STATEMENT OF WORK
FOR
PROCUREMENT

Title: AY/AZ Change Trailer

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1.0 Objective

Procure one (1) 42' by 84' triple-wide mobile office/change trailer to support future AY/AZ tank farm activities.

2.0 Background/Introduction

AY/AZ tank farm currently utilizes two change trailers (241-AY-1 & 241-AY-2) for access to both farms. To support retrieval of AY-102, it is anticipated that 241-AY-1 change trailer will be repurposed as a control trailer. This leaves 241-AY-2 as the only operable change trailer. However, 241-AY-2 is undersized to accommodate the increased load and is beyond its service life.

It is anticipated that approximately 60-70 people will access AY/AZ farm change trailers on a daily basis once AY-102 retrieval begins. In order to support the increased usage, 241-AY-2 must be replaced with a larger change trailer.

The replacement of 241-AY-2 change trailer has been identified as necessary to support future work activities. To alleviate congestion the new trailer will be partially separated down the middle with a wall, essentially creating two (2) 42' x 42' trailers. One side will be a dedicated entry trailer into the tank farm (Ingress) and the other side will be a dedicated exit trailer out of the tank farm (Egress).

To continue supporting tank farm activities, Washington River Projection Solutions LLC (hereafter called WRPS) must maintain the housing infrastructure to support the ongoing tank farm work. The addition of a new change trailer at AY/AZ tank farm will provide support personnel a functional facility for the next 20+ years.

Herein after the trailer manufacturer shall be referred to as the "Supplier."

3.0 Scope

The Supplier shall be responsible for designing, fabricating, and delivering one (1) 42' by 84' triple-wide mobile office/change trailer. The trailer shall be life safety code compliant.

This work shall include design, fabrication, and delivery of the mobile office/change trailer. This scope **does not** include trailer set-up at the site. The mobile trailer must be a brand new (not previously used) facility. The floor plans shall be similar to those shown in Attachment 1. In no case shall applicable codes be violated as a result of incorporating the details or notes from the sketches provided.

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3.1 Facility Description

One (1) triple-wide mobile office/change trailer will be approximately 3528 square feet with a nominal size of 42' by 84' and will be single story. A suggested floor plan for the trailer is presented in Attachment 1.

3.2 Design Parameters

The mobile facility 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.

The mobile office/change trailer shall be constructed to safely resist the following loads (WRPS Engineering Standard, TFC-ENG-STD-06):

- Wind Load: 20-psf live horizontal, 15-psf live load uplift.
- Roof Load: 30-psf minimum live load. 25-psf minimum snow load.
- Seismic Load: In accordance with IBC for the Hanford Area.
- Floor loads imposed by unit, personnel, and all fixtures and equipment.
    - Note that the trailer will have five (5) ARGOS-5AB units installed by others that weigh approximately 700 lbs. each. The locations of these units are shown in Attachment 1.

3.2.1 Structural

- The trailer's sub floor shall be reinforced to withstand the added weight of the five (5) ARGOS-5AB units to be installed by others.

3.2.2 Architectural

See Attachment 1 for the desired layout of the trailer.

- Walls shall be manufacturer's standard walls and have a NFPA 101® Class A (0 – 25) flame spread rating.
- White or off white in color.

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- Install insulation on all walls.
    - Fire hazard classification shall not exceed the following: Flame spread 15, fuel contribution 10, and smoke development of 15 when tested according to ASTM E 84.
    - Floor to ceiling measurement shall be a minimum of 8'.
- Roofing material shall be 40 millimeter white Ethylene Propylene Diene Monomer (EPDM). No metal roof.
    - The roof **should meet** the Department of Energy and Cool Roof Rating Council program criteria for a 'cool roof': minimum three (3) year aged solar reflectance of 0.55, and minimum three (3) year aged thermal emittance of 0.75, or with a solar reflectance index (SRI) of 64 (for a low-sloped roof pitch less than or equal to 2:12) or SRI 29 or higher (for steep-sloped roof pitch exceeding 2:12) in accordance with ASTM Standard E1980-01.
- Furnish trailer skirting to match exterior wall and finish. Installation by others. Provide a sufficient amount of skirting to accommodate 36" from finished floor to grade. Installation will be by others.
    - Furnish an additional 25 LF of trailer skirting.
- Furnish and install commercial grade vinyl flooring with a slip resistant finish in a light, neutral color.
    - Install a ¼" thick 4' x 4' metal plate where each ARGOS-5AB units will be located for mounting purposes.
        - Ensure the metal plates have holes drilled to allow the ARGOS 5AB units to be anchored to the floor through the plate using the base mounting supports shown in Attachment 4.
- Install a 1" conduit from each ARGOS-5AB unit location through the ceiling and route to the ARGOS gas bottle rack shown Attachment 1.

- The gas lines will be run and connected by others.
- The ARGOS bottle rack will be supplied and installed by others.

3.2.3 Doors

- Furnish and install five (5) exterior metal doors with narrow lite window and metal frame, see Attachment 1 for locations. Furnish and install three (3) exterior doors with narrow lite window, metal frame, and inner dimensions of 4' wide by 7' 7" tall, as shown in Attachment 1.
  - Door closures to be Corbin Russwin, Model #DC3210 M54 689.
  - Paint color to be medium gray (similar to the pewter colored rubber cove base).
  - Door hardware for the doors with Proxy readers to be Von Duprin E99L-US26D crash bar assembly.
  - Door hardware for all other doors to be Von Duprin 996L-R&V.
- Furnish and install one (1) exterior metal roll-up door with inner dimensions of 4' wide by 7' tall to accommodate laundry, as shown in Attachment 1.

3.2.4 Windows

- Furnish and install ten (10) operable windows, screens, frames, interior trim, exterior trim and blinds on the trailer, see Attachment 1 for approximate window locations.
  - Windows shall be 48" by 48".
  - Blinds shall be 1" white horizontal, interior mount Hunter Douglas Décor Aluminum Blinds or WRPS approved equal.

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3.2.5 Electrical

- There shall be no shared neutrals in this installation.
- Furnish and install two (2) Electrical panels located inside the trailer as shown in Attachment 1.
    - Electrical panels shall be recessed in the wall, flush mount.
- Furnish and install one (1) spare 2" PVC conduit from the bottom of each electrical panel to below the floor so they can be accessed from underneath the trailer.
    - Extend spare conduit 12" below vapor barrier and cap for future use.
- Furnish and install new branch circuit wiring as shown in Attachment 1.
    - There shall be no more than eight (8) receptacles on each circuit.
    - Receptacles and switches shall be Specification Grade 20 amp, 120 volt, white, Decorator style with white covers to match.
- Furnish and install seven (7) recessed GFCI receptacles with "in use" weatherproof cover as shown in Attachment 1.
- Furnish and install two (2) 3-gang AV Boxes in the trailer. See Attachment 1 for AV Box locations. Each AV Box shall contain:
    - Duplex receptacle.
    - HDMI port.
    - Four (4) speaker jacks.
    - Two (2) HLAN jacks.
    - One (1) 1 ½ IN PVC conduit to above the ceiling.

- Install electrical receptacles in the ceiling for each ARGOS-5AB unit.
    - Electrical receptacles will be 110V ac/60 Hz/2.0A, recommended power requirement as shown in Attachment 3.

3.2.6 Electrical Verification

- All electrical systems and circuits will be field tested, verified and documented prior to delivery on site. A WRPS representative will be present during final verifications.
- Furnish and install labels for all switches, receptacles, ports, panels, disconnects, etc. Labels shall be P-Touch labeling system indicating circuit number.

3.2.7 Low Voltage

- Furnish and install two (2) 3' wide by 5' tall fire-rated plywood backer board for communication and proxy door security system equipment, see Attachment 1 for locations.
    - Do not paint the communication boards. The fire-rating stamp must be visible.
- Furnish and install HLAN and phone outlets in accordance with Attachment 1.
    - All HLAN cabling shall be Cat5E.
    - Each HLAN location shall consist of one (1) white, single gang cover plate with two (2) jacks.
    - Install one (1) cable for each jack.
    - The jacks shall be white, two each per plate.
- Furnish and install one (1) 2" PVC conduit (per communication board) with end bell on both ends from above the ceiling to overlapping the top of each communication board by 6".

- Install the conduit within 3" of either side of the communication board.

- Furnish and install one (1) 2" PVC conduit (per communication board) from the bottom of the communication board through the floor to beneath the trailer.
  - Conduit shall extend 6" onto the bottom of the communication board, including end bell.
  - Conduit shall extend 12" below vapor barrier.
  - Install the conduit within 3" of either side of the communication board.

3.2.8 Proximity Door Security System

- Furnish and install four (4) single-gang recessed boxes with blank weatherproof cover on the exterior wall by the "clean side" doors as shown in Attachment 1 for future installation of a card reader.
  - Install boxes at 48" to top of box above finished floor.
  - Install boxes on the latch side of the door.
  - Furnish and install Belden cable 3-pair shielded 18 AWG from each box to their respective communication board. Leave an additional 10' length on the cable coiled in the ceiling above the board.
    - Connections by others.

- Furnish and install four (4) single-gang flush mount boxes with blank cover on interior wall.
  - Install boxes at approximately the same level as the crash bar.
  - Furnish and install 3-conductor 12 AWG MC cable from each box to their respective communication board. Leave an additional 10 FT length on the cable coiled in the ceiling above the board.

- Connections by others.

3.2.9 Lighting

- All lighting (interior and exterior) shall be on its own circuit.
- Furnish and install a minimum of forty (40) 24" by 48" LED troffer interior light fixtures with switching in accordance with Attachment 2.
    - Ballast disconnect shall be included.
    - Furnish and install additional wire supports for each light fixture.
        - Minimum of two (2) supports per fixture installed on opposite corners.
        - Supports to run from fixture to permanent building structure.
- Furnish and install nine (9) exterior outdoor lights on the trailer as shown in Attachment 1.
- Furnish and install six (6) exterior flood lights as shown in Attachment 1.

3.2.10 HVAC

- Furnish and install two (2) HVAC units, as shown in Attachment 1.
- Furnish and install a fusible disconnect switch for each HVAC unit with an externally operable handle on the exterior in close proximity to the HVAC unit, as shown in Attachment 1.
- Both supply and return lines shall be ducted.
- Furnish and install eight (8) HVAC vent ducts as shown in Attachment 2.

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3.2.11 Equipment

- Furnish and install the following equipment in the trailer as shown in Attachment 1.
    - Six (6) 10' long Benches.
        - Benches shall be 18" wide with wooden top and metal supports attached to the floor.
    - Four (4) 12' long Benches.
        - Benches shall be 18" wide with wooden top and metal supports attached to the floor.
    - One (1) 6' long x 42" high Bench.
        - Bench shall be a minimum of 18" wide with wooden top and metal supports attached to the floor.
    - One (1) 14' long Bench.
        - Bench shall be a minimum of 18" wide with wooden top and metal supports attached to the floor.
    - Shelves and Cabinets.
        - See the Elevation Details A-D on Attachment 1 for dimensions and details.
        - Shelves and Cabinets will be made out of wood.
    - Two (2) Fire Extinguisher Cabinets.
        - Cabinets shall be semi-recessed with non-lockable hinged glass door, pull handle and catch. Size the extinguisher cabinets to fit AMEREX model #B441. The fire extinguishers shall be supplied by WRPS.

- One (1) 48" high L shaped counter (11.5'L x 2'W) attached to the floor permanently.
- One (1) L shaped desk (9.5'L x 2'W).
- Four (4) 60"L x 30"W Tables, as shown in Attachment 1.
  - Tables will not be attached to the floor.
- Four (4) 28"L x 30"W Tables, as shown in Attachment 1.
  - Tables will not be attached to the floor.
- One (1) Supply Cabinet.
  - Supply cabinets shall be 6' H x 36" W x 18" D.
- One (1) Survey table with storage cabinets underneath.
  - Survey table shall be 10'L x 3'W and will not be attached to the floor.
- One (1) Curtain rail track.
  - Curtain rail track shall have an 8' radius.
- One (1) Curtain.
  - Curtain shall be capable of sliding open or closed to provide privacy.
  - Curtain will be floor to ceiling in length.
  - Curtain will be capable of attaching to wall when not in use.

3.3 Supplier Schedule

The Supplier shall submit to WRPS a Schedule for approval. This approved Schedule will become the Project Baseline Schedule and will be an updated version of the proposal schedule. The Schedule shall be based on a critical path analysis of activities (as applicable) and sequence of operations needed for the orderly performance and completion of all the work in accordance with this

subcontract. The schedule shall contain sufficient detail to identify critical schedule activities, WRPS interface, submittals required, and any other information pertinent to the performance of this Subcontract.

The Supplier shall promptly inform WRPS of any proposed change in the schedule and shall furnish WRPS with a revised schedule within seven (7) calendar days after approval by WRPS of such change.

The schedule shall be kept up-to-date, taking into account the actual work progress and shall be revised weekly.

If it is determined, by WRPS, that there are significant variances between the Supplier's actual and scheduled progress (i.e., endangering completion of the Supplier's work within the scheduled time), the Supplier may be required to prepare and submit a corrective action plan. Corrective action plans shall be submitted to WRPS identifying the following:

- Completion dates for activities behind schedule.
- Identify problem areas, anticipated delays and schedule impacts.
- Describe corrective actions taken or proposed.

4.0 Deliverables / Submittals

4.1 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 A-6005-315). 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 must be sent to WRPSCCDocControl@rl.gov. Electronic formats must be non-password protected in one of the following formats:

- Microsoft® Office Compatible

- Portable Document Format (PDF)
- Joint Photographic Experts Group (JPEG)
- AutoCAD (DWG).

4.2 Plans and Drawings

Supplier shall produce and submit electronic copies of the drawings for approval by WRPS. The drawings shall include, but are not limited to, floor plans, architectural details/sections, electrical (including panel schedule) and mechanical. Other design information shall include:

- Shop drawings, calculations, catalog cuts and complete design analysis for the structure.
- Calculations and other data as necessary to clearly describe design, materials, sizes, layouts and assembly instructions.
- Operations and maintenance manuals for HVAC, plumbing and electrical equipment.
- Lighting level calculations, as required.
- Wiring diagrams and panel schedules.
- Life safety code compliance checklist.
- Final as-built drawings shall be provided in the native electronic file (e.g. .DWG).

Design drawings and HVAC performance criteria and specifications must be approved by WRPS personnel prior to construction of the facility.

Any manufacturer changes to the original WRPS approved drawings needs to be submitted for review and approval by WRPS.

4.3 Materials and Equipment

Supplier shall submit a detailed description (catalog cut sheets, MSDSs, etc.) of all materials and equipment prior to installation for WRPS approval. The information shall include colors and samples as applicable.

4.4 Material Book

Supplier shall provide two (2) hardcopies and one (1) electronic copy of all materials used in the creation of the facility (product data, cut sheets, MSDS, etc.) as a required submittal. The book shall include a general statement ensuring that no materials or products containing asbestos or beryllium were used in the construction of the facility.

4.5 Final Product

Supplier shall provide the complete trailer and transport the trailer to the Hanford Site **on or before December 1, 2014**, unless temporary storage arrangements in town are approved by a WRPS representative**.** Installation and assembly of the mobile trailer shall be by others and is not included in this request for proposal.

5.0 Acceptance Criteria

Unless otherwise approved by WRPS, all electrical control panels and electrical equipment [a general term including material, fittings, devices, appliances, luminaries (fixtures), apparatus, and the like, used as a part of, or in connection with, an electrical installation] delivered or brought onto the site in performance of this subcontract must be listed or labeled by an organization currently recognized by OSHA as a nationally recognized testing laboratory.

All items and processes are subject to review, inspection or surveillance by WRPS at the Supplier's facilities or any lower-tier manufacturing facilities at any time.

The 100% complete mobile facility shall comply with Chapter 296 150F WAC.

The Supplier is expected to notify WRPS to schedule the in-process factory inspection at least two (2) weeks in advance and the final inspection at least 48 hours prior to delivery.

6.0 Configuration Management and Standards

6.1 Configuration Management Requirements

Configuration management requirements for this Release are based upon the types of engineering services being procured and include the TOC standards listed in Section 6.2, *Applicable Standards* and the statements below.

Design Analysis documentation shall include the following:

- Definition of the objective of the analysis.

- Definition of analysis inputs and their sources.
- Results of literature searches or other applicable background data.
- Identification of assumptions and indication of those that must be verified as the design proceeds.
- Identification of any computer calculation including computer type, computer program (e.g., name), revision identification, inputs, outputs, evidence of or reference to computer program verification and the bases (or reference thereto) supporting application of the computer program to the specific physical problem.
- Review and approval.

6.2 Applicable Standards

APPLICABLE ENGINEERING CODES AND TOC ENGINEERING STANDARDS

	Number	Title
1.	ANSI C37 Series	Circuit Breakers, Switchgears, Substations, and Fuses
2.	ANSI/IEEE 141	IEEE Recommended Practice for Grounding of Industrial and Commercial Power Systems (IEEE Green Book)
3.	ANSI/IEEE 242	IEEE Recommended Practice for Protection and Coordination of Industrial and Commercial Power Systems (IEEE Buff Book)
4.	ANSI/IEEE 399	Recommended Practice for Power Systems Analysis (IEEE Brown Book)
5.	ANSI/IEEE 902	IEEE Guide for Maintenance, Operation, and Safety of Industrial and Commercial Power Systems (IEEE Yellow Book)
6.	ANSI/IEEE 1015	IEEE Recommended Practice for Applying Low Voltage Circuit Breakers Used in Industrial and Commercial Power Systems (IEEE Blue Book)
7.	ASTM E1980	Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.
8.	ASTM E 84	Standard Test Method for Surface Burning Characteristics of Building Materials
9.	IESNA	Lighting Handbook: Reference and Application
10.	NEMA 250	Enclosures for Electrical Equipment (1000 Volts Max)

	Number	Title
11.	NEMA PB-1	Panel boards
12.	NFPA 70®	National Electric Code
13.	NFPA 70E®	Standard for Electrical Safety in the Workplace
14.	NFPA 101®	Life Safety Code
15.	NFPA 225®	Model Manufactured Home Installation Standard
16.	TFC-ENG-STD-01	Human Factors in Design
17.	TFC-ENG-STD-06	Design Loads for Tank Farm Facilities
18.	TFC-ENG-STD-07	Ventilation System Design Standard
19.	TFC-ESHQ-FP-STD-02	Fire Protection Design Criteria
20.	WAC 296-150F	Factory-Built Housing and Commercial Structures

7.0 ESH&Q Requirements

7.1 Quality Assurance Requirements

The work activities for this Statement of Work have been designated as Commercial Quality and as such, the Supplier shall, as a minimum, implement industry commercial practices for the mobile facility.

Supplier shall be responsible for performing quality workmanship and shall incorporate the quality control measures necessary to ensure work conforms to drawings and specifications. The Supplier shall perform all manufacturing work in accordance with their Quality Control Program.

WRPS has the right to factory inspect the mobile facility at any time prior to shipment.

7.2 Price-Anderson Amendments Act Requirements

This 7.2 section and the General Provisions Article 2.11 entitled, *Price-Anderson Amendments Act (PAAA),* are both determined to be N/A.

7.3 Verification/Hold Points

A factory inspection will be conducted during fabrication of the trailer sections. Supplier is to notify WRPS a minimum of two (2) weeks in advance to schedule the inspection.

A final inspection will be conducted by a WRPS representative to confirm compliance with design, codes, standards, this Statement of Work and the as-built drawings before the trailer is delivered on Site.

8.0 Work Location/Potential Access Requirements

The primary work location will be the Supplier's home location and manufacturing facilities. Delivery of the mobile facility shall be to the Hanford Site 200E area. Supplier will contact the WRPS Construction Manager or BTR a minimum of 48 hours in advance of delivery.

9.0 Training

The Supplier is expected to provide appropriately trained and qualified staff to perform the type of work specified. This shall include necessary expertise and training including necessary continuing training programs to assure Supplier personnel maintains a current understanding of laws, requirements, and industry standards. The Supplier shall maintain WRPS and regulatory required certifications and qualifications for personnel.

10.0 Qualifications

All drawings and calculations shall be stamped by a Registered Professional Engineer with a **current** stamp in the State of Washington **prior to fabrication completion**. Supplier personnel shall have all appropriate training, experience, qualification and/or certification(s). Documentation/certification of personnel qualifications shall be maintained by the Supplier and provided to WRPS upon request. Supplier shall provide reasonable assurance that the assigned personnel have sufficient documented training, education and experience to satisfy the specified requirements.

11.0 Special Requirements

The Supplier shall be fully responsible for delivery of the mobile office from its fabrication site to its designated deliver location at Hanford **on or before December 1, 2014.** Any damages resulting from transporting the mobile office will be repaired and/or replaced at Supplier's expense.

12.0 Use of Government Vehicles

There is no anticipated need for any Supplier employees to use a Government-furnished vehicle in the performance of this Statement of Work. The Supplier's employees, therefore, are specifically prohibited from driving any Government-furnished vehicles under the performance of this Statement of Work unless this Statement of Work is

formally so modified by the parties and a copy of any applicable driver's license provided to the BTR.

13.0 Government Property

No government property is anticipated to be required for this scope of work.

14.0 Reporting/Administration

The Supplier shall provide weekly status reports by no later than close of business every Wednesday. The status reports shall include an updated Supplier Schedule showing the percent complete and the Change Since Last Week (CSLW) duration for each activity. The status report shall also include the percent spent to date on the contract, as well as a recovery plan and reason for any activity with a negative CSLW.

14.1 Kick-off Meeting

A kick-off meeting shall be held at the Supplier's office after issuance of a notice to proceed. The purpose of the meeting will be to provide the Supplier with additional information as required to accomplish the specified tasks and to develop a basis for project partnership. This meeting will focus on a discussion of the work scope and the goal, role, and responsibility of each project participant. Pertinent documents shall be reviewed and discussed.

14.2 Technical Coordination Meetings

The Supplier shall hold technical coordination meetings on an as needed basis, to discuss project issues as they arise. WRPS representatives including operations, engineering, project manager, and project engineer(s) shall attend the coordination meetings, as necessary. The Supplier shall prepare meeting minutes and issue them to the meeting participants within one working day of the meeting for review and concurrence. The Supplier shall also track any actions arising from these meetings and document them on the Project Action Item List with the meeting minutes.

14.3 Communications

Any oral communications or informal written communications (e.g. e-mail, facsimiles) affecting the approved work scope shall be brought to the attention of WRPS by the Supplier as soon as possible, but before the Supplier takes any action. Any changes / additions to the work scope shall be formalized by written contract amendment issued by the subcontract administrator. All email communication shall copy TOCVND@rl.gov.

14.4 Records Requirements

Each deliverable record document shall show the following:

- Project and contract identification.
- Originating firm's name.
- End-item document title.
- WBS number.
- Document identification number.
- Document descriptive title.

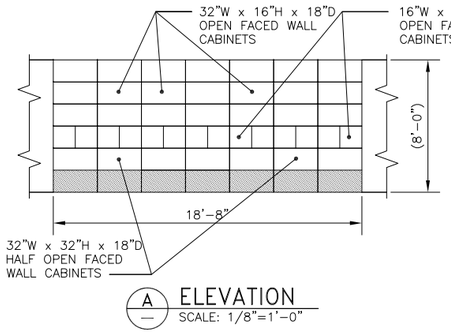
Those documents that describe or support the project design baseline, with current and previous revisions, shall be maintained as record documents in accordance with the Supplier's approved configuration control program. The Supplier shall provide a list of proposed record documents to the WRPS Project Manager for approval within thirty (30) days of the Notice to Proceed.

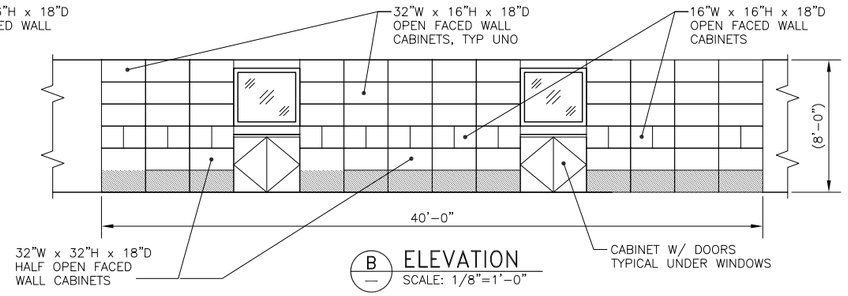
15.0 Workplace Substance Abuse Program Requirements

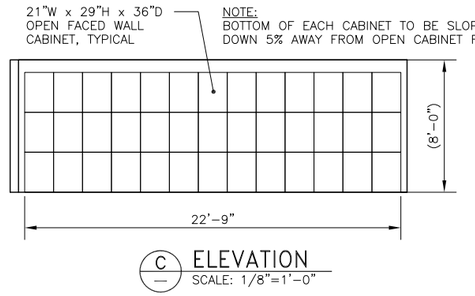
A Workplace Substance Abuse Program is not required for this Statement of Work.

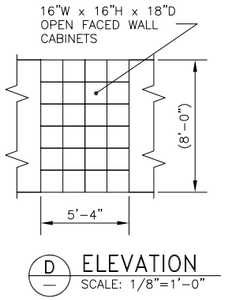
16.0 Attachments

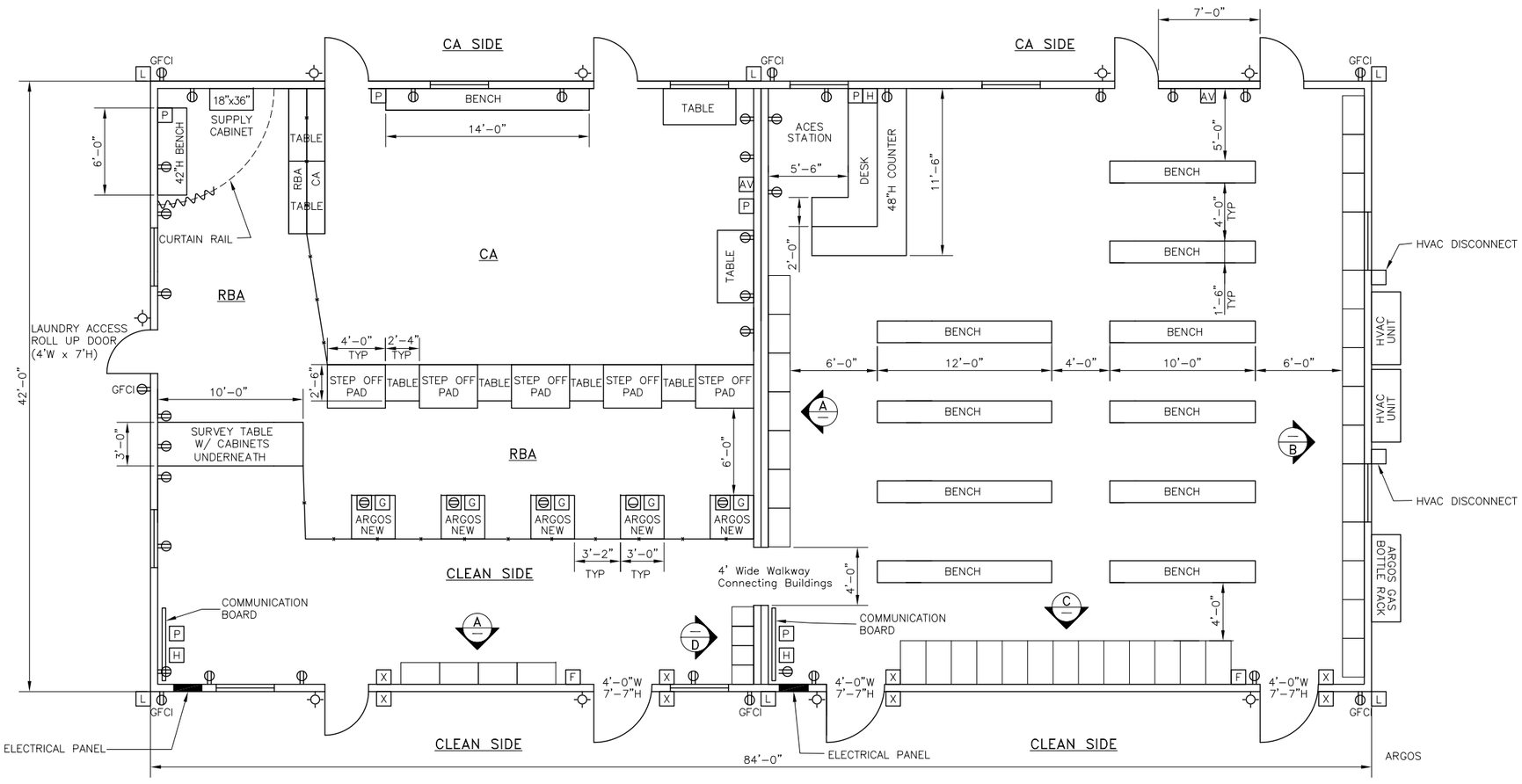
- Attachment 1 –Architectural, Electrical and HLAN Plan – AY/AZ Change Trailer
- Attachment 2 –Lighting and HVAC Plan – AY/AZ Change Trailer
- Attachment 3 – ARGOS – AB Family Gas Flow Monitors Cut Sheet
- Attachment 4 - ARGOS – 5AB Vendor Drawings







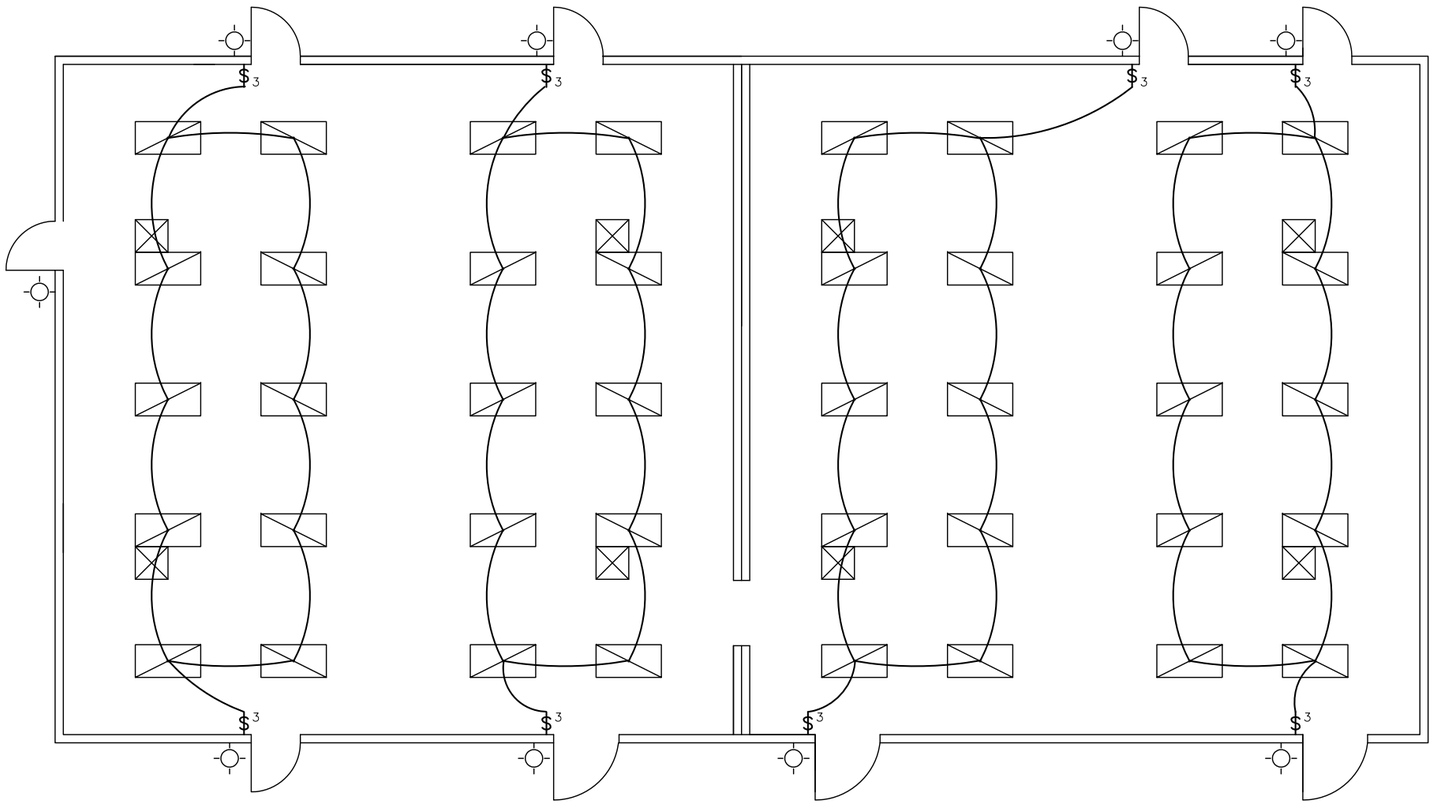




SYMBOL LEGEND	
F	FIRE EXTINGUISHER
G	CEILING GAS LINE
H	HLAN DROP
P	PHONE DROP
X	PROXY
⊖	CEILING RECEPTACLE
L	FLOOD LIGHT
AV	AV BOX
☼	OUTDOOR LIGHT

ARCH, ELEC & HLAN PLAN – AY/AZ CHANGE TRAILER

SCALE: 1/8"=1'-0"



SYMBOL LEGEND

- CEILING LIGHT FIXTURE
- ^{3} 3-WAY SWITCH
- OUTDOOR LIGHT FIXTURE
- HVAC VENT DUCT

LIGHTING & HVAC PLAN – AY/AZ CHANGE TRAILER

SCALE: 1/8"=1'-0"

CANBERRA

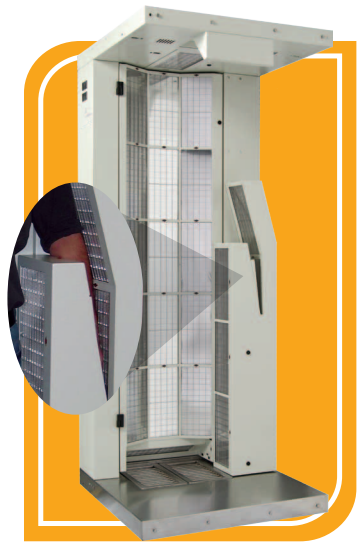
Argos™-AB Family of Gas Flow Whole Body Contamination Monitors

Features

- Fast personnel throughput with exceptional coverage due to optimized counting geometry, shielding and patented* detector technology
- The Argos-5AB provides the ultimate in (two-step) contoured body coverage
- The Argos-3AB provides lower cost contoured body coverage which outperforms all competitive "economy" models by removing detectors in areas least likely to have contamination. The Argos-3AB is easily field upgradeable to the 5AB by simply adding missing detectors
- Simultaneous monitoring of both sides of the hands with moveable detector for enhanced beta and alpha sensitivity
- Ergonomic and very easy-to-use with audible and visible messages on large LCD screen
- Space-saving design minimizes overall clearance requirements and allows for easy maintenance access from front and side of the unit
- Built-in computer with Windows® XP Embedded operating system with LAN capabilities and USB ports enables easy system management
- Same robust software and serial bus electronics as CANBERRA Argos-TPS, Sirius-3/-5, GEM™-5 and Cronos-4/-11 monitor families
- Compliant with IEC61098 Standard requirements
- Algorithm based on Gaussian or Bayesian statistics (compliant with the ISO 11929:2010 Standard requirements)

* Patent US 7,470,913 B1 High Efficiency and High Homogeneity Large-Area Gas-Filled Detectors

Description



CANBERRA's Argos-AB line of Whole Body Surface Contamination Monitors provide the ultimate in user-friendly operation and thorough, reliable detection of external contamination on personnel working in nuclear environments.

The Argos-5AB and Argos-3AB feature our most advanced gas flow detectors optimized for the best alpha and beta response possible (along with minimizing the gamma response). The detectors have been arranged in a configuration where dead space between detectors has been minimized. This arrangement provides optimal contour geometry and coverage for workers.

All Argos monitors use a sophisticated "fast following" background trending and release-limit algorithm to provide the best possible performance in stable or varying radiation fields.

Reliable industrial PC-based operation with intuitive software results in improved health physics programs, better tracking of contamination and faster, more thorough personnel throughput at boundary points.

Excellent detector protection, modularity of components, and extensive diagnostics result in direct reductions in consumable and work force maintenance costs.

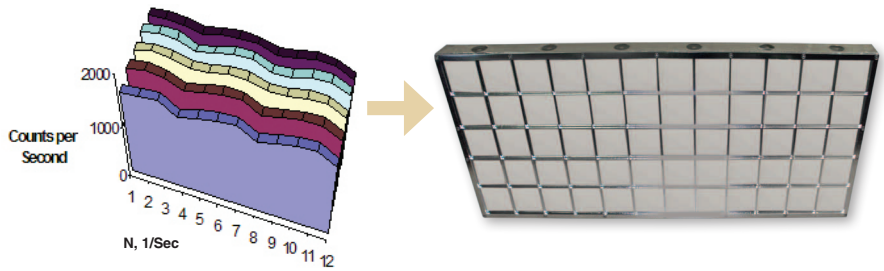
Overview

The Argos-AB design has been configured to contour the human body as closely as possible, improving overall detection ability. Gaps between detectors have also been minimized and detectors have been carefully arranged to pay particular attention to those parts of the body most likely to be contaminated. This arrangement results in excellent body coverage, as shown by the horizontal scan on the following page.

The Argos-3AB incorporates all of the characteristics of the Argos-5AB except that it has fewer detectors (18 versus 25). The removed detectors are replaced by blank plates and have been strategically chosen as those covering areas of the body least likely to be contaminated. Thus, this version provides the best value for the money in a surface contamination monitor when the budget is limited. The Argos-3AB is easily field upgradeable to the 5AB by simply adding the missing detectors.

The patented detector design makes use of three independent counting sections which reduce background and lead to better detection capability. This design further enhances uniform detector response as shown in the diagram on the following page.

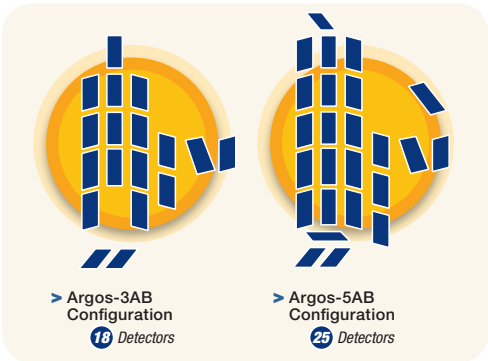
Argos-AB Family of Gas Flow Whole Body Contamination Monitors

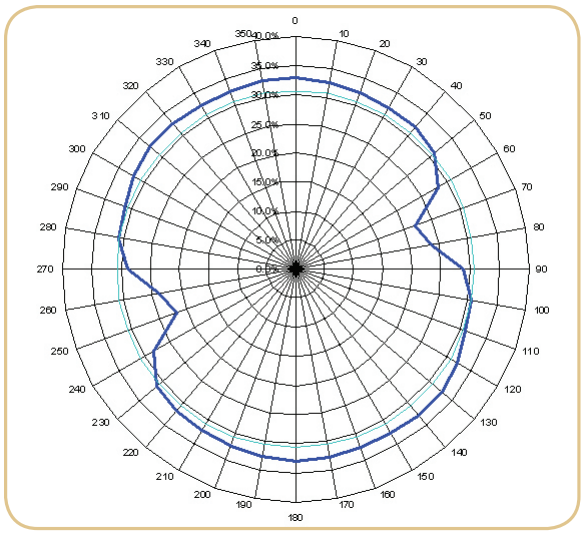


This diagram shows the counts detected by placing a button source in 60 different positions along and across the detector. The uniformity of response is remarkable (±8%). The huge degradation (±50%) exhibited by some of CANBERRA's competitors in such areas as the corners has been significantly minimized.

The overall benefit of CANBERRA's geometry and patented detector design is that count times will be reduced by as much as 25% compared to similar systems.

Additionally, the Argos radon daughter rejection software is a useful tool to help to reduce radon interference and minimize false alarms. The software is designed to provide the user with flexibility in setting up its parameters and related outcomes.





Argos-5AB Horizontal Scan Efficiency for ^{36}Cl, Phantom 5 cm from Center Detector.

Electronics and Computer

An electronics module box (the "preamplifier") is connected to the back of each detector and performs amplification discrimination, counting, high voltage and pulse generation.

The built-in computer manages the system operation. The computer runs Windows XP Embedded and uses USB flash for transferring data. Data may be retrieved either this way or via a LAN.

A removable keyboard interface is used for parameter setting, testing, calibration and maintenance.

Setting Parameters

Sensitivity of detection by detector/zone, alpha, beta and gamma alarm levels in dpm, dpm/cm^2, Bq, Bq/cm^2, nCi, nCi/cm^2, pCi, pCi/cm^2, µCi or µCi/cm^2, false alarm non-detection probabilities and Figure of Merit adjustments, etc.

Monitoring and Alarms

Indicator lights at the entry show the monitor is ready to use. While the occupant is being monitored, messages and a count down are given both on the LCD screen and audibly (multiple languages are available).

Verification of proper occupant positioning is ensured with the help of photoelectric sensors. Visual and voice prompts are also provided.

Argos-AB Family of Gas Flow Whole Body Contamination Monitors

Argos monitor with Zeus option.

Gamma Detection (Zeus™) Option

- The Zeus option adds full gamma detection capability
- Three large plastic scintillators monitor body contamination
- Smaller scintillator monitors the head
- Scintillators are shielded with 10 mm (~0.4 in.) of lead
- A 25 mm (~1.0 in.) lead curtain minimizes self-shielding effects

Other Available Options include

- ID Readers
- Frisker
- CRemote: Centralized Remote Control and Data Access software
- Local Database Support
- Doors or barriers (entrance, exit or both)
- Small Item Monitors
- Top of shoe detector (gamma)
- Automatic movable alpha/beta head detector
- IP Camera
- Spare Purging Detector
- LCD/Keyboard Options

Consult the CANBERRA Contamination Monitor Configuration Guide for details of options that will enhance the use of the Argos AB system.

Visible and audible alarms are given if contamination is detected. A “CONTAMINATED” result is shown on a large color LCD display with voice reinforcement and also visually with an LED beside each contaminated detector.

The display shows the type (alpha, beta or gamma), the quantity (cps, cpm, dpm, dpm/cm^2, Bq, Bq/cm^2, nCi, nCi/cm^2, pCi, pCi/cm^2, µCi or µCi/cm^2) and the location (alarming detector flashing on a graphical figure and LED on alarming detector itself). Date-stamp log of system monitoring: number of times used, contaminated staff, used parameters, checking of calibration and faults, etc. is available.

Up to four contact closure relays are available for remote signaling of the monitor’s status (e.g. “In Operation”, “Contaminated”, “Clean”, “Fault” etc. or some combinations thereof).

Remote Monitoring and Reporting

The Argos family of monitors is fully compatible with CANBERRA’s CRemote software. CRemote enables the status and reporting monitoring over Ethernet to a central monitoring station.

Maintenance and Calibration

A separate LED on each detector shows which detector is alarming and/or being addressed on the LCD screen.

For easy diagnostic purposes, information is readily available on the precise monitor status, parameter changes, including high voltage, discrimination thresholds of each detector. To provide further assistance, live-time rate meters show counts seen by each detector.

The Argos-AB is designed to inherently minimize gas usage. Therefore, no “gas management system” is required.

Calibration of every detector and alarm testing can each be done in less than 30 minutes.

Efficiency

Typical 4π efficiency, rounded to the nearest whole number, measured with 10 cm x 10 cm plate source placed in the center of the detector. Those that used a button source are marked with an “*” and average values were calculated based on multiple locations on the detector.

Isotope	Efficiency on contact, with fine mesh	Efficiency on contact, with foot grill, with fine mesh
^{14}C*	9%	6%
^{99}Tc	18%	14%
^{60}Co	16%	14%
^{137}Cs	29%	22%
^{36}Cl	29%	23%
^{90}Sr/ ^{90}Y	36%	26%
^{241}Am*	20%	13%
^{239}Pu	19%	12%

Gas Flow Proportional Detectors	LFP-579
Quantity	Argos-5AB: 25
Quantity	Argos-3AB: 18
Type	Gas Flow
Window (Note that the window assembly is field replaceable)	Multilayer Aluminized Mylar® at typically 0.8 ±12% mg/cm^2
Radiation Monitored	Alpha, Beta

Argos-AB Family of Gas Flow Whole Body Contamination Monitors

Specifications

PHYSICAL	MODEL	
	Argos-5AB	Argos-5AB Zeus
SIZE (w x h§ x d)*:	91.4 x 225 x 102 cm (36.0 x 88.6 x 40.2 in.)	92 x 229 x 104.8 cm (36.2 x 90.1 x 41.3 in.)
WEIGHT**:	321 kg (706 lb)	883 kg (1942 lb); Add 476 kg (1048 lb) for removable lead brick ingots

§ ...feet fully extended add 3.3 cm (1.3 in.)
* ...Argos-3AB and Argos-3AB Zeus are the same size as their Argos-5 counterparts
** ...or less for Argos-3 configurations

ELECTRICAL

Power Requirements:

- 220 V ac/50 Hz/1.0 A or 110 V ac/60 Hz/2.0 A mains 3 m (~10 ft) IEC standard cable (supplied; specify voltage and any special cable requirements on order; contact local CANBERRA affiliate for further information).

CERTIFICATION

- IEC 61098 compliant.
- ISO 11929:2010 compliant.

ENVIRONMENTAL

Temperature Range:

- Operating (meets IEC61098): 0–40 °C (32–104 °F).
- Storage: 0–50 °C (32–122 °F).

Relative Humidity:

- Operating (per IEC61098): ≤85% non-condensing at 35 °C (95 °F) maximum.
- Storage: ≤95% non-condensing.

Power Consumption:

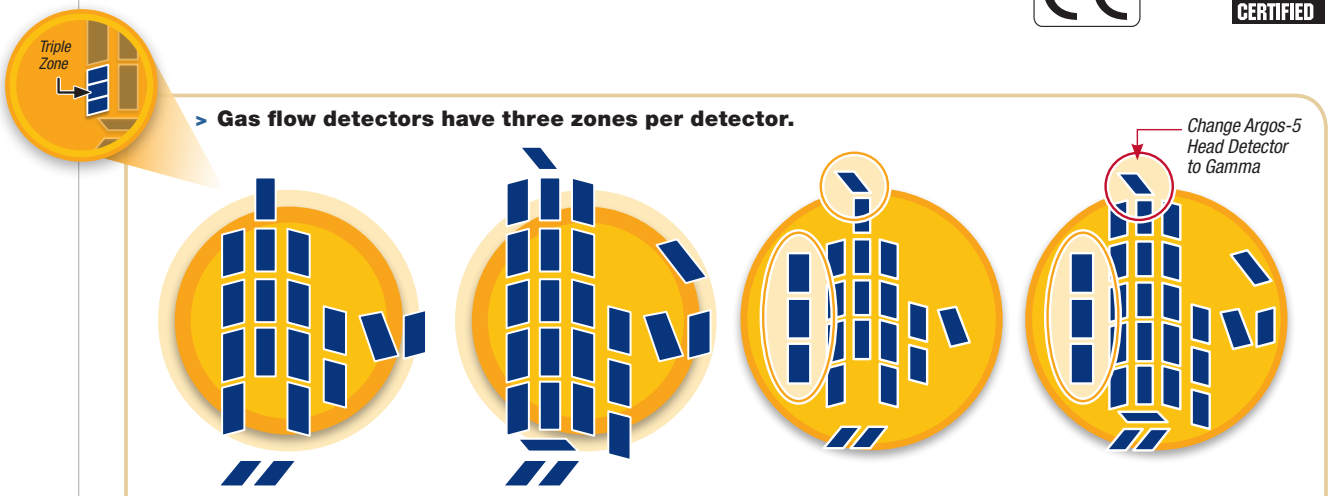
Model	Power Consumption
Argos-3AB:	160 VA
Argos-5AB:	170 VA
Argos-3/5 with Door/Barrier options*:	+90 VA

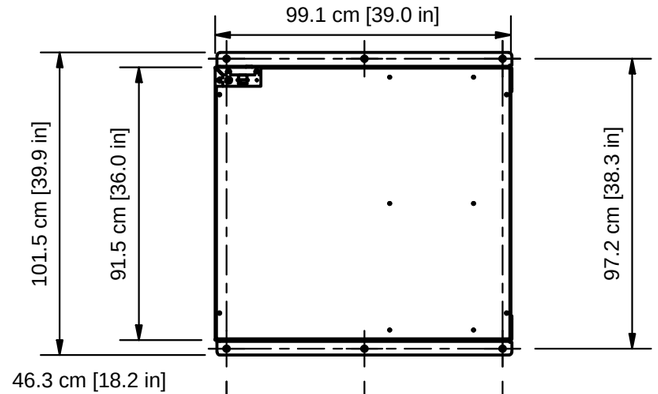
*If installed and applicable; add this value to the above numbers.

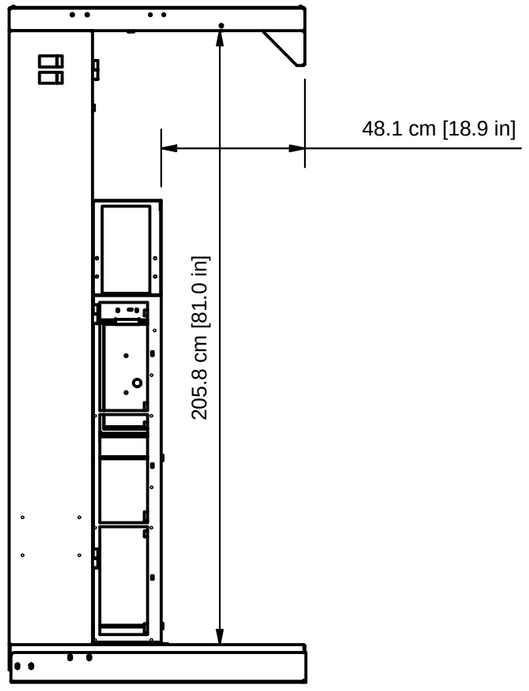
Ordering Information:

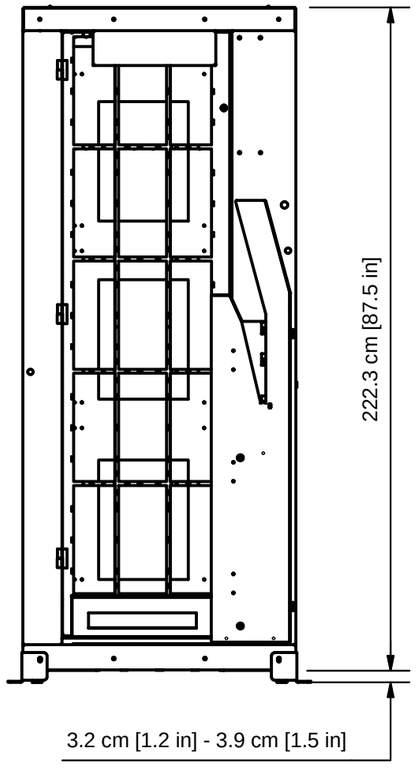
- 7062322 – ARGOS-3AB, 2-Step Whole Body Mon.
- 7061780 – ARGOS-5AB, 2-Step Whole Body Mon.
- 7062229 – ZEUS3G, GAMMA CAPABILITY FOR ARGOS-3.
- 818002 – ZEUS5G, GAMMA CAPABILITY FOR ARGOS-5.
- Consult the CANBERRA Contamination Monitor Configuration Guide for additional options that will enhance the use of the Argos AB system.

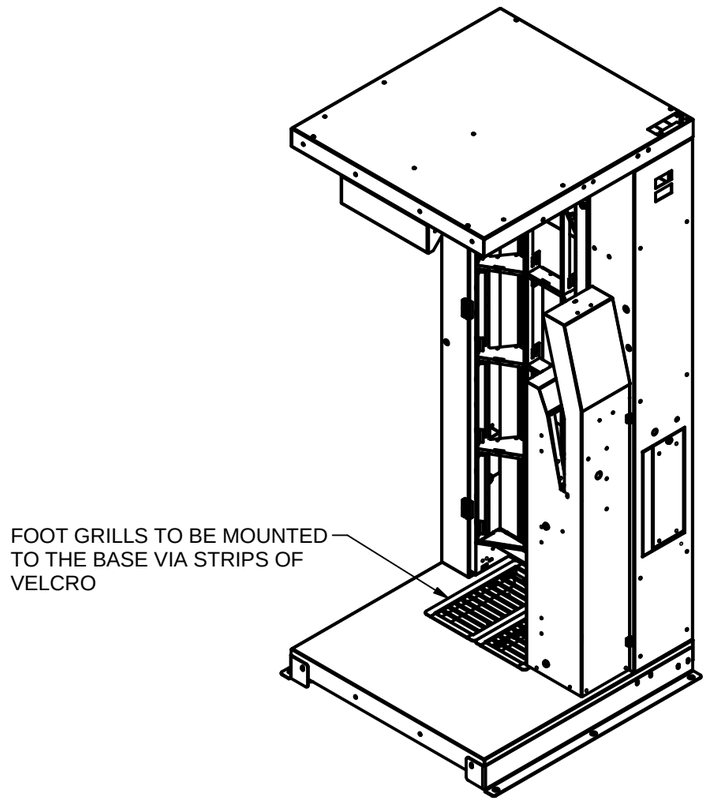
ISO 9001 SYSTEM CERTIFIED











WEIGHT:

Weight: 290.3 kg [638.7 lbs]

TOLERANCES ARE: UNLESS OTHERWISE STATED

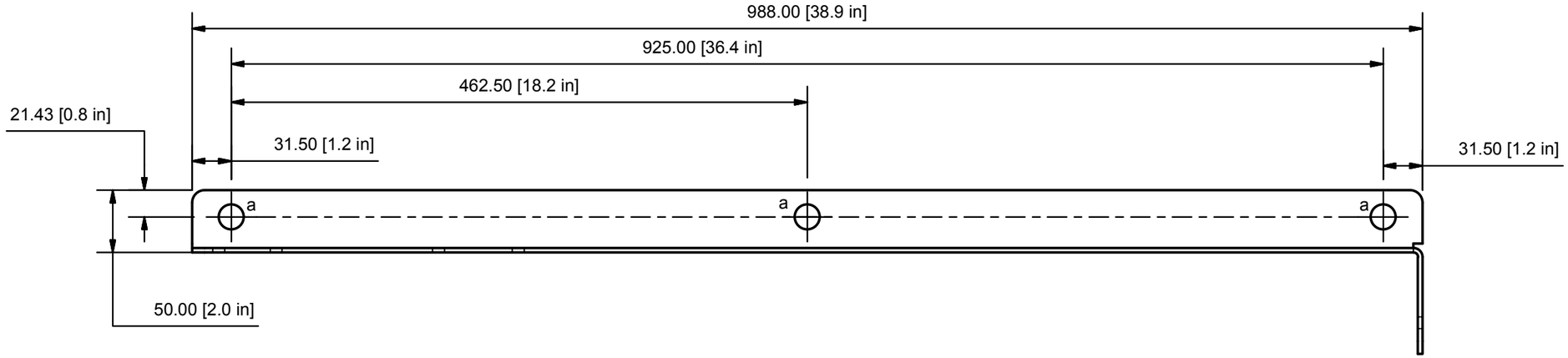
NO DEC cm		NO DEC in	
.X	±0.5	.X	±0.25

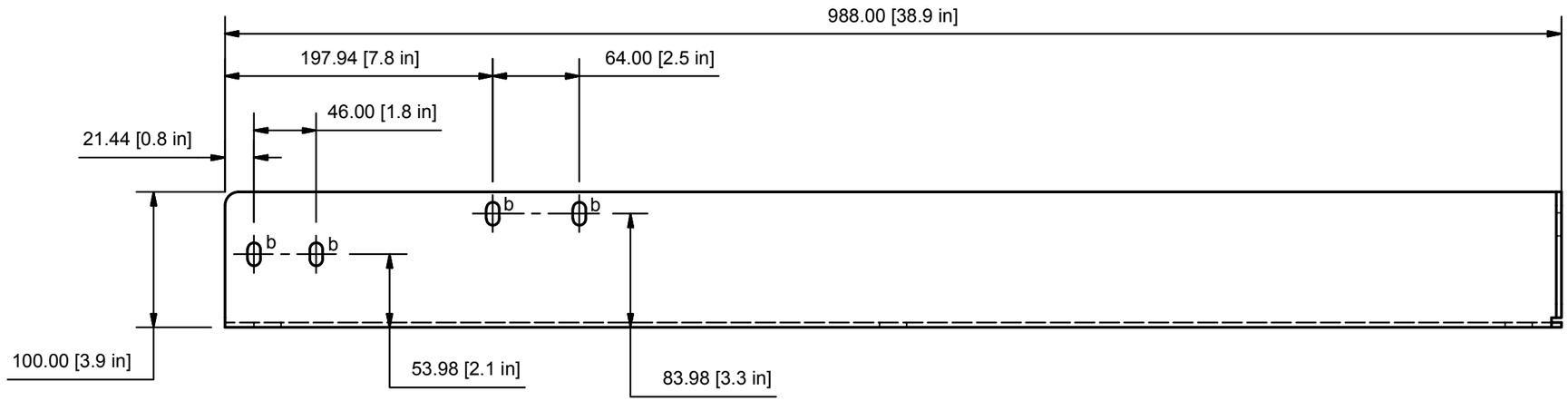
THIRD ANGLE PROJECTION

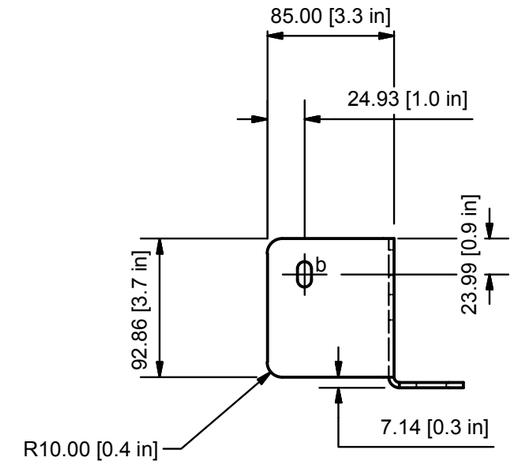
CANBERRA CO.

ARGOS-5AB with Floor Mount General Arrangement

DRN amahdessian	9/28/2010	DWG NO.	REV
APP JoeM.	5/17/2011	G000022	A
SCALE 1:20	ORDER # 21355	SHT 1	OF 1







NOTES:

1. REMOVE BURRS & SHARP EDGES
2. REF: UNLESS OTHERWISE STATED DIMENSIONS ARE EXTERNAL

HOLE LEGEND:

a, Ø20.00 [0.8 in] HOLE, 3 PLCS

b, 9.53 x 17.03 [0.4 in x 0.7 in] CUTOUT, 5 PLCS

THIRD ANGLE PROJECTION

UNLESS OTHERWISE STATED
DIMENSIONS ARE: ☐INCHES ☒mm ☐cm
(IN BRACKETS) ☐INCHES ☐mm ☐cm
TOLERANCES ARE:

DEC. INCH	NO DEC mm	ANGLES DEG
.XX ±.020	.X ±0.30	.X°XX' ± 0°30'
.XXX ±.005	.XX ±0.15	

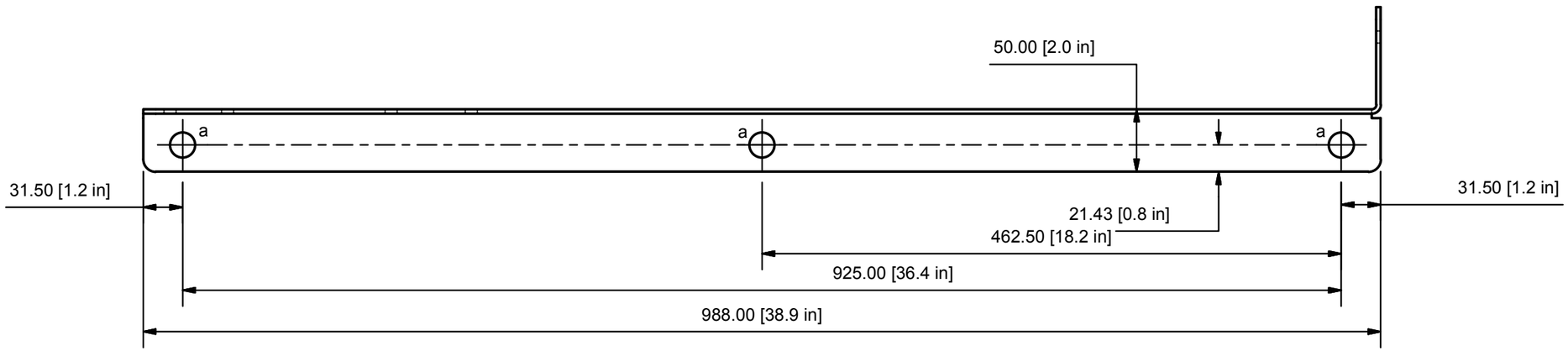
MATERIAL: #10 Ga (0.1406") ST-STL

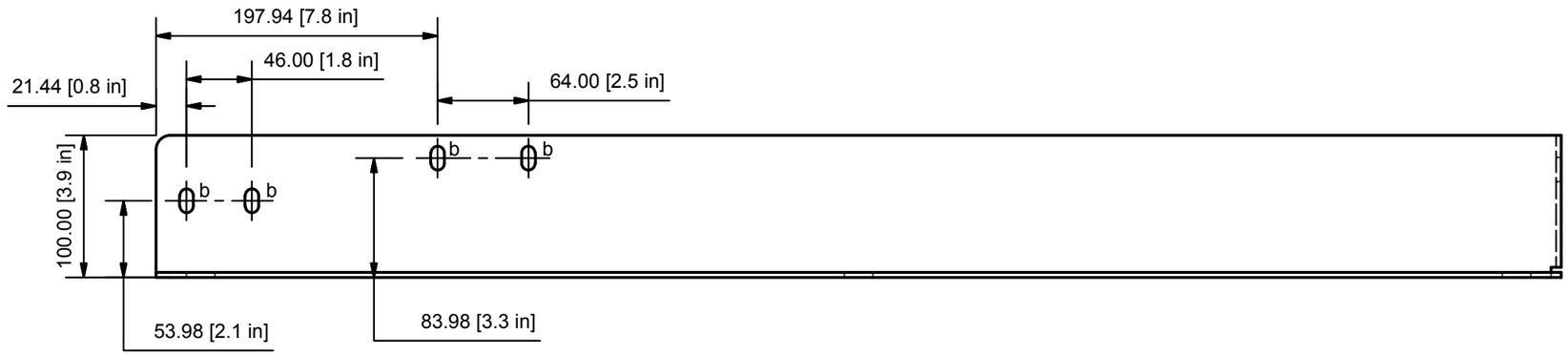
FINISH: SEE NOTE

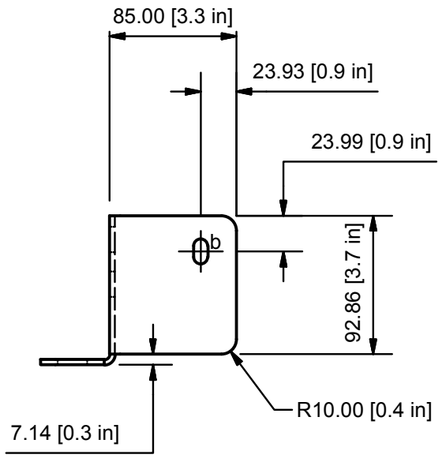
CANBERRA CO.

BASE MOUNTING SUPPORT, ENTRY

DRN amahdessian	4/28/2011	DWG NO/SCN	REV
APP JoeM.	5/17/2011	7072223	A
SCALE 1:4		SHT 1 OF 1	







NOTES:

1. REMOVE BURRS & SHARP EDGES
2. REF: UNLESS OTHERWISE STATED DIMENSIONS ARE EXTERNAL

HOLE LEGEND:

a, Ø20.00 [0.8 in] HOLE, 3 PLCS

b, 9.53 x 17.03 [0.4 in x 0.7 in] CUTOUT, 5 PLCS

THIRD ANGLE PROJECTION

UNLESS OTHERWISE STATED
DIMENSIONS ARE: ☐INCHES ☒mm ☐cm
(IN BRACKETS) ☐INCHES ☐mm ☐cm
TOLERANCES ARE:

DEC. INCH	NO DEC mm	ANGLES DEG
.XX ±.020	.X ±0.30	.X°XX' ± 0°30'
.XXX ±.005	.XX ±0.15	

MATERIAL: #10 Ga (0.1406") ST-STL

FINISH: SEE NOTE

CANBERRA CO.

BASE MOUNTING SUPPORT, EXIT

DRN amahdessian	4/28/2011	DWG NO/SCN	REV
APP JoeM.	5/17/2011	7072224	A
SCALE 1:4		SHT 1 OF 1	