### **Clearing:**

Minimal clearing may be necessary for livestock fence. Contractor shall clear trees and shrubs within the fence right-of-way to allow for construction access and future maintenance. Remove any obstruction that would hinder the fence placement, operation, and maintenance. Stockpile trees and/or shrubs for use at the site.

#### **Posts:**

Fence posts shall be steel T-posts and steel posts. Steel posts shall be used at corners and to brace gates, with t-posts placed elsewhere. T-posts shall be placed 16 feet apart with a stay between T-posts or 14 feet apart with no stay.

Vertical stay members shall be 4-foot tall, approximately 2-inch by 2-inch untreated wood. One stay shall be placed between each post as shown on the Drawings (Sheet D4) when spacing between posts is 16 feet. Stays are not used at bracing locations. Wood stays will sit solidly on the ground and extend 6 inches above the top wire.

Steel posts used for corner braces shall be a minimum of 7 feet in length with a minimum outside diameter of 2 and 3/8 inches. Corner posts shall be 3.65 pound/foot or equivalent and galvanized with 2 oz/SF zinc coating.

T-posts shall be steel 1.33 pound/foot T-posts that are a minimum of 5.5 feet in length and painted. Steel line posts shall have a welded or riveted anchor plate near the bottom (minimum 18 square inches area) and have suitable corrugations, knobs, studs, or grooves for fastening the wire.

Corner posts shall be set a minimum of 3 feet in either 12-inch diameter or 12-inch square concrete. Concrete shall completely fill the post hole up to the adjacent ground surface.

T-posts shall be driven into the ground approximately 18 inches where possible.

Diagonal steel braces shall be 2.25 pounds/foot or equivalent with a 1 5/8-inch outside diameter and 7-foot length. Diagonal braces shall be installed at a 60-to-65-degree angle from corner brace and imbedded 1 foot in either 12-inch diameter or 12-inch square concrete. Diagonal braces shall be connected to steel posts using a 1 5/8-inch galvanized steel rail end cap and a 2 3/8-inch galvanized steel brace band.

Braces are required at all corners, gates, and changes in grade greater than 5 degrees.

**Wire:**

The fence shall be a four-strand wire fence. The top three strands shall be barbed wire and the bottom strand smooth.

All wire must be galvanized, 12.5-gauge wire with minimum strength of 70,000 pounds per square inch. Wire shall not be kinked or nicked.

Wire shall be taut with due consideration for contraction and expansion.

All line wires shall dead-end on corner, turn, or line-brace posts with wire ends wrapped twice around the steel post and twisted back at least three full twists on the stretched wire. The first couple twists around the stretched line wire shall be at approximately a right angle to the line wire for maximum security.

Stretch and clip fence wire, one strand at a time, between brace points. Stretch each wire uniformly with the proper tools. Do not stretch wire with a vehicle. Wires shall be tight and secure.

Set and lay out wire on the post side that will receive the greatest pressure from livestock (i.e., wire should be on the post side opposite the stream).

Space wires as illustrated on the Drawings (Sheet D4).

**Staples and Fasteners:**

Fence wire will be secured to steel brace posts with two complete wraps.

Fence wire shall be securely fastened to stays using galvanized staples 1.5 inches long (72 per pound). Staples shall be twisted so that both legs are in contact with the wire before being driven. Drive staples into fence stays on an upward angle when the wire tension is up and on a downward angle when the wire tension is down (reducing the potential for wire tension to pull the staple out).

Staples are to be driven nearly flush with the stay as possible without damage to the wire.

Fasteners or wire clips for use with steel T-posts shall be 12-gauge or heavier zinc coated wire. Fasteners shall be snug enough to prevent the wire from moving vertically on the post.

**Alignment:**

Fence shall be installed close to the alignment shown on the Drawings (Sheet S1). Adjustments are permitted in order to avoid natural barriers, bedrock, the removal of large trees, or similar. Adjustments must be kept within 20 feet of the design alignment or as approved by Project Sponsor.

Landowner shall approve staked fence alignment prior to fence installation.

**5.11.2      *Removable Fence Sections (Water Gate)***

**Description:**

This work involves construction of removable fence sections at the site. Removable fence sections are located where livestock fence crosses the stream channel. Removable fence sections allow livestock managers to remove these portions of fence during certain times of the year to minimize fence damage by flooding, ice, etc. Refer to the Drawings (Sheet S1) for the locations of removable fence sections. Construct removable fence sections as shown on Sheet D4 of the Drawings and as described below.

No measurement shall be made for removable fence sections, and payment shall be incidental to this bid item.

**Materials:**

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

Materials include:

- 16-foot by 3-foot by 1/4-inch steel hogwire panels
- 3/16-inch steel cable
- 1/2-inch cable tensioner
- 1/2-inch spring snap link
- 1/2-inch chain
- 1/2-inch connectors
- 3-8-inch wire rope clip

**Execution:**

Work includes, at a minimum:

- Contractor shall refer to the Drawings (Sheet S1) for removable fence section locations.
- Contractor shall ensure that steel end posts are installed near the top of bank on both streambanks, but not placed within the existing channel (locations will be staked by Project Sponsor's Representative). End posts shall be securely anchored such that they have capacity to support removable fence sections.
- Contractor shall install removable fence sections as shown on Sheet D4 of the Drawings.
- Steel posts, wire, and diagonal steel braces shall be installed in the same manner as livestock fence.
- Hogwire panels shall be attached to steel cable using 1/2-inch spring snap links using a minimum of 3 snap clips per panel.
- Contractor shall wrap 1/2-inch chain around end post and connect steel cable to cable tensioner using a 3/8-inch wire rope clip. Cable tensioner shall be connected to chain using 1/2-inch connectors.

**Measurement:**

Measurement for Bid Item 11 – Livestock Fence with Removable Fence Sections will be by the actual number of LF (to the nearest LF) of fence, including removable fence section length, installed, as determined by the Project Sponsor's Representative.

**Payment:**

Payment for Bid Item 11 – Livestock Fence with Removable Fence Sections will be based on the unit price bid per LF as shown on the bid form. This price shall constitute full compensation for all labor, equipment, tools, supplies, materials, and incidentals necessary to accomplish the work.

## 5.12 Bid Item 12 – Livestock Crossings and Rock Ford Installation

### Applicable WA Standard Specifications:

N/A

### Description:

This work consists of constructing 2 livestock crossings and a rock ford at the locations shown in the Drawings (Sheet S1). Depth of finished crossing shall be 24 inches. Haul of excess soils generated from crossings and rock ford shall be incidental to this Bid Item and shall be accounted for by the Contractor as appropriate in their bid.

### Materials:

- Contractor shall provide all labor, equipment, tools, additional materials, and incidentals necessary to complete the work as specified.
- 3 inch to 6 inch rock,  $D_{50} = 4.5$  inches.
- 12-inch minus rock

### Execution:

Work includes, at a minimum:

- Contractor shall refer to the Drawings (Sheet S1) for livestock crossing locations.
- All construction activities shall occur during dry conditions.
- BMPs shall be implemented as necessary and in accordance with Bid Item 3 – Storm Water Best Management Practices to ensure that sediment is not discharged into Asotin Creek during the work.
- One crossing in live water shall be permitted at the location of Livestock Crossing 1 (Sheet S7). Livestock Crossing 1 does not require any construction below the ordinary high-water mark.
- Livestock crossings and rock ford shall be constructed in a manner that meets the requirements specified herein and as shown on the Drawings (Sheet D3).
- Contractor shall excavate crossing to a depth of 24 inches.
- Contractor shall compact subgrade below excavation to ensure adequate base for rock.
- Contractor shall place and compact 12-inch minus rock and compact to achieve a layer 18 inches thick in compacted thickness.
- Contractor shall place and compact 3-inch to 6-inch rock and compact to achieve a layer 6 inches thick in compacted thickness.
- Rock fill shall be adjusted to a moisture content that is suitable for compaction. Operate vibratory trench roller (or other approved compaction equipment) over the full width of each 6-inch lift with three complete passes minimum or until visual displacement ceases.
- Contractor is responsible for ensuring that compaction requirements are met as specified herein. Testing and results will only be required at Project Sponsor's request.
- Grade livestock crossings and rock ford to match existing ground as closely as possible without leaving areas subject to erosion or degradation. Starting livestock crossings and rock ford elevations shall match the existing floodplain elevation or as approved by

Project Sponsor. On the upstream and downstream ends of livestock crossings and ford, cuts in streambed, if necessary, shall taper to existing ground at a maximum slope of 2:1 (horizontal:vertical).

- Finished grade of livestock crossings and rock ford shall exactly match existing channel bottom slope.
- Contractor shall separate and sort generated material into usable and non-usable stockpiles if necessary.
- Usable material shall be sorted into:
  - Topsoil for surfaces of rock/soil berm (see Specification and Drawings for depth of topsoil required). Topsoil shall consist of natural, friable soil that is representative of soils in the vicinity that produce heavy vegetation growth and is reasonably free from underlying subsoil, clay lumps, cobbles or boulders, noxious weeds, litter, brush, and matted roots.
  - Rock/soil fill for compacted areas of rock/soil berm (Bid Item 13). Rock/soil fill shall be structural, compactable material. Rock/soil fill shall have rocks up to a maximum size of 6 inches, with a fines content that is suitable for compaction.
- Excavated material shall be used as fill material (as sorted above) rock/soil berm (Bid Item 13) or as designated by Project Sponsor. Unsuitable material (if any) shall be disposed of at a Project Sponsor-approved location out of the 100-year floodplain. Haul of excess soils or materials generated from low-water crossings to other project locations shall be incidental to this bid item and shall be accounted for by Contractor as appropriate in their bid.

**Measurement:**

Measurement for Bid Item 12 – Livestock Crossings and Rock Ford will be by the actual number of LF (to the nearest LF) of Livestock Crossing installed, as determined by Project Sponsor’s Representative.

**Payment:**

Payment for Bid Item 12 – Livestock Crossings will be based on the unit price bid per LF as shown on the bid form. This price shall constitute full compensation for all labor, equipment, tools, supplies, materials, and incidentals necessary to accomplish the work.

**5.13 Bid Item 13 – Rock/Soil Berm**

**Applicable WA Standard Specifications:**

N/A

**Description:**

This Bid Item consists of providing materials for and construction of rock/soil berm at the specified location on the Drawings (Sheet S1). Rock/soil berm construction involves excavation, backfill and compaction, and all other tasks associated with completing the Work as specified. The rock/soil berm is designed to protect the existing home located within the Site from flooding.

**Materials:**

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



- Structural fill shall be a pit run (crushed basalt ranging in size from 1 inch to 6 inch with a minimum of 15% fines). Excavated material from onsite generated at the side channel reshaping (Bid Item 7) and Livestock Crossings (Bid Item 12) may also be used if it meets these size and compaction requirements.
- Topsoil shall consist of natural, friable soil that is representative of soils in the vicinity that produce heavy vegetation growth and is reasonably free from underlying subsoil, clay lumps, cobbles or boulders, noxious weeds, litter, brush, and matted roots. Excavated material generated on site may be used if it meets these requirements.
- Rock armoring shall be angular and have a  $D_{50} = 6$  inches.

**Execution:**

Work includes, at a minimum:

- Contractor shall refer to the Drawings (Sheet S1) for approximate location and length of rock/soil berms. Exact location will be as staked by Project Sponsor's Representative.
- Install Rock/Soil Berm in a manner that meets the requirements specified herein and as shown on the Drawings (Sheet D5).
- Contractor shall place and compact structural fill and compact until the final top elevation is approximately 12 inches above surrounding ground elevation.
- Rock fill shall be adjusted to a moisture content that is suitable for compaction. Operate vibratory trench roller (or other approved compaction equipment) over the full width of each 6-inch lift with three complete passes minimum or until visual displacement ceases.
- Contractor is responsible for ensuring that compaction requirements are met as specified herein.
- Rock/soil berm shall taper to existing ground at a slope of 2:1 (horizontal:vertical).
- 4 inches of topsoil shall be loosely placed and distributed to a uniform thickness to facilitate revegetation on berm top and side slope facing the home.
- 12 inches of rock armoring shall be placed on the channel facing side.
- Contractor shall hydroseed and mulch over topsoil in accordance with Bid Item 17 – Hydroseeding and Mulching.

**Measurement:**

Measurement for Bid Item 13 – Rock/Soil Berm will be by the actual number of LF (to the nearest LF) of rock/soil berm installed, as measured by the Project Sponsor's Representative.

**Payment:**

Payment for Bid Item 13 – Rock/Soil Berm will be based on unit price bid per LF 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.

**5.14 Bid Item 14 – Post Assisted Log Structures (PALS)**

**Applicable WA Standard Specifications:**

N/A

**Description:**

This Work consists of providing materials for and constructing PALS in the floodplains. PALS installation includes procuring logs, moving and placing logs, driving posts, and all other tasks associated with PALS installation. PALS consist of densely packed logs and slash pinned by posts. This wood combination helps keep slash in place and traps fine sediment on the floodplain.

Refer to the Drawings (Sheets S6) for approximate PALS locations. Final locations shall be adjusted and approved by the Project Sponsor's Representative.

**Materials:**

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

- Key logs (minimum of 3 per structure) should be:
  - 4-inch minimum diameter.
  - A maximum of 8 feet in total length.
  - Rootwad optional but preferred.
- Slash.
- Posts (minimum 8 per structure) should be:
  - 3-inch minimum diameter.
  - A minimum of 6.5 feet in total length.
- All materials are subject to approval by the Project Sponsor.

**Execution:**

Work includes, at a minimum:

- Contractor shall refer to the Drawings (Sheets S6) for approximate PALS locations. Exact installation locations shall be as staked by the Project Sponsor's Representative.
- Refer to the Drawings (Sheet D6) for typical PALS design.
- Install PALS perpendicular to high flow paths, with a maximum structure length of 15 feet.
- Drive posts at angles to pin material together and to the streambank. Posts shall extend a minimum of 3.0 feet below the ground surface.
- Densely pack native slash, sticks, branches, and small logs around key logs.

**Measurement:**

Measurement for Bid Item 14 – Post Assisted Log Structures (PALS) will be by the actual number of PALS installed, as measured by the Project Sponsor's Representative.

**Payment:**

Payment for Bid Item 14 – Post Assisted Log Structures (PALS) will be based on the unit price bid for each PALS installed as shown on the Bid Form.

## 5.15 Bid Item 15 – Off Channel Habitat Area

### Applicable WA Standard Specifications:

N/A

### Description:

This Bid Item includes excavation and grading of off-channel habitat area 1 as shown on the Drawings (Sheets S1, S4, and D1). Off-channel habitat areas are intended to accept flow from the main channel during a typical annual flood event and backwater during moderate flows. These areas offer water storage and habitat for aquatic organisms. Cooperation with Bid Item 16 – Floodplain Roughness will be required.

Off-channel habitat area construction involves excavation to the grades shown on the Drawings, placement of slash (Bid Item 16), and hydroseeding and mulching (Bid Item 17). Off-channel habitat area will be staked by Project Sponsor's Representative prior to excavation.

Construction of this Bid Item involves excavation of existing ground within the historical floodplain and generates, as a result, material that may be used elsewhere on the Site. Haul of excess soils generated from off-channel habitat shall be incidental to this Bid Item and shall be accounted for by the Contractor as appropriate in their bid. **Project Sponsor or Project Sponsor's representative must be present during off-channel habitat construction.**

### Materials:

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

### Execution:

Work includes, at a minimum:

- Off-channel habitat area construction shall follow cross-sections and notes on the Drawings (Sheet S4).
- Contractor shall work with Project Sponsor's Representative to vary the off-channel habitat depth to achieve a non-planar surface with elevation diversity.
- Reuse excavated material, if suitable and not contaminated with undesirable vegetation to construct Bid Item 12 Livestock Crossings and/or Bid Item 13 – Rock/Soil Berm. Unsuitable material shall be disposed of at a Project Sponsor-approved location out of the 100-year floodplain. Haul of excess material generated by this bid item to other project locations shall be incidental to this bid item and shall be accounted for by Contractor as appropriate in their bid
- Upon completion of off-channel habitat area, Contractor shall spread slash in accordance with Bid Item 16 – Floodplain Roughness across any disturbed areas or as directed by Project Sponsor.
- Contractor shall hydroseed and mulch in accordance with Bid Item 17 – Hydroseeding and Mulching.

### Measurement:

Measurement for Bid Item 15 – Off-Channel Habitat will be by the actual number of square feet (to the nearest 100 SF) of off-channel habitat constructed, as measured by the Project Sponsor's Representative..

**Payment:**

Payment for Bid Item 15 – Off-Channel Habitat will be based on the unit price bid per SF as shown in 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.

**5.16 Bid Item 16 – Floodplain Roughness and Microtopography**

**Applicable WA Standard Specifications:**

N/A

**Description:**

This bid item includes the placement of woody material (slash) and fine grading of disturbed areas, within the Work Limits shown on Sheet S6 of the Drawings, including off-channel habitat area, temporary access road, and excavation for structures. Disturbed areas consist of those locations where equipment and vehicles have driven or tracked over existing ground and altered the existing ground surface or existing native vegetation. Contractor shall place brush, without burial, within those disturbed areas.

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 are incidental to the Work, and no separate payment will be made unless specifically provided for elsewhere in the Contract Documents.

Contractor shall leave disturbed areas in the Project Site with an irregular surface with small ridges and furrows. This treatment creates areas to trap seed and organic matter for new plant growth and create variability in the landscape. 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 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. Refer to Detail 3 on Sheet D1 of the design Drawings.

Contractor shall place salvaged logs, woody material, and brush to create additional roughness in the disturbed areas and provide shelter and organic matter for reestablishing plants. Small woody material consists of salvaged tree and shrub trunks and tree and shrub branches 3 to 8 inches in diameter and longer than 8 feet. It also includes shrub clumps longer than 8 feet. Brush consists of all tree and shrub parts smaller than 3 inches in diameter. These materials are available from material stockpiled off site, no more than 30 miles away (See Section 4 – Incidentals). Logs greater than 6 inches in diameter that are surplus to those needed for Bid Item No. 9 and 10, Habitat Structures and Key Structures, may also be used for floodplain roughness.

Contractor shall place small woody material (small logs) at a rate of approximately 100 pieces per acre in those disturbed areas within the Work Limits shown on Sheet S6 of the Drawings. Woody material shall be spaced at a typical distance of 20 feet from each other.

Procurement of slash is incidental to this bid item. See Section 4 for details on slash.

**Materials:**

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

**Execution:**

- Install slash without burial in the disturbed areas to cover 50% to 75% of the disturbed area.
- Leave disturbed areas at the Project Site with a finished irregular surface including ridges and furrows as described above.
- Install small woody material (small logs) in disturbed areas within the floodplain at a rate of 100 pieces per acre and to be spaced 20 feet apart.
- Install brush without burial in the disturbed areas to cover 50% to 75% of the disturbed area.
- Use woody material stockpiled as specified in Section 4 - Incidentals.

**Measurement:**

Measurement for Bid Item 16 – Floodplain Roughness will be by the actual number of SF (to the nearest 100 SF) of disturbed area installed with slash, as measured by the Project Sponsor’s Representative.

**Payment:**

Payment for Bid Item 16 – Floodplain Roughness will be based on the unit price bid per SF as shown in 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.

**5.17 Bid Item 17 – Hydroseeding and Mulching**

**Applicable WA Standard Specifications:**

Division 8-02.3(9) Seeding, Fertilizing, and Mulching

Division 9-14 Erosion Control and Roadside Planting

This Bid Item includes all Work necessary to revegetate all areas disturbed as a result of the Work. Under this Bid Item, Contractor shall perform seeding in those areas indicated on the Drawings and specified above. All Work shall be completed in accordance with the Washington Standard Specifications, Divisions 8-02 and 9-14, and as specified herein.

**Description:**

Work required under this Bid Item includes Hydroseeding operations of all disturbed areas, as specified herein.

The estimated floodplain area required for seeding based on the Drawings is listed on the Bid Form. Additional area may be incorporated based on disturbed areas due to construction activities and equipment tracking.

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. Contractor shall provide copies of Washington State Department of Agriculture (WSDA) test results and the seed dealer's license and endorsements.

Hydroseeding shall occur between September 15<sup>th</sup> and October 15<sup>th</sup>.

**Materials:**

- Hydroseed mix shall provide a slurry for an even application over the entire area to be hydroseeded.

Hydroseed Mix:

- Native seed mix as shown in Table 1. Variations to this mixture may be used with prior approval by Project Sponsor.
- Mulch – such as Enviroblend, 70 wood:30 paper or Hydrostraw, 80% straw
- Fertilizer NPK 10-20-20+6 MgO
- Tackifier
- Water

**Table 1. Native Seed Mix and Application Rate**

Species	PLS* lbs./acre	*Substitutes
'Secar' Snake River Wheatgrass ( <i>Elymus wawawaiensis</i> )	6	*Blubunch wheatgrass ( <i>Pseudoroegneria spicata</i> )
'Sherman' Big Bluegrass ( <i>Poa secunda</i> )	2	
Thickspike Wheatgrass ( <i>Elymus lanceolatus</i> ssp. <i>lanceolatus</i> )	6	*Streambank Wheatgrass ( <i>Elymus lanceolatus</i> ssp. <i>lanceolatus</i> )
Slender Wheatgrass ( <i>Elymus trachycaulus</i> )	1	

\*PLS = Pure Live Seed with germination potential

\*\*Seeding rate shall be doubled for broadcast applications

**Execution:**

- Coordination with Bid Item 4 – Temporary Construction Access Roads to ensure that access roads are decompacted as necessary prior to seed application.
- Contractor shall apply hydroseed and mulch to all disturbed areas, including, but not limited to habitat structures, key structures, staging areas and access roads, rock/soil berm, brush fascine, and off channel habitat area.
- Contractor shall apply hydroseed and mulch to the upland area as shown on Sheet S5 in the Drawings.
- Perform native seed operations by hydroseeding at a rate shown in Table 1.
- If site access limits Contractor's ability to apply seed via HydroSeeding, broadcasting may be substituted with Project Sponsor approval.
- Coordinate with other construction activities.



- Contractor shall store seed in a secure location protected from rodents, birds, etc.
- All HydroSeeding shall occur between September 15<sup>th</sup> and October 15<sup>th</sup>.
- Provide all labor, tools, equipment, materials, and incidentals necessary to complete the Work as specified.

**Measurement:**

Measurement for Bid Item 17 – Hydorseeding and Mulching will be by the actual number of SF (to the nearest 100 SF) of seed provided and installed, as measured by Project Sponsor’s Representative.

**Payment:**

Payment for Bid Item 17 - Hydroseeding and Mulching will be based on the unit price bid per SF as shown in the Bid Form of the Contract Documents. This unit price shall constitute full compensation for all labor, equipment, tools, supplies, materials, and incidentals necessary to accomplish the Work.

## **Section 6     References**

State of Washington Department of Ecology. 2019. Stormwater Management Manual for Eastern Washington, August.

U.S. Environmental Protection Agency (USEPA). 1992. Storm Water Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practices, October.