

## EOI-300-296-ERS Attachment 1 – Soil Removal Work Scope

### 300-296 Soil Removal Contract Work Scope

The 300-296 SRP will provide equipment, systems, and facility modifications to the 324 Building to remove debris and grout within the 324 Building B Cell, remove the B Cell floor, and remotely excavate soil from B Cell. Structural modifications will be performed to support B Cell prior to commencing remote excavation of the underlying contaminated soil.

*Note: The structural modifications will not be part of this work scope.* Additionally, facility modifications will also be performed to support installation of the remote excavation equipment.

All operational activities will be conducted remotely via cameras and lighting that will require installation in A, B, C, and D Cells, as well as the airlock. Equipment operating stations will be located in a control trailer outside of the 324 Building. The B Cell crane will be available for use on a limited basis. Manipulators will be available for operational activities from the gallery to aid in handling and connecting hydraulic hoses, water delivery hoses, etc.

B Cell will be fitted with engineered devices called Remote Excavator Arms (REAs) and end effector tools (e.g., shear, hydraulic hammer, excavator bucket). The REAs are an adaptation of commercially available excavation equipment mounted on an engineered platform and fitted with controls that allow remote operation of the excavators. A saw will be mounted on an engineered platform that will allow remote operation of the saw to cut through the B Cell floor to allow the concrete floor to be removed and packaged into waste bins. A transfer mechanism will be installed in the B Cell doorway for movement of waste bins between B Cell and the Airlock.

The existing grout and debris will be removed from B Cell and placed into waste bins (each capable of holding approximately 14 ft<sup>3</sup> of material) using an REA and end-effector tools. The transfer mechanism will be used to move the waste bins from B Cell into the Airlock where an existing crane will be used to relocate the waste bins to A Cell within the 324 Building. The B Cell concrete floor with stainless steel liner will be remotely sectioned using the saw and placed into waste bins using an REA. These waste bins will also be relocated to A Cell within the 324 Building.

After the B Cell floor is removed, the REAs will be used to remotely excavate soil approximately 2 feet to either side of the expansion joint (20 in. from the cell wall) and up to a depth of approximately 10 feet beneath B Cell (equipment limitation). The excavation, which will extend beneath each of the B Cell walls, is focused on the removal of the highly radioactive soil beneath the expansion joint. The excavated soil will be placed in waste bins and the waste bins will be moved into the Airlock for dose measurement to determine disposition. After soil is excavated from underneath each of the B Cell walls, grout will be added to fill the excavation and provide structural stability before subsequently excavating beneath the next B Cell wall. Following removal of the soil underneath the B Cell expansion joint and walls, other highly radioactive soil will be remotely excavated as necessary to enable future open air remediation of the remaining contaminated soil, which will be performed by a separate project.

The more highly contaminated soil and debris will be relocated to A Cell, C Cell, and D Cell within the REC and grouted in place. These cells can store a maximum of approximately 273 waste bins. If the total volume of contaminated material exceeds available space in these cells, the excess material will be packaged in waste boxes, grout added to fill the void space, and

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the waste boxes transported to the Environmental Restoration Disposal Facility (ERDF). The total number of waste bins to be loaded is undetermined, but assumptions have been made that range from a minimum of ~280 bins to a maximum of ~600 bins.

The project scope also includes the utilization of a mockup of B Cell and the Airlock for equipment validation, training and qualifications for operations planned for the 324 Building during soil removal, and contingency/response planning during operations for any unplanned occurrences or challenges.

The period of performance is anticipated to start in October, 2017 with an overall project duration of approximately two years.

Contract work scope includes the following activities in the associated facility or area:

### 324 Mockup:

- Finalizing equipment installation procedures
- Finalizing equipment operating procedures
- Finalizing maintenance procedures
- Equipment installation training
- Equipment operations training
- Equipment maintenance training
- Simulation of floor grout removal
- Saw cutting of the Mockup of B Cell floor
- Qualifications training for equipment operators
- Videotaping of equipment operator qualifications training

### 324 Building:

- Gallery
  - Control Trailer installation
  - I&C and Electrical installation
  - Cameras and lighting installation
  - Rail System installation

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- Hydraulic Power Units installation
- B Cell Grouting System
- Airlock
  - Cell Dam installation
  - Waste Bin/Box Grouting System
  - A, C, & D Cell Grouting System
  - Radiation Assay Unit(s) installation
  - HVAC Dam installation
- 324 Building, inside B Cell:
  - Remote Excavator Arm(s) (REAs) System installation
  - Transfer Mechanism installation
  - Manipulator (MSMs) installation
  - Floor Saw installation
  - Tool(s) and hanger(s) installation
  - Water Delivery System installation
  - Support for Readiness activities
- Operations:
  - B Cell floor debris removal to support floor saw cutting
  - Saw cutting of B Cell floor
  - B Cell soil excavation and waste bin loading
  - Waste Box grouting
  - A, C, and D Cell grouting
  - B Cell grouting