



## **Buried Distribution Products**

NetReach™ CoolPed 3.0 Passive DSLAM Enclosure

Description and Installation Manual (631-200-108), Revision D

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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 Precautions Definition

Definitions of the safety admonishments used in this document are listed under “Admonishments Used in this Document” on page 4.

## General Safety Precautions

The following precautions shall be observed at all time when handling and installing the enclosure:

- Observe the general safety precautions against personal injury and equipment damage.
- The procedures outlined in this manual are only recommended guidelines. Ensure that all NEC (National Electric Code) and local codes for safety and wiring are followed.
  - Use listed two-hole compression connectors (lugs) to terminate all ground connections. Selected lug shall match wire and type, and crimped applied as specified by the lug manufacturer.
  - Apply NO-OX-ID-A to all ground connections.
  - Insulation of field-wire conductors should be rated no less than 105 °C, and gauge in a manner that is consistent with the NEC and local codes.
- Always use a non-contact voltage detector, when approaching an enclosure, to verify no leaks or shorts are presents on the external body.
- Read Enclosure Placement in its entirety prior to attempting to handle or secure the enclosure.
- A minimum of two persons are required to safely install the enclosure.
- Hard hats and steel-toed boots should be worn while maneuvering the enclosure.
- Safety glasses should always be on while on-site.
- Safety gloves should be on when working in temperature extremes, with batteries, or with sharp objects.
- All electricians, operators, and technicians have been trained for the task at hand.
- Keep bystanders away.
- Ensure that all personnel on site are familiar with the first-aid kit location and emergency procedures in the event of an injury.
- Never leave the enclosure unattended. If leaving the site, close and secure the enclosure.

## **You Must Follow Approved Safety Procedures**



**DANGER!** Performing the following procedures may expose you to hazards. These procedures should be performed by qualified technicians familiar with the hazards associated with this type of equipment. These hazards may include shock, energy, and/or burns. To avoid these hazards:

- a) The tasks should be performed in the order indicated.
- b) Remove watches, rings, and other metal objects.
- c) Prior to contacting any uninsulated surface or termination, use a voltmeter to verify that no voltage or the expected voltage is present. Check for voltage with both AC and DC voltmeters prior to making contact.
- d) Wear eye protection.
- e) Use certified and well maintained insulated tools. Use double insulated tools appropriately rated for the work to be performed.

## **Voltages**

### **AC Input Voltages**



**DANGER!** This system operates from AC input voltage capable of producing fatal electrical shock. AC input power must be completely disconnected from the branch circuits wiring used to provide power to the system before any AC electrical connections are made. Follow local lockout/tagout procedures to ensure upstream branch circuit breakers remain de-energized during installation. **DO NOT** apply AC input power to the system until all electrical connections have been completed and checked.

### **DC Output and Battery Voltages**



**DANGER!** This system produces DC power and may have a battery source connected to it. Although the DC voltage is not hazardously high, the rectifiers and/or battery can deliver large amounts of current. Exercise extreme caution not to inadvertently contact or have any tool inadvertently contact an output terminal or battery terminal or exposed wire connected to an output terminal or battery terminal. **NEVER** allow a metal object, such as a tool, to contact more than one termination or battery terminal at a time, or to simultaneously contact a termination or battery terminal and a grounded object. Even a momentary short circuit can cause sparking, explosion, and injury.

## Specific 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 enclosure.

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

Do not install equipment showing any physical damage.



### **DANGER!** RISK OF ELECTRICAL SHOCK, AC

Proper actions, include, but not limited to:

- a) Verify before contacting the enclosure 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 enclosure circuit breakers are OFF and the utility incoming feed is OFF.

Use a trained licensed electrician.



### **DANGER!** RISK OF ELECTRIC SHOCK

The DC bus is powered by DUAL power sources – Rectifiers and DC Batteries.

To properly work on the system, de-energize by disconnecting BOTH power sources. Even with the batteries turned off by using a local battery (circuit breaker) disconnect, batteries are still “LIVE” and hazardous, including a voltage >50 VDC, and a source of high short circuit current.

Use extreme caution around the batteries and terminals.

Do not smoke.



### **DANGER!** RISK OF ELECTRICAL SHOCK, OSP CABLES

If joint 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.



### **DANGER!** RISK OF CHEMICAL EXPOSURE

A battery can present harmful chemicals. Refer to the Battery Installation Manuals and MSDS supplied with the batteries. Work in a ventilated area and follow all safety procedures.

At a minimum, wear safety glasses and gloves when working with batteries.



**WARNING!** PREVENT INJURIES, FROM LIFTING THE ENCLOSURE

Follow all local safety practices while lifting the enclosure. Wear all locally approved safety gear. All persons working with lifting equipment must wear standard safety headgear, eye protection, and (when required) gloves.

Keep bystanders away from work operations at all times.

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

Use all four points (eyebolts) to lift the enclosure.

Do not move or lift the enclosure with the front door open.

Never lift or move the enclosure with batteries or rectifiers installed.

Do not allow the lifting equipment or enclosure 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.

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

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 enclosure is suspended from the crane.

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

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

Do not exceed the lifting capacity of the crane.

Forklift Operation:

The forklift must be rated for a lifting capacity of 4,000 lbs (1814 kg), or greater.

Required Equipment:

One hoist, crane, or forklift capable of lifting 4,000 lbs (1814 kg).

Four wire-rope slings, 8-ft. (2.44 m) long (minimum). Each sling should have 1,500 lb. (700 kg) capacity.

Four connecting links (clevises) (rated for a minimum of 1500 lb), to attach the wire-rope slings to the enclosure lifting eyes.

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 enclosure into position while it is lifted and lowered.





**CAUTION!** PREVENT EQUIPMENT DAMAGE, PROPER HANDLING

Do not stack nor lay the enclosure on its side.

Similarly, do not stack batteries or lay them on their side. Do not tip batteries -- keep in upright position at all times.

To avoid possible personnel injury or damage to the enclosure, do not remove it from the pallet until at the installation site, at the point of transfer onto the pad.



**DANGER!** PREVENT EQUIPMENT DAMAGE, MAINTAIN VENTILATION

To optimize the service life of this equipment, make sure there are no obstructions in front of the ventilation openings.



**WARNING!** RISK OF INJURY, FROM UNSECURED ENCLOSURE

Do not push or lean against an unsecured (unbolted) enclosure as it may tip over causing bodily injury.

Do not pull cables, terminate cables, install or place any batteries or rectifiers until enclosure has been secured onto a pad.

Use caution when opening and closing doors to an enclosure not secured onto a pad.



**WARNING!** RISK OF INJURY TO EYES AND SKIN, FROM OPTIC DEVICES

Do not look into a fiber cable or device, nor hold such cable or device against body, fabric or other material.



**WARNING!** RISK OF HAZARDOUS SUBSTANCES

After handling of the enclosure or any such component, such as batteries, cables, busbars, etc., always wash hands immediately after.



**WARNING!** RISK OF EXPLOSION

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



**CAUTION!** PREVENT EQUIPMENT DAMAGE, FROM CONDENSATION

Until the enclosure is turned up for service, the bags of desiccant shipped with the enclosure must remain in the enclosure to prevent condensation.

Once service is in-place, remove the desiccant.



**CAUTION!** PREVENT EQUIPMENT DAMAGE, BUILD A GOOD PAD

The pad should be level to within 1/4 in (6.4 mm) over the entire length and width, with a crown in the middle to prevent any pooling of water and twist to the enclosure frame.

When mounting the enclosure on a pad, the compression strength of the concrete pad used must be a minimum of 4000 psi as determined by ASTM C39 test of compression strength of concrete cylinders.

Always use a barrier pad between the concrete and the pad to prevent corrosion.



**CAUTION!** PREVENT EQUIPMENT DAMAGE, OPERATING TEMPERATURE

The enclosure is approved for operation in an environment with an expected temperature range of -40°F to +115°F (-40° C to +46°C) and 5% to 95% relative humidity range, condensing. Do not use at temperatures or humidity exceeding these ranges.

The enclosure is not for indoor use.



**CAUTION!** PREVENT DAMAGES CAUSED BY ELECTROSTATIC DISCHARGES (ESD)

When handling the ECU unit, wear an appropriate antistatic device (a wrist strap for example) that is properly connected to a designated antistatic grounding point (on a framework, on an anti-static floor mat, etc.). ESD-protective packaging material shall also be used when carrying/shipping the ECU unit.

## Personal Protective Equipment (PPE)



**DANGER!** ARC FLASH AND SHOCK HAZARD.

Appropriate PPE and tools required when working on this equipment. An appropriate flash protection boundary analysis should be done determine the “hazard/risk” category, and to select proper PPE.



Only authorized and properly trained personnel should be allowed to install, inspect, operate, or maintain the equipment.

Do not work on LIVE parts. If required to work or operate live parts, obtain appropriate Energized Work Permits as required by the local authority, per NFPA 70E “Standard for Electrical Safety in the Workplace”.

## Hazardous Voltage



**DANGER!** HAZARD OF ELECTRICAL SHOCK.

More than one disconnect may be required to de-energize the system before servicing.

## Handling Equipment Containing Static Sensitive Components



**ALERT!** Installation or removal of equipment containing static sensitive components requires careful handling. Before handling any equipment containing static sensitive components, read and follow the instructions contained on the Static Warning Page.

## Maintenance and Replacement Procedures



**CAUTION!** When performing any step in procedures that requires removal or installation of hardware, use caution to ensure no hardware is dropped and left inside the unit; otherwise service interruption or equipment damage may occur.



**NOTE!** When performing any step in procedures that requires removal of existing hardware, retain all hardware for use in subsequent steps, unless otherwise directed.

## STATIC WARNING



This equipment contains static sensitive components. The warnings listed below must be observed to prevent damage to these components. Disregarding any of these warnings may result in personal injury or damage to the equipment.

1. Strictly adhere to the procedures provided in this document.
2. Before touching any equipment containing static sensitive components, discharge all static electricity from yourself by wearing a wrist strap grounded through a one megohm resistor. Some wrist straps have a built-in one megohm resistor; no external resistor is necessary. Read and follow wrist strap manufacturer's instructions outlining use of a specific wrist strap.
3. Do not touch traces or components on equipment containing static sensitive components. Handle equipment containing static sensitive components only by the edges that do not have connector pads.
4. After removing equipment containing static sensitive components, place the equipment only on conductive or anti-static material such as conductive foam, conductive plastic, or aluminum foil. Do not use ordinary Styrofoam™ or ordinary plastic.
5. Store and ship equipment containing static sensitive components only in static shielding containers.
6. If necessary to repair equipment containing static sensitive components, wear an appropriately grounded wrist strap, work on a conductive surface, use a grounded soldering iron, and use grounded test equipment.

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## **ABOUT THIS DOCUMENT**

### **Purpose**

This practice provides a description of the CoolPed 3.0 (CPED1844) DSLAM Enclosure as well as installation instructions.

### **Reason for Reissue**

Whenever this practice is reissued, the reason for reissue will be stated in this paragraph.

### **Additional Information**

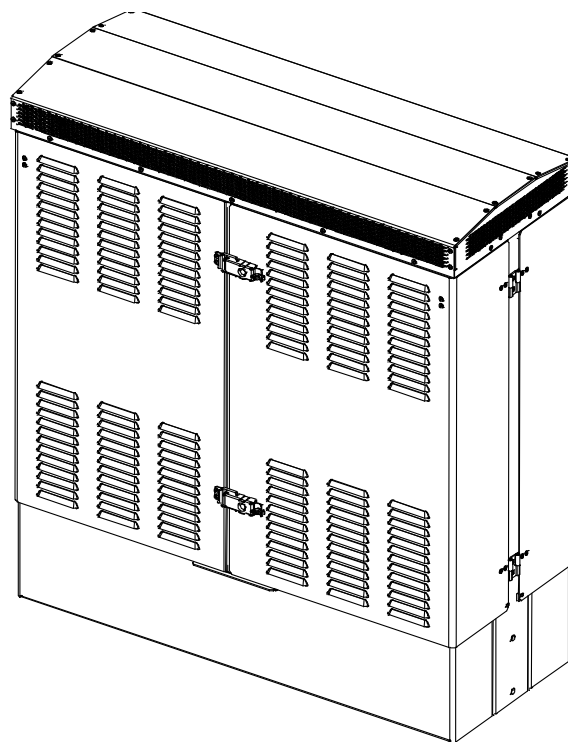
The information contained in this practice is subject to change without notice and may not be suitable for all applications. Always follow local practices and procedures as applicable for procedures not specifically described in this practice.

# DESCRIPTION

## Application

The CoolPed 3.0 (CPED1844) DSLAM enclosure (shown in **Figure 1**) houses environmentally-hardened electronics. It can accommodate up to four customer-supplied Digital Subscriber Line Access Multiplexers (DSLAMs), two in the front and two in the back, an optional Vertiv AC Power Kit (ACPOWKIT F1007112), and various accessories as may be required by your specific application. Generous ventilation in the enclosure doors and cap provide the necessary air flow for multiple DSLAM's.

**Figure 1:** The CoolPed DSLAM Enclosure



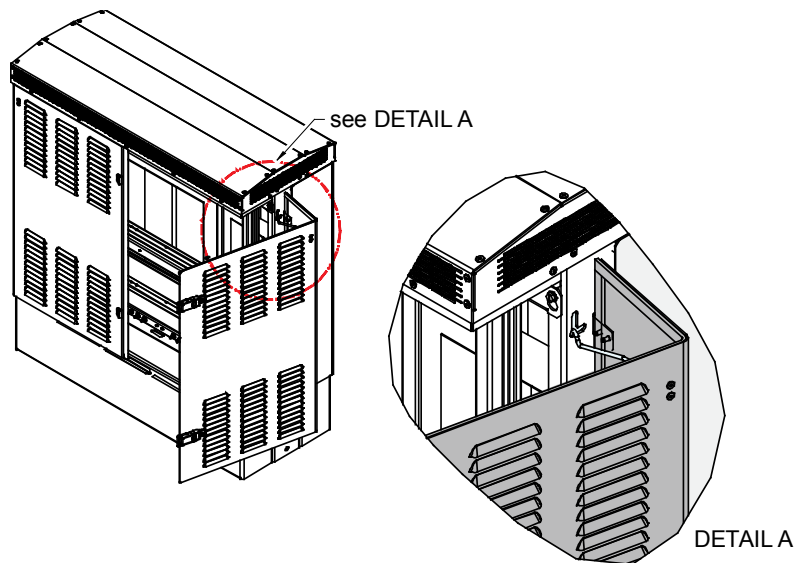
## Construction

The CoolPed 3.0 (CPED1844) DSLAM enclosure is constructed with mill-galvanized steel and has a durable painted finish. It is a round cornered, rectangular design, ventilation in the doors and cap provide optimal ventilation for up to four weather hardened DSLAM's. To ease installation, the lower cover can be removed by loosening the hex head bolts inside the base and lifting the cover up.

## Doors and Locking Mechanisms

There are doors on the front and back of the enclosure, equipped with wind latches that secure the doors when open.

**Figure 2:** The CoolPed 3.0 (CPED 1844) DSLAM Enclosure



Each pair of doors is secured by a latch at the top and bottom of the doors. A 216-type tool is required to open the doors, and padlock hasps provide the option for additional security. The doors can be removed by opening them and lifting them off the hinges.

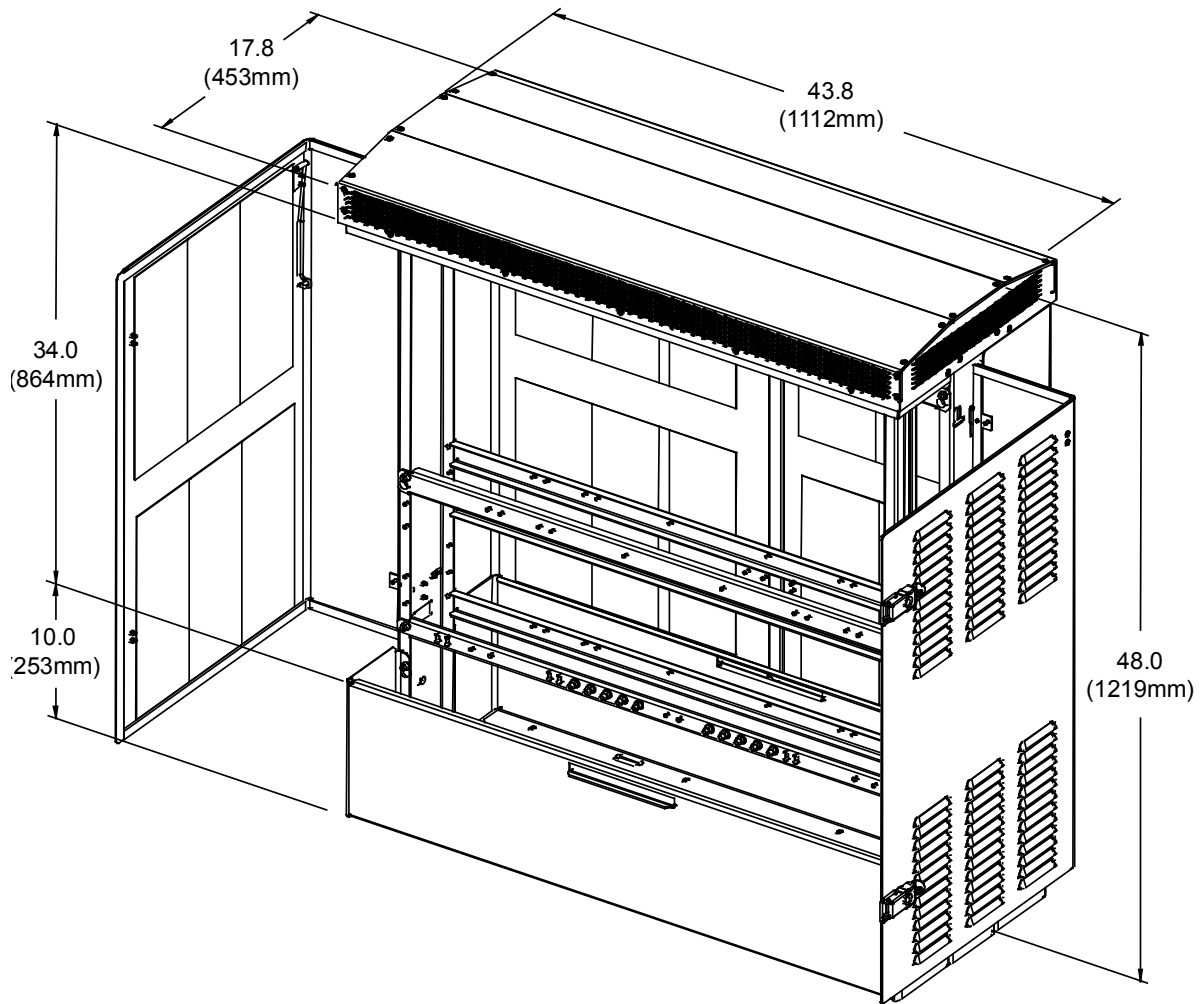
## Mounting

The enclosure can either be pad mounted or direct buried (stake mounted). For ultimate stability, pad mounting is recommended. For direct buried installation, two (2) mounting stakes and two (2) stabilizer bars are included.

## Physical Specifications

The CoolPed 3.0 (CPED1844) DSLAM enclosure weighs 195 lbs. Its dimensions are shown in **Figure 3**.

**Figure 3:** Dimensions CoolPed 3.0 (CPED1844) DSLAM Enclosure





# INSTALLING THE ENCLOSURE



**CAUTION!** Notify the proper personnel, and perform all local safety procedures before installing the enclosure.

## Preparation

### You Will Need

To prepare the enclosure for mounting, you will need cable caps and tape (if the cable will not be looped through the enclosure).

### Procedure

Perform the following steps to prepare for the installation of the enclosure:

1. Place the enclosure as shown on the construction work prints.

The cable or cables are normally placed on the trench line. When offsetting cables from the cable trench, the engineer needs to specify each location for the DSLAM enclosures and needs to indicate on the construction drawings the amount of offset.



**NOTE!** If possible, avoid offsetting an enclosure from the trench line. Offset cables of this type are difficult to locate, and the cables are often cut when other excavations or cable placement occurs.



**ALERT!** When installed, the enclosure must be level.

2. Decide whether the enclosure will be mounted on a pad or direct buried.

When mounted on a pad, the top of the enclosure is about 48 inches (121.9 cm) above the pad. When direct buried, the top of the enclosure is 44 to 46 inches (111.8 to 116.8 cm) above the final grade.



**NOTE!** Pad mounting offers the greatest stability and security. When direct buried, you must exercise extra care in leveling the pedestal. If you do not properly level a direct buried pedestal, operation may be affected.

3. At the enclosure location, place the cable as prescribed on the construction work prints and in accordance with local practices.

Leave the appropriate amount of cable above the ground. The amount of cable needed will vary depending on how the enclosure is mounted and on whether or not the cable will be looped through the enclosure.

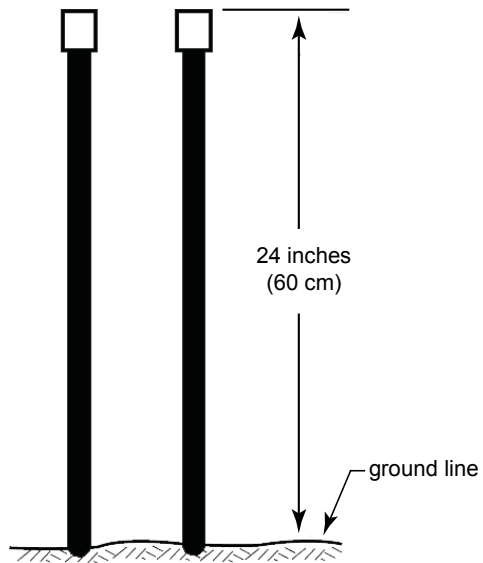


**NOTE!** If you will be installing the enclosure in a manner other than those described in this section, the engineer must specify the amount of cable that is to be looped through the enclosure.

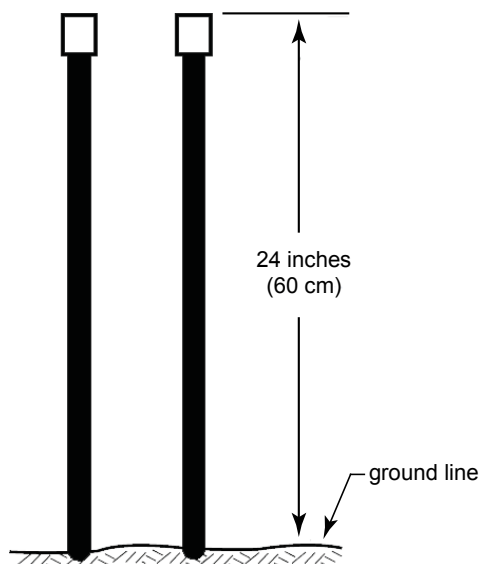
- If the cable will be looped through the enclosure, a cable loop that is a minimum 90 inches (2.3 m) long, measured from the point the cable exits the ground to the point it reenters the ground, should extend above the ground line. (See **Figure 4**)
- If the cable will not be looped through the enclosure, each end of the cable should extend about a minimum of 36 inches (91 cm) above the ground line. (See **Figure 5**) Seal the open cable ends with cable caps and tape to prevent water and dirt from entering the cable core.

**ALERT!** Do not leave an excessive length of cable above the ground.

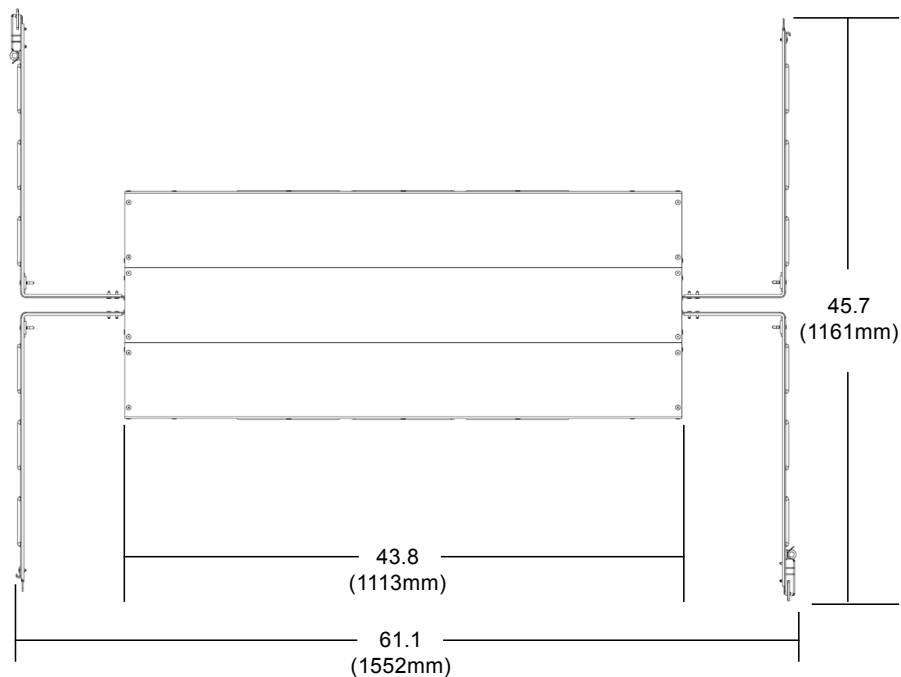
**Figure 4:** Cable Looped Through Enclosure




**Figure 5:** Cable Not Looped Through Enclosure



**Figure 6:** Recommended "Keep-Out" Area for CoolPed 3.0 Enclosure



## Mounting the Enclosure on a Pad

 **NOTE!** To ease installation, the doors of the enclosure can be removed, as well as either of the lower covers.

## You Will Need

To mount the enclosure on a pad, you will need to supply:

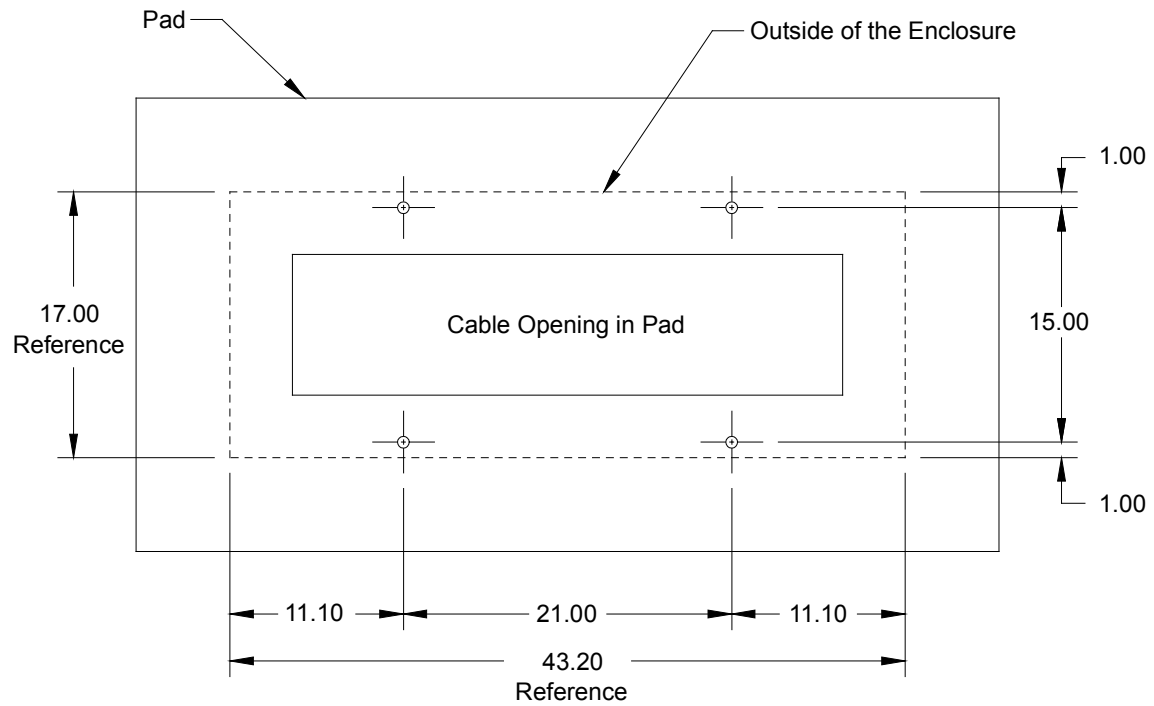
- four 1/2-13 threaded anchors; and
- a 3/4" hex socket wrench.

## Procedure

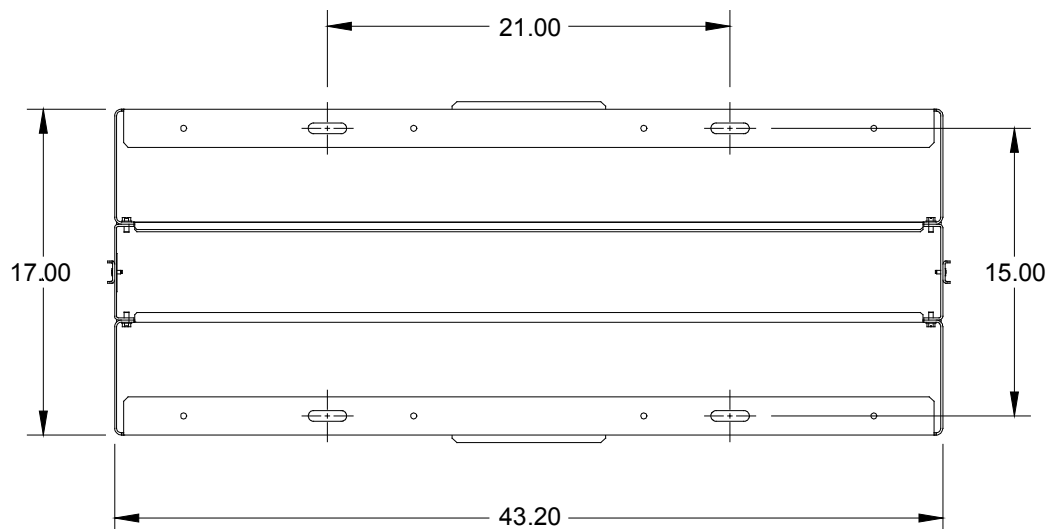
Perform the following steps to mount the enclosure on a pad:


1. Unpack the enclosure and dispose of the packing materials properly.
2. Install 1/2-13 threaded anchors in the pad at the locations shown in **Figure 7**. Center the mounting holes around the pad's cable opening or according to local practices. (The slots on the bottom of the enclosure for the pad mounting hardware are shown in **Figure 8**)

**Figure 7:** Pad Mounting Hole Centers




**Figure 8:** Bottom View of the Enclosure




 **CAUTION!** When moving a CoolPed DSLAM Enclosure from its pallet to the installation location, be careful to not let the enclosure bend or flex as damage to the enclosure could result.

3. Slide the enclosure around the cable loop that extends from the pad's cable opening.
4. Secure all cables inside the enclosure, and reattach the lower cover.
5. Align the four front and rear pad mounting flanges, located on the inside of the enclosure's base, with the anchors in the pad.
6. Use the 1/2-13 mounting bolts and washers, included in the loose parts bag inside the enclosure, to secure the enclosure at each of the four mounting holes.

### Direct Buried Mounting - Stakes and Stabilizers

 **NOTE!** Mounting on a pad (as described in *Mounting the Enclosure on a Pad*) offers the greatest stability for the enclosure. If you are direct burying the enclosure, exercise care and extra attention when leveling the enclosure.

 **NOTE!** To ease installation, the doors of the enclosure can be removed, as well as either of the lower covers.

### You Will Need


To mount the enclosure using stakes and stabilizers, you will need:

- equipment to dig a trench;
- a 216-type tool;
- a 9/16" hex socket wrench and a 9/16" hex open end type or box end wrench; and
- a rubber mallet or hammer.

### Procedure

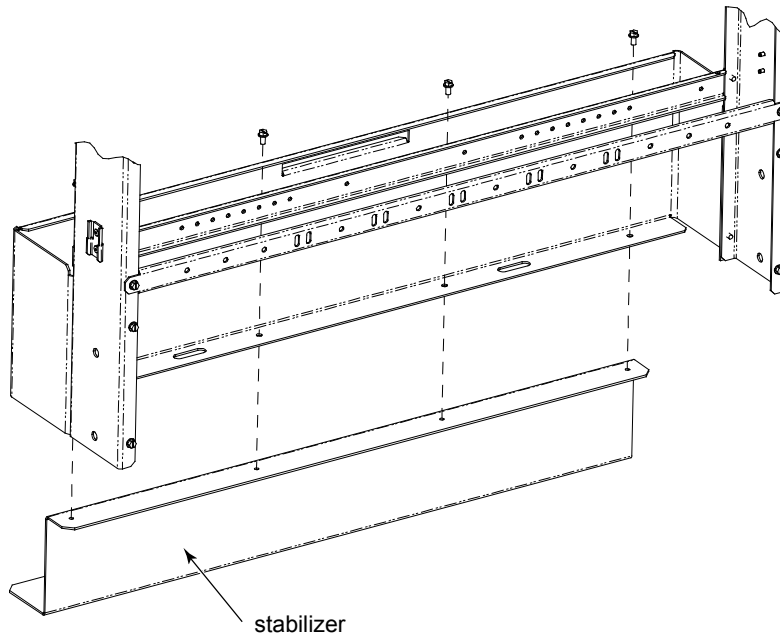
Perform the following steps to direct bury the enclosure:

1. Unpack the enclosure and dispose of the packing materials properly.
2. Dig a rectangular hole with approximately the following dimensions: Length: 50 inches; Width: 30 inches; Depth: 10 inches.

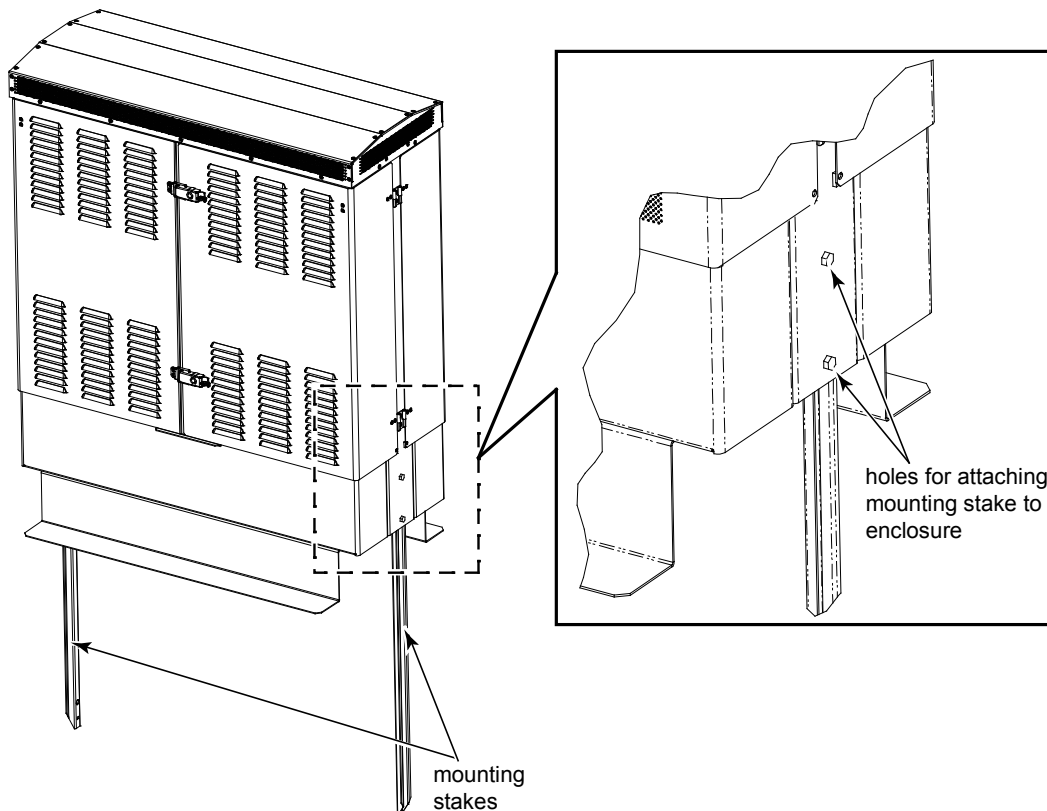
 **ALERT!** There should be about 5 inches (13 cm) between the bottom of the doors and the finished grade level.

3. To mount the stabilizers (one per side), locate kit inside enclosure packaging. Using four hex head 1/4-14 screws per side. Attach the stabilizer to the lower cover as shown in **Figure 9**. Bottom fin of the stabilizers are to be positioned outwards from the enclosure.

**Figure 9:** Mounting Stabilizers



**Figure 10:** Mounting Stakes



4. Place the enclosure over the cable loop that extends from the ground.
5. Mark the approximate locations on the ground where the stakes would mount on the inside of each side of the enclosure (as shown in **Figure 10**), and lift the enclosure out and away from the hole.
6. Pound the mounting stakes into the ground, in the locations indicated by the marks you have made, so that the stakes will protrude at least 4 inches (10 cm) above the finished grade. Take special care to drive the stakes straight into the ground.



**WARNING!** When stake mounting the enclosure, be careful not to damage the cable when driving the stakes into the ground.

7. If local bonding and grounding practices require a ground rod, install it, and attach a sufficient length of 6 AWG copper wire to the ground rod with a ground rod clamp, per local practices.
8. Place the enclosure over the cable loop that extends from the ground, and align the mounting locations on the side of the enclosure with the mounting holes provided on the mounting stakes.
9. Secure all cables inside the enclosure. Then reattach the lower cover.
10. Use the  $\frac{3}{8}$ -inch mounting hardware from the loose parts kit to secure the stakes to the enclosure. The stakes are to be mounted on the inside of the enclosure. (See **Figure 10**)
11. Backfill around the outside of the enclosure with soil. At final grade, the top 5 inches (13 cm) of the lower cover should be above ground, and the bottom 4 inches (10 cm) should be below ground.
12. Place gravel (preferred) or backfill in the enclosure base to grade, or as local practices apply.

## Grounding

Perform the step to complete the installation of the enclosure:

1. Perform all bonding and grounding procedures according to local practices. A ground bar is provided in the base of the enclosure.

# INSTALLING EQUIPMENT IN THE ENCLOSURE

## Overview

The CoolPed enclosure can accommodate up to four customer-supplied weather-hardened DSLAMs, two in the front and two in the back, and an optional Vertiv AC Power Kit (ACPOWKIT F1007112), and various accessories as required by your specific application.

## You Will Need

To install equipment in the enclosure, you will need to supply:

- a 216-type tool; and
- DSLAM manufacturer mounting bracket.

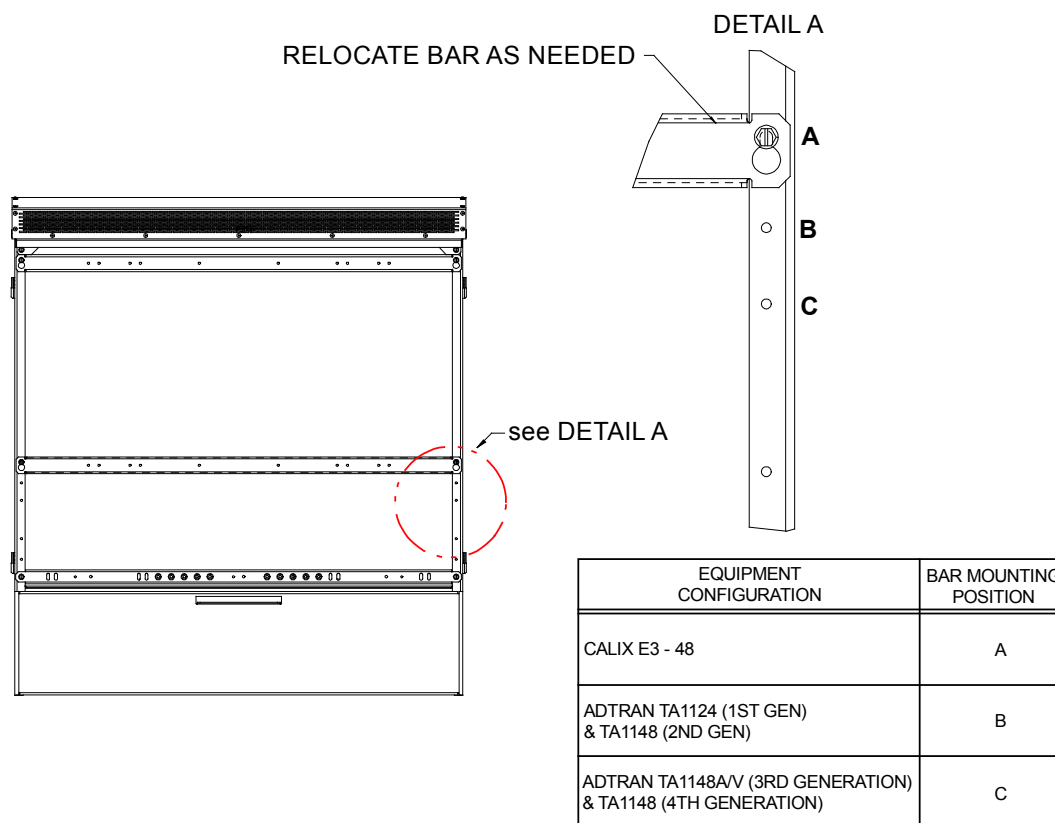
## Procedure

Perform the following steps to install equipment in the enclosure:

1. If the doors are not already open, then use a 216-type tool to open the doors, and secure them with the wind latches.
2. Depending on the DSLAM used, mounting to the horizontal rails will require adaptor brackets to be supplied by the DSLAM provider. If required, affix brackets to DSLAM per manufacturer requirements or local practice prior to mounting.
3. Relocate the lower DSLAM horizontal rail as needed depending on which DSLAM module is used by loosening the  $\frac{1}{4}$ " bolt on each end. See **Figure 11** for horizontal rail location required for the given DSLAM module used.

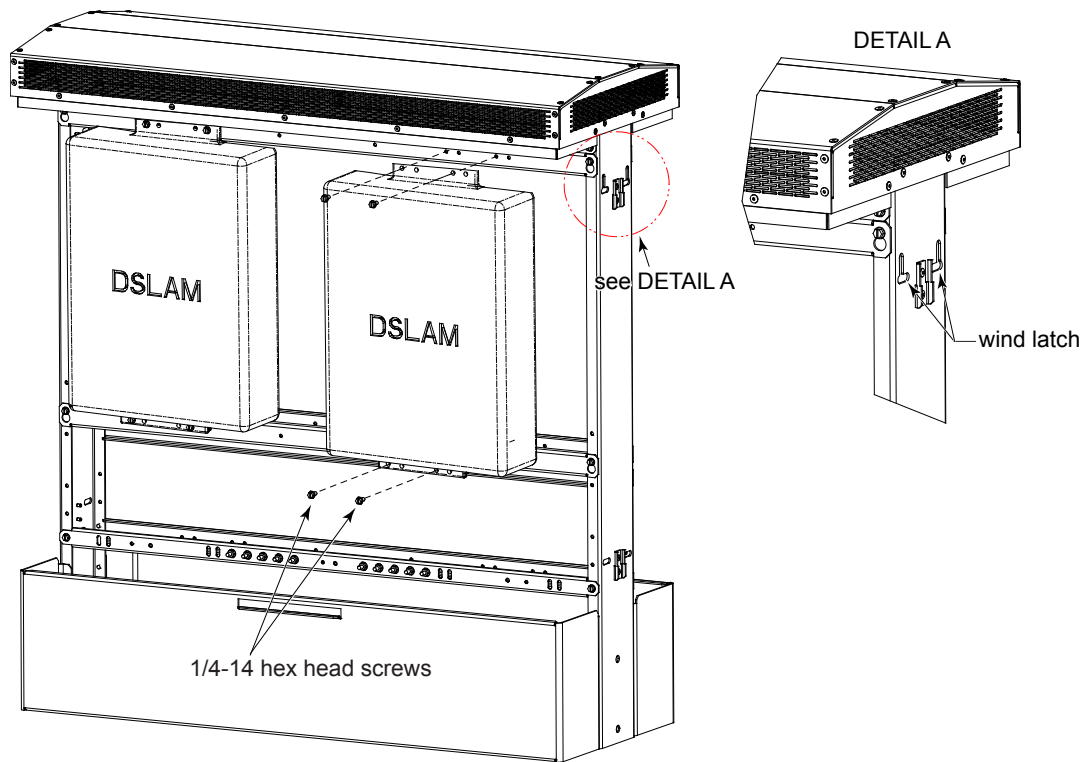


**Figure 11:** Lower DSLAM Horizontal Rail



- Using the 1/4-14 hex head screws provided in the loose parts kit, attach the DSLAM to the top and bottom horizontal rails using two screws each top and bottom (4 per DSLAM mounted). See **Figure 12**.

**Figure 12:** Attaching DSLAM to Top and Bottom Horizontal Rails



5. If an Vertiv AC Power Kit (ACPOWKIT F1007112), or other accessories are to be installed, please refer to their respective documentation or local practice.

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