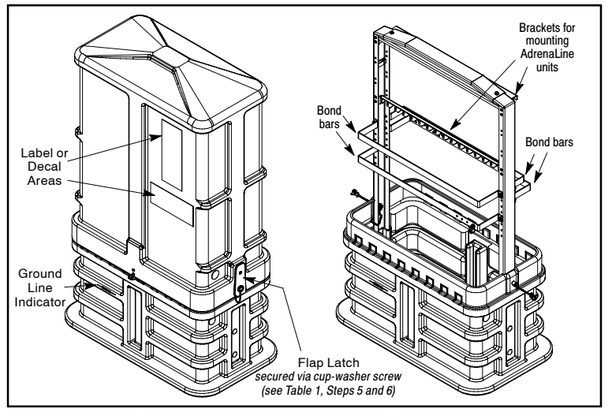


Figure 1. Dome on and Dome off Views of CMPH Enclosure, Blockless ADI Configuration

- Installation Instructions -

AdrenaLine™ Distribution Interface (ADI)

CMPH-75 Series Blockless Configuration

1. GENERAL

1.1 Document Purpose

This document provides installation instructions for the blockless CMPH-75 versions of the AdrenaLine™ Distribution Interface (ADI) for the Charles Multi-Purpose Housing (CMPH™) enclosure. The ADI brackets inside the CMPH-75 are designed to mount up to 25, single-line, AdrenaLine units. Single-line AdrenaLine units are ordered, mounted, and connected separately. See Figure 1 for a typical CMPH-75 model. See Table 5 for ordering and option information, or call Charles Industries (see Part 3) to request more information.

- NOTE -

Hereafter the AdrenaLine Distribution Interface may be referred to as the "ADI" and the CMPH-75 Charles Multi-Purpose Housing may be referred to as the "CMPH" or "enclosure."

1.2 Document Status

Whenever this document is updated, the reason will be stated in this paragraph.

1.3 Product Purpose and Description

The CMPH ADI provides an easy way to mount up to 25 single-line AdrenaLine units in one protective, outside plant (OSP), above-ground, CMPH enclosure. The CMPH design offers easy installation, superior structural strength, 360° technician access, generous internal equipment and cable storage capacity, and protection against corrosion, floods, fire, weather, dirt, insects, intrusion, dents and impact. The CMPH contains a base, a dome, and internal ADI brackets and supportive framework for AdrenaLine units. The *base* has corrugated or ribbed walls, internal, dual-purpose, molded-in, channel grooves (which accept most metallic stakes as well as the vertical channels of the internal framework), an open top, and an open bottom. Easy replacement installations and easy underground cable access is provided via the open base bottom. The top piece of the CMPH is the dome, designed to overlap the base for a flood-protective bell-jar effect. Inside the CMPH, sturdy framework with bars and brackets allows up to 25 AdrenaLine units to be mounted, grounded, and terminated.

1.4 Product Mounting Type and Location

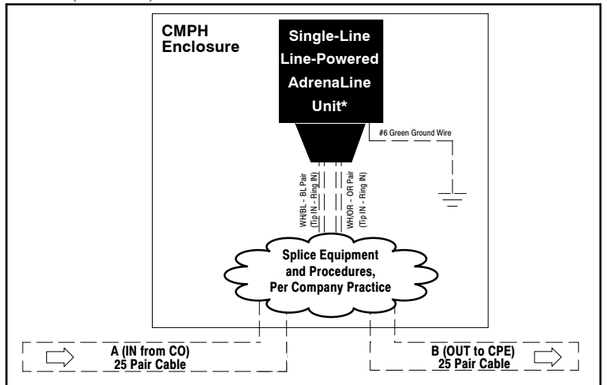
The CMPH is an above-grade enclosure, the base of which is typically installed in a trench or hole in the ground up to the base's ground line indicator. The ribbed or corrugated base walls provide excellent stability in most soil types. The dome mounts on the base and protects all equipment mounted inside the CMPH. Stake mounting is available via molded channel grooves, which are located at the center of each interior side wall. These grooves accept most new and existing enclosures' mounting stakes. Once the CMPH is installed in the ground, then separately-ordered single-line AdrenaLine units are mounted on brackets inside the enclosure.

1.5 AdrenaLine "Blockless" Application and Configuration

The AdrenaLine CMPH enclosures can be installed in existing brownfield applications or new greenfield applications. For either application, Charles recommends using 25-pair cables. Brownfield applications typically consist of a cable branch or stub-in configuration. Approximately four feet of cable stub length above the CMPH ground line (give or take a foot) is recommended for adequate cable splicing and wire termination, depending upon company practice and the specific splicing and termination equipment used. *No terminal blocks are provided; termination and splicing of AdrenaLine cable stubs to incoming and outgoing cables and all cable bonding is to be performed per local company practice.*

1.6 Other AdrenaLine CMPH Configurations

Charles offers both Line- and Express-powered AdrenaLine Distribution Interface CMPH versions which provide terminal blocks and instructions for specific and orderly ways to trim, prepare, bond, splice and terminate all cables and wires. Call *Charles* (see Part 3) for more information.



**Note: Only one line-powered, single-line, AdrenaLine unit is shown. The CMPH supports up to 25 single AdrenaLine units. Express-powered, single-line, AdrenaLine units are equipped with a third wire pair in the cable tail for powering purposes.*

Figure 2. CMPH Functional Diagram, Blockless ADI Configuration

2. INSTALLATION

See Table 1 to perform a new CMPH enclosure installation (without AdrenaLine units). See Table 2 to install AdrenaLine units inside the CMPH. Table 3 describes a new CMPH installation with stakes. For replacement or rehabilitation application instructions, call Charles for more details.

- BODILY HARM WARNINGS -

The corrugated metal or armor that may be present in cables is very sharp at the cut or exposed edges. Extreme caution should be taken to prevent personal injury. Protective work gloves are recommended when handling armored cable.

Cable cleaning solvents may contain hazardous materials or harmful ingredients. Always read and follow the manufacturer's precautions, warnings, and instructions when working with cleaning solvents or products.

- CABLE DAMAGE WARNING -

Be careful not to damage any buried cables or service wires while digging either to expose cables or to prepare a hole or trench, or while driving stakes.

- GROUNDING WARNING -

Always follow local codes and company practices for performing proper cable and site bonding and grounding. Perform all bonding and grounding prior to other electrical or communications connections.

- NOTE -

Never grasp or use the flap-latches as handles to lift the dome off the base; latch breakage and possible enclosure intrusion could result.

3. CUSTOMER TECHNICAL SERVICE

If technical assistance or customer service is required, contact Charles Industries by calling or using one of the following options:

847-806-8500 (Tech. Service local) 847-806-6300 (Customer Service)
800-607-8500 (Tech. Service toll-free) 847-806-6653 (Customer Service FAX)
847-806-8556 (Tech. Service FAX) mktserv@charlesindustries.com (email)
techserv@charlesindustries.com (email) www.charlesindustries.com (website)

Table 1. Installing a New CMPH Enclosure

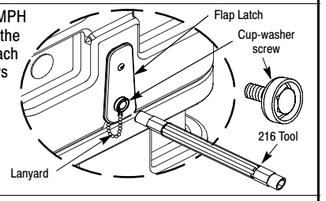
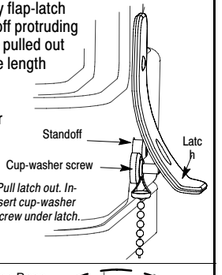
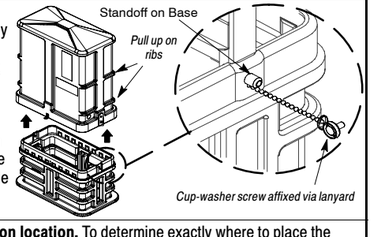
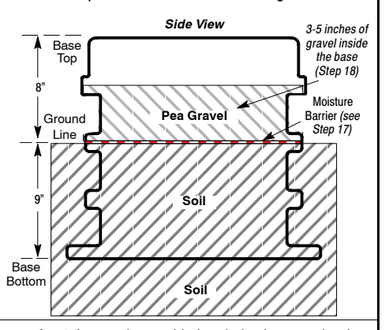
Step #	Instruction
1. □	**Obtain tools, materials and equipment.** Gather the following equipment to perform the CMPH installation. □ 216 tool or can wrench □ Trenching, digging and site cleanup equipment & tools □ Charles CMPH model □ Cable grounding materials and tools □ Scissors, knife or snips □ Cable opening and management equipment □ Level □ Clean, dry, pea gravel *(3/8"-5/8" diameter)* □ Measuring tape □ Conduit and conduit caps *(optional)* □ Soil tamping tool(s) □ Wrenches or socket set □ Soil for backfill □ Insulated work gloves *(optional, to handle metallic stakes)*
2. □	**Prepare trench.** ***Do not damage any buried cables or wires while digging.*** Dig and prepare the cable trench, per company practice.
3. □	**Place cables (or conduit or innerduct) in trench.** Follow company practice to lay or place the cables, innerduct or conduit. See Step 11 for proper cable length.
4. □	**Unpack and inspect equipment.** Without damaging the CMPH exterior, remove the CMPH from its packaging. Inspect the unit upon delivery; if damaged in transit, report the damage to the shipping company.
5. □	**Unlock the CMPH.** Unlock the CMPH using a 216 tool or can wrench at the two cup-washer screws (one at each side of the CMPH); turn the screws counterclockwise until they freely hang from their lanyards. When locked, the cup-washer screws prevent movement of the flap-latches. 
6. □	**Disengage the flap-latches.** Each limited-flexibility flap-latch contains a hole in it which accepts the round standoff protruding from the side of the base collar. Each latch must be pulled out or away from base side wall just enough to clear the length of the protruding standoff. Maintain the flexed for pulled-out latch position by temporarily inserting the cup-washer screw or an item of similar diameter or thickness under each latch (between the latch and the side wall). Do not pry or flex the latches too far, only enough to clear the standoff. ***Never grasp or use the flap-latches as handles to lift the dome off the base; latch breakage and possible enclosure intrusion could result.*** 
7. □	**Remove the dome.** While the flap-latches are properly disengaged from the base standoffs, grasp the ribs at each side of the dome and lift up to remove the dome from the base. The cup-washer screws remain attached to the base via the lanyard (or chain). Set aside the dome for later use. 
8. □	**Determine base installation location.** To determine exactly where to place the base in the trench, use the base itself as a positioning template by placing it up over the top of the conduit, innerduct, or cables *(route the cables through the base)* and lowering the base to the ground. Analyze the site and place the base at its proposed final orientation and horizontal positioning in the trench or hole. Mark this proposed final spot by removing a shallow layer of top soil from around the outside perimeter of the base about 2-4 inches wider than the base. Remove the base and set it aside.
9. □	**Dig a hole for the base.** ***Caution: Avoid damaging buried cables, wires, innerduct, conduit or ground equipment whenever digging.*** At and within the marked perimeter boundary, dig *straight* down to a depth of 9 inches. Do not dig too deep.
10. □	**Optional – Stake mountings only.** For stake mounting applications, continue with the steps in Table 3.
11. □	**Verify sufficient cable length at the base hole.** Verify the cable is long enough to allow easy future cable splicing and wire termination at any company-approved splicing equipment that may be mounted or placed within the installed CMPH. Per company practice, make any cable adjustments needed to allow sufficient cable stub length for wire termination, and optionally cut the cable to proper length.
12. □	**Put base in hole and route cable(s) through base.** Route the cables or conduit up through the bottom of the base, then put the base in the prepared hole or trench.
13. □	**Verify proper base depth.** Before backfilling, verify the base is at the proper depth, approximately 9 inches deep. Rest the base on solid or well-tamped soil when measuring this distance. Verify the base ground line indicator is at the same level as the final-grade ground line. Remove, add, or tamp more soil as necessary.
14. □	**Level the base.** Verify the level (or plumb) of the base. Check the level at either the top surface of the base, or against one of the interior vertical channels of the metal frame. Check the level in both dimensions; front to back, and side to side. Make any needed base-bottom soil adjustments to get a good or true level or plumb line.
15. □	**Prepare earth ground.** ***Always follow local codes and company practice when preparing earth ground and when grounding cables or equipment.*** If an earth ground is not present at the CMPH site and local code or practice requires an earth ground, prepare one now. Attach earth ground to the CMPH's ground lug on one of the bond bars using a ground wire of proper gauge, per company practice.
16. □	**Backfill and tamp outside the base.** With the base in place, backfill the trench or hole outside of the base. While backfilling, tamp the soil and check the base level once or twice. Continue to add and tamp the soil until it is at the base ground-line. **Backfill soil inside the base and tamp.** First plug, cap, or cover all channel, conduit, or innerduct openings. Then per company practice, backfill soil *inside* the base, tamping soil periodically, to the ground line mark. This adds stability and helps prevent any company-approved gravel (Step 18) from falling or slipping under the base sides when it is added. 
17. □	**Place the red-plastic bag or sheet.** Locate the provided, red-plastic, vapor-barrier bag shipped with the CMPH, cut it open on all but one long edge to make one large plastic sheet, (seal any holes with duct tape), and place it into the base on top of the soil fill. Completely cover the soil. Fit the bag around and encircle the cables, conduit, or innerduct, spread it outward from the center, and press all sheet edges downward where they make contact with the base walls. Alternately, cut a hole or "X" in the center of the sheet, drop the sheet down over the centered cables or conduit group, bring it all the way down to the tamped soil or fill, fit the sheet's inner hole edges snugly around the cables or conduit, and spread it out as underlined above. When installed properly, the sheet resembles a vapor barrier and aids moisture run-off into the soil. ***Failure to use the plastic moisture-barrier bag on top of the soil significantly increases the risk of condensation inside the enclosure.***
18. □	**Add gravel inside the base.** Pour 3-5 vertical inches of company-approved gravel (gravel minimizes condensation and drains well) into the base (about to the top base rib, or 1" below any innerduct or conduit opening) on top of the soil. Use 5/8" (or less) diameter pea gravel, or clean, dry, non-porous, gravel rock only (cut stone retains more moisture). Five 18-pound bags work well. Spread out and level the gravel.
19. □	**End of base installation – determine next procedure.** If AdrenaLine units will now be installed, go to Table 2. If AdrenaLine units will NOT be installed at this time, continue with Step20 to close the CMPH enclosure. PLEASE KEEP THIS DOCUMENT INSIDE THE CMPH FOR THE NEXT CREW.

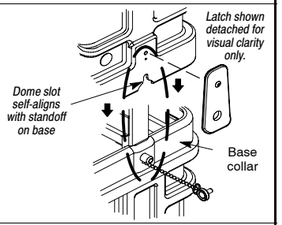
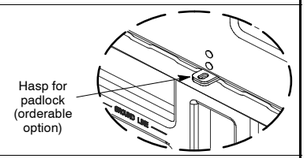
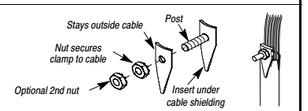
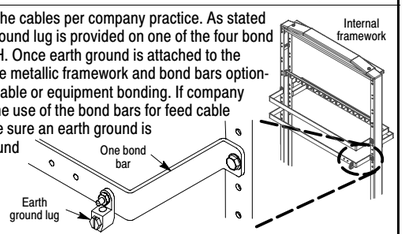
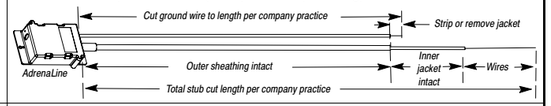
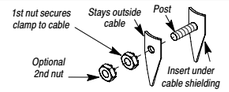
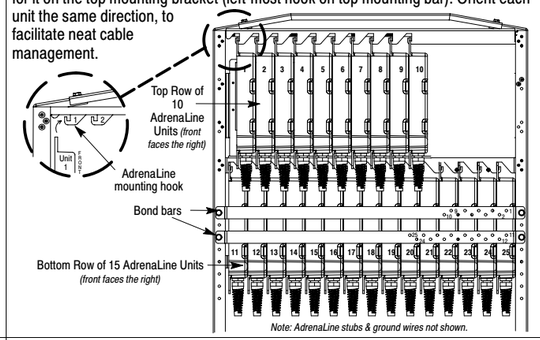
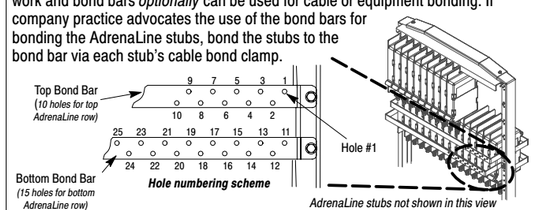
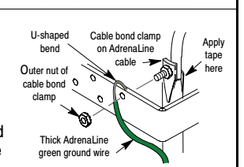
Table 1 (continued) - Closing the CMPH	
20. □	**Re-check cable management.** Verify any cables or equipment is organized and will not contact the interior walls of the dome when installed (keep items at least 1" inside the vertical plane of the base collar). This assures safe and smooth dome placement.
21. □	**Install dome.** Locate the dome and lift it up and over the interior framework and equipment. Lower the dome until it overlaps and self-latches to the base. Verify the standoffs protrude through the holes in the latches (self-latch feature). 
22. □	**Lock the CMPH.** Lock the CMPH by re-inserting and turning the cup-washer screws clockwise into the threaded holes provided for them in the standoffs. Tighten the cup-washer screws with a 216 tool or can wrench (as shown in Step 5).
23. □	**(Optional) Padlock the CMPH.** For models equipped with an optional hasp, the CMPH also can be locked by inserting a padlock through the holes in the hasp provided at the front of the enclosure. 
24. □	**End of CMPH placement. Clean up site.** If no more equipment or cable work will be performed at this time, clean up the site, fill and tamp any trenches, replace any removed sod, restore the landscape to it's original condition, pick up all equipment, and optionally leave this document inside the CMPH for future reference.

Table 2. Cable Termination and AdrenaLine Installation	
Step #	**Instructions**
1. □	**Open the CMPH enclosure.** Open the CMPH, per Steps 5-7 of Table 1.
2. □	**Verify the CMPH enclosure is grounded.** Per company practice and local codes, verify earth ground is connected to the earth ground lug (see lug on bar in Step 6).
	Preparing the Feed Cable
3. □	**Verify feed cable length.** Verify enough feed cable slack is available for routing and connection to the selected splice point.
4. □	**Prepare feed cable.** Per company practice, perform all cable preparation work (measure and cut cables to length [if still needed], measure, cut, and remove proper lengths of cable sheathing and shielding, remove any yarn, bindings or wrappings, group or identify correct pairs, and trim wires if desired, etc.).
5. □	**Install cable bond clamps to cables.** Using company-approved methods and materials, install a cable bond clamp to each feed cable's shield at the sheath cut line. 
6. □	**Bond cables.** Bond the cables per company practice. As stated in Step 2, an earth ground lug is provided on one of the four bond bars inside the CMPH. Once earth ground is attached to the CMPH ground lug, the metallic framework and bond bars optionally can be used for cable or equipment bonding. If company practice advocates the use of the bond bars for feed cable bonding purposes, be sure an earth ground is connected to the ground lug, then perform all cable bonding per company practice. 
7. □	**Terminate feed pairs (if performed at this time).** If company practice is to terminate the cable pairs to optional, company-provided, splice or termination equipment, terminate all feed pair wires at this time using company-approved equipment and methods. *If splicing is to be performed directly to the cable stubs of the AdrenaLine units, wait until Step 14 (after the AdrenaLine cable stub is prepared) to splice the feed cable pairs to the AdrenaLine cable stubs.*

Preparing the AdrenaLine Units	
8. □	**Prepare and open AdrenaLine cable stub.** Blunt-cut the entire AdrenaLine cable stub to a length determined per company practice, using company approved tools and methods. The AdrenaLine cable stub that exits the bottom of the unit consists of (from the outside to the inside): an outer cable sheathing, a metallic shielding, a protective tube or jacket, and two or three inner wire pairs. Line-powered AdrenaLine cable stubs have two pairs of wires, and express-powered AdrenaLine units have three pairs of wires (third pair is for powering). 
9. □	**Measure and cut ground wire to length.** As shown in Step 8, locate the thick, green, ground wire that exits the bottom of the AdrenaLine unit alongside (but not part of) the cable stub. Cut this wire to length and strip it per company practice.
10. □	**Install bond clamp to AdrenaLine stub.** Per company practice, install an approved bond clamp to each AdrenaLine cable shielding at the cable sheathing cut-line *(see Step 13),* then tape the seam. 
11. □	**Mount AdrenaLine unit(s).** Mount the first AdrenaLine unit from the hook provided for it on the top mounting bracket (left-most hook on top mounting bar). Orient each unit the same direction, to facilitate neat cable management. 
12. □	**Bond AdrenaLine cable stubs.** Per company practice, bond the AdrenaLine cable stubs. Once earth ground is attached to the CMPH ground lug, the metallic framework and bond bars *optionally* can be used for cable or equipment bonding. If company practice advocates the use of the bond bars for bonding the AdrenaLine stubs, bond the stubs to the bond bar via each stub's cable bond clamp. 
13. □	**Ground AdrenaLine unit (green ground wire).** Bond and connect AdrenaLine's thick green ground wire, per company practice. If none exist, the following may be performed: make a U-shaped bend in a 1" stripped wire length at the end of the ground wire. Insert the U-bend between the bond bar and the loosened outer hex nut of the cable bond clamp. Hold the wire in place, then tighten the outer hex nut. 
14. □	**Splice wire pairs.** After bonding and securing all AdrenaLine and feed cables, locate the correct colored IN (from CO) and OUT (to CPE) feed cable wire pairs to be spliced to the appropriate colored wires of the correct AdrenaLine unit being placed in service (see the table below). Splice all pairs for all AdrenaLine units being placed in service, and label each cable and splice, per company practice.

Wire Color	Designation	Wire Color	Designation	Wire Color	Designation
White/Blue	CO side, Tip	White/Orange	CPE side, Tip	White/Green	Ground
Blue	CO side, Ring	Orange	CPE side, Ring	Green	-48 VDC Power

15. □	**Mount and terminate all AdrenaLine units.** Repeat Steps 8-14 for all units placed in service at this time. If desired, perform additional cable or wire management per company practice, and label all cables and units, if desired.
16. □	**Finish cable work and equipment mounting.** Close up the CMPH by performing Steps 20-24 of Table 1.

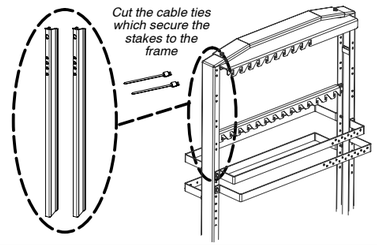
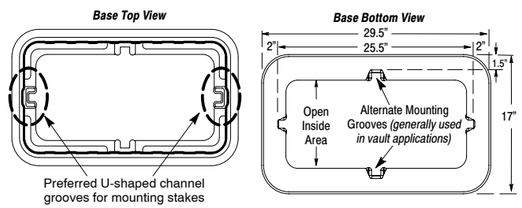
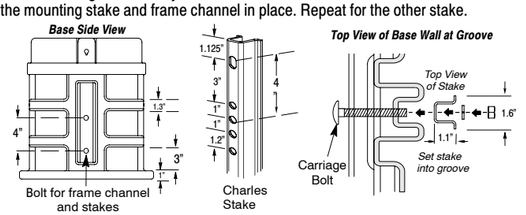
Table 3. Installing the CMPH with New Charles Stakes	
Step #	***Instructions***
	Charles offers some CMPH models which include two mounting stakes (either 30", 36", or 42" long). All stakes have identical hole patterns. This table describes how to install these models.
1. □	**Prepare the CMPH, trench, and cable.** Perform Steps 1-9 of Table 1 to open the enclosure and prepare the hole or trench and the cables or conduit. Verify the base installation site is ready and suitable for metallic stakes.
2. □	**Remove stakes from CMPH framework.** Two mounting stakes are packed with the CMPH and attached to the frame with cable ties. Detach the stakes from the frame and remove the packing used for shipping purposes. 
3. □	**Determine which grooves to use for stakes.** The base contains a molded-in dual-purpose groove at the center of each wall to accept the U-shaped mounting stakes (as well as the U-shaped vertical channels of the frame). Per local company practice and site conditions, select two wall grooves that are appropriate for stake attachment purposes (the grooves on the narrow walls are typically used). 
4. □	**Attach stakes to grooves in base.** Turn the base upside-down or on its side on the ground to better access the grooves *through the base bottom*. Inside the base, remove the nuts and washers from the bolts (which are 4" apart) that secure the frame channels in place. On the mounting stake, the distance between the first and third hole down from the top of the stake is 4". Insert the top of the stake into the base (from the base bottom), rotate the stake so the stake and groove perimeter contours match, align the stake holes with the bolts in the base, and press the stake into the groove. Firmly re-attach the lock washers and nuts, to secure both the mounting stake and frame channel in place. Repeat for the other stake. 
5. □	**Verify hole or trench accommodates stake length.** Lift the base and attempt to place it back in place in the trench or hole. If the trench is deep enough to accommodate the length of stake protruding from the bottom of the base, skip the rest of this step. If the hole or trench is not deep enough to accept the stakes, and the weight of the base is not enough to drive the stakes the length needed to allow the base to rest at its proper depth, then once again use the base as a template to mark the exact stake locations in the ground where more soil must be removed. Remove the base from the hole, and at the stake-hole indentations, dig down just enough to accommodate the length of the stake.
6. □	**Set base in place, bring cables into base.** When the hole is deep enough for the stakes, again lift the base by its walls or ribs and set it back into the hole, being sure to enclose or encompass within the base all cables, innerduct, conduit or equipment present at the site and intended for storage inside the enclosure.
7. □	**Finish the installation.** Perform Steps 13 through 24 in Table 1 to finish the installation. Be sure to backfill and firmly tamp soil *into the stake holes* when backfilling.

Table 4. Physical Specifications		
Feature	***U.S.***	***Metric***
Height, overall	47 in.	119.4 cm
Height, base only, incl. collar	17 in.	43.2 cm
Height, dome only	33 in.	83.8 cm
Height, internal framework	30 in.	76.2 cm
Height, base bottom to ground line	9 in.	22.9
Depth, base (at wider footprint)	17 in.	43.2 cm
Depth, dome	14.5 in.	36.8 cm
Width, base (at wider footprint)	29.5 in.	75 cm
Width, dome	27 in.	68.6 cm
Weight, dome	22 lbs.	10 Kg
Weight, base, including bracketry	29 lbs.	13.1 Kg
Weight, two 30" stakes	5 lbs.	2.2 Kg
Weight, two 36" stakes	6 lbs.	2.7 Kg
Weight, two 42" stakes	7 lbs.	3.2 Kg

NOTE: All dimensions and weights are approximate.

Table 5. Model Number Ordering Information and Options	
Model #	***Description***
CMPH-750NNH	Charles Multi-Purpose Housing with custom, internal, sturdy, ADI brackets to accommodate up to 25 single-line AdrenaLine units. All self-locking CMPH enclosures come with a polyethylene base and (overlapping) dome, a security hasp (accepts customer-supplied padlock), internal metallic framework for mounting equipment and cabling, ground and bond bars, instructions, and a plastic moisture-barrier sheet. *No terminal blocks provided.*
CMPH-751NNH	Same as above but with two included 30" metallic stakes.
CMPH-752NNH	Same as above but with two included 36" metallic stakes.
CMPH-753NNH	Same as above but with two included 42" metallic stakes.
CMPH-750NFH	Same as above but with flame retardant material and NO metallic stakes.
CMPH-751NFH	Same as above but with two included 30" metallic stakes.
CMPH-752NFH	Same as above but with two included 36" metallic stakes.
CMPH-753NFH	Same as above but with two included 42" metallic stakes.
Ordering Options for the CMPH	
CTA-01E	AdrenaLine ™ single-line unit, express powered, with 30'-foot cable stub, for triple play applications.
CTA-01E-S	Replaces above model as of Summer 2007 (new housing material).
CTA-01L	Same as CTA-01E but line powered.
CTA-01L-S	Replaces above model as of Summer 2007 (new housing material).
CRE-01E	AdrenaLine ™ single-line unit, express powered, with 30-foot cable stub, for reach extended applications, available Summer 2007.
CRE-01E-S	Replaces above model as of Summer 2007 (new housing material).

All CMPH models above can be equipped with a security hasp, which accepts a padlock. To order a hasp model, add an "H" to end of the part number. Line and express,powered ADI versions are also available, which have factory-installed terminal blocks. Various replacement and optional parts are available. Contact Charles for details.