STATEMENT OF WORK

Requisition #: 330364

Title: Project T1P207 Transfer Line Replacement Early Phase Fabrication and Testing

Revision Number: 0

Date: 8/16/2019

1.0 Objective

The objective of this Statement of Work (SOW) is to fabricate and test the pieces of equipment to allow the installation of transfer line wall nozzles through tank farm concrete structures to support future installation of pipe-in-pipe transfer lines. This includes eight safety significant nozzles to be installed in the field, six general service nozzles to be used as part of mock-up testing, and other components to aid in the installation and completion of the early field work phase of the transfer line replacement project. The safety significant nozzles will be installed in both AW farm and at the pump room wall of the 242-A Evaporator. The testing and general service nozzles will be used to validate the design and train personnel on the installation of the nozzles.

2.0 Background/Introduction

Tank Farm Projects has been tasked to replace the slurry and feed waste transfer lines between the 242-A Evaporator and AW farm. The project scope includes:
- Coring the Evaporator and tank farm pump pit (AW-02A, AW-VPB, and AW-02E) walls
- Installation of new PUREX nozzle assemblies
- Installation of four new pipe-in-pipe waste transfer lines
- Installation of jumpers in all affected pits and in the evaporator

3.0 Scope

Task 1: Fabricate Mockup Wall Nozzle Assemblies

The Subcontractor shall fabricate wall nozzle mock-up components in accordance with drawings CEES-18-719-M-001. This shall include the following:

- (2) 2” Counterweight Assembly CEES-18-719-M-001-010
- (2) 3” Counterweight Assembly CEES-18-719-M-001-020
- (3) 2” Wall Nozzle Weldment CEES-18-719-M-001-030
- (3) 3” Wall Nozzle Weldment CEES-18-719-M-001-040
- (3) 2” Mounting Plate Weldment CEES-18-719-M-001-050
- (3) 3” Mounting Plate Weldment CEES-18-719-M-001-060
- (2) Anchor Bolt Template 8” Core CEES-18-719-M-001-070
- (2) Anchor Bolt Template 10” Core CEES-18-719-M-001-080
- (2) 2” Exterior Plate, 1” THK CEES-18-719-M-001-035, Item number 70
- (2) 3” Exterior Plate, 1” THK CEES-18-719-M-001-036, Item number 71
The Subcontractor shall build one of each component to allow initial testing as described in Task 4. Modifications required shall be incorporated into the follow-on component fabrication to ensure proper functionality.

The procurement quality level for these items are General Service (QL-3). Any nozzles unused during the mockup shall be packaged and delivered to WRPS to be aids for training of construction contractors prior to performing the work in the field.

The Subcontractor shall not begin fabrication until “approved for fabrication” drawings have been provided.

**Procurement Quality Assurance Clauses:**
B79 - Certificate of Conformance

**Task 2: Fabricate Nozzle Installation Test Stand (NITS)**

The Subcontractor shall fabricate, assemble, test, inspect, package, and deliver one Nozzle installation test stand, SK-T1P207-NITS-010. As part of this task four concrete test pieces (SK-T1P207-NITS Item 8) shall also be fabricated. Two of the four concrete test pieces shall be painted with epoxy and two shall be coated with polyuria. This fabrication will be utilized for the execution of Task 4 Mockup testing. It is anticipated that two of these concrete test pieces shall be consumed as part of the Task 4 mock-up testing. The remaining two shall be delivered along with the main test stand to WRPS to support future training of construction contractors. The procurement quality level of this item is General Service (QL-3).

The vendor shall prepare a detailed Fabrication, Inspection, and Test (FIT) plan and submit to WRPS Engineering and Quality Assurance for approval. Specific witness/hold points will be provided by the Buyer for approval. Vendor shall provide 48 hours’ notice prior to the start of these activities. This fabrication will be utilized for the execution of Task 4 Mockup testing. Painting of SK-T1P207-NITS-010 should occur after completion of the Task 4 testing.

The PUREX nozzles shall be provided by the Buyer as GFE for the purpose of this fabrication. All other material shall be supplied by the vendor. The Subcontractor shall not begin fabrication until “approved for fabrication” drawings have been provided.

**Procurement Quality Assurance Clauses:**
B13 - Fabrication/Inspection/Test Plan
B25 - Certified Weld Inspector (CWI)
B28 - Welding Procedures and Qualifications
B52 – Inspection and Test Report
B76 - Procurement of Potentially Suspect/Counterfeit Items
B79 - Certificate of Conformance

**Task 3: Fabricate Core Catcher**

The Subcontractor shall fabricate, assemble, test, inspect, package, and deliver one Core Catcher Assembly, SK-T1P207-CC-010, in accordance with drawing SK-T1P207-CC. The procurement quality level of this item is General Service (QL-3).

The vendor shall prepare a detailed Fabrication, Inspection, and Test (FIT) plan and submit to WRPS Engineering and Quality Assurance for approval. Specific witness/hold points will be
provided by the Buyer for approval. Vendor shall provide 48 hours’ notice prior to the start of these activities.

This fabrication will be utilized for the execution of Task 4 Mockup testing. Painting of SK-T1P207-CC-010 should occur after completion of the Task 4 testing. The Subcontractor shall not begin fabrication until “approved for fabrication” drawings have been provided. The PUREX connectors (excluding the central blocks) shall be provided by the Buyer as GFE for the purpose of this fabrication. All other material shall be supplied by the vendor.

Procurement Quality Assurance Clauses:
B13 - Fabrication/Inspection/Test Plan
B25 - Certified Weld Inspector (CWI)
B28 - Welding Procedures and Qualifications
B52 – Inspection and Test Report
B76 - Procurement of Potentially Suspect/Counterfeit Items
B79 - Certificate of Conformance

Task 4: Mockup Testing
Mockup testing shall be performed in accordance with Appendix A – Nozzle Assembly Installation Testing/Mockup.

Task 5: Fabricate Shield Plate
The Subcontractor shall fabricate, assemble, inspect, package, and deliver one shield plate without retainers in accordance with drawing H-2-70549 Sheet 1 Detail XVIII. An 1/8-inch thick neoprene gasket is an equivalent in accordance with detail note. Assembly shall be coated grey by powder coating. The procurement quality level of this item is General Service (QL-3).

Procurement Quality Assurance Clauses:
B13 - Fabrication/Inspection/Test Plan
B25 - Certified Weld Inspector (CWI)
B28 - Welding Procedures and Qualifications
B52 – Inspection and Test Report
B79 - Certificate of Conformance

Task 6: Fabricate Safety Significant Nozzle Assemblies
The Subcontractor shall fabricate, assemble, test, inspect, package, and deliver eight safety significant wall nozzle assemblies per Table 1. Parts shall be fabricated in accordance with drawings H-14-111832 and H-14-11833, as applicable. The PUREX nozzles shall be provided by the Buyer as GFE for the purpose of this fabrication. The procurement quality level of this item is Safety Significant (QL-2). The nozzles and primary piping are designated safety significant.

If commercial grade dedication is to be utilized to support fabrication, see the Commercial Grade Dedication Scope and Details section below.

Note: Fabrication may NOT proceed on Task 6 without a Revision 0 of drawings H-14-111832 and H-14-11833. 242-A Pump Room Nozzles shall be shipped attached to the applicable size
counterweight assembly (e.g. H-14-111832-010 and -020) for ease of handling. Note that counterweight assemblies are fabricated under Task 7.

<table>
<thead>
<tr>
<th>Location</th>
<th>Nozzle Size</th>
<th>Nozzle Designation</th>
<th>Drawing/Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>242-A Pump Room</td>
<td>2-Inch</td>
<td>Nozzle 41</td>
<td>H-14-111832-030</td>
</tr>
<tr>
<td>242-A Pump Room</td>
<td>2-Inch</td>
<td>Nozzle 42</td>
<td>H-14-111832-030</td>
</tr>
<tr>
<td>242-A Pump Room</td>
<td>3-Inch</td>
<td>Nozzle 43</td>
<td>H-14-111832-040</td>
</tr>
<tr>
<td>AW-02A Central Pump Pit</td>
<td>2-inch</td>
<td>Nozzle E</td>
<td>H-14-111833-010</td>
</tr>
<tr>
<td>AW-02A Central Pump Pit</td>
<td>2-inch</td>
<td>Nozzle F</td>
<td>H-14-111833-020</td>
</tr>
<tr>
<td>AW-02A Central Pump Pit</td>
<td>2-inch</td>
<td>Nozzle W</td>
<td>H-14-111833-030</td>
</tr>
<tr>
<td>AW-02E Feed Pump Pit</td>
<td>3-inch</td>
<td>Nozzle F</td>
<td>H-14-111833-040</td>
</tr>
<tr>
<td>AW-B Valve Pit</td>
<td>2-inch</td>
<td>Nozzle R6</td>
<td>H-14-111833-050</td>
</tr>
</tbody>
</table>

Inspections/testing of the wall nozzle assemblies include items such as:

- Radiography
- Liquid Penetrant inspections
- Hydrostatic pressure test
- Level hang test
- Protective coating inspection and holiday testing

Procurement Quality Assurance Clauses:
B01 – Quality Assurance Program Submittal and Pre-Award Survey
B04 - Supplier Quality Program Evaluation
B13 - Fabrication/Inspection/Test Plan
B25 - Certified Weld Inspector (CWI)
B28 - Welding Procedures and Qualifications
B31 - Nondestructive Examination Process
B46 – Liquid Penetrant Material Certification
B49 - Certified Material Test Report (all primary and encasement pressurized piping components)
B52 - Inspection and Test Report
B76 - Procurement of Potentially Suspect/Counterfeit Items
B79 - Certificate of Conformance

Commercial Grade Dedication Scope and Details:
For items which are identified as a safety significant quality level, the Subcontractor can utilize commercial grade dedication for the procurement of simple items (e.g. pipe, weld filler material, unions, etc.). These items are required to be safety significant per the procurement specification and/or drawing. The Subcontractor shall state in their proposal if commercial grade dedication is to be used, and for which components, so the appropriate contract NQA-1 Part II, Subpart 2.14 requirements can be applied.

Task 6 Commercial Grade Dedication Information:
The nozzle assemblies will makes up part of the Hanford waste transfer system primary piping pressure boundary. The safety function of the primary piping system is to provide confinement of waste. Providing confinement of waste decreases the frequency of a fine spray leak.
In addition, providing confinement of waste protects the facility worker from wetting spray/jet/stream leak, from a flammable gas deflagration in a DST annulus due to misroute, and from a flammable gas deflagration in a waste transfer-associated structure due to a waste transfer leak.

The critical characteristics of the components within the primary piping pressure boundary is the 400 psig design pressure, minimum operating design temperature of 32°F, a maximum design temperature of 200°F, and material compatibility with Hanford tank waste.

Necessary actions to verify the critical characteristics shall be submitted to the Buyer as part of the commercial grade dedication (CGD) plan for review/approval. To ensure the critical characteristics have been met, the following actions may need to be performed:

- Establish production traceability (i.e. heat/lot/batch homogeneity).
- Verify part number on 100% of the items received, if applicable.
- Perform dimensional inspection.
- Following EPRI guidelines where production traceability exists, perform destructive testing to obtain chemical and mechanical properties to show conformance with the applicable material standard.
- Perform a hydrostatic pressure test of the items in accordance with ASME 31.3 to the cold working pressure of the components.

The Subcontractor shall prepare a CGD plan which outlines the actions to be taken to verify each component meets its safety function and how these actions are to be performed in accordance with their quality assurance program. The plan shall be submitted to the Buyer for review and approval prior to the procurement of the items. At the completion of the actions listed in the CGD plan, the Subcontractor shall document the results and conclusions of the actions and testing performed in a CGD test report. The test report shall be submitted to the Buyer for their review and approval.

**Task 7: Fabricate Wall Nozzle Assembly Support Components**

The Subcontractor shall fabricate, assemble, inspect, package, and deliver the components listed below. Note, counterweight assemblies fabricated from H-14-111832 shall be delivered mounted to the applicable wall nozzles as discussed in Task 6. The procurement quality level of this item is General Service (QL-3).

This shall include the following:

- (2) 2” Counterweight Assembly, H-14-111832-010
- (1) 3” Counterweight Assembly, H-14-111832-020
- (2) 2” Mounting Plate Weldment, H-14-111832-050
- (1) 3” Mounting Plate Weldment, H-14-111832-060
- (2) Anchor Bolt Template 8” Core, H-14-111832-070
- (1) Anchor Bolt Template 10” Core, H-14-111832-080
- (2) 2” Exterior Plate, 1” THK H-14-111832-035, Item number 70
- (1) 3” Exterior Plate, 1” THK H-14-111832-036, Item number 71
- (4) 2” Mounting Plate Weldment, H-14-111833-070
- (1) 3” Mounting Plate Weldment, H-14-111833-060
- (4) Anchor Bolt Template 8” Core, H-14-111832-080
• (1) Anchor Bolt Template 10” Core, H-14-111832-090
• (4) 2” Exterior Plate, 1” THK H-14-111833-018, Item number 46
• (1) 3” Exterior Plate, 1” THK H-14-111833-019, Item number 47

Note: Fabrication may NOT proceed on Task 7 without a Revision 0 of drawings H-14-111832 and H-14-11833.

Procurement Quality Assurance Clauses:
B13 - Fabrication/Inspection/Test Plan
B25 - Certified Weld Inspector (CWI)
B28 - Welding Procedures and Qualifications
B52 – Inspection and Test Report
B76 - Procurement of Potentially Suspect/Counterfeit Items
B79 - Certificate of Conformance

4.0 Submittals

In support of the work scope established in Section 3.0 above, submittals are listed on the Master Submittal Register (MSR).

Submittals shall be provided using the TOC Incoming Letter of Transmittal form provided by the Procurement Specialist. All transmittal subject headings shall contain, at a minimum, the subcontract number, submittal number, and submittal description.

Submittals shall be provided in electronic format unless available only as a hard copy. Electronic submittals shall be sent in accordance with instructions provided by the Procurement Specialist. Electronic formats must be non-password protected in one of the formats noted on the Procurement Website located and the following web address:
http://www.hanford.gov/tocpmm/files.cfm/APPROVED_ELECTRONIC_RECORD_FORMATS.pdf

5.0 Acceptance Criteria

Work to be determined acceptable when meeting the following criterion and WRPS approval of final Quality Records:

1. Fabrication inspection reports
2. Material traceability records
3. Welding and inspections records
4. Pressure testing reports
5. Coating inspection reports
6. Mock up testing complete
7. Certificates of Conformance
8. Nozzle operational and center of gravity tests

6.0 Configuration Management and Standards

6.1 Configuration Management Requirements

There are no specific Configuration Management requirements applicable to this SOW.
6.2 Applicable Standards

APPLICABLE CODES AND STANDARDS

<table>
<thead>
<tr>
<th>Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>ASME B31.3 Process Piping</td>
</tr>
<tr>
<td>2.</td>
<td>ASME NQA-1 Quality Assurance Requirements for Nuclear Facility Applications</td>
</tr>
<tr>
<td>3.</td>
<td>AWS D1.1 Structural Welding Code – Steel</td>
</tr>
</tbody>
</table>

7.0 ESH&Q Requirements

7.1 Quality Assurance Requirements

The Contractor shall have a documented and implemented Quality Assurance Program. The Contractor’s program shall be submitted for review/approval against the requirements identified on site form A-6006-661 Quality Assurance Requirements dated 8/14/19.

7.1.1 Supplier Quality Assurance Program

The Subcontractor’s Quality Assurance Program shall be subject to review at all times, including prior to award.

7.1.2 Supplier Quality Assurance Program Changes

The Subcontractor shall, during the performance of this subcontract, submit proposed changes to their approved quality assurance program to the WRPS Buyer for review and concurrence prior to implementation.

7.1.3 Quality Assurance Oversight

WRPS personnel will co-ordinate with the supplier to conduct scheduled and periodic oversight of activities or products associated with this scope of work.

7.2 Price-Anderson Amendments Act Requirements

The Subcontractor shall comply with Article 2.11 entitled, *Price-Anderson Amendments Act (PAAA)*, contained in the General Provisions and shall have a process in place to ensure that noncompliance documentation that affects work performed for WRPS, is submitted to WRPSPAAA@RL.Gov. The subcontract/PO number must always accompany the material being provided.

Subcontractor personnel shall be trained to the nuclear safety rules consistent with their specific position and assigned work.

7.3 Special ESH&Q Requirements

Access to the Hanford Site is required for delivery of items only.
8.0 Verification/Hold Points

As part of the subcontract submittal process and unless otherwise specified, TOC will review Subcontractor prepared documents and designate all required TOC review, inspection, witness, and notification points.

9.0 Reserved

10.0 Work Location/Potential Access Requirements

Not applicable

11.0 Training

Not applicable

12.0 Qualifications

Not Applicable

13.0 Special Requirements

Government Property

Pursuant to the Subcontract General Provisions article entitled “Management of Subcontractor-Held Government-Owned Property” and Special Provision 12 (SP-12) – Management of Government Property, the following Government-owned property will be furnished to the Subcontractor. The Subcontractor will be responsible for managing the Government-Furnished Property (GFP) below and/or Contractor-Acquired Property (CAP) as required in the Subcontract General Provisions, SP-12 and in accordance with its Property Management program.

<table>
<thead>
<tr>
<th>Government Furnished Property/Material Description</th>
<th>Quantity</th>
<th>Unit Of Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>QL-2 2” PUREX Nozzle</td>
<td>6</td>
<td>EA</td>
</tr>
<tr>
<td>QL-2 3” PUREX Nozzle</td>
<td>2</td>
<td>EA</td>
</tr>
<tr>
<td>General service 2” PUREX Nozzle</td>
<td>As required</td>
<td>EA</td>
</tr>
<tr>
<td>General service 3” PUREX Nozzle</td>
<td>As required</td>
<td>EA</td>
</tr>
<tr>
<td>General service 2” PUREX Connector</td>
<td>As required</td>
<td>EA</td>
</tr>
<tr>
<td>General service 3” PUREX Connector</td>
<td>As required</td>
<td>EA</td>
</tr>
<tr>
<td>Hilti Core Drill DD250 BS Complete Kit</td>
<td>1</td>
<td>EA</td>
</tr>
<tr>
<td>Hilti Water Management System</td>
<td>1</td>
<td>EA</td>
</tr>
<tr>
<td>Hilti 10” coring Drill bits</td>
<td>As required</td>
<td>EA</td>
</tr>
<tr>
<td>Hilti 8” coring Drill bits</td>
<td>As required</td>
<td>EA</td>
</tr>
</tbody>
</table>

14.0 Reporting/Administration

Not applicable

15.0 Workplace Substance Abuse Program Requirements

The Subcontractor’s Workplace Substance Abuse Program applies to this SOW.
Nozzle assembly Fabrication and installation testing/mockup
Test, Training, and Witness Plan

Tank Farm Projects has been tasked to replace the slurry and feed waste transfer lines between the evaporator and AW farm. The project scope includes:

- Coring the evaporator and pit walls
- Installation of new PUREX nozzle assemblies
- Installation of transfer lines
- Installation of jumpers

The scope of this test plan focuses on the wall nozzle assembly fabrication, concrete wall coring, and wall nozzle assembly installation.

The contractor shall facilitate, assemble, and perform all following tasks, with direct involvement from WRPS engineering. It is desirable that the test location be in close proximity to the fabrication location in case any modifications are required during testing. All testing shall be performed by qualified personnel and shall be done safely. The contractor shall provide a testing environment that ensures the safety of all personnel, including WRPS observers.

The following listed equipment will be needed to successfully execute the mockup testing and will be supplied as Government Furnished Equipment (GFE) and what will be expected to be provided by the contractor.

GFE (Supplied by WRPS):
- General service 2” PUREX Nozzle, QTY: as required
- General service 3” PUREX Nozzle, QTY: as required
- General service 2” PUREX Connector (without block)
- Hilti Core Drill DD250 BS Complete Kit
- Hilti Water Management System
- Hilti 10” coring Drill bit
- Hilti 8” coring Drill bit

The following listed equipment will be needed to successfully execute the mockup testing and will be provided by the vendor.

Items supplied by Vendor:
- Mockup nozzles fabricated per Task 1 of this SOW
- One Nozzle installation test stand fabricated per Task 2 of this SOW
- One Core Catcher fabricated per Task 3 of this SOW
- Water source capable of delivering at least 10 gpm
- Power source to run Hilti DD250
- Any measurement equipment not explicitly stated as being GFE required to perform the following tests contained in this appendix.
- Crane or forklift capable of lifting nozzle assemblies and impact wrench (or simulated impact wrench)
- Impact wrench with 2” deep impact socket
- High accuracy digital level (±0.05°)
- Assorted concrete anchors for mounting core drill.

Fabricator will be responsible for providing any additional hoses, fittings, etc. required to perform the following tasks.

**Engineering Tests**
The testing will be performed in the presence of a WRPS engineer. The intent is to understand and validate acceptable installation of the mock wall nozzle assemblies under conditions representative of what is expected at the evaporator wall.

**Test 1: Core Drill and Core Catcher**
Before any other testing or operation occurs, the Hilti DD250 shall be tested to ensure proper core-drilling function and the Core Catcher per SK-T1P207-CC performs its intended function. The Core Catcher shall be installed on the test stand (SK-T1P207-NITS) via a crane or fork lift to verify fit-up. After the vertical Purex connectors are tightened, the horizontal acorn nut shall be rotated until there is compression up against the concrete block.

To ensure the proper core-drilling function, the drill will be suspended horizontally using a concrete anchor from the test stand per Hilti’s manufactures instructions. Vendor shall drill multiple 8” and 10” cores to the satisfaction of WRPS engineering. Visually inspect the cores for straightness and dimensional accuracy per Table 1. While coring, the core catcher should be used to ensure it is able to seal to the “interior” of the test stand and contain all cutting fluid and spalling. Various cores may be utilized with and without the core catcher installed per WRPS engineering direction to visually observe differences in coring speed, RPM, and pressure.

<table>
<thead>
<tr>
<th>Table 1 Core Dimensional Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hole Size</td>
</tr>
<tr>
<td>Vertical level</td>
</tr>
<tr>
<td>Horizontal alignment</td>
</tr>
</tbody>
</table>

Acceptance:
- **Demonstrate the Hilti Core Drill can be used in the manner described and the dimensional tolerances can be maintained.**

**Test 2: Core Catcher Sealing Test**

When the core catcher is deployed in the field, the interior of the evaporator will be under 1 inch of vacuum. With the Core Catcher installed and compressed up against the test stand, introduce ~1/2 gallons of water into the Core Catcher basket weldments. Note if leakage occurs with the introduction of the water. Changes to the Core Catcher compression and basket alignment can be made to make adjustments as required. Connect the applicable hoses/fittings and introduce 1” WG of positive pressure to the inside of the basket weldments. Note if leakage occurs with the introduction of the air pressure.

Acceptance: **Demonstrate the Core Catcher can maintain a seal to what will be in the interior evaporator wall while under vacuum.**
Test 3: Nozzle Assembly Installation

Background: The evaporator wall nozzle assemblies will be installed without a manned entry into the pump room of the evaporator. Therefore, all manned work activities will need to take place from outside the evaporator. From inside the evaporator the process crane will be used to place wall nozzle assembly through the wall, remove counter weight, install/uninstall core catcher (SK-T1P207-CC). The sequence of installation of the wall nozzles is shown on H-14-111832 Sheets 15-17.

When Test 1 has been successfully completed, the installation of the wall nozzle assemblies will be mocked-up and tested to evaluate the nozzle assembly design and the associated installation process.

The installation process will use the Nozzle installation test stand per SK-T1P207-NITS and include the following steps. Note; these steps are subject to change and/or reordering as necessary to successfully complete nozzle installation. The fabricator is encouraged to provide input throughout the testing/mockup process to streamline the process.

1. Mount Hilti DD250 Drill
2. Core Drill and use Hilti Water Management System while coring
   a. 8” hole for 2” wall nozzle assembly
   b. 10” hole for 3” wall nozzle assembly
3. Install four HILTI concrete anchors that will be used to hold temporary exterior wall mounting plate.
4. On “interior” using crane, install mockup wall nozzle assembly through the core penetration
   a. In general, this step shall be made as difficult for those executing the work as possible. Restricted visibility, cumbersome PPE, restricted communication, radiological controls, and safety setbacks shall be explored as potential obstacles that will need to be overcome.
5. Install temporary exterior wall mounting plate and secure nozzle assembly using all-thread and leveling screws
   a. Roughly Level nozzle assembly using machined reference block
6. Using “interior” impact wrench loosen attachment pen (screw that secures the counterweight to the nozzle assembly)
7. On “interior” using crane, Remove counterweight assembly
8. Lock nozzle assembly into place using all thread and leveling screws while leveling the assembly using the reference block to ±0.125° from horizontal in all directions.
9. Use RTV silicone or similar product, seal any gaps between the temporary exterior wall mounting plate and the wall nozzle assembly
10. Fill void area with grout
   a. Ensure wall nozzle remains level to within 0.125° from horizontal in all directions while filling with grout.
11. Allow grout to set for minimum of 16 hrs.
12. Remove temporary exterior wall mounting plate and verify that there are no visible voids in the core drilled area.
13. Cut and grind all-thread flush to wall and clean residual grout debris
14. Install Final wall mounting plate and torque concrete anchors per drawing
15. Weld final wall mounting plate to nozzle assembly as shown on H-14-111833 Step 7, if requested by engineering.

Test 3 shall be completed with both the 2” and 3” nozzle assemblies. All steps (1-15) shall be complete at least once for both the 2” and 3” nozzle assemblies. Steps 4-8 shall be repeated (assume 6-10 times) until WRPS engineering is satisfied with the design of the nozzle assembly design and associated work steps.
Acceptance: Demonstrate the mockup wall nozzle assemblies can be installed following the prescribed steps in this document or generated during the mockup.
APPENDIX B: PROCUREMENT QUALITY ASSURANCE CLAUSES WORKSHEET

Procurement quality clauses may be used for the acquisition of items and services. The clauses establish contractual obligations for quality program systems, identification, traceability, documents submittals, testing, reporting, qualification, special process controls, inspections, etc. This worksheet is for Internal Use Only and will not be sent to the Subcontractor in the SOW package.

The clauses have been created as a convenient way to communicate quality requirements to the Subcontractor. By checking the appropriate clause below, the Procurement Specialist will insert the appropriate contract language in the QA section of the subcontract/purchase order.

The specific language for each clause and further information can be found at [http://idmsweb.rl.gov/idms/livelink.exe/207075580/QA_AVS_Appendix.doc?func=doc.Fetch&nodeid=207075580](http://idmsweb.rl.gov/idms/livelink.exe/207075580/QA_AVS_Appendix.doc?func=doc.Fetch&nodeid=207075580)

**PREAWARD AND SUPPLIER FABRICATION**

<table>
<thead>
<tr>
<th>Clause</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>B01 (X)</td>
<td>Quality Assurance Program Submittal and Pre-award Survey</td>
</tr>
<tr>
<td>B04 (X)</td>
<td>Supplier Quality Program Evaluation</td>
</tr>
<tr>
<td>B07 ()</td>
<td>Certified Quality Program</td>
</tr>
<tr>
<td>B10 ()</td>
<td>Quality System for Materials Specifying Testing Per ASME</td>
</tr>
<tr>
<td>B12 ()</td>
<td>Supplier Use of Calibrated Equipment</td>
</tr>
<tr>
<td>B13 (X)</td>
<td>Fabrication/Inspection/Test Plan</td>
</tr>
<tr>
<td>B14 ()</td>
<td>Supplier Use of Software Controlled Instruments and Equipment Containing Embedded Software (Firmware)</td>
</tr>
<tr>
<td>B15 ()</td>
<td>Supplier Use of Commercial off the Shelf Software</td>
</tr>
<tr>
<td>B16 ()</td>
<td>Source Inspection</td>
</tr>
<tr>
<td>B17 ()</td>
<td>Certified Electrical Inspector (Non-NEC-IAEI)</td>
</tr>
<tr>
<td>B18 ()</td>
<td>Supplier Use of Spreadsheet Calculations Using Commercial off the Shelf Software</td>
</tr>
<tr>
<td>B19 ()</td>
<td>First Article Inspection-Source</td>
</tr>
<tr>
<td>B22 (X)</td>
<td>Nonconformance Documentation and Reporting</td>
</tr>
<tr>
<td>B25 (X)</td>
<td>Certified Weld Inspector (CWI)</td>
</tr>
<tr>
<td>B28 (X)</td>
<td>Welding Procedures and Qualifications</td>
</tr>
<tr>
<td>B31 (X)</td>
<td>Nondestructive Examination Process</td>
</tr>
</tbody>
</table>

**MATERIAL IDENTIFICATION**

<table>
<thead>
<tr>
<th>Clause</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>B32 ()</td>
<td>Identification of Items with Part number/Model number</td>
</tr>
<tr>
<td>B33 ()</td>
<td>Identification of Items with Catalog Cut</td>
</tr>
<tr>
<td>B34 ()</td>
<td>Identification of Items</td>
</tr>
<tr>
<td>B37 ()</td>
<td>Identification and Traceability of Items</td>
</tr>
<tr>
<td>B43 ()</td>
<td>Identification of Age Control Items</td>
</tr>
</tbody>
</table>

**TESTING AND TEST DATA**

<table>
<thead>
<tr>
<th>Clause</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>B46 (X)</td>
<td>Liquid Penetrant Material Certification</td>
</tr>
<tr>
<td>B49 (X)</td>
<td>Certified Material Test Report</td>
</tr>
<tr>
<td>B52 (X)</td>
<td>Inspection and Test Report</td>
</tr>
<tr>
<td>B55 ()</td>
<td>Flame Test Report</td>
</tr>
<tr>
<td>B58 ()</td>
<td>Calibration Report</td>
</tr>
<tr>
<td>B61 ()</td>
<td>Certification of Calibration</td>
</tr>
</tbody>
</table>
B64  ()  Repair and Calibration Services
B65  ()  Nationally Recognized Testing Laboratory (NRTL) Listed or Labeled
B66  ()  NRTL Listed or Labeled components in a system

INSPECTION AND ACCEPTANCE CRITERIA

B67  ()  First Article Inspection/Test-Receiving
B70  ()  Supplier Furnished Items
B73  ()  Control of Graded Fasteners
B76  (X) Procurement of Potentially Suspect/Counterfeit Items
B79  (X) Certificate of Conformance (C of C)
B80  ()  C of C for Commercial Grade Surveyed Procurements
B82  ()  Recommended Spare Parts Listing
B83  ()  Certificate of Conformance for Respiratory Protection Equipment
B84  ()  Commercial Grade Dedication of Items/Services

MATERIAL HANDLING

B85  ()  Packaging/Shipping Procedures
B88  ()  Direct Drop Shipment