XTE 802 Series
Walk-In-Cabinet (WIC)

Description and Installation Manual

Specification Number: F2018009

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Technical Support Site

If you encounter any installation or operational issues with your product, check the pertinent section of this manual to see if the issue can be resolved by following outlined procedures.

Visit https://www.vertiv.com/en-us/support/ for additional assistance.

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Admonishments Used in this Document

DANGER! Warns of a hazard the reader ***will*** be exposed to that will ***likely*** result in death or serious injury if not avoided. (ANSI, OSHA)

WARNING! Warns of a potential hazard the reader ***may*** be exposed to that ***could*** result in death or serious injury if not avoided. This admonition is not used for situations that pose a risk only to equipment, software, data, or service. (ANSI)

CAUTION! Warns of a potential hazard the reader ***may*** be exposed to that ***could*** result in minor or moderate injury if not avoided. (ANSI, OSHA) This admonition is not used for situations that pose a risk only to equipment, data, or service, even if such use appears to be permitted in some of the applicable standards. (OSHA)

ALERT! Alerts the reader to an action that ***must be avoided*** in order to protect equipment, software, data, or service. (ISO)

ALERT! Alerts the reader to an action that ***must be performed*** in order to prevent equipment damage, software corruption, data loss, or service interruption. (ISO)

FIRE SAFETY! Informs the reader of fire safety information, reminders, precautions, or policies, or of the locations of fire-fighting and fire-safety equipment. (ISO)

SAFETY! Informs the reader of general safety information, reminders, precautions, or policies not related to a particular source of hazard or to fire safety. (ISO, ANSI, OSHA)

Important Safety Instructions

Safety Admonishments Definitions

Definitions of the safety admonishments used in this document are listed under “Admonishments Used in this Document” on page v.

Safety and Regulatory Statements

Refer to Section 4154 (provided with your customer documentation) for Safety and Regulatory Statements.

Déclarations de Sécurité et de Réglementation

Reportez-vous à la Section 4154 (fourni avec les documents de votre client) pour les déclarations de sécurité et de réglementation.

1 About this Document

This document provides description and installation instructions for the Vertiv™ XTE 802 Series Walk-In-Cabinet (WIC); Spec. No. F2018009, including associated foundation kits and platforms.

When using this document, consider the footprint for the Vertiv™ XTE 802 Series Walk-In-Cabinet (WIC) you are installing as well as any installed options when determining which procedures contained within this document will be applicable for your installation.

Procedures related to the provisioning, start-up, and acceptance of associated telecom equipment are not covered in this document.

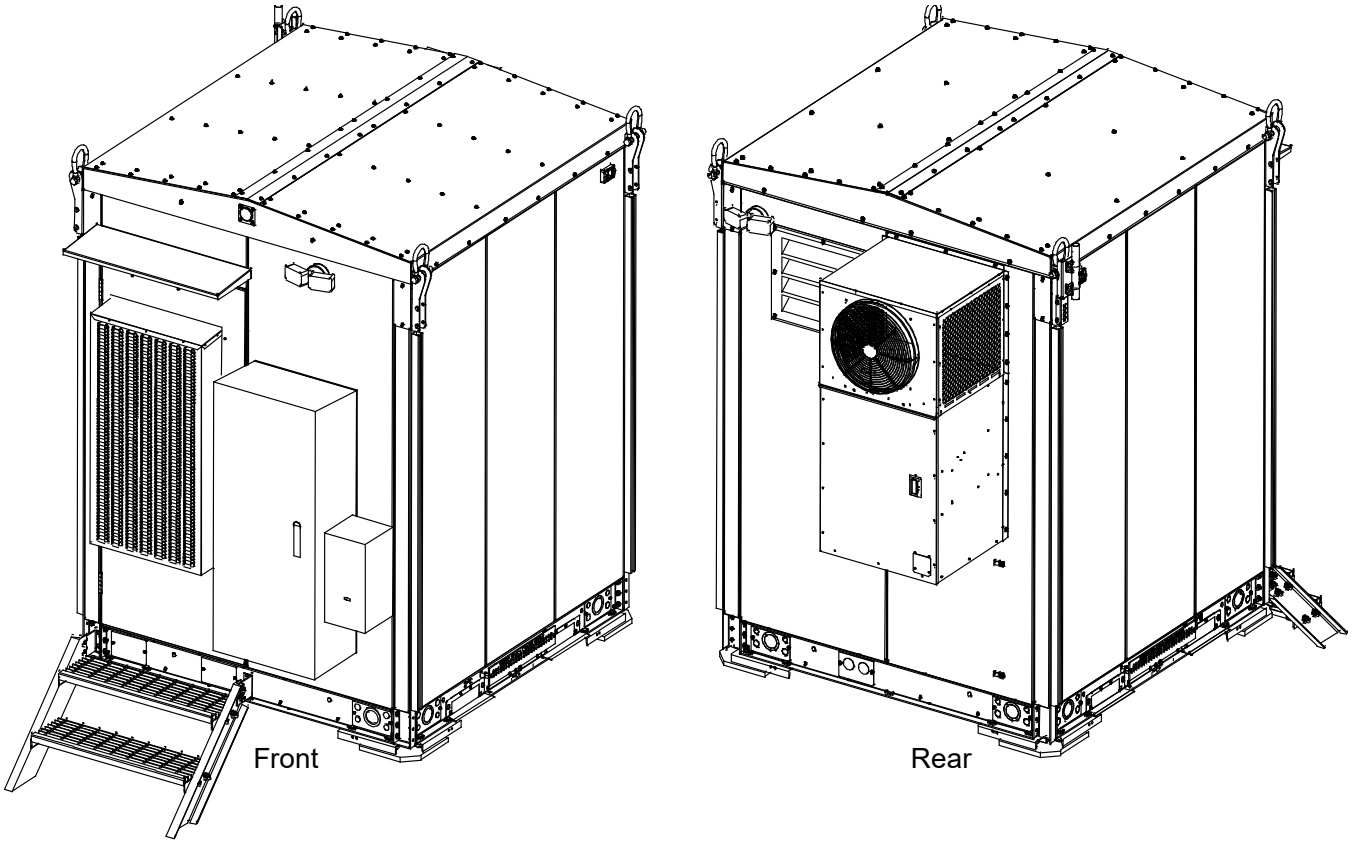
Documents that supplement the information in this document are referenced in “Sequence of Procedures” on page 28.

2 Product Description

2.1 General

The Vertiv™ XTE 802 Series Walk-In-Cabinet (WIC) ensures vital electronic equipment is protected from vandalism and environmental damage. The Vertiv™ XTE 802 Series Walk-In-Cabinet (WIC) may be equipped with a Vertiv™ NetSure™ 7100 Power System (-48 VDC at 1000 amps, +24 VDC at 500 amps, 3 row distribution or -48 VDC at 1000 amps, -58 VDC at 250 amps, 3 row distribution). The Vertiv™ XTE 802 Series Walk-In-Cabinet (WIC) offers an array of climate control, remote monitoring and control, power, mounting and configuration options. See Figure 2.1 for overall views of the Vertiv™ XTE 802 Series Walk-In-Cabinet (WIC).

Figure 2.1 Overall Views of Vertiv™ XTE 802 Series Walk-In-Cabinet (WIC)



2.2 Part Numbers

Refer to Table 2.1 for applicable product part numbers.

Table 2.1 Vertiv™ XTE 802 Series Walk-In-Cabinet (WIC) Part Numbers and Descriptions

Part Number	Description	NEQ
Vertiv™ XTE 802 Series Walk-In-Cabinet (WIC)		
F2018009	ATT 6X6 WIC e/w as detailed below.	NEQ.20060
Electrical Service Entrance		
PTLC-ATS-3S-12200-CL_ATT	UL 891 Listed, 32x22*x10 cabinet with CamLok Connector Panel, 240 VAC / 120 VAC, 200 A Power Transfer Load Center with automatic transfer between Utility and an Alternative Power Source permanently connected or temporarily connected via CamLok style connectors. PTLC includes ASCO 510 Series TVSS surge protection, a 30-position Square D NQ panelboard, and an alarm monitor for utility power loss SPD fail, and generator. (Vertiv P/N 151840.)	NEQ.20110
DC Power System		
582127000203	Vertiv™ NetSure™ 7100 SERIES -48V DC Power System sized at 1,000 Amp on the -48 VDC side and 500 A on the +24 VDC side with 3 factory-installed and wired battery trays.	NEQ.20068
582127000503	Vertiv™ NetSure™ 7100 SERIES -48V DC Power System sized at 1,000 Amp on the -48 VDC side and 250 A on the -58 VDC side with 3 factory-installed and wired battery trays.	NEQ.53545
Additional Equipment		
PTS 3703-WIC WOF	Rack CommBay-WIC-without Fiber Panel.	NEQ.19678
PTS3704-WIC-WF	Rack CommBay-WIC-with Fiber Panel.	NEQ.19679
DAC2000S000-299-VAR-0013	Direct Air Cooling (DAC) system. Dual Fan -48 VDC powered fresh air cooling kit with HVAC control for low voltage (24 VAC) controlled HVAC unit. (Vertiv P/N 151903.)	N/A
ECUA18 MAA1018	1.5 TON WALL MOUNTED HVAC, with controller, supply and return grills and remote sensor (Vertiv P/N 10011724).	N/A

2.3 Application

The Vertiv™ XTE 802 Series Walk-In-Cabinet (WIC) is designed to house and protect environmentally sensitive electronics at telecommunications sites including cellular, microwave radio, BBU pools for CRAN, and edge applications with virtualized networks.

- The Vertiv™ XTE 802 Series Walk-In-Cabinet (WIC) is designed to provide secure and water-tight housing for equipment, power and batteries supporting wireless and wireline telecommunications applications.
- The Vertiv™ XTE 802 Series Walk-In-Cabinet (WIC) depends upon a proven structural system and integrated mechanical components.
- The Vertiv™ XTE 802 Series Walk-In-Cabinet (WIC) has several mounting options, primarily helical and concrete pier.

2.4 Standards Compliance

CAUTION! PREVENT EQUIPMENT DAMAGE, OPERATING TEMPERATURE
The WIC is approved for operation in an environment with an expected temperature range of -40 °F to +115 °F (–40 °C to +46 °C) and 0% to 95% relative humidity range, condensing. Do not use at temperatures or humidity exceeding these ranges.

The WIC is not for indoor use.

The Vertiv™ XTE 802 Series Walk-In-Cabinet (WIC) is designed to meet the following standards where applicable:

- CSA Certificate of Compliance #70096774.
  - CLASS - C321111 - INDUSTRIAL CONTROL EQUIPMENT - Enclosures for Electrical Equipment
  - CLASS - C321191 - INDUSTRIAL CONTROL EQUIPMENT - Enclosures for Electrical Equipment – US
  - Enclosure Type 3R

NOTE! *The WIC is intended for industrial and/or power distribution equipment applications. These components are intended for the installation of industrial electrical equipment and/or power distribution equipment where the complete assembly is approved for installation in non-hazardous locations in accordance with the National Electric Code (NEC) and Canadian Electric Code (CEC).*

APPLICABLE REQUIREMENTS

a) CSA C22.2 No, 94.1-07 / UL 50 12th Ed (Harmonized) Enclosures for Electrical Equipment, Non-Environmental Considerations.

b) CSA C22.2 No. 94.2-07 / UL 50E 1st Ed (Harmonized) Enclosures for Electrical Equipment, Environmental Considerations.

- National Building Code - Canada, 2005.
- National Building Code - USA, 2012.
- ASTM A653 - Galvanized Steel.
- Welding Conformance to CWB - CSA Standard W47.1 and AWS – D1.2, D1.3 and D1.6.
- Designed to Meet Seismic Zone 4.
- Telcordia GR487 compliant for corrosion, water intrusion, ultraviolet radiation, and impact resistance.
- DC Power System - UL Listed 1801, cUL, NEBS Level 3.

- Power Transfer Load Center (PTLC) – constructed in accordance with UL 67 Standard for Panelboards. Suitable for use as Service Entrance.
- Automatic Power Transfer Switch: UL Listed to UL 1008, Standard for Transfer Switching Equipment.
- UL/CSA Compliant Climate and other miscellaneous electrical equipment.
- Electrical certification as per CSA and NFPA70 (NEC) requirements.
- Installation method compliant to AT&T TP76300.

2.5 Safety Listed AC or DC Components

A typical Vertiv™ XTE 802 Series Walk-In-Cabinet (WIC) only utilizes listed or recognized components for the United States and/or Canada. The following examples of these may or may not be included in the WIC:

- AC Terminal Blocks
- Liquid Tight Flexible Metallic Conduit
- GFI AC Receptacle
- AC-DC Rectifiers
- AC or DC Circuit Breakers

2.6 Commercial AC Service

AC power to be provided by customer via an upstream power source load center or power pedestal. Only load circuits to be brought into AC entry facility. Overcurrent devices are not provided in the WIC. Load circuits in the WIC requiring power as per the WIC AC schematic.

- Power Service Required: 120 VAC / 240 VAC, 1 phase, 60 Hz with upstream fuse protection and upstream surge protection.

The service entrance system will consist of the following:

- Power Transfer Load Center constructed in accordance with UL 67 Standard for Panelboards.
  Suitable for use as service equipment.
- Automatic Power Transfer Switch: ASCO D3ATS, 2 Pole, 200 Amp, 240 VAC maximum. UL Listed to UL 1008, Standard for Transfer Switching Equipment.
  - Transfer Controller – ASCO Group G Automatic Transfer Switch Controller including:
    Automatic Engine Starting Contacts.
    Single Phase voltage sensing of Normal and Emergency sources.
    Frequency sensing of Emergency source.
- Short Circuit Ratings:
  - Main (Normal Source): Utility main disconnect circuit breaker, 2 pole, 200 amp at 240 VAC maximum, 22kA – Square-D Type QD.
  - Main (Normal Source): Utility main disconnect circuit breaker, 2 pole, 200 amp at 240 VAC maximum, 42kA – Square-D Type QG.
  - Permanent Emergency Source: Permanent emergency source circuit breaker, 2 pole, 200 amp at 240 VAC maximum, 10kA – Square-D Type QB.
  - Temporary Emergency Source: Temporary emergency source circuit breaker, 2 pole, 200 amp at 240 VAC maximum, 10kA – Square-D Type QB.

  - Branch: Branch ratings as follows when used with the specified branch devices and in combination with selected optional normal and emergency source short-circuit ratings.
    42kA using Square-D QH or QHB rated: 1 pole 15-30A, 2 pole 15-30A, 3 pole 15-30A.
    22kA using Square-D QO-VH or QOB-VH rated: 2 pole 150A, 3 pole 35-150A.
    10kA using Square-D QO or QOB rated: 1 pole 15-70A, 2 pole 15-125A, 3 pole 15-30A.

- Panelboard: Square-D NQ, 200 Amp maximum, 240 VAC maximum, single phase with 100% rated neutral. 30 circuits, accepts bolt-on or plug-in branch devices.
- Square-D QO120GFI, 20 Amp, 120 VAC Ground Fault Circuit Interrupter (GFCI) circuit breaker, wired to a duplex outlet.
- Transient Surge Protection: Connected to line side of panelboard for L-N (and L-G if used as service equipment) mode protection. ASCO 510 Series TVSS with phase monitoring, alarm module, and load phase voltage availability indicator's (LED) on front of swing panel.
- Enclosure:
  - Type 3R Listed to UL 50/50E. Single compartment wall mount compartment provides Type 1 protection with exterior open and swing panels closed.
  - Box and Doors: Constructed of 0.095 think aluminum alloy (5052-H32).
  - Finish (all interior and exterior surfaces): Textured polyester powder coat, pebble gray (RAL 7032).
- Alarms – Utility Loss Alarm Monitoring, SPD Fail, and generator.

2.7 WIC Dimensions, Weights, and Physical Specifications

Standard Racks

The Vertiv™ XTE 802 Series Walk-In-Cabinet (WIC) may be equipped with two 19" wide equipment bays and each provides 45 rack units (RU). One (1) rack comes equipped with a fiber patch panel and the other does not.

Dimensions

- See Figure 2.2 for overall dimensions.
- See Figure 2.3 for mounting hole dimensions without corner plates and Figure 2.4 for mounting hole dimensions with corner plates.
- See Figure 2.5 for working space clearances.
- See Figure 2.6 for base dimensions.
- See Figure 2.7 and Figure 2.8 for conduit knockout locations and dimensions.

Specifications

- External Dimensions – 80" x 80" x 113"
- Internal Height – 96.5"
- Internal Width – 71.4"
- Internal Length – 71.4"
- Weight – Empty: 4,500 lbs.
  As Installed: 6,500 lbs.
- R13 Insulation for walls and ceiling.
- One (1) hour fire rating.
- Common equipment kit (lighting, cable rack, etc.).
- Primary DC powered high efficiency thermal management system.
- 1.5 ton backup air conditioner.
- Heater system.
- 200 A AC electrical system with power transfer and Cam-lock generator connection.
- Fully integrated internal grounding system.
- Thermal management and HVAC control.
- 66 type contact alarm consolidation point.
- Fold down laptop desk.
- Externally mounted color matched unistrut channels on each lifting strap for mounting external equipment.
- Externally mounted GPS antenna mounting brackets.
- Color – Pebble-Gray, RAL7032.

- Finish – Standard finish is multistage dry powder polyester paint for maximum durability and performance against corrosion. Optional exterior finishes also available upon request.
- Vertiv™ NetSure™ 7100 DC Power System in 23" rack with three (3) battery trays (Third Party Integrated).
- NCU system and generator control (Third Party Integrated).
- Two (2) 19" equipment welded frames installed. One with fiber patch panel and the other without. (Third Party Integrated.)

Figure 2.2 WIC Overall Dimensions

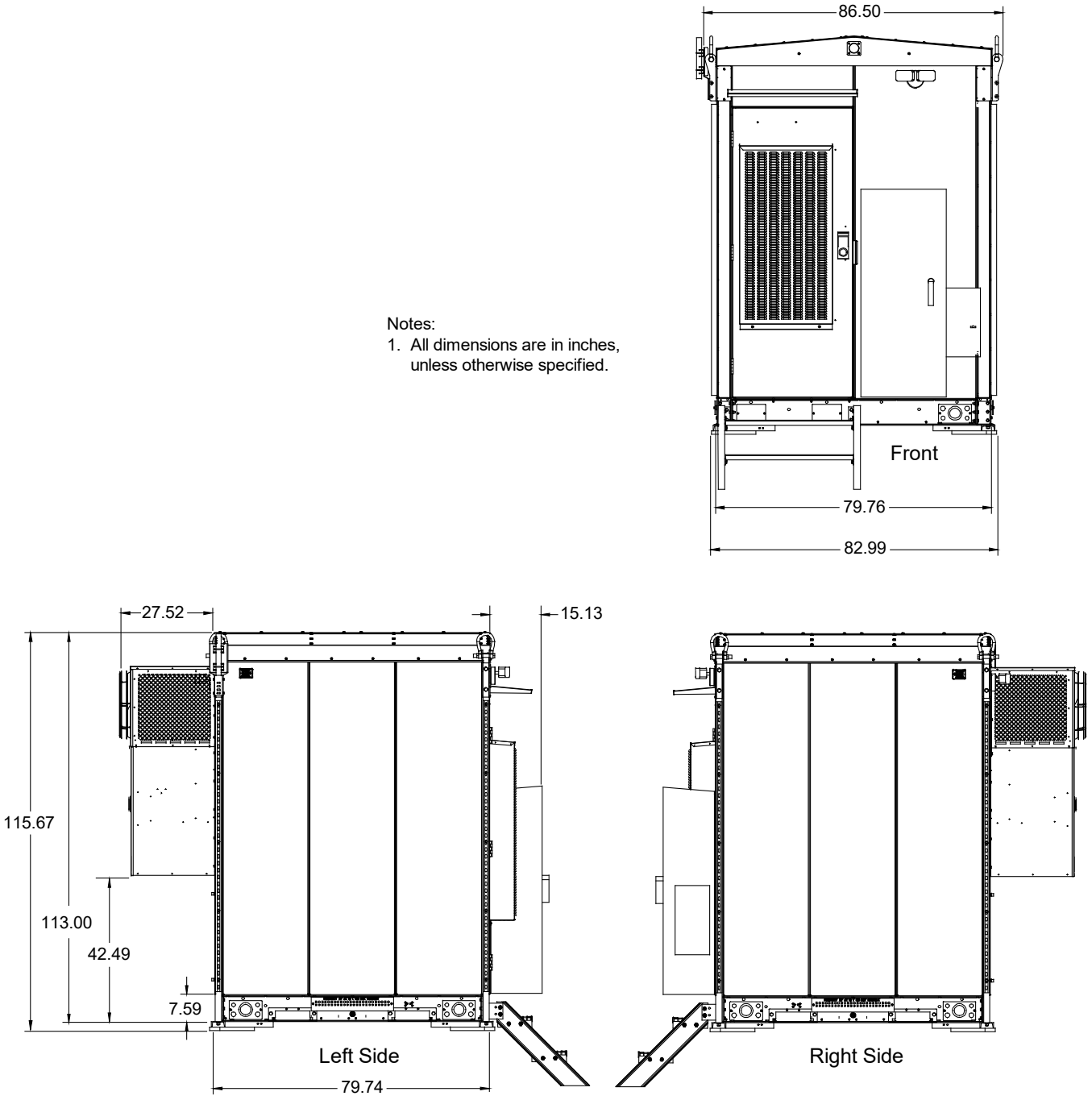


Figure 2.3 Mounting Hole Dimensions (without corner plates)

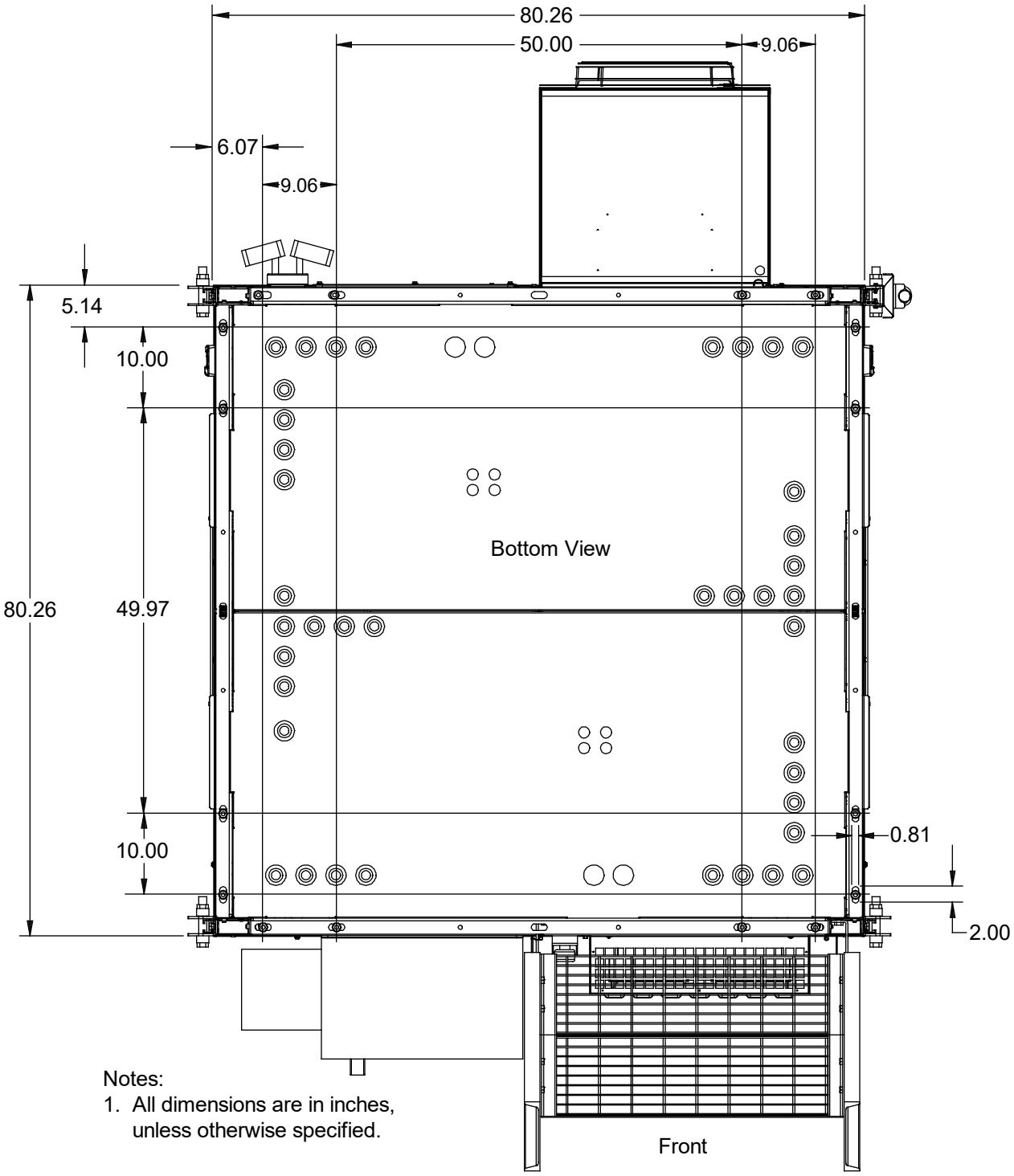


Figure 2.4 Mounting Hole Dimensions (with corner plates)

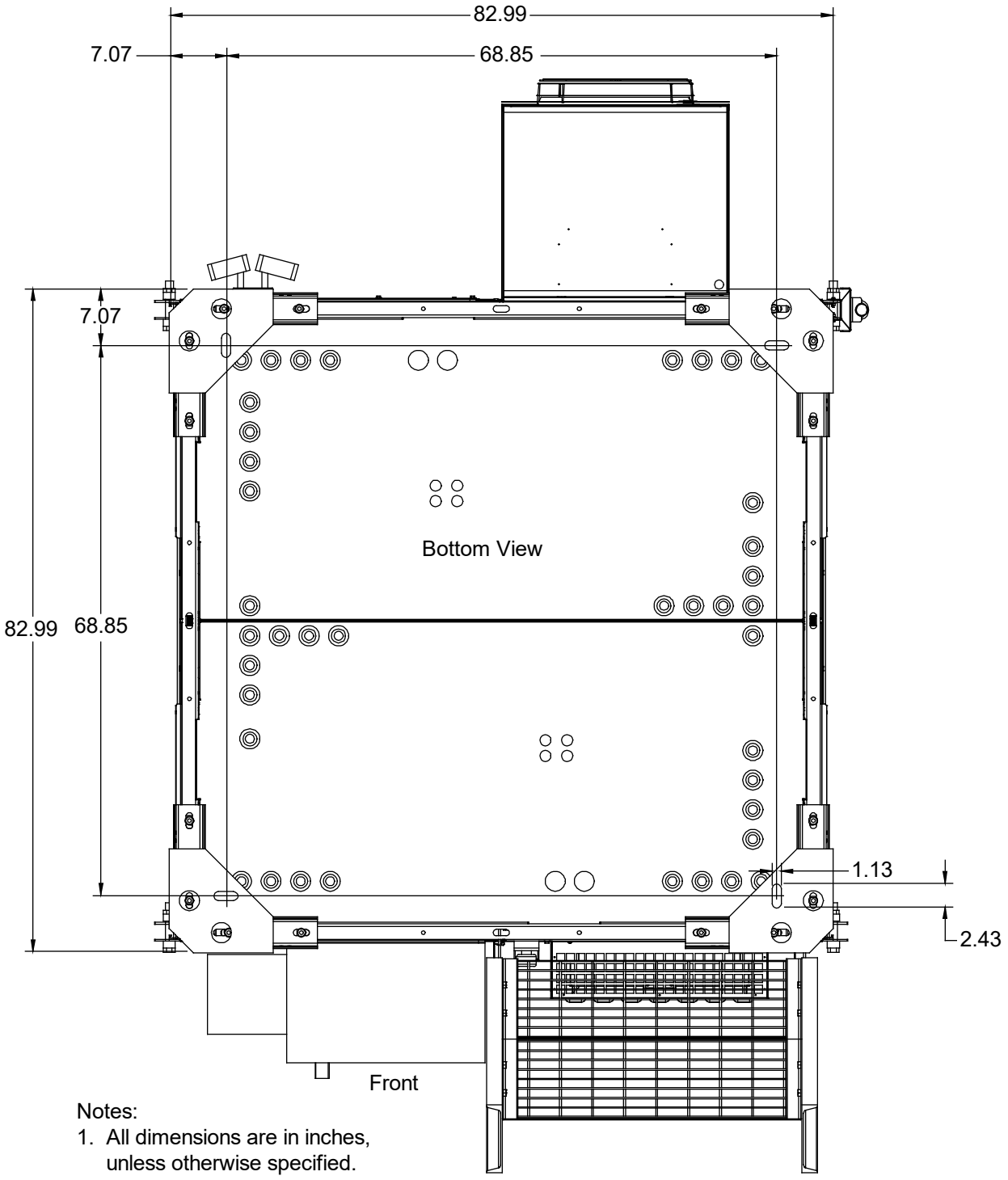


Figure 2.5 Working Space Clearances

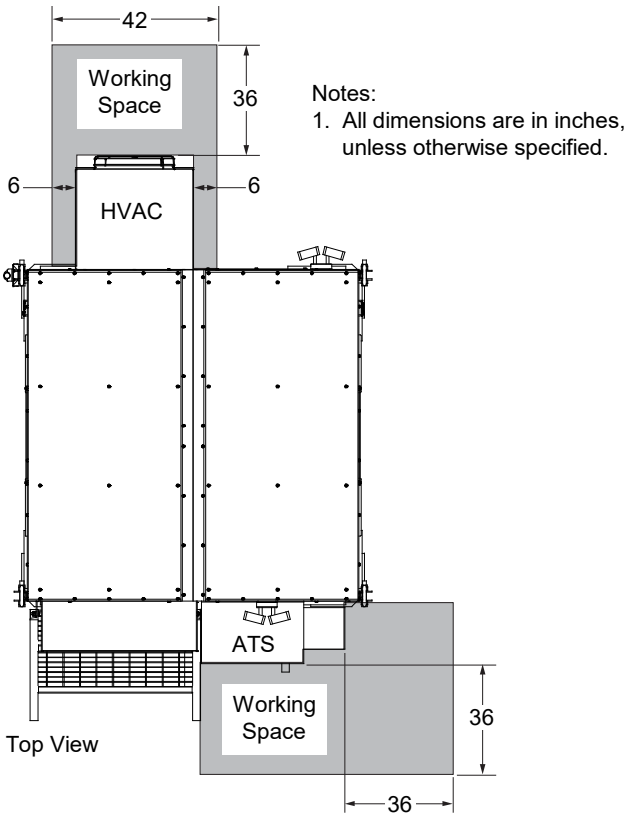


Figure 2.6 Base Dimensions

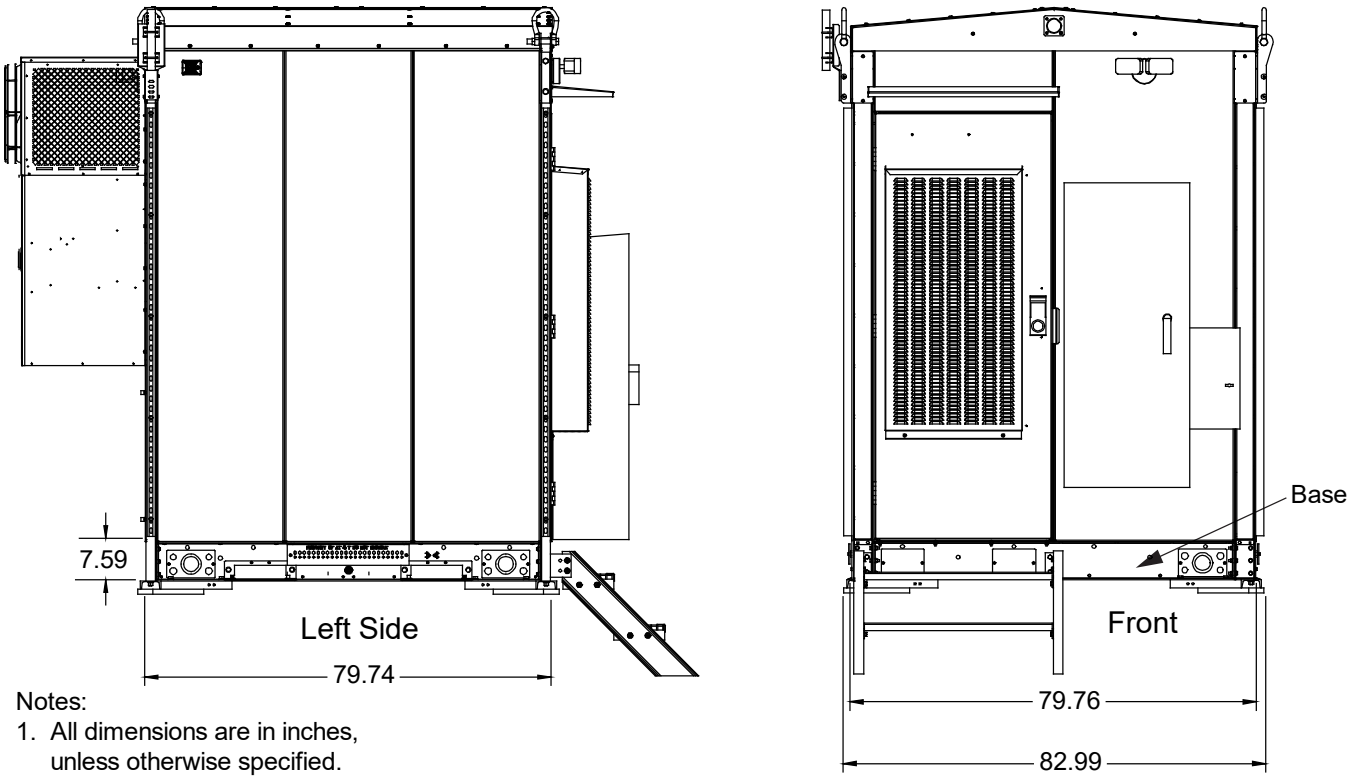
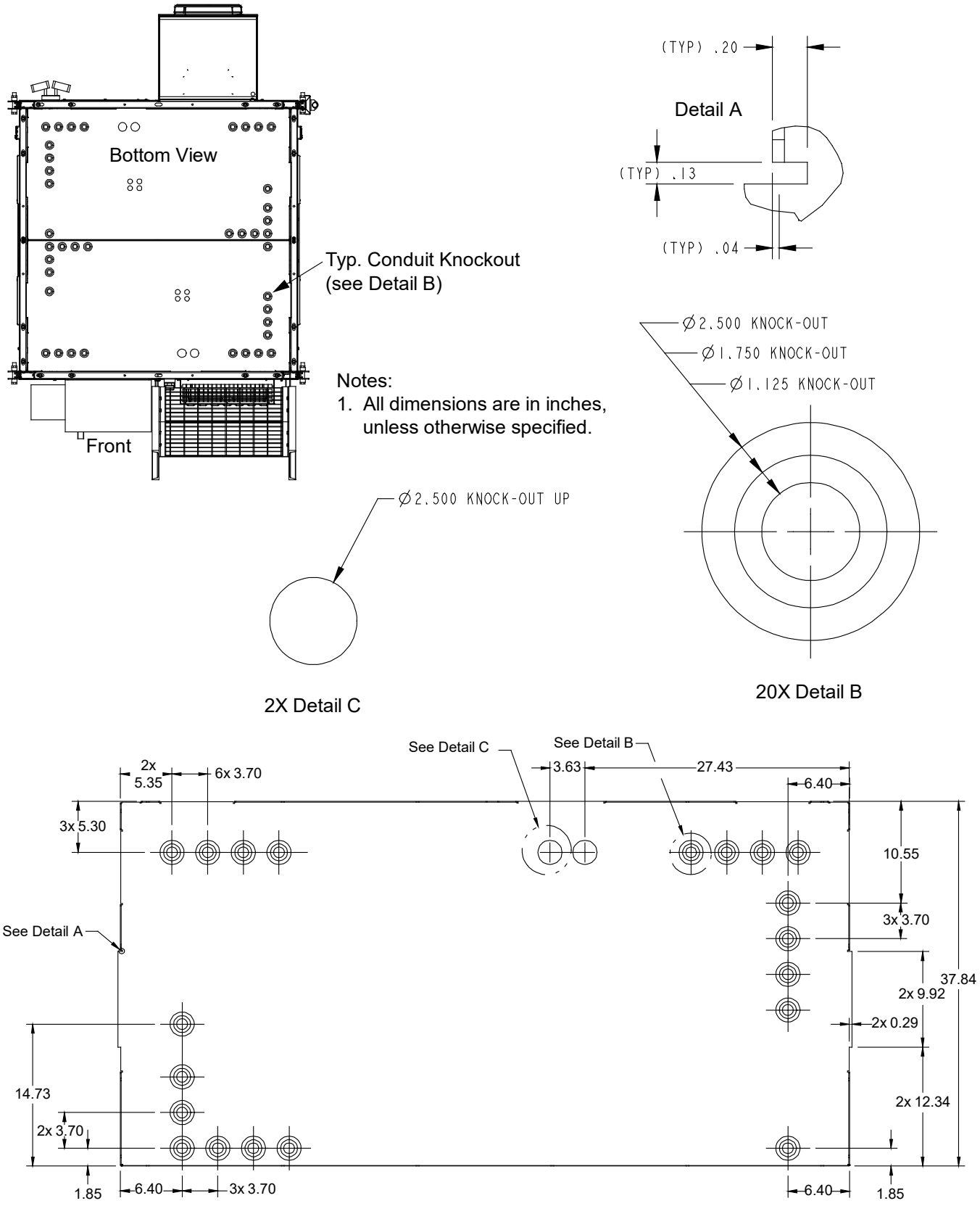
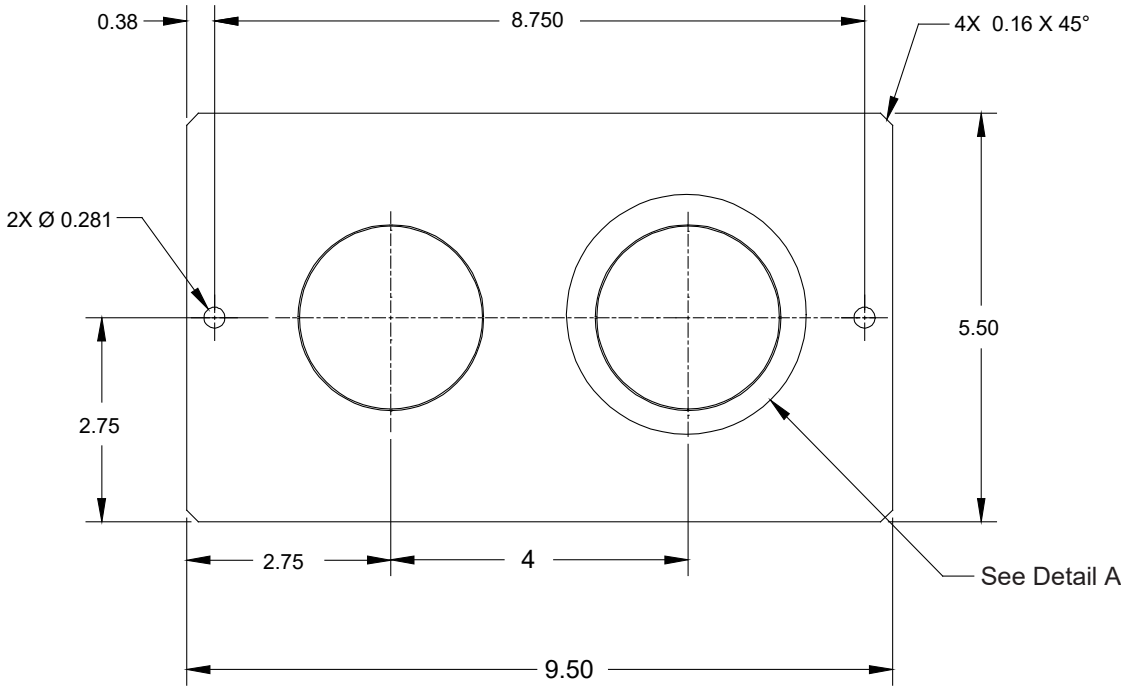


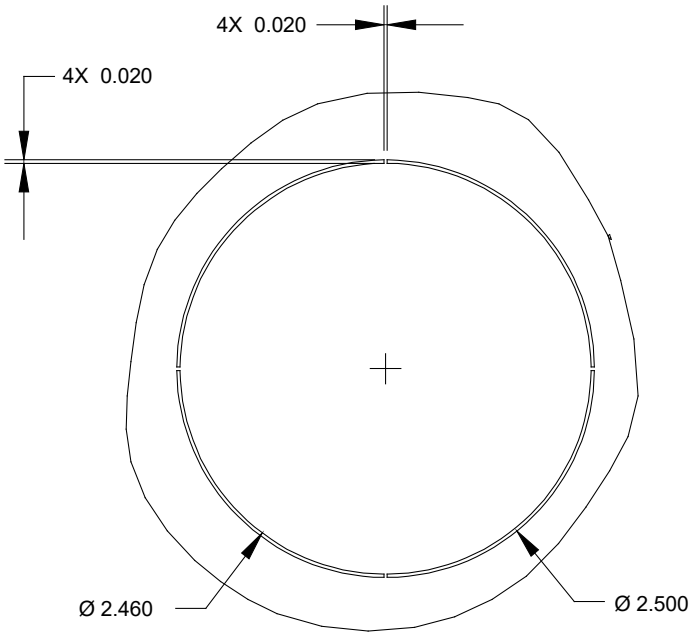
Figure 2.7 Conduit Knockout Locations in WIC Base Pan



Bottom Cover Panel Conduit Knockout Locations and Dimensions

Figure 2.8 WIC Base Side Plate Conduit Knockout Dimensions





2X Detail A

Notes:
1. All dimensions are in inches, unless otherwise specified.
2. All dimensions are to outside surface.

2.8 WIC Features and Options

Perspective Views

For illustrations of the WIC, refer to the following.

- Refer to Figure 2.9 and Figure 2.10 for WIC perspective views with major features identified.
- Refer to Figure 2.11 for WIC wall detail views.
- Refer to Figure 2.12 for top view of WIC floor.
- Refer to Figure 2.13 for WIC AC conduit routing.
- Refer to Figure 2.14 for WIC DC wireway locations.
- Refer to Figure 2.15 for door intrusion switch and fold down laptop desk locations.
- Refer to Figure 2.16 for floor cable entry ports locations.

Construction

Welded galvanized steel construction with outstanding impact and corrosion resistance.

- Interlocking steel panels construction.
- Walls, floor and ceiling are made of 14 gauge steel.
- Ceiling joists with 12 gauge steel.
- Floor Load: 200 pounds per square foot minimum (uniform with full-support foundation).
- Roof Live and Impact Load: 300 PSF (maximum).
- Wind Speed: 180 mph.

Protection

Powder coat finish. Meets GR487 Telcordia mechanical and environmental standards for telecom cabinets.

- Protects against rain, sleet, snow, splashing water and damage from external ice formation.
- Optional exterior finishes including brick, stone and exposed aggregate are available upon request.

Mounting Base

Cable mounting base with 360 degree access to floor penetrations for easy conduit and cable entries into the Vertiv™ XTE 802 Series Walk-In-Cabinet (WIC). See Figure 2.6 on page 10.

- Fork lift tubes on front and back.
- Base includes steel cover plates front and back to accommodate cabling.

Interior Finish

- Walls: White-textured Melamine panels over 5/8" gypsum board (1-hour fire-rated).

Insulation

- Walls: R-13 Thermax foam with vapor barrier in wall cavities.
- Roof: R-13 Thermax foam with vapor barrier in cavities between ceiling and roof.

Common Equipment Kit

- Motion Controlled 70 W Outside Light
- Interior -48 VDC Lights
- Door Contacts
- Halo ground, interior isolated copper ground bar with ground cables to equipment rack, H taps for ground terminal and external isolate ground bar with 2/0 ground cable, ground entry / exit plate as per ATT grounding specification.

Access Doors and Hardware

- Type: 16 gauge galvanized steel commercial grade insulated door.
- Size: 36" x 84" outward opening.
- Frame: 16 gauge galvanized steel frame.
- Door Lock: KABA Simplex L1000 Series, Model 1021B, Mechanical w/Best core.
- Hinges: (3) stainless steel with non-removable pin (per door).
- Door Holder: positive engagement latch with bumper stop.
- Closer: adjustable-hydraulic.
- Drip Cap: 12" drip cap above doorway.

Convenience Outlet

The WIC is equipped with two 20 A convenience outlets on the interior left side wall and one 20 A GFCI on the exterior PTLC-ATS.

Ground Bar

The WIC contains one (1) 24-position galvanized steel ground bar mounted to the outside of both the right and left sides of the base assembly and one (1) 1/4" x 4" copper Master Ground Bar (MGB) located on the interior. The all-metal structure of the WIC is bonded together using the PANI method for grounding.

Door Intrusion Switch

A door intrusion switch is provided, factory wired to the alarm blocks. See Figure 2.15 for location and "Intrusion Alarm Switch Operation" on page 29 for operation.

Lifting

The Vertiv™ XTE 802 Series Walk-In-Cabinet (WIC) is equipped with one lifting lug at the top of each corner that allow it to be lifted and lowered into position. The base is also equipped with fork lift pockets that allow the use of a forklift to offload and lower to the mounting base at the site.

Alarms

- The Vertiv™ XTE 802 Series Walk-In-Cabinet (WIC) is equipped with intrusion, HVAC, various commercial AC power and DC power alarms.
- Two alarm blocks are provided on the Telco Board inside the WIC for alarm connections.
- An alarm pinout is specified in the schematic drawings shipped with the WIC.
- The intrusion alarm triggers whenever the door is opened. It can be disabled by pulling the alarm plunger completely forward.

Light Switch

Located to the right of the door as you enter. A light switch is provided for the three (3) interior ceiling mounted LED lights.

Rack Sizes

Accommodates 19" width equipment racks with EIA hole spacing.

Fold Down Laptop Desk with Document Holder

The Vertiv™ XTE 802 Series Walk-In-Cabinet (WIC) is equipped with a fold down laptop desk with document holder. See Figure 2.15 for location.

Cable Entry Ports

The WIC contains wall and floor cable entrances. Cables can be routed into the WIC through either wall ports or floor ports.

a) **Wall Entry Ports:** Wall cable port plates are provided to route cables through the wall of the WIC including the GPS cables. Port boots must be used to seal the cables. Port boots are not provided with the WIC.

   See Figure 2.17 for the location of the cable entry ports. Refer to "Installation of Wall Cable Port Plates and Routing of Cabling through the Ports" for installation of the wall cable port plate and routing of the cables through the ports.

b) **Floor Entry Ports:** The WIC has five (5) cutouts in the floor which are all equipped with Roxtec 24/24 EzEntry ports. See Figure 2.16 for the location of the cable entry ports. See Figure 2.7 on page 11 for conduit knockout locations in WIC base pan.

Climate Control

The Vertiv™ XTE 802 Series Walk-In-Cabinet (WIC) is offered with the climate control options listed in Table 2.2.

HVAC Units

AC heaters are included with each air conditioning unit to maintain internal WIC temperatures during cold climate conditions. Air conditioners are AC powered, and are refrigerant-based vapor compression devices. The heaters are electric strip type, integral to the a/c unit.

Thermal Controller

Marvair CoolLink.

Table 2.2 Climate Control Configuration

Thermal System Element	Mounting	Power	Controls
Primary Cooling System: Filtered Vent Fans (2 Radial Fans) / Power Louver Exhaust Vent Free Air Cooling	Door / Rear Wall	48 VDC Power / ECU	Marvair CoolLink
Secondary / Back-Up System: HVAC Unit - Cooling, 1.5 Ton - Integral Electric Heat Elements	Rear Wall	240 VAC Circuit	Marvair CoolLink and Thermostat

-48 VDC Battery Option

The Vertiv™ NetSure™ 7100 -48 VDC power bay contains three (3) battery shelves equipped with three (3) strings of -48 VDC batteries connected in parallel.

Rack Units

Accommodates up to two 84" tall, 45 RU relay racks for 19" wide equipment mounting.

Master Ground Bar (MGB)

- One (1) 4” X 16” X 1/4” Master Ground Bar (MGB) is included as standard in the Vertiv™ XTE 802 Series Walk-In-Cabinet (WIC).
- The MGB will accommodate thirty-six (36) 2 hole lugs with 3/8" studs on 1" centers. Maximum lug width is 1.200”.

NOTE! *Two (2) hole lugs are required on all ground bar terminations.*

Working Space Requirements

See Figure 2.5 on page 10 for working space requirements.

Figure 2.9 Perspective Views with Major Features Identified

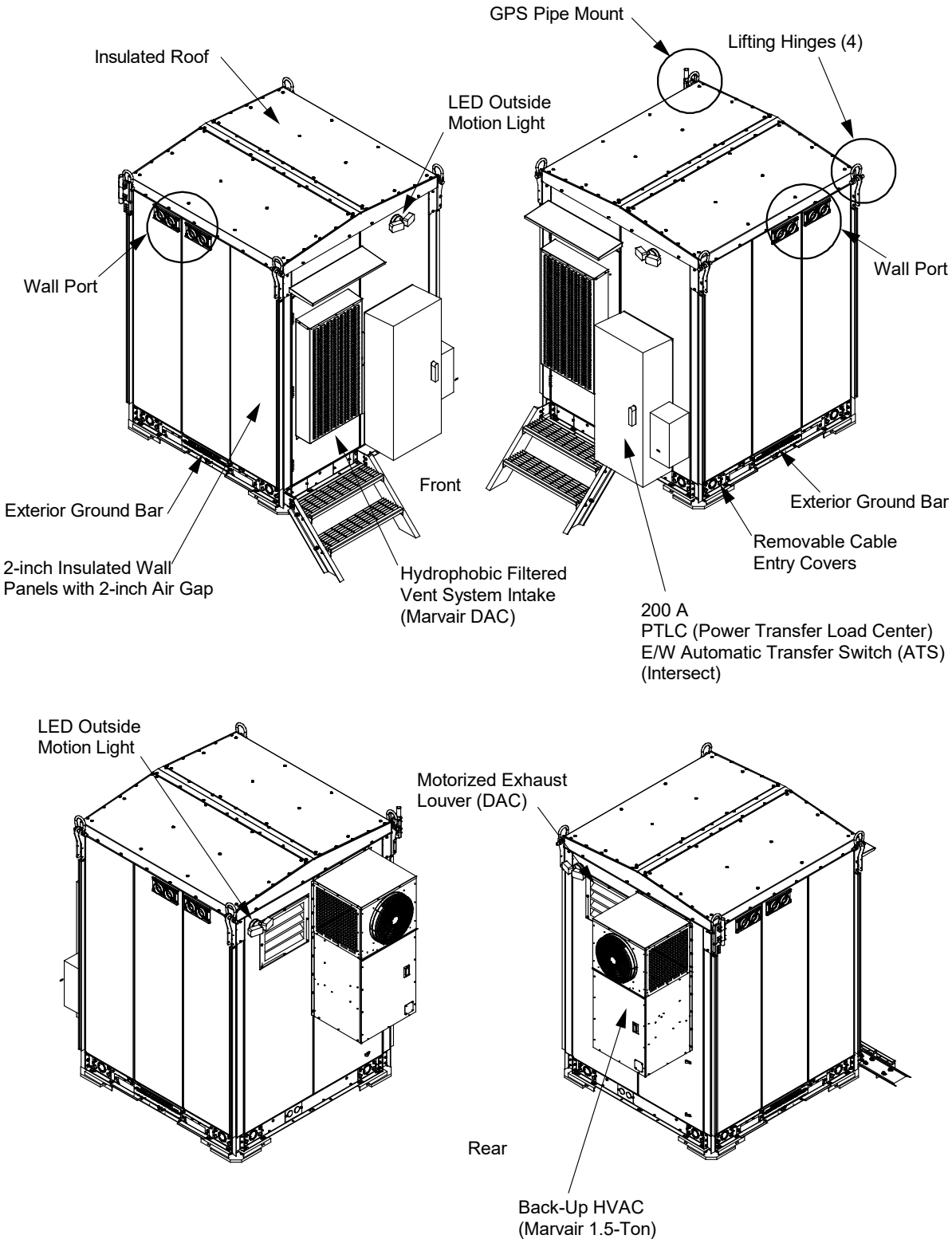


Figure 2.10 Perspective Views with Major Features Identified (interior)

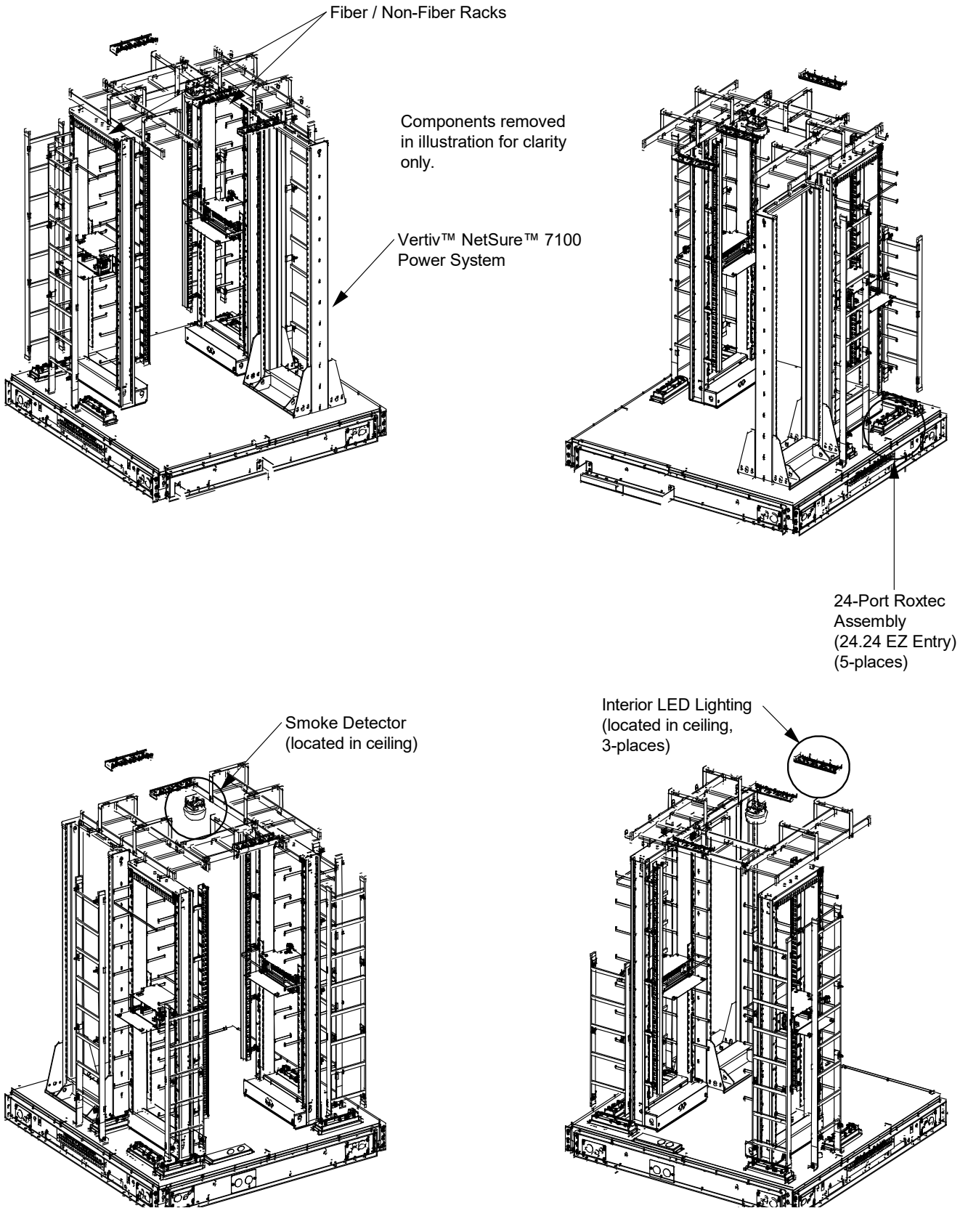


Figure 2.11 WIC Wall Detail Views (cont'd on next page)

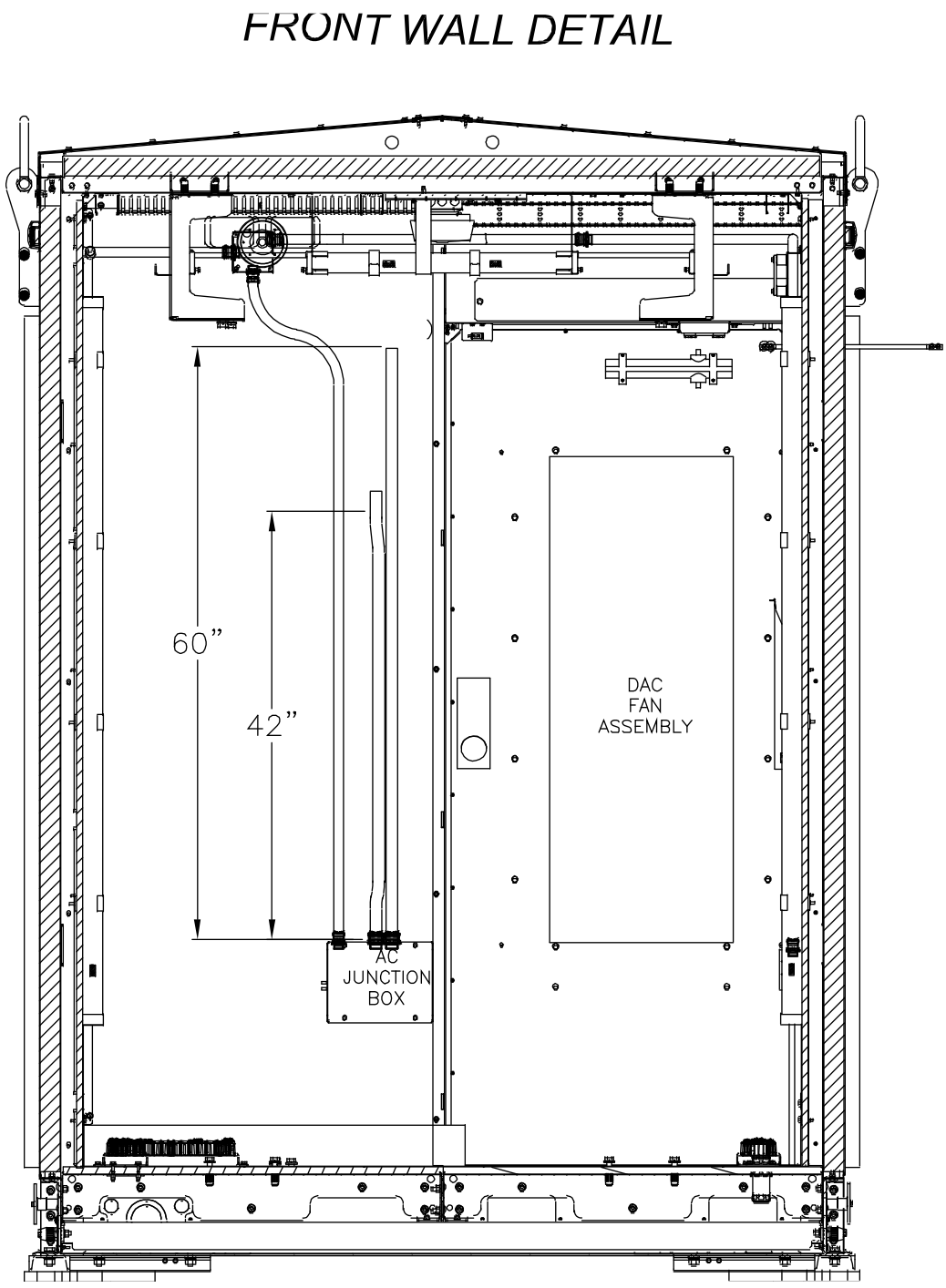


Figure 2.11 WIC Wall Detail Views (cont'd from previous page, cont'd on next page)

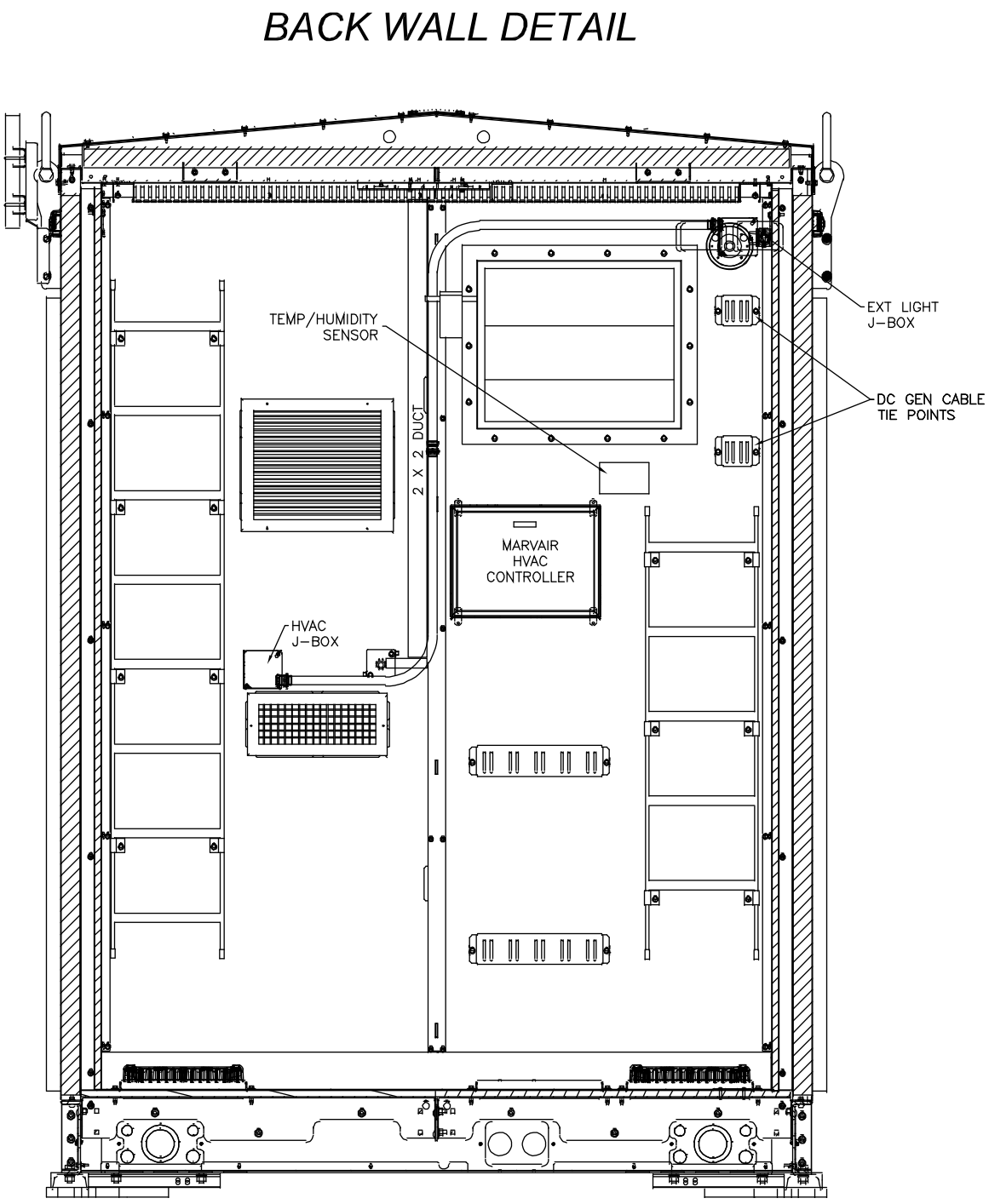


Figure 2.11 WIC Wall Detail Views (cont'd from previous page, cont'd on next page)

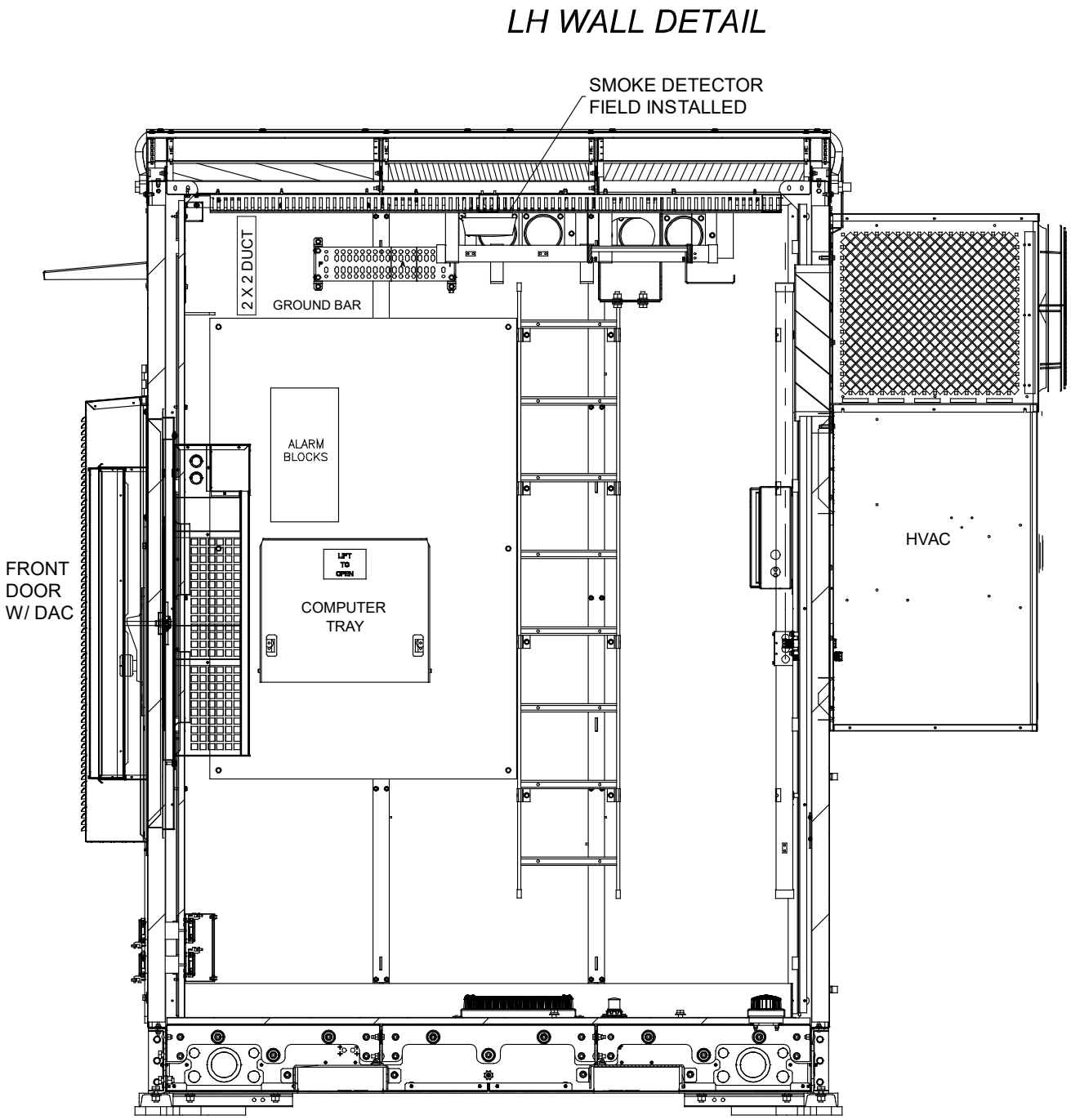


Figure 2.11 WIC Wall Detail Views (cont'd from previous page)

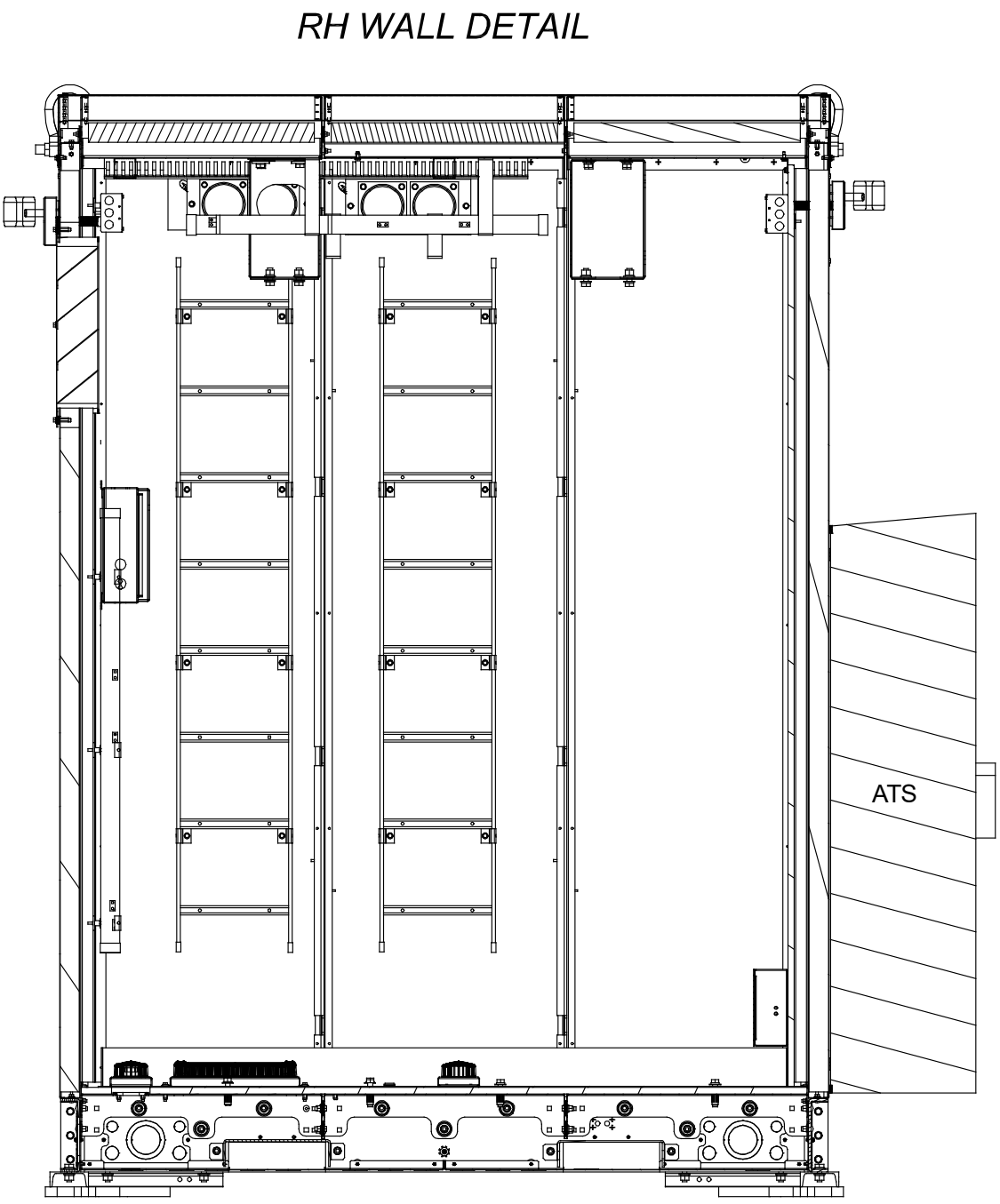


Figure 2.12 Top View of WIC Floor

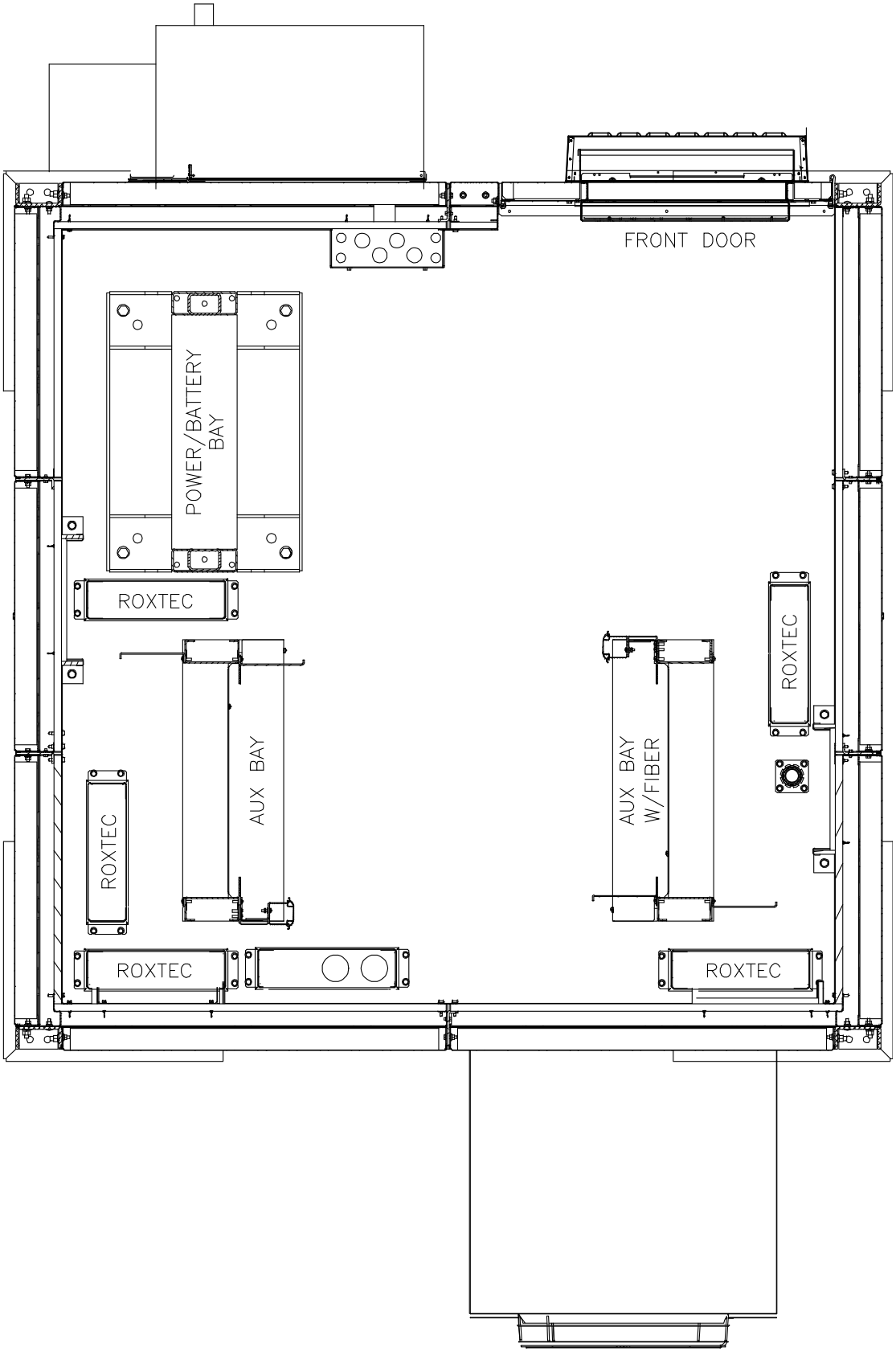


Figure 2.13 WIC AC Conduit Routing

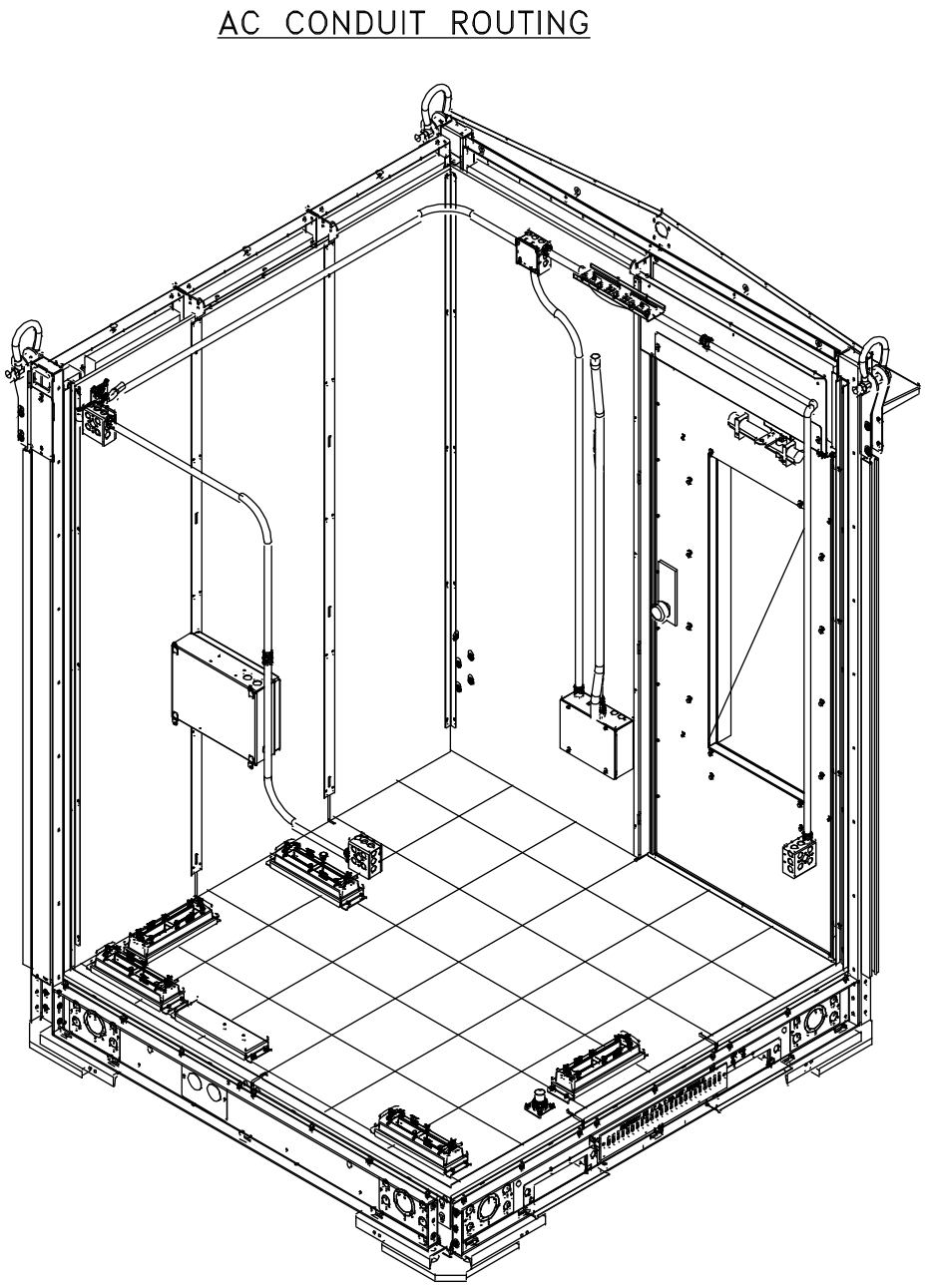


Figure 2.14 WIC DC Panduit Routing

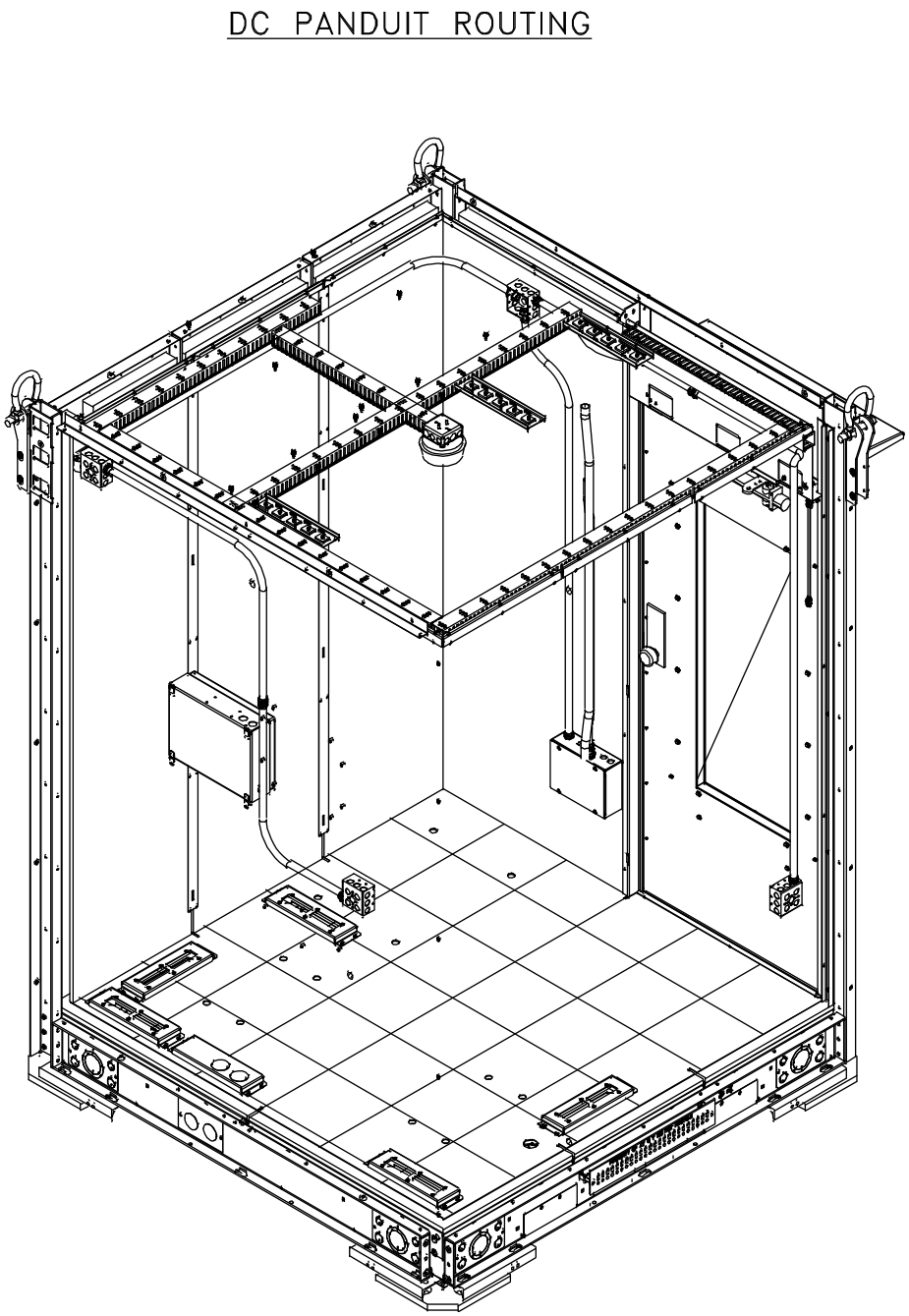


Figure 2.15 Door Intrusion Switch and Fold Down Laptop Desk Locations

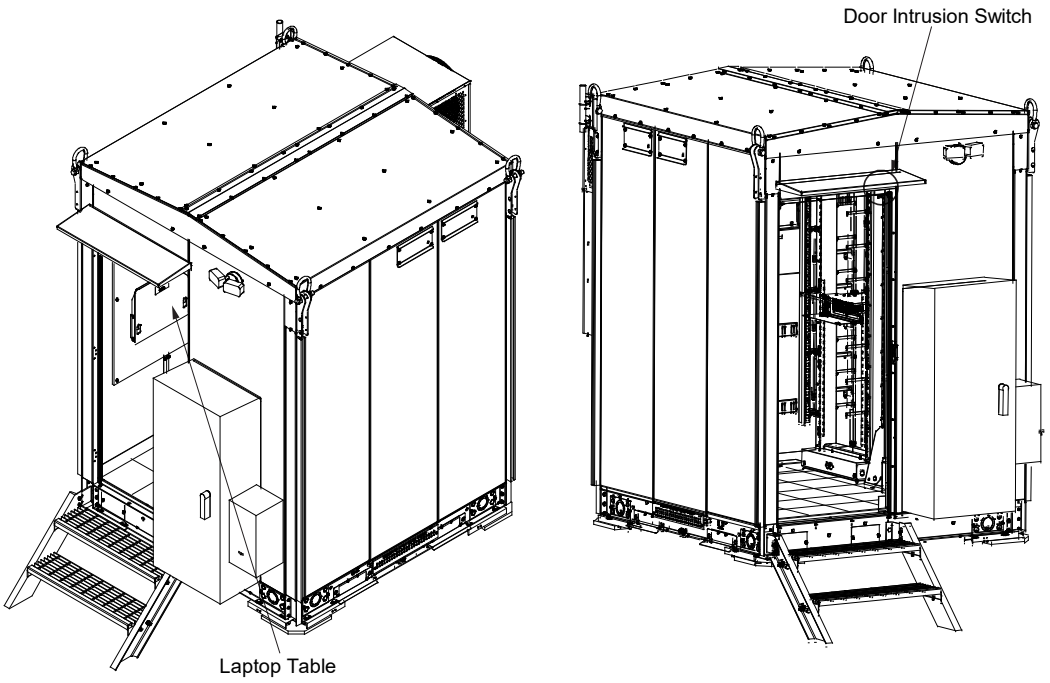


Figure 2.16 Floor Cable Entry Ports

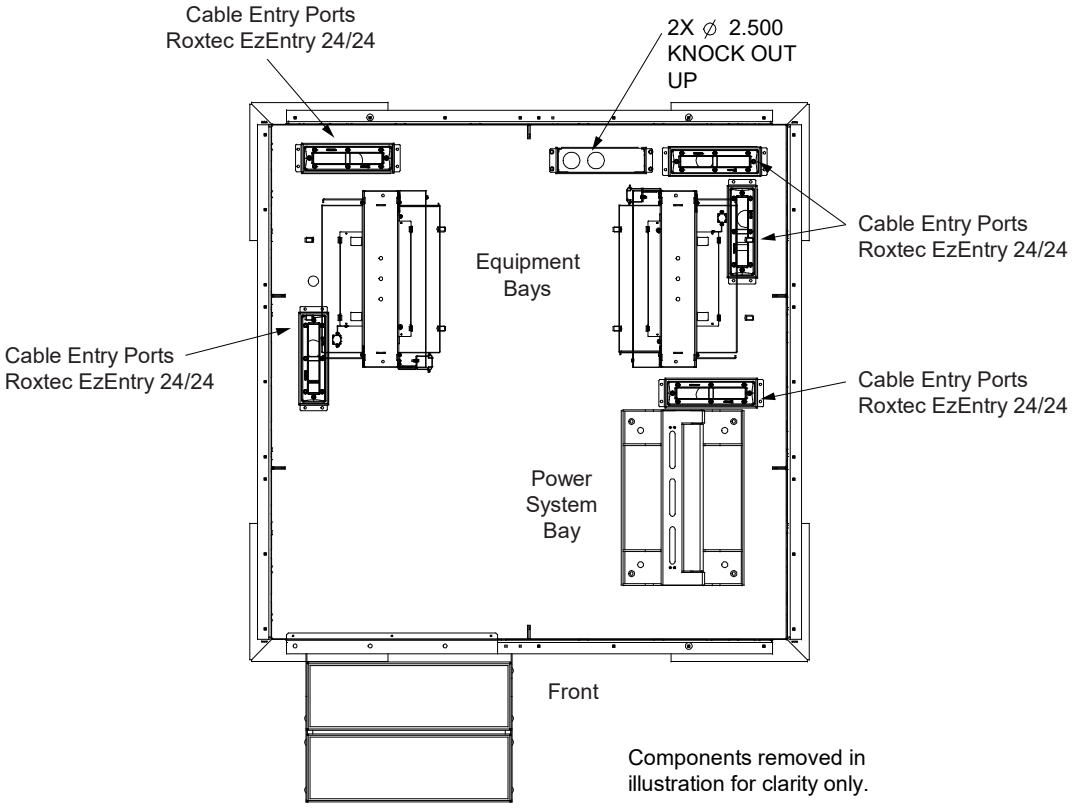
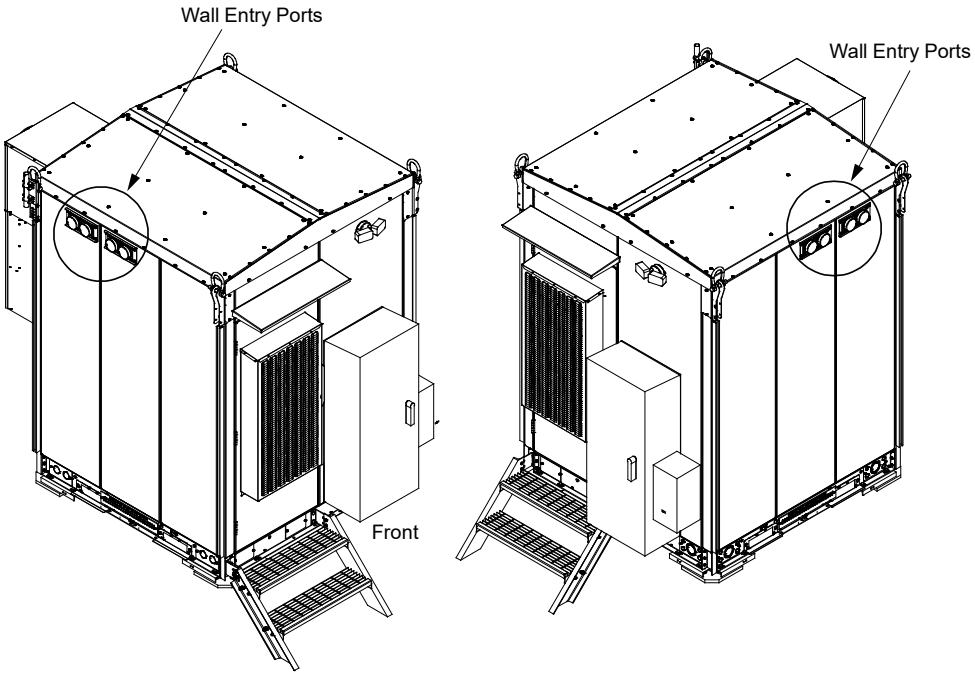


Figure 2.17 Wall Cable Entry Ports



Note: 1. Port boots must be used to seal the cables.
2. Port boots are not provided with the WIC.

3 Sequence of Procedures

3.1 General

Perform the procedures in Table 3.1 (in the order listed) to fully install the WIC.

Other practices and manufacturer's documents will be required to complete the installation of the system. This includes, but is not limited to:

- Setup and maintenance of rectifiers, controller, and batteries.
- OSP cable fishing, sealing, grounding, splicing, and termination.
- Equipment manufacturer's drawings and documentation.
- Refer also to…
  - SD-2018009-01 (WIC Schematic Drawings).
  - J-2018009-01 (WIC Job Drawings)

Table 3.1 Sequence of Procedures

Section in this Document	Starting on Page	Description
Product Description	1	Provides information that will help the project engineer determine an appropriate use and location for the WIC, including associated foundation options.
Front Door	29	Describes the front door and operation of the front door intrusion alarm switch.
Installation Considerations	30	Provides installation overview.
WIC and Generator Placement	32	Describes the transportation and storage requirements, the safe handling of the WIC, and the procedures to install the WIC and associated foundation options.
Sealing Cable Entries	46	Provides methods for sealing cable entries.
Grounding the WIC	47	Describes the grounding requirements for the WIC.
AC Power	56	Provides wiring information for the electrician.
DC Power	61	Provides information regarding the DC power system and distribution. Provides reference where to find information and installation instructions for the various models of batteries used in the WIC. Provides external DC generator wiring instructions.
OSP Cables	66	Provides procedures for preparing the cable sheaths and routing the cables within the WIC.
Alarm Wiring	67	Describes the wiring for the WIC alarms.
Initial Power Up	69	Describes the power up sequence for the AC power, the DC power, and the batteries.
Direct Air Cooling (DAC) and HVAC	71	Describes the WIC thermal components.

4 Front Door

4.1 Safety Precautions

DANGER! RISK OF ELECTRICAL SHOCK, AC

Proper actions, include, but not limited to:

- Verify before contacting the WIC that no current leakage or ground fault condition is present.
- Verify a proper ground is in place.

WARNING! RISK OF EXPLOSION

For safety reasons, never restrict or block the airflow through the door or entry panel ventilation openings.

4.2 Locking Mechanism

The front door is equipped with a KABA Simplex L1000 Series, Model 1021B, Mechanical w/Best core door lock.

4.3 Securing Mechanism

The front door is equipped with a positive engagement latch with bumper stop to secure the door in an open position and an adjustable-hydraulic closure.

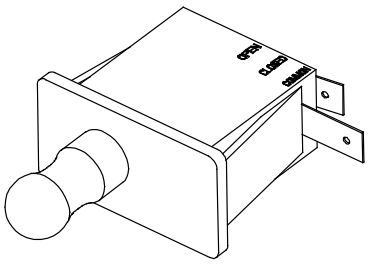
4.4 Intrusion Alarm Switch Operation

The front door is equipped with an intrusion alarm switch. The intrusion alarm switch is connected to the alarm block. If connected to an alarm sending device, an alarm can be sent whenever the front door is opened. The intrusion alarm can be disabled while performing routine maintenance as described in the following procedure. Refer to Figure 2.15 on page 26 for location of the intrusion alarm switch. Refer to Figure 4.1 for an illustration of the intrusion alarm switch.

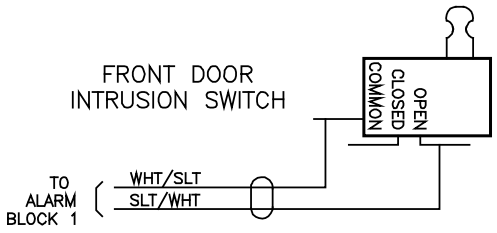
Procedure

1. Open the front door. If connected properly, the intrusion alarm activates.
2. Pull the plunger on the switch to silence the alarm.
3. The intrusion alarm can be reset by pushing the plunger back in, or by closing the front door.

Figure 4.1 Intrusion Alarm Switch



Front Door Intrusion Switch View



Note: This wiring of the intrusion switch results in a Normally Closed (open on alarm) circuit.

5 Installation Considerations

NOTE! *If holes are drilled into the exterior of this WIC and not filled using a seal tight connector, the manufacturer's warranty will be void.*

5.1 Important Safety Instructions

DANGER! Adhere to the "Important Safety Instructions" presented at the front of this document.

5.2 Installation Overview

The following is the recommended sequence for the installation and start-up procedures. The sequence may change according to job and site conditions.

- Ensure all site drawings and approvals are in place.
- Obtain the recommended tools and test equipment.
- Read "Important Safety Instructions" starting on page vi carefully.
- Check that all the equipment and materials have been delivered.
- Proceed with the physical installation of the WIC.
- Install and verify ground cables.
- Install and verify the AC power.
- Install and verify the DC power.
- Route, splice, and verify the OSP cables.
- Install and verify the alarm cables.
- Install and verify the batteries.
- Turn-up, verify, and adjust the system.

5.3 Tools and Test Equipment Required for Installation

The following tools, test equipment and materials are required for the physical installation of the WIC:

- Approved voltage detector
- Digital multimeter (DMM), 0 to 200 V dc, 0 to 300 V ac
  - Digital clamp-on meter, 0 to 30 A dc, 0 to 60 V ac, recommended
- Torque wrench
- Ratchet drive, extensions, sockets
- Carpenter's level
- Lineman's scissors
- Lineman's strippers
- Lineman's cutters
- Appropriate crimping tool with dies
- Electrician's insulated screwdrivers, Phillips, No. 1 and 2
- Electrician's insulated screwdrivers, flat-blade, small and large
- Insulated nut drivers for battery installation.
- Silicone sealant
- NO-OX-ID-A or approved equivalent

Outside the scope of this document, are the tools to fish, splice and terminate OSP Cables and laptop to setup the power system controller.

Equipment associated with lifting the WIC by the eyebolts is listed separately, in a subsequent section.

6 WIC and Generator Placement

6.1 Overview

This section contains the procedures required for physical installation of the WIC and Generator.

6.2 Site Selection

Obtain rights-of-way and other permits (electrical permit), depending on local codes and authorities, prior to installing the WIC.

Site Location Considerations

Consider the following when deciding on the location for the WIC and Generator.

- Place the WIC and Generator on servitudes, on dedicated (recorded) easements, or on property owned by the company. Avoid any unrecorded easements.
- Use public road and street rights of way only where there is enough space to place the WIC and Generator and provide safe working conditions. The WIC and Generator should be easily accessible with adequate parking to ensure safety for people and vehicles. Place the WIC and Generator where it will not create a visual or physical obstruction to either vehicles or pedestrians.
- Select locations that will minimize accidental or intentional vandalism. Consider the use of protective posts/bollards when the WIC and Generator is located near parking areas where vehicles could back into it.
- Do not place the WIC and Generator in ditches or areas subject to flooding. If installation is in a flood zone, use the Elevated WIC and Generator Platform.
- Figure 2.5 on page 10 shows the minimum working space allowed between the WIC and Generator and any obstruction including fences, hedges, etc. Working space consists of adequate area for craft personnel to perform work and maintenance procedures as defined in the National Electric Code (NEC).
- Where ordinances or other standards require that the WIC and Generator be placed behind vegetation, preference should be given to evergreens that will not produce leaves, sticky pollen or waste that could fall and clog the climate control units vents.
- If the area is subject to freezing temperatures, be sure to comply with the local building codes and footing requirements to eliminate the possibility of frost heave.
- Minimize snow buildup around the WIC and Generator and its externally mounted components.
- Placement should support access for snow removal equipment in the event of a snow/ice storm.

6.3 Transportation and Storage

Safety Precautions

WARNING! PREVENT INJURIES, FROM LIFTING THE WIC
Follow all local safety practices while lifting the WIC. Safety equipment, signage, traffic control and all required Personal Protective Equipment (PPE) shall be used.

Keep unnecessary personnel and bystanders clear of work areas at all times.

Do not lift the WIC over people. Do not let anyone work, stand, or pass under a lifted WIC.

Do not move or lift the WIC with a door open.

Only properly trained and certified operators shall operate any crane or lifting equipment.

Do not allow the lifting equipment or WIC to touch any electrical wiring or equipment.

Operate all lifting equipment within safety constraints, as defined by the manufacturer and local practices; for example, do not exceed the capacity of reach.

Crane Operation:

Only properly trained operators shall operate the crane.

Do not operate the crane until all stabilizers are extended. The stabilizers must be in firm contact with the ground or other adequate support structure. Do not retract or extend the stabilizers when the WIC is suspended from the crane.

Only the crane rigging crew should set up the crane and rigging.

Do not exceed the lifting capacity of the crane.

Use all four (4) provided lifting points (eyes) at the top corners of the WIC to lift the WIC.

Use crane spreader frames to prevent WIC framework warping due to side loading.

Never route straps, cables or chains through the fork-lift channels in the base for a vertical crane lift.

Do not use slings, clevises or shackles of insufficient capacity.

Forklift Operation:

Only properly trained operators shall operate the forklift.

Do not exceed the lifting capacity of the forklift.

Forklifts shall have a minimum fork length of 72 inches (183 cm).

DANGER! RISK OF ELECTRICAL SHOCK, GENERAL
Do not install equipment showing any physical damage. If packaging is damaged, do not accept receipt from the shipper.

CAUTION! PREVENT EQUIPMENT DAMAGE, PROPER HANDLING
Do not stack nor lay the WIC on its side.

WARNING! RISK OF INJURY, FROM UNSECURED WIC
Do not pull cables or terminate cables until WIC has been properly secured in its mounted position.

CAUTION! PREVENT EQUIPMENT DAMAGE, FROM CONDENSATION
Until the WIC is secured and sealed, weather protection shall be maintained to prevent moisture and condensation from entering ports or openings into the conditioned space within.

General

For short-term storage, the WIC should not be exposed to temperatures that exceed the temperature range of –40 °C (–40 °F) to +70 °C (+158 °F).

For long-term storage, the WIC and packaging should be kept dry and not be exposed to temperatures outside the range of –10 °C (+14 °F) to +40 °C (+104 °F).

Once packaging has been discarded and the WIC has been securely placed in its mounted position, the WIC may be exposed to conditions from –40 °C (–40 °F) to +46 °C (+115 °F).

6.4 Unpacking and Preparing the WIC at the Installation Site

Safety Precautions

DANGER! Do not install any additional equipment until the WIC is secured in its mounted position.

CAUTION! TO AVOID EQUIPMENT DAMAGE:
DO NOT REMOVE the exterior packaging or wrap from the WIC until the WIC is transported to the installation site. Control moisture and condensation inside the WIC until it is turned up for service.

General

- The WIC is shipped from the manufacturer with plastic wrap to protect the WIC during shipment.
- If the external packaging appears excessively damaged, do not accept the unit from the shipper as interior damage may not be apparent.
- CAREFULLY remove all packaging material from around the WIC. Dispose of the packaging according to local practices.
- On receipt at the site, inspect the WIC to make sure there is no damage to equipment. Check the packing slip to make sure all components are received. If any components are damaged or not received, contact your supervisor for further instructions.
- Close and latch all doors in preparation for WIC placement.

WARNING! Do not open any doors on the WIC unless it is secured in its mounted position, or securely restrained against unexpected movement or tipping.

6.5 Preparing to Lift the WIC

General

Refer to “Transportation and Storage” on page 33.

Required Equipment When Using a Crane:

- A crane capable of lifting the shipped weight of the equipped WIC plus a safety margin.
  - 10,000 lbs (4536 kg), or greater.
- Four (4) wire-rope slings, 8-ft. (2.4 m) long (minimum). Slings should each have the capacity to support the entire shipped weight of the equipped WIC to prevent potential cascading failures.
  - 8,000 lbs (3629 kg)
- Spreader frames are required for shorter slings to prevent WIC framework damage due to side-loading forces at the top corner lifting eyes. Lifting forces shall be vertical only and applied only at the lifting eyes.
- Four (4) connecting links (clevises), to attach the wire-rope slings to the WIC lifting eyebolts. Connecting links should each have the capacity to support the entire shipped weight of the equipped WIC to prevent potential cascading failures.
  - 8,000 lbs (3629 kg)
- A 75-ft (20 m) rope, 5/8” (1.5 cm) in diameter, to use as a tagline. A tagline is used to guide the WIC into position while it is lifted and lowered.

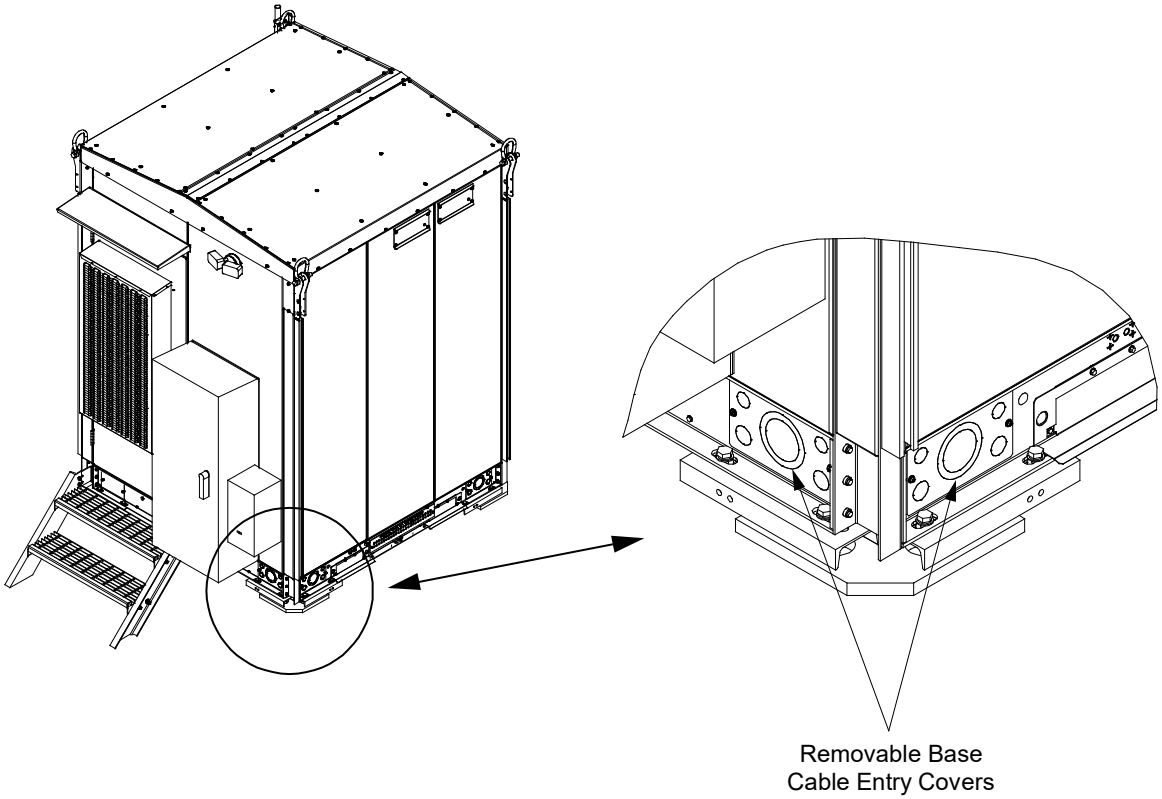
Required Equipment When Using a Forklift:

- A forklift capable of lifting the shipped weight of the equipped WIC plus a safety margin.
  - 10,000 lbs (4536 kg), or greater.
- Forklifts shall have a minimum fork length of 72 inches (183 cm).

Preparing to Lift the WIC Procedure

1. If not previously done, unpack the WIC according to the instruction in “Unpacking and Preparing the WIC at the Installation Site” on page 34.
2. If WIC base cable entry covers are installed, remove the bolts from the WIC base cable entry covers and set aside the covers and hardware for later re-use. See Figure 6.1.

Figure 6.1 Removing Base Cable Entry Covers



6.6 Lifting the WIC

Safety Precautions

DANGER! The maximum WIC weight when lifted shall not exceed equipment ratings!

Procedure (When Using a Crane)

1. Close and latch all doors before lifting and placing the WIC.
2. Inspect the lifting eyebolts and ensure eyebolts and roof are secure and free of damage.
3. Install a clevis and shackle or a threaded shackle in each eyebolt at the top of the WIC as shown in Figure 6.2.
4. Insert all four (4) 8 feet minimum lifting slings securely through all four clevises or shackles as shown in Figure 6.2. Never route straps, cables or chains through the forklift channels in the base for a vertical crane lift.

NOTE! *If slings are not long enough (8-ft. [2.4 m] or longer), use a spreader bar to be sure the cables pull on the lifting eyebolts in a vertical direction.*

NOTE! *It is important that the length of each sling allow for an angle 45 degree or more.*

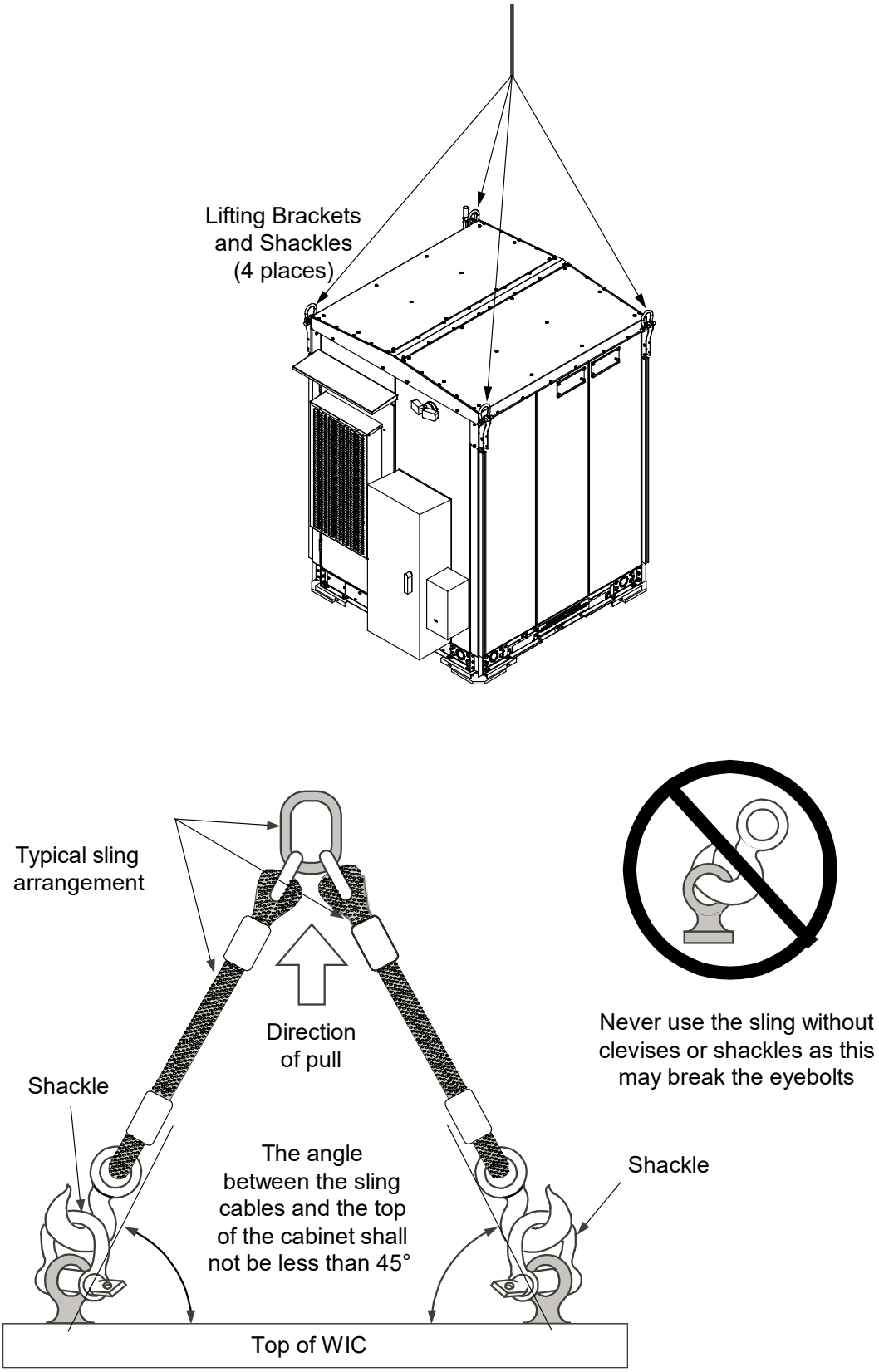
NOTE! *Failure to maintain a 45 degree angle or greater and using all four eyebolts will void any warranty or service claim.*

5. Tie a 75-ft. rope to a lifting eyebolt so it can be used as a tag line.
6. Never work under the WIC while it is suspended above the ground.
7. Lift the WIC off the truck and place it into its mounted position using the tagline to guide it into position. Continue with the “Placing the WIC” procedure on 39.

Procedure (When Using a Forklift)

1. Close and latch all doors before lifting and placing the WIC.
2. Lift the WIC using the forklift pockets located in the base of the WIC.
3. Never work under the WIC while it is suspended above the ground.
4. Lift the WIC off the truck and place it into its mounted position. Continue with the “Placing the WIC” procedure on 39.

Figure 6.2 Lifting the WIC



6.7 Placing the WIC

The following is a typical guide. Consult your company policies for your specific installation requirements.

Perform the following steps in placing and securing the WIC.

Procedure

ALERT! During lifting, the WIC must be lowered so that the WIC is level and parallel to the piers. Place the WIC so that it lines up with the bolt locations and clears any conduits.

1. Be sure to install and secure provided hardware between WIC base and foundation prior to setting the full weight of the WIC.
2. Check to be sure the WIC is properly placed.
3. Loosen the slings or remove forklift so that the full weight of the WIC rests on the foundation.
4. Verify hardware between WIC base and foundation is tight and secure.
5. Remove the slings, spreader bars, and tagline (if using a crane).

ALERT! If the WIC will not be powered up for an extended period, place a heat source, such as two 120 VAC 150 W incandescent lamps inside the WIC to prevent condensation. Suspend lamps from cable racks to prevent contact with any structures or equipment inside the WIC.

7 Installing GPS Antennae Mounting Bracket Kit

The GPS antennae mounting bracket kit can be install in either of the two lifting eye brackets at the back of the WIC. A Roxtec port is provided for sealing the antennae cable as it exits the WIC.

Refer to Figure 7.1 for an illustration of the GPS antennae mounting bracket kit P/N 564693. Attach the GPS antennae mounting bracket kit to the preferred corner lifting eye bracket as shown in Figure 7.2, using the provided hardware.

NOTE! *The tape covering the paint free areas on the WIC lifting bracket must be removed prior to GPS antennae mounting bracket installation.*

Figure 7.1 GPS Antennae Mounting Bracket Kit P/N 564693

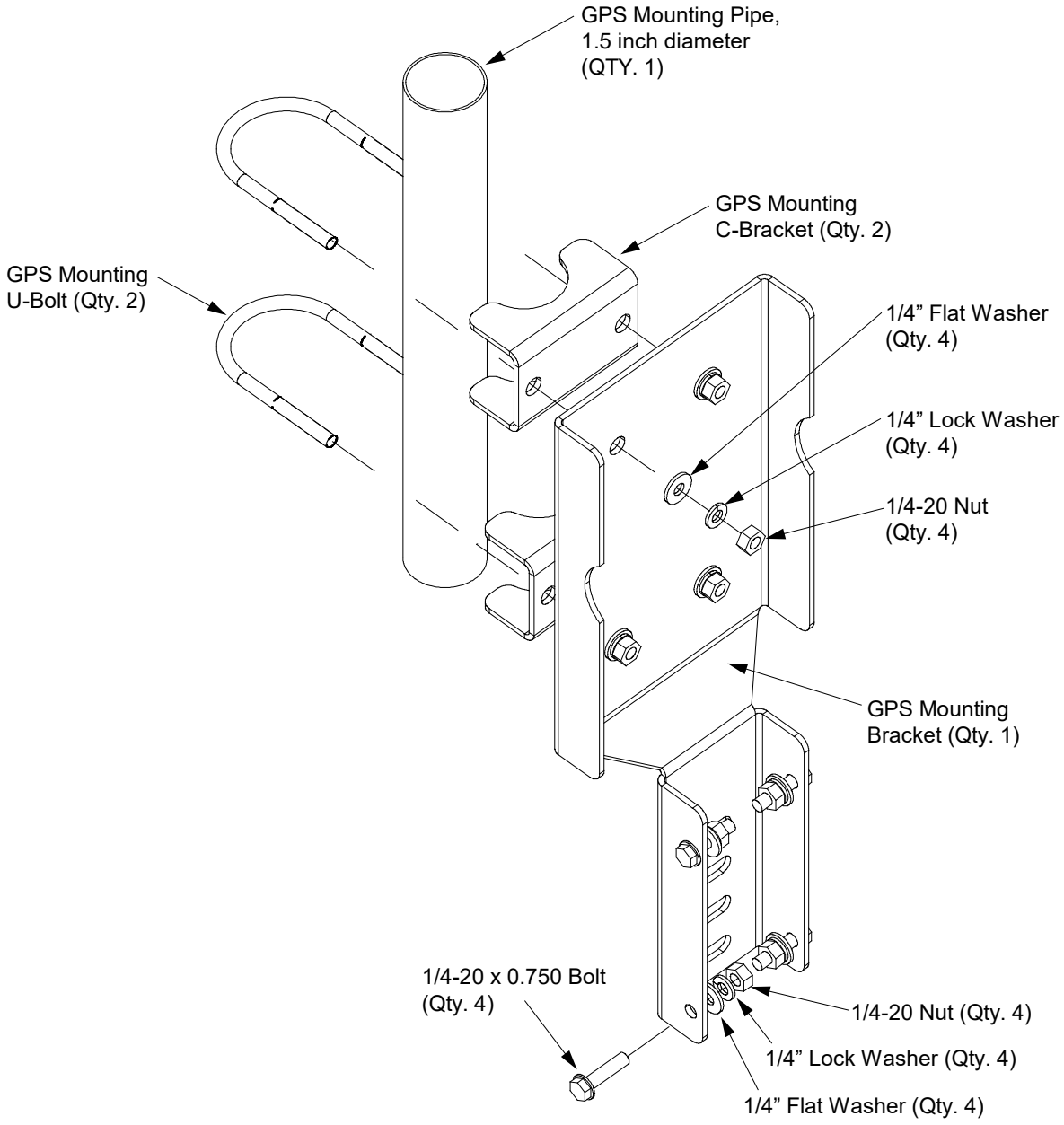
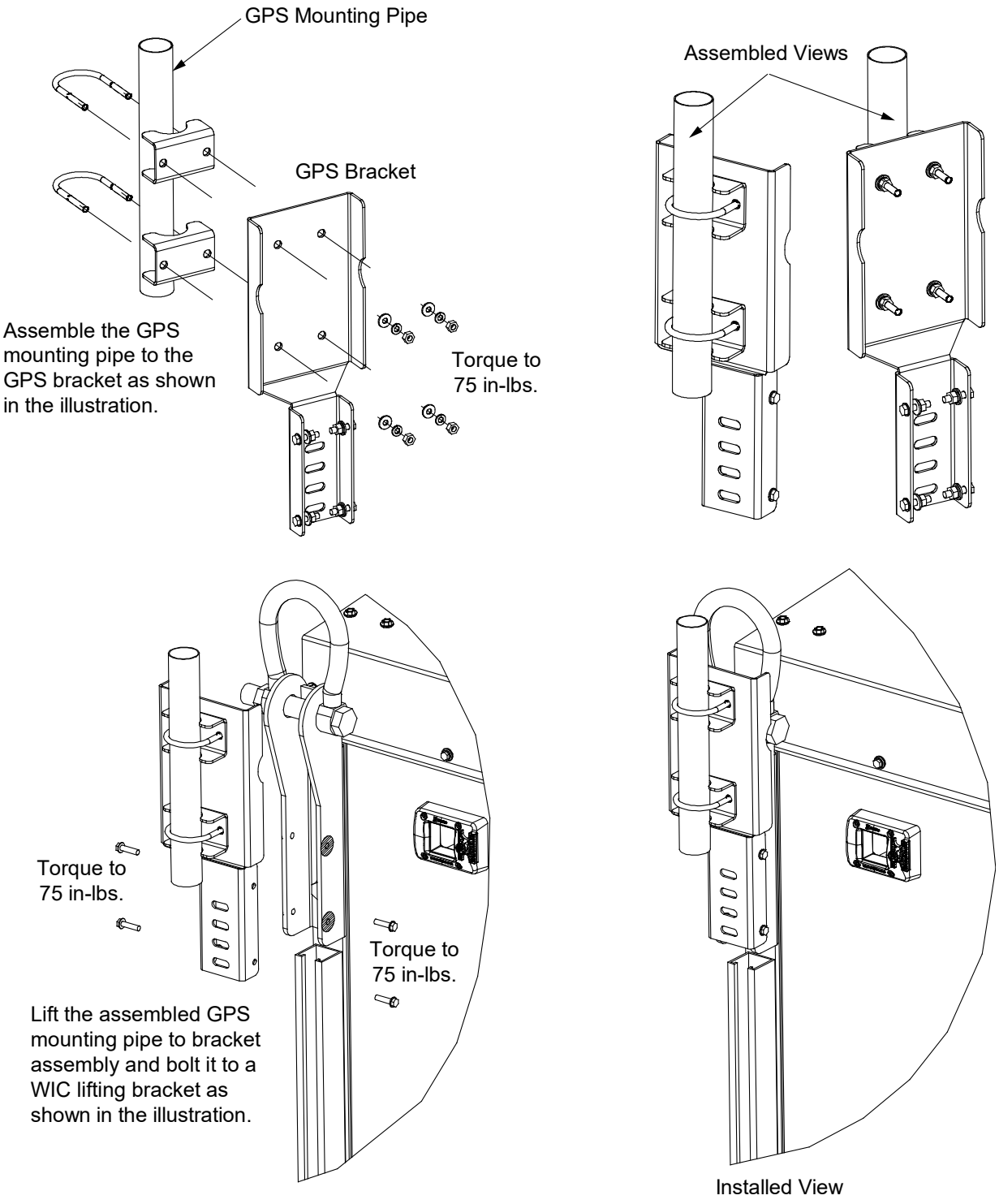


Figure 7.2 Installing the GPS Antennae Mounting Bracket Kit P/N 564693



8 Installation of Wall Cable Port Plates and Routing of Cabling through the Ports

8.1 Installation of Wall Cable Port Plates

NOTE! *The exterior plates with the ports are provided in the loose parts kit shipped in each WIC.*

Wall cable port plates are provided to route cables through the wall of the WIC including the GPS cables. Port boots must be used to seal the cables. Port boots are not provided with the WIC.

Refer to “Routing of GPS Cabling through the Ports” to route of GPS Cables inside the WIC.

Cables can be routed into the WIC through either wall ports or floor ports. Refer to “Sealing Cable Entries through the Wall” on page 45 to route the cables through the wall of the WIC. Refer to “Sealing Cable Entries through the Floor” on page 46 to route the cables through the floor of the WIC.

Perform the following steps to install the wall cable port plates.

Procedure

1. Remove the blank plate by removing four (4) 1/4 screws, four (4) 1/4 lock washers, and four (4) 1/4-20 sealing washers. See Figure 8.1. Set hardware aside for later reuse.
2. Disconnect the blank plate with the ground wire by removing the hardware. See Figure 8.1. Set hardware aside for later reuse.

NOTE! *One end of the ground wire is fixed inside the WIC.*

3. Connect the ground wire with the wall cable port plate by using the hardware removed above. See Figure 8.2.
4. Install the wall cable port plate by using the hardware removed above. See Figure 8.2.
5. Repeat the above steps to install another wall cable port plate.
6. Install the boots for sealing the GPS cables.

NOTE! *Wall cable port plate has two ports. Secure two boots for each wall cable port plate installed.*

Routing of GPS Cabling through the Ports

1. Route the GPS cables into the WIC through the port boots of the wall cable port plates.
2. Make sure the port boots are installed properly sealing the cables installed. If the second boot is not used for the cables, ensure that it is properly installed and seals the WIC from the outside air.

Figure 8.1 Removing the Blank Plates

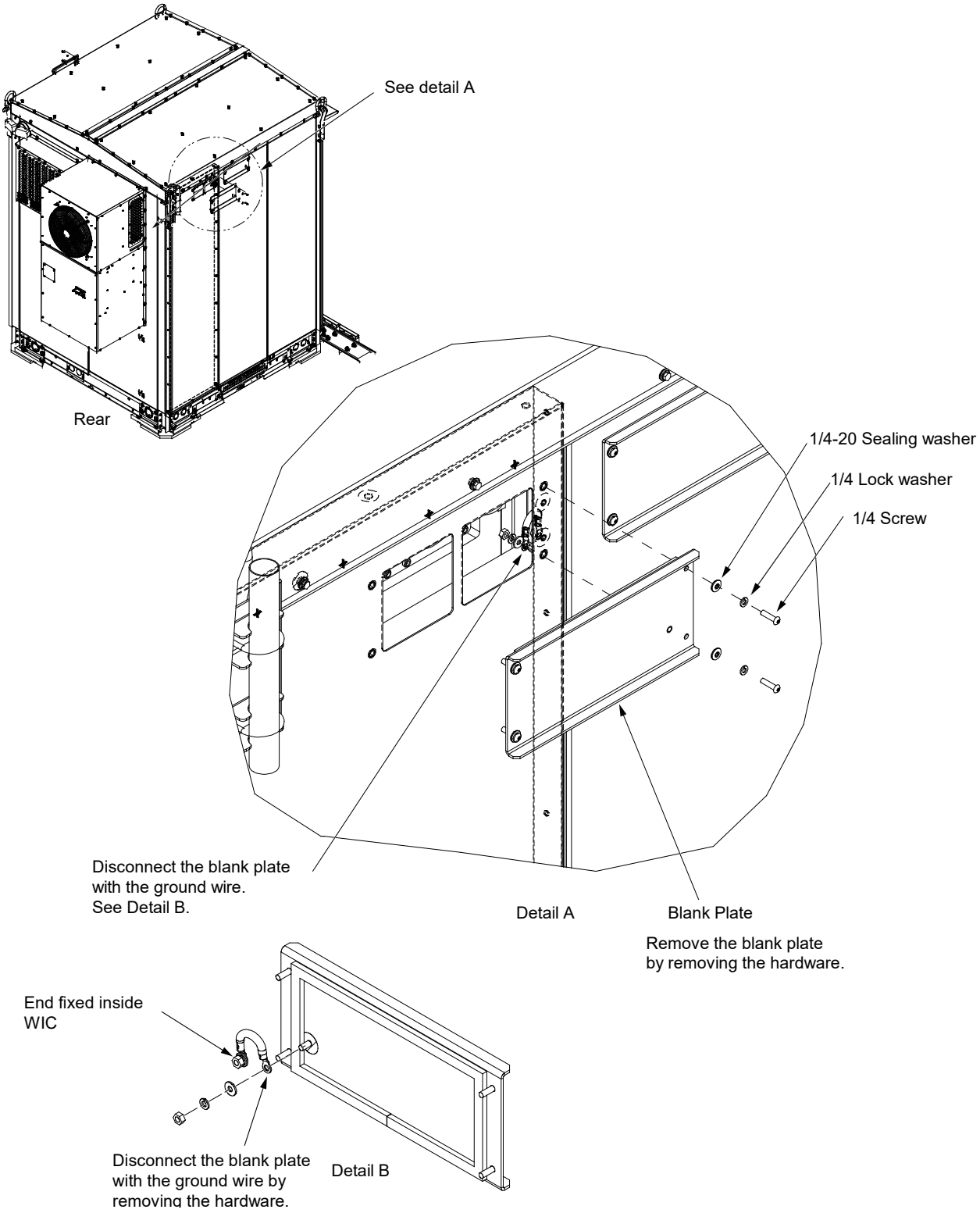
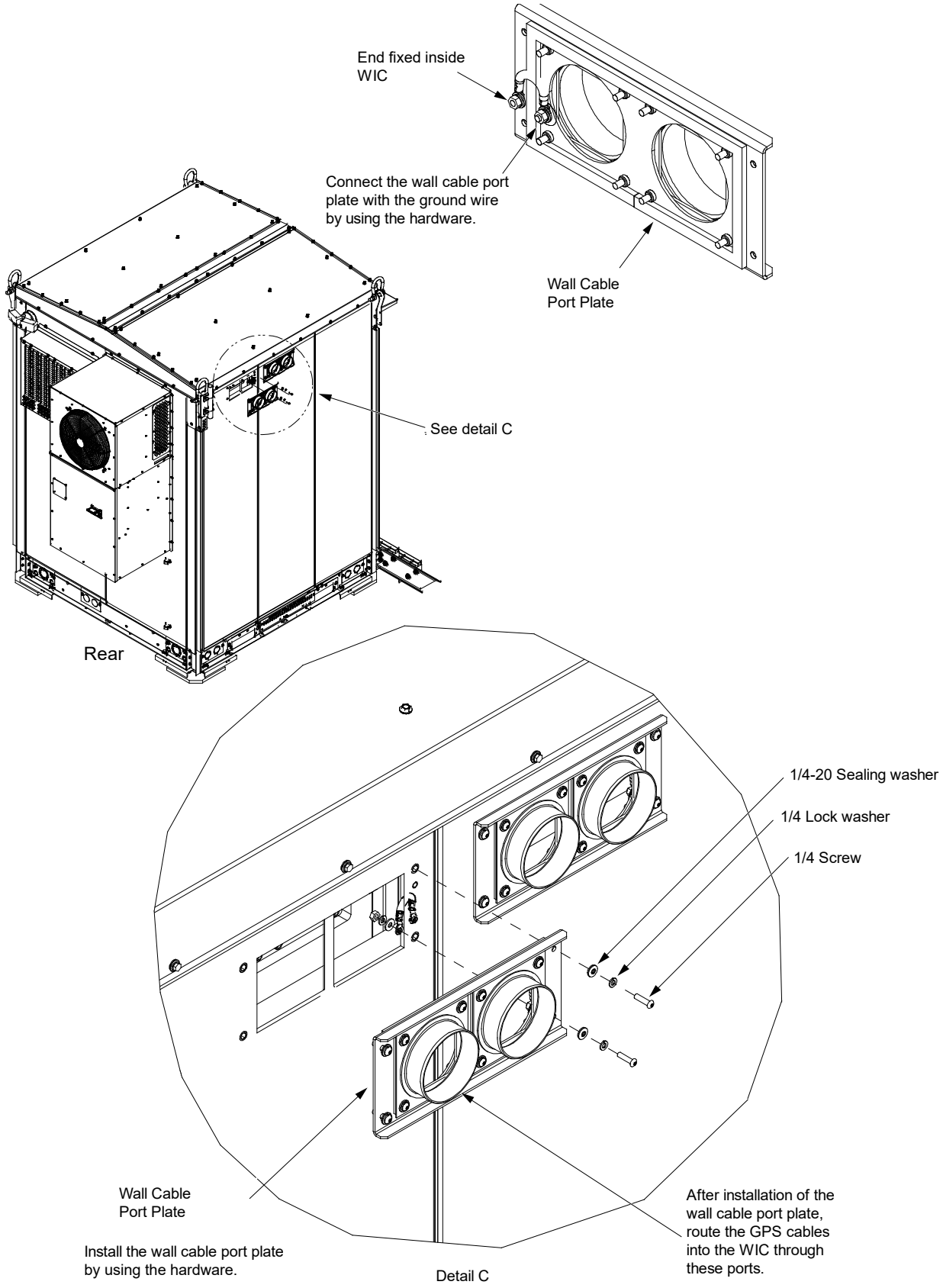


Figure 8.2 Installing the Wall Cable Port Plates



8.2 Sealing Cable Entries through the Wall

In keeping with best industry practices, seal all cable grommets penetrations against weather, rodent and insect intrusions.

It is extremely important to maintain a well-sealed WIC. Failure to do so can jeopardize the enclosed electronic equipment, as well as the proper functioning of the WIC systems. All cable transitions into the WIC must be properly sealed as required.

Port boots must be used to seal the cable entry points. Port boots are not provided with the WIC. Refer to the manufacturer Installation Instructions provided with the port boots for proper sealing of the cable entries.

9 Sealing Cable Entries through the Floor

NOTE! *If the floor entry ports are not being used, route the cable into the WIC through the wall entry ports. Refer to "Sealing Cable Entries through the Wall" on page 45.*

In keeping with best industry practices, seal all cable grommets penetrations against weather, rodent and insect intrusions.

It is extremely important to maintain a well-sealed WIC. Failure to do so can jeopardize the enclosed electronic equipment, as well as the proper functioning of the WIC systems. All cable transitions into the WIC must be properly sealed as required.

Refer to the following procedure to seal cable entries with duct sealing foam:

1. Route the cables into the WIC through bottom-entry conduits (preferred) or through side-entry conduits in the WIC base structure (if absolutely necessary). The bottom-entry and removable side-entry plates have pre-configured knockout stampings to facilitate conduit connections.
2. Route the OSP cables into the WIC conditioned space by removing a Roxtec port frame from the finished floor inside the WIC. Use a fiberglass fish tape from a side-entry port to extend to below the Roxtec port. Reach down through the finished floor to the fish tape, and use it to route pull cord or cables as required. Conduit knockouts are directly below each Roxtec port in the WIC base pan.
3. Route OSP cables to equipment through the Roxtec port frame, securing to cable rack and equipment frames as required.
4. Seal all conduit openings with Roxtec blocks, duct sealing foam or the equivalent against weather, animal and insect intrusion into the WIC.
5. Replace port covers, Roxtec port frames and any other material removed during installation.
6. Verify that cables are routed as required and that all cable entries are properly sealed.

10 Grounding the WIC

10.1 Important Safety Instructions

DANGER! Adhere to the “Important Safety Instructions” presented at the front of this document.

10.2 Safety Precautions

DANGER! RISK OF ELECTRICAL SHOCK, GENERAL

All WIC grounding must be installed and verified prior to connecting any power cables (AC or DC) and turning-up of the WIC.

Ensure that all NEC (National Electric Code), CSA (Canadian Electric Code) and local codes for safety and wiring are followed. Consideration for corporate standards also apply.

10.3 General

All external ground wires shall only be terminated to the exterior ground bars located at the base of the left and right sides of the WIC (see Figure 10.1).

All internal ground wires shall be terminated to the Master Ground Bar as reflected in Figure 10.2 prior to any externally derived electrical power being connected to the WIC.

All WIC grounding must be installed prior to turn up of WIC.

- The internal WIC frame and all attached equipment are factory grounded to the WIC Master Ground Bar.
- Two (2) 2 AWG green conductors are factory connected from the WIC Master Ground Bar to two (2) exterior ground bars on the lower right and left exterior of the WIC.
- The WIC structure is separately grounded to the exterior ground bars.

10.4 Exterior Ground Bars

ALERT! Grounding should be accomplished according to local practices and in accordance with the latest NEC codes.

Refer to Figure 10.3, Figure 10.4, and Figure 10.5 for WIC site grounding schemes.

Procedure

1. Connect one provided stranded cable from each exterior ground bar to site ground per local practices. Refer to Figure 10.1 for location.
2. The exterior ground bars are configured to terminate 2-hole lugs, 3/8” hardware, on 1” center spacing (see Figure 10.1).
3. Allow for a 0.125” minimum space between adjacent lugs.

NOTE! *If generator is being installed on a platform. The generator platform must have a 2 gauge ground wire run from it to a WIC exterior ground bar.*

10.5 Master Ground Bar (MGB)

See Figure 10.2 for typical connections.

Figure 10.1 WIC Exterior Ground Bars Locations

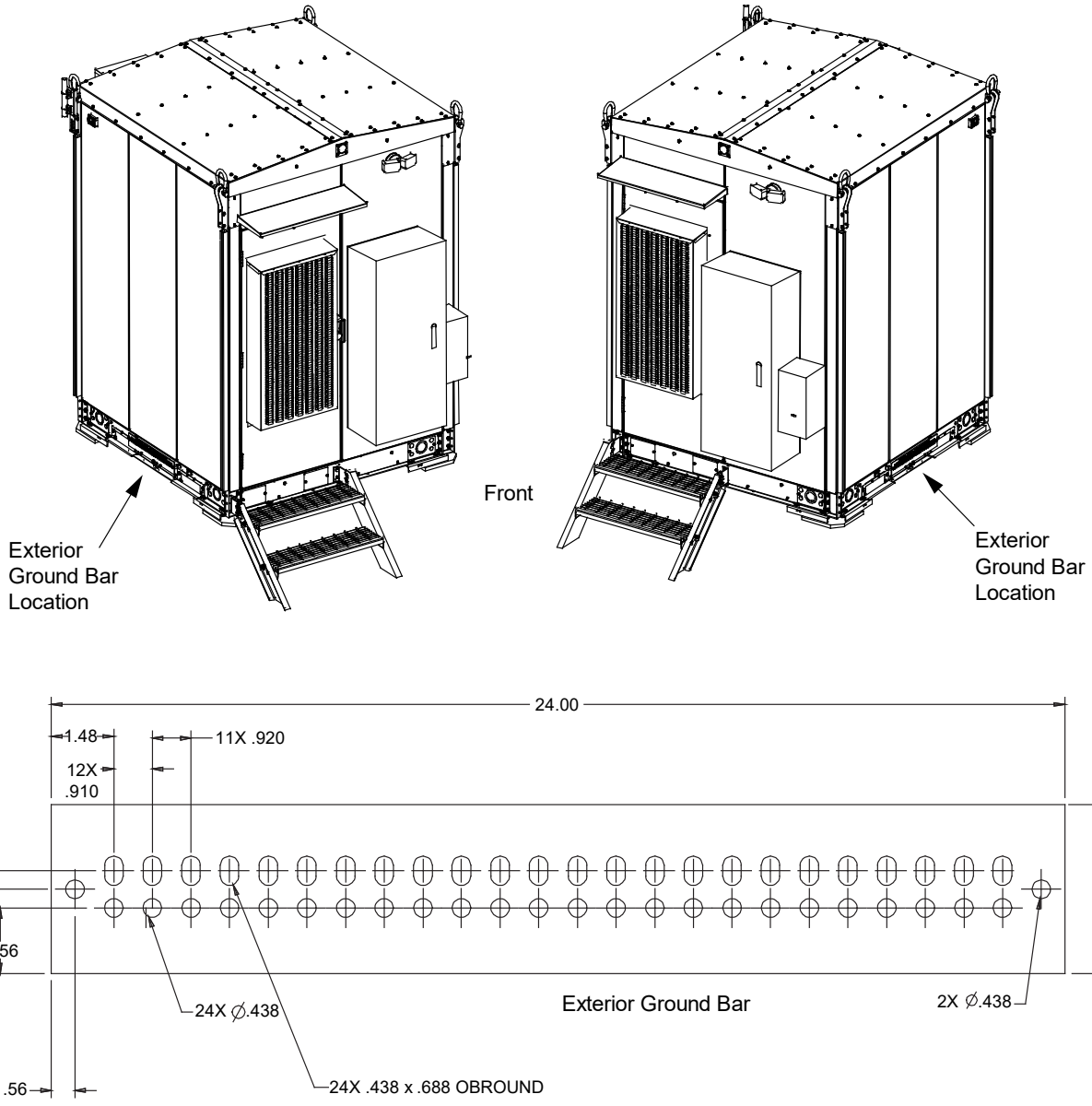
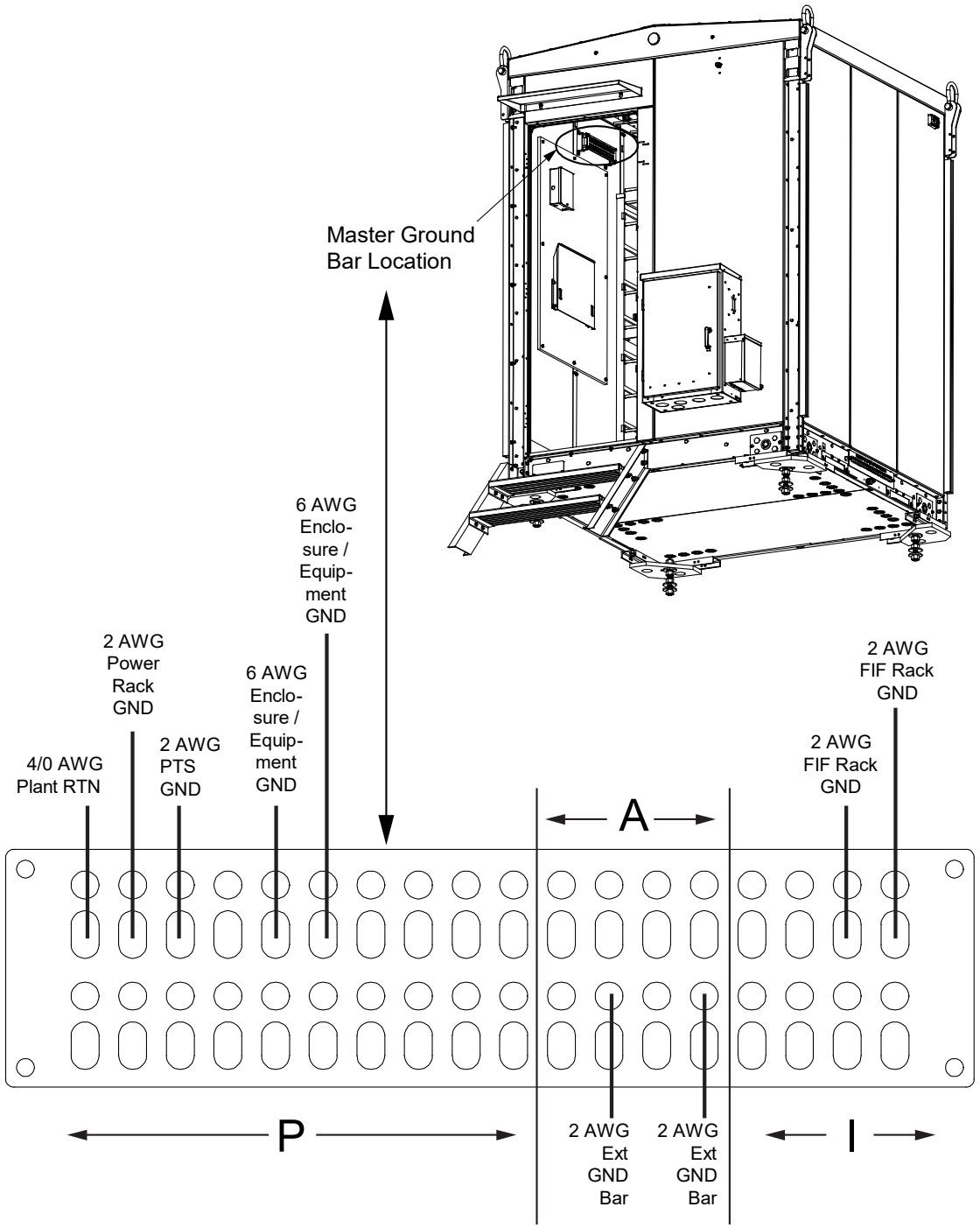


Figure 10.2 Typical Master Ground Bar Terminations (cont'd on next page)



Master Ground Bar Layout and Designation Plan

Cables may be dressed from top or bottom if required by physical cable layout.

Keep cables in same section of busbar as shown above.

Termination locations space horizontally for 4/0 cable lugs of 1.200" maximum width allow for 0.125" minimum space between adjacent lugs. Busbar mounting detail omitted for clarity.

Figure 10.2 Typical Master Ground Bar Terminations (cont'd from previous page)

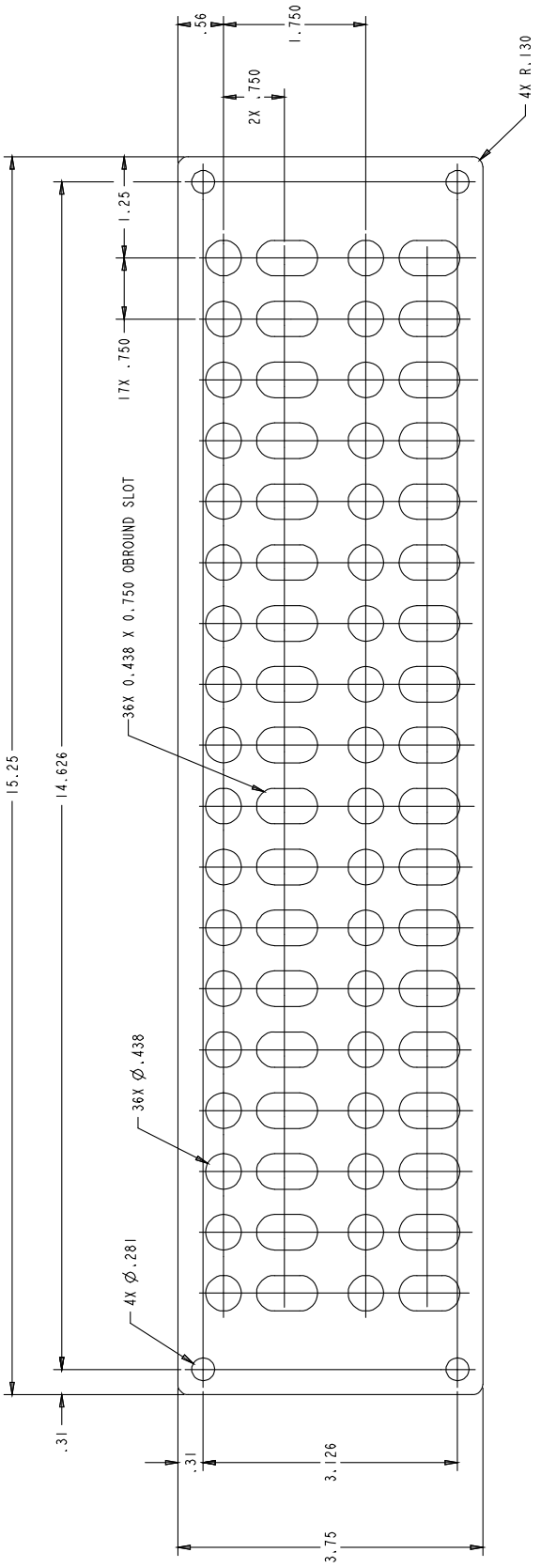
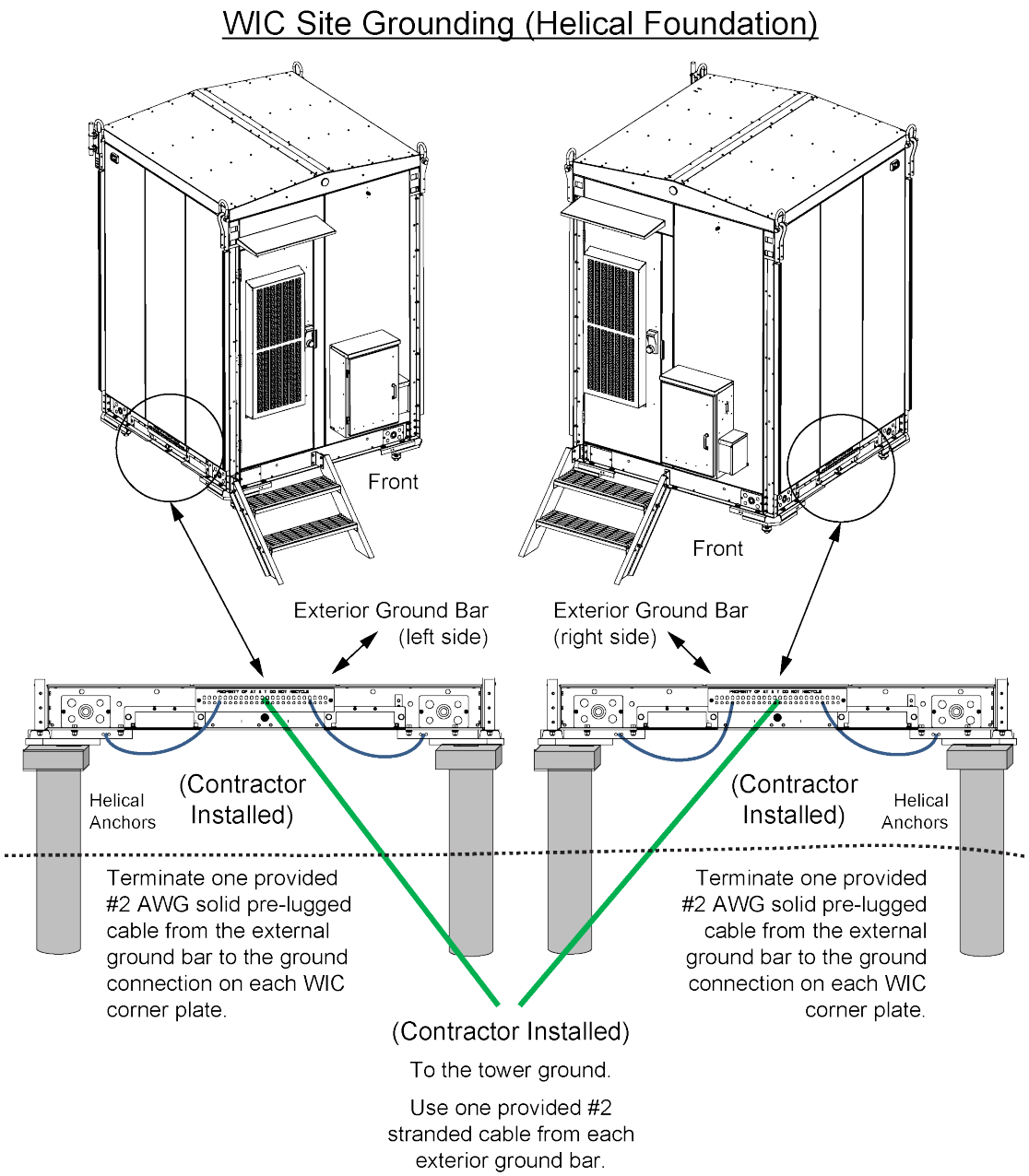
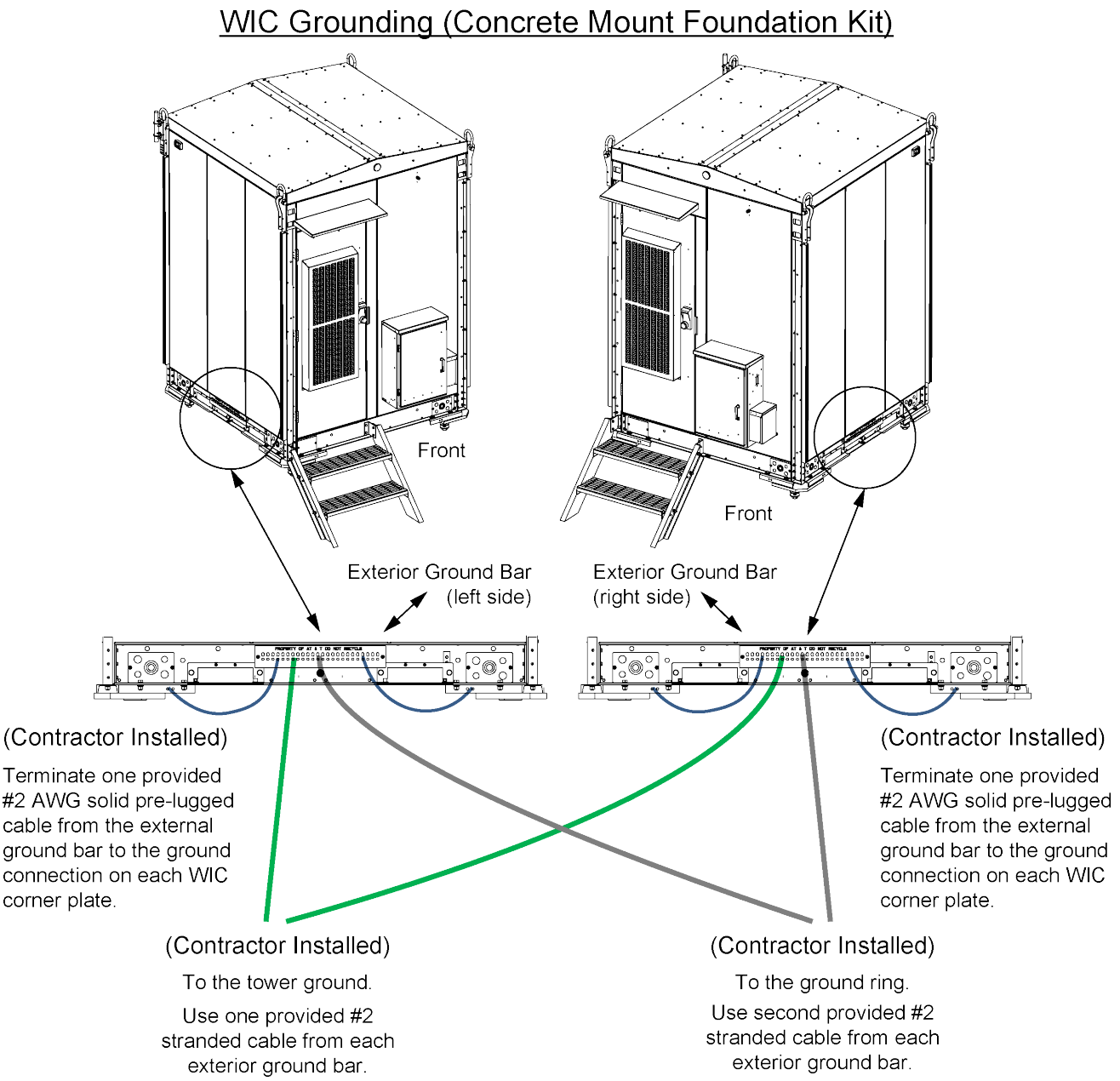


Figure 10.3 WIC Site Grounding Scheme (Helical Foundation)



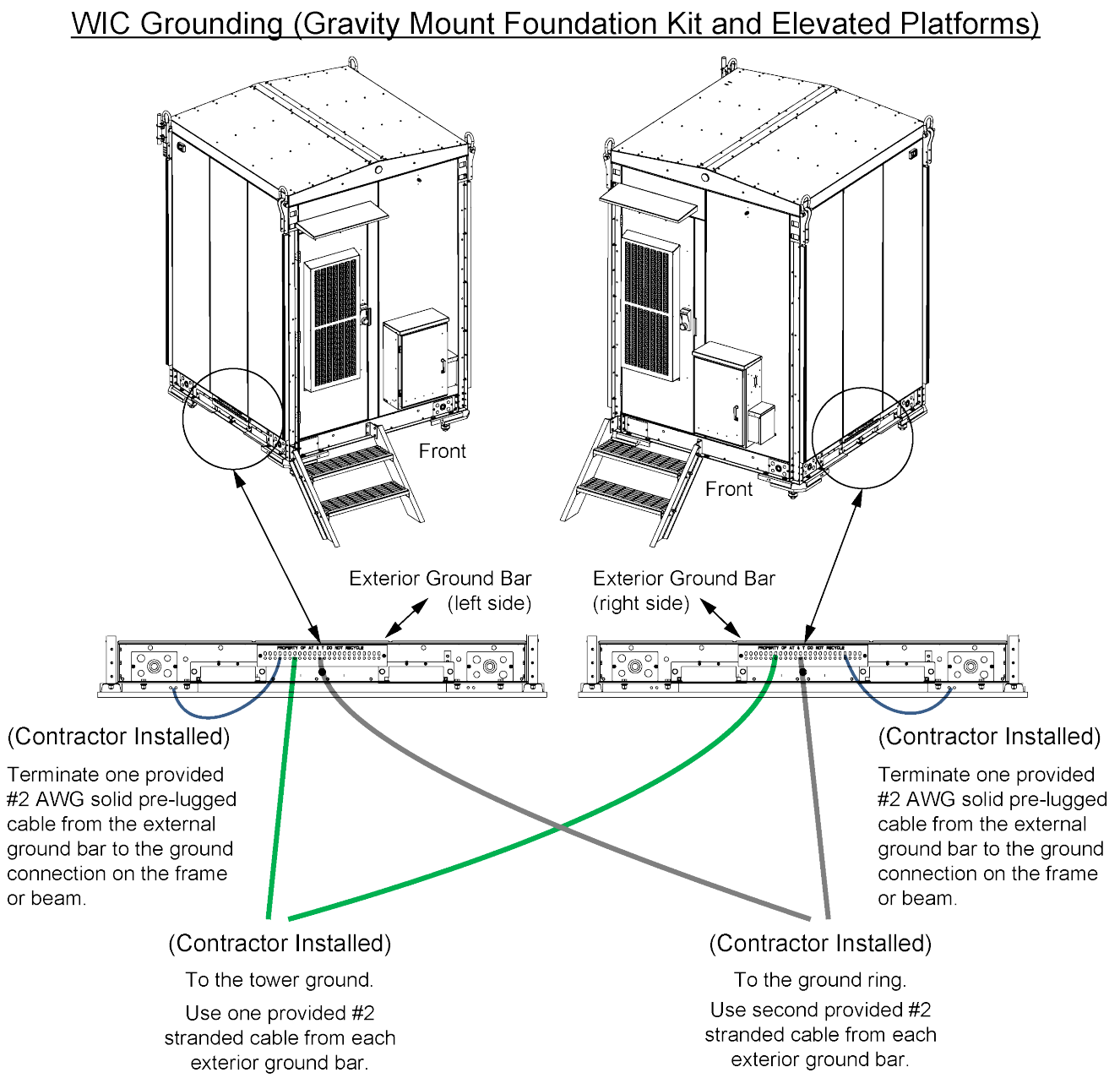
Grounding Conductor Size	Minimum Bending Radius (inches)		
	(Insulated RHH/RHW)		Solid (Uninsulated)
	Recommended	Required	
6 AWG	12	2	1-1/2
4 AWG	12	3	na
2 AWG	12	3	2
1/0 AWG	12	4	na
4/0 AWG	12	4	na
750 kcmil	12	7	na

Figure 10.4 WIC Site Grounding Scheme (Concrete Mount Foundation Kit)



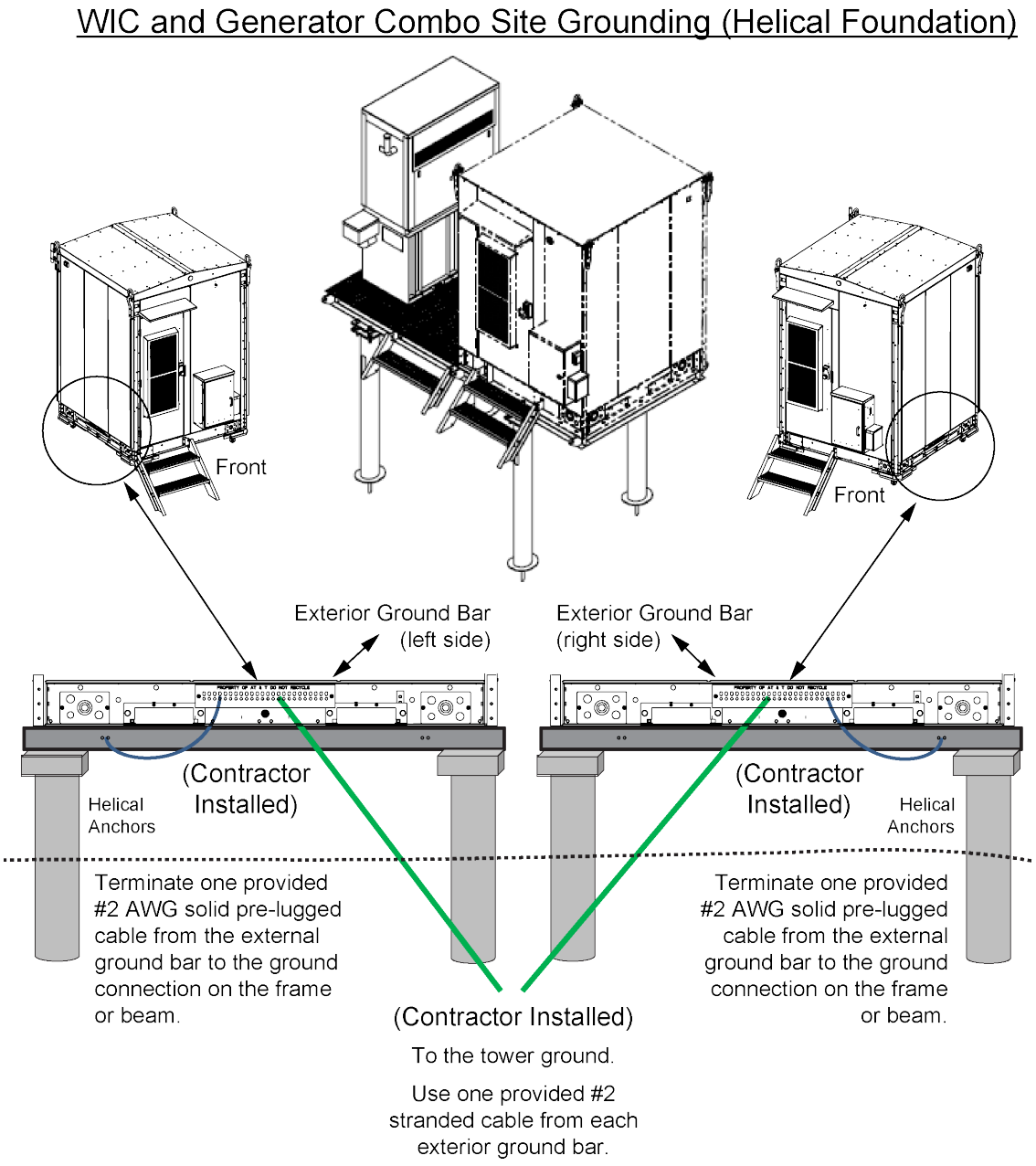
Grounding Conductor Size	Minimum Bending Radius (inches)		
	(Insulated RHH/RHW)		Solid (Uninsulated)
	Recommended	Required	
6 AWG	12	2	1-1/2
4 AWG	12	3	na
2 AWG	12	3	2
1/0 AWG	12	4	na
4/0 AWG	12	4	na
750 kcmil	12	7	na

Figure 10.5 WIC Site Grounding Scheme (Gravity Mount Foundation Kit and Elevated Platforms)



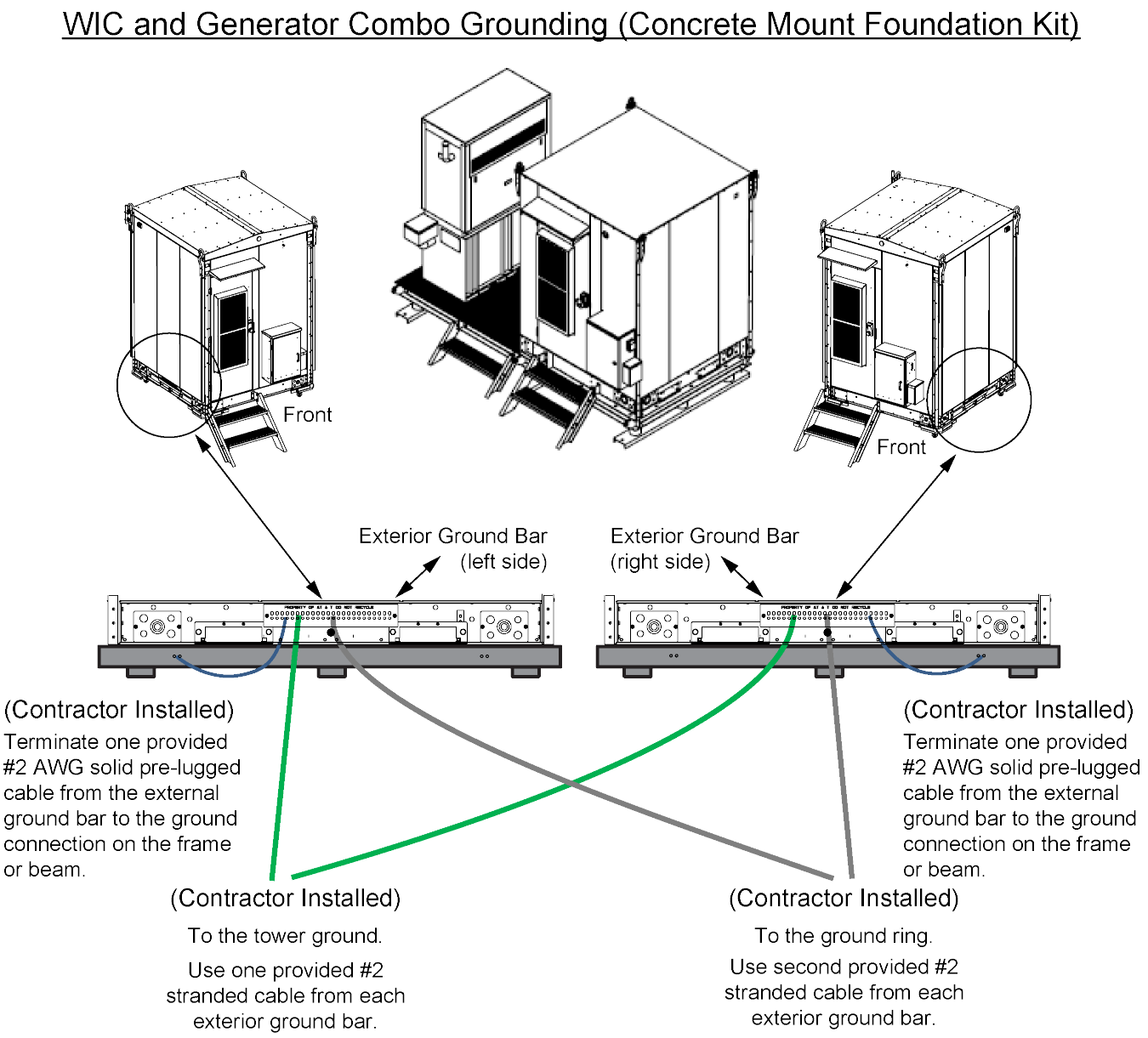
Grounding Conductor Size	Minimum Bending Radius (inches)		
	(Insulated RHH/RHW)		Solid (Uninsulated)
	Recommended	Required	
6 AWG	12	2	1-1/2
4 AWG	12	3	na
2 AWG	12	3	2
1/0 AWG	12	4	na
4/0 AWG	12	4	na
750 kcmil	12	7	na

Figure 10.6 WIC and Generator Combo Site Grounding Scheme (Helical Foundation)



Grounding Conductor Size	Minimum Bending Radius (inches)		
	(Insulated RHH/RHW)		Solid (Uninsulated)
	Recommended	Required	
6 AWG	12	2	1-1/2
4 AWG	12	3	na
2 AWG	12	3	2
1/0 AWG	12	4	na
4/0 AWG	12	4	na
750 kcmil	12	7	na

Figure 10.7 WIC and Generator Combo Site Grounding Scheme (Concrete Mount Foundation Kit)



Grounding Conductor Size	Minimum Bending Radius (inches)		
	(Insulated RHH/RHW)		Solid (Uninsulated)
	Recommended	Required	
6 AWG	12	2	1-1/2
4 AWG	12	3	na
2 AWG	12	3	2
1/0 AWG	12	4	na
4/0 AWG	12	4	na
750 kcmil	12	7	na

11 AC Power

11.1 Important Safety Instructions

DANGER! Adhere to the “Important Safety Instructions” presented at the front of this document.

11.2 Safety Precautions

DANGER! RISK OF ELECTRICAL SHOCK, GENERAL

All ground connections must be installed and verified, prior to connecting any power cables (AC or DC) and turning-up of the WIC.

Before installation, the AC grounding electrode system must be bonded to an AC main service power neutral/ground bus. Contact your local power company or local practices for information about codes or restrictions for your installation.

When connecting any discrete power connection, make the connection first with the ground/return and break last with ground/return.

Remove rings, metallic wrist bands, or bracelets, etc.

DANGER! RISK OF ELECTRICAL SHOCK, AC

Proper actions, include, but not limited to:

a) Verify before contacting the WIC that no current leakage or ground fault condition is present.

b) Verify a proper ground is in place.

c) Verify for AC hook-up, all WIC circuit breakers are OFF and the utility incoming feed is OFF.

Use a trained licensed electrician.

DANGER! ELECTRICAL HAZARD

Observe all safety precautions as specified by local building codes and the National Electrical Code (NEC). All procedures should be performed by a licensed electrician. If local building codes specify procedures different from those in this section, follow local codes.

11.3 General

Refer to “Grounding the WIC” on page 47 for information on WIC grounding.

11.4 WIC AC Schematic

The complete system schematics are included with each WIC.

11.5 AC Input Connections to Power Transfer Load Center (PTLC) E/W Automatic Transfer Switch (ATS)

The WIC requires separate AC feeds for the rectifiers, AC outlets, HVAC unit and external lighting. These AC feeds are factory connected to the externally-mounted Power Transfer Load Center (PTLC) and fed via individual circuit breakers.

The PTLC requires 120 VAC / 240 VAC, single phase, 60 Hz commercial AC. The PTLC is rated for 200 A. Refer to Figure 2.9 on page 17 for location of the PTLC. Refer to Figure 11.2 for a typical PTLC wiring diagram.

Make connections to the PTLC per the current edition of the American National Standards Institute (ANSI) approved National Fire Protection Association's (NFPA) National Electrical Code (NEC), and applicable local codes.

The following procedure shall be performed by a trained electrician.

Procedure

1. Use an approved voltage detector to verify the WIC is safe.
2. Verify that the WIC is properly grounded.
3. Verify that all breakers in the external PTLC are in the OFF position.
4. Refer to the schematic drawings shipped with your WIC for a detailed AC wiring diagram. See also Figure 11.2.
5. Open the PTLC dead front panel for access to AC utility input terminals (Figure 11.3).

CAUTION! The PTLC and the WIC are configured for a 200 A, 240 VAC single phase supply ONLY. Connection of other voltages or phase sources will cause damage to the WIC and its components.

6. Determine the AC cabling route into the PTLC for your installation site. The site installation electrician must use a suitably-sized conduit hole punch to make a sealable conduit entry into the bottom left of the NEMA 3R weatherproof PTLC cabinet to access the site utility feed terminals. Only weather-rated compression conduit fittings are permitted for use.
7. Route the site AC utility, 200 A, 240 VAC, 1-Ph, 3-wire plus ground conductors from the utility metering cabinet to the WIC external PTLC via a sealed conduit connection.

NOTE! *All green/yellow terminals are bonded to the Neutral/Ground bus in the PTLC. The site electrician shall provide ground wires per NFPA 70 (NEC) and applicable codes and standards.*

8. Connect the above feeds as required. Strip the leads before inserting into terminal block. Apply a coating of anti-oxidation paste (i.e.: “No-Ox”) to the conductors before inserting them into the terminal block. Torque the fasteners as required. Test the lead connections by gently pulling on them.
9. After cables are installed, refer to the “Sealing Cable Entries” on page 46 and seal all cable entries and conduits.

Figure 11.1 Power Transfer Load Center (Reference Only)

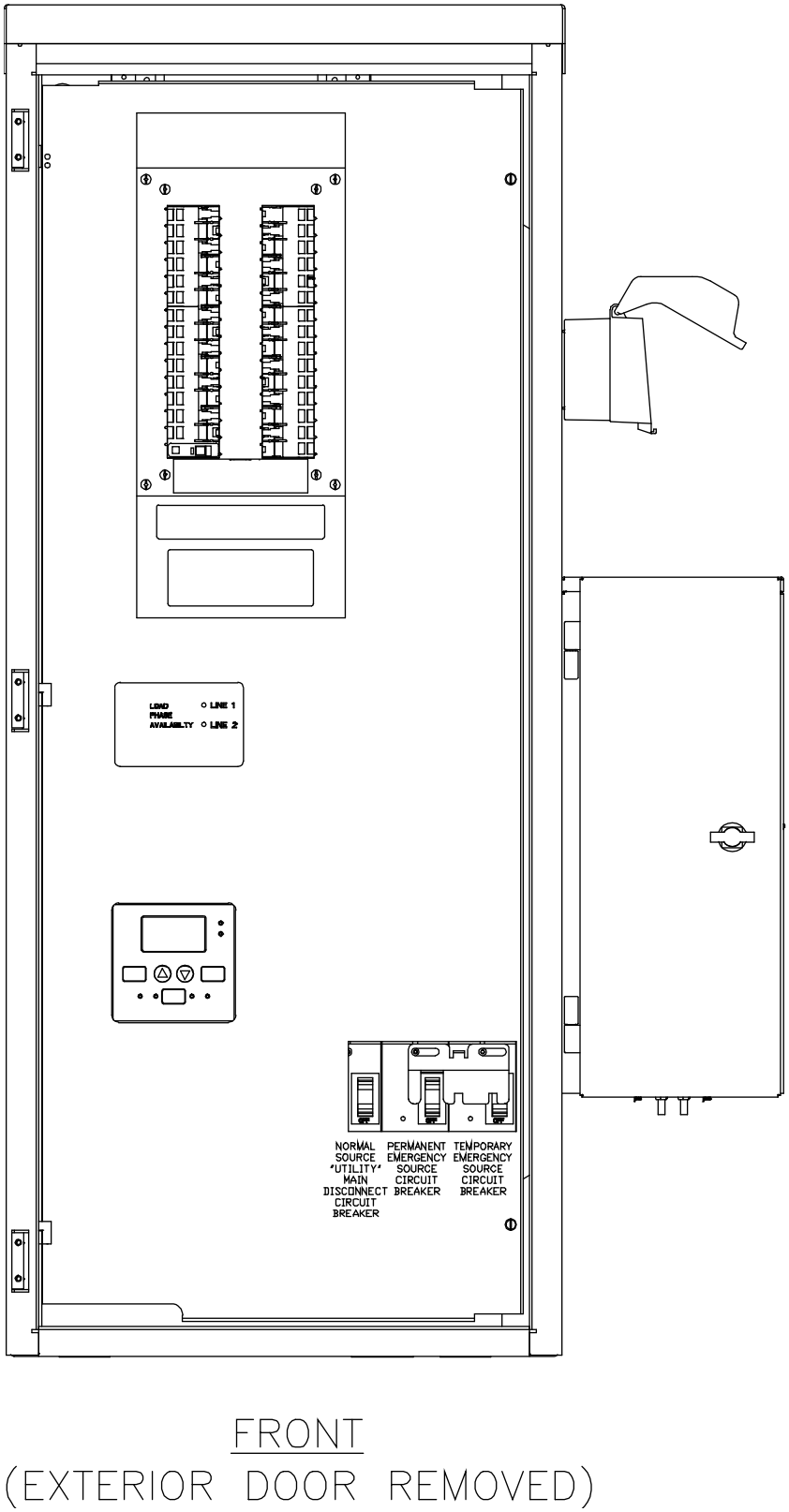


Figure 11.2 Typical Power Transfer Load Center (PTLC) Wiring Diagram

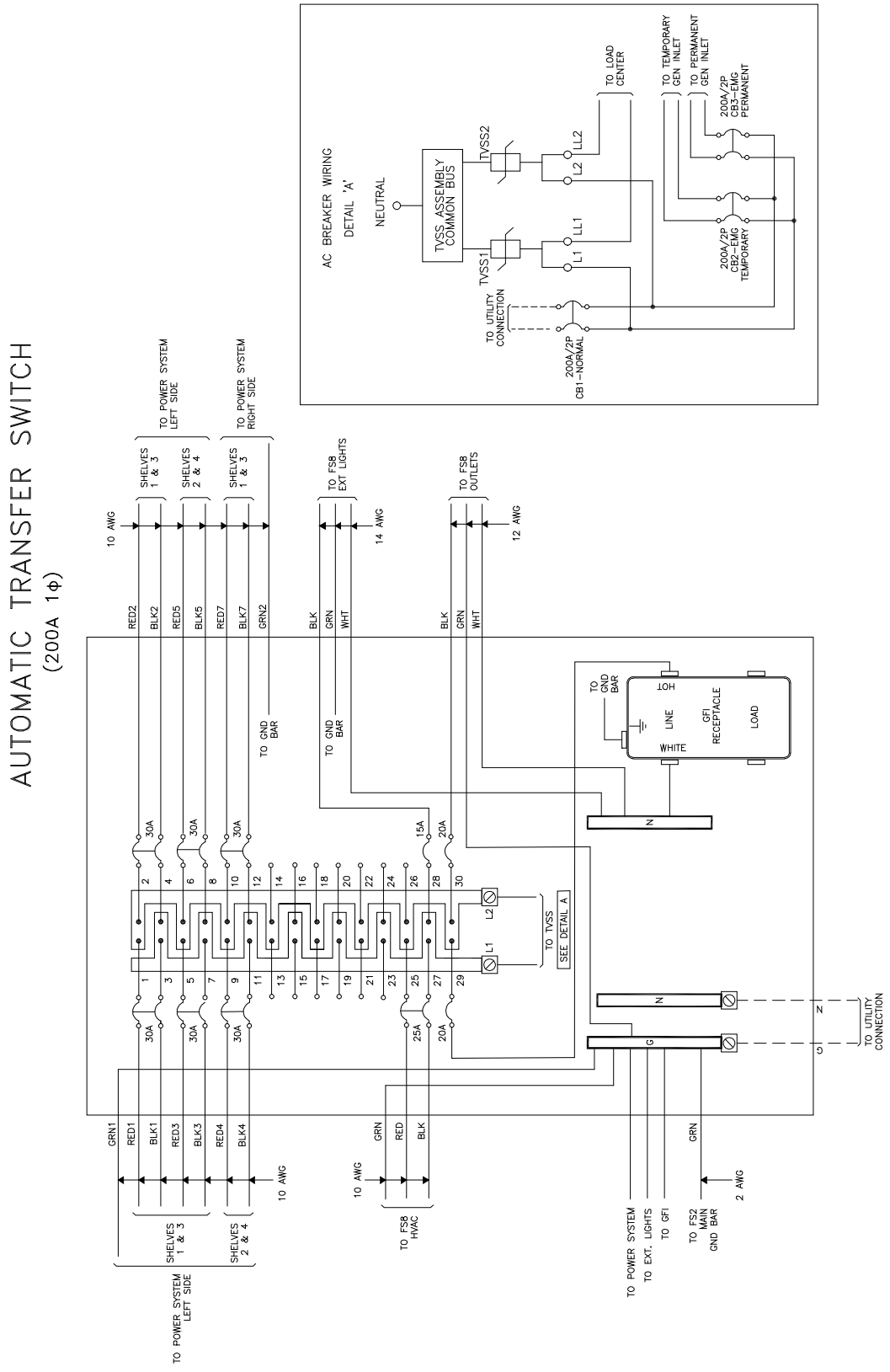
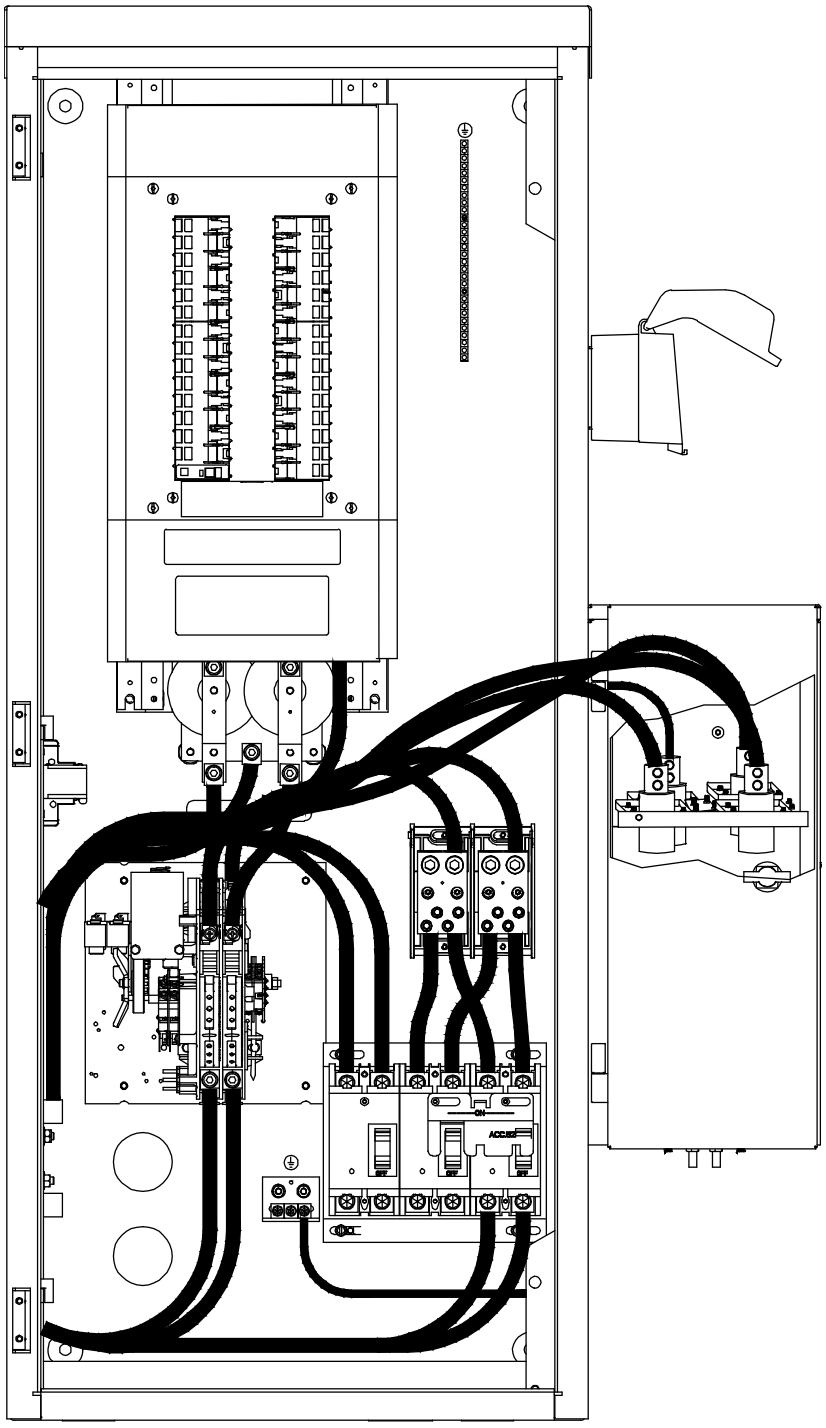


Figure 11.3 AC Input and PTLC Internal Layout (Reference Only)



12 DC Power

12.1 Important Safety Instructions

DANGER! Adhere to the “Important Safety Instructions” presented at the front of this document.

12.2 Safety Precautions

DANGER! RISK OF ELECTRICAL SHOCK, GENERAL
All ground connections must be installed and verified prior to connecting any power cables (AC or DC) and turning-up of the WIC.

When connecting any discrete power connection, make the connection first with the ground/return and break last with ground/return.

Remove rings, metallic wrist bands, or bracelets, etc.

Do not install equipment showing any physical damage.

DANGER! RISK OF ELECTRICAL SHOCK, DC
A maintenance Battery Switch / Breaker does NOT isolate both legs of a battery circuit, nor do the batteries have a protective fuse. Proceed with caution and use only insulated tools when working around batteries or any DC potential.

Always be sure that any connection points have been de-energized.

Fuses can produce sparks during interruption or clearing of a fault, so only use fuses provided with safety caps or enclosed holders, where applicable.

12.3 General

Refer to “Grounding the WIC” on page 47 for information on WIC grounding.

12.4 DC Power Cabling Color Scheme

On the WIC, the DC power cabling color scheme is:

- -48 VDC: Blue or Blue Tape at End
- Return: Gray or Black.

Refer to the schematic diagram provided with the WIC.

12.5 Battery Installation and Wiring

Refer to the DC power system instruction manual(s) for information regarding the installation and wiring of the batteries.

12.6 External DC Generator Wiring

Generator Input Circuit Breaker Kit P/N 564219 is shipped loose with the WIC. Refer to IM564219 (Kit Installation Instructions) to install the kit into the NetSure Power System. This kit provides a 400 A circuit breaker to feed the rectifier output bus of the power system through a shunt. The customer connects an external generator output to this circuit breaker which then supplies generator input power to the system.

12.6.1 Procedure

Recommended Cable Sizes

- 0 to 150 Feet: One (1) 500 kcmil or two (2) 4/0 per polarity.
- Greater than 150 Feet: One (1) 750 kcmil per polarity.

Recommended Cable Routing

1. DC generator cables enter the WIC either via the knock outs located on the rear of the base or via the knock outs located on the bottom of the base. See Figure 12.1.
2. DC generator cables are routed up through the knock outs provided in the interior floor of the WIC. The cables then are routed up the cable ladder on the rear wall, then to the ladder rack on the adjacent wall, then transition to the ceiling ladder rack, and then down into the NetSure Power System. See Figure 12.1.

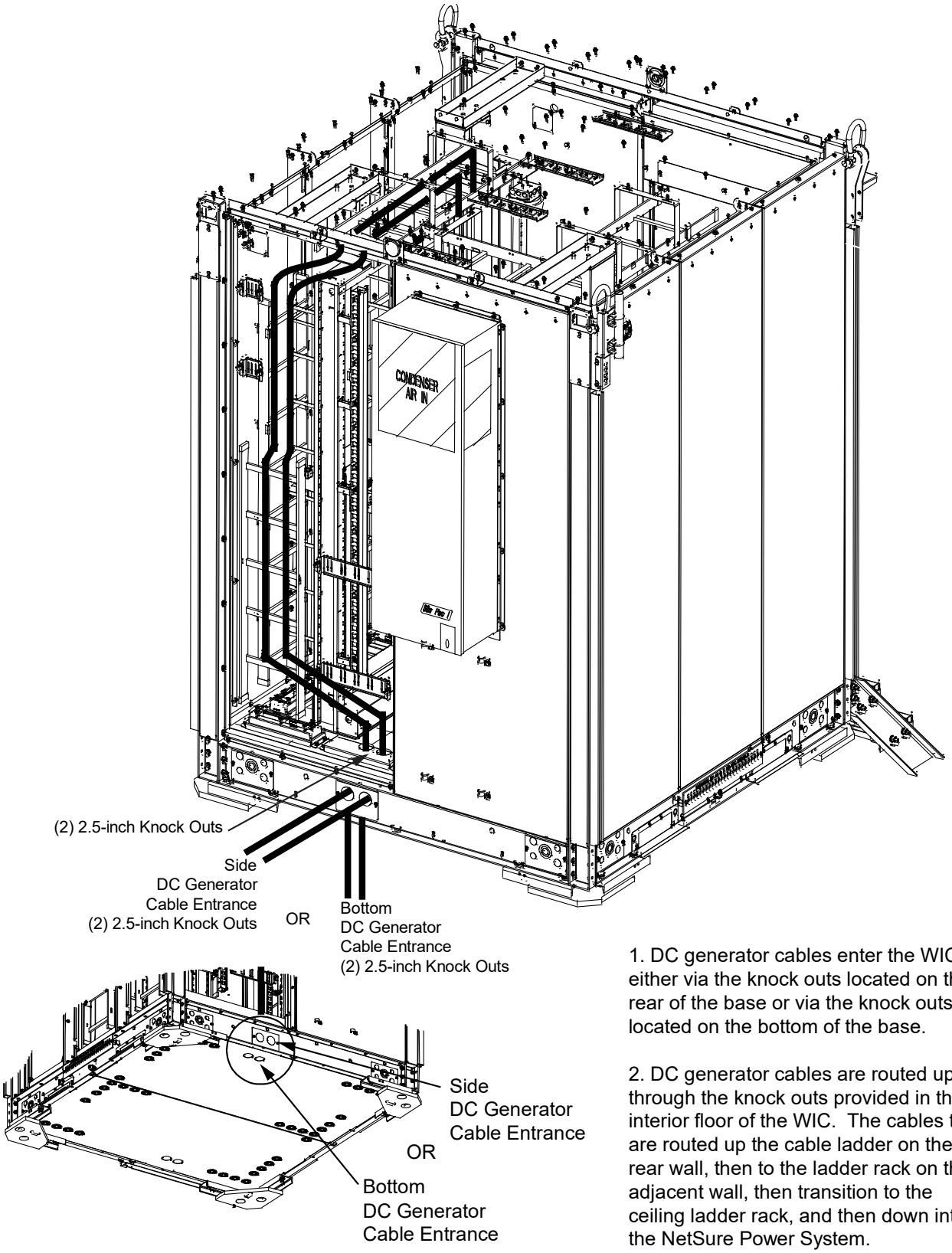
Connecting DC Generator Cable to Generator Input Circuit Breaker Kit P/N 564219

1. Wire input generator leads per Figure 12.2.
    - Load should not exceed 75% of the 400 A breaker rating (300 A).
    - Designed to accommodate two cables (per polarity), minimum wire size is equivalent to one (1) 500 kcmil cable (each polarity).
    - Maximum lug width is 1.25”.

12.7 Operating the Power System

Refer to the DC power system instruction manual(s) for information regarding the powering and operation of the power system. Refer to Figure 12.3 for a profile illustration of the power system.

Figure 12.1 Recommended DC Generator Cable Routing



1. DC generator cables enter the WIC either via the knock outs located on the rear of the base or via the knock outs located on the bottom of the base.

2. DC generator cables are routed up through the knock outs provided in the interior floor of the WIC. The cables then are routed up the cable ladder on the rear wall, then to the ladder rack on the adjacent wall, then transition to the ceiling ladder rack, and then down into the NetSure Power System.

Figure 12.2 Connecting DC Generator Cable to Generator Input Circuit Breaker Kit P/N 564219

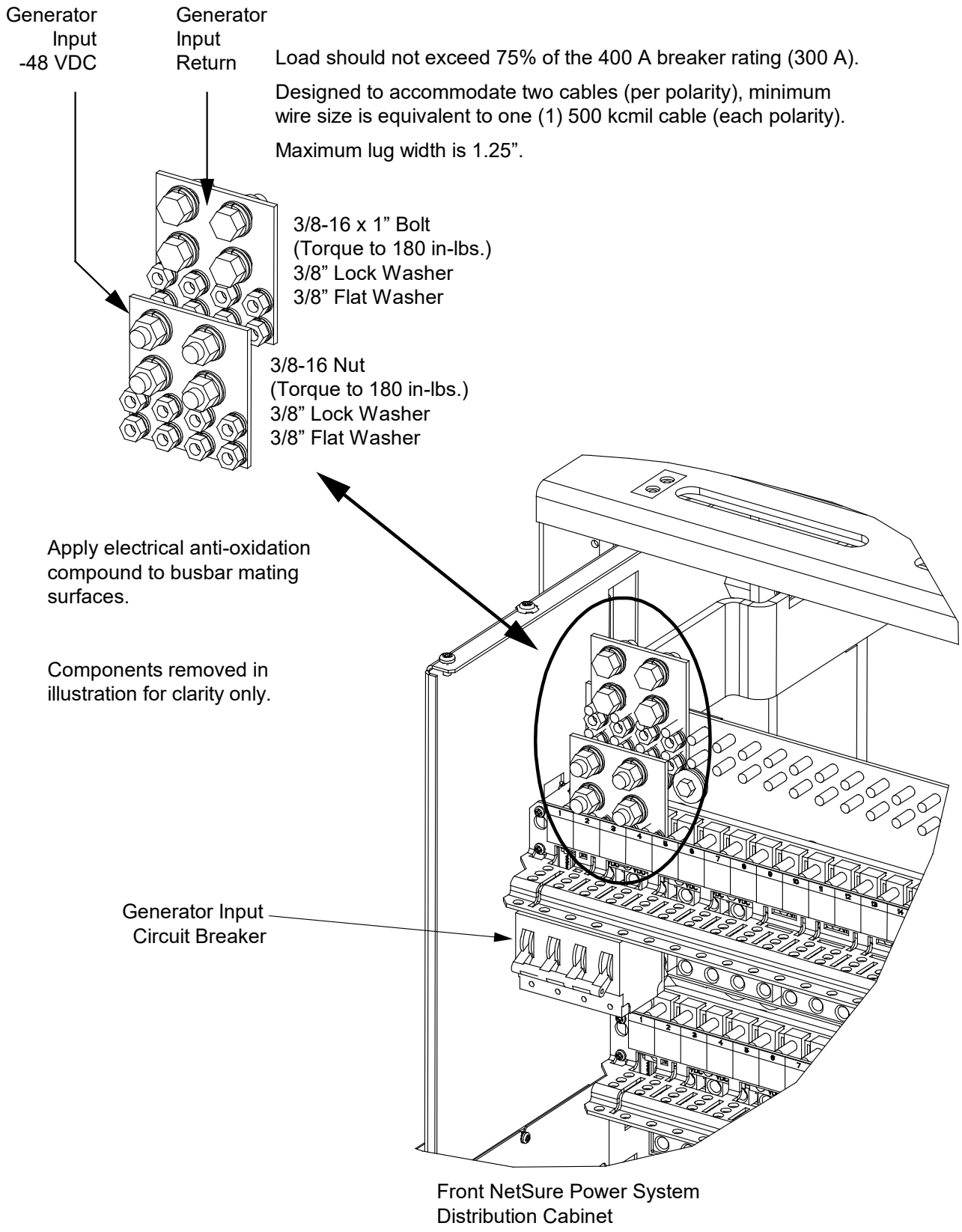
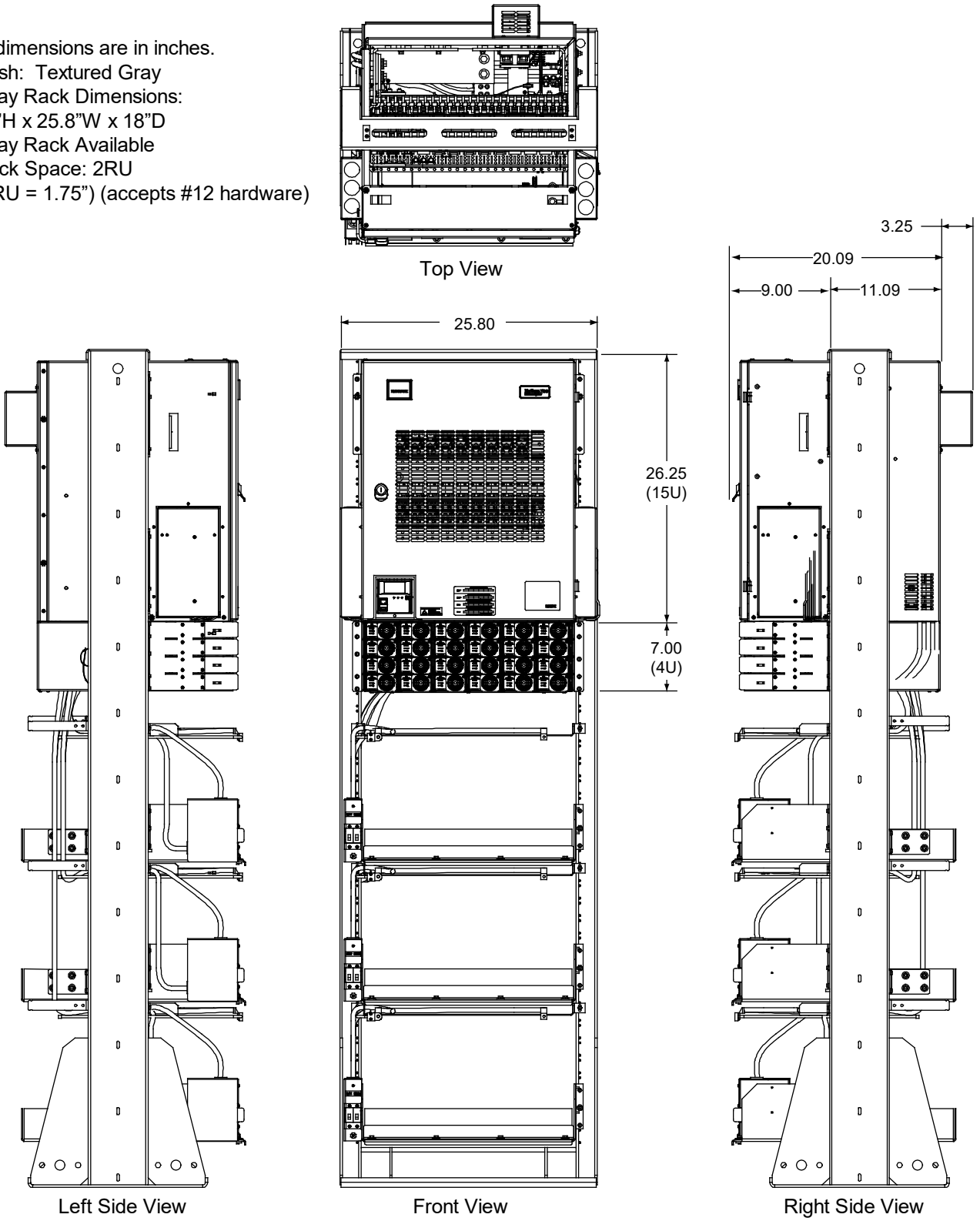


Figure 12.3 Vertiv™ NetSure™ 7100 (582127000203 or 582127000503) Installed in WIC

Notes:
1. All dimensions are in inches.
2. Finish: Textured Gray
3. Relay Rack Dimensions:
   84”H x 25.8”W x 18”D
4. Relay Rack Available
   Rack Space: 2RU
   (1RU = 1.75”) (accepts #12 hardware)



13 OSP Cables

13.1 Important Safety Instructions

DANGER! Adhere to the “Important Safety Instructions” presented at the front of this document.

13.2 Safety Precautions

DANGER! RISK OF ELECTRICAL SHOCK, OSP CABLES

If buried cables are used, check the cable sheath for voltage in accordance with local standards. If voltage is detected, do not proceed with the installation. Contact the supervisor and do not proceed until the voltage hazard is eliminated.

NOTE! *The following procedures are recommendations only, and are performed in conjunction with the procedures and training that adhere to local practices.*

13.3 Sealing Cable Entries

After cables are installed, refer to “Sealing Cable Entries” on page 46 and seal all cable entries.

13.4 Installing Fiber Cables

Install fiber cables using a 1.5" x 1.5" fiber routing duct provided along the length of cable rack for fiber management.

14 Alarm Wiring

Refer to Figure 2.11 starting on page 19 for alarm block location. Refer to Figure 14.1 for alarm block wiring.

14.1 Connecting External Alarms

NOTE! *The customer-connection alarm blocks are punch-down, insulation displacement, split center, often referred to as telecommunications "66" blocks. Do not exceed the manufacturer recommended wire size. Normally, 20 AWG to 24 AWG solid twisted-pair copper conductor cables are used for alarm signals. Wire should NOT be stripped before inserting into block. Use the appropriate tools to insert wires into the connection points on the alarm blocks.*

Alarm blocks are provided for the following purposes.

WIC Alarms

All alarms for customer connections are brought out to an alarm block. For alarm pinout locations on the block, refer to the Schematic Drawings (SD) either supplied in the WIC and/or as labels on the alarm block housing. The two (2) alarm blocks are punch-down, insulation displacement type, located on the plywood panel on the left as door entry is made, below the main ground busbar. The alarms from the Vertiv™ NetSure™ 7100 DC plant, as well as the AC utility and TVSS failure alarms from the PTLC/ATS, the auxiliary contacts on the DC generator 400 A demarcation circuit breaker, and the Direct Air Cooling (DAC) controller are all factory connected to the alarm blocks. Refer also to Figure 14.1 for alarm block wiring.

Site Equipment Alarms

Alarms from customer-provided equipment installed in the WIC relay racks or on the exterior of the WIC shall be cabled and connected to the alarm blocks by the customer as required for the specific site installation.

Alarm Collection and Aggregation

Equipment and connection for alarm collection and aggregation or multiplexing for remote reporting to a customer Network Operations Center (NOC) shall be specified and installed by the customer as required for the specific site capabilities and installation.

Figure 14.1 Alarm Block Wiring

ALARM TERMINATION BLOCKS

BLOCK 1

A CLIP	COLOR	ALARM	SOURCE	FS
1	WHT/BLU	RBS INTRUSION	ENTRY DOOR SWITCH CONTACTS	8
2	BLU/WHT			
3	WHT/BLU	RBS COMMERCIAL POWER FAIL	FROM PTLC POWER FAIL RELAY	3
4	BLU/WHT			
5	WHT/ORG	RBS POWER AC SPD	FROM PTLC SURGE PROTECTOR	
6	ORG/WHT			
7	YEL/ORG	RBS SMOKE	DAC SMOKE DETECTOR	4
8	ORG/YEL			
9	WHT/SLT	RBS HIGH TEMP	HIGH TEMP	
10	SLT/WHT			
11	RED/ORG	RBS LOW TEMP	LOW TEMP	
12	ORG/RED			
13		RBS HUMIDITY HIGH	DAC HUMIDITY SENSOR	
14				
15	WHT/BLU	RBS HVAC 1 FAIL	DAC HVAC FAIL	4
16	BLU/WHT			
17	WHT/GRN	RBS HVAC 2 FAIL	SWIC/CWIC HVAC FAIL(WALL UNIT)	4
18	GRN/WHT			
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
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37				
38				
39				
40				
41				
42				
43				
44				
45				
46				
47				
48				
49				
50				

BLOCK 2

A CLIP	COLOR	ALARM	SOURCE	FS
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23	WHT/GRN	RBS GEN RUNNING	GEN RUN	3
24	GRN/WHT			
25				
26				
27				
28				
29				
30				
31				
32				
33				
34				
35				
36				
37				
38				
39				
40				
41				
42				
43				
44				
45				
46				
47				
48				
49				
50				

S66 BLOCK
(TYPICAL)

CLIP #	A	B	C	D	E	F
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
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50						

NOTES:

1. TERMINATE ALARMS ON COLUMN A.
2. 50 PR SPLIT CENTER BLOCK.
   COLUMNS INTERNALLY CONNECTED:
   A–B–C
   D–E–F
3. ALL ALARM CIRUITS ARE NOMALLY CLOSED AND WILL OPEN IN ALARM CONDITION.

15 Initial Power Up

15.1 Important Safety Instructions

DANGER! Adhere to the “Important Safety Instructions” presented at the front of this document.

15.2 Safety Precautions

DANGER! RISK OF ELECTRICAL SHOCK, GENERAL

All ground connections must be installed and verified prior to turning-up of the WIC.

DANGER! RISK OF ELECTRICAL SHOCK, AC

Proper actions, include, but not limited to:

a) Verify before contacting the WIC that no current leakage or ground fault condition is present.

b) Verify a proper ground is in place.

CAUTION! PREVENT EQUIPMENT DAMAGE, FROM CONDENSATION

Until the WIC is turned up for service, maintain WIC sealing to prevent weather and moisture entry. Provide humidity control (i.e.: two 150 W incandescent bulbs) as required.

Once the WIC is operational, the WIC system will maintain interior conditions.

15.3 Prerequisite

Verify that all procedures and safety notices previous to this section have been applied regarding the WIC, system grounding, AC power, DC power, and battery installation.

Verify that all procedures and safety notices accompanying customer-installed equipment have been applied.

Verify that the WIC has an approved connection to the local utility power supply.

CAUTION! Prevent Equipment Damage: connect only 200 A, 240 VAC, 1-PH, 3 wire supply.

15.4 Initial Power Up Sequence

Checks

1. Use an approved voltage detector to verify WIC is not unsafe.
2. Verify all battery disconnect circuit breakers located in the WIC are Off.
3. Verify all other breakers inside the WIC are Off.
4. Verify no open power leads are present.
5. Verify all cables and connections are secure.
6. Verify any installed batteries, including proper matching of polarity.
7. Enable utility power into the WIC by closing the external overcurrent protective devices supplying AC input to the WIC.
8. Use an approved voltage detector to verify WIC safety.

CAUTION! Always allow components like rectifiers and the RA-ECU a few minutes to complete their start-up sequences.

Refer to the power system instruction manual(s) supplied with the WIC or by the manufacturer for field-installed systems.

16 Direct Air Cooling (DAC) and HVAC

16.1 Description

The climate control configuration for the F2018009 WIC consists of a Direct Air Cooling (DAC) unit and a HVAC unit, both controlled by a common controller.

Refer to the DAC, HVAC, and controller manufacturer documentation for operating instructions. The most current versions of these manuals can be found at https://www.airxcel.com/marvair.

Refer to Figure 16.1 for a typical schematic of the DAC and HVAC systems installed in this WIC.

Alarm circuits from the controller are factory connected to the WIC alarm blocks. See Figure 14.1 on page 68.

16.2 General Operation

The controller monitors internal WIC temperature and controls the operation of the DAC unit to provide cooling for the equipment installed in the WIC. The controller also operates a second HVAC unit that provides additional cooling when the DAC is unable to maintain the desired cooling temperature set point. The HVAC unit also serves as a backup in the event of failure of the DAC unit.

On a call for cooling from a temperature sensor located in the WIC, the fan in the DAC unit turns on and both the outside air damper in the unit and the external exhaust damper open. The fan speed varies based on the difference between the current WIC temperature and the first stage cooling set point temperature. As the temperature approaches the set point, the fan speed increases to a maximum of 100% of rated air flow and, as the temperature recedes from the set point, the fan speed decreases to the minimum of 5% of rated air flow. If the DAC is operating and the temperature rises above the first stage cooling set point, the DAC will continue to operate and the evaporator blower in the air conditioner will turn on. If the temperature rises above the second set point temperature, the DAC is turned off, the motorized damper and exhaust damper are both closed and the air conditioner turns on in mechanical cooling. The air conditioner runs until the temperature drops below the mechanical cooling disable set point. At this point, the DAC is turned on and both the motorized damper and exhaust damper are opened. The air conditioner can also be turned on to provide a comfortable working temperature when technicians are in the WIC. Any time the air conditioner is providing mechanical cooling, the DAC is turned off and all louvers are closed.

Figure 16.1 F2018009 Direct Air Cooling (DAC) and HVAC Schematic Diagram (cont'd on next page)

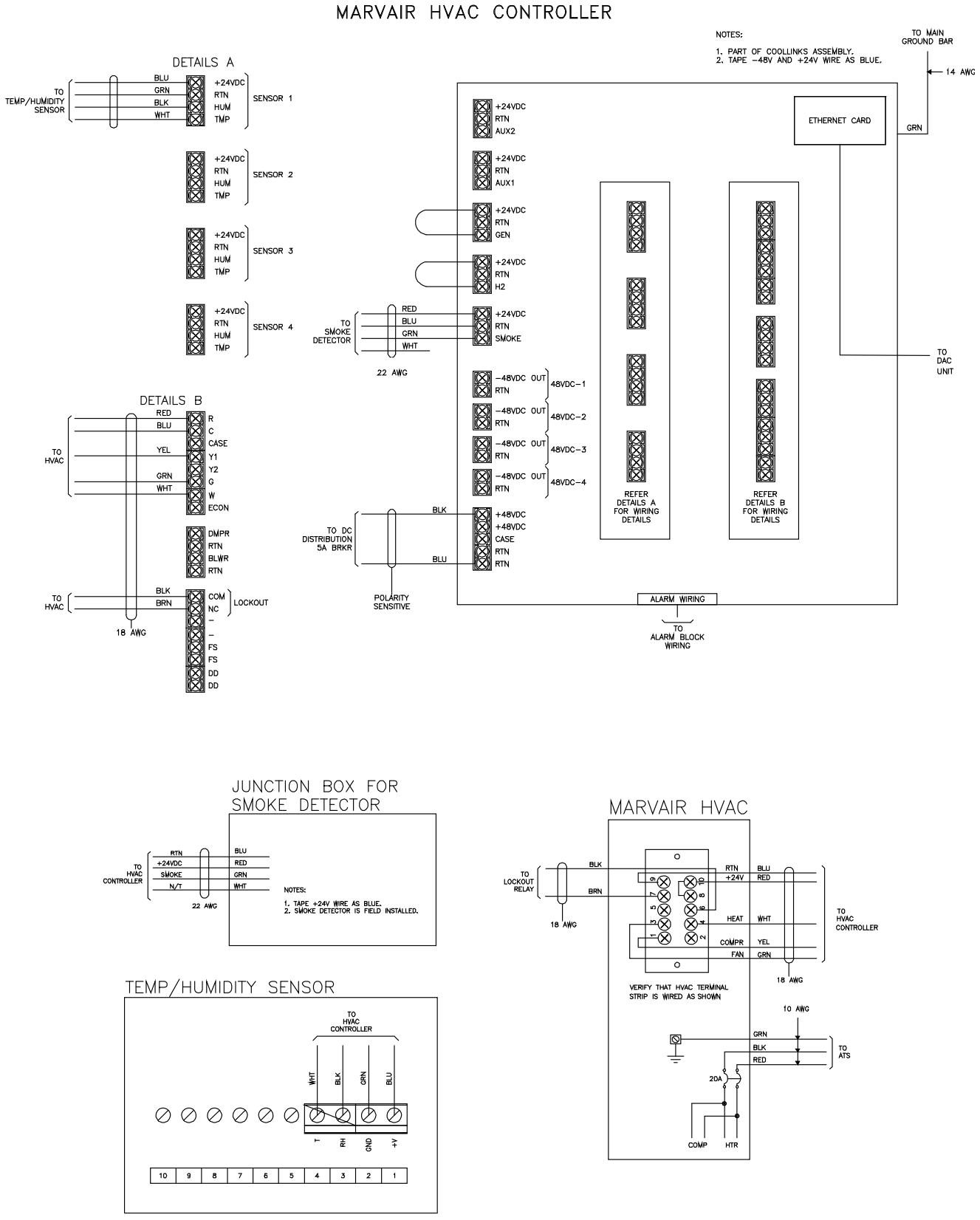
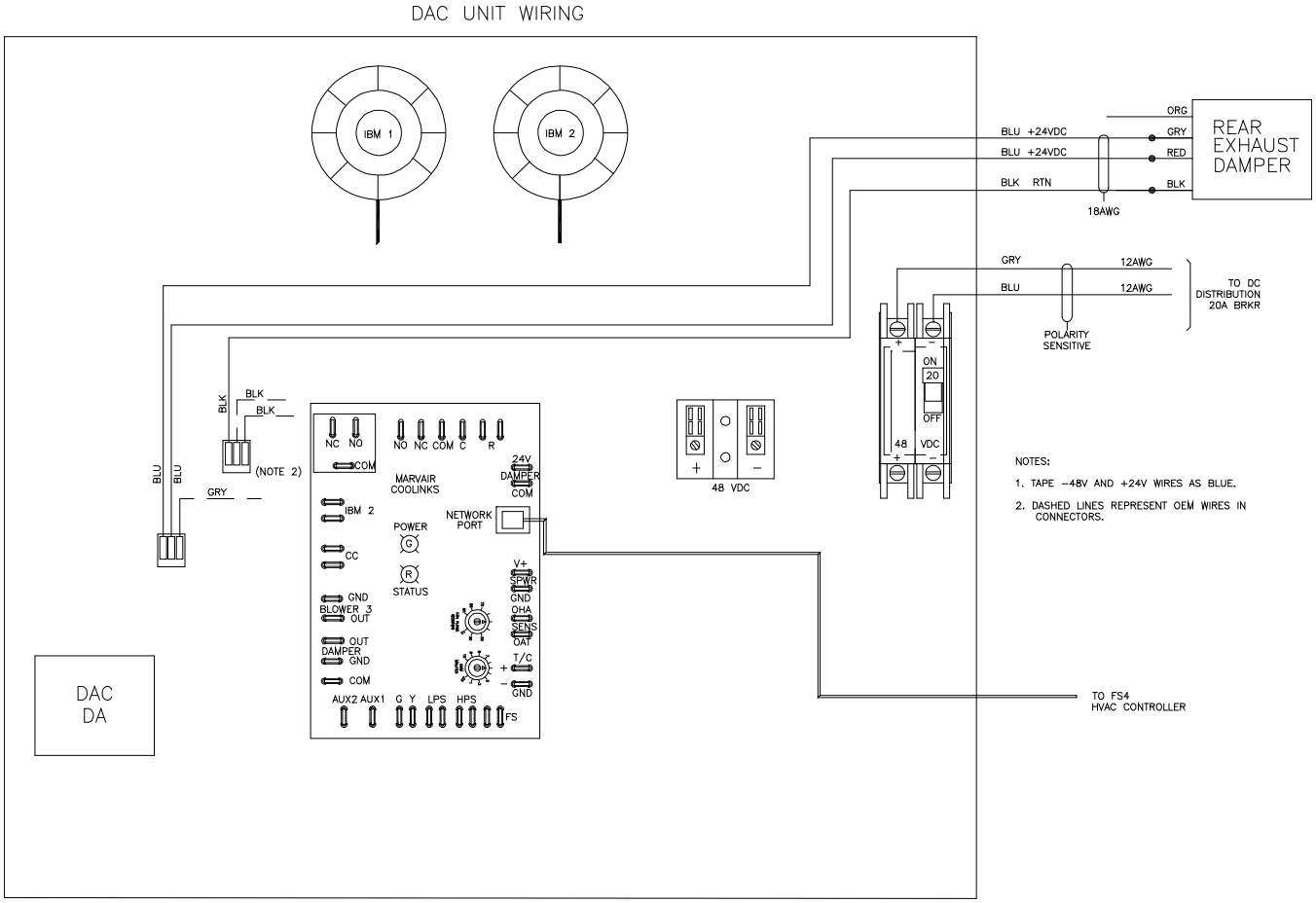


Figure 16.1 F2018009 Direct Air Cooling (DAC) and HVAC Schematic Diagram (cont'd from previous page)



16.3 Controller

16.3.1 General

Operation of the DAC and the air conditioner in the WIC is managed by the controller. Refer to the controller manufacturer documentation for operating instructions. The most current version of this manual can be found at https://www.airxcel.com/marvair.

16.3.2 LCD Message Display

The two-line LCD display provides basic status information for controller. The contents of each line is dependent on the controller conditions and are determined as shown in Table 16.1.

Table 16.1 LCD Message Display Line Definitions

Upper Line	Alternates every five seconds between the current indoor temperature and relative humidity and the average temperature and relative humidity over the last 24 hours. A "??" indicates that the value from the sensor is bad and that either the sensor is faulty or not connected properly.
Lower Line (no active alarms)	Displays outdoor temperature and relative humidity. If the Wi-Fi is OFF and the Wi-Fi pushbutton is pressed, displays "Wifi On". If the Wi-Fi is ON and the Wi-Fi pushbutton is pressed, reverts to outdoor temperature and relative humidity.
Lower Line (active alarms)	Displays the Wi-Fi connection status ("Wifi On" or "Wifi Off") followed by "# alarms" where # is the number of active alarms.

16.3.3 Connecting to the Controller via a Smart Phone

See "Wi-fi Access:" on page 74.

16.4 WIC Environmental Control Quick Start Guide

NOTE! *All these thresholds are defined by the AT&T ran support program office – national standards team and are subject to change. This bulletin is strictly for information only.*

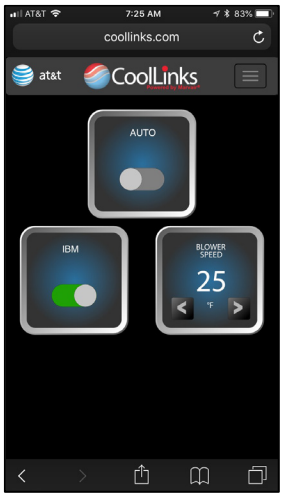
Operational Set Points:

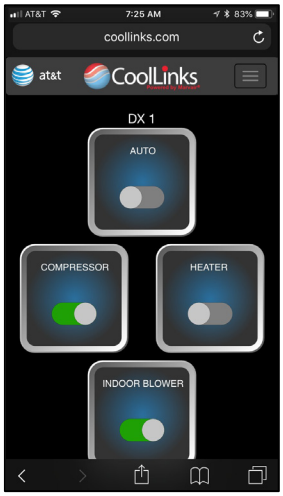
DAC/WAC Cooling: (ambient air)	**Temperature**	**DAC/WAC Fan Speed**
	< 55 °F	0%
	>= 55 °F	5%
	> 77 °F	5%-100%
	> 90 °F	100%
	>= 104 °F	0%
HVAC Cooling:	**Temperature**	**Mechanical**
	>= 104 °F	HVAC Compressor On
	<= 89 °F	HVAC Compressor Off
HVAC Heating:	**Temperature**	**Mechanical**
	< 45 °F	HVAC Heating Elements On
	>= 55 °F	HVAC Heating Elements Off

Wi-fi Access:

The NextGen CoolLinks™ controller is equipped with an integral Wi-fi hot spot, ngcl-wifi, that provides access to the controller web page from a smart phone. To enable the hot spot for a period of 30 minutes, press the Wi-fi enable push button on the bottom of the

enclosure. Wait for the LCD message display to indicate that the Wi-fi is On. From the smart phone choose the Wi-Fi connection settings screen. Select the ngcl-wifi network and, when prompted, enter coollinks into the WPA2 password field. Then select Join to connect to the controller. Open a web browser and type “www.coollinks.com” in the address window to display the main web page.





Action	Description
Comfort Mode	Comfort mode push button. Touch to enable (green) and touch again to disable (grey). When enabled, system will drop the cooling temperature set point to 77 °F for a period of 60 minutes.
Set Point Adjustment	Touch main gauge symbol to open the set point control screen. In the control screen, touch the left/right arrow to decrease/increase set point. System will restore defaults after 60 minutes.
Manual Mode	Touch DAC or DX symbol to open the control screen for the DAC or HVAC unit. In the control screen, touch auto mode push button to disable auto (grey) and touch again to enable auto (green). Touch the relevant push button to turn on/off the equipment or the left/right arrow to increase/decrease fan speed. Re-selecting auto will de-energize any equipment that was energized while auto mode was disabled.

17 DC Power, Outdoor Enclosure & Service Contacts

Refer to Section 4154 (provided with your customer documentation) for support contact information.

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