

# Express 250

## DC Fast Charging Station

### Site Design Guide for Standalone and Paired Stations



# IMPORTANT SAFETY INSTRUCTIONS

## SAVE THESE INSTRUCTIONS

This manual contains important instructions for ChargePoint® products that shall be followed during installation, operation and maintenance of each product.

### WARNING:



1. **Read and follow all warnings and instructions before servicing, installing, or operating the ChargePoint® product.** 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 product and adhere to all national and local building codes and standards.** Before installing the ChargePoint product, 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 product for proper installation before use.
3. **Always ground the ChargePoint product.** A touch current of >3.5 mA AC RMS is possible in case of a fault condition of loss of electrical continuity of the earthing conductor. Failure to ground the product can lead to risk of electric shock. The product 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 product using a ChargePoint-approved method.** Failure to install on a surface that can support the full weight of the product can result in death, personal injury, or property damage. Inspect the product for proper installation before use.
5. **The product 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 or connector adapter. Do not touch fingers to charging rails.**
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, the flexible output cable, the vehicle inlet, the electric vehicle connector, or the electric vehicle connector adapter is broken, cracked, open, or shows any other signs of damage. Do not use this product if internal parts are accessible, including wiring.**
10. **Wire and wire terminal information are provided in the ChargePoint product Site Design Guide and Installation Guide.**



11. **Torques for installation of wire terminals are provided in the ChargePoint product Installation Guide.**
12. **The ChargePoint product maximum operating temperature is 50 °C (122 °F).**
13. **Do not use an electric vehicle connector adapter with any charger or EV that is capable of exceeding the adapter's rated voltage of current capacity. Some EVs and EVSE combinations are capable of multiple voltages or limited durations of current overloading designed for normal EVSE-to-EV connections. Use of an electric vehicle connector adapter in these situations could result in unsafe conditions such as fire, burns, or exposure of high voltage.**



**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

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



**Applicable to EU** - To comply with Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE), devices marked with this symbol may not be disposed of as part of unsorted domestic waste inside the European Union. Enquire 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 Product Reference Documentation](#).

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## 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:** Critical detail that must be followed to achieve intended results



**NOTE:** Important contextual details or procedural clarifications



**REINSTALL NOTE:** Essential instructions to follow when reinstalling a part or component



Read the manual for instructions



Ground/protective earth

## 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.

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# Revision History

This page provides a summary of revisions made, listing the month and year of each update along with a brief description of the changes made.

Month & Year	Version Number	Description
December, 2025	v2	This version includes the following changes: <ul style="list-style-type: none"><li>• Introduced a new <a href="#">Connectivity</a> chapter detailing procedures for testing cellular connectivity.</li><li>• Revised the chapter <a href="#">Concrete Mounting Template</a> with current instructions.</li><li>• Added a new chapter <a href="#">Install the Surface Mount Plate</a> to include instructions for installing the Express 250 on existing concrete surface.</li></ul>
September, 2025	v1	In section <a href="#">Electrical Design</a> , added information related to auto transformers and neutral-to-ground bonding.

# Introduction 1

This topic describes how to design an installation site for the ChargePoint® Express 250 DC fast charging station and install the Concrete Mounting Template, before station installation. An Express 250 charging station can be installed to operate by itself (called **Standalone**) or to share power with one other Express 250 for higher throughput (called **Paired**).



**IMPORTANT:** You must be a licensed electrician and complete online training to become a ChargePoint certified installer. If you do not complete training, you cannot access the ChargePoint network to complete installation. Find online training at: [chargepoint.com/installers](https://chargepoint.com/installers). If the charging station is not installed by a ChargePoint certified installer, using a ChargePoint approved method, it is not covered under warranty and ChargePoint is not responsible for any malfunctions.

## Accessing ChargePoint Documentation

Access documents at [ChargePoint Product Reference Documentation](#).

Document	Content	Primary Audiences
Datasheet	Full station specifications	Site designer, installer, and station owner
Site Design Guide	Civil, mechanical, and electrical guidelines to scope and construct the site	Site designer or engineer of record
Concrete Mounting Template Guide	Instructions to embed the charging station template in a concrete pad with anchor bolts and conduit placement (these may also be included in the Site Design Guide)	Site construction contractor
Surface Conduit Entry Kit Guide	Instructions for sites where conduit cannot be run underground	Installer
Construction Signoff Form	Checklists used by contractors to ensure the site is correctly completed and ready for product installation	Site construction contractor
Installation Guide	Anchoring, wiring, and powering	Installer



Document	Content	Primary Audiences
	on	
Operation and Maintenance Guide	Operation and preventive maintenance information	Station owner, facility manager, and technician
Service Guide	Component replacement procedures, including optional components	Service technician
Declaration of Conformity	Statement of conformity with directives	Purchasers and public



**CAUTION:** Use low torque settings when working with power tools during installation or servicing. Over-torquing can damage the equipment.



**WARNING:** Do not install or service the charging station in inclement weather. If you work in snow, rain, or wind, you must use a weather-proof shelter that covers all boxes and components.



**NOTE:** For all charging station specifications other than dimensions and weights, refer to the product's Datasheet, which can be found online at ChargePoint Product Reference Documentation. For assistance, go to [chargepoint.com/support](https://chargepoint.com/support) and contact technical support using the appropriate region-specific number.

Installing the Express 250 requires two people and takes approximately 3-4 hours. This time estimate does not include the time needed to pull DC and Ethernet cable for a Paired installation if it is not already done. Paired installation also requires contacting a ChargePoint support technician to perform any required software updates and configuration.



**IMPORTANT:** Ensure that the installation complies with all applicable codes and ordinances.

## Pairing Two Express 250s

The Express 250 can be installed either as a standalone system, or paired with another Express 250 using a DC connection to more flexibly share load. The two Power Modules in the base of each charging station can be shared in any combination according to charging need. This allows high power output in sites with space constraints.

To pair two charging stations, all of the following are required:

- Additional conduit, ducting, or armored cable (according to region) correctly installed between the two charging stations for DC conductors and Ethernet wiring
- Both stations must have 62.5 kW power enabled (not allowed on stations only enabled for 50 kW)
- Both stations must be provisioned for full power back to the panel (not allowed on **power select** stations)

## Initial Site Guidelines

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

If you have pre-existing infrastructure or are using your own preferred electrical contractor to prepare your site, a completed Construction Signoff Form 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.

## Plan for Future Charging Capacity

ChargePoint recommends that you plan to install charging stations for 5-10% of parking spaces, or 10-15% for high EV adoption areas like California. Designing electrical infrastructure to support current and future needs for EV charging helps avoid costly later as demand for EV charging grows.

Consider these methods to prepare a site for future charging stations in a later phase of work:

- Add extra capacity if electrical panels are being upgraded now
- Use sub-panels as a way to shorten electrical paths
- Oversize the conduit between the main electrical panel and future stations
- Install pull or junction boxes at the end of an existing row of charging stations, to ease cable pulls for future stations
- If a junction box or disconnect will be installed between rows of stations, oversize the wiring between the main panel and the junction box to prevent needing to re-pull wire later

## 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.

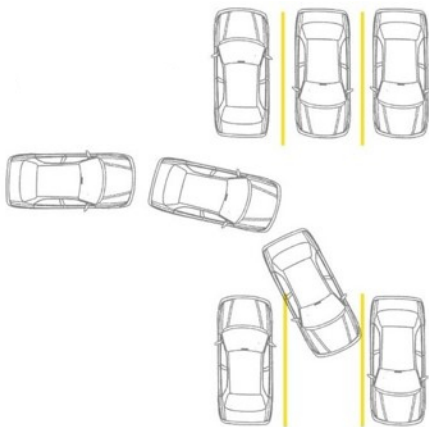


**WARNING:** The charging station must be installed on a level concrete base. Asphalt cannot support the full weight of the charging station. Failure to install on a level concrete base may cause the station to tip over, resulting in death, personal injury, or property damage.

The layout considerations are as follows:

- Determine appropriate ground anchoring locations where concrete exists or can be installed (no asphalt surfaces).
- Consider locations where it will be easy to add future stations.

- Determine optimum conduit layout to minimize linear conduit costs to multiple parking spaces. If possible, avoid or minimize trenching requirements, especially more costly trenching to run conduit under asphalt surfaces.
- Evaluate existing electrical infrastructure to determine if the existing utility service and electrical panel capacity is sufficient. Identify costs for any necessary upgrades and/or a new dedicated electrical panel. 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.
- Measure cellular signal levels 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.
- ChargePoint recommends to avoid locations under trees where sap, pollen, or leaves would fall on the charging station and increase the station owner's site upkeep workload.
- For stall parking, ChargePoint recommends using perpendicular parking stalls that allow a vehicle to enter either front-first or rear-first, to better accommodate the varied charge port locations on different EVs. Diagonal stall parking is not advised.

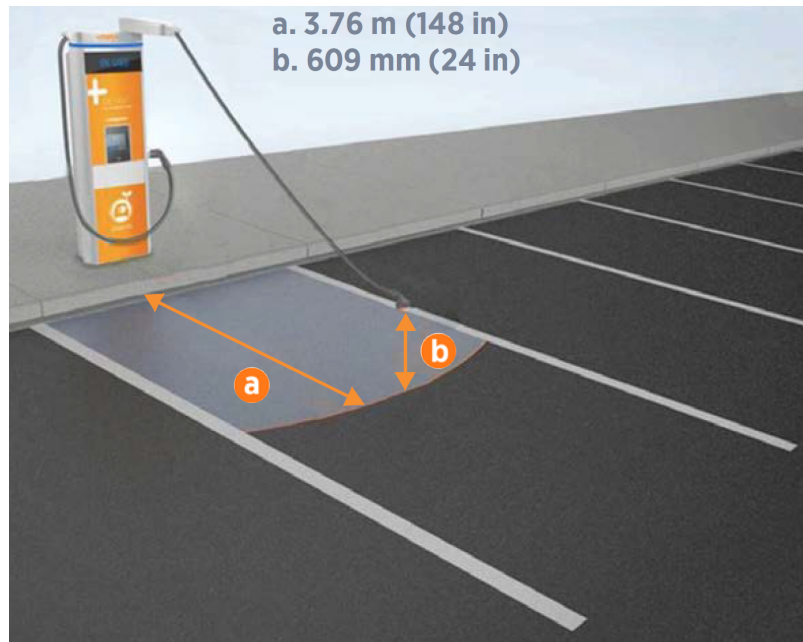


**NOTE:** While ChargePoint tests charging stations with a majority of upcoming vehicles, ChargePoint cannot guarantee the port locations of future vehicles and cannot warrant the configurations proposed will work for all vehicles.

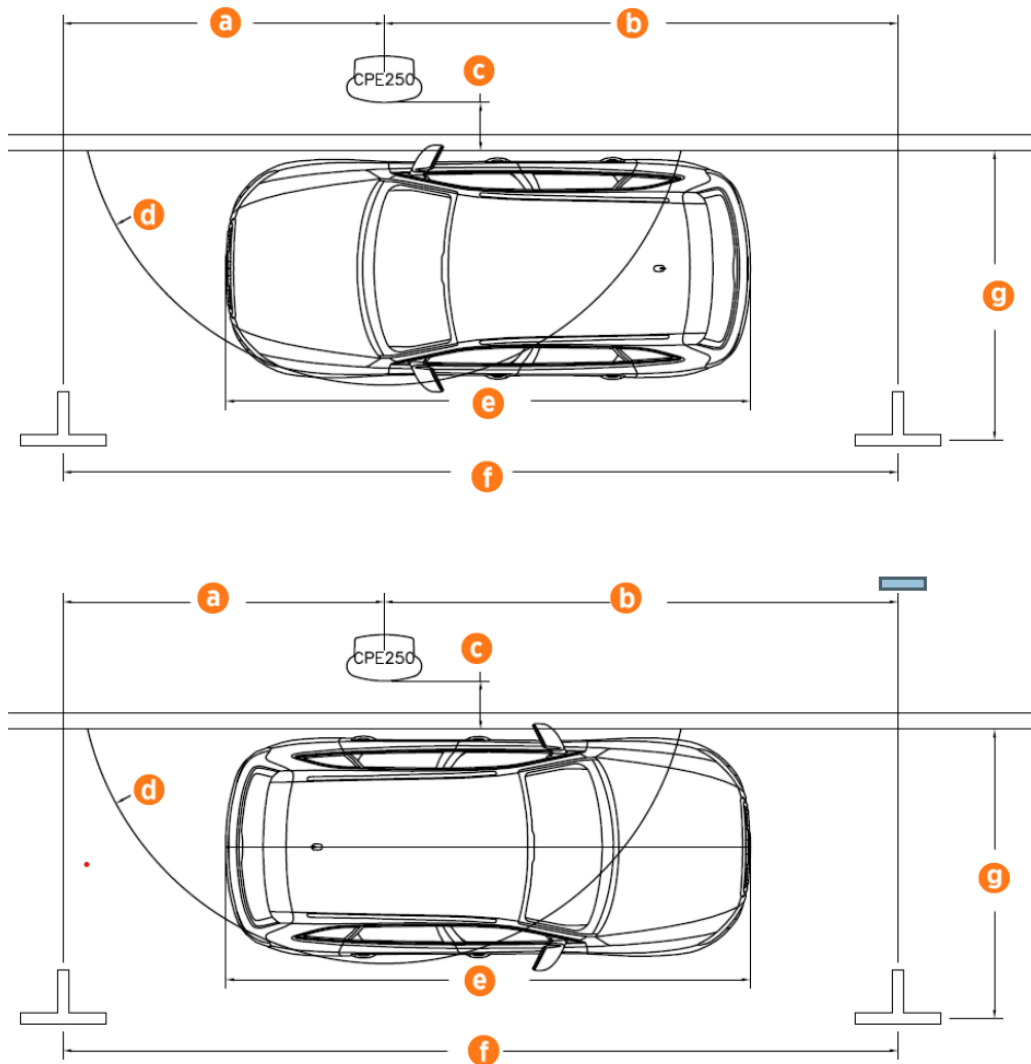
- Choose adjacent parking spaces in an area with adequate lighting.
- Consider how easily drivers can find the stations they need to access.
- Check local requirements for accessibility and pathway width, sometimes called "path of travel", to ensure station placement does not restrict sidewalk use.
- Building a pad into the head of a parking space (instead of on the sidewalk) is allowed if a) local code allows it compared to the minimum parking space length, and b) the pad meets all pad requirements listed in this document.
- Note that the station's two charge cables are different types of connectors to maximize usability across EV models. The cables cannot both be used at the same time. Therefore, do not position an Express 250 to share two parking spots.



**IMPORTANT:** Place each charging station centered at the head of its parking space, with the touchscreen facing the vehicle. This placement maximizes cable reach for the varied charge port locations on different EVs.



- Pull-through parking (gas station model) is not recommended. If pull-through parking is used, ChargePoint recommends placing at least one charging station on each side of the island. This avoids situations where the charging station is on the opposite side of the vehicle from the charge port. Guidance for station placement in island or curbside parking is shown below.



- (a)** Distance from left space marking: 3048 mm (120 in) maximum
- (b)** Distance from right space marking: 4876.8 mm (192 in)
- (c)** Distance from curb: 457.2 mm (18 in)
- (d)** Distance from curb: 457.2 mm (18 in)
- (e)** Example EV length: 4978.4 mm (196 in)
- (f)** Recommended parking space length: 7924.8 mm (312 in)
- (g)** Recommended parking space width: 2743.2 mm (108 in)

# Civil and Mechanical Design 2

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

## Component Dimensions and Weight

The Express 250 is a vertical enclosure with the dimensions shown here.



Component	Weight
Each Power Module	44 kg (97 lb)
Crated Power Module as shipped	49.9 kg (110 lbs)
Express 250 with two Power Modules, installed	339 kg (746 lb)
Crated Express 250 as shipped	494 kg (1089 lb)

## Pad

The station can be installed on either a newly poured pad or an existing concrete surface. The mounting surface must be smooth and cannot exceed a slope of 6.35 mm per 304.8 mm (0.25 inches per foot).

The concrete pad must either be designed to be site-specific, or must meet these specifications:

- At least 305 mm (12 in) deep (or deep enough to be 305 mm (12 in) below the frost line)
- At least 1296 mm (51 in) on each side
- Contains #4 rebar or larger, top and bottom, 305 mm (12 in) on center
- Concrete 2500 PSI minimum

The above pad specifications are designed to meet these conditions:

- 170 mph wind speed
- Wind Risk Category I
- Wind Exposure D
- Seismic Importance Factor 1.0
- Hayward Fault with mapped spectral response accelerations  $S_s=2.45$   $S_1=1.019$
- Seismic Design Category E
- Foundation of Sandy Soil with allowable stress = 1500 psf,  $C_d = 1.33$

In some extreme conditions, a larger pad would be required. For sites with less stringent seismic, soil, or wind conditions, a smaller pad might be possible.

If the existing pad does not meet the specifications above, it must be inspected and approved by a structural engineer for the station's dimensions and weight. If needed, give these structural design specifications to the structural engineer for verification:

Components	Value
Product Weight	340 kg (750 lbs)
Product Height from Ground	2.230 m (7.317 ft)
Product Width	0.71 m (2.33 ft)
Product Frontal Area	Height * Width
CG Height	1.12 m (3.66 ft)
Number of Anchor Bolts	4
Bolt Pattern	See dimensioned images in this section
Anchor Bolt Size	M16 (5/8 in)
Anchor Bolt Embedment	229 mm (9 in)

## Drainage

Ensure any site slopes, walls, or fencing do not trap water around the charging station installation site. The system is only built to withstand 457.2 mm (18 in) of standing water.



**WARNING:** Exposing the charging station to over 457 mm (18 inches) of standing water could create an electrocution, shock, or fire hazard. Cut power to the

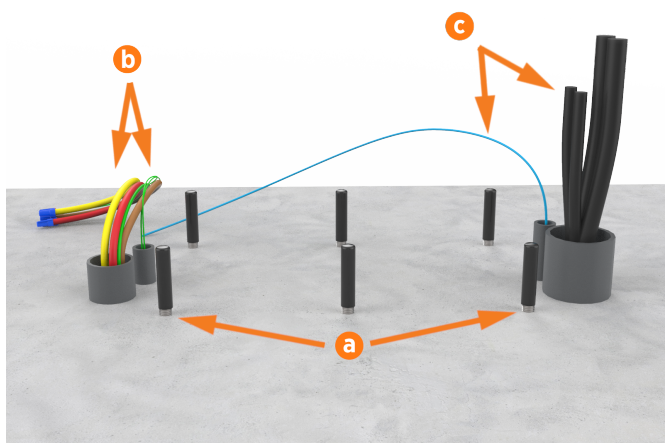
charging station if it has been exposed to standing water and contact ChargePoint before the charging station is powered on.



## Mounting Specifications

The Express 250 is installed on a concrete pad. Details on how to prepare this pad are described later in this guide.

All installations require anchor bolts **(a)**. Standalone installations only require the two conduit stub-ups on the left side, for AC wiring and shunt trip wiring **(b)**. Paired installations also require the wiring shown on the right: DC wiring and Ethernet communication **(c)**.



**IMPORTANT:** Although the Concrete Mounting Template was originally designed for six anchor bolts, only the four corner anchor bolts are required for station stability. Newer charging stations are designed to only use the four corner anchor bolts. If older sites were already designed with six anchor bolts, removing the middle bolts is not required.



**WARNING:** If not installed correctly, the station may pose a fall hazard, leading to death, personal injury, or property damage. Always use the provided Concrete Mounting Template shown pre-installed in the Introduction, or a ChargePoint-approved surface mounting solution, to install the 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.

## Clearances

The Express 250 requires minimum functional and service clearances as listed in the table below:

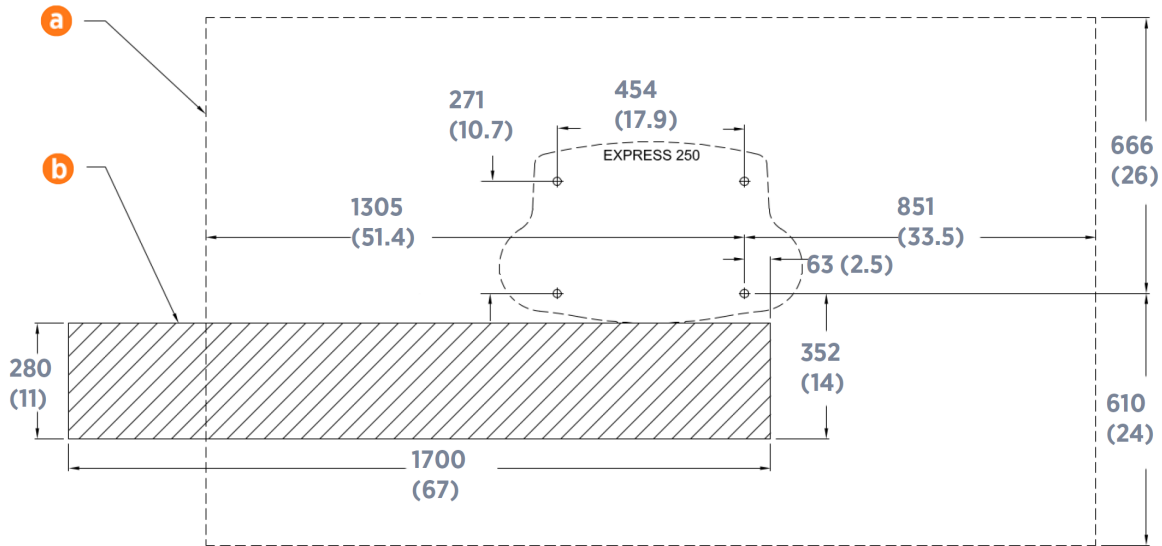


Clearance	Value
Front Clearance	330.2 mm (13 in) at grade; 609.6mm (24 in) minimum open space
Side Clearance	711.2 mm (28 in) required; 863.6 mm (34 in) recommended**
Rear Clearance	304.8 mm (12 in) required; 609.6 mm (24 in) recommended
Top Clearance	304.8 mm (12 in)

\* Side clearance is measured from extrusion to extrusion.

\*\* Side clearance can be shared between two charging stations. However, if the charge handles of both stations are facing each other, add an extra 254 mm (10 in).

Measurements are provided in millimeters (inches).



- (a) Service clearance of open space (not necessarily at system grade)
- (b) Power Moduleservice clearance at grade from the front right anchor, extending 1700 mm (67 in) to the left, without any permanent obstructions (fencing, bollards, wheel stops, etc.)



**NOTE:** Listed side clearances are the minimum required for operation and service. For paired charging stations, the bend radius of the DC cable and conduit might require spacing them further apart.

Rear clearance, and the front and side clearance for Power Module service, must be at grade level +/- 25 mm (1 in).

Refer to the [Ventilation](#) section, and check local and regional code, for any additional clearance requirements.

## Ventilation

Ensure that any installation, especially an indoor installation, has adequate airflow to dissipate the station's heat at maximum operation. Each charging station emits approximately 3.3 kW of waste heat at maximum operation.

The station location must allow fresh ambient airflow. Restriction of airflow might result in reduced maximum performance. Do not install a station where it is exposed to air that is heated above ambient temperatures.

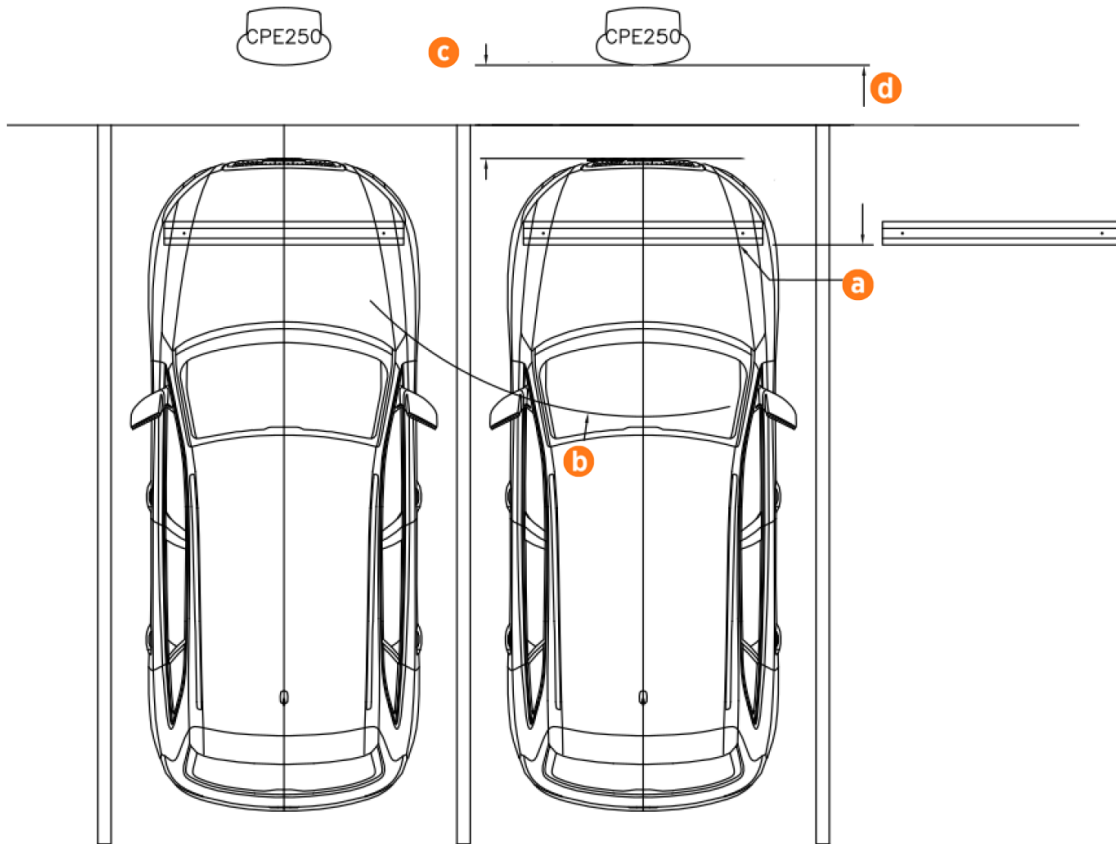
In addition to the service clearances listed in the [Clearances](#) section, consider these figures for site layout:

- If a charging station will have a wall directly behind it, minimum rear clearance is 305 mm (12 in).
- If two charging stations will be positioned back to back, increase the rear clearance to a shared 610 mm (24 in) for both stations to reduce exhaust recirculation.

## Wheel Stops

Bollards and wheel stops are not explicitly required by ChargePoint. However, ChargePoint recommends these best practices and considerations when designing the site:

- Permanent bollards or wheel stops must not encroach upon the Power Module clearance listed in the clearance diagram above. Removable bollards are allowed if service personnel have the ability to move them as needed.
- Where permitted by code, wheel stops are preferred over bollards for head-in or back-in spaces.
- When using wheel stops, consider the average vehicle overhang distance from tire to bumper (passenger, bus, etc.), as well as leaving space for the driver to walk up and access the touchscreen. General recommended distances are shown in the wheel stop image below.
- Position wheel stops to actively block at least one wheel, without presenting a trip hazard to pedestrians walking between vehicles.



- (a) Wheel stop, positioned to actively block at least one wheel
- (b) Cable reach radius: 3.76 m (148 in)
- (c) Recommended distance for walk-up access: 609 mm (24 in)
- (d) Recommended distance between wheel stop and : 1371 mm (54 in) for passenger vehicles



**IMPORTANT:** Shorter wheel stops that are installed in the center of a parking spot can fit between the wheels of a larger vehicle and not prevent forward motion.



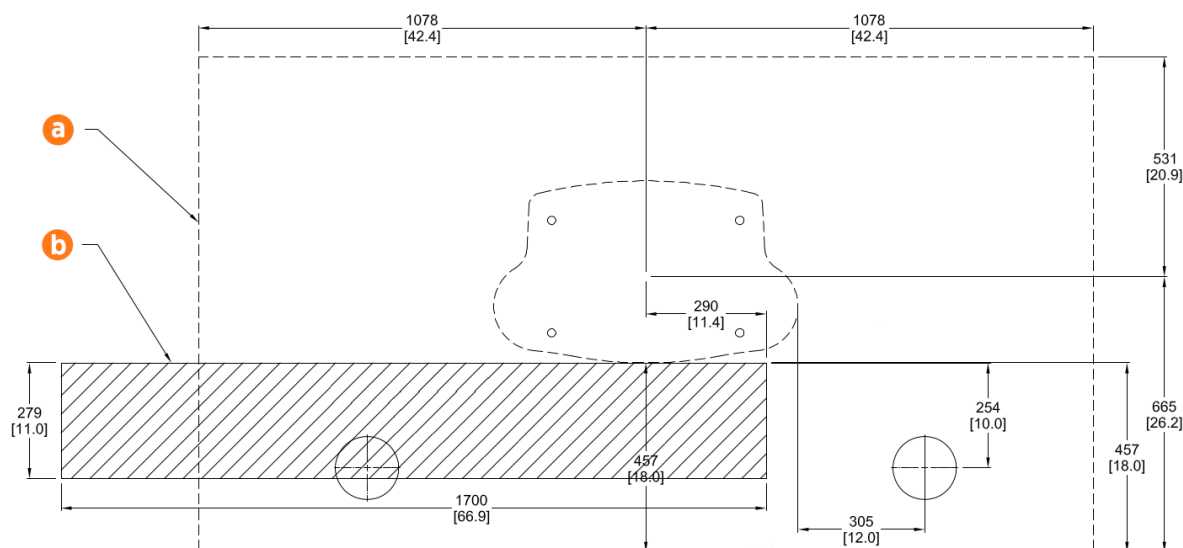
**NOTE:** For fleet or commercial use, measure the rear or front overhang of the largest vehicle in use, depending on charge port location.

## Bollards

Bollards and wheel stops are not explicitly required by ChargePoint. However, ChargePoint recommends these best practices and considerations when designing the site:

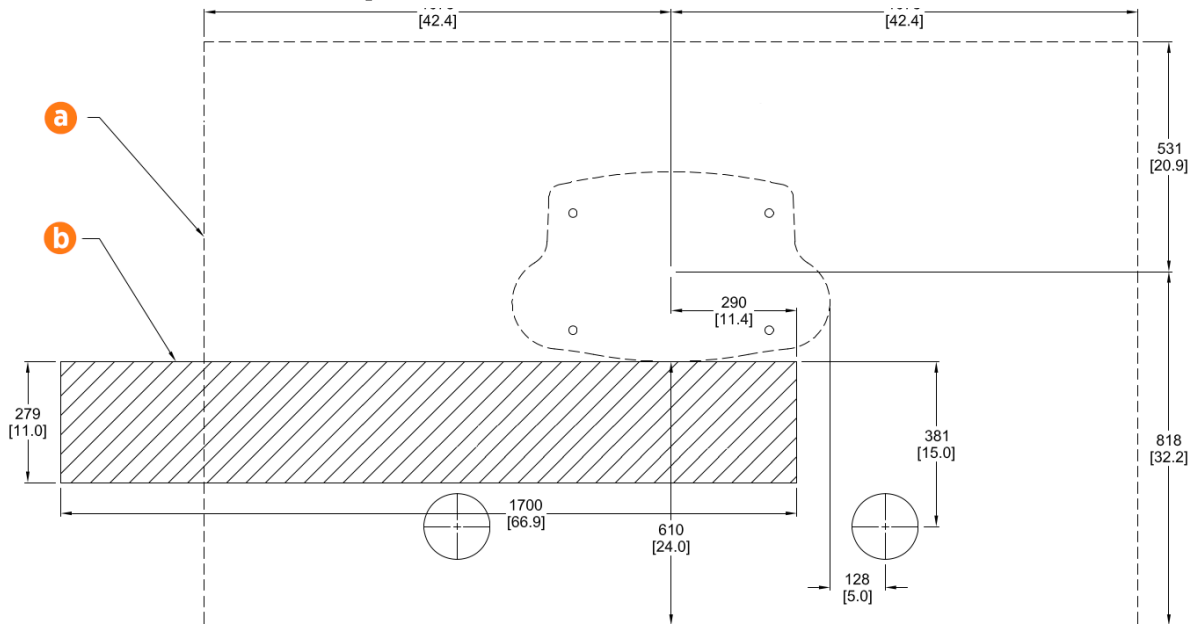
- Permanent bollards or wheel stops must not encroach upon the Power Module clearance listed in the clearance diagram above. Removable bollards are allowed if service personnel have the ability to move them as needed.
- Where permitted by code, wheel stops are preferred over bollards for head-in or back-in spaces.
- When bollards are required by code, needed for snowy areas, or needed for curbside spaces, ensure bollard placement does not interfere with removing and replacing charge cables in the station's side holsters. General recommended distances are shown in the bollard images below.
- Try to minimize bollard interference with the movement of charge cables between the station and the vehicle. Bollards are recommended to be no taller than 914 mm (36 in) where needed.
- No bollard can be placed within 457 mm (18 in) of the station, as measured on-center.

## Curbside Bollard Installation



- (a)** Use and service clearance of open space (not necessarily at grade)
- (b)** Unobstructed front service clearance at grade

## Head-in or Back-in Space Bollard Installation



- (a)** Use and service clearance of open space (not necessarily at grade)
- (b)** Unobstructed front service clearance at grade

## Pairing Previously Installed Charging Stations

If all site construction for paired charging is completed in advance, Express 250 stations can be initially installed as Standalone and paired at a later date. In that case, follow these additional steps:

- During initial site construction, install DC and communication conduit or ducting (as applicable by region) in advance.
- Extend side clearance at both DC conduit stub-up locations to 1.2 m (4 ft) to allow space for cable pulling equipment.
- Run a pull rope through the larger DC conduit before landing the charging stations. Do not pull DC cable in advance, as it is too thick to hide inside the cover panels without risking damage or unwanted electrical contact.
- Install a fishing tape in the smaller communication conduit to assist with routing the Ethernet cable later. If Ethernet is pulled in advance, leave 317.5 cm (125 in) of wire above grade at each end.
- Use duct seal compound to seal the ends of the DC and communications conduit stub-ups. Seal the ends of the fishing tape to hang outside the conduit.
- Install the cover panels and extrusions on the Express 250 stations over the stub-ups as normal.

By only connecting AC wiring (and shunt trip if applicable), each station can perform as a Standalone station until the station owner is ready to pair them. At a later time, the stations can be paired by installing DC conductors, connecting Ethernet communication, and performing a firmware update if required. Refer to the *Express 250 Installation Guide* for further details.

Once two Express 250 are correctly paired, operation of both stations is inhibited if Ethernet connectivity is lost or one station loses power. This is a safety feature to prevent one Paired station from accidentally powering the other during maintenance.



**WARNING:** Do not connect DC power between the charging stations until both stations are ready to complete the full pairing configuration. Station firmware updates are required to enable full Paired behavior. Connecting power before the charging station is properly configured can create a safety risk or can damage equipment.

## Accessibility

To meet the accessibility requirements, the Express 250 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.

This complies with European disability requirements if the station is installed at grade. If your installation must comply with disability access regulations, 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.

## Signage

Refer to local and regional code to design the following elements for the site:

- Any required re-striping of parking spaces
- EV or Accessible EV signs
- EV or Accessible EV paint markings on and around the parking spaces

# Electrical Design 3

The default installation requires service wiring to be installed underground. (If a site requires surface mounting, refer to [Install the Surface Mount Plate](#) for instructions on installing the station using a surface mount plate.) 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 or ducting, or use armored cable, as required 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 ChargePoint Concrete Mounting Template (CMT) 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.



It is possible to pre-install charging stations as Standalone initially and pair them at a later date, if desired. In this case, install the DC and Ethernet conduit and run a pull rope through the conduit before landing the charging stations. Contact ChargePoint for instructions to pair two charging stations when ready.

## 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 on each leg of a 3-phase panel for North America installations, in accordance with National Electric Code requirements. For other regions, refer to local code.

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.

Each charging station requires a service panel breaker as follows:

Nominal Voltage	Max AC Current	Circuit Breaker Size
400 VAC (EU)	96 A	125 A
480 VAC (NA)	80 A	100 A (125% continuous load required for N. America)

The charging station does not contain an internal breaker. Therefore, its KAIC rating (KiloAmps Interrupt) is related to the station's upstream breaker.



**CAUTION:** The charging station is tested to IEC 61000-4-5, Level 5 (6 kV @ 3000 A) standards. In geographic areas that experience frequent thunderstorms, supplemental surge protection must be installed at the service panel to guard against product damage.

## Transformer Configuration

Refer to the following tables to configure electrical service.

	North America	Europe
Input Rating	480 VAC, 3-phase, 80 A, 60 Hz	400 VAC, 3-phase, 96 A, 50 Hz
Electrical Service Configuration	277/480 4 wire WYE*	230/400 Y, L1, L2, L3, N, Ground
Product Connection	3-phase 480 plus ground (neutral not required)	3-phase 400 plus protective earth (neutral not required)

\*Delta (floating or grounded) is not supported

Neutral is not required for system operation, however Neutral-to-ground bonding is required at the Main Distribution Panel (MDP) supplying the charging station.



**IMPORTANT:** This requirement applies to Canadian installations. Whether using a step-up or step-down autotransformer, refer to the "*Hydro-Québec bulletin - Choosing the right one 600/480 V transformer*" for specific guidance.

## AC Disconnect Switch

A local AC disconnect switch, separate from the shunt trip wiring, is recommended to be installed between each charging station and the electrical panel. This is especially important if the main electrical panel or utility room is distant, out of line of sight, or has restricted access. For North America installations, refer to disconnect switch requirements per NEC Article 625, "Electric Vehicle Charging and Supply Equipment Systems".



**WARNING:** If service is performed on either Paired charging station, both stations must be powered off at their AC disconnect switch(es) and locked out/tagged out for safety.

Do not install a DC disconnect between Paired charging stations.

## RCD Use

The use of an RCD is not recommended. RCD use can create nuisance tripping, especially during transient conditions such as power restoration, line surge, line dips, or phase loss.

To reduce the risk of shock, the charging station provides:



- Galvanic (reinforced) isolation between the AC input and DC output. Current does not flow to earth ground, even in cases such as charge cable damage.
- An output isolation monitor interrupter (IMI).

If the isolation level is compromised, charging is halted or prevented from starting, and the output de-energized. The isolation monitor operates continuously during charging to ensure the output is always galvanically isolated. UL 2231-1 requires that an isolation monitor interrupter (IMI) is provided in the product and evaluated during operation as part of certification testing.

Although RCD/GFCI use is required in mode 1,2,3 AC charger installations, neither UL nor IEC mandate an RCD for a permanently installed mode 4 isolated output DC charger.

## RCD Settings

For Standalone installations where the use of an RCD (RCCB or RCBO) cannot be avoided, use the following settings to minimize nuisance trips:

- Type: A, F or B (type B and F preferred)
- Trip threshold: 500 mA
- Trip delay: 150 ms

If an RCD must be employed for a Paired installation, contact ChargePoint.

## Region Specific Notes: UK

When discussing DC charging station installations with a UK DNO (utility), include these two considerations:

- Where possible, request TN-S earthing from the DNO (distribution network operator)
- The Express 250 represents a Class I construction, balanced 3-phase load greater than 500 W

Either statement allows UK DNOs to provide a PME earth terminal and avoids the requirement for a TT earthing arrangement and associated (300 mA) RCD. The second statement meets the clause in the IET Code of Practice for EV Charging Equipment Installation, 3rd Edition that allows the DNO to provide a PME connection for "on the street equipment".

Installations at petrol stations are a special case that requires additional site planning. Contact Express 250 for more information.

## Grounding/Earthing Requirements

- The station must be connected to a grounded, metal, permanent wiring system.
  - North America: A grounded service neutral conductor must be run with circuit conductors and connected to an equipment-grounding terminal.
  - Europe: Use TN-S or TN-C-S configurations. (TT is not recommended because it requires RCDs.)
- Ensure a grounding conductor that complies with local codes is properly grounded to earth at the service equipment or, when supplied by a separate system, at the supply transformer.

## Shunt Trip Wiring

ChargePoint advises against installing an emergency stop (E-stop) button on charging stations. Drivers can unintentionally trip the emergency shutoff, causing inconvenience and downtime to site hosts. However, wiring to enable a remote shunt trip is standard on each station. This shunt trip wiring is activated when

unsafe conditions are detected, such as a missing cover panel or a severe impact. All shunt trip behavior is already hard-coded into the charging station and has no programmable variables.

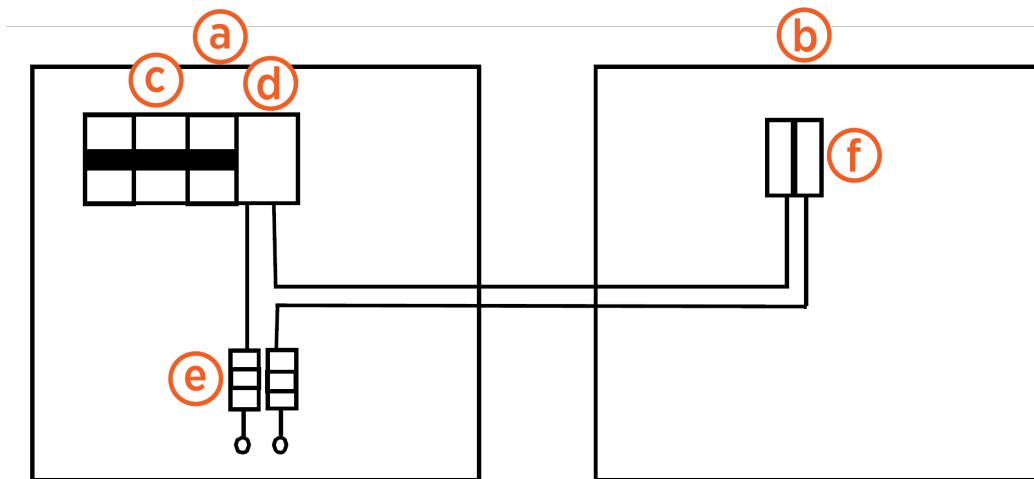
The charging station provides a set of unpowered (dry pair) contacts near the AC input terminals, to connect to a shunt trip device. These contacts are rated to 440 VAC and 5 ARMS.

When a shunt trip is used, select a breaker with a shunt trip that is within the contact rating of the Express 250 shunt trip contacts. Common ratings available for shunt trips are 12, 24, or 48 VDC, or 110-240, 400 VAC depending on the installation region. 480 VAC rated shunt trips may not be used.

Follow the installation guide provided by the breaker or shunt trip vendor. Control power is derived at the electrical panel.



**NOTE:** For Paired charging stations, wire the connections so that a shunt trip activation on either station trips the breakers of both Paired stations.

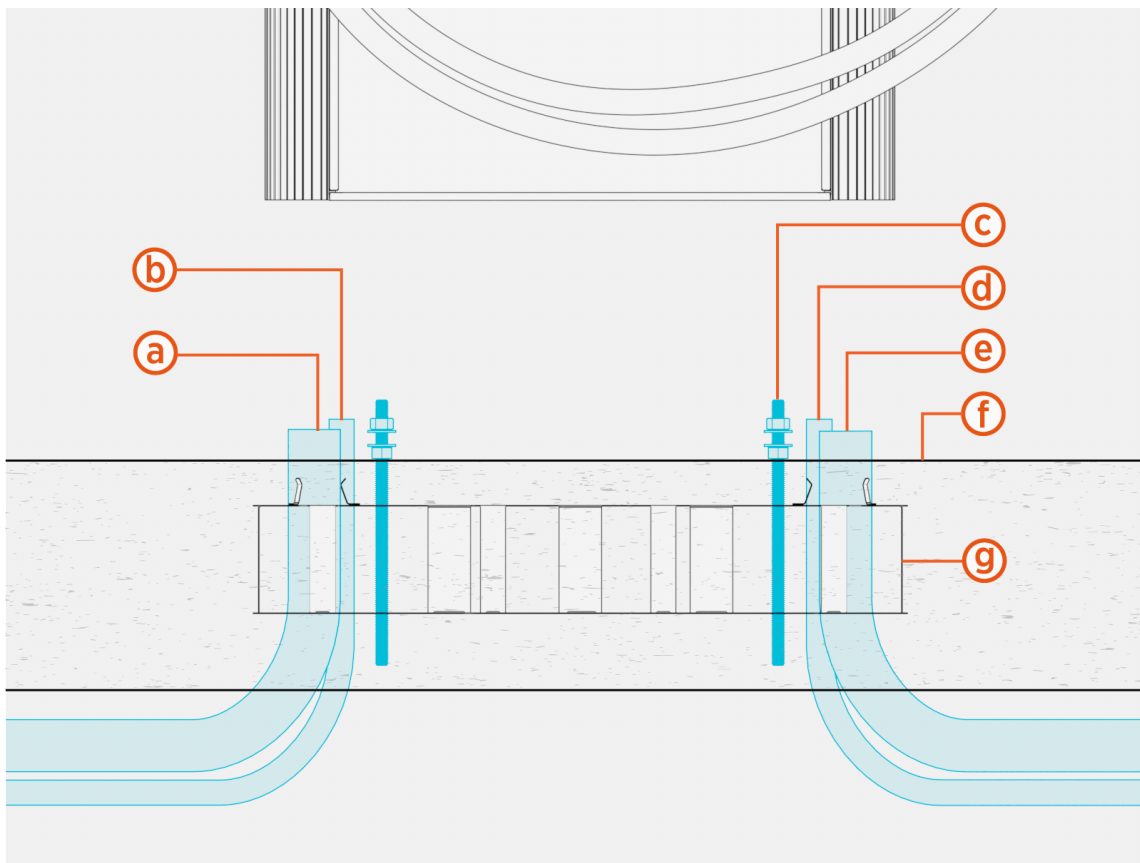


- (a) Electrical panel
- (b) Express 250
- (c) Circuit breakers
- (d) Shunt trip
- (e) Control power (fused)
- (f) Shunt trip terminal block (near AC terminals)

## Conduit

The outer diameter of conduit or armored cable must not exceed the sizes called out in the conduit layout drawing below. Conduit stub-ups cannot extend higher than 76.2 mm (3 in) above the surface of the concrete pad.

In regions that do not use conduit, armored cable may be laid in the same configuration to conform to the wire placement as shown in the chapter, [Concrete Mounting Template](#). Ensure a length of at least 61 cm (2 ft) is left free above grade at each end to allow the wiring to reach the charging station AC terminals.



- (a) AC conduit: 50.8 mm (2 in trade size)
- (b) Shunt trip conduit: 19.1 mm (3/4 in trade size)
- (c) Anchor bolts
- (d) Paired installations only: Ethernet conduit: 19.1 mm (3/4 in trade size)
- (e) Paired installations only: DC conduit: 76.2 mm (3 in trade size)
- (f) Concrete surface
- (g) Concrete Mounting Template (embedded in concrete)



**NOTE:** Ensure no bell ends are left on any conduit after all wires are pulled. Bell ends can interfere with station placement. Depth of conduit or armored cable may vary by site. The image above does not dictate conduit depth, as long as the stub-ups are vertical and placed correctly.

## Wiring Requirements for Standalone Stations



**IMPORTANT:** The AC terminal blocks accept a maximum wire size of 35 mm<sup>2</sup> (2 AWG) solid or stranded wires. If using a larger gauge wire to accommodate a long run, reduce the wire size at the local external disconnect.

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

- Neutral conductor as required by region (a Neutral connection is not required for equipment operation and the terminal is provided for convenience only)
- Shunt trip wiring: size 0.08 to 2.5 mm<sup>2</sup> (28 to 14 AWG), fine stranded or solid
- AC conductors (L1, L2, L3) and ground per the following specifications:

Voltage Rating	Temperature Rating	Maximum Conductor Size for Terminals
EU non-armored: 600/1000 V	90 °C	35 mm <sup>2</sup>
EU armored: 600/1000 V	90 °C	35 mm <sup>2</sup> multi-core
NA: 600 V	90 °C	2 AWG

## Additional Wiring Requirements for Paired Stations



**IMPORTANT:** The DC terminal blocks can accept a maximum wire size of 120 mm<sup>2</sup> (4/0 AWG). Check site plans and local code for site-specific requirements.

For stations that will be installed as Paired, follow all AC wiring requirements above as well as the following additional wiring.



**NOTE:** Be sure to acquire, or alert the installer to acquire, lugs in advance of the site visit. Contact ChargePoint in advance if help is required to obtain lugs.

- Ethernet wiring for DC:
  - Minimum of CAT5e or better
  - Outdoor or plenum rated wiring
  - Maximum run length of 100 m (328 ft)
  - Leave 3.2 m (10.5 ft) of wire above grade at each end
  - Field crimp using straight-through pattern 568B
- DC conductors (x4):

Voltage Rating	Temperature Rating	Maximum Conductor Size for Terminals	Insulation Type	DC Input/Output
EU non-armored: 600/1000 V	90 °C	120 mm <sup>2</sup>	XLPE	160 A
EU armored: 600/1000 V	90 °C	120 mm <sup>2</sup> 4-core and cable gland sized to local code (such as Cablecraft CCG-CW50 or similar)	XLPE	160 A
NA: 1000 V	90 °C	4/0 AWG	XHHW-2	160 A



**NOTE:** 95 mm<sup>2</sup> (3/0 AWG) is sufficient for most sites unless ambient temperatures are  $\geq 40^{\circ}\text{C}$ .

- 2 positive and 2 negative conductors; 1 positive and 1 negative in each direction
- USA/Canada: Copper only, maximum station DC output/input current: 160 A
- EU/UK: Rated at 1000 V conductor to conductor (+/-500 V conductor to ground, LV), copper only, maximum station DC output/input current: 160 A
- DC cable run must be continuous, with no joints or splices
- Consult site drawings for site-specific conductor size and length (Appendix A provides conductor size calculation examples for reference)
- Leave 61 cm (2 ft) of each conductor above grade at each end
- DC lugs (x4):
  - Silver plated copper compression lug (2-hole specified for North America); tin plated is acceptable if used with dielectric grease
  - Holes for an M6 (1/4 in) stud at 19 mm (3/4 in) stud hole spacing
  - Maximum width 30 mm (1.18 in)



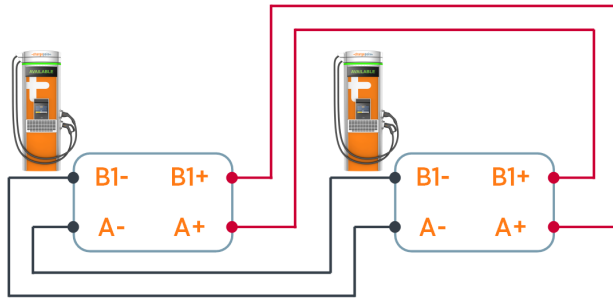
**NOTE:** 95 mm<sup>2</sup> (3/0 AWG) is sufficient for most sites unless ambient temperatures are  $\geq 40^{\circ}\text{C}$ .

- North America lug size: 3/0 or 4/0 AWG
- Example UK/EU lugs for average conductor size are Weidmuller 1494410000 120 mm<sup>2</sup> or similar (always review the lug manufacturer's instructions for crimper tool and die compatibility)
- Contact ChargePoint if the installer requires lugs for 3/0 (kit 99-002644) or 4/0 (kit 99-002645) conductors

When DC conductors are pulled through conduit, label each end of each DC conductor to aid installation as follows:

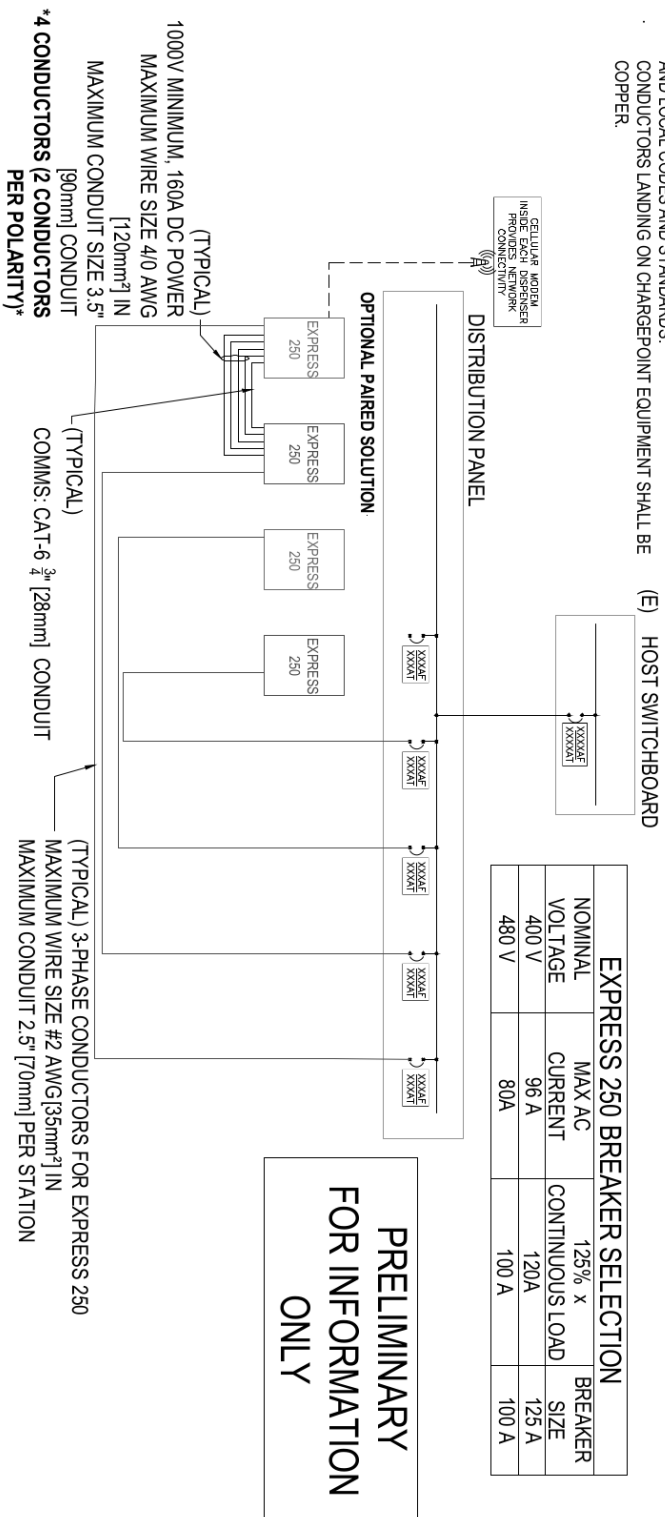
- Station 1 **A+** on one end and Station 2 **B1+** on the other end
- Station 1 **A-** on one end and Station 2 **B1-** on the other end
- Station 1 **B1+** on one end and Station 2 **A+** on the other end

- Station 1 **B1-** on one end and Station 2 **A-** on the other end



**CAUTION:** Be sure to connect positive to positive, and negative to negative, on the same wire. Do not reverse the polarity.

GENERAL NOTES:  
ALL OCPDS, CONDUCTOR AND CONDUIT SIZES STATED HERE ARE PROVIDED BY CHARGEPOINT FOR REFERENCE ONLY. SITE SPECIFIC WIRE SIZING SHALL BE PERFORMED BY THE INSTALLATION CONTRACTOR TAKING INTO ACCOUNT SITE SPECIFIC CONDITIONS AND LOCAL CODES AND STANDARDS.  
CONDUCTORS LANDING ON CHARGEPOINT EQUIPMENT SHALL BE COPPER.



NOTES: EXPRESS 250  
1 SET OF PAIRED EXPRESS 250'S, EACH CONTAINING  
(2) 31.25KW POWER MODULES  
2 x EXPRESS 250 EACH CONTAINING (2) 31.25KW  
POWER MODULES

# Concrete Mounting Template 4

The Express 250 is a DC fast charging station for electric vehicles. The default installation requires service wiring to be installed underground and run to a concrete pad. (If a site requires surface mounting, refer to [Install the Surface Mount Plate](#) for instructions on installing the station using a surface mount plate). The ChargePoint Express 250 Concrete Mounting Template (CMT) correctly aligns anchor and conduit openings to ensure the station can be easily installed and connected.



**WARNING:** Use of a ChargePoint approved mounting method, such as the CMT, is required for safe installation of the Express 250. Failure to use an approved mounting method may result in a risk of tip-over, which can cause death, personal injury, or property damage, and will void the Limited One-Year Parts Exchange Warranty.

The CMT available from ChargePoint includes:

- 16 mm (5/8 in)-11 thread, 305 mm (12 in) long threaded mounting bolts with plastic caps on one end
- 16 mm (5/8 in) nuts
- 16 mm (5/8 in) washers
- Printed specification detailing how to position an assembled CMT in the concrete



**NOTE:** You must order the CMT separately, with sufficient lead time before the site preparation. This kit is not included with the ChargePoint Express 250 charging station.

## Bring these Tools and Materials

In addition to the CMT kit, the site construction team needs:

- Digging tools (shovel, spade, etc.)
- Materials to prepare the form for pouring concrete
- Concrete as specified by site drawings
- Rebar as specified by site drawings
- 24 mm (15/16 in) wrench (x2)



- Pliers to adjust the guide fingers on the CMT conduit openings (if needed)
- Level
- Cut-resistant gloves
- Protective eyewear
- Conduit, ducting, or armored cable in the amounts and types specified by site drawings, that complies with local code (see the rest of this document for conduit sizes and routing)

## CMT Overview

The Express 250 is a DC fast charging station for electric vehicles. It converts three-phase power from its associated building (callout **(a)** in the image below) to DC power to charge the vehicle. A ground conductor also runs in conduit **(a)**, optional Shunt trip wiring **(b)** connects the station to the breaker panel, allowing the station to shut down automatically if a fault or hazard occurs, such as a damaged cover panel or impact from a vehicle.

If two stations are “paired”, they share DC power to allow faster (higher amperage) charging to a vehicle as needed. In this case, DC conduit **(e)** are run between the stations, as is an Ethernet wire **(d)** for communication.

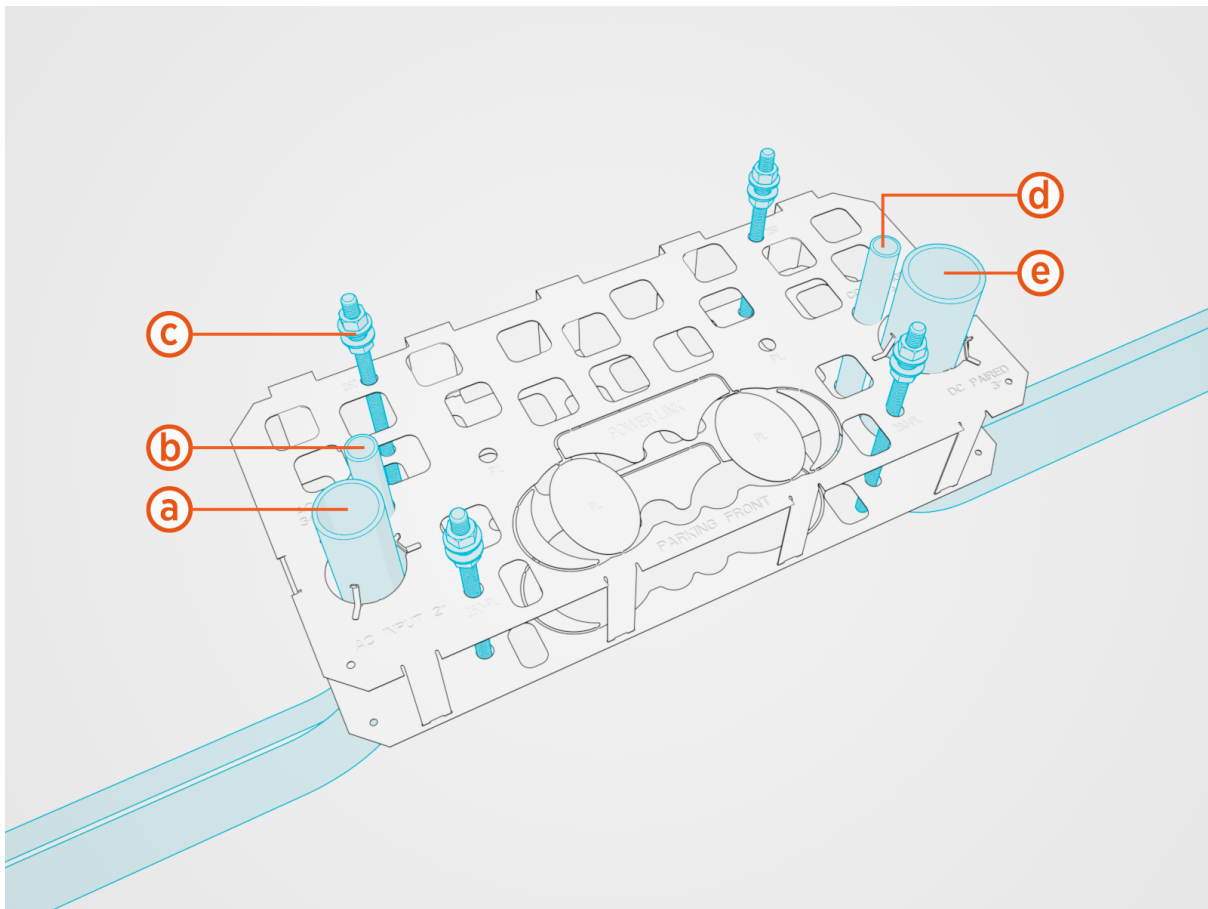


**NOTE:** Each station communicates with ChargePoint using a cellular network. No communication wiring is needed between the station and the building.

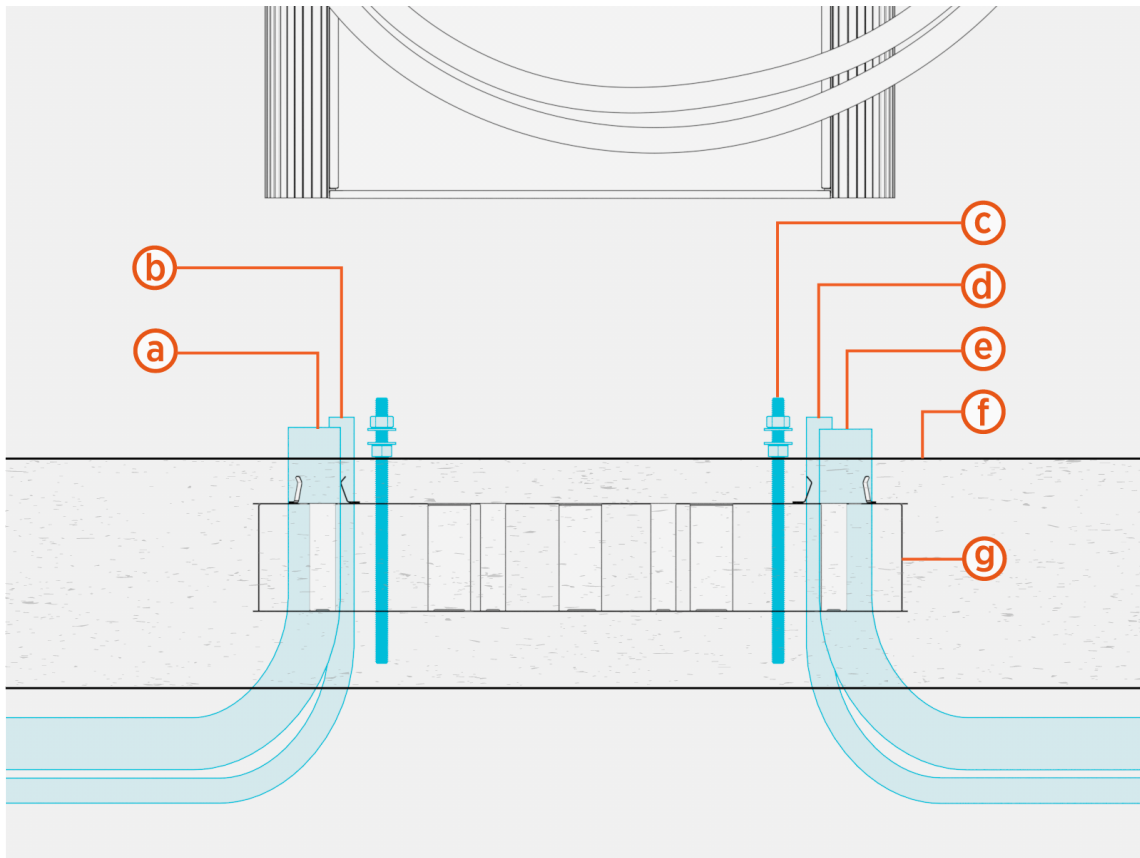
An assembled CMT template is shown below with the positions of all conduit and anchor bolts.



**NOTE:** A separate CMT is required for each charging station (two per Paired installation).



- (a)** AC conduit
- (b)** Shunt trip conduit
- (c)** Anchor bolts (x4)
- (d)** Ethernet conduit (Paired installations only)
- (e)** DC conduit (Paired installations only)



- (a) AC conduit from the left side of each station to the breaker panel (possibly with an AC disconnect switch in the circuit): 50.8 mm (2 in trade size)
- (b) Shunt trip conduit from the left side of each station to the breaker panel: 19.1 mm (3/4 in trade size)
- (c) Anchor bolts (x4)
- (d) Paired installations only: Ethernet conduit between the two stations to be paired, right side to right side: 19.1 mm (3/4 in trade size)
- (e) Paired installations only: DC conduit between the two stations to be paired, right side to right side: 76.2 mm (3 in trade size)
- (f) Concrete surface
- (g) Concrete Mounting Template (embedded in concrete)



**NOTE:** Ensure no bell ends are left on any conduit after all wires are pulled. Bell ends can interfere with station placement. Depth of conduit or armored cable may vary by site. The image above does not dictate conduit depth, as long as the stub-ups are vertical and placed correctly.

## Assemble the CMT

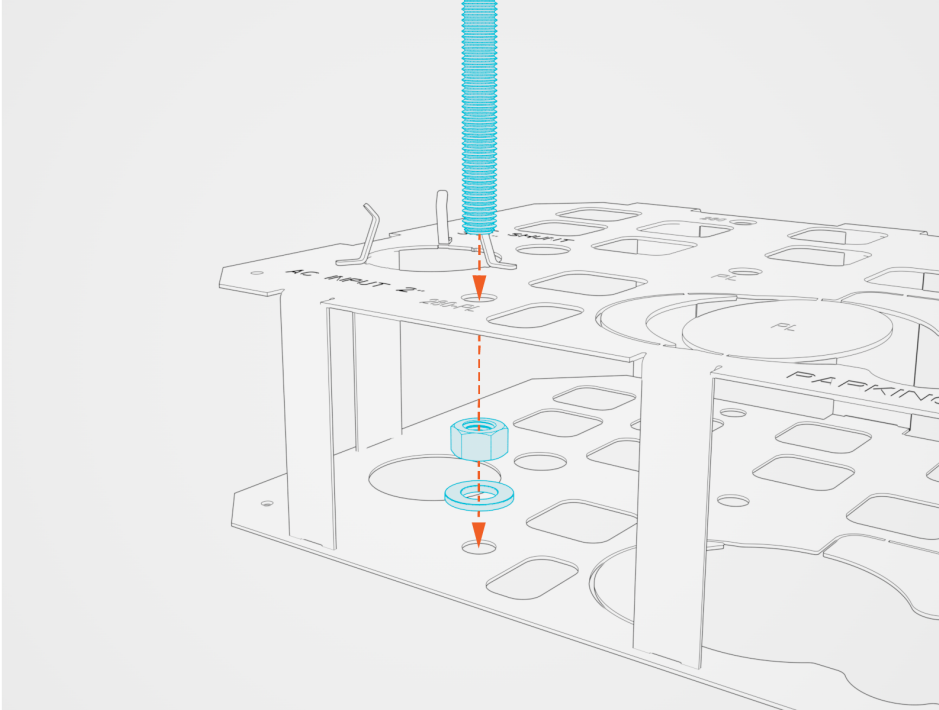


**CAUTION:** The CMT can have sharp edges. Wear cut-resistant gloves.

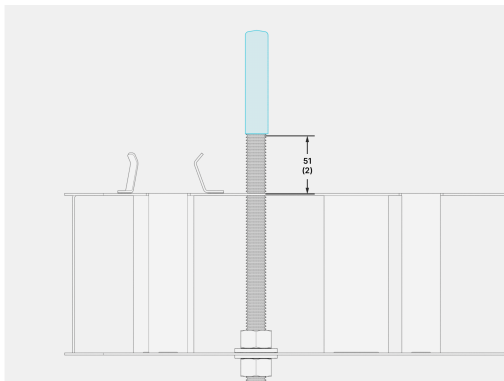
Before pouring concrete, assemble the CMT with its anchor bolts, washers, and nuts.

To assemble the CMT, perform the steps below:

1. Holding the mounting bolt by its plastic cap, insert the bare end into a corner bolt hole on the template's top plate.
2. Before inserting the bolt through the template's bottom plate, thread a nut onto the bolt and place a washer as shown.
3. Make sure the plastic cap is firmly pressed onto the bolt.

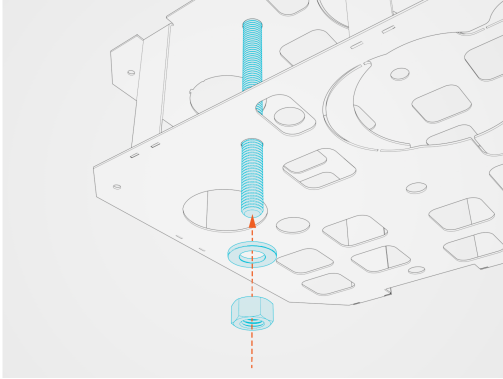


4. Hold the bottom nut and washer flush against the top surface of the bottom plate, then thread the bolt onto the nut until the distance between the plastic cap and the top plate measures 51 mm (2 in).



5. Repeat Steps 1 to 4 for the remaining three corner bolts.

6. Secure a second washer and nut onto the bottom of each bolt until it is flush with the bottom surface of the bottom plate. Torque each nut to 5.6 Nm (50 in-lb).



## Install the CMT

To install the CMT, perform the steps below:



**WARNING:** Failure to install the ChargePoint charging station in accordance with these instructions and all local building practices, climate conditions, safety standards, and all applicable codes and ordinances may lead to risk of death, injury, or property damage, and will void the Limited One-Year Parts Exchange Warranty.

1. Trench and excavate an opening to accommodate the wiring conduit and the concrete mounting pad that meets local codes and requirements, per site drawings.
2. Run conduit to each station as needed. If the stations will be Paired, run DC and Ethernet conduit between stations as well.
3. Build the form and lay rebar for the foundation.



**IMPORTANT:** It is critical that the conduits are positioned properly and plumb. The tolerance where the conduits enter the station is 2 mm (1/16 in).

4. On the CMT, locate the "FRONT" marking and the conduit guide fingers. Position the conduit guide fingers facing up.
5. Place the assembled CMT so that the "FRONT" marking aligns with the specified front of the station.
6. Slide the CMT over the conduit stub-ups until the top surface of the template is positioned 50.8 mm (2 in) below where the top surface of the concrete will be when poured. The surface of the concrete must align with the bottom of the plastic caps.
  - Carefully press the CMT down onto the conduit to avoid flexing it.
  - Ensure the conduits are plumb.
  - Use a level to check that the CMT is level from front to back and from side to side.
7. Tie or shim the CMT to the rebar to prevent movement during concrete pouring.



**IMPORTANT:** Before pouring concrete, the CMT and the conduit must be secured in place to prevent them from rising or floating out of position while the concrete is poured and curing.

8. Pour the concrete.



**NOTE:** Make sure the concrete surface between the conduits is completely level and free of any irregularities.

9. Complete the *Construction Signoff Form* available at [ChargePoint Product Reference Documentation](#) provided by ChargePoint to verify that the site is correctly completed and ready for product installation.

# Install the Surface Mount Plate 5

This chapter describes how to install a surface mount plate that allows an Express 250 DC fast charging station to be anchored without pouring new concrete. The surface mount plate is used with drilled and epoxied anchor bolts. When surface mounting an Express 250, there are two options for wiring:

- Reusing an existing AC underground conduit (possibly pulling new conductors)
- Using a Surface Conduit Entry (SCE) kit that provides a rear conduit entry box for conductors to enter the station through surface wireways (refer to the *SCE kit's installation guide* available at [ChargePoint Product Reference Documentation](#) for full installation details)

Installing the Express 250 using the surface mount plate requires one ChargePoint Certified Installer and about 2 to 2.5 hours to complete (not including epoxy cure time). This time estimate includes the full charging station installation, including the applicable steps described in the *Express 250 Installation Guide* at [ChargePoint Product Reference Documentation](#). If this is a Paired installation, allow an additional hour. This time estimate does not include the time needed to pull cables.



**NOTE:** This topic is a supplement to the normal charging station installation described in the *Express 250 Installation Guide* available at ChargePoint Product Reference Documentation that ships with the station. Ensure all installation instructions from that guide are followed except where this guide deviates. Shunt trip wiring is normally a feature of the Express 250, but is not required for operation. If shunt trip wiring will be used, run a conduit or wireway for the low voltage shunt trip wires that is separate from the AC conductor conduit or wireway.

## Before You Begin



**DANGER: RISK OF SHOCK.** Before performing any procedure, the technician must disconnect the power to the charging station at the service panel. Follow local code to de-energize the applicable circuit and lock out/tag out the upstream breaker before proceeding. Use a multimeter and check that the power is off. Keep power off for the circuit until all cover panels are correctly reinstalled and the work is complete. FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN SERIOUS INJURY, LOSS OF LIFE, OR PROPERTY DAMAGE.



**IMPORTANT:** You must be a licensed electrician and complete online training to become a ChargePoint certified installer. If you do not complete training, you cannot



access the ChargePoint network to complete installation. Find online training at: [chargepoint.com/installers](https://chargepoint.com/installers). If the charging station is not installed by a ChargePoint certified installer, using a ChargePoint approved method, it is not covered under warranty and ChargePoint is not responsible for any malfunctions.

[chargepoint.com/installers](https://chargepoint.com/installers)



**CAUTION:** Ensure the following conditions are met before you proceed

- Do not use power tools during installation or servicing. Over-torquing can damage the equipment.
- Do not install the charging station in inclement weather. If you must complete the installation in rain or wind, you must use a weather-proof shelter that covers all boxes and components.



**NOTE:** For assistance, go to [chargepoint.com/support](https://chargepoint.com/support) and find your region's technical support number.

## Tools and Materials

For a surface mount plate installation, the installer must bring:

- All tools and materials mentioned in the *Express 250 Installation Guide* available at [ChargePoint Product Reference Documentation](#)
- Concrete drill, level feature recommended
- 25 mm (1 in) and 6 mm (1/4 in) concrete bits
- 25 mm (1 in) rebar bit if needed
- 24 mm (15/16 in) open ended wrench
- Flathead screwdriver
- 750 ml of epoxy with bonding strength of 11.7 MPa minimum, compressive strength of 82.7 MPa minimum, and tensile strength of 49.3 MPa minimum, such as Hilti HIT-RE 500 V3 (normal cure time), Hilti HY-200 (fast curing), or similar



**NOTE:** Different epoxy types have different cure times at various temperatures. Check local temperatures for the site in advance to help choose an appropriate epoxy.

- Vacuum and/or brush
- Marker
- Isopropyl wipes
- Paper towels



**IMPORTANT:** Ensure the following conditions are met before you proceed.



- Read the *Express 250 Installation Guide* available at ChargePoint Product Reference Documentation and site drawings to source and bring the correct AC conductors (required), shunt trip wiring (optional), DC conductors and lugs (Paired installations only), and Ethernet wiring (Paired installations only).
- If the Express 250 will be paired, check the serial number on the rear surface just under the cable swing arms. For North America stations with SNs prior to 1929xxxx, or EU/UK SNs prior to 2003xxxx, the station also requires a Pairing Upgrade Kit. Contact ChargePoint for the kit and the installation guide for that configuration.

## Check Site Readiness

Before beginning work, check that the site meets the basic requirements outlined below, as illustrated in the following image. Measurements are listed in mm (in).

- The panel breaker serving the charging station matches the site drawing requirements depending on local code and the type of installation: 62.5 kW Standalone, 125 kW Paired, or 50 kW de-rated (when replacing a previous, lower-amperage system).
- The smooth, level concrete pad has been approved by a structural engineer for the Express 250 dimensions and weight, or the pad conforms to these general specifications:
  - At least 305 mm (12 in) deep (or deep enough to be 305 mm (12 in) below the frost line)
  - At least 1296 mm (51 in) on each side
  - Contains #4 rebar top and bottom 305 mm (12 in) on center
  - Concrete 2500 PSI minimum



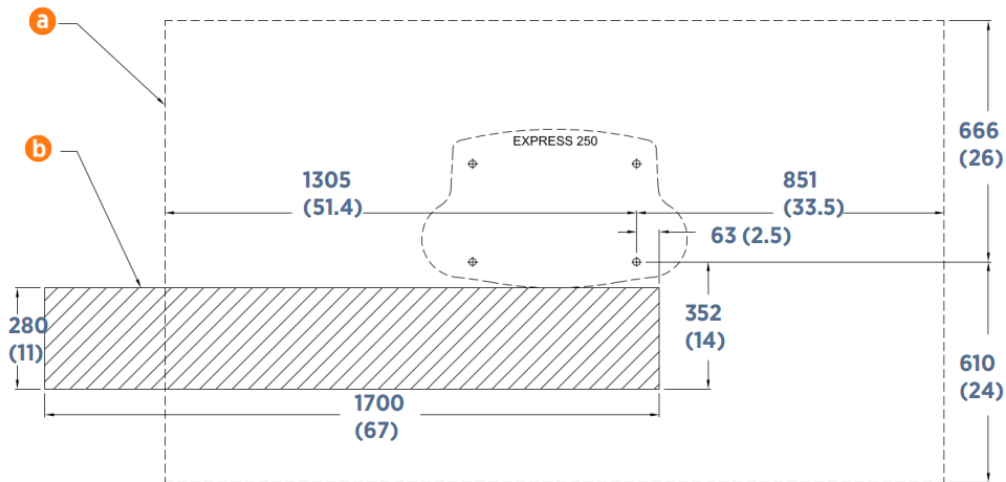
**NOTE:** These pad specifications are applicable in most conditions, as described in this document. In some extreme conditions, a larger pad would be required.

- Charging station sites are positioned so that each station is centered on a parking space (unless curbside), with the front of the station facing the vehicle. (This maximizes cable reach.)
- The cellular signal strength at the station location has been tested and is consistently strong. If RSRQ is measured at -10 dB or better, then RSRP can be -90 dBm or better. If RSRQ cannot be measured or is not adequate, RSRP must be -85 dBm or better.
- The service clearance of open space (not necessarily at system grade) extends a minimum of 683 mm (26.9 in) beyond the station in front, 396 mm (15.6 in) beyond the station in back, and 788 mm (31 in) beyond the station on each side (image callout **(a)**).



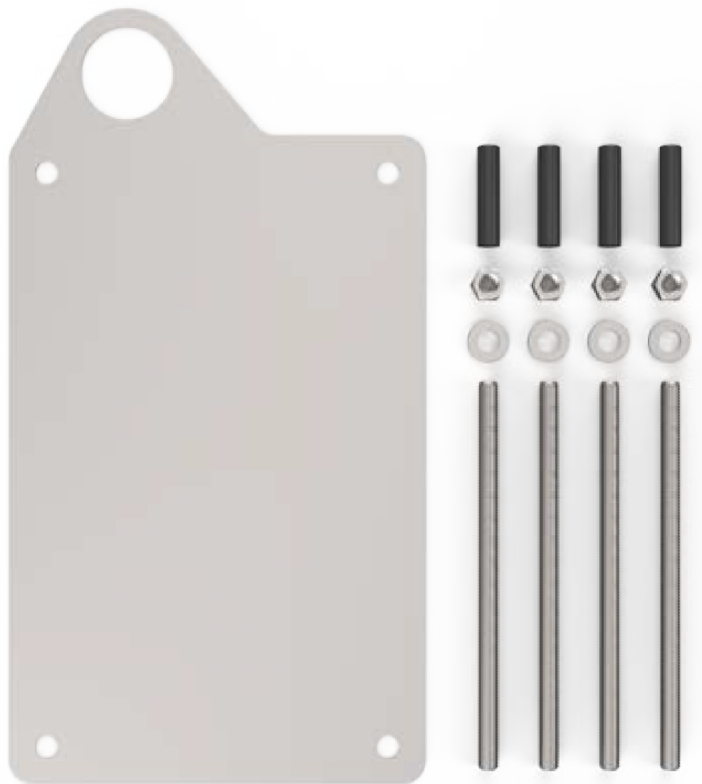
**IMPORTANT:** If the Express 250 will use a SCE kit, check the *SCE kit's installation guide* available at ChargePoint Product Reference Documentation to ensure enough rear space for the conduit box and its service clearance.

- The front of the station has 352 mm (14 in) of space at grade from the front right anchor, extending 1700 mm (67 in) to the left without any permanent obstructions (bollards, wheel stops, etc), refer **(b)**.



If the site does not meet these basic requirements, contact ChargePoint before continuing.

## Check the Surface Mount Plate Kit Contents



Check the contents of the Surface Mount Plate Kit before beginning work. The kit includes:

- Surface mount plate
- M16X300 anchor bolts, washers, and nuts (x4)
- Anchor bolt plastic caps (x4)

## Prepare the Express 250

Prepare the station and power modules, then follow the installation guide for setup.

1. Receive the Express 250 station and its Power Modules at the site.
2. Follow the directions in section 1 of the to familiarize yourself with the process, crate contents, and required tools and materials.

## Install Surface Mount Anchor Bolts

To install the surface mount anchor bolts, perform the following steps:

1. Place the surface mount plate at the proposed location. Align the large left hole with AC conduit if present (for example, when replacing an older station). Check that the station placement on the pad meets the site requirements.



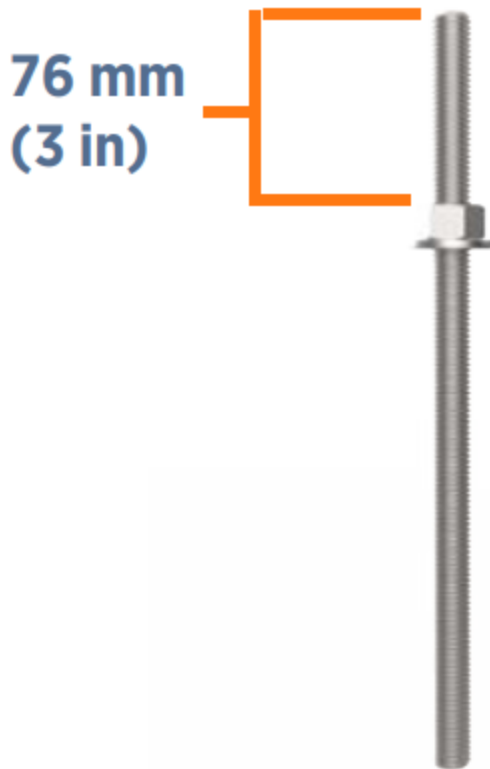
**IMPORTANT:** Ensure the rear clearance leaves room for surface conduit runs if present, and for service clearance.



2. Use a marker to mark the locations for the Express 250 anchor bolts. Remove the surface mount plate.
3. Use the 6 mm (1/4 in) concrete drill bit to drill each pilot hole about 51 mm (2 in) deep. The holes must be parallel to each other and perpendicular to grade.



4. Use a vacuum or brush to clean the dust from the holes.
5. Use the 25 mm (1 in) concrete drill bit to drill each anchor hole a minimum of 229 mm (9 in) deep. Anchor bolts must have 127 mm +/- 12.7 mm (5 in +/- 1/2 in) above grade.
6. Place the surface mount plate on the ground again. Verify that the new holes for the Express 250 align with the holes in the surface mount plate.
7. Thread a washer and a nut onto each anchor bolt, so that the measurement from the top of the nut to the top of the bolt is 76 mm (3 in).



8. Put a piece of tape above each nut to prevent it from floating upward when rotating the bolt into the epoxy later.
9. Prepare the epoxy. Ensure the applicator is dispensing correctly mixed epoxy before beginning work (for example, the Hilti epoxy is white when unmixed and grey when mixed).

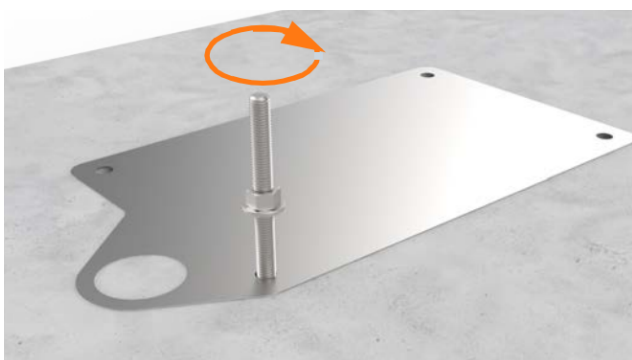
10. Fill the first anchor bolt hole with epoxy until the epoxy is about 44.5 mm (1.75 in) from the top of the hole.



**IMPORTANT:** Continue immediately to the next step because the epoxy sets within about eight minutes.



11. Insert the mounting bolt into the hole. Rotate the mounting bolt as you insert it to draw epoxy into the threads. Lift the anchor bolt again to see how close to the surface the epoxy has filled. If the epoxy is below grade level, add enough to fill the hole to grade level. Use paper towels to wipe up any excess.



12. Measure the nut distance from the top of each bolt again and adjust if needed. These nuts help secure the surface mounting plate to the concrete and should be flush against the base when installed.

13. If the Express 250 station will not be immediately installed, insert a protective plastic cap over the bolt.



14. Use a level to check that each anchor bolt is plumb. If needed, adjust while the epoxy is still setting.
15. Repeat the above epoxy steps for each of the other three anchor bolts.



**NOTE:** Stop and allow the epoxy to cure for the initial cure time listed on the epoxy, before beginning to install the Express 250.



## Anchor and Label the Express 250 Station

To anchor and label the Express 250 Station, perform the following steps:

1. Check that the epoxy has set completely.
2. Torque all four nuts to 94.9 Nm (70 ft-lb).
3. Follow the instructions in the *Express 250 Installation Guide* available at [ChargePoint Product Reference Documentation](#) from the beginning of the guide to the end of the section “*Mount and Secure the Express 250*”. The station should now be mounted on the anchor bolts, leveled, and secured with the anchor washers and nuts.



**IMPORTANT:** The station should rest on the leveling nuts, not on the surface mount plate.

4. Stop before the section "*Connect the AC wiring*".
5. If required, adjust the ratings with a new label over the existing ratings line, just below the swing arms in the back:



- If the Express 250 is being connected to wiring and a breaker of 80 A, affix the 50 kW ratings label to the station
  - If the Express 250 is being paired, affix the 125 kW label to the station
6. Continue normal installation of the Express 250 charging station per the *Express 250 Installation Guide* available at [ChargePoint Product Reference Documentation](#) until the on-screen configuration. When prompted for either **Replacement** or **New Installation**, choose **New**.
  7. Complete normal Express 250 installation and testing per the *Express 250 Installation Guide* available at [ChargePoint Product Reference Documentation](#).

# Examples of Express 250 Paired Wire Sizing 6

The required DC wire gauge varies based on the specific site. Use these example scenarios to help you determine the correct wire gauge for your site.



**IMPORTANT:** These scenarios are only examples, and are not intended to replace an assessment by a local electrician. Always follow all applicable local and national codes and requirements. A site drawing should be engineered for your specific site to reduce installation costs and ensure compliance with local codes.

## DC Interconnection, Example Calculation: Newark, NJ

### Assumptions:

- Breaker and equipment terminal rating minimum 75 °C
- Electric Vehicle Charging Equipment rated for continuous duty per Article 625.41
- Maximum 50 °C ambient rating
- Installation location: Newark, NJ, USA
- 90 °C rated wire required
- Maximum station DC output/input current: 160 A
- Four conductors in conduit, only two current carrying conductors

The continuous duty derating per 625.41 is  $160 \times 1.25$ , or 200 A.

Temperature derating from 2017 NEC Table 310.15(B)(2)(a) based on 30 °C the derating factor for 91 °F and 90 °C rated wire is 0.96 (87-95 °F row).

From the 90 °C column of NEC Table 310.15(B)(16), a 3/0 copper conductor has an ampacity of 225 A.

Applying the temperature derating factor,  $225 \times 0.96 = 216$  A

200 A is the minimum rated ampacity this conductor must have per the NEC to prevent potential insulation damage and provide the ability of the conductor to dissipate heat caused by the current flow. After the temperature derating calculation, the resulting 216 A is greater than the 200 A required.

A 3/0 copper conductor has an ampacity of 200 A at 75 °C, which is the ampacity column required for equipment rated 100 A or greater per NEC 110.14(C)(1)(b). If, following the derating from the 90 °C column, the resultant ampacity of the 3/0, 90 °C wire is equal to or greater than the ampacity rating of the same size conductor in the 75 °C, the conductor is permitted.

From NEC table 310.15(B)(16) in 90 °C column, after the derating, the 3/0 conductor ampacity is 216 A which is greater than the minimum required 200 A. Thus the permitted copper conductor size is 3/0.



The permission to use the 90 °C ampacity for ambient temperature adjustment comes from the general requirement in 110.14(C); Conductors with temperature ratings higher than specified for terminations shall be permitted to be used for ampacity adjustment, correction, or both.

## AC Mains Input Wiring, Example Calculation: Phoenix, AZ

### Assumptions:

- Breaker and equipment terminal rating minimum 75 °C
- Continuous duty equipment
- Maximum 50 °C ambient rating
- Installation location: Phoenix, AZ, USA
- 90 °C rated wire required
- 480 VAC Input, 3 phase, no neutral
- Maximum station AC input rating: 80 A
- Three current carrying conductors in conduit

The continuous duty derating per 625.41 is  $80 \times 1.25$ , or 100 A.

Temperature derating from 2017 NEC Table 310.15(B)(2)(a) based on 30 °C the derating factor for 107 °F and 90 °C wire is 0.87 (from the 105-113 °F row).

The allowable ampacity for a #3 AWG 90°C copper conductor per NEC Table 310.15(B)(16) is 115.

Applying the temperature derating factor from Table 310.15(B)(2)(a),  $115 \times .87 = 100.05$  A.

100 is the minimum ampacity this conductor must have per the NEC to prevent potential insulation damage and provide the ability of the conductor to dissipate heat caused by the current flow. After the derating is applied, the resulting ampacity of 100.05 A is greater than the 100 A required.

A #3 AWG copper conductor is rated at 100 A at 75 °C, which is the ampacity column required for equipment rated 100 A or greater per NEC 110.14(C)(1)(b). However in this case, the equipment is only rated to 80 A. Since the equipment is listed and identified with a 75 °C termination rating, we can use NEC Section 110.14(C)(1)(a)(3). As long as after derating from the 90 °C column of table 310.15(B)(16) the resultant ampacity is equal to or greater than the ampacity rating of the conductor in the 75 °C column, the #3 AWG conductor is permitted.

From NEC table 310.15(B)(16) in 90 °C column, after the derating, the conductor ampacity is 100.05 A, which is greater than the minimum required 100 A. Thus the permitted conductor size is 3 AWG.

The permission to use the 90 °C ampacity for ambient temperature comes from the general requirement in 110.14(C); Conductors with temperature ratings higher than specified for terminations shall be permitted to be used for ampacity adjustment, correction, or both.

# Connectivity 7

A consistently strong cellular signal is needed before installers can activate the vehicle charging 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.



**NOTE:** Cellular connection is needed only if there is no Ethernet to USB network connection.

## Signal Strength and Quality

You must use a cellular signal detection device (such as a Siretta Snyder LTE or equivalent) to take signal strength readings at the exact proposed mounting location of the charging station. If the charging station does not have its own cellular connection, take the signal strength reading at the proposed mounting location of the gateway station.

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

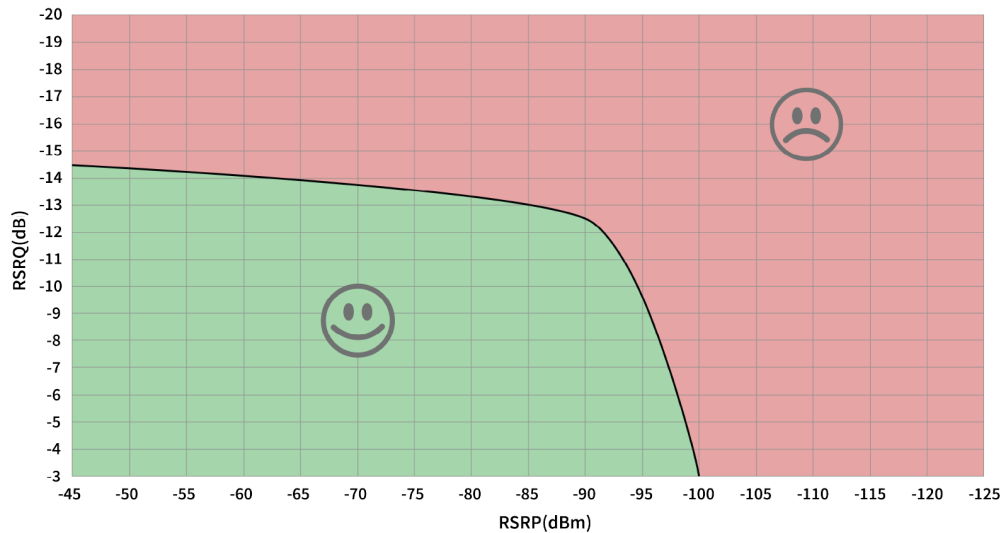
- US: AT&T, T-Mobile, and Verizon
- Canada: Rogers, Telus, and Bell

In Europe, ChargePoint products all support LTE bands 1, 3, 7, 8, and 20. 900 and 1800 MHz are also supported for 2G fallback. Partners vary by country.

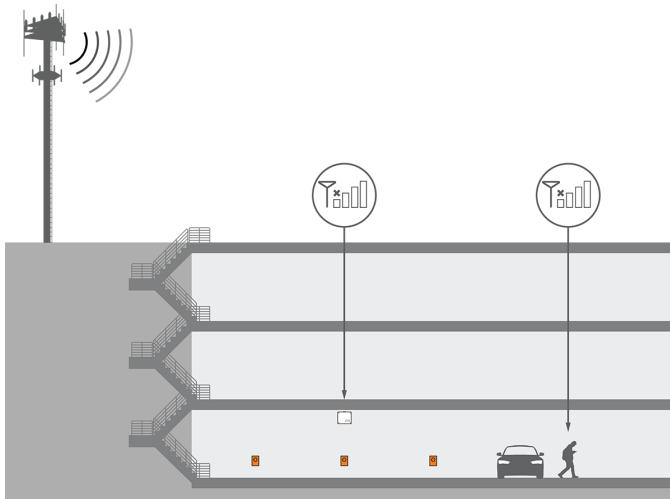
You must test the LTE signal strength at the proposed mounting location of every gateway station and ensure the location meets the minimum RSRQ at -12.5 dB or better, for RSRP measured at -90 dBm or better. Refer to the graph for acceptable combinations.

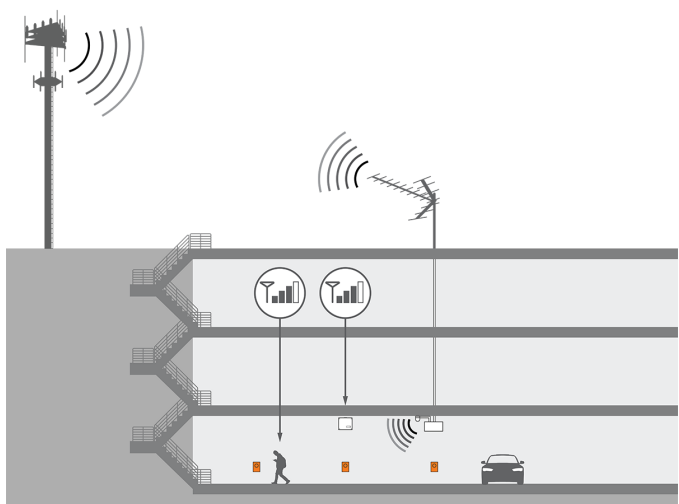


**NOTE:** Cellular signal strength is measured in dBm, a logarithmic unit expressed as a negative number. Because dBm values are negative, a value closer to zero indicates a stronger signal. For example, -70 dBm represents a stronger signal than -85 dBm, while -90 dBm indicates a weaker signal than both.



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.





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.

Repeaters are not allowed in France. Contact the French service provider for more information.

## Limited Warranty Information and Disclaimer

The Limited Warranty you received with your charging station is subject to certain exceptions and exclusions. For example, your use of, installation of, or modification to, the ChargePoint® charging station in a manner in which the ChargePoint® charging station is not intended to be used or modified will void the limited warranty. You should review your limited warranty and become familiar with the terms thereof. Other than any such limited warranty, the ChargePoint products are provided "AS IS," and ChargePoint, Inc. and its distributors expressly disclaim all implied warranties, including any warranty of design, merchantability, fitness for a particular purposes and non-infringement, to the maximum extent permitted by law.

## Limitation of Liability

CHARGEPOINT IS NOT LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, PUNITIVE OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION LOST PROFITS, LOST BUSINESS, LOST DATA, LOSS OF USE, OR COST OF COVER INCURRED BY YOU ARISING OUT OF OR RELATED TO YOUR PURCHASE OR USE OF, OR INABILITY TO USE, THE CHARGING STATION, UNDER ANY THEORY OF LIABILITY, WHETHER IN AN ACTION IN CONTRACT, STRICT LIABILITY, TORT (INCLUDING NEGLIGENCE) OR OTHER LEGAL OR EQUITABLE THEORY, EVEN IF CHARGEPOINT KNEW OR SHOULD HAVE KNOWN OF THE POSSIBILITY OF SUCH DAMAGES. IN ANY EVENT, THE CUMULATIVE LIABILITY OF CHARGEPOINT FOR ALL CLAIMS WHATSOEVER RELATED TO THE CHARGING STATION WILL NOT EXCEED THE PRICE YOU PAID FOR THE CHARGING STATION. THE LIMITATIONS SET FORTH HEREIN ARE INTENDED TO LIMIT THE LIABILITY OF CHARGEPOINT AND SHALL APPLY NOTWITHSTANDING ANY FAILURE OF ESSENTIAL PURPOSE OF ANY LIMITED REMEDY.

## FCC Compliance Statement

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the manufacturer's instruction manual, may cause harmful interference with radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case, you will be required to correct the interference at your own expense.

Important: Changes or modifications to this product not authorized by ChargePoint, Inc., could affect the EMC compliance and revoke your authority to operate this product.

Exposure to Radio Frequency Energy: The radiated power output of the 802.11 b/g/n radio and cellular modem (optional) in this device is below the FCC radio frequency exposure limits for uncontrolled equipment. The antenna of this product, used under normal conditions, is at least 20 cm away from the body of the user. This device must not be co-located or operated with any other antenna or transmitter by the manufacturer, subject to the conditions of the FCC Grant.

## ISED (formerly Industry Canada)

This device complies with the licence-exempt RSS standard(s) of Innovation, Science and Economic Development Canada (ISED). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Cet appareil est conforme aux flux RSS exemptés de licence d'Innovation, Sciences et Développement économique Canada (ISDE). L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter.

Radiation Exposure Statement: This equipment complies with the IC RSS-102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and your body.

Énoncé d'exposition aux rayonnements: Cet équipement est conforme aux limites d'exposition aux rayonnements ioniques RSS-102 Pour un environnement incontrôlé. Cet équipement doit être installé et utilisé avec un Distance minimale de 20 cm entre le radiateur et votre corps.

**See FCC/ISED.**

## FCC/IC Compliance Labels

Visit [chargepoint.com/labels](https://chargepoint.com/labels)