**DOCUMENT RELEASE AND CHANGE FORM**

Prepared For the U.S. Department of Energy, Assistant Secretary for Environmental Management
By Washington River Protection Solutions, LLC., PO Box 850, Richland, WA 99352
Contractor For U.S. Department of Energy, Office of River Protection, under Contract DE-AC27-08FR14800

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2. **Title:** Procurement Specification for AX Tank Farm Waste Retrieval System Control Trailers POR471 and POR498

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   - PRHA-02039  **Rev.** 00
   - PRHA-02040  **Rev.** 00
   - PRHA-02041  **Rev.** 00

7. **Approvals**

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<th>Signature</th>
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<td>02/27/2017</td>
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<td>EDWARDS, GREG A</td>
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<td>WASHINGTON, MARGUERITE</td>
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8. **Description of Change and Justification**

Revision 1 updates the control trailer layout and requirements for procuring mobile office trailers for use as control trailers.

Because of the relatively simple nature of the design and the general service status of the equipment, a graded approach was applied and design verification was not performed as allowed by ARES Quality Assurance Procedure 3.5, Design Verification.

9. **TBDs or Holds** ☒ N/A

10. **Related Structures, Systems, and Components**

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11. **Impacted Documents – Engineering** ☒ N/A

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12. **Impacted Documents (Outside SPF):**

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<td>WITHERSPOON, JP P</td>
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Procurement Specification for AX Tank Farm
Waste Retrieval System Control Trailers POR471 and POR498

LN Homan
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1100 Jadwin Ave., Suite 400
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U.S. Department of Energy Contract DE-AC27-08RV14800

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Cost Center: N/A Charge Code: N/A
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Key Words: Control Trailer, Double Shell Tank System, Waste Retrieval System, AX Retrieval, POR471, POR498

Abstract: This document provides the technical requirements for procurement of the control trailers that will contain monitoring and control system equipment and process monitoring equipment to support waste retrieval from single-shell tanks 241-AX-101, 241-AX-102, 241-AX-103, and 241-AX-104 to double-shell tank 241-AZ-102.

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Approved For Public Release

DATE:
Mar 01, 2017

A-6002-767 (REV 3)
PROCUREMENT SPECIFICATION FOR AX TANK FARM WASTE RETRIEVAL SYSTEM CONTROL TRAILERS POR471 AND POR498

February 2017

prepared by

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prepared for

Washington River Protection Solutions, LLC
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LIST OF TERMS

Abbreviations and Acronyms
ADA        Americans with Disabilities Act  
ANSI       American National Standards Institute  
ASCE       American Society of Civil Engineers  
ASHRAE     American Society of Heating Refrigerating, and Air-Conditioning Engineers  
BISCI      Building Industry Consulting Services International, Inc.  
CCTV       Closed-Circuit Television  
CFR        Code of Federal Regulations  
COR        Code of Record  
DOE        U.S. Department of Energy  
EMT        Electrical Metallic Tubing  
FMC        Flexible Metallic Conduit  
GFCI       Ground-Fault Current Interrupter  
HLAN       Hanford Local Area Network  
HVAC       Heating Ventilation and Air Conditioning  
IBC        International Building Code  
IEEE       Institute of Electrical and Electronics Engineers  
IESNA      Illuminating Engineering Society of North America  
IFC        International Fire Code  
IMC        International Mechanical Code  
LED        Light Emitting Diode  
MC         Metal Clad  
MSL        Master Submittal Log  
NEC        National Electrical Code  
NEMA       National Equipment Manufacturers Association  
NFPA       National Fire Protection Association  
OSHA       Occupational Safety and Health Administration  
PVC        Polyvinyl Chloride  
RMC        Rigid Metal Conduit
RPP-SPEC-60185, Rev. 1

SDS  Safety Data Sheet
SOW  Statement of Work
SRI  Solar Reflectance Index
TIA  Telecommunications Industry Associate
TOC  Tank Operations Contract
UL  Underwriters Laboratories
VOC  Volatile Organic Compound
WAC  Washington Administrative Code
WSEC  Washington State Energy Code

Units
 AWG  American Wire Gauge
 °F  Degrees Fahrenheit
 ft  Feet
 lb  Pounds
 psf  Pounds per Square Foot
 V  Volts
 VAC  Volts Alternating Current
1.0 SCOPE

This specification provides the required provisions to procure trailers that will be used as control trailers and will contain monitoring and control system equipment to support waste retrieval at the Hanford Site’s Tank Farms. This scope includes design, fabrication and delivery of the control trailers.

2.0 APPLICABLE DOCUMENTS

The following documents form a part of the basis of design to the extent specified in the applicable sections of this Specification. In the event that the requirements of this Specification are more restrictive than the requirements of the documents referenced herein, the requirements of this Specification take precedence.

Copies of specifications, standards, drawings, and publications required by suppliers in connection with specified procurement functions should be obtained from the contracting agency or as directed by the contracting agent.

2.1 GOVERNMENT DOCUMENTS

The government documents listed in Table 2-1 constitute a part of this specification to the extent specified herein.

Table 2-1. Government Documents. (2 pages)

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<td>DOE-0359</td>
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<td>HNF-36174</td>
<td>“DOE Fire Protection Handbook – Hanford Chapter”</td>
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<td>RCW Title 19 Chapter 27A</td>
<td>“Business Regulations – Miscellaneous: Energy-Related Building Standards”, Revised Code of Washington (RCW), as amended</td>
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<td>“Factory-Built Housing and Commercial Structures,” WAC, as amended</td>
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2.2 NON-GOVERNMENT DOCUMENTS

National codes and standards listed in Table 2-2 constitute a part of this specification to the extent specified herein.

Table 2-2. Non-Government Documents. (2 pages)

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<td>Institute of Electrical and Electronics Engineers (IEEE) Recommended Practice for Grounding of Industrial and Commercial Power Systems (IEEE Green Book)</td>
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<td>ASCE/SEI 7-05</td>
<td>“Minimum Design Loads for Buildings and Other Structures,” American Society of Civil Engineers (ASCE)</td>
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<td>ASHRAE Handbook – Fundamentals, 2013</td>
<td>“Fundamentals,” American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE), Atlanta, Georgia</td>
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### 3.0 TECHNICAL REQUIREMENTS

#### 3.1 ITEM DEFINITION

The Seller will design and procure all components associated with the following scope of work except as specifically identified in the specification.

A. The control trailers will consist of a mobile office structure approximately 64 ft. long by 24 ft. wide with pre-installed heating, ventilation, and air conditioning (HVAC), a 120/240 Volt electrical panel, lighting fixtures, receptacles, and Hanford Local Area Network (HLAN) ethernet ports.

B. Work includes walls, roof, doors, insulation, electrical, HVAC, interior finishing, and all required accessories and trim. Work does not include placement of the trailers and site preparation.
C. Seller to provide junction boxes above the ceiling and wire required for receptacles and communications based on Sketch SK-E1 sheet 3.

D. The following is a list of the furniture and equipment to be provided by others; Seller to verify finished floor is capable of supporting estimated weight of equipment. Estimated weights are provided on sketch SK-E1, Sheet 1, in Appendix A. Furniture and equipment provided by others includes:

1. CCTV racks,
2. Camera system components (camera control units, remote control units, camera lighting controls, etc.),
3. Furniture (desks, chairs, etc.),
4. Copiers, and
5. Monitors.

E. The occupancy of these trailers is estimated to be 13-15 people at any given time.

F. Seller is to provide a panelboard with a minimum of 25% spare capacity and 10% spare breakers, minimum, for customer use. (Single phase 120VAC, 20 Amp breakers).

3.1.1 Control Trailer Diagram

The sketches (see Appendix A), and drawings listed below encompass the details of the Seller provided items as discussed above and additional details necessary to complete the design of the control trailers:

1. SK-E1, Sheet 1, Control Trailer Equipment Layout Plan Estimated Weights; shows a detailed layout of furniture and various monitoring and control system equipment, which will be provided by others, and estimated weights of certain equipment. (See Appendix A)

2. SK-E1, Sheet 2, Control Trailer Equipment Layout Plan Estimated Heat Generation; shows a detailed layout of furniture and various monitoring and control system equipment, which will be provided by others, and estimated heat generation of certain equipment. (See Appendix A)

3. SK-E1, Sheet 3, Control Trailer Lighting and Power Plan; shows a detailed arrangement of lighting fixtures and receptacles with circuit numbers assigned. (See Appendix A)

3.1.2 Interface Definition

A. The control trailers shall have the following interfaces:
1. Provisions for connection to onsite electrical power at 120/240 Volt and grounding in the field; and

2. Provisions for connection to Hanford Local Area Network (HLAN) in the field.

3.1.3 Pollution Prevention and Waste Minimization

A. Products procured such as adhesives, sealants, paints, carpet and furnishings shall have low pollutant emissions (low Volatile Organic Compounds [VOCs]).

B. When available, materials and equipment procured shall be made in the U.S.A.

C. When available, materials procured shall have a recycled content of 20% or more.

D. No products shall be asbestos containing materials.

3.2 CHARACTERISTICS

In the following subsections, the required minimum performance characteristics are defined.

3.2.1 Functional Characteristics

The control trailers POR471-WT-TRLR-001 and POR498-WT-TRLR-001 will function as control rooms for monitoring and controlling the operations of the waste retrieval systems for single-shell tank waste retrieval activities at tanks 241-AX-102 and 241-AX-104, and 241-AX-101 and 241-AX-103, respectively.

3.2.2 Physical Characteristics

A. The control trailers will have the physical characteristics shown on Sketch SK-E1 Sheets 1 – 3.

B. The control trailers shall be comprised of two (2) sections, single-story, and approximately 1,450 interior square feet.

1. Each section shall have a nominal dimension of 12 feet wide by 64 feet long, with an overall facility footprint of 24 feet by 64 feet.

C. The control trailers shall have an interior height from finished floor to the bottom of the ceiling of nine (9) feet.

3.2.3 Reliability

The control trailer components supplied by the Seller shall be designed to have a minimum design life of 10 years, preferably without preventive maintenance and independent of the length of operation.
3.2.4 Maintainability

Components shall be installed in accessible locations for maintenance and shall allow for replacement upon failure.

3.2.5 Environment

The control trailer will be subjected to the environmental conditions listed in TFC-ENG-STD-02, “Environmental/Seasonal Requirements for TOC Systems, Structures, and Components.”

3.2.6 Transportability and Storage

The Seller shall be responsible to provide necessary equipment, vehicles, permits, etc. to transport the control trailers to the site facility or test site. The structures will have sufficient axles and wheels to allow movement on State and Federal highways and un-improved roads on the Hanford Site.

3.3 DESIGN AND CONSTRUCTION REQUIREMENTS

The control trailers shall meet the Washington State Gold Insignia standards. The control trailers shall be designed and fabricated in conformance with the best industry practices using new and first quality materials and shall meet Chapter 296-150F WAC and the latest requirements of the WSEC, and each trailer section tagged with the WA State Gold Insignia.

Structural design criteria can be found in TFC-ENG-STD-06, “Design Loads for Tank Farm Facilities,” ASCE/SEI 7 10; and the IBC, unless otherwise listed in Table 31.

The following sections and illustrations in Appendix A depict the desired components, materials, assembly details, and dimensions for the control trailers. Similar or equivalent designs that meet the requirements of this specification shall be acceptable (i.e., building structure materials and the method of construction) and are subject to approval by the Buyer in writing.
Table 3-1. Design Criteria.

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3.3.1 Parts/Materials/Processes

A. All materials shall be new and located as shown on the drawings in Appendix A. Substitute materials shall be allowed only if approved in advance by the Buyer. The Seller shall not use suspect or counterfeit parts and shall verify and document compliance with this requirement using the U.S. Department of Energy suspect/counterfeit items list and DOE G 414.1-3.

B. Design and fabricate trailers in accordance with WAC 296-150F and WAC 51-50.

C. Walls, roofs, doors, electrical, HVAC, and interior finishing shall comply with the IBC, IFC, IMC and the NEC, as applicable.

3.3.2 Architectural

A. The occupancy category of the control trailer is category IV, Group B (seismic design category D) as defined in the IBC and shall be designed as a performance category 2 (PC-2) structure for safety significant service. The building itself is not a safety significant structure, however, it houses instrumentation panels that are categorized as safety significant equipment.

B. Roofing material shall meet the DOE “cool roof” requirements.

1. For low-sloped roof (roof pitch less than or equal to 2:12), roofing material shall have a minimum three (3) year aged Solar Reflectance of 0.55 and Thermal Emittance of 0.75 or a three (3) year aged Solar Reflectance Index (SRI) of 64.
2. For steep-sloped roof (roof pitch exceeding 2:12), roofing material shall have a minimum three (3) year aged Solar Reflectance of 0.20 and Thermal Emittance of 0.75 or a three (3) year aged SRI of 29.

C. Trailers shall have shed type (membrane) roofs.

D. Siding shall be T1-11.

E. T1-11 trailer skirting and trim materials, painted to match the trailers, to preclude windblown debris from accumulating under trailer will be provided with the trailer. Installation will be by others.

F. Ceilings shall be two (2) foot by four (4) foot acoustic ceiling tile.
   1. Acoustic ceiling tiles to meet BioPreferred® requirements, 37% minimum biobased content.

G. Interior walls:
   1. All interior walls shall have 5/8 inch plywood backing from floor to ceiling.
   2. All interior walls shall be vinyl wrapped gypsum board and have a NFPA 101® Class A (0-25) flame spread rating.
   3. All interior walls shall be insulated for sound dampening purposes.
   4. All interior walls shall be structurally anchored to joists.

H. Size and fabricate wall and roof system free of distortion or defects detrimental to appearance or performance.

3.3.3 Doors

A. Exterior doors:
   1. The trailers shall have three (3) exterior exits.
      a. Exterior door closure shall be Corbin Russwin, Model #DC3210 M54 689.
      b. Mount photo luminescent exit signs over each exit door.
   2. NFPA 101 compliant entrance doors with exterior porch lights are required.
   3. Exterior doors shall be hollow metal door with a narrow lite window and metal frame.
   4. Exterior doors shall have a kick plate and kick stand. The height of the pre-engineered platform shall be taken into account for the mounting height and location of the kick stand.
5. Crash bar shall be Von Duprin 99-series crash bar assembly with 996L trim, grade 1 Schlage ND53-LD lockset, and finish US26D.

6. Color of doors is to be determined.

B. Interior doors:

1. Interior doors shall be Dutch-style doors with the upper and lower halves of the door swinging independently. The lower portion of the door shall include a small shelf. Dutch doors shall also have a locking mechanism on the upper portion of the door to secure the upper and lower portions of the door together.

C. All doors shall have ADA compliant commercial lockable lever handles.

D. All doors shall be sealed, caulked, gasketed, or weather stripped to minimize air leakage (WSEC Section 1314.1).

E. All doors shall be a minimum of 36” in width.

F. Refer to Appendix A for door locations.

3.3.4 Building Requirements

A. The trailers shall include an office approximately 10’-6” by 17’, as shown on the drawings provided in Appendix A.


D. Flooring: A uniform live load of 100 psf per Table 4-1 of ASCE 7. This table also specifies use of a concentrated live load of 2000 lbs., which is spread over an area of 2.5 ft by 2.5 ft. The designer shall use either the uniform load or the concentrated load in sizing the floor members, whichever produces the greater load effects.

1. Subfloor material shall be a minimum of 1-1/8 inch plywood decking.

2. The floor will be covered with commercial grade, grey, low-static carpet squares, level 200P, 24 ounce (minimum).

E. The building designs shall be stamped by a Professional Engineer licensed in the State of Washington who is experienced in design of this type of work.
3.3.5 Heating, Ventilation, and Air-Conditioning

A. The HVAC system for this control trailer shall meet the requirements of the IMC; ASHRAE Handbook – Fundamentals; ASHRAE Handbook - HVAC Systems and Equipment.

B. The control trailers shall have a central HVAC system for both heating and cooling.

C. HVAC unit(s) shall be mounted on the end wall of the trailers with a programmable thermostat for each zone.
   1. The HVAC system shall provide independent control for two (2) zones: the small office area and the main control room.

D. HVAC unit(s) shall have a disconnect switch with externally operable handle on the exterior of the trailer in close proximity to the HVAC unit(s) and be rated for operation at 240VAC.
   1. Disconnect switch to be mounted 36 inches from the top of the disconnect to finished floor.

E. The HVAC system shall be sized to accommodate the estimated heat loads as shown on sketch SK-E1, Sheet 2 in Appendix A, and for occupancy of up to 15 people. Duct smoke detectors are required for heat pumps that have a capacity that exceeds 2000 cfm and shall be installed in accordance with IMC and NFPA 90A requirements.
   1. For equipment sizing and building heating or cooling load calculations, design conditions for Hanford shall be used, and are:
      a. Annual Heating Design Conditions @ 99%
         i. Temperature: 12.6 °F DB
         ii. Dew Point: 4.6 °F
         iii. Humidity Ratio: 7.2 grains water/lb. dry air
         iv. Mean coincident DB: 15.1 °F
      b. Annual Cooling Design Conditions @ 2%
         i. Temperature: 93.3°F DB
         ii. Mean coincident WB: 64.1°F
         iii. Dew Point: 53.4°F
      c. HVAC equipment located outdoor shall be designed for the extreme bounding temperatures of:
         i. Summer: 115°F
         ii. Winter: -25°F
      d. Indoor summer temperature: 68°F to 75°F.
      e. Indoor winter temperature: 68°F.
2. Heat loads to consider:
   
a. Personal Computers, 11 total: 2,050 BTU/h each 
b. Computer Monitor, 7 total: 820 BTU/h each 
c. Copiers, 2 total: 3,620 BTU/h each 
d. Personnel, 15 FTEs: 450 BTU/h each 
e. Instrument Panels, 3 total: 5,545 BTU/h total 
f. Instrument Enclosures: 1,980 BTU/h total 
g. Camera Racks, 2 total: 1,590 BTU/h each 
h. Camera Equipment: 14,335 BTU/h total
i. Camera Monitors, 6 total: 495 BTU/h each

F. Thermostats to be mounted at approximately 60 inches above finished floor.

G. The HVAC system supply and return air lines shall be fully ducted.

H. The HVAC unit(s) supplied under this order shall be fully functional and prepared to commence operation when delivered.

3.3.6 Electrical

A. The electrical system for this control trailer shall meet the requirements of the following codes, standards and procedures:

1. ANSI C37 Series
2. ANSI/IEEE 141
3. ANSI/IEEE 242
4. ANSI/IEEE 399
5. ANSI/IEEE 902
6. ANSI/IEEE 1015
7. DOE-0359
8. IEEE 142
9. NEMA 250
10. NEMA PB-1
11. NFPA 70® (NEC)
12. NFPA 70E®

B. All electrical equipment must be listed or labeled by a nationally recognized testing laboratory such as the Underwriters’ Laboratory.

NOTE: Nationally recognized testing laboratories are listed on the OHSA website at http://www.osha-slc.gov/dts/otpca/nrtl/index.html. Nationally recognized testing laboratories listed on this site are certified only for certain products. It is the designer’s responsibility to ensure the listing is appropriate for the equipment specified.
C. If Section 3.3.6.B of this specification is not met, and there is an Underwriters Laboratories (UL) standard for the piece of equipment, it shall be field evaluated and labeled by an OSHA recognized NRTL representative.

D. Equipment without a listing mark or label by a nationally recognized testing laboratory is not approved unless a nationally recognized testing laboratory category for that type of equipment does not exist. If a category for the equipment does not exist, the equipment can only be approved for use in accordance with DOE-0359.

E. The conductors shall be copper for all sizes of wire and cable unless specifically designated otherwise in Appendix A of this specification.

F. The minimum size power conductors (600V and below) shall be #12 American Wire Gauge (AWG).

G. Power wiring for 120/240 Volt single phase systems shall have the color-coded insulation or markings indicated below:
   1. Hot 1 = Black;
   2. Hot 2 = Brown;
   3. Neutral = White or Gray;

H. There shall be no shared neutrals (Edison circuits).

I. Electrical systems shall be wired in metal conduit, flexible metal conduit, or electrical metallic tubing, with a minimum size of ¾ inch.

J. Main panel shall be located as shown on the control trailer layout in Appendix A.
   1. Panel shall have a 200A minimum main breaker, with a minimum of 42 single pole breaker spaces.
   2. Main distribution shall be designed for 120/240 Volt, single phase underground service.
   3. Install one (1) additional spare 2 inch EMT conduit from the bottom of the panel to six (6) inches below the trailer vapor barrier. Cap for future use.
   4. Install two (2) additional spare 1 inch EMT conduit from the top of the panel, one on each side, to six (6) inches above drop ceiling. Cap for future use.

K. Interior J-boxes above drop ceiling, as shown on Sketch E1, Sheet 3, in Appendix A, shall consist of a six (6) inch square by 4 inch deep minimum, metal box mounted above drop ceiling in locations shown on the layout. Provide an additional 10 ft. of slack cable at J-boxes, label wires with circuit number, and cap for future use.

L. Interior J-boxes in walls for monitors and readerboards, as shown on Sketch E1, Sheet 3, in Appendix A, shall consist of a four (4) inch by four (4) inch by two and one eighth (2
1/8) inch deep minimum, empty metal box with a single gang mud ring and blank cover, mounted in the wall 60 inches above the finished floor, with a 1 inch conduit, in locations shown on the layout.

M. Exterior J-boxes, for future floodlights, on Sketch E1, Sheet 3, in Appendix A, shall consist of a six (6) inch square by 4 inch deep minimum, metal box with blank weatherproof cover, mounted a maximum of 12 inches below roof eves in locations shown on the layout. Provide an additional 10 ft. of slack cable at J-boxes, label wires with circuit number, and cap for future use.

N. There shall be no more than eight (8) duplex receptacles per circuit.

O. Electrical receptacles in outdoor areas shall be GFCI with “in use” weatherproof covers.

P. Switches, dimmers, and receptacles shall be specification/commercial grade, 20 amp, 120 volt, white, Decora style with white covers unless otherwise specified in this Specification.

Q. All switches, dimmers, receptacles, communication ports, panels, disconnects, etc. shall be labeled with P-Touch labeling system, indicating the panel and circuit number.

R. Light switches and dimmers shall be mounted 48 inches to center, above the finished floor.

S. Receptacles shall be mounted 14 inches to center above the finished floor.

T. The Seller shall provide a single point for connections to an external ground grid. The trailer frame and the service entrance ground shall be bonded.

U. Cross connections between trailer sections shall be hard wired. The Subcontractor shall provide material required for the cross connections and all wiring shall be clearly identified and labeled.

3.3.7 Low Voltage – Communications/HLAN

A. The communication systems for the control trailer shall meet the requirements of ANSI/TIA 568-B and BICSI Telecommunications Distribution Methods Manual.

B. Trailers shall have HLAN drops in approximate locations as shown on SK-E1 Sh. 3.

C. All network cabling shall be Cat 5E wired back to communication board. 110 block terminations by others.

D. Communication board shall be four (4) foot by four (4) foot fire-rated plywood backer board for mounting the communication system equipment.

1. The fire-rating stamp must be visible; the board shall not be painted.
2. Provide a #6 AWG building ground, bonded to trailer frame, placed at the backboard location.

E. Install two (2) two (2) inch PVC conduit with end bell on both ends from above the ceiling to overlapping the top of the communication board by six (6) inches, and within three (3) inches of either side of the communication board.

F. Install two (2) two (2) inch PVC conduit overlapping the bottom of the communication board by six (6) inches, and within three (3) inches of either side of the communication board through the floor to beneath the trailer extending 12 inches below the vapor barrier.

G. Each network access point shall consist of the following:
   1. One (1) white, single gang cover plate with two (2) jacks.
   2. One (1) cable per jack.
   3. Jacks shall be white, two each per plate.
   4. Each jack shall be labeled in consecutive order: 1, 2, 3, 4, etc.

H. Provide Leviton® RJ-45 (8-pin connector) wall jack (ANSI TIA 568-B) and face plates used for all drops (white).

I. Provide sufficient length of Cat 5E wire to ensure cabling can reach communication board area when trailer sections are assembled. Provide an additional 10 ft. of slack cable at backboard, and 10 ft. of slack cable at each power pole location as shown on the drawings listed in Section 3.1.1 of this Specification.

J. All communication wires shall be run in conduit from the ceiling space, inside the walls, to the communication drops.

K. Group communications wires together in an organized manner.

L. Provide space above suspended ceiling for future 12” wide by 6” deep wire way as shown on drawings.

3.3.8 Lighting


B. All interior lighting shall be on two (2) circuits as shown on Sketch E1 Sheet 3 in Appendix A.

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1 Leviton is a registered trademark of Leviton Manufacturing Co., Inc., Melville, New York.
C. Interior light fixtures shall be two (2) foot by four (4) foot specification/commercial grade, dimmable, LED troffers with maintenance disconnect.
   1. Each fixture shall have a minimum of two (2) wire supports on opposite corners from the fixture to permanent building structure.

D. All exterior lighting shall be on its own circuit.

E. All exterior lights, and future floodlight J-boxes, shall be controlled by one (1) single photocell that extends above the roof line and shall be facing north.

F. Porch lights shall be RAB Lighting #ENTRA12N, 120 Volt, without photocell or Company approved equal.

G. Future flood lights shall be assumed to be 150 W LED lights, for circuit sizing purposes.

3.3.9 Industry and Government Standards

The use of standard or commercial parts and processes shall be governed by the industry and government standards listed in Sections 2.1 and 2.2.

3.3.10 Interchangeability

All materials shall be new (not previously used) and as called out in this Specification. The Seller shall have responsibility for providing proof of equivalency.

The Seller shall not use suspect or counterfeit parts and shall verify and document compliance with this requirement using the DOE suspect/counterfeit items list and DOE G 414.1-3.

3.3.11 Nameplate/Identification/Marking

The control trailers (each trailer section) shall each be labeled on the frame with an attached Manufacturer’s Certification Nameplate and identified/marked with a nameplate that displays the trailer name and serial number. Each trailer shall also have the Washington State Labor and Industry Gold Insignia attached and clearly visible on the exterior of the trailer.

3.3.12 Miscellaneous Items

A. The Seller shall provide miscellaneous items such as mounting hardware, clamps, conduit, conduit fittings, and wire, as required for installation.

B. The Seller shall provide manuals for operation, maintenance, installation, assembly, and disassembly of all supplied equipment. The manuals will consist of vendor manuals, catalog cut sheets, data sheets, wiring and control diagrams, spare parts lists, and dimensional drawings.
3.3.13 Warranty Information

A. Provide a ten (10) year manufacturer’s written warranty to include coverage for exterior pre-finished surfaces and trim finish. The finish shall be warranted against cracking, chipping, or crazing; blistering, peeling, chalking, or fading.

B. Provide a twenty (20) year warranty for roofs.

C. Provide a five (5) year warranty against defects in material and workmanship. Should a product fail, the Seller shall repair, replace with new product, replace with equivalent product, or provide a full refund for the product.

D. The Seller shall provide the Buyer with copies of all warranty information prior to shipping.

3.3.14 Document Submittal (Vendor Information)

Required submittals are summarized below, and identified and listed in detail on the procurement Master Submittal Register (MSR). The MSR identifies the minimum submittals required by this Specification and identifies when the submittals are required to be submitted in the procurement process. The MSR included with the purchase order will constitute the governing MSR.

A. Submittals shall be provided using the Tank Operations Contractor Incoming Letter of Transmittal form (A-6005-315). All transmittal subject headings shall contain, at a minimum, the subcontract number, submittal number identified by the MSR, and submittal description.

B. Submittals shall be provided in electronic format unless available only as a hard copy. Electronic submittals may be sent to TOCVND@rl.gov or delivered via a WRPS-designated File Transfer Protocol (FTP) site. Electronic formats must be non-password protected in one of the following formats:

- Microsoft® Office Compatible
- Portable Document Format (.PDF)
- Tagged Image File Format (.TIFF)
- Graphics Interchange Format (.GIF)
- Moving Picture Expert Group (.MPEG)
- Drawing File Format (.DWG)
- Windows® Media Video (.WMV)
- Joint Photographic Experts Group (.JPEG)

C. All deliverable documentation shall be complete, accurate, legible, and reproducible. Before delivery, design media and documents shall be reviewed by qualified Subcontractor personnel for technical adequacy and appropriate content in accordance with the Subcontractor’s Quality Assurance Program/procedures. The Subcontractor shall attest, in writing, to the accuracy and completeness of the information contained in the final deliverables.

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2 Microsoft is a registered trademark of Microsoft Corporation in the United States and/or other countries.
3 Windows is a registered trademark of Microsoft Corporation in the United States and/or other countries.
E. Deliverables shall be subject to approval by the Buyer’s Technical Representative. Deliverables shall comply with this Specification and technical basis documents and other requirements identified herein.

3.3.14.1. List of Submittals

A. Design/Drawing Package: Submit electronic copy of design/drawing package including, but not limited to:

1. Title page
2. Architectural
3. Structural
4. Sections
5. Details
6. Exterior Elevations
7. Electrical/HLAN
8. Panelboard Schedules
9. Reflected Ceiling Plan
10. Mechanical (HVAC)

B. Washington State Labor and Industry approved drawing package.

C. Catalog Data: Legible manufacturer’s data sheets on each product, material or piece of equipment to be used, including, preparation instructions, recommendations, storage and handling requirements and recommendations, as well as installation methods. Additional information to include Safety Data Sheet (SDS), shelf life, and temperature range of storage or application.

D. Product Samples: Submit product samples for flooring, wall base, and window trim.

E. Gold Seal Insignia: Submit proof of compliance with WAC-150F and the Gold Seal Insignia.

F. Seller shall submit detailed design calculations for structural building components prepared and sealed by a Professional Engineer registered in the State of Washington. Calculations shall meet the design criteria given.

G. Seller shall submit manuals for operation, maintenance, installation, assembly, and disassembly, and include vendor manuals, catalog cut sheets, data sheets, wiring and control diagrams, spare parts lists, and dimensional drawings, as specified in Section 3.3.12.

H. Seller shall submit warranty information, as specified in Section 3.3.13.

I. Seller shall submit test plans and procedures for approval prior to testing, as specified in Section 4.2.1.

J. Seller shall submit results for acceptance prior to shipment, as specified in Section 4.2.1.
K. Seller shall submit special handling instructions, as specified in Section 5.3.

3.3.14.2. Approval of Submittals

A. All submittals transmitted shall include the designation in the MSR per Tank Operations Contractor Vendor Processes stated in TFC-BSM-IRM_DC-C-07. Submittals are divided into two types: 1) those requiring “approval” (e.g., approval data or pre-purchase evaluation data); and 2) those “not requiring approval” (e.g., vendor information data). Submittals “not requiring approval” will be reviewed to verify completeness and adequacy for their intended purposes. A submittal requiring approval that is not approved is identified as: 1) “Not Approved Revise and Resubmit.” The submittal is considered technically deficient, or incomplete, and therefore unacceptable. Re-submittal is required, hence the fabrication, procurement, or performance of procedures shall not proceed; or 2) “Approved with Exception.” Fabrication, procurement, and performance may proceed, and re-submittal is required to verify incorporation of the exception. Submittals “not requiring approval” that are determined to be incomplete or inadequate will be marked “Resubmit.” An explanation of the deficiencies will be included for corrective action by the Seller.

B. Approval by the Buyer does not relieve the Seller of responsibility for accuracy or adequacy of design under this Specification.

C. If any revision has been made to previously submitted items, the Seller shall re-submit updated versions of said items for approval, in addition to the items listed above.

D. Certified data shall be defined to mean that the design adequacy of a given item (document, drawing, calculation, etc.) be verified by persons other than those who prepared the item. Each deliverable (drawing, calculation, etc.) shall have at least an originator's/preparer's signature and a checked-by or approved-by signature.

4.0 QUALITY ASSURANCE REQUIREMENTS

A. The Seller shall follow standard commercial quality practices unless otherwise stated in this specification or the SOW.

B. Seller shall be responsible for performing quality workmanship and shall conduct the quality control measures necessary to ensure work conforms to drawings and specifications.

C. The Supplier shall ensure that no suspect or counterfeit parts or components are provided in conjunction with this procurement. Suspect and counterfeit items are described in DOE G 414.1-3.

4.1 ACCEPTANCE CRITERIA

Unit construction shall comply with applicable industry and government codes and standards. Supplier shall maintain a Quality Control Program that complies with Seller’s Quality Assurance program.
4.2 INSPECTIONS AND TESTS

4.2.1 Tests

A. Test plans and procedures shall include, but are not limited to the following:
   1. Megger and continuity checks on all wiring, and
   2. Verification of no unintentional grounds.

B. Basic functionality tests for circuits, lights, receptacles, and HVAC systems shall be performed by the Seller to ensure they will function as designed.

C. Connection tests for all power and signal wires shall be performed by the Seller to ensure they will function as designed.

5.0 PREPARATION FOR DELIVERY

5.1 GENERAL

All items shipped are to arrive at the job site in the same condition it was in when it passed all quality control inspections. The equipment shall be supported in a manner to prevent damage during shipment and to permit handling while in storage or during installation. Assembly openings shall be protected by covers.

5.2 PACKAGING

Packaging shall be provided by the Seller to withstand rain, snow, blowing sand and expected temperatures of -25 to 115°F.

5.3 HANDLING

If special handling is required for control trailer shipment, field assembly, or installation of equipment, the special handling information and instructions shall be provided by the Seller prior to shipment. The special handling instructions shall be so identified and included in the Seller’s customers’ use documentation.

5.4 SHIPPING

A. The mode and method of transporting, and the extent of storage for the control trailers are to be mutually agreed on by the Seller and Buyer prior to fabrication and delivery of the control trailers to provide the best protection of equipment during transit and storage. Any boxed or crated components shall be blocked and securely fastened on the carrier vehicle to prevent shifting, crushing, or bumping during transport. Shipping dunnage, tie-downs, etc. shall be such that the components cannot be damaged or cannot be unduly stressed in any manner from carrier vibration or acceleration/deceleration.

B. At the final destination, the Buyer will inspect the shipment as necessary to ensure that received items have not been damaged during shipment and that required items and
supporting documentation have been received. The receipt inspection by the Buyer constitutes final acceptance.
APPENDIX A

SKETCHES
## RPP-SPEC-60185, Rev. 1

### Panel Type (Model): TBD

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### NOTES:
1. LOADS TO BE PROVIDED UPON REQUEST OF CONTRACTOR, SUBMITTAL.
2. ALL BREAKERS SHALL BE MARKED WITH LOCK-OUT ACCESSORY.

### SUBTOTAL:
- TOTAL WATTS PHASE A: 5380
- TOTAL WATTS PHASE B: 4440
- TOTAL WATTS PHASE C: 2240
- TOTAL: 12060
APPENDIX B

MASTER SUBMITTAL REGISTER FORM (A-6005-317)
### TOC MASTER SUBMITTAL REGISTER (MSR)

1. MSR Number (COMPLETED BY DOCUMENT CONTROL):

2. REV:

3. Requisition:
4. Subcontract-Release No.:
5. Purchase Order:
6. Title:
7. Vendor Name:
8. Responsible Person:
9. Project No.:
10. Date:

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Purpose:
APP – Approval    INF/REC – Information/Record

Submittal Schedule:
PF – Prior to Fabrication    PP – Prior to Procurement    PS – Prior to Shipment
I – Before Installation    P – Before Final Payment    U - Before Use
PT – Prior to Testing    UDI – Upon Date Identified

Media
E – Electronic    H - Hardcopy

B-2
### TOC MASTER SUBMITTAL REGISTER (MSR)

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<td>3.3.14.1.H</td>
<td>Warranty Information, as specified in Section 3.3.13. (POR471 &amp; POR498)</td>
<td>INF/REC</td>
<td>PF</td>
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<td>Test Plans and Procedures, as specified in Section 4.2.1. (POR471 &amp; POR498)</td>
<td>APP</td>
<td>PT</td>
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<td>Test Results, as specified in Section 4.2.1. (POR471 &amp; POR498)</td>
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<td>Special Handling Instructions, as specified in Section 5.3. (POR471 &amp; POR498)</td>
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**Purpose:**
- APP – Approval
- INF/REC – Information/Record

**Submittal Schedule:**
- PF – Prior to Fabrication
- PP – Prior to Procurement
- PS – Prior to Shipment
- PT – Prior to Testing
- I – Before Installation
- P – Before Final Payment
- U – Before Use
- UDI – Upon Date Identified
- WS – With Shipment

**Media:**
- E – Electronic
- H – Hardcopy

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