

CT4000

Networked Charging Station

Site Design Guide



IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS

WARNING:



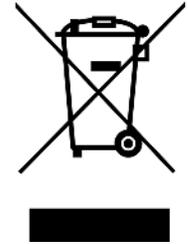
1. **Read and follow all warnings and instructions before installing and operating the ChargePoint® charging station.** Install and operate only as instructed. Failure to do so may lead to death, injury, or property damage, and will void the Limited Warranty.
 2. **Only use licensed professionals to install your ChargePoint charging station and adhere to all national and local building codes and standards.** Before installing the ChargePoint charging station, consult with a licensed contractor, such as a licensed electrician, and use a trained installation expert to ensure compliance with local building and electrical codes and standards, climate conditions, safety standards, and all applicable codes and ordinances. Inspect the charging station for proper installation before use.
 3. **Always ground the ChargePoint charging station.** Failure to ground the charging station can lead to risk of electrocution or fire. The charging station must be connected to a grounded, metal, permanent wiring system, or an equipment grounding conductor shall be run with circuit conductors and connected to the equipment grounding terminal or lead on the Electric Vehicle Supply Equipment (EVSE). Connections to the EVSE shall comply with all applicable codes and ordinances.
 4. **Install the ChargePoint charging station on a concrete pad using a ChargePoint approved method.** Failure to install on a surface that can support the full weight of the charging station can result in death, personal injury, or property damage. Inspect the charging station for proper installation before use.
 5. **This charging station is not suitable for use in Class 1 hazardous locations, such as near flammable, explosive, or combustible vapors or gases.**
 6. **Supervise children near this device.**
 7. **Do not put fingers into the electric vehicle connector.**
 8. **Do not use this product if any cable is frayed, has broken insulation, or shows any other signs of damage.**
 9. **Do not use this product if the enclosure or the EV connector is broken, cracked, open, or shows any other signs of damage.**
 10. **Use only copper conductor wire rated for 90 °C (194 °F).**
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IMPORTANT: Under no circumstances will compliance with the information in a ChargePoint guide such as this one relieve the user of the responsibility to comply with all applicable codes and safety standards. This document describes approved procedures. If it is not possible to perform the procedures as indicated, contact ChargePoint. **ChargePoint is not responsible for any damages that may result from custom installations or procedures not described in this document or that fail to adhere to ChargePoint recommendations.**

Product Disposal

Do not dispose of as part of unsorted domestic waste. Inquire with local authorities regarding proper disposal. Product materials are recyclable as marked.



Document Accuracy

The specifications and other information in this document were verified to be accurate and complete at the time of its publication. However, due to ongoing product improvement, this information is subject to change at any time without prior notice. For the latest information, see our documentation online at chargepoint.com/guides.

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Illustrations Used in This Document

The illustrations used in this document are for demonstration purposes only and may not be an exact representation of the product. However, unless otherwise specified, the underlying instructions are accurate for the product.

Symbols

This guide and product use the following symbols:



DANGER: Risk of electric shock



WARNING: Risk of personal harm or death



CAUTION: Risk of equipment or property damage



IMPORTANT: Crucial step for installation success



Read the manual for instructions



Ground/protective earth

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Site Design Guidelines 1

This document describes how to design a project site for the ChargePoint® CT4000 networked charging station for electric vehicles. This includes guidelines and best practices for electrical infrastructure and capacity planning, construction and concrete work required prior to installation of charging stations, and cellular signal requirements.

For full specifications and certifications for CT4000 charging stations, refer to the CT4000 Datasheet found online at: chargepoint.com/guides.

Initial Site Guidelines

ChargePoint recommends that you plan to install charging stations for 5-10% of parking spaces at commercial buildings, or 10-20% for high EV adoption areas like California. Designing electrical infrastructure to support current and future needs for EV charging helps avoid costly upgrades later as demands for EV charging grows.

Electrical Requirements

An onsite evaluation is needed to determine conduit and wiring requirements from the panel to the proposed parking spaces, construction and concrete requirements for mounting the charging stations, as well as to measure cellular signal levels and identify suitable locations for any necessary cellular signal booster equipment.

Review the CT4000 Datasheet at chargepoint.com/guides. Each Level 2 charging port requires:

- A dedicated single phase electrical circuit (32 A at 208/240 V).
- A new dual pole breaker 40 A circuit breaker at the electrical panel. (Used breakers can damage equipment and cause a fire risk.)
- Conductor wiring sized in accordance with the National Electric Code requirement for 125% capacity for continuous load for all branch circuits from panel to stations via raceway or conduit.

Consequently, a CT4000 charging station with two charge ports requires two circuits and two new dual pole 40 A circuit breakers. If power capacity is limited at a site or to reduce costs for electrical infrastructure, consider ChargePoint Power Management options for power sharing at the circuit level, panel level, transformer, or site level.

Cellular Connectivity

The CT4000 charging station needs strong cellular connectivity to allow ChargePoint to communicate with the station. A connection is needed for station owners and operators to access these features:

- User authentication, access control, and billing
- Energy usage reporting
- Charging station utilization and charging session details for analytical reporting
- Real-time charging status to drivers using the ChargePoint mobile app or web portal
- Ability for drivers to use the ChargePoint mobile app and Tap to Charge, Apple Pay, or Android Pay on their smartphone to start and stop sessions
- Text or email notifications to drivers when vehicle battery is full or stops charging
- Notifications to drivers prior to pricing increases for overstay of parking at EV spots
- Station fault alarms and remote diagnostic capability
- Over-the-air software upgrades for new station features or enhancements

If you have preexisting infrastructure or are using your own preferred electrical contractor to prepare your site, a Site Validation by a ChargePoint Operations and Maintenance (O&M) partner is required to certify compliance with electrical specification requirements, and to ensure everything was prepared to ChargePoint specifications.



IMPORTANT: Always check local codes or consult an engineer to ensure the site is prepared in compliance with all applicable regulations. Local authorities might not allow a unit to operate if it is not installed to code.

Charging Station Placement

To help minimize costs, choose station locations that are as close as possible to the available electrical infrastructure. Selecting these types of locations helps minimize long conduit and wire runs, as well as any trenching work.

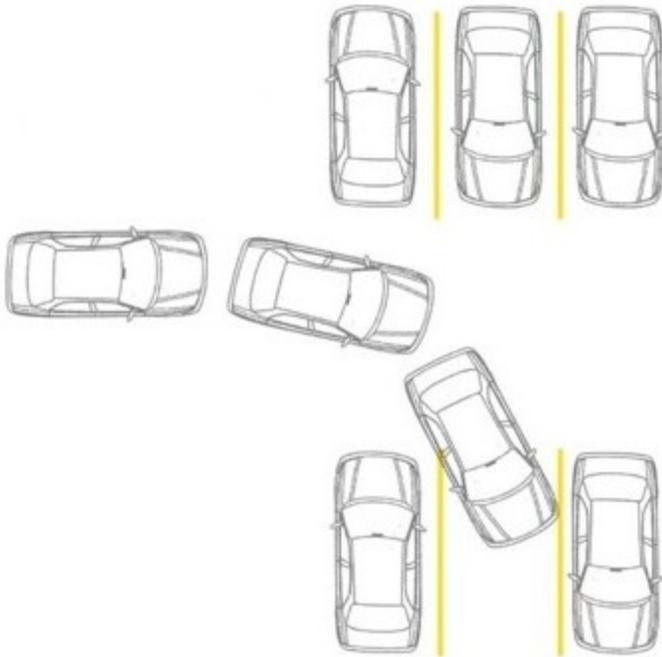


WARNING: The ChargePoint charging station must be installed on a level concrete base or a flat wall rated for the weight of the station. Asphalt cannot support the full weight of the station. Failure to install the station on a suitable surface may cause the station to tip over, resulting in death, personal injury, or property damage.

Layout Considerations

- Identify station locations for EV charging spots.
- To help minimize costs, choose station locations that are as close as possible to the available electrical infrastructure.
- Consider locations where it will be easy to add future stations.

- Consider how easily drivers can find the stations they need to access.
- Identify suitable locations with smooth, plumb surfaces for wall mount stations or suitable floor surfaces for pedestal mount stations.
- Determine raceway or conduit runs for electrical wiring from the electrical panel. Consider a layout to minimize linear conduit costs to all proposed EV parking spaces. If possible, avoid or minimize trenching requirements, especially more costly trenching to run conduit under asphalt surfaces.
- Consider ADA compliance. The charging station should not block ramps or pathways and the bottom of the screen cannot be more than 48 inches above the level of the parking stall.
- Choose adjacent parking spaces in an area with adequate lighting.



- For stall parking, ChargePoint prefers using perpendicular parking stalls to better accommodate EVs with front and rear charge ports.
Note: While ChargePoint tests charging stations with a majority of upcoming vehicles, ChargePoint cannot guarantee the port locations of future vehicles and cannot warrant the configurations proposed will work for all vehicles.
- Use dual-port pedestal mount stations where possible in open areas for adjacent parking or adjoining parking spaces.
- Consider protective bollards and wheel blocks where appropriate, especially for open tandem parking spaces.

Electrical Considerations

- Evaluate existing electrical infrastructure to determine if the existing utility service and electrical panel capacity is sufficient. Ensure the electrical wiring, overcurrent circuit protection, and metering (if required) is in place by reviewing the datasheet, as well as the wiring diagram and grounding requirements in this document.
- Ensure the electrical wiring, overcurrent circuit protection, and metering (if required) is in place by reviewing the datasheet, as well as the wiring diagram and grounding requirements in this document.
- Ensure that you use 16 mm² (6 AWG) or 10 mm² (8 AWG) wire to the station. If you will be feeding the station with larger wire (like 25 mm² (4 AWG)), you will need to splice the wire for 16 mm² (6 AWG) or 10 mm² (8 AWG). For each charging port, only three wires are required: L1, L2, and Ground. For dual port stations, only five wires are required as both ports share the same Ground wire.

Note: Neutral must be bonded to Ground upstream at the transformer or panel for each separately derived system.

- Identify costs for any necessary upgrades and/or a new dedicated electrical panel. Size all conduit and electrical wiring in accordance with the National Electric Code requirements. ChargePoint recommends using a certified electrician to evaluate available capacity and identify any upgrades that may be required.
- If a dedicated EV electrical panel is required, choose a panel location in close proximity to the existing electrical supply.

Additional Considerations

- Determine appropriate mounting type: wall mount vs. pedestal mount.
- Use dual-port pedestal mount stations where possible in open areas for adjacent or tandem parking spots. Establish the quantity of each type of charging station in the initial order.
- Measure cellular signal levels using professional cellular test equipment to ensure adequate cellular coverage at the station installation location. To ensure adequate signal strength in underground or enclosed parking structures, cellular repeaters may be required. Use an indoor antenna located near EV parking spaces and an outdoor antenna typically located at the garage entrance ceiling or on the rooftop where cellular signals are best.
- Determine cost budget options for electrical infrastructure to satisfy current needs and future needs. Prioritize charging stations locations based upon immediate and future needs, construction timelines, and costs.

Plan for the Future

Keep in mind not only current EV charging needs, but future needs as EV adoption grows.

- Consider running raceway or conduit to all planned EV parking spots, but pulling electrical wiring from the panel to meet current needs.
- Consider installing a dedicated electrical panel for EV charging, then leverage ChargePoint Power Management to efficiently use available power at a site to support more EV charging ports than would otherwise be possible without power management.

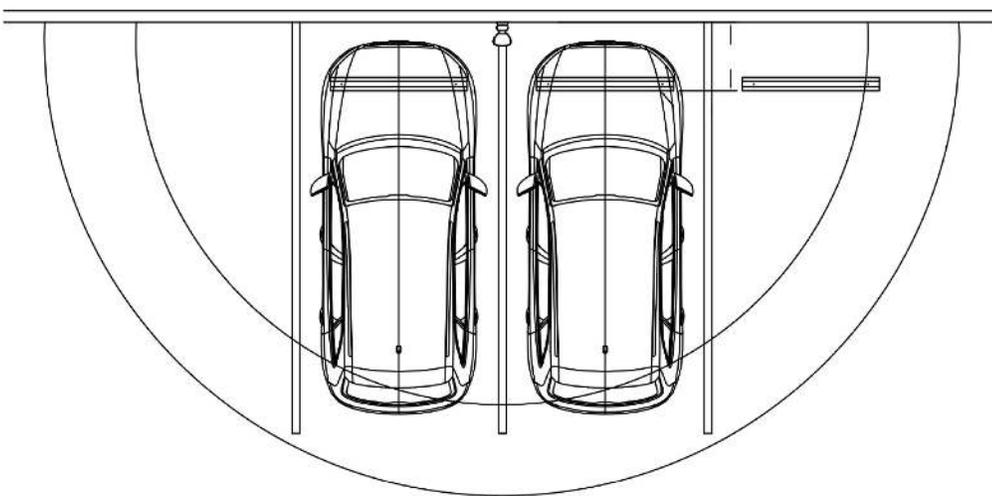
Civil and Mechanical Design 2

Use the guidance below to design the civil and mechanical aspects of the site.

The station can be installed attached to a wall, or on a concrete pedestal. The pedestal can be a newly poured pad or an existing concrete surface.

Wall Mount Stations

For wall mounted stations, the wall must be smooth, stable, and plumb. The minimum height of the wall must be 1250 mm (49 in). Place wheel stops (a) 90 mm (3 ft) from the wall. The arc shows the usable reach of the two charging cable lengths available, 5.5 m (18 ft) (b) and 7 m (23 ft) (c).



IMPORTANT: Ensure the wall supports the station. If mounting to a hollow wall, bridge at least two studs using a 41 mm (1 5/8 in) channel strut.



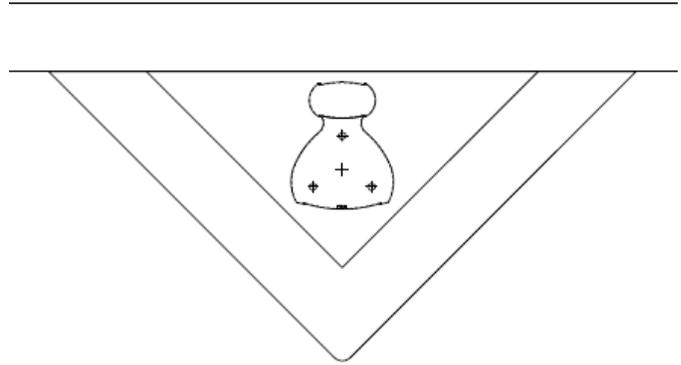
WARNING: If not installed correctly, the ChargePoint charging station may pose a fall hazard, leading to death, personal injury, or property damage. Always use the provided Concrete Mounting Template shown preinstalled here, or a ChargePoint-approved surface mounting solution, to install the ChargePoint charging station. Always install in accordance with applicable codes and standards using licensed professionals. Non approved installation methods are performed at the risk of the contractor and void the Limited One-Year Parts Exchange Warranty.

Pedestal Mount Stations

For newly poured pedestal mounted installations, the mounting surface must be smooth and cannot exceed a slope of 6 mm per 300 mm (0.25 in per ft). The concrete base must measure at least 600 mm (2 ft) on all sides. For installations in existing concrete, epoxy anchors can be used. Consult a civil engineer to ensure sufficient volume and strength of concrete.

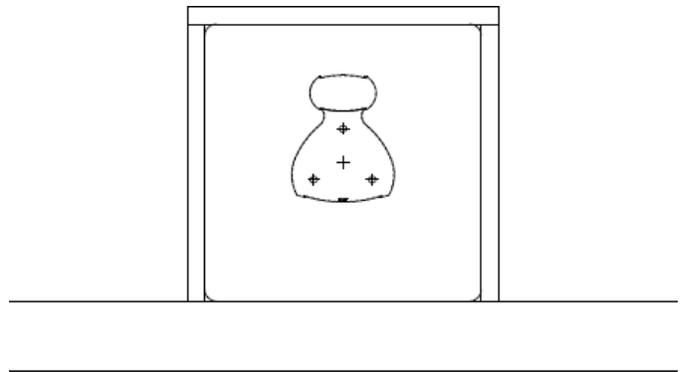
There are three basic pedestal base designs:

- In front of a curb (a) 900 mm (3 ft) x 2 (b)
Area: 0.42 m² (4.5 ft²)
Volume: 0.26 m³ (9 ft³)

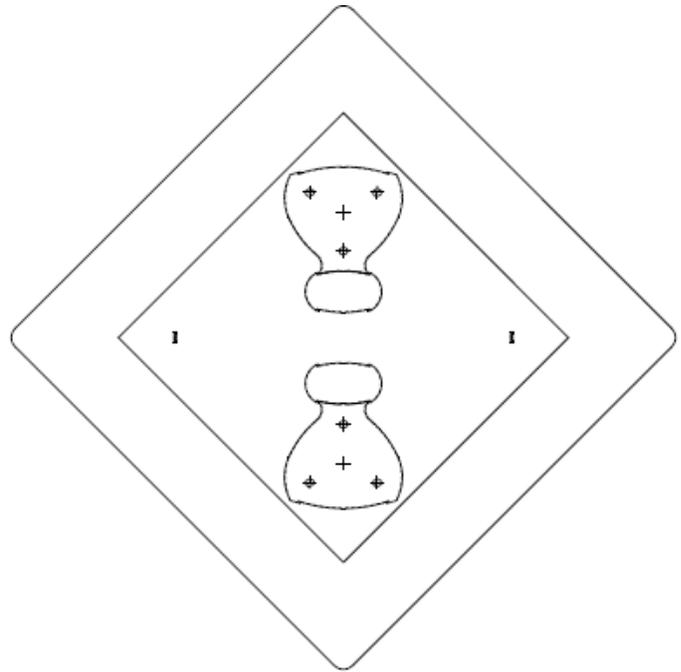


- Behind a curb (a) in a planter or berm 600 mm (2 ft) on each side
Area: 0.37 m² (4 ft²)
Volume: 0.23 m³ (8 ft³)

Note: Use a retaining wall as needed to prevent dirt from accumulating on the pad.

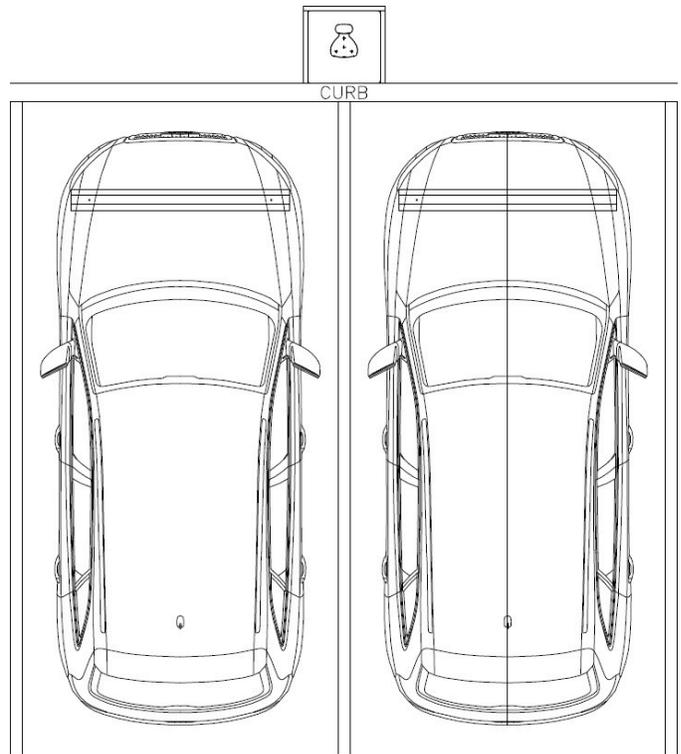


- Two stations back to back, centered between four spaces
900 mm (3 ft) on each side Area: 0.84 m² (9 ft²)
Volume: 0.51 m³ (18 ft³)

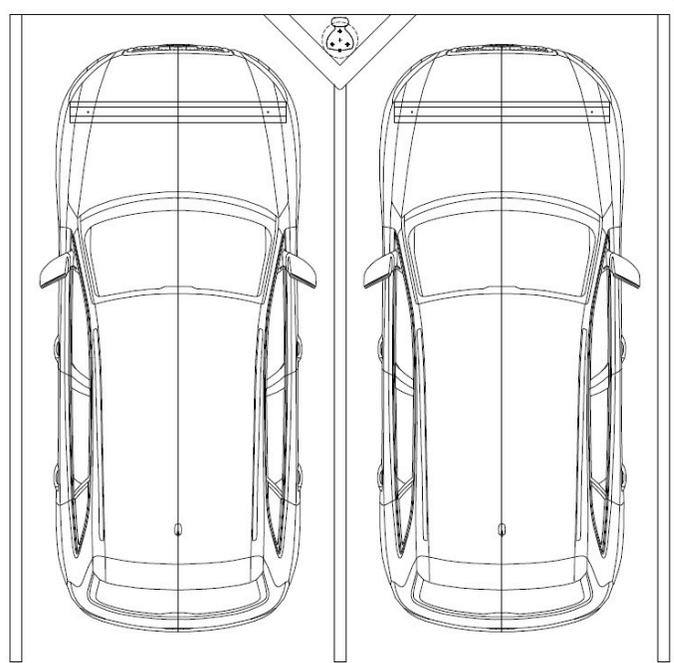


The pedestal base design can be configured in a variety of ways to serve different parking arrangements. Ensure a sufficient volume of concrete to provide anchoring for the charging station.

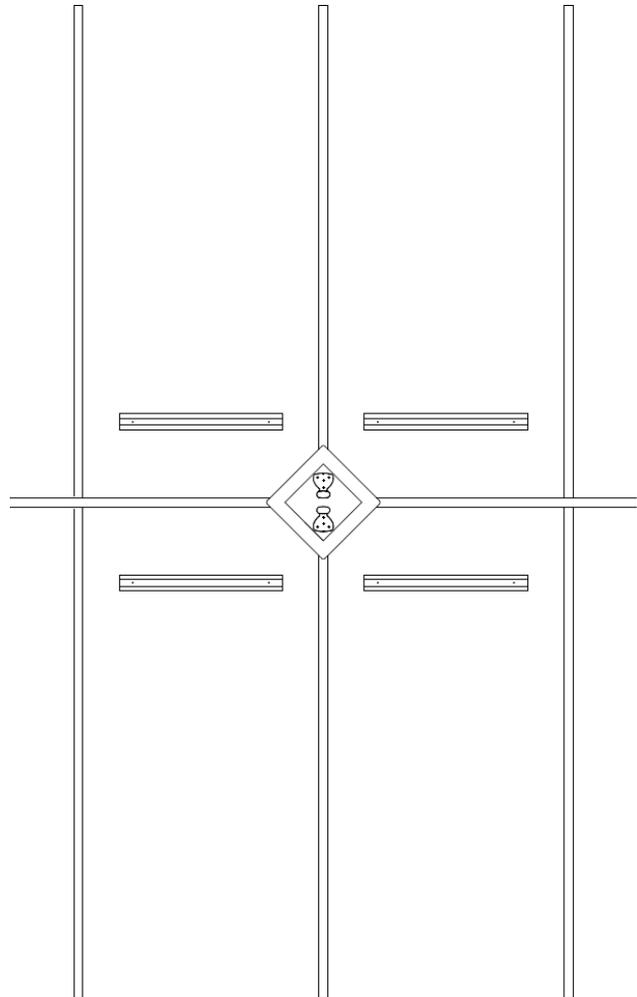
- Place the station in a planter or berm between spaces with wheel stops 900 mm (3 ft) from the front of each stall.



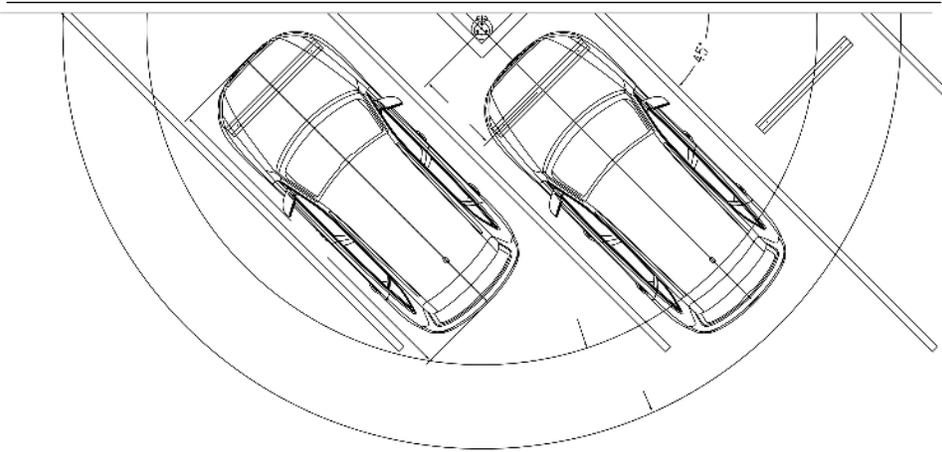
- Place the station against the curb between spaces with wheel stops 900 mm (3 ft) from the front of each stall. The base of the charging station can be flush with the parking spaces or at curb level.



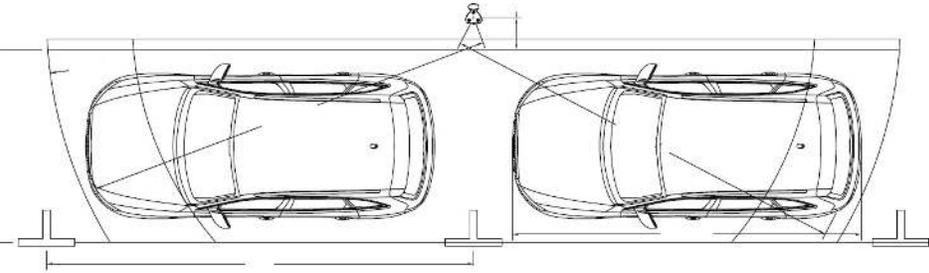
- Place two stations back to back centered on four spaces with wheel stops 900 mm (3 ft) from the front of each stall. The base of the charging station can be flush with the parking spaces or at curb level.



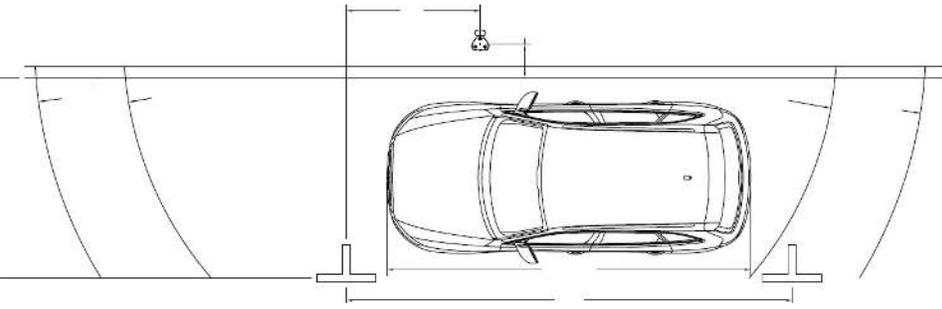
- Place a dual holster station centered on the right space. The charging cables reach two vehicles. Place a wheel stop (a) 1220 mm (4 ft) from the center of the charging station. The arc shows the usable reach of the two charging cable lengths available: 5.5 m (18 ft) (b) and 7 m (23 ft) (c). The 7 m (23 ft) cord option is recommended for this configuration. The base of the charging station can be flush with the parking spaces or at curb level. Be sure to install EV Charging Station signs on both spaces.



- Place a dual holster station centered between two parallel parking spaces (a), each 6 m (20 ft) long. Place the station (b) 450 mm (18 in) from the curb. A 7 m (23 ft) charging cable is recommended.



- Place a single holster station for a single parallel parking space 6 m (20 ft) long. Place the station (a) 450 mm (18 in) from the curb, and 1.8 m (6 ft) from the front of the parking space (b).



Ensure any site slopes, walls, or fencing do not trap water around the charging station installation site. The system is only built to withstand water to the height of the conduit stub-up.



WARNING: Exposing the ChargePoint® charging station to water above the height of the conduit stub-up could create an electrocution, shock, or fire hazard. Cut power to the charging station if it has been exposed to standing water and contact ChargePoint before the charging station is powered on.

For pedestal installations, the conduit stub-up must be a minimum of 230 mm from any obstructions to the rear. This includes other charging stations. Check applicable codes for any additional clearance requirements.

Accessibility

To meet the accessibility requirements, the CT4000 charging cables are no more than 1220 mm (48 in) above ground and no more than 254 mm (10 in) away.

This complies with American Disability Act (ADA) requirements, if the station is installed at grade. If your installation must comply with ADA standards, or the disability access regulations for other regions, consider this when designing the height of the pad or when planning a wall-mounted installation.

Also consider site design factors such as placement of bollards, wheel stops, or other vehicle obstacles when planning charging station access for disabled parking stalls. Check disability access regulations for guidance on the clearances needed for wheelchair access to charging cables and user interfaces.

Electrical Design 3

The wall mount CT4000 installation uses surface mount wiring. The pedestal mount CT4000 installation requires service wiring installed underground. (If a site requires surface mounting, contact ChargePoint before beginning work, to obtain an approved installation method.) Conduit and wire size are determined based on the length of runs from the electrical panel to the station location. Service wiring must be run through conduit to comply with local electrical codes. Consult national and local codes or a project engineer to determine the grade, quality, and size of the conduit or cable. The CT4000 Concrete Mount Kit accommodates service wiring through the flare, conduit, or locally appropriate wiring method.

Note: All wiring and conduit is supplied by the contractor unless otherwise indicated.

Upstream Components

Charging stations are considered continuous load devices (EVs draw maximum load for long durations); therefore, electrical branch circuits to EV chargers must be sized at 125% of the load for North American installations, in accordance with National Electric Code (NEC) requirements. (For other regions, refer to local code.) This means that for a maximum 32 A load at 208/240 V output to an electric vehicle, 40 A breakers are required.

Wiring must be sized in accordance with NEC code for continuous load devices. Typically, 16 mm² or 10 mm² (6 AWG or 8 AWG) insulated electrical wiring is used, depending upon the distance between the electrical panel and the charging station. The terminal block accepts a maximum of 16 mm² (6 AWG) wire.

When planning multiple EV charging stations, it is best practice to segment non-continuous and continuous loads, with all branch circuits for EV charging on a dedicated electrical panel assembly with adequate circuit breakers. When sizing new electrical panels dedicated for EV charging, all branch circuits must support continuous load, and the panel rating must be sized for at least 125% of the total load on each leg of a 3-phase panel.



CAUTION: The CT4000 charging station is tested to IEC 61000-4-5, Level 5 (6 kV @ 3000 A) standards. In geographic areas that experience frequent thunderstorms, appropriate supplemental surge protection is recommended to guard against product damage.



IMPORTANT: ChargePoint charging stations are UL 916 listed as Energy Management devices and are networked for real time communication to ensure they operate within the provisioned load allowance.

Conduit

The outer diameter of conduit must not exceed the sizes called out in the conduit layout drawing: 63 mm (2.5 in). Conduit stub-ups cannot extend higher than 660 mm (26 in).

For wall mounted stations, flex conduit must be used to bring the wire to the station.

Wiring Requirements

For full product specifications, refer to the CT4000 Datasheet. Using that data, ensure that the installation location is equipped with service wiring that supports the CT4000's power requirements:

- AC conductors (L1, L2)
- Ground conductor

When pulling electrical wiring via conduit for CT4000 pedestal mount, ensure at least 900 mm (3 ft) of coiled wire remains above conduit stub up.

When pulling electrical for wall mounted stations, the conduit and wire must be brought to the location where the stations will be mounted. Flex conduit must be used to bring the wire to the station. Wiring is brought in via the bottom of the CT4000.

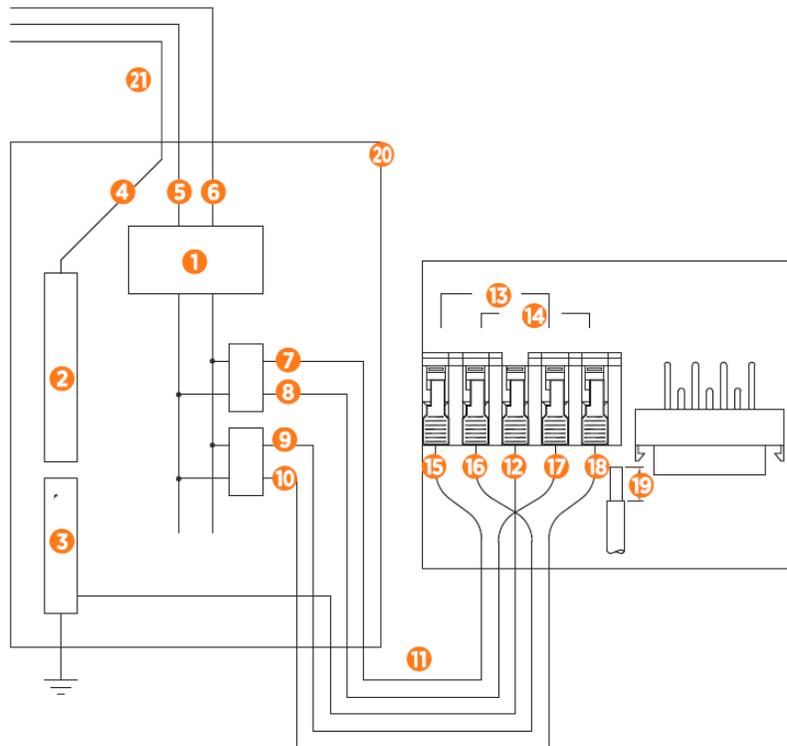


IMPORTANT: The AC terminal blocks on the CT4000 accept a maximum size of 16 mm² (6 AWG) solid or stranded wires. If using a larger gauge wire to accommodate a long run, reduce the wire size at the disconnect.

Wiring Diagram

240 VAC Single Phase Panel

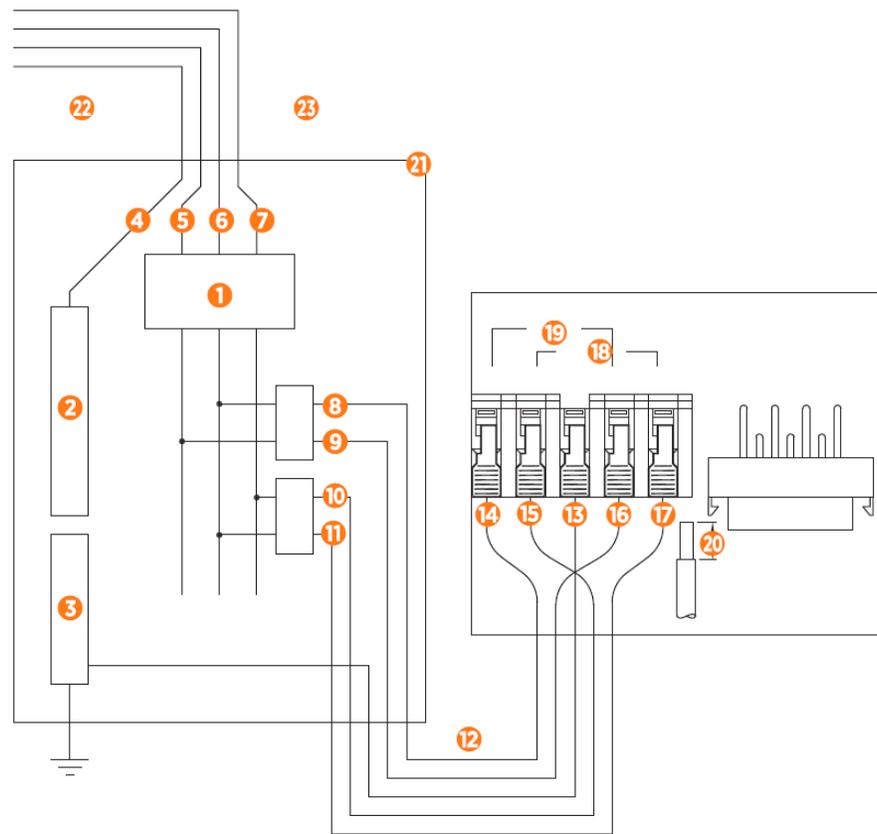
1. Main Breaker
2. Neutral Bus
3. Ground Bus
4. Neutral
5. L2
6. L1
7. Left L1
8. Left L2
9. Right L1
10. Right L2
11. 240 VAC
12. Ground
13. Terminal Block Left
14. Terminal Block Right
15. Left L1
16. Right L1
17. Left L2
18. Right L2
19. Strip wire 13 mm (1/2 in)
20. Local Service or Subpanel
21. 120/240 VAC 10
Bonded Neutral Required



Left and right refers to the left and right ports on the charging station.

208 VAC Three Phase Panel

1. Main Breaker
2. Neutral Bus
3. Ground Bus
4. Neutral
5. L3
6. L2
7. L1
8. Left L1
9. Left L2
10. Right L1
11. Right L2
12. 208 VAC
13. Ground
14. Left L1
15. Right L1
16. Left L2
17. Right L2
18. Terminal Block Right
19. Terminal Block Left
20. Strip wire 13 mm (1/2 in)
21. Local Service or Subpanel
22. 120/208 VAC 30
Bonded Neutral Required
23. Each 40 A, 2-Pole
Breaker may be connected to any two lines



Left and right refers to the left and right ports on the charging station.

Grounding Requirements

The CT4000 must be connected to a grounded, metal, permanent wiring system. An equipment-grounding conductor must be run with circuit conductors and connected to an equipment-grounding terminal or lead on the CT4000.

A grounding conductor that complies with applicable codes must be grounded to earth at the service equipment or, when supplied by a separate system, at the supply transformer.

Ensure that a grounding conductor that complies with all applicable codes is properly grounded to earth at the service equipment or, when supplied by a separate system, at the supply transformer.

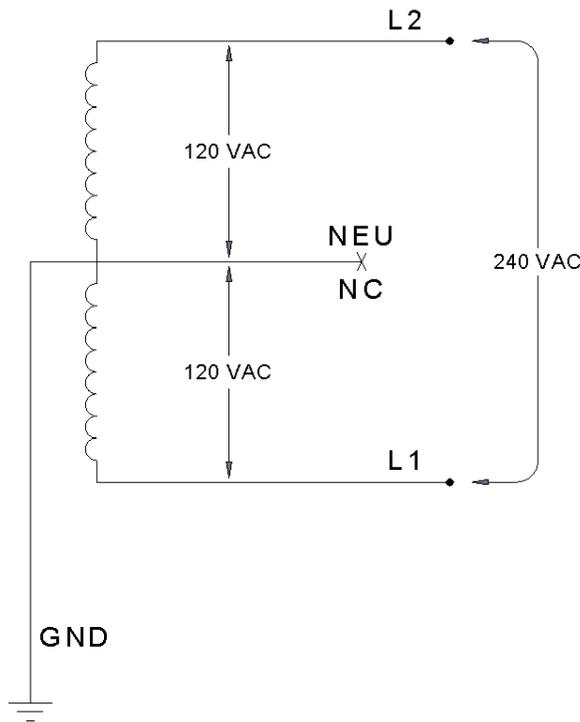
The voltage of either line, relative to ground, must not fall below 80 volts or a Floating Line Connection error occurs. Because the voltage of either line relative to ground must not be allowed to fluctuate, use only center-grounded systems. Neutral is not used to power the station but must be properly connected to ground, at the panel or transformer, to provide the necessary voltage reference relative to ground.

- In a Wye system, connect the station to any two lines, as shown.
- In a Delta system, connect the station to a center-tapped secondary only, where the center tap is bonded and the station is connected to the L1 and L3. This allows voltages to remain constant regardless of other loads that may be using the lines.

Connect To These Systems

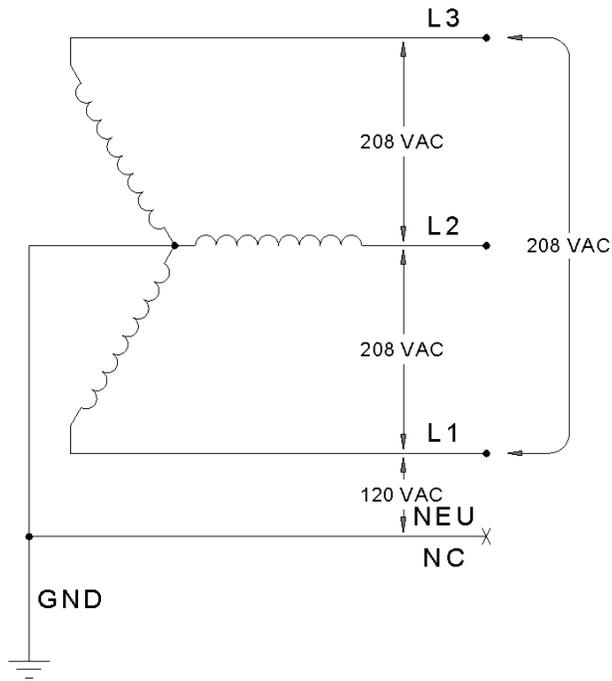
120/240 VAC

10 Bonded Neutral Station is connected to L1 and L2. Neutral is not used.



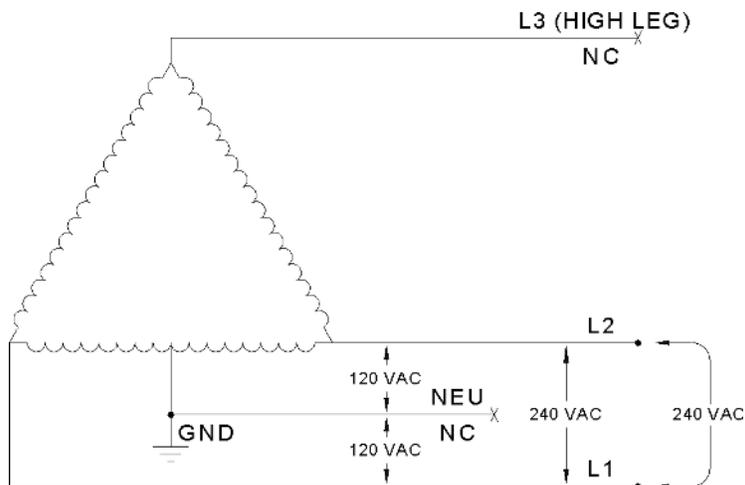
120/208 VAC

30 Wye Bonded Neutral Station may be connected to any two lines. Neutral is not used.



120/240 VAC, 30 Delta

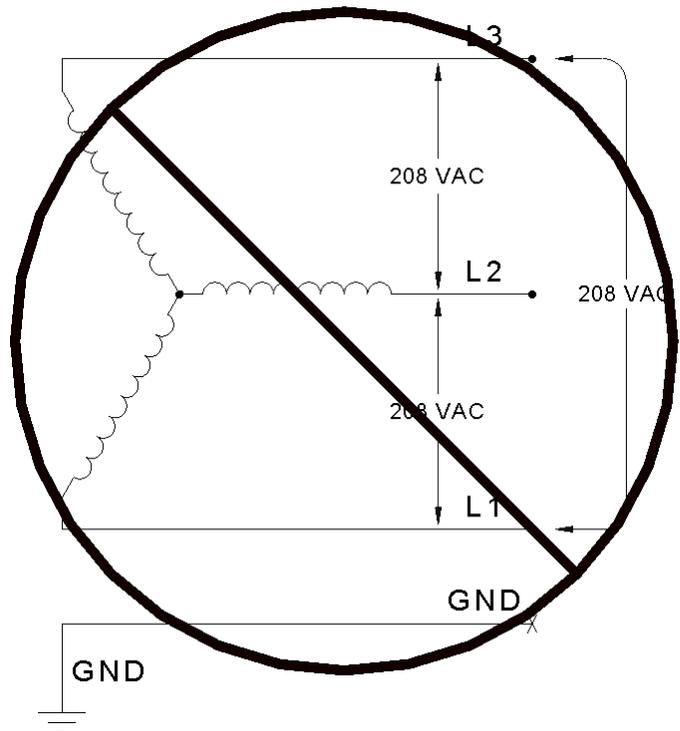
- Center tap grounded
- Bonded neutral
- Station must be connected to L1 and L2 only
- Do not connect any part of the system to L3
- Neutral is not used
- **Not recommended for new construction**



Do Not Connect to These Systems

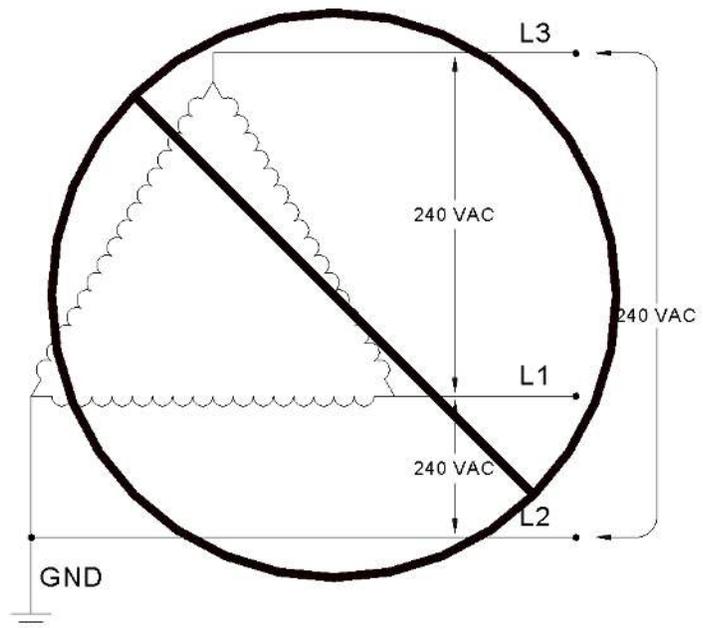
120/208 VAC 3-phase Wye

- Ungrounded Floating neutral
- Voltage of either line to ground is undetermined
- Neutral is not grounded



120/240 VAC 3-phase Delta, corner-grounded

- Voltage of any line is not 120 V nominal relative to ground
- Any system where the center point of the AC power source is not grounded.



Connectivity 4

A consistently strong cellular signal is needed before installers can activate the station. Weak or sporadic signal can affect crucial aspects of the charging station, including:

- Accuracy in reporting
- Ability for drivers to use the mobile app
- Ability for customer support to troubleshoot problems
- Support for advanced features such as Power Management or Waitlist

A strong signal is also required for the ChargePoint Assure maintenance and management programs.

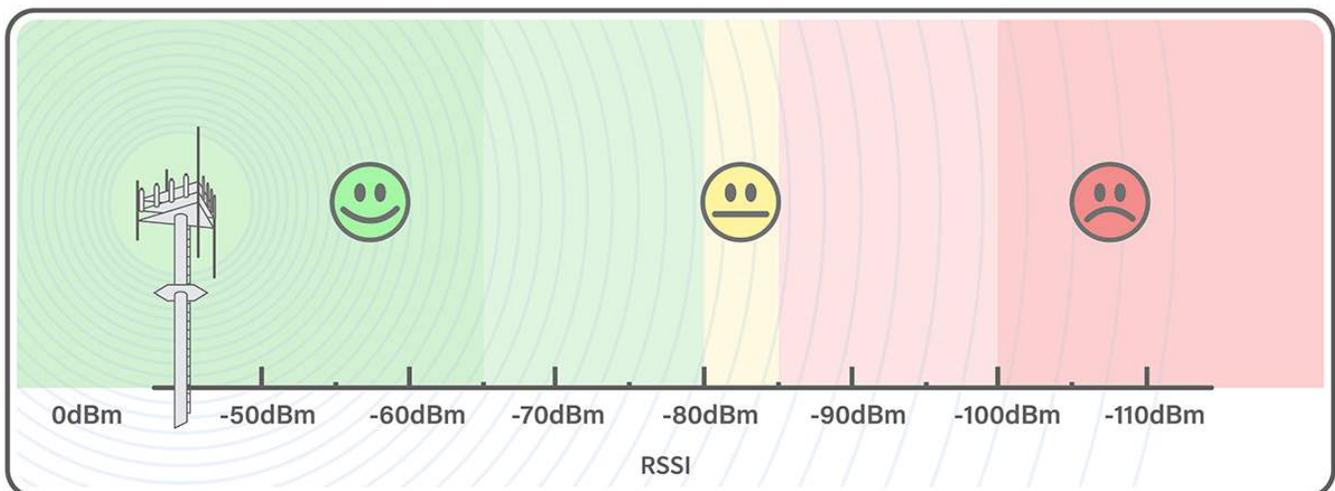
ChargePoint stations use cellular data connections to reach ChargePoint Cloud Services. This allows secure, PCI-compliant data connections without requiring any other form of internet connectivity at an install site or imposing additional network management responsibilities on a site host.

Each station has its own cellular connection.

Signal Strength and Quality

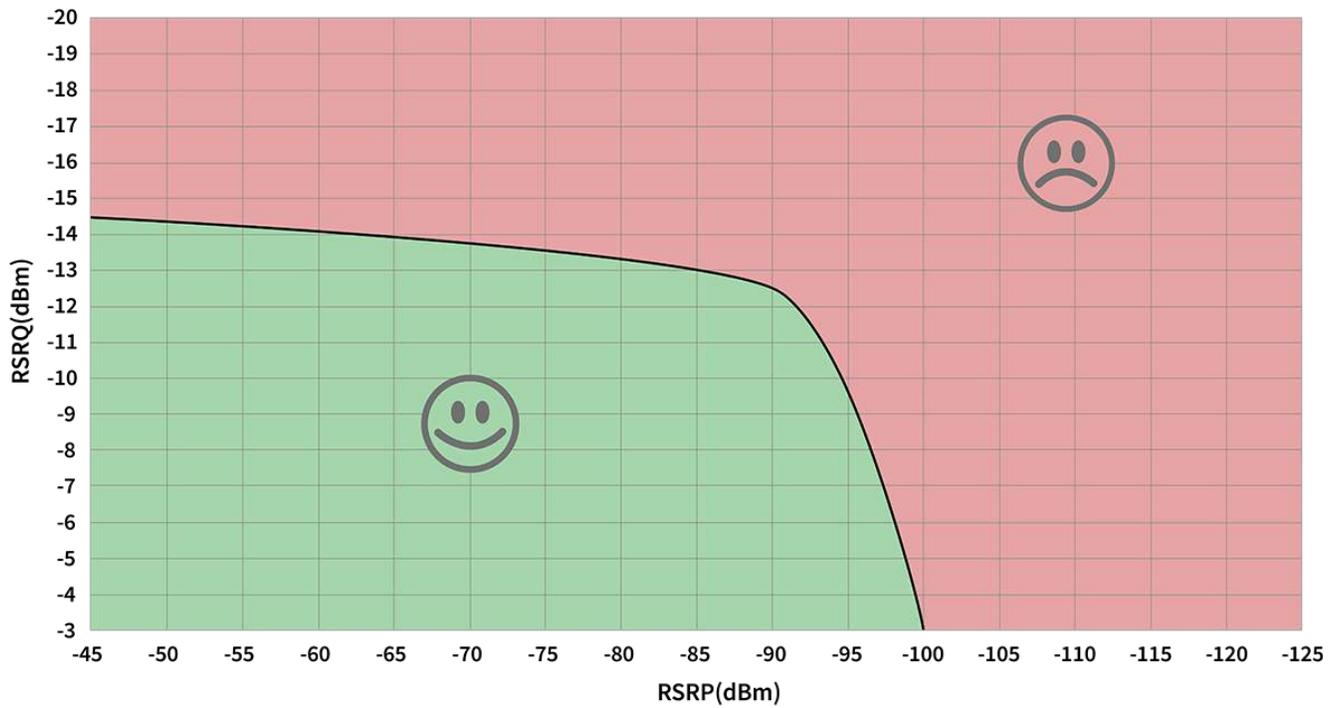
Use a cellular signal detection device (such as a Siretta Snyder LTE or equivalent) to take signal strength readings at the exact proposed charging station or gateway locations.

For stations using 3G, test the location of every station and ensure it meets minimum -85 dBm RSSI.

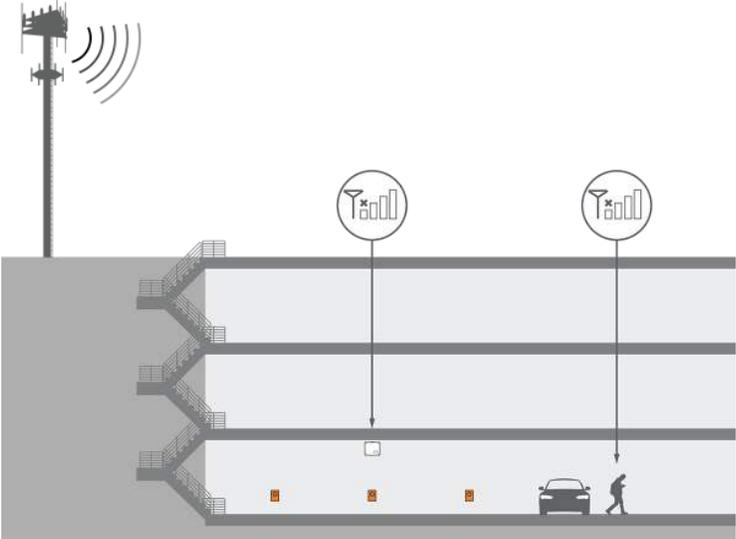


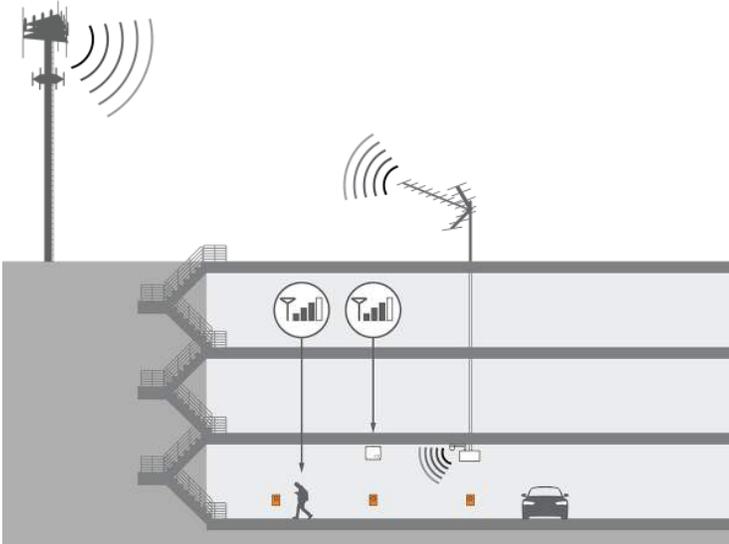
For stations using LTE, test the location of every gateway and ensure it meets minimum RSRQ at -12.5 dB or better, for RSRP measured at -90 dBm or better. Refer to the graph for acceptable combinations.

Note: These numbers are all negative, so -70 dBm is stronger than -85 dBm, and -90 dBm is weaker.



If the signal strength is weaker than this, take cellular readings at the location where any cellular signal booster antennas will be installed. Ensure enough signal exists for that repeater model. Install repeaters to boost the strength of the cellular signals. Repeaters are often required when installing charging stations in an underground garage or enclosed parking structure.





In North America, ChargePoint products all support LTE bands 2, 4, and 5. The most commonly supported carriers to check during site evaluation are:

- US: AT&T, T-Mobile, Verizon
- Canada: Rogers, Telus, and Bell

For other regions, or if the site does not have strong signal on these bands, contact your ChargePoint representative for additional solutions.

ChargePoint strongly recommends a consultation with a cellular connectivity specialist before all installations. A consultation can verify:

- Service with a supported carrier on a supported LTE band
- Available signal and local noise levels on applicable bands
- Site changes to correctly meet your needs, both for station bandwidth and other phone coverage for customer or tenant satisfaction

Repeaters

Some sites require repeaters to ensure strong signal to all stations. If a repeater is required, look for a model with these features:

- Specifically LTE compatible on the listed bands
- Multi-carrier
- Multi-band
- Not already dedicated to FirstNet or other first responder-specific networks
- Auto-gain recommended

Note: Do not rely on readings taken with a cell phone when conducting site surveys. Many signal boosters and network extenders may not be compatible with ChargePoint hardware, including certain types of Distributed Antenna Systems (DAS), micro/nano/pico/femto-cells, and carrier- or band-specific signal boosters.

CT4000 Pedestal Mount 5

Concrete Preparation

The ChargePoint charging station pedestal mount can be installed either into new concrete or onto an existing concrete surface (on an intermediate floor only). The kit components you need to use, the tools required, and the installation steps vary depending on the type of installation: installation on new concrete or installation on existing concrete.



WARNING:

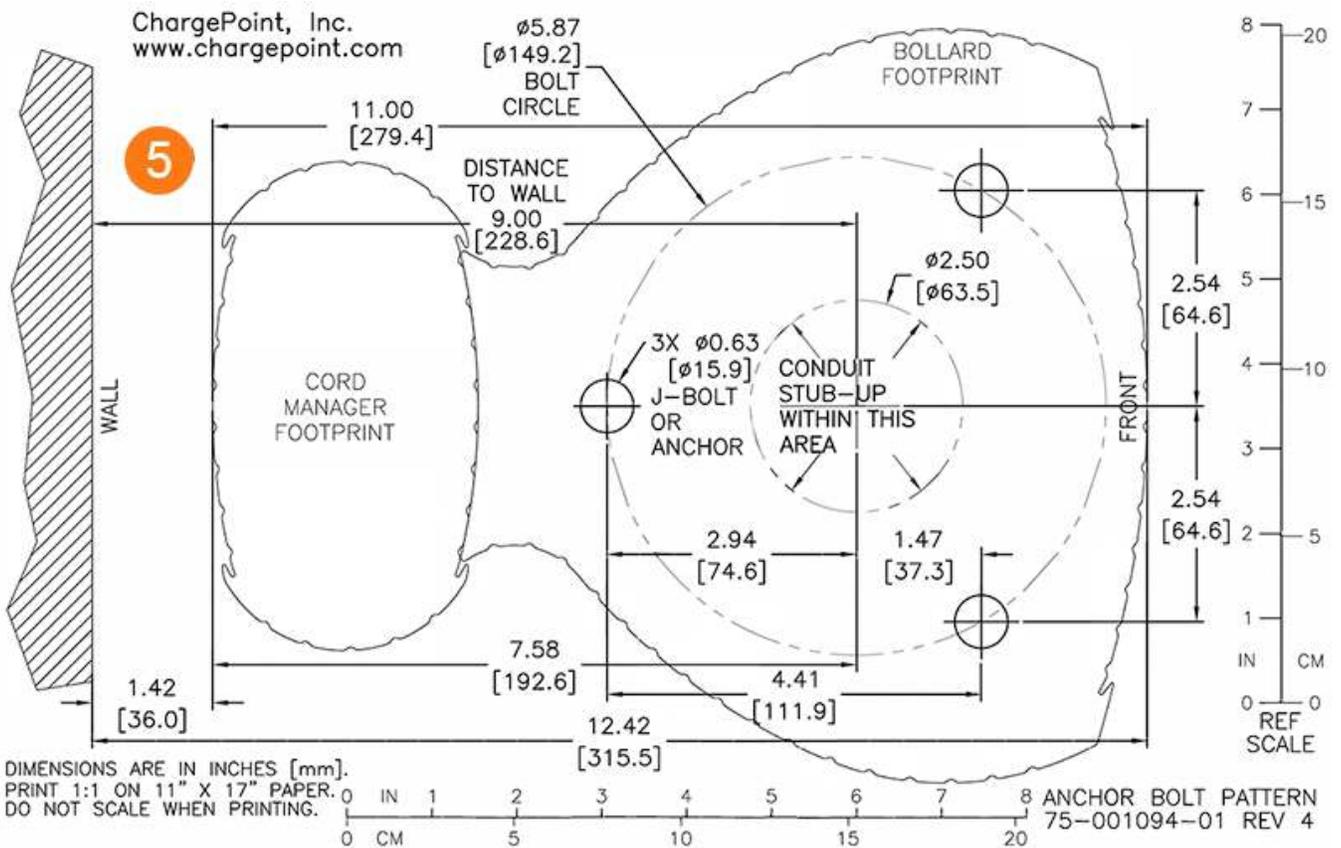
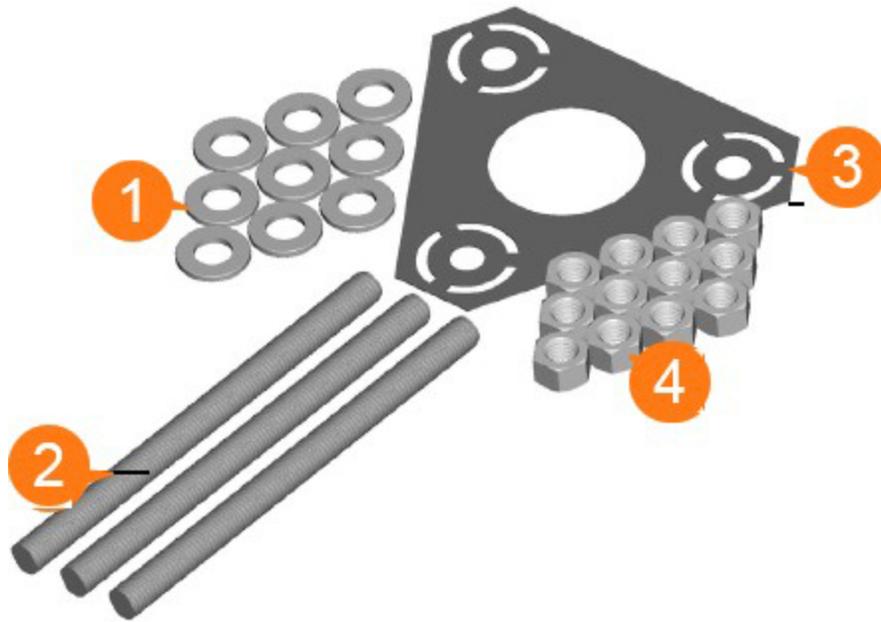
Do not use expanding anchor bolts.
Do not install the CT4000 on an asphalt surface.

Concrete Mount Kit

ChargePoint offers an optional CT4000 Concrete Mount Kit for purchase. The kit contains all parts needed to install the CT4000 pedestal mount into new or existing concrete.

Note: The Concrete Mount Kit contains 12 hex nuts and 9 galvanized washers. You need only 6 of each for installation on existing concrete pad.

Kit Contents	
1	9 galvanized washers
2	3 hot-dipped galvanized threaded bolts
3	1 plastic bolt installation template
4	12 hex nuts
5	CT4000 installation template with Cable Management Kit footprint



Note: When installing the CT4000 charging station, ensure that 2 bolts are located **at the front** of the station and 1 bolt is located in the rear, facing the Cable Management Kit.

Installation into New Concrete

Before casting new concrete, review the site for suitability to install a CT4000. The CT4000 requires space behind the power stub-up for the Cable Management Kit (CMK). To ensure adequate clearance, refer to the illustrations below and to the CT4000 Installation Template (75-001094-01) included in the Concrete Mount Kit.

Note: If the original copy of the installation template is lost, a new one can be printed at: <https://chargepoint.box.com/v/CT4000-bpt-enus>. Ensure the PDF version of the mounting template is accurate by printing at 100% scale on 11 inch x 17 inch paper ("Tabloid" or "B-Size") and verifying at least one dimension.

IMPORTANT: Always check local codes to ensure compliance. You may need to adjust these instructions to comply with codes that apply at your installation location.

- The concrete block must measure at least 600 mm (2 ft) on all sides.
- The bolt threads must extend 75 mm (3 in) above the concrete.
- The conduit must extend 300 to 600 mm (12 to 24 in) above the concrete.

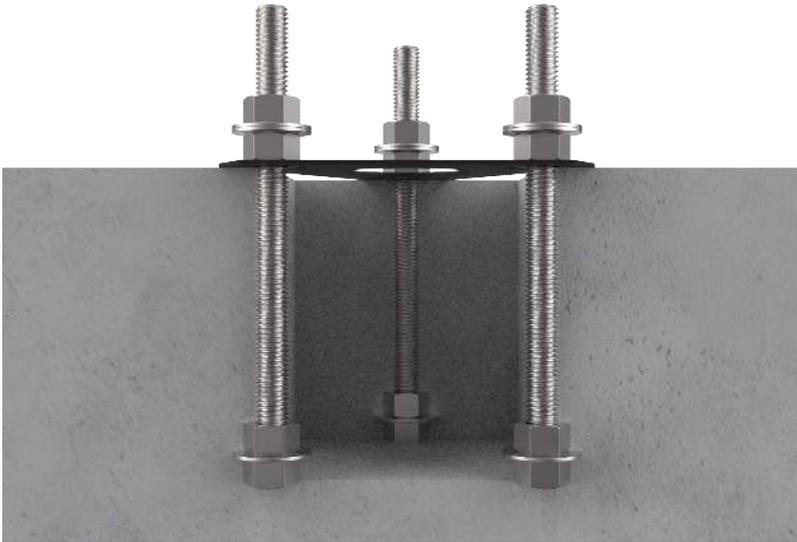
Installation Instructions

1. Install two nuts, with two washers captured between them, onto each of the three bolts. Lock them together so the lower end of the upper nut is located 150 to 160 mm (6 to 6.25 in) from one end of the bolt. This sets the length of the exposed threads.
2. Place the plastic bolt installation template over the three bolts. This ensures the relative position of the bolts and that the flange of the pole fits over the bolts.
3. On the opposite end of each bolt, install a nut, a washer, and a nut. Lock the two nuts together so that the lower nut aligns to the bottom of the bolt. This provides retention for the bolt in the concrete.
4. Immediately after pouring the concrete, push the bolts into the concrete 150 mm (6 in) deep.
 - Ensure correct alignment, with the two bolts facing forward and the third bolt to the rear.
 - Ensure that the top 75 mm (3 in) of the bolts remains exposed.
 - Use a bubble level to ensure the bolts are plumb.



IMPORTANT: Rotate the bolts as you insert them. This allows the epoxy to fully coat the threads of the bolts, reducing the amount of trapped air.

Note: The plastic bolt installation template can be left in place.



5. When the concrete is fully set, remove the upper nuts and the washers to install the pedestal's mounting post.

You are now ready to install the CT4000 pedestal mount charging station.

Installing on Existing Concrete

Review the site for suitability to install a CT4000. The CT4000 requires space behind the power stub-up for the Cable Management Kit (CMK). To ensure adequate clearance, refer to the CT4000 Installation Template (75-001094-01) included in the installation kit.

Minimum Requirements

IMPORTANT: Always check local codes to ensure compliance. You may need to adjust these instructions to comply with codes that apply at your installation location.

Review the dimensions of the existing concrete slab. To safely mount a CT4000 charging station, the concrete must be at least 150 mm (6 in) thick. At this thickness, all of the CT4000 mounting bolts must be positioned at least 380 mm (15 in) from the front edge, at least 300 mm (12 in) from the side edges, and at least 150 mm (6 in) from the rear edge of the concrete slab.

If an existing charging station is already in place at the installation site, turn off all power to the station and disassemble according to the original manufacturer's instructions. Cut away any existing bolts or non-power conduit stub-up to ground level. You may need to plug cut-away conduits at the slab end, and disconnect wiring at the other end.

Tools Required

Electric hammer drill with 12 mm (0.5 in) or larger chuck.

Consumables Required

The following table lists and describes consumable items that you will need. The quantity listed in the table is based on installation of one charging station.

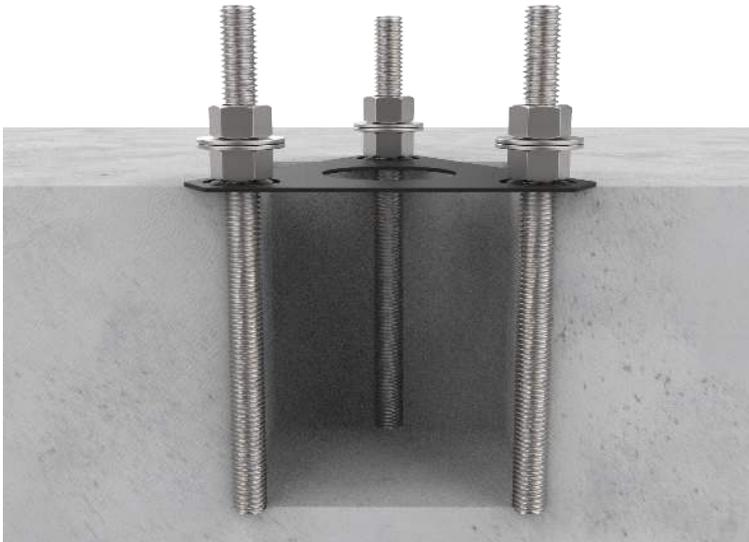
Note: The consumption rate of these products varies depending on conditions at the installation site.

Quantity	Description	Purpose
1	Epoxy adhesive for concrete such as Hilti RE-500.	Fill drilled holes.
1	Electrical cleaning and maintenance aerosol, any angle spray duster, 235 ml (8 oz)	Clean drilled holes. Note: Compressed air will work.
1	Slow spiral round-shank masonry drill bit, 25 mm (1 in) diameter, 12.5 mm (0.5 in) shank, 255 mm (10 in) drill depth, 300 mm (12 in) length overall	Drill 25 mm (1 in) holes in concrete. Note: The holes must be at least 150 mm (6 in) deep.

Quantity	Description	Purpose
1	Drill bit for concrete embedded rebar, round 25 mm (1 in) bit size, 12.5 mm (0.5 in) shank diameter, 300 mm (12 in) length overall	Drill 25 mm (1 in) hole through rebar.
1	Nylon loop handle brush, 25 mm (1 in) brush diameter, 75 mm (3 in) length brush, 215 mm (8.5 in) length overall	Clean drilled holes.
3	Push-on round cap, fits 16 mm (5/8 in) - 17.5 mm (11/16 in) OD, 1/2 in inside height	Keeps the epoxy inside the drilled holes in situations where the slab is only 150 mm (6 in) deep.

Installation Instructions

1. Install two nuts, with two washers captured between them. Lock them together so the lower end of the upper nut is located 150 to 160 mm (6 to 6.25 in) from the bottom of the bolt. This sets the length of the exposed threads.
2. Place the plastic bolt installation template to mark the hole locations.
3. Remove the template and drill three 25 mm (1 in) diameter holes 150 mm (6 in) deep into the concrete.
 - When locating the template, consider the charging station's total footprint.
 - It is important that the bolts are parallel after installation. Ensure the drill holes are plumb by using a level to check the angle of the drill after drilling 25 to 38 mm (1 to 1.5 in).
 - If installing over existing buried conduit, position the center of the template around the conduit stub-up.
 - You may need two drill bits: one for the concrete (with the pilot) and another for the rebar (without the pilot). Always start the hole using the standard drill bit, then switch to the rebar drill bit only if drilling through rebar.



4. Remove all dust from inside the drilled holes using compressed air, a vacuum, and/or a brush.
5. If the concrete slab is only 150 mm (6 in) deep, insert a plug (such as McMaster product #9753K56) in each hole to keep the epoxy in place until it hardens. Place the plug over the long end of a bolt and then use the bolt to push the plug to the bottom of the hole.
6. Fill each hole with epoxy to about 65 to 75 mm (2.5 to 3 in) below the top. Continue immediately to the next step because the epoxy sets quickly.

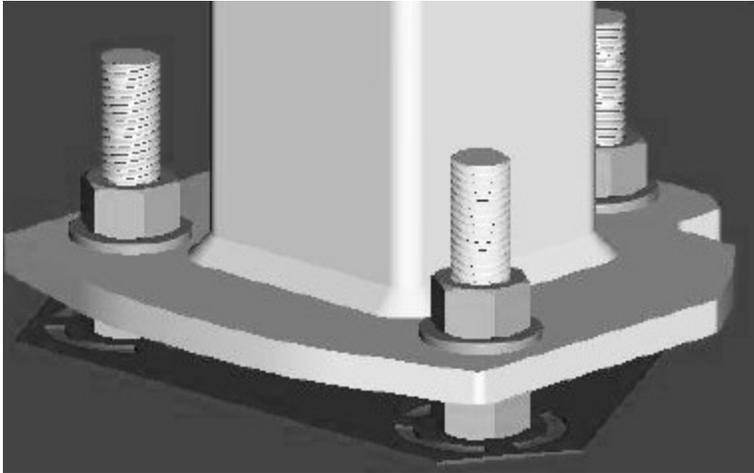
Note: Inserting the threaded bolts displaces the epoxy, causing it to fill the holes to the grade level. If the epoxy is below grade level after the next step, add more epoxy.

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7. Place the plastic concrete bolt installation template over the holes. This ensures the relative position of the bolts and that the flange of the pole fits over the bolts.
 8. Insert the bolts through the template, into the holes.

IMPORTANT: Rotate the bolts as you insert them. This allows the epoxy to fully coat the threads of the bolts, reducing the amount of trapped air.

Note: The installation template can be left in place.

9. If needed, top the holes with epoxy to grade level.
10. Use a bubble level to ensure the bolts are plumb.



11. Allow the epoxy to cure (depending on cure times recommended by the epoxy manufacturer) before removing the top nuts and washers.
12. Allow the epoxy to fully cure (depending on cure times recommended by the epoxy manufacturer) before applying torque to the nuts.

You are now ready to install the CT4000 pedestal mount charging station.



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