Tuesday, October 6, 2020

ADDENDUM NO. 2

This addendum is provided to all known prospective proposers for clarification of the subject Invitation for Bid (IFB).

Hesperia Scope of Work

- The original plan was to use the ChargePoint Surface Conduit Entry Kits to pair the chargers without having to remove the chargers from their original installation but after a long discussion with ChargePoint engineering it was determined that the best course of action would be to remove the chargers and existing mounts and reinstall them using the new installation procedures which are included in exhibit 1.
- 2. 4 chargers on the west end under the solar canopy will need to be removed and the 30" X 10' X 8" thick section of concrete and mounting hardware removed and discarded. 4 new mounting hardware templates will need to be installed according to ChargePoint instructions (exhibit 1) and existing conduit modified and adapted to the new charger mounting hardware to allow for pairing the chargers. The most southern chargers in each pair will need to be turned 180 degrees so that the southern charger of the pair faces west and the northern charger of each pair continues to face east. A conduit for the DC cable will need to be fabricated and installed between the 2 charger templates in the pairs according to ChargePoint instructions. Once the bases have been prepared for connecting the chargers in pairs, new concrete will need to be poured the same thickness as the surrounding slab. Chargers mounted and wiring reconnected to the chargers with the additional wiring to pair the units. A concrete path of travel will need to be added to access the west facing chargers from the parking slab west of the solar canopy. This could be done on a 45 degree angle to avoid obstructions.
- 3. The same process listed in #1 will be performed on the 2 chargers east of the north pair of chargers described in paragraph 1.
- 4. Single charger south of the ones listed in paragraph 2 is to be removed along with the 10' X 30" concrete slab under the charger going over to the slab where the disconnect is mounted. New mounting hardware template will be installed for existing charger that was removed and also the new charger that will be mounted alongside the original charger and paired. Southern most charger of the pair to be facing west and the northern most charger of the pair to be facing east. New 3AWG wire will need to be run from the new disconnect to the switchgear 140' away to the north. Conduit is currently approximately 5' underground from the disconnect proposed location to the switchgear and a 100 amp circuit breaker needs to be added to the empty cutout in the switchgear panel for such a purpose alongside the existing circuit breakers.
- The mounting bracket for the additional disconnect will need to be modified to accept the additional disconnect supplied by contractor. Existing conduits will have to be re VVTA IFB 2021-01 Page 1 of 4 (Rev. 09/2020)

positioned to connect to the new disconnect with 45-degree fittings or contractor recommendation method acceptable by VVTA.

- 6. Charge point will assign a lead engineer for assistance in the installation of the chargers and the pairing procedure so that it conforms to ChargePoint requirements.
- 7. Contractor will be responsible to clean up and haul all waste cement, metal, and trash from jobsite so that the location is restored to original cleanliness.
- 8. ChargePoint will provide an inspection of the installation along with validation of proper charger operation.
- 9. See attached drawings, pictures, and instructions.

Barstow Scope of Work

- 1. 4" Conduit has been installed between the planter where the disconnects will be located and the proposed location of the ChargePoint chargers. SCE under their Charge Ready Transport program will install a new transformer and supply the power to the transformer, switch gear, and disconnects and it will be the contractors scope of work to run the power from the disconnects to the charger locations and install 6 CP250 chargers in pairs according to manufacturer's installation instructions. Paired chargers will need to be installed facing opposite directions; one facing north and the other facing south.
- 2. There will be 3 sets of paired charger locations for the 6 chargers as outlined in the attached drawing. Some concrete will have to be cut out in order to run the conduit from the 4" conduit to each of the chargers and conduit from one base to the other for pairing and DC voltage. New concrete poured to secure the mounting bases and chargers installed according to ChargePoint instructions.
- 3. Chargers are to be installed one facing North and one facing South in each pair. Wiring run between the 2 chargers so that they are paired according to ChargePoint instructions.
- 4. Charge point will assign a lead engineer for assistance in the installation of the chargers and the pairing procedure so that it conforms to ChargePoint requirements.
- 5. Contractor will be responsible to clean up and haul all waste cement, metal, and trash from jobsite so that the location is restored to original cleanliness.
- 6. ChargePoint will provide an inspection of the installation along with validation of proper charger operation.
- 7. See attached drawings, pictures and instructions.

With the addition of the Barstow Facility installation, please use the Bid Form below:

HESPERIA FACILITY INSTALLATION

Description	Price per Unit	Total
Parts		
Labor		

BARSTOW FACILITY INSTALLATION

Description	Price per Unit	Total			
Parts					
Labor					
TOTAL COST \$					

THIS FORM REPLACES THE BID FORM INCLUDED IN THE IFB.

All other terms and conditions of the IFB remain the same.

As stated in the IFB, all addenda must be acknowledged. Please use Attachment G of the IFB to acknowledge receipt of this addendum. Failure to acknowledge any addenda to this IFB may be cause to deem Bidder "Non-Responsive."

The revised installation and pairing instructions along with the information for Barstow follow:







Mounting must be made wider and conduit re-positioned to new Disconnect installed on this mounting hardware.

51" wide

0

0

0

00

DISCONNECT 5

Conduit for new charger

000

0









ar

VICTOR VALLEY TRANSIT

v Electric Bus

mounting need to match the



The High Desert Goes Green

national e CA 4753

ry Electria

Proper orientation of paired chargers

-chargepoin+





-chargepoin+.



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 or around hazardous locations, such as near flammable, explosive, or combustible materials.

6. Do not use this product if the enclosure, EV cable, or the EV connector is broken, cracked, open, or shows any other indication of damage.

7. Do not put fingers into the electric vehicle connector.



Important: Under no circumstances will compliance with the information in this manual relieve the user of his/her responsibility to comply with all applicable codes or safety standards. This document describes the most commonly-used installation and mounting scenarios. If situations arise in which it is not possible to perform an installation following the procedures provided in this document, contact ChargePoint, Inc. ChargePoint, Inc. is not responsible for any damages that may result from custom installations that are not described in this document or for any failure to adhere to installation recommendations.

Product Disposal

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.



No Accuracy Guarantee

Commercially reasonable efforts were made to ensure that the specifications and other information in this manual are accurate and complete at the time of its publication. However, the specifications and other information in this manual are subject to change at any time without prior notice.

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Symbols Used in This Document

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.

ADA ONIX

-chargepoin+.

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Site Design Guidelines

This document describes how to design a project site for the ChargePoint[®] Express 250 Paired DC fast charging stations.

The Express 250 is a DC fast charging station for electric vehicles. Each charging station communicates with ChargePoint using a cellular network. This connectivity is required for diagnostics and reporting, as well as communication with the online dashboard that allows the station owner to control its settings and commands. See the section "Cellular Connectivity" on page 15 for detailed information.

For full specifications and certifications for Express 250 charging stations, refer to the *Express 250 Data Sheet* found online at: chargepoint.com/support/guides

Important: 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.

Paired 250

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 Express 250 charging stations, all of the following are required:

- Both Express 250s must have 62.5 kW power enabled (not allowed on stations only enabled for 50 kW)
- Both Express 250s must be provisioned for full power back to the panel (not allowed on "power select" stations)
- · Both Express 250s must be properly installed, connected to each other, and communicating

Initial Site Guidelines

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 upgrades later as demand for EV charging grows.

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 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.
 Asphalt cannot support the full weight of the Charging Station. Failure to install the ChargePoint Charging Station on a level concrete base may cause the Charging Station to tip over, resulting in death, personal injury, or property damage.

Layout considerations:

- 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 locations of EV charge ports. 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.



Important: Place each charging station centered at the head of its parking space. This placement maximizes cable reach for the varied charge port locations on different EVs.



a. 3.76 m (148 in) b. 609 mm (24 in)

• 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. Cable reach radius: 2895.6 mm (114 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)

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Civil and Mechanical Design 2

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

Component Dimensions



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).

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 or a ChargePoint-approved surface mounting solution to install the ChargePoint[®] Charging Station and 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 Warranty.

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 ChargePoint® Charging Station to over 18 inches (457 mm) 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

Shown are the Express 250 anchor locations, conduit stub-ups, and clearance areas (shaded in blue). Measurements are provided in millimeters, with inches in brackets.



- a. Shunt trip conduit, 19.1 mm (3/4 in) trade size maximum
- b. 400/480 VAC conduit, 50.8 mm (2 in) trade size, 69.9 mm (2.75 in) OD maximum
- c. Front service clearance
- d. Rear service clearance
- e. Data conduit, 19.1 mm (3/4 in) trade size maximum
- f. DC power conduit, 76.2 mm (3 in) trade size, 88.9 mm (3.5 in) OD maximum

Clearances

The Express 250 requires minimum maintenance clearances as listed in the table below.

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).

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 closer front and side clearance for Power Module service, must be at grade level +/- 12.7 mm (0.5 in).

Fencing, bollards, or wheel stops must not encroach upon the clearances listed above, if present. None of these barriers are explicitly required by ChargePoint.

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 charging station's heat at maximum operation. Each Express 250 charging station emits approximately 3.3 kW of waste heat at maximum operation.

The charging 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, increase the rear clearance to 0.9 m (3 ft).
- If two Express 250 charging stations will be positioned back to back, increase the rear clearance to 1.8 m (6 ft) to reduce exhaust recirculation.

Pairing Existing Charging Stations

If all site preparation 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 in advance.
- For regions using armored cable: install the cables (and ducting if applicable) in advance, leaving a service loop long enough to reach the bus bar blocks approximately 61 cm (2 ft) above grade. Bundle the cable ends and install the cover panels and extrusions on the Express 250 stations as normal.
- For regions using conduit:
 - Extend side clearance at both DC conduit stub-up locations to 1.2 m (4 ft) to allow space for cable pulling equipment.
 - Install a fishing tape in the communication conduit to assist with routing of Ethernet cable later. If Ethernet is pulled in advance, leave 317.5 cm (125 in) of wire above grade.
 - 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.

Accessibility

The Express 250 touchscreen and charging cables are centered at a distance of 1143 mm (45 in) from the ground, to comply with American Disability Act (ADA) requirements. If your installation must comply with ADA standards, or the disability access regulations for other regions, consider this height when designing the height of the pad.

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 holsters and user interfaces.

-chargepoin-

Electrical Design **3**

The default Express 250 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 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 CPE250-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.

Note: It is possible to pre-install Express 250 charging stations as Standalone initially and pair them at a later date, if desired. In this case, install the DC conduit per "The Express 250 Concrete Mounting Template" on page 19, 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 for North American 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. For North American installations, the panel rating must be sized for at least 125% of the total load on each leg of a 3-phase panel.

Each Express 250 requires a service panel breaker as follows:

- North America, 480 V: 100 A breaker for 125% of a maximum 80 A load
- Europe and UK, 400 V: 100 A breaker for a maximum 96 A load



CAUTION: The Express 250 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.

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 charging station. This shunt trip wiring is activated when unsafe conditions are detected, such as a cover panel not being seated correctly and posing a shock risk. All shunt trip behavior is already hard-coded into the charging station and has no programmable variables.

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

Disconnect

A local AC disconnect, 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 AC disconnects must be powered off for safety.

Conduit

In regions that use conduit, the outer diameter of conduit 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, as shown below.

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 section, "The Express 250 Concrete Mounting Template". Ensure a length of at least 61 cm (2 ft) is left free above grade to allow the wiring to reach the charging station AC terminals.



- a. Shunt trip conduit: 19.1 mm (3/4 in trade size)
- b. AC conduit: 50.8 mm (2 in trade size)
- c. Mounting bolts
- d. Data conduit: 19.1 mm (3/4 in trade size)
- e. DC conduit: 76.2 mm (3 in trade size) (conduit inlet OD of 88.9 mm (3.5 in))
- f. Concrete surface
- g. Concrete Mounting Template (embedded in concrete)

Wiring Requirements

!

Important: The AC terminal blocks on the Express 250 accept a maximum wire size of 35 mm² (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.



Important: The DC terminal blocks on the Express 250 can accept a maximum wire size of 120 mm^2 (4/0 AWG). Please contact ChargePoint to obtain the lugs required. Check site plans and local code for site-specific requirements.

For full product specifications, refer to the *Express 250 Data Sheet*. Using that data, ensure that the installation location is equipped with service wiring that supports the Express 250's power requirements:

- AC conductors (L1, L2, L3), maximum wire size of 35 mm² (2 AWG) solid or stranded wires at the terminal
- Ground conductor
- Neutral conductor as required by region (Neutral connection is not required for service equipment operation and terminal is provided for convenience only)
- Shunt trip wiring
- 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
 - Field crimp using straight-through pattern 568B, and test for functionality
 - Crimp the drain wire into RJ45 connectors at both ends
- DC conductors (for 4 lugs):
 - 2 positive and 2 negative conductors total; 1 positive and 1 negative in each direction
 - Maximum conductor size of 120 mm² (4/0 AWG)
 - USA/Canada: Rated at 1000 V, 90°C, copper only, minimum current carrying capacity 160 A, insulation type XHHW-2.
 - EU/UK: Rated at 1000 V conductor to conductor (+/-500 V conductor to ground, LV), 90°C, copper only, minimum current carrying capacity 160 A, insulation type XLPE (cross-linked polyethylene). If armored cable, 4-core cable and cable gland sized to local code (such as Cablecraft CCG-CW50 or similar).
 - 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
- DC lugs (x4):
 - Silver plated copper narrow-tongue 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 24 mm (15/16 in)
 - 4 mm (0.55 in) clearance between the bottom bus bar block's top stud axis and the beginning of the top bus bar block
 - Example lugs for average conductor size are Ilsco CLWD-3/0-14-34 or similar (North America) or Weidmuller 1494410000 120 mm² or similar (UK/EU)
 - Contact ChargePoint if the installer requires lugs for 3/0 (kit 99-002644-01) or 4/0 (kit 99-002645-01) 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.

Grounding Requirements

- The Express 250 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 on the Express 250.
- Ensure that 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.

Cellular Connectivity

A consistently strong cellular signal is needed before installers can activate the station. Do not rely on cell phone applications to measure cellular signals when conducting site surveys. Ensure the signal at the installation site is consistently -85 dBm or better. (Note that these numbers are all negative, so -70 dBm is stronger than -85 dBm, and -90 dBm is weaker.) Use a cellular signal detection device (such as a SquidTM) to take signal strength readings at the exact proposed charging station locations.

If the signal is below -85 dBm, take cellular readings at the location where a cellular signal booster antennas will be installed to ensure enough signal exists to be boosted. Install repeaters to boost the strength of the cellular signals. Repeaters are often required when installing the charging station in an underground garage or enclosed parking structure.

ADA ONK

Wiring Diagram



-chargepoin-

The Express 250 Concrete 4 Mounting Template

The default Express 250 installation requires service wiring installed underground that is pulled to a concrete pad. The ChargePoint Express 250 Concrete Mounting Template (CPE250-CMT) provides correctly-aligned mounting bolts and conduit openings to ensure the Express 250 can be easily positioned and mounted.

WARNING: Use of a ChargePoint approved mounting method, such as the CPE250-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 CPE250-CMT, available from ChargePoint, includes:

- 16 mm (5/8 in)-11 thread, 304.8 mm (12 in) long threaded mounting bolts with plastic caps on one end (6 included)
- 16 mm (5/8 in) nuts (24 included)
- 16 mm (5/8 in) washers (24 included)
- Printed specification detailing how to position an assembled CPE250-CMT into the concrete

Note: You must order the CPE250-CMT with sufficient lead time before the site preparation. This kit is not included with the ChargePoint Express 250 charging station, and must be ordered separately in advance.

Tools and Materials

In addition to the CPE250-CMT described on the following pages, you will need:

- Digging tools (shovel, spade, etc.)
- Materials to prepare the form for pouring concrete
- Concrete
- Conduit
- 24 mm (15/16 in) wrench (x2)
- Pliers to adjust the guide fingers on the conduit opening (if needed)
- Level
- Cut-resistant gloves

CPE250-CMT Overview

Before pouring concrete, you must assemble and position the mounting template. A top-down view, and an assembled template, is shown below with the conduit and wiring components described in the previous section.

Note: A separate CPE250-CMT is required for each charging station (two per paired installation).





- a. AC conduit
- **b.** Shunt trip wiring
- c. Communications wiring
- d. DC conduit

Assemble the CPE250-CMT



CAUTION: The CPE250-CMT can have sharp edges. Be sure to wear cut-resistant gloves when handling it.

- Holding a mounting bolt by its plastic cap, insert the bare end into a bolt hole in the top plate of the template.
- 2. Before inserting the bolt through the bottom plate of the template, thread a nut onto the bolt and add a washer as shown.
- 3. Ensure the plastic cap is pressed fully down on the bolt.
- 4. Holding the bottom nut and washer flush against the top surface of the bottom plate, thread the bolt onto the nut until the distance between the bottom of the plastic cap and the surface of the top plate is 50.8 mm (2 in).
- 5. Repeat Steps 1 to 4 for the remaining bolts.



 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 CPE250-CMT



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 plans.
- 2. Build the form 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).

- **3.** On the CPE250-CMT, locate the "FRONT" marking and the conduit guide fingers. The conduit guide fingers face up.
- 4. Place the assembled CPE250-CMT so that the "FRONT" marking aligns with the specified front of the station.
- 5. Slide the CPE250-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 CPE250-CMT down onto the conduit to avoid flexing it.
 - Make sure that the conduits are plumb.
 - Use a level to check that the CPE250-CMT is level from front to back and from side to side.

Important: Before pouring concrete, the CPE250-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.

6. Pour the concrete.

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

7. Complete the Site Readiness Form provided by ChargePoint to verify that the site is correctly completed and ready for product installation.

-chargepoin+.

Examples of Express 250 Paired A Wire Sizing

The required DC wire gauge varies based on the specific site. These example scenarios can 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

Continuous duty derating per 625.41

160 x 1.25 = 200 A

From the Appendix D ASHRAE, the table summer design temperature is 91°F for Newark, NJ.

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*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

Continuous duty derating per 625.41

80 x 1.25 = 100 A

From the Appendix D ASHRAE table, the summer design temperature is 107°F for Phoenix, AZ

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 X .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 80 A. Since the equipment is listed and identified with a 75°C termination rating, then 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.

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 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.

Industry Canada

This device complies with Industry Canada license-exempt RSS standard(s). 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.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. 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 tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

FCC/IC Compliance Labels

Visit chargepoint.com/labels/





chargepoint.com/support 75-00136101 r3

VICTOR VALLEY TRANSIT AUTHORITY BATTERY ELECTRIC BUS CHARGING SOLUTION ADDITION (QTY 1) AND PAIRING (QTY 8) DC CHARGERS 1750 Smoke Tree St, Hesparia, Ca. 92345

LIST OF DRAWINGS (REVISION 1)

 SHEET SHEET NO.
 TITLE

 1 OF 5
 VVTA -G-0001 TITLE PAGE

 2 OF 5
 VVTA - E-5001 SITE PLAN

 3 OF 5
 VVTA - E-5002 EQUIP LAYOUT

 4 OF 5
 VVTA - E-5003 ELEVATIONS

 5 OF 5
 VVTA - E-5004 SINGLE LINE DIAGRAM



<u>VVTA Site</u>



VICINITY MAP (NOT TO SCALE) N

> DES R1: l

 $\frac{\text{AREA MAP}}{(\text{NOT TO SCALE}) \text{ N}}$

REVISIONS				PREJECT: Victor Vally Transit Authority	
SCRIPTION	ΒY	DATE		17150 Smoke Tree St, hesparia,	Ca. 92345
JPDATE SCE DETAILS	RM	3/19/20			
			•	<u>DWG TITLE:</u>	
			-cnardepoin-	TITLE PAGE	
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				DATE: 3/09/2020	DWG#:



VVTA Site

SITE MAP (NOT TO SCALE) N

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<u>PROJECT:</u> Victor Vally Transit A 17150 Smoke Tree St, hesparia,	uthority Ca. 92345
 <u>DWG_TITLE:</u>	
SITE PLAN	
SCALE:	VVTA-E-5001.A
DATE: 3/09/2020	DWG#:







ALL DCPDS, CONDUCTORS AND CONDUIT SIZES STATED HERE ARE PROVIDED BY CHARGEPDINT FOR REFERENCE DNLY. SITE SPECIFIC WIRE SIZING SHALL BE PERFORMED BY THE INSTALLATION CONTRACTOR TAKING INTO ACCOUNT LOCAL CONDITIONS AND CODES/ STANDARDS. ALL CONDUCTORS SHALL BE COPPER. ALL LOCATION SHOWN ARE APPROXIMATE AND EXACT LOCATIONS DETERMINED AT TIME OF CONTRACTOR CONSTRUCTION SUBMITTAL DOCUMENTS.

CONTRACTOR SHALL PERFORM GPR AND TAKE ALL NECCESSARY PRE-CAUTIONS TO WORK AROUND EXISTING UTILITIES.

NEW WORK KEYNDTES

1 ADDITIONAL CPE 250 CHARGER.

2 EXISTING QTY (7) CPE250 CHARGERS

CABLE								
REFERENCE	DUTY	FROM	то	OP VOLTS	# OF WIRES	WIRE SIZE *	INSUL TYPE	LENGTH (ft)
	AC PRIMARY CABLES TO							
C01-AC	CPE250	MDP	C01	600V	3	#3 AWG	THHN/THWN-2	150
	(EGC)	MDP	C01	0V	1	#8 AWG	BARE	150
C03 A.C	AC PRIMARY CABLES TO	MDD	602	CODI	2	40 AM/C	THUN /TUNAN 2	150
CUZ-AC	CPE250	IVIDP	ωz	6004	3	#5 AVVG	THEN/THWN-2	120
	EQUIPOTENTIAL BOND	1100	000	<i></i>	4	#0.414/C	2405	150
	(EGC)	IVIDP	002	UV	1	#8 AWG	BAKE	150
	DC INTERCONNECTION							
	BETWEEN PAIRED CPE250	004		. (500.) (12/2 11/2	T	10
CO1-CO2-DC-A	UNITS BUS A	01	602	+/- 500 V	2	#3/0 AWG	THHN/THWN-2	10
	DC INTERCONNECTION							
	BETWEEN PAIRED CPE250							
CO1-CO2-DC-B	UNITS BUS B	CO1	C02	+/- 500 V	2	#3/0 AWG	THHN/THWN-2	10
-								
CO1-CO2-NL	NETWORK LINK	CO1	C02	COMMS	8	CAT 6 FTP		10
CPE250 CONDU	IT SCHEDULE							
								CONDUIT
CONDUIT REF	DUTY	FROM	TO	CABLE REF	# OF WIRES	WIRE SIZE *	INSUL TYPE	SIZE (INCH)
CO1	AC PRI POWER CABLES	MDP	CO1	C01-AC	3	#3 AWG *	THHN/THWN-2	- 2"
	GROUND	MDP	CO1	C01-PE	1	#8AWG	BARE	_
CO2	AC PRI POWER CABLES	MDP	CO2	C02-AC	3	#3AWG	THHN/THWN-2	2"
	GROUND	MDP 601	CO2	CU2-PE		#8AWG	BARE	
C01/C02	DC PAIRED POWER CABLES	CO1	602	C01-C02-DC-A	#3/U AWG	2	THHN/THWN-2	- 3"
01/02	DC PAIRED POWER CABLES	601	602	C01-C02-DC-B	#3/U AWG		THHN/THWN-2	2/41
	PAIRED NETWORK CABLE	101	1 002	COT-COZ-INE	CALPER	CAIGFIP		3/4



REVISIONS				PROJECT: Victor Vally Transit A	uthority
DESCRIPTION	BY	DATE		17150 Smoke Tree St, hesparia,	Ca. 92345
R1: UPDATE SCE DETAILS	RM	3/19/20			
				<u>DWG TITLE:</u>	
			-cnardeboin	SINGLE LINE DIA	GRAM
			3	SCALE:	VVTA-E-5004.A
				DATE: 3/09/2020	DWG#:

CPE25	0 BREAKER	R SELECT	IDN
NOMINAL /Oltage	MAX AC CURRENT	125% × Continudu S Load	BREAKE R SIZE
400 V	100 A	125 A	125 A
480 V	80A	100 A	100 A

