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1.0 INTRODUCTION / BACKGROUND

The 300-296 Remote Soil Excavation Project is preparing to excavate highly contaminated soil from underneath B-Cell in the 324 building. The 324 building is a Hazard Category 2 Nuclear Facility located in the 300 Area of the U.S. Department of Energy (DOE) Hanford Site. The 324 building was constructed from 1963 - 1966 to support materials and chemical process research and development activities ranging from laboratory / bench-scale studies to full engineering-scale pilot plant demonstrations with radioactive materials. The 324 building is comprised of a shielded metallurgical facility (SMF), radiochemical engineering complex (REC), low level canyon, tank vault, cold canyon, cask handling area, maintenance shops, laboratory area, administrative offices, and building support systems.

The Heating, Ventilation and Air Conditioning (HVAC) system at the 324 Building is required to provide confinement ventilation for the facility and is deemed Safety Significant. The system is over fifty years old and is past its design life. The confinement ventilation requirements of the 300-296 project have highlighted the need to better understand the operation of the HVAC system and maximize its remaining life. This will require documented system flow, pressure and process control setpoint data which can be used to demonstrate the system can meet its safety function for the duration of the project.

This contract is issued for the performance of ventilation system evaluation and test services in support of CH2M Hill Plateau Remediation Company (CHPRC) work scope for the period January 2018 through June 2018. CHPRC is a prime contractor to the Department of Energy (DOE) and all work on this Statement of Work will be performed in support of the CHPRC contract with DOE.

2.0 DESCRIPTION OF WORK – GENERAL

This Statement of Work (SOW) addresses specific activities within the CH2M Hill Plateau Remediation Company (CHPRC) 300-296 Remote Soil Excavation Project. The Contractor will provide engineering services to the 300-296 Engineering organization. Work required by this SOW includes the following activities:

a. Review system design and safety bases to understand the HVAC system operational requirements. Prepare a Test Plan to functionally test the HVAC system. The Test Plan will address specific activities described in Section 3.0.
b. Prepare a Test Procedure to be used to perform the testing in the facility.
c. Support work package development to implement the Test Procedure in the facility.
d. Provide support during performance of the Test Procedure in the facility.
e. Prepare a Test Report to document the test results and provide a basis for future operation of the system.
f. Prepare a simplified analytical model of the building ventilation system.

3.0 DESCRIPTION OF WORK – SPECIFIC

The work scope for this activity includes the resources, material and/or equipment necessary to accomplish the CHPRC activities detailed in Task Descriptions below.
3.1 Task Descriptions

a. This task requires the review of facility ventilation system design documents and safety bases to fully understand the HVAC system operational requirements, and preparation of a Test Plan to evaluate the operation of the HVAC system in various operating configurations. The objective of the Test Plan is to determine which combination of supply fans, exhaust fans, damper positions and process set points will optimize system operation while satisfying the operational requirements of the system. The following variables, at a minimum, will be monitored and controlled during the testing:

- Number of operating supply and exhaust fans
- Damper positions
- Controller set points
- Door status (i.e., open or closed)
- Differential pressure across A-frame and final filters
- Adequacy of air flow through the facility
- Zone pressures
- Supply and exhaust plenum pressures

The Test Plan will define tests and provide the rationale for the method, extent, and sequence of planned testing; discuss relationships to other affected systems; address test controls to be applied; and identify review and approval requirements.

b. A detailed Test Procedure will be prepared to implement the test objectives described in the Test Plan, and will be written so that it can be executed in the facility. The purpose of the Test Procedure, once successfully executed, is to determine the optimal operating configuration of the facility that will support the needs of the Project soil removal activities. It will also generate data which can be used as a basis for making future changes to the HVAC system. The Test Procedure for the ventilation system shall be prepared in accordance with CHPRC Procedure PRC-PRO-EN-286, Testing of Equipment and Systems. This Task includes support during preparation of the Test Procedure work package development as well as support during the performance of the test. The Contractor supporting the development of the Test Plan and Test Procedure will not direct or perform work in the Facility and will serve in a consulting capacity.

c. A work package prepared by CHPRC personnel will require technical input to ensure testing is conducted properly to retrieve the necessary information to accurately determine the operating configuration of the system.

d. Attendance during performance of the Test Procedure to answer questions or provide expertise will be required. The Contractor supporting the performance of the Test Procedure will not direct or perform work in the Facility and will serve in a consulting capacity.

e. A Test Report will be prepared to document the results of the testing and to identify recommendations for improvement to system operation. The Test Report will be released as a CHPRC document.
f. A simplified analytical model of the Building 324 ventilation system will be prepared that can be used to predict the effect of changes in damper positions, airlock door position, and process set points. The model will incorporate the results of the system testing described in the Test Procedure.

3.2 Acceptance Criteria

Work products and services provided shall meet all applicable CHPRC procedures for control and review of work products and pertinent regulatory requirements, as required by this contract and incorporated provisions.

Travel related to work activities contained in this SOW will only be undertaken with prior authorization by the Buyers Technical Representative (BTR).

3.3 Special Requirements

There are no special requirements.

3.4 Organizational Interfaces

The Contractor shall interface with the CHPRC BTR on technical issues and the CHPRC Contract Specialist (or designee) on contractual issues.

- Buyer’s Technical Representative (BTR) – Sam E. Wajeeh 376-1264
- Technical Point of Contact - Daniel Vitaletti 376-1357
- Project Manager – Michael J. Jennings 372-1502

3.5 Work Not Included

The Contractor will serve in a consulting role as a “subject matter expert” and will not physically manipulate work or serve as a Test Director. Tests performed under a work package will be performed by CHPRC personnel or authorized representatives.

3.6 Buyer Furnished Materials and Equipment

Not Applicable.

3.7 Site Conditions and Known Hazards

There are no site conditions and/or known hazards.

3.8 Site Coordination Requirements

There are no site coordination or interface requirements.

4.0 TECHNICAL REQUIREMENTS

Contractor will perform in accordance with the terms and conditions of this contract, CHPRC internal policies and procedures, and quality assurance provisions, including safety programs, laws, orders, permits, rules, confidentiality of information and intellectual property safeguards.

5.0 PERSONNEL REQUIREMENTS

5.1 Training and Qualification
A. Task specific or unique training or qualifications required for this task include professional training and experience in the design, procedure preparation, testing, adjusting and balancing of ventilation systems.

B. The Contractor is expected to provide appropriately trained and qualified staff to perform the assigned scope of work. Qualified staff shall have a degree in Mechanical Engineering (with an emphasis of HVAC Systems Engineering), shall have a minimum of 20 years of experience, and be licensed as a Professional Engineer in the State of Washington.

C. CHPRC shall provide Contractor staff task or facility specific training as required for site and facility access and safe performance of assigned tasks.

5.2 Security and Badging Requirements

For any onsite work, see CHPRC Provision (SP-5, Special Provisions – On Site Services) at: http://chprc.hanford.gov/files.cfm/SP-5r010_PRC.pdf.

Special clearance requirements will be provided, if applicable.

5.3 Site Access and Work Hours

A. Work will be done on a 4 x 10 schedule. The standard workday shall consist of ten (10) hours of work between 6:00 AM and 4:30 PM, with one-half hour designated as an unpaid period for lunch. If schedule alternative is required BTR will communicate to contractor’s contact.

6.0 ENVIRONMENTAL, SAFETY, HEALTH, AND QUALITY REQUIREMENTS

The Contractor shall perform work safely, in a manner that ensures adequate protection for employees, the public, and the environment, and shall be accountable for the safe performance of work. The Contractor shall comply with, and assist CHPRC in complying with Environmental, Safety, Health, and Quality (ESH&Q) requirements of all applicable laws, regulations and directives.

Materials supplied or purchased for use in performance of this contract, to the maximum extent practical, shall be environmentally preferred as described in 40 CFR 247 and including Biobased products as designated by the USDA. www.biopreferred.gov

The following project-specific ESH&Q requirements are applicable to this scope of work in addition to the requirements identified in the contract General Provisions and, when work is being conducted on site, the additional ESH&Q requirements in SP-5 Special Provisions – On-Site Services.


6.1 Safety Requirements

Contractor and its subcontractors shall be responsible to comply with state, federal, and DOE requirements or regulations. Where there is a difference in regulations or requirements, the most stringent shall apply.

### 6.2 Quality Assurance and Control

The Contractor shall perform quality work in compliance with the requirements of this contract. The Contractor is responsible to pass down to any sub-tier contractor the applicable requirements of this contract. The Contractor must allow access to their facility, work site, or sub-contractor’s facility or work site at any time during this contract for CHPRC personnel to perform inspections or surveillances.

### 6.3 Quality Assurance/Inspection Requirements

There are no quality assurance/inspection requirements.

### 6.4 Suspect/Counterfeit and Defective Items

No equipment is delivered as part of this work.

### 6.5 Environmental Requirements

Environmental requirements are contained in SP-5. All onsite work shall be conducted in accordance with these requirements.

### 6.6 Radiological Requirements

There are no radiological requirements.

### 6.7 Nuclear and Criticality Safety

This work is involves testing systems that are nuclear safety-related.

### 6.8 Software Products and/or Services Where Software is Used

Use of software shall conform to the requirements of CHPRC-00189 (Appendix G), PRC-PRO-IRM-309, and the CHPRC Software Management plans for these respective software products.

### 7.0 MEETINGS AND SUBMITTALS

#### 7.1 Meetings

After contract award, the Contractor shall participate in weekly meetings with project personnel to review progress and results. These meetings may take place by teleconference.

#### 7.2 Submittals

The required submittals for this contract are listed in Attachment 1, Submittal Register, which also includes a link to the Register definitions.
8.0 DELIVERABLES, PROJECT CONTROLS, MILESTONES, AND PERFORMANCE SCHEDULE REQUIREMENTS

8.1 Deliverables

The required deliverables are listed in Attachment 1, Submittal Register.

8.2 Performance Schedule

Contractor shall provide a two-week “look ahead” schedule, updated weekly, one day prior to each scheduled Weekly Progress Meeting.
Attachment 1

Submittal Register
**Submittal Register**

The Contractor shall meet the required schedule and provide the documents specified in accordance with the following submittals.

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>001</td>
<td>AP/H1/E</td>
<td>Yes</td>
<td>No</td>
<td>Provide a Test Plan to test 324 Building HVAC System</td>
<td>30 Days after Award</td>
<td>Eng.</td>
<td>10</td>
<td>3.1.a</td>
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<td>002</td>
<td>AP/H1/E</td>
<td>Yes</td>
<td>No</td>
<td>Provide a Test Procedure to test 324 Building HVAC System</td>
<td>60 Days after Award</td>
<td>Eng.</td>
<td>10</td>
<td>3.1.b</td>
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<td>003</td>
<td>AP/H1/E</td>
<td>Yes</td>
<td>No</td>
<td>Provide the Final Test Report</td>
<td>21 Days after Test Completion</td>
<td>Eng.</td>
<td>10</td>
<td>3.1.e</td>
</tr>
<tr>
<td>004</td>
<td>AP/H1/E</td>
<td>Yes</td>
<td>No</td>
<td>Provide an Air Flow model</td>
<td>45 Days after Test Completion</td>
<td>Eng.</td>
<td>10</td>
<td>3.1.f</td>
</tr>
</tbody>
</table>
APW = Approval Required Prior to Work (CHPRC must approve the Contractor’s submittal prior to the Contractor being authorized to proceed with any activity/work associated with the submittal).
AP = Approval Required (CHPRC must approve the Contractor’s submittal; however, work associated with the submittal may proceed prior to CHPRC approval).

Format: Describes the type of submittal required (electronic or printed):
- **DWG**: An AutoCAD drawing using the Hanford standard formatting (See CHPRC-00263, Off-Site Vendor Instructions for the Preparation and Control of Engineering Drawing).
- **MFC**: Microsoft Format Compatible application (Word, Excel, Access, PowerPoint)
- **P3**: A Primavera Project Planner schedule
- **GEN**: General or Open Format/Media
- **PDF**: Adobe Acrobat (Portable Document Format)
- **E**: Electronic
- **H#**: Hardcopy reproducible to three (3) times

1. Technical submittals are Engineering or Quality affecting submittals. A Yes in this column designates the need for formalized comments, and a formalized comment disposition process by the Contractor. Examples of Technical Submittals would include Engineering or Fabrication Drawings, or Certificates of Conformance.
2. Vendor Information for project record purposes.
3. Description / Document Title. Describe submittal.
4. Required submittal date or its relationship to project milestones. Examples are July 14, 2009, or Award + 15 days, Contract Completion +30 days.
   - **A**: Date of Award
   - **CD**: Conceptual Design Complete
   - **PD**: Preliminary Design Complete
   - **FD**: Final Design Complete
   - **M**: Mobilization
   - **SC**: Start of Construction
   - **EC**: End of Construction
5. Approver Organization. Examples are Construction Manager, Safety, Quality, Radiation Protection, Waste Management.
6. The number of Work Days required for review of the submittal.
7. Contract Reference: Cross reference to the Contract requirement that defines this submittal.