

TECHNICAL SPECIFICATIONS

SECTION 01010

EQUIPMENT AND WORK REQUIREMENTS

1.0 GENERAL.

1.1 The intended use of the equipment, materials, and labor is to preserve an archaeological site located on the bank of the Columbia River by covering the site with rockfill materials, cover the rockfill with topsoil, and cover the topsoil with biological remediation materials to stabilize the topsoil. Work will be directed by the Contracting Officers Representative (COR).

1.2 Pre-work conference and safety meeting shall be held at the beginning of the work period at a location designated by the COR.

1.3 The COR reserves the right to remove unsatisfactory or unsafe equipment and/or operators from the site. The Contractor shall replace the rejected equipment or operator within one work shift.

2.0 WORK LOCATIONS.

2.1 The archaeological work area is at Columbia Park located along the bank of the Columbia River in Kennewick, Washington. The rockfill borrow site is located along the bank of the Snake River approximately 6 miles downstream from Ice Harbor Dam.

2.2 Ingress and egress to work areas will involve travel over public highways, roads, and streets. Any violations of state and local traffic laws shall be borne by the Contractor, not the Government.

2.3 Traffic Control. The Contractor shall develop and implement a traffic control plan for work at the Columbia Park site. The plan shall comply with Washington State Department of Transportation, Standard Plans for Road and Bridge Construction. All signs, traffic control devices, and personnel to conduct traffic control shall be furnished and supervised by the Contractor. Before work begins at the site the plan shall be submitted to the Contracting Officer for review and acceptance.

3.0 Deleted.

DOI 02347

4.0 SAFETY.

4.1 Accident Prevention. In accordance with Contract Clause: ACCIDENT PREVENTION the Contractor shall provide and maintain work environments and procedures which will safeguard the public, Government personnel, Contractor personnel, property, materials, supplies, and equipment exposed to Contractor operations and activities.

4.1.1 The Contractor shall comply with the U.S. Army Corps of Engineers Safety and Health Requirements Manual, EM 385-1-1, dated September 1996.

4.1.2 Whenever the Contracting Officer detects any noncompliance with these requirements or any condition which poses a serious or imminent danger to the health or safety of any personnel, the Contracting Officer will notify the Contractor and request immediate initiation of corrective action. Lack of notice from the Contracting Officer does not relieve the Contractor from

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compliance requirements and responsibility. After receipt of notice from the Contracting Officer, the Contractor shall immediately take corrective action. Such notice, when delivered to the Contractor at the site of the work, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time or for additional costs or damages by the Contractor.

4.2 Accident Prevention Plan. Before commencing any work on site, the Contractor shall submit an Accident Prevention Plan for the Contracting Officer's review and acceptance. Paragraph 01.A.07 of EM 385-1-1 reflect requirements and guidelines for preparing accident prevention plans.

4.3 Hazard Analysis. Prior to beginning each major phase of work, an activity Hazard Analysis shall be prepared by the Contractor in accordance with paragraph 01.A.09 and Figure 1-1 of EM 385-1-1.

4.4 Subcontractors. Compliance with the accident prevention and safety requirements by subcontractors will be the responsibility of the Contractor.

5.0 EQUIPMENT. The following listing contains general specifications regarding the equipment that will be required to perform contract work. It should be fully understood that all equipment may not be required on the start date. The COR will direct when each piece of equipment will be mobilized and the particular work site to which the equipment shall be delivered. Further clarification will be provided to the Contractor prior to mobilization. Operators shall be fully qualified for the piece of equipment and must demonstrate operating capabilities to the satisfaction of the COR. The COR may dismiss any operator for incompetence or unsatisfactory operation and request a replacement operator.

5.1 Helicopter Unit. The helicopter unit shall consist of a helicopter with pilot, dump bucket, and support personnel to assist helicopter operations with loading and unloading the dump bucket. One (1) helicopter capable of lifting approximately 3,000 pound load with lifting cable and hook attached to the belly of the helicopter to hook onto and lift the dump bucket. The dump bucket shall be capable of containing a minimum 3/4 cubic yard of rock and topsoil materials. Dump bucket shall be suspended by the lift line at least 100 feet below the helicopter. If rotor wash creates excess wave action and noise vibrations in the water a longer lift line will be required. The number of personnel to support the helicopter operations shall be determined by the Contractor.

5.2 Wheel loader. One (1) rubber tired front-end loader, minimum bucket capacity of 3.0 cubic yards with teeth, minimum of 130 Hp. Loader will operate at the rockfill borrow site located downstream from Ice Harbor dam.

5.3 Excavator/loader. One (1) excavator/loader, minimum bucket capacity of 1.0 cubic yards with thumb. Excavator/loader will operate at the Columbia Park work site.

5.4 Double Axle Dump Trucks. Highway end-dump trucks, minimum 12 cubic yard capacity, double axle, with rocklips. The Contractor shall be prepared to furnish as many as three dump trucks, depending on the cycle time of the trucks between the rockfill borrow site and the Columbia Park work site. The number of trucks to be furnished will be directed by the COR and it may vary from day to day.

5.5 Dump Truck Trailer. One, highway legal, 10 cubic yard trailer (pup) that is pulled behind one of the dump trucks. Use of the pup will be directed by the COR and it may vary from day to day.

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5.6 Semi end dump trucks, 20 cubic yard capacity. The Contractor shall be prepared to furnish as many as two semi trucks, depending on the cycle time of the trucks between the rockfill borrow site and the Columbia Park work site. The number of trucks to be furnished will be directed by the COR and it may vary from day to day.

6.0 ROCKFILL. Rockfill shall be obtained from the Government-owned stockpiles at the borrow site. The rock is former bedrock material which was excavated from the bottom of the Snake River during a previous dredging project. Rockfill shall be selected from the stockpiles to obtain a well graded distribution of aggregate diameters not to exceed 24 inches in diameter.

6.1 Placing Rockfill. Dump trucks shall deliver rockfill materials to the rock stockpile at Columbia Park. From the stockpile location, the rock shall be mixed with topsoil and loaded into the dump bucket and transported by helicopter to the archaeological site. Mixing of the soil with the rock shall be accomplished by the excavator/loader when loading the dump bucket. At the site the bucket shall be set on the ground or newly placed rock and the load released. The helicopter shall raise the bucket leaving the rock in place. Some spreading of the rock as it leaves the bucket is recommended to minimize the piling of each bucket load. Placing of rock should begin at the top of the slope and proceed downward toward the river. Not all of the rock has to be in place before the placement of the final topsoil cover begins.

7.0 TOPSOIL. Topsoil shall be procured from a private source and delivered by the Contractor to the work site at the times and in the quantities directed by the COR. The dump trucks described in paragraph 5.4 and 5.6 shall not be used for delivering topsoil unless the COR has released the trucks from hauling rockfill and they are not being paid for by the Government at the hourly rate in Item No. 0004AB and 0006AB. The topsoil shall be a natural, silty sandy soil, or silt, characteristic of representative soils in the vicinity that produce heavy growths of crops, grass, or other vegetation. Topsoil shall be free from roots, stones, and other materials, that hinder grading, placing of bioremediation materials, planting of tree cuttings, and maintenance operations, and free from objectionable weed seeds and toxic substances. Weight tickets of the truck empty and the truck loaded shall accompany each load of topsoil to the point of delivery and given to the COR at the delivery site. In the event the COR or a representative for the COR is not at the site at the time of delivery, the weight tickets shall be delivered or mailed to the Contracting Officer within 3 days after delivery of the topsoil. A possible source for topsoil is McDonald's Excavating, Tri-Cities, WA. Point of contact is Steve McDonald (509) 627-1153.

7.1 Placing of Topsoil. Soil shall be placed over the rockfill to provide a minimum of 6 inches of cover between the rock and the bottom of the coir fiber logs. After placement of a coir fiber log, additional soil shall be placed to level the ground surface on the land side of the log. Some hand spreading will be necessary to shape the soil into a terraced configuration. After the erosion control blankets are in place another 2 inches of topsoil shall be spread over the blankets.

8.0 BIOREMEDIATION MATERIALS. The bioremediation materials shall be procured and delivered by the Contractor to the work site. Invoices of the procured materials shall be delivered to the Contracting Officer.

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8.1 Coir Fiber Logs. Coir fiber logs shall be made of 100% coir (coconut) fiber and bound by coir fiber netting. The logs shall have a minimum tensile strength 55 pounds per yarn when dry or 40 pounds when wet. The logs shall weigh a minimum of 5 pounds per linear foot. The logs shall have a diameter of 12 inches. Bon Terra America, 355 W. Chestnut St., Genesee, Idaho, 83832, telephone 1-800-882-9489 makes coir fiber logs (product name is "Biolog") that meets these requirements.

8.2 Erosion Control Blankets. Erosion control blankets shall be made of a 100% blend of coir fiber twine woven into a high strength organic geotextile grid. The blankets shall weigh a minimum of 1.3 pounds per square yard. The blankets shall be a minimum thickness of 0.3 inches, an open area of 50%, and a C Factor of 0.002. The blankets shall be able to withstand flow velocities up to 11 feet per second. Bon Terra (800)-882-9489 makes erosion control blankets (product #CF7) that meet these requirements.

8.3 Live Plants.

8.3.1 Willow and Cottonwood Cuttings. Live willow and cottonwood cuttings shall be cut from living coyote willow plants and from live cottonwood plants. Live cuttings shall be 30 to 40 inches in length and have a minimum diameter of 1/4 inch and a maximum diameter of 3/4 inch.

8.3.2 Willow and Red Osier Dogwood Posts. Live willow and red osier dogwood posts shall be 5 to 6 feet in length and have a minimum and maximum diameter of 1/2 to 2 inches.

8.3.3 All cuttings and posts shall have at least two lateral buds or terminal bud scars in the top 12 inches of the plant. Cuts on the stem shall be made at approximately a 45 degree angle. Cuts shall be made with smooth, sharp tools (not sawn). Plant material at the harvest sites shall be handled with care to avoid bark stripping and trunk wood splitting. All side branches shall be cleanly removed to approximately 1/4 inch from the live post. During transportation to the project site, the live cut plants shall be covered with a tarp or burlap material and kept wet with water. Bases shall be soaked for 24 hours prior to planting. A possible source for plants is Wildlands, Inc. 1941 Saint St., Richland, WA, 99352, telephone 800-288-8328.

8.4 Wood Stakes. Stakes shall be nontreated wood. Stakes for securing erosion control blanket shall be nominal 1 by 2 by 14 inches long cut diagonally along the 14 inch length. Stakes for securing coir fiber logs shall be nominal 2 by 4 by 36 inches long cut diagonally along the 36 inch length. Stakes shall be sufficiently free of knots so that stakes will not break or split when driven into the ground.

8.5 Quantity of Bioremediation Materials. The estimated quantities of bioremediation materials is as follows:

<u>Quantity</u>	<u>Item</u>
1250 linear feet	Coir fiber logs (biologs)
1200 sq. yds.	Erosion control blanket
1300 each	14 inch long 1" by 2" stakes for erosion control blanket
850 each	36 inch long 2" by 4" stakes for coir fiber logs
8000 linear feet	Coconut fiber twine for securing biologs into place
1200 each	Willow posts

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1200 each
 900 each
 400 each

Red osier dogwood posts
 Willow cuttings
 Cottonwood cuttings

9.0 PLACEMENT OF BIOREMEDIATION MATERIALS.

9.1 Biolog Placement. The Contractor shall place the biologs as shown on the drawings to create a series of terraces. The biolog at the toe of the fill shall be placed before any rockfill material is placed. As the rock is transported and placed behind the toe biolog, the Contractor shall hand place rock on the river side of the toe biolog. The remaining biologs shall not be placed until the rock is in place and covered with soil. All biologs shall be secured in place with stakes and twine lashed between the stakes and over the biologs. Stakes shall have a saw kerf or be notched about 1 inch below the top of the post to facilitate lashing with the coconut fiber twine or twine may be secured in place with a heavy duty staple driven into each stake. Staple shall not damage twine. A maximum of 10 inches of stake shall be exposed for stakes on the river side of the biologs. The landward stakes shall not exceed the height of the secured biolog. The driving of pilot holes may be necessary to insure embedment of the wooden stakes. Pilot holes should be driven with steel rods.

9.2 Erosion Control Blanket. Blankets shall be placed over the biologs and topsoil. Blankets are supplied in rolls. Begin placement on the downstream end of the site and unroll in the upstream direction. Joints between ends of rolls shall be lapped in the direction of river flow. Overlap at edges and end joints shall be a minimum of 6 inches. Blankets shall have intermediate staking on a frequency of one stake per square yard of surface area. Stakes shall be notched slightly to grip the blanket. Blanket stakes shall not extend more than 2 inches above top of blanket.

9.3 Plantings.

9.3.1 Willow and red osier dogwood posts shall be placed over the underlying erosion control blanket and before the next higher biolog is placed. These posts shall be in a horizontal position. The posts shall be spaced approximately 3 feet on center. Every other post shall be alternated between willow and dogwood.

9.3.2 Willow and cottonwood cuttings shall be planted after the 2 inch soil cap has been placed and graded. Planting shall begin on the top terrace and proceed downward terrace to terrace until all the cuttings have been planted. Each plant shall be pushed into the soil or into a guide hole created by a pointed metal rod. Lightly tamp the soil around each plant to close voids created during planting.

10.0 Deleted.

11.0 ADDITIONAL MATERIALS AND EQUIPMENT. The Contractor shall furnish additional materials and equipment to the work site to assist with contract work. These items do not need to be new but they must be in good condition. After completion of work this equipment shall remain the property of the Contractor and shall be removed from the project site. Other equipment may need to be furnished as the work progresses.

<u>Quantity</u>	<u>Item</u>
1 ea	Gasoline powered water pump with manifold to supply water to two hoses
4 pair	Hip waders for work crew
4 ea	Life jackets for work crew

