CITY OF FORT BRAGG
PUBLIC WORKS

2024 EV FLEET CHARGING STATIONS PROJECT

City of Fort Bragg

CITY PROJECT NO. PWP-00126

SPECIAL PROVISIONS

GENERAL

THE SPECIAL PROVISIONS CONTAINED HEREIN HAVE BEEN PREPARED BY OR UNDER THE DIRECTION OF THE FOLLOWING REGISTERED PERSONS.

TO BE SUPPLEMENTED WITH THE CALIFORNIA DEPARTMENT OF TRANSPORTATION 2023 STANDARD SPECIFICATIONS AND 2023 STANDARD PLANS, AND THE FORT BRAGG STANDARD SPECIFICATIONS.

Susanne Loutsis 03/18/2024

Susanne Loutsis, PE Date
Registered Civil Engineer No. 91288 Exp. 6/30/2024

DocuSigned by:
Chantell O'Neal 11/4/2024
714E1085226D467...
Recommended for Approval Date

Approved By:

DocuSigned by:
John Smith 11/4/2024
783F134418F04E1...
John Smith Date
Director of Public Works

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GENERAL PROVISIONS

STANDARD SPECIFICATIONS

The 2023 State of California Standard Plans and Specifications (State Standard Specifications), City of Fort Bragg Standard Specifications (City Standard Specifications) and Standard Plans (City Standard Plans), dated April 2008, the Contract Documents, the Contract Plans, Bid Forms, these Technical Specifications, and the PG&E Supplemental Plan, shall control all work to be done under this contract.

Copies of the City Standard Specifications and City Standard Plans may be obtained from the City of Fort Bragg, 416 North Franklin Street, Fort Bragg, California 95437 or are available on our website. In the event of a conflict between the State Standard Specifications and the City Standard Specifications the City Standard Specifications shall control.

Unless otherwise indicated, improvements constructed under this Contract shall be constructed in accordance with the 2023 edition of the Standard Specifications of the State of California, California State Transportation Agency, Department of Transportation, which specifications are hereinafter referred to as the State Standard Specifications, and in accordance with the following modifications and revisions.

BEGINNING OF WORK

The Contractor is advised that no field construction work may commence, and the counting of working days shall not begin until Notice to Proceed is issued by the City. Work that does not involve field construction such as pre-construction meetings, creation of progress schedules, preparation of Traffic Control Plans, preparation of Storm Water Pollution Prevention Plan, etc., may occur prior to the counting of working days. A Building Permit will be required for the work.

The number of working days for this project is fifteen (15) days without the alternative bid items and twenty-two (22) days with the Alternative bid items.

CHANGES AND EXTRA WORK

The Public Works Department (Department) may make changes within the scope of work and add extra work. The City Engineer or designee describes the changes and extra work, the payment basis, and any time adjustment in a Change Order.

A Change Order is approved when the Department signs the Change Order.

Until the Department approves a Change Order, continue to perform the work under the Contract unless the engineer orders you to start the work described in the Change Order before its approval.

Submit detailed cost data for a unit price adjustment for a bid item if (1) the City Engineer or designee requests the data or (2) you request a unit price adjustment resulting from a change of more than 25 percent in the bid item's quantity.

COORDINATION

The Contractor shall notify the City's police department personal directly, of any work to be performed under this Contract on any given work day either on the afternoon of the prior working day or before 8:30 a.m. on the given working day. Any work completed for which the City has not received prior notification of its scheduling MAY NOT BE ACCEPTED FOR PAYMENT.

The Contractor shall notify residents and businesses fronting on or adjacent to the Streets and Alleys of this Project of impending construction activity prior to doing any work in front of a resident's home or business office, in accordance with:

The Contractor's attention is directed to Sections 5-1.20 "Coordination with Other Entities", and 7-1.03, "Public Convenience", of the State Standard Specifications 12.9 **Owner Notification Emergency Service Providers Notifications** section of the Contract Special Provisions Part 3. The Contractor shall coordinate their work with the following entities throughout the project:

- Mendocino Coast Hospital Ambulance Service 707-937-1940
- Mendocino Transit Authority 707-234-6444
- City of Fort Bragg Police Department 707-964-0200
- City of Fort Bragg Fire Department 707-961-2831
- Waste Management of Fort Bragg 707-964-9172
- United States Postal Services 707-964-2302
- Fort Bragg Unified School District 707-961-3518

PAYMENT

Full compensation for conforming to the requirements of this section shall be considered as included in the Contract prices paid for the various items of work involved and no additional compensation will be allowed.

WORK ON PRIVATE PROPERTY

The Contractor's attention is directed to Section 5-1.36 "Property and Facility Preservation" of the State Standard Specifications and these Technical Specifications. The Contractor shall protect existing private improvements from damage. On-site private improvements may include, but are not limited to, trees, shrubbery, lawns, irrigation facilities, structures, mailboxes, pavement, curbing, fences, walls and drainage facilities.

If such objects are damaged, they shall be replaced, repaired and or restored at the Contractor's expense, to a condition as good as or better than when the Contractor entered upon the property, as determined by the City.

Work is to be constructed within existing public rights of way and Temporary Construction Agreement limits unless as otherwise directed by the City.

The Contractor shall be responsible for repairing, replacing, or restoring all fencing within the limits of Work that are damaged or removed during construction. Damage shall include all that is caused as a result of any and all work associated with the contract. All repairs to damaged fencing shall be done in a manner which results in fencing in equal or better than the previously existing conditions. Fence replacement or repair shall be completed as soon as it will not be damaged by further construction activities.

The Contractor shall be responsible for repairing, replacing, or modifying all landscape and irrigation systems within the limits of the Work that are damaged, capped, or removed during construction. Damage shall include all that is caused as a result of any and all work associated with the contract. All repairs to both landscaping and irrigation systems shall be done in a manner equal to or better than the previously existing conditions. If irrigation systems are damaged during trenching, or by other construction activities, the Contractor shall repair the damage within two (2) calendar days in order to maintain full operation of the system. Any loss and/or subsequent

replacement of plant material due to damage of the irrigation system or the neglect to repair it promptly shall be the sole responsibility of the Contractor. Landscape replacement or repair shall be completed as soon as it will not be damaged by further construction activities. The Contractor shall place protective fencing around trees on private property adjacent to project improvements.

Payment

Full compensation for conforming to the requirements of this section shall be considered as included in the Contract prices paid for the various items of work involved and no additional compensation will be allowed.

SUBMITTALS

The Contractor shall submit shop drawings, product data and samples as required for conformance with the Project Plans and Technical Specifications. Submittals shall conform to the City Standard Specifications Section 1-1.08, "Shop Drawings" and Volume 1 Submittals Section of Contract Provisions. At a minimum, the Contractor shall submit the following for review and approval by the City:

Item	Submitted	Approved	Notes
Pre-Construction Documentation			
Traffic Control Plan			
Class 2 Aggregate Base Gradation			
Type A HMA Mix Design			

Payment

Full compensation for conforming to the requirements of this section shall be considered as included in the Contract prices paid for the various items of work involved and no additional compensation will be allowed.

TECHNICAL CONSTRUCTION PROVISIONS

Item # 1 TRAFFIC CONTROL PLAN

Provisions for public convenience and safety, construction area traffic control, and hours of work shall be in accordance with the City Standard Specifications. Specific requirements are provided in Sections 1-1.05, and "Traffic Control Standard Specifications" of the Standard Specifications and the Contractor shall be responsible for public safety and traffic control within the Project limits and on the approaches to the Project.

A traffic control plan (or plans) shall be submitted for review for any work requiring modifications of existing traffic patterns. The traffic control plan shall include provisions for vehicular, pedestrian, and bicycle access. Additionally, the traffic control plan shall address traffic signal operation for any work performed within 200 feet of a signalized intersection. Prior to performing any work that requires a lane closure, a Traffic Control Plan, prepared by the Contractor, shall be reviewed, and approved by the City of Fort Bragg.

Construction shall be suspended and no activities that interfere with public traffic shall be conducted on Memorial Day, Independence Day, Labor Day or Veterans Day, during the four-day Thanksgiving weekend and on December 21 through January 1 unless approved by City Engineer.

The local Fire Department, Sheriff/Police Department, California Highway Patrol, and Regional Transit (if applicable) shall be notified 24 hours in advance of construction work.

Construction area signs shall conform to the requirements of Section 1-1.05 of the Standard Specifications.

During construction, the Contractor shall not have any parking closures, in the same area, for more than three (3) consecutive working days.

With the exception of times during active paving, at least one lane of 10-foot minimum pavement width shall be maintained for each direction of travel during standard construction hours. Lane closure shall not be allowed without an approved traffic control plan, proper advance warning devices, signing and flag person control. Unless otherwise approved by the City of Fort Bragg, construction shall not be permitted on weekends and holidays.

Minor deviations from the requirements of this section concerning hours of work which do not change the cost of the work may be permitted upon the written request of the Contractor if in the opinion of the City Engineer, public traffic will be better served and the work expedited. These deviations shall not be adopted by the Contractor until the City Engineer has approved them in writing. All other modifications will be made by contract change order.

Pedestrian access facilities that comply with ADA regulations shall be provided through construction areas within the right-of-way and as specified herein. Pedestrian walkways shall be provided with surfacing of cold mix or hot mix asphalt concrete, Portland cement concrete, or timber. Surfaces shall be skid resistant and free of irregularities. After grinding, the contractor shall place cutback at curb return to eliminate tripping hazard.

Paved pedestrian access to sidewalks shall be maintained during all stages of construction. Walkways shall be maintained in good condition by the Contractor. Walkways shall be kept clear of obstructions.

Portable delineators, signs and tapers shall be installed per Section 12-3.11B(3) of the State

Specifications where temporary drop-offs are created by construction.

Full compensation for providing said pedestrian facilities shall be considered as included in the prices paid for the various contract items of work involved and no additional compensation will be allowed therefore.

Any closure or detour of pedestrian access for contractor's convenience shall be approved in writing by the City Engineer prior to scheduling work in the area under question. Any request for temporary closure or detour of pedestrians shall be made in writing and include plans and information showing requested duration, days of the week, routes, signing and safety measures. Approval or rejection of requests will be at the sole discretion of the City Engineer. Additional signing and safety measures for pedestrians approved as part of a pedestrian access modification shall be considered as included in the prices paid for the various contract items of work involved and no additional compensation shall be allowed therefore.

Measurement and Payment

All costs for maintaining traffic control systems shall be included in the LUMP SUM Price paid for the Traffic Control Plan and shall include full compensation for furnishing all labor (including flagging costs), materials (including signs and portable changeable message signs), tools, equipment and incidentals, and for doing all the work involved in placing, removing, storing, maintaining, moving to new locations, replacing, and disposing of the components of the traffic control systems as shown on the Plans, required to maintain traffic as specified in the State Specifications, in these Special Provisions, and as directed by the City Engineer and no additional compensation shall be allowed therefore.

Item # 2 CONSTRUCTION STAKING

The Contractor's attention is directed to Section 5-1.26 "Construction Surveys" of the State Specifications. The Contractor shall be responsible for providing all necessary construction stakes and marks to establish the lines and grades for the construction and completion of the work, including but not limited to, alignments, and temporary survey stakes.

The Contractor shall employ a person authorized to perform Land Surveying or Civil Engineering in the State of California to perform all necessary construction staking. Any other proposed person(s) shall be first approved by the City Engineer. All construction stakes and marks set by the Contractor's Land Surveyor, Civil Engineer, or other approved person(s), shall be carefully preserved by the Contractor. In case such stakes and marks are destroyed or damaged, they shall be promptly replaced, at the direction of the City Engineer, at no additional cost to the City.

The Contractor will be provided CAD files to assist the construction staking effort. The City will provide reference files containing project control lines, aerial photogrammetric mapping of existing facilities (without digital terrain model), and proposed improvements only. CAD files for plan sheets, electrical facilities, planting, and survey control will not be provided. These electronic files will be provided to the contractor upon contractor request once notice to proceed has been given.

Measurement and Payment

Construction Staking shall be paid for by LUMP SUM price and shall include full compensation for furnishing all labor materials, tools, equipment and incidentals for doing the work involved in establishing the lines and grades, as shown on the plans, as specified in the Standard Specifications, State Specifications and these special provisions, and as directed by the Engineer, and no additional compensation shall be allowed.

Item # 3 MOBILIZATION

Mobilization shall conform to the provisions in Section 11, "Mobilization," of the State Standard Specifications and to these Technical Specifications. Construction insurance shall adhere to the requirements set forth in the contract documents.

Measurement & Payment
Payment for this item shall be on a LUMP SUM basis. Payment for this item shall be in accordance with Section 2 of the State of California, Business and Transportation Agency, Department of Transportation (Caltrans), Standard Specifications, latest edition and include all work as defined in this section. No additional compensation will be allowed.

Item # 4 24" STANDARD CONCRETE CURB & GUTTER

Installation of Concrete Curb & Gutter shall conform to Section 73 "Concrete Curbs and Sidewalks" of the State Specifications, Std. Drawing 205, "Curb, Gutter, and Sidewalk," as shown on the Project Plans, as described in these Special Provisions, and as directed by the City Engineer.

Prior to placing AB, subgrade soil should be scarified at least 6 inches, uniformly moisture conditioned at or slightly above optimum moisture content and compacted to at least 90% relative compaction.

All locations of Concrete Curb & Gutter require replacement with the Standard Curb and Gutter type as shown on the Project Plans. Expansion joints shall be constructed at twenty-foot (20') intervals. Expansion joint filler strips shall have the top edge placed and securely held ¼ inch below the surface. Expansion joints shall be edged with an edging tool having a radius of ¼ inch.

The top back of curb shall match the adjacent existing and/or new concrete sidewalks and driveways. Minor adjustments of the height of curb may be required within one half inch (1/2") without adjusting the cross section.

Curb and gutter shall be water tested in the presence of the City Engineer prior to acceptance to verify that water will flow along the flowline of the replaced curb and gutter. No standing water will be allowed. The finished surface shall be free from humps, sags, and other irregularities.

After removal of existing curb and gutter or asphalt, improvement work shall be completed within **five (5) working days** in accordance with these and any other related specifications. Failure to complete improvement work as specified above, as determined by the City Engineer, shall result in Liquidated Damages in the sum of **FIVE HUNDRED DOLLARS (500.00)** for each and every calendar day beyond the five (5) working days of curb and gutter removal. If work is to remain in place over the weekend or holiday, the Contractor shall install temporary pedestrian barricades and delineators.

Concrete Curb & Gutter shall be sprayed uniformly with a clear curing compound. The material, method, and rate of application shall conform to Section 90 7.01B, "Curing Compound Method," of the State Specifications except that only non-pigmented curing compound conforming to the requirements of ASTM Designation: C 309, Type 1, Class B, or of AASHTO Designation: M 148, Type 1 D, shall be used.

Removal of any existing curb and gutter shall also include saw-cutting the adjacent asphalt pavement the distance from the face of gutter as shown on the plans and removing, disposing of the asphalt paving within this area in its entirety, and replacing asphalt to conform to existing grades. Asphalt

shall conform to these specifications.

The cost of excavation, removal, disposal of existing concrete or other material, and excess materials, and saw cutting to place concrete curb and gutter shall be included in the bid price here.

Measurement and Payment

Concrete Curb & Gutter shall be paid for on a per LINEAR FOOT basis. Measurement will be based on the actual linear feet of Concrete Curb & Gutter installed as determined by measurement along the flowline. The contract unit price paid for Concrete Curb & Gutter shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, and for doing all work involved in Concrete Curb & Gutter including but not limited to excavation, subgrade preparation, disposal of excess materials, compaction, imported borrow, saw cutting, asphalt conforming, and dowels, as shown on the Project Plans, as specified in the Standard Specifications, these Special Provisions, and as directed by the City Engineer and no additional compensation will be allowed therefore.

As no gutter will be constructed at the EV stalls, the curb there will be paid for as sidewalk area per Item #5 of these Technical Specifications.

Item # 5 ADA COMPLIANT STANDARD SIDEWALK AND DRIVEWAY

SIDEWALK

Concrete Sidewalk shall conform to Section 73, “Concrete Curbs and Sidewalks” of the State Specifications, the Project Plans, these Special Provisions, and as directed by the City Engineer.

Expansion joints shall be constructed at twenty-foot (20’) intervals. Sidewalk contact joints shall be constructed where newly installed Concrete Sidewalk meets existing concrete features. Expansion joints and sidewalk contact joints shall conform to Std. Drawing 205. Control joints and scoring shall match adjacent sidewalk.

New sidewalk shall be sprayed uniformly with a clear curing compound. The material, method, and rate of application shall conform to Section 90-7.01B, “Curing Compound Method,” of the State Specifications except that only non-pigmented curing compounds conforming to the requirements of ASTM Designation: C 309, Type 1, Class B, or of AASHTO Designation: M 148, Type 1-D, shall be used.

The Concrete Sidewalk area shall be defined as the sidewalk area between the back of curb and back of walk, including curb ramps. The retaining curb at the back of curb ramps shall be considered as part of the Concrete Sidewalk area and paid for with the Concrete Sidewalk bid item.

CONCRETE DRIVEWAY

Concrete Driveway shall conform to Section 73, “Concrete Curbs and Sidewalks” of the State Specifications, the Project Plans, these Special Provisions, and as directed by the City Engineer.

Concrete Driveway Conform, refers to portion of the driveway on private property that must be reconstructed to transition from back of walk to the existing on-site driveway. The width, depth, and thickness of materials for each driveway transition shall match existing.

Concrete driveway conforms are typically one foot to two feet in width measured from the back of walkway. The Engineer shall determine the amount and exact limits of conform in the field. The estimated quantity of driveway conform is approximate. The City reserves the right to add, eliminate and /or modify any driveway conform in the field.

New driveway shall be sprayed uniformly with a clear curing compound. The material, method, and rate of application shall conform to Section 90-7.01B, "Curing Compound Method," of the State Specifications except that only non-pigmented curing compounds conforming to the requirements of ASTM Designation: C 309, Type 1, Class B, or of AASHTO Designation: M 148, Type 1-D, shall be used.

After the removal of existing sidewalk and driveway, the improvement work shall be completed within **five (5) working days** in accordance with these and any other related specifications. Failure to complete improvement work as specified above, as determined by the City Engineer, shall result in Liquidated Damages in the sum of **FIVE HUNDRED DOLLARS (500.00)** for each and every calendar day beyond the five (5) working days of sidewalk removal. If work is to remain in place over the weekend or holiday, the Contractor shall install temporary pedestrian barricades.

Measurement and Payment

ADA Standard Sidewalk and Driveway work shall be paid for on a per SQUARE FOOT basis. Measurement will be based on the actual square footage of the concrete installed as determined by measurement along the perimeter of the concrete. The contract unit price paid per SQUARE FOOT of concrete shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, and for doing all work involved in installing concrete including, but not limited to, excavation, subgrade preparation, disposal of excess materials, imported borrow, compaction, saw-cutting and dowels, as specified in the Standard Specifications, these Special Provisions, and as directed by the City Engineer and no additional compensation will be allowed.

The cost of excavation, removal, and disposal of existing concrete driveway and sidewalk shall be included in the this bid item. Any damage to adjacent, existing facilities during construction of the sidewalk shall be repaired at the Contractor's expense to the satisfaction of the City Engineer.

6" curb in front of EV stations will be paid per plan area in this bid item.

Item # 6 REINFORCED CONCRETE PAD AND EV PEDESTAL MOUNTS

Construct Reinforced Concrete Pad for the electrical equipment as shown in the Project Plans. Contractor to remove vegetation only where required for installation. Contractor shall provide openings for the electrical conduits to passthrough pad as required per the equipment specifications.

Prior to placing AB, subgrade soil should be scarified at least 6 inches, uniformly moisture conditioned at or slightly above optimum moisture content and compacted to at least 90% relative compaction. AB should be compacted to 95% relative compaction.

Concrete pads shall be sprayed uniformly with a clear curing compound. The material, method, and rate of application shall conform to Section 90-7.01B, "Curing Compound Method," of the State Specifications except that only non-pigmented curing compounds conforming to the requirements of ASTM Designation: C 309, Type 1, Class B, or of AASHTO Designation: M 148, Type 1-D, shall be used.

Measurement and Payment

Reinforced Concrete Pad and EV Pedestal Mounts work shall be paid for on a per LUMP SUM basis. Measurement will be based on the actual square footage of the concrete installed as determined by measurement along the perimeter of the concrete. The contract unit price paid per LUMP SUM of

concrete shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, and for doing all work involved in installing concrete including, but not limited to, excavation, subgrade preparation, disposal of excess materials, imported borrow, and saw-cutting, as specified in the Standard Specifications, these Special Provisions, and as directed by the City Engineer and no additional compensation will be allowed.

The cost of excavation, removal, and disposal of existing vegetation or asphalt at the concrete pad location shall be included in the Reinforced \ Concrete Pad and EV Pedestal Mount Bid Item.

Any damage to adjacent, existing facilities during construction shall be repaired at the Contractor's expense to the satisfaction of the City Engineer.

Item # 7 REMOVAL AND APPLICATION OF STRIPING

The Removal and Application of Striping work shall consist of: removing the parking stall designation paint, painting new pavement markings in the newly paved parking area, *and painting the curb in front of the EV stations* as shown on the Project Plans.

PAINT REMOVAL

Remove parking stall designation paint as shown on the Project Plans. Paint may be removed with a pressure washer and when necessary, by hand with the use of a solvent. If other methods are unsuccessful, light grinding or sanding methods may be used. All remaining debris shall be removed and prior to work completion.

NEW PAINT

Pavement paint material and method of placement shall conform to Section 84 and 85 of the 2018 California Standard Specifications, to the current California Manual on Uniform Traffic Control Devices, and to these Special Provisions.

Removal and Application of Striping shall conform to Manufacturer's recommendations and City Standards. All coating products shall be packed in standard closed containers. Each container of separately packaged component shall be clearly and durably labeled to indicate the date of manufacture, manufacturer's batch number, quantity, color, component identification and designated name or formula specification number together with special instructions.

Prior to painting the area will need to be prepped. Broom-clean asphalt surface using mechanical brooming device, or stiff bristle hand broom. Scrape and blow fine sand and debris off of surface. Pressure washing may be necessary to remove debris. Use a non-solvent-based degreaser to remove stains as needed. Thoroughly rinse the area and let dry for 24 hours.

Surfaces should be dry for at least 24 hours prior to applying pavement paint. The ambient temperature must be at least 50ºF and rising. The temperature of the asphalt surface must be at least 5ºF above the dew point temperature during and after applying paint. Pavement Paint application must be complete at least two hours before sunset to allow for proper cure.

Mask all adjacent areas using paint-grade masking tape. Use duct taped on concrete and asphalt surfaces. Building paper extended minimum of 48 inches beyond the edge of painted area is required to prevent over-spray of paint onto adjacent areas.

Apply pavement paint using spray texture gun (Graco RTX1500 TexSprayer) or Benron "EZ-TEX DX" sprayers, or otherwise approved equal or otherwise approved method. The paint manufacturer shall approve spray gun settings and alternative spray equipment.

The primer shall be compatible with the paint and applied per the manufacturer's specifications. All

paint shall be the following brands, or approved equal:

Color	Type	Brand
Black, white	Enamel	Krylon (Premium)
White	Alkyd	Aervoe-Pacific

All paint for new pavement markings shall be applied at a minimum of two (2) full coats. First coat shall be dry prior to application of the second coat. All markings to receive paint shall be spray painted. Brushes and rollers shall not be allowed without prior City Engineer approval. Primer shall be applied prior to the application of the final two (2) coats of paint.

Measurement and Payment

Removal and Application of Striping shall be paid for on a LUMP SUM basis. Measurement will be based on the actual count of pavement paint removed or installed (i.e. each parking stall delineator or curb section). The contract price paid for LUMP SUM basis. Removal and Application of Surface Paint shall include full compensation for furnishing all the labor, materials, tools, equipment, incidentals, and for doing all the work involved in placing and removing the pavement paint, including referencing existing pavement markings, alignment and layout work, all as specified in the 2023 Caltrans Standard Specifications, CA MUTCD, these Special Provisions, and as directed by the City Engineer, and no additional compensation will be allowed.

Item # 8 ELECTRICAL TRENCH

This Electrical Trench bid item consists of the required trench work associated with constructing the underground electrical components such as, but not limited to, conduit, pull boxes, wires, junctions, grounds, etc. to make all the required connections from the electrical equipment to the EV stations functional, at locations shown on the Electrical Plan Sheet of the Project Plans and as described in the electrical equipment manufacturer's specifications and as shown on the PG&E Supplemental Plan Sheet. Work to be done in accordance with the most recent version of the California Electric Code. The work includes digging, recompacting, and paving the trenches as shown in the Project Plans. Hot asphalt mix Type A shall be used for trench paving, as described in these Standard Specification. See State Standard Specifications Minimum Tack Coat Spray Rates (Gallons per Square Yard) table for various dilution ratio rates.

Measurement and Payment

The Electrical Trench item shall be paid for on a per LINEAR FOOT basis and shall include all work necessary within the area identified as on the Project Plans and these project specifications. The contract unit price paid for shall include, but is not limited to, full compensation for furnishing all labor, materials, tools, equipment, and incidentals for doing all work involved in the procurement, production, delivery, excavation, disposal, testing, and placement of the trench items as shown on the Project Plans, as specified in the Standard Specifications, these Special Provisions, and as directed by the City Engineer and no additional compensation will be made therefore. As applicable, payment for paving over trench areas to be included in bid item #11. Temporary paving may be required per the City Engineer.

Item # 9 INSTALL ELECTRICAL EQUIPMENT

This bid item consists of the required work associated with installing the electrical equipment ((4) EV stations, (1) switchboard box and panel, (1) distribution panel and (1) step-down transformer) to the underground electrical trench components listed in Bid Item #8, as shown on the Project Plans. For warranty, the electrical equipment must be installed according to the equipment manufacturer's recommendations.

See Appendix 1 for manufacturer provided electrical equipment details, specifications, and installation instructions. PG&E will provide and install the electric meter at the switchgear box after the box has been installed. City of Fort Bragg to provide the electrical equipment listed in this bid item.

Measurement and Payment

The Install Electrical Equipment item shall be paid for on a per ITEM basis and shall include all work necessary identified on the Project Plans and as required to uphold the manufacturer's warranties. The contract item price paid for Install Electrical Equipment shall include, but is not limited to, full compensation for furnishing all labor, materials, tools, equipment, and incidentals for doing all work involved in the production, delivery, excavation, disposal, testing, and placement of the equipment, as specified in the Standard Specifications, these Special Provisions, and as directed by the City Engineer and no additional compensation will be made therefore.

Item # 10 HOT MIX ASPHALT (TYPE A)

Remove Existing Surfacing

The Contractor shall remove existing: vegetation, soil, base rock, asphalt concrete, and concrete at the locations shown on the Project Plans. The City Engineer may remove locations of work or specify additional project locations. Additional locations shall be paid for at the contract unit price of the appropriate bid items and no additional compensation will be allowed.

The Contractor shall protect existing concrete structures that are not shown for removal on the Project Plans. Any concrete structures damaged by the Contractors activities that are not shown to be removed on the Plans shall be repaired at the Contractor's expense. Yard drain pipes, sprinkler heads, and sewer cleanouts and lines located in the work area shall be protected from damage and remain free of debris.

Contractor to clean sawcut where this section is to meet cold plane and asphalt section.

ASPHALT

Hot Mix Asphalt (Type A) used shall conform to Section 39 "Asphalt Concrete" of the Standard Specifications and these Special Provisions. The base course for Hot Mix Asphalt (Type A) shall be ¾" gradation. The top lift of Hot Mix Asphalt (Type A) shall be ½" gradation. Supplying, mixing, proportioning, and storing Hot Mix Asphalt (Type A) shall conform to the requirements as specified in Section 39 "Asphalt Concrete" of the Standard Specifications except as specified herein.

The Contractor shall submit in writing to the City Engineer a complete mix design as described in Section 39-2.01A(3)(b) "Job Mix Formula" of the Standard Specifications.

Placement

The methods and equipment furnished by the Contractor shall produce a layer of asphalt concrete conforming to the requirements, including straightedge tolerance, of Section 39 "Asphalt Concrete," of the State Specifications.

The placement of all Hot Mix Asphalt (Type A) shall be done in uniform lifts. Any asphalt concrete structural sections replaced shall be brought to the elevation of the adjacent existing asphalt before Hot Mix Asphalt (Type A) is placed. The only allowable joints on the top lift of HMA (Type A) shall be the joints between the new and existing asphalt and the Contractor shall overlap said joint.

A tack coat, as specified in Section 39 of the State Standard Specifications, shall be applied to all mating surfaces along lip of gutter and at conforms to existing pavement prior to placement of new asphalt concrete. Tack coat shall be diluted SS1 or CSS1, or undiluted RS-1 or CRS-1 type asphalt emulsion. See State Standard Specifications Minimum Tack Coat Spray Rates (Gallons per Square Yard) table for various dilution ratio rates.

Existing drainage paths shall remain the same pre and post the installation of the Hot Mix Asphalt (Type A) Section.

Measurement and Payment:

The contract unit price paid per TON of Hot Mix Asphalt (Type A) shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, and for doing all work involved in laying the new asphalt including: removing any existing base and existing surfacing (vegetative or asphalt), laying and compacting of the new base and asphalt. Work will include but not be limited to: saw cutting, excavation, disposal of excess materials, and protecting facilities and structures not shown for removal as specified in the Standard Specifications, these Special Provisions, and as directed by the City Engineer and no additional compensation will be allowed therefore.

There is no Bid Item for Tack Coat. Full compensation for the furnishing and placement of Tack Coat will be considered as included in the prices paid for the various contract items of work and no additional payment shall be made.

Item # 11 CLASS II BASE SECTION

Class 2 Aggregate Base

Aggregate Base (AB) shall be Class 2 and shall conform to Section 26, “Aggregate Bases,” of the State Specifications, and these Special Provisions.

Aggregate base shall be produced from commercial quality aggregate consisting of broken stone, crushed gravel, clean, rough-surfaced gravel and sand, or a combination thereof. The grading of the material shall be three-fourth inch (3/4”) maximum. Spreading and compacting shall be performed by methods that will produce a uniform base when firmly and properly compacted free from pockets of course or fine material.

Class 2 aggregate base shall be placed conforming to the Project Plans, Standard Drawings in the Standard Specifications, and as directed by the City Engineer. Prior to placing AB, subgrade soil should be scarified at least 6 inches, uniformly moisture conditioned at or slightly above optimum moisture content and compacted to at least 90% relative compaction. AB should be compacted to 95% relative compaction.

Existing drainage paths shall remain the same pre and post the installation of the Class 2 Aggregate Base Section.

Measurement and Payment:

The contract unit price paid per LUMP SUM of Class II Base shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, and for doing all work involved in Class II Base including: removing any existing surfacing (vegetative or asphalt or other), laying and compacting the material. Work will include but not be limited to: saw cutting, excavation, disposal of excess materials, and protecting facilities and structures not shown for removal as specified in the Standard Specifications, these Special Provisions, and as directed by the City Engineer and no additional compensation will be allowed therefore.

Item # 12 6" PRECAST CONCRETE WHEEL STOP

This work shall consist of procuring and installing 6" Precast Concrete Wheel Stops where shown on the Project Plans. Install and anchor as recommended by the manufacturer. Seal top with non-shrinkage grout.

Measurement and Payment

Wheel Stops shall be paid for on a per EACH basis. Measurement will be based on the actual number of Wheel Stops installed as determined by actual count. The work for Wheel Stops shall include, but not be limited to, full compensation for furnishing all the labor, materials, tools, equipment, incidentals, and for doing all the work involved in installing, complete in place, all as shown on the Project Plans, and as directed by the City Engineer and no additional compensation will be allowed.

Item # 13 STANDARD BOLLARDS

The work for the Standard Bollard item shall consist of procuring and installing standard bollards as shown in the Project Plans. Use 4" galvanized steel pipe, standard, schedule 40 with 4" malleable iron end cap material. Visibility strips to be reflective yellow as shown on the Project Plans.

Measurement and Payment

Standard Bollards shall be paid for on a per EACH basis. Measurement will be based on the actual number of Standard Bollards installed as determined by actual count. The contract unit price paid for Standard Bollards shall include, but not be limited to, full compensation for furnishing all the labor, materials, tools, equipment, incidentals, and for doing all the work involved in installing, complete in place, all as shown on the Project Plans and as directed by the City Engineer and no additional compensation will be allowed.

Item # 14 PARKING LOT SIGN INSTALLATION

Parking Lot Sign shall consist of, but not be limited to, the furnishing and installing a custom sign which reads "Official Vehicles Only Beyond This Point" as shown on the Project Plans and conforms to the provisions in Section 82, "Signs and Markers" of the State Specifications, and as shown on the Project Plans, described in these Special Provisions, and as directed by the City Engineer.

Measurement and Payment

The contract unit price will be paid per EACH Parking Lot Sign installed. The item shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, and for doing all work involved in procuring and installing the sign and post per the Project Plans. Work will include but not be limited to: disposal of excess materials, furnishing sign posts and aluminum signs, and protecting facilities and structures not shown for removal as specified in the Standard Specifications, these Special Provisions, and as directed by the City Engineer and no additional compensation will be allowed therefore.

Item # 15 PAVEMENT MARKING

The "Authorized Vehicles Only" and "Police Vehicles Only" Pavement Marking work shall consist of painting the parking lot asphalt as shown on the Project Plans.

NEW PAINT

Pavement paint material and method of placement shall conform to Section 84 and 85 of the 2023 California Standard Specifications, to the current California Manual on Uniform Traffic Control Devices, and to these Special Provisions.

Pavement Marking work shall conform to Manufacturer's recommendations and City Standards. All coating products shall be packed in standard closed containers. Each container of separately packaged component shall be clearly and durably labeled to indicate the date of manufacture, manufacturer's batch number, quantity, color, component identification and designated name or formula specification number together with special instructions.

Prior to painting the area will need to be prepped. Broom-clean asphalt surface using mechanical brooming device, or stiff bristle hand broom. Scrape and blow fine sand and debris off of surface. Pressure washing may be necessary to remove debris. Use a non-solvent-based degreaser to remove stains as needed. Thoroughly rinse the area and let dry for 24 hours.

Surfaces should be dry for at least 24 hours prior to applying pavement paint. The ambient temperature must be at least 50ºF and rising. The temperature of the asphalt surface must be at least 5ºF above the dew point temperature during and after applying paint. Pavement Paint application must be complete at least two hours before sunset to allow for proper cure.

Mask all adjacent areas using paint-grade masking tape. Use duct taped on concrete and asphalt surfaces. Building paper extended minimum of 48 inches beyond the edge of painted area is required to prevent over-spray of paint onto adjacent areas.

Apply pavement paint using spray texture gun (Graco RTX1500 TexSprayer) or Benron "EZ-TEX DX" sprayers, or otherwise approved equal or otherwise approved method. The paint manufacturer shall approve spray gun settings and alternative spray equipment.

The primer shall be compatible with the paint and applied per the manufacturer's specifications. All paint shall be the following brands, or approved equal:

Color	Type	Brand
Black, white	Enamel	Krylon (Premium)
White	Alkyd	Aervoe-Pacific

All paint for new pavement markings shall be applied at a minimum of two (2) full coats. First coat shall be dry prior to application of the second coat. All markings to receive paint shall be spray painted. Brushes and rollers shall not be allowed without prior City Engineer approval. Primer shall be applied prior to the application of the final two (2) coats of paint.

Measurement and Payment

Pavement Markings shall be paid for on a per EACH basis. The contract price paid on a per EACH Pavement Markings shall include full compensation for furnishing all the labor, materials, tools, equipment, incidentals, and for doing all the work involved in placing and removing the pavement paint, including referencing existing pavement markings, alignment and layout work, all as specified in the 2018 Caltrans Standard Specifications, CA MUTCD, these Special Provisions, and as directed by the City Engineer, and no additional compensation will be allowed.

Item # 16 BID ALTERNATIVE 1: NO CLIMB 8' IRON FENCING

This bid item consists of the procurement and installation of no climb fencing of the Montage-Commercial type by Ameristar type (or approved equal). Fencing to be 8-foot high and biasable. Contractor to install the fencing per manufacturer's instructions and as shown on the Project Plans.

Measurement and Payment

No Climb Fencing shall be paid for on a per LINEAR FOOT basis. Measurement will be based on the number of linear feet of fencing installed as determined by measuring. The contract will be paid per linear foot for No Climb Fencing and shall include, but not be limited to, full compensation for furnishing all the labor, materials, tools, equipment, incidentals, and for doing all the work involved in installing, complete in place, including all footings, and as shown on the Project Plans, and as directed by the City Engineer and no additional compensation will be allowed. Contractor to restore asphalt to previous condition at their own expense.

Item # 17 BID ALTERNATIVE 1: NO CLIMB 7' PEDESTRIAN GATE AND HEADERS

This bid item consists of the procurement and installation of no climb Exodus type Pedestrian Egress Single Swing Gate and Header Kit by Ameristar (or approved equal). Gate to be 7-foot high with a one-foot-high header kit. Install per manufacturer's instructions and as shown on the Project Plans.

Measurement and Payment

The No Climb Pedestrian Gate and Headers shall be paid for on a per EACH basis. Measurement will be based on the actual number of No Climb Pedestrian Gates installed. The contract unit price paid for No Climb Pedestrian Gates and Headers shall include, but not be limited to, full compensation for furnishing all the labor, materials, tools, equipment, incidentals, and for doing all the work involved in installing, including all footings, complete in place, where shown on the Project Plans, and as specified in the Project Plans or as otherwise directed by the City Engineer and no additional compensation will be allowed. Contractor to restore asphalt to previous condition at their own expense.

Item # 18 BID ALTERNATIVE 1: NO CLIMB VEHICLE CANTILEVER GATE

Procurement and installation of no climb electric cantilever gate by Ameristar Transport Tranverse style (or approved equal). Gate to be 8-foot high. Gates are to be operable by electric key pad. The work is to procure, install, construct the footings for, and install the electric key pad and all the associated electrical gates components are included in this bid item. Install per the manufacturer's instructions as shown on the Project Plans.

Measurement and Payment

No Climb Vehicle Cantilever Gate shall be paid for on a per EACH basis. Measurement will be based on the actual count installed. The contract is to be paid for on an EACH. The No Climb Vehicle Cantilever Gate item shall include, but not be limited to, full compensation for furnishing all the labor, materials, tools, equipment, incidentals, and for doing all the work involved the installation of, complete in place, including all footings, and as shown on the Project Plans, and as specified in the Project Plans and as directed by the City Engineer and no additional compensation will be allowed. Contractor to restore asphalt to previous condition at their own expense.

APPENDIX 1

Sales Order Number (SO#) _____

Express 250 Construction Signoff Form

This form is required to ensure the site for your ChargePoint EV charging station(s) has been prepared as specified, by you or by your chosen contractor, before beginning your charging station installation. Submit this completed form, and the photos specified at the end, to **installdispatch@chargepoint.com.** The detailed data sheets, site design guides, and installation guides defining ChargePoint specifications are online at: chargepointuniversity.com.

IMPORTANT: All installations must comply with local and regional code. ChargePoint provides concrete pad guidance in the *Express 250 Site Design Guide* that is applicable for most sites; however, pad size for a given site might be smaller or larger due to site conditions. Ensure site drawings have been completed and approved by a structural engineer for this site.

Note: If the station installer arrives to install the charging station and finds these items incomplete, you will incur a separate re-dispatch fee.

Site Information	Contractor Information
Site address:	Company name:
	Site lead name:
Number of Express 250 stations to be installed:	Site lead job title:
Contact name:	Site lead email:
Contact phone:	Site lead phone:
Contact email:	Date work began:

Take the following photos throughout the site construction process.

	Required Pictures
☐	1. All trenching completed and conduit/ducting laid in place
☐	2. The Concrete Mounting Template (CMT) in place with anchor bolts and conduit stub-ups correctly inserted, and the CMT held at the proper height to prevent movement during the concrete pour
☐	3. Concrete pad completed, showing anchor bolts and conduit stub-ups in place for AC and shunt trip
☐	4. **Paired only:** Conduit stub-ups (or provision for armored cable) in place for DC conductors and Ethernet
☐	5. Overall space around the concrete pad, showing all service clearances are available
☐	6. The electrical panel's specification label, to show total panel capacity
☐	7. The open electrical panel with the dead front panel removed, showing terminations
☐	8. The open electrical panel with the dead front panel on, showing breaker amperage ratings and labels for Express 250 connections
☐	9. **Paired only:** The front of each AC disconnect (if applicable by region)
☐	10. 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

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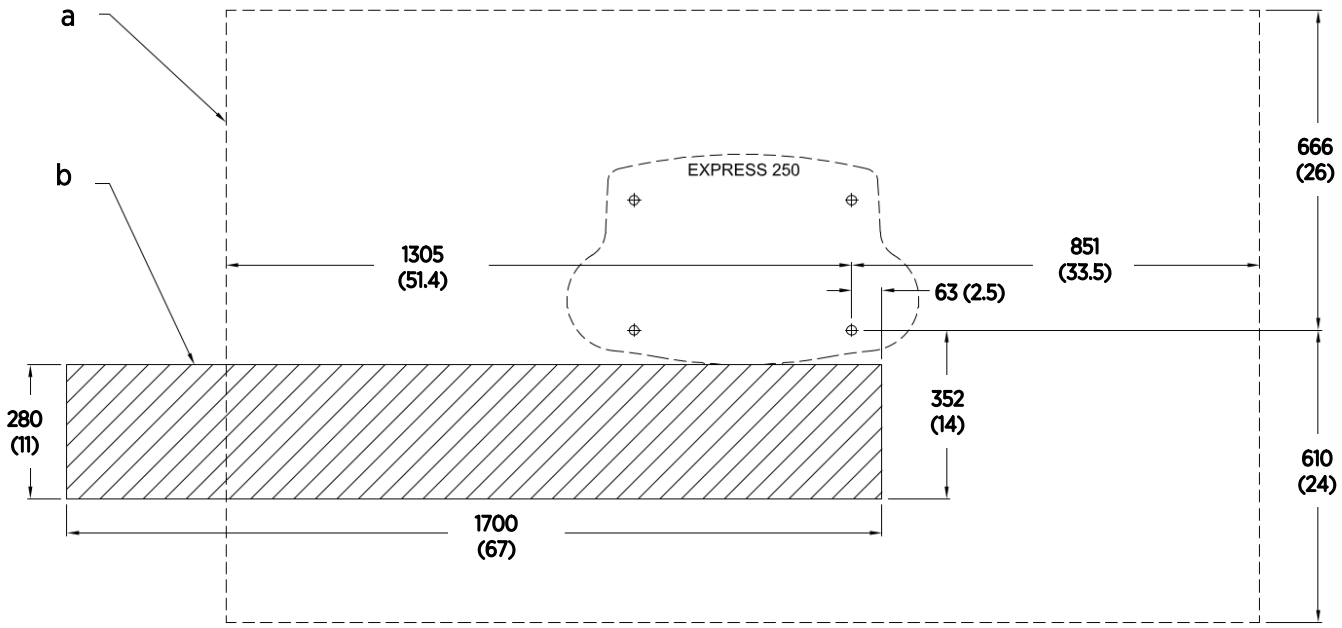
Civil Work

☐	1. The concrete pad was either designed and approved by a structural engineer for this specific site, OR conforms to 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
☐	2. Walls, fences, or slopes do not prevent water from draining from the pad.
☐	3. The concrete mounting template (CMT) is installed in the concrete pad, 50.8 mm (2 in) below the concrete surface, with anchor bolts in place in the CMT.
☐	4. The AC conduit (max 50.8 mm/ 2 in trade size) and shunt trip conduit (max 19.1 mm/ ¾ in size) are positioned correctly in the CMT and cut down to 76.2 mm (3 in) above grade.
☐	5. **Paired only:** The DC conduit (max 76.2 mm/ 3 in trade size) and Ethernet conduit (max 19.1 mm/ ¾ in size) are positioned correctly in the CMT and cut down to 76.2 mm (3 in) above grade.
☐	6. The **service clearance** of open space (not necessarily at system grade) extends a minimum of 610 mm (24 in) beyond the station in front, 1276 mm (50 in) total front to back, 2156 mm (84.8 in) side to side centered on the station, and 305 mm (12 in) above the station (a).
☐	7. 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) (b).
☐	8. 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.
☐	9. The charging station is at least 305 mm (12 in) from any wall as its rear clearance. Stations positioned back to back are no closer than 610 mm (24 in) shared clearance.
☐	10. All signage, parking spot striping, and “EV” markings are completed per site drawings and local code.



Sales Order Number (SO#) _____

APPENDIX 1

Electrical Work

☐ 1. A correctly rated, dedicated breaker is installed for each station, per this table:

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

☐ 2. Breakers have shunt trip capability if the site drawing calls for shunt trip wiring.

☐ 3. All necessary electrical infrastructure has been completed per local codes and ChargePoint specifications for 3-phase power plus ground, with properly sized wire at the station. (Neutral is not required for system operation.)

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

Record the AC conductor size and voltage rating: _____

☐ 4. **Paired only:** All four DC copper conductors are installed between stations as follows:

Voltage Rating	Temp Rating	Maximum Conductor Size for Terminals	Insulation Type
EU non-armored: 600/1000 V	90°C	120 mm^2	XLPE
EU armored: 600/1000 V	90°C	120 mm^2 4-core	XLPE
NA: 1000 V	90°C	4/0 AWG	XHHW-2

Record the size, voltage rating, and insulation type for the DC conductors: _____

☐ 5. **Paired only:** Outdoor rated Ethernet Cat5e or Cat6 cable, without terminations, is pulled between the two stations with 3050 mm (10 ft) of service loop at each end.

☐ 6. The station location has been tested for 4G/LTE cellular and meets minimum -85 dBm RSRP or better.

I,_____, hereby certify that the scope of work in this form has been correctly completed.

Signature	*Date*

chargepoint

Express 250

DC Fast Charging Station

Site Design Guide

for Standalone and Paired Stations

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.

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.

APPENDIX 1

Contents

APPENDIX 1

Site Design Guidelines 1

This document 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.

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 (page 26) for detailed information.

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. Local authorities might not allow a unit to operate if it is not installed to code.

Access ChargePoint documents online at chargepoint.com/guides or chargepoint.com/eu/guides for each phase of the project:

Document	Content	Audiences
Express 250 Data Sheet	Full station specifications	Site designer, installer, and station owner
This document	**Civil, mechanical, and electrical guidelines to scope and construct the site**	**Site designer or engineer of record**
Concrete Mounting Template Guide	Onsite instructions for installing the CMT with anchor bolts and conduit placement	Site construction contractor
Express 250 Installation Guide	Anchoring, wiring, and powering on	Installer
Express 250 Operations and Maintenance Guide	Operation and preventative maintenance	Station owner or facility manager
Full set of Field Replacement Guides	Component replacement procedures	Station owner or third party servicer

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 might also require contacting a ChargePoint support technician to perform any required software updates and configuration if a station is being

retrofitted from Standalone to Paired.

Important: All installers must be licensed electricians and complete an online training course to become a ChargePoint certified installer. Installers who do not complete installation training cannot access the ChargePoint Network to complete pinpointing and station setup.To complete online training and become a certified installer, refer to ChargePoint University at: chargepoint.com/installers or chargepoint.com/eu/installers

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 Express 250 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 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)

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 upgrades 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.

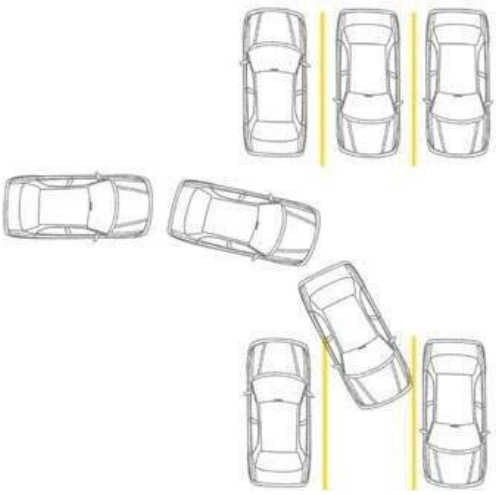
WARNING: The ChargePoint charging station must be installed on a level concrete base. Asphalt cannot support the full weight of the charging station. Failure to install the ChargePoint charging station on a level concrete base may cause the charging station to tip over, resulting in death, personal injury, 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. For more information, see Cellular Connectivity (page 26).
- 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.

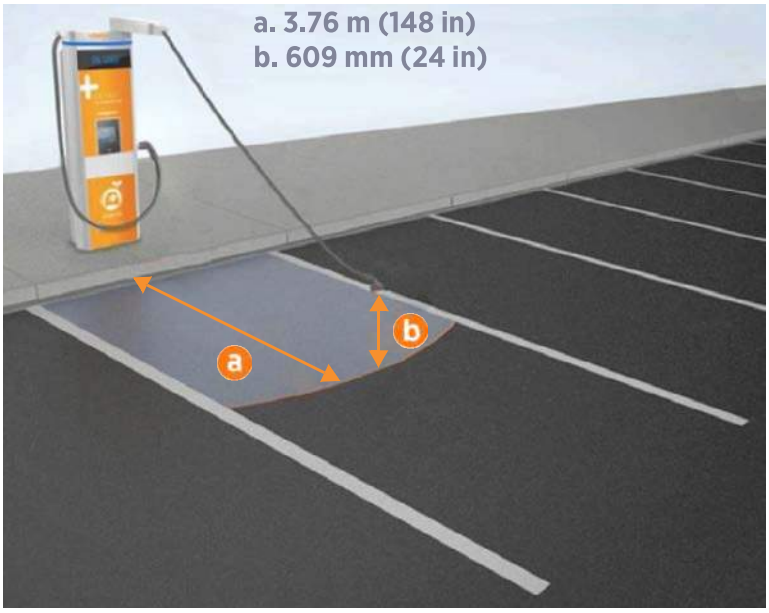
- For stall parking, ChargePoint recommends using perpendicular parking stalls that allow a vehicle to enter either front-first or rear-first, to better accommodate the varied charge port locations on different EVs. Diagonal stall parking is not advised.

  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.



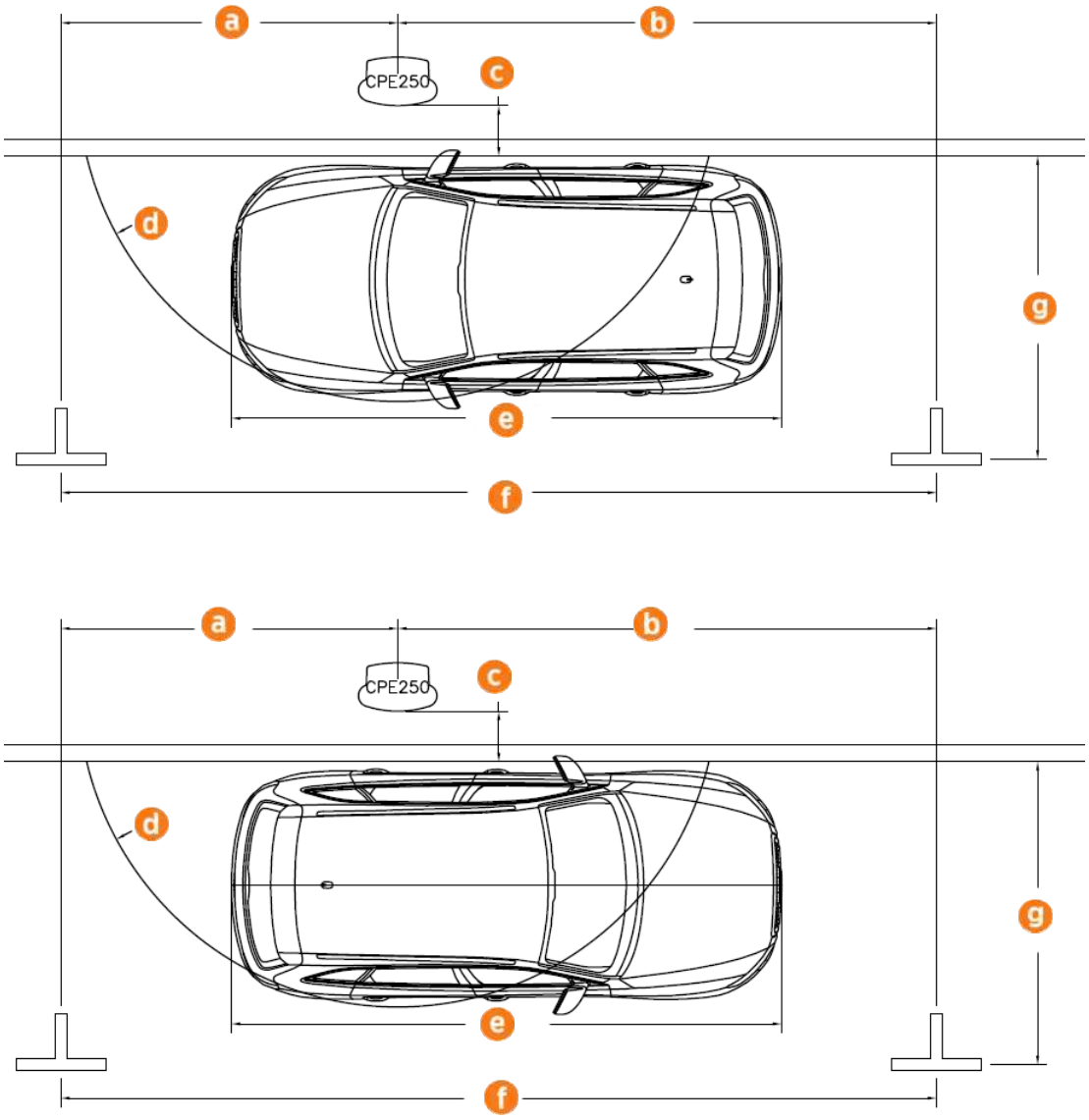
- Choose adjacent parking spaces in an area with adequate lighting.
- Consider how easily drivers can find the stations they need to access.
- Check local requirements for accessibility and pathway width, sometimes called “path of travel”, to ensure station placement does not restrict sidewalk use.
- 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 Express 250’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.

APPENDIX 1



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: 3.76 m (148 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)

APPENDIX 1

Civil and Mechanical Design 2

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

Component Dimensions and Weights

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 Ss=2.45 S1=1.019
- Seismic Design Category E
- Foundation of Sandy Soil with allowable stress = 1500 psf, Cd = 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 Express 250's dimensions and weight. If needed, give these structural design specifications to the structural engineer for verification:

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)

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

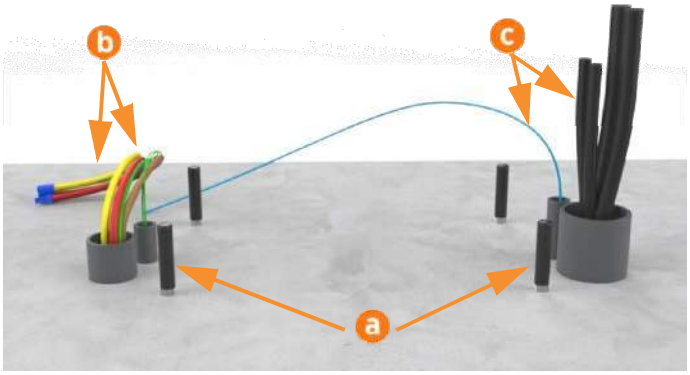
Ensure any site slopes, walls, or fencing do not trap water around the charging station installation site. The system is only built to withstand 457.2 mm (18 in) of standing water.

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

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 four 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). For more detail, see Conduit (page 21).



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 ChargePoint® charging 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 ChargePoint® charging station. Always install in accordance with applicable codes and standards using licensed professionals. Non-approved installation methods are performed at the risk of the contractor and void the Limited One-Year Parts Exchange Warranty.

Clearances

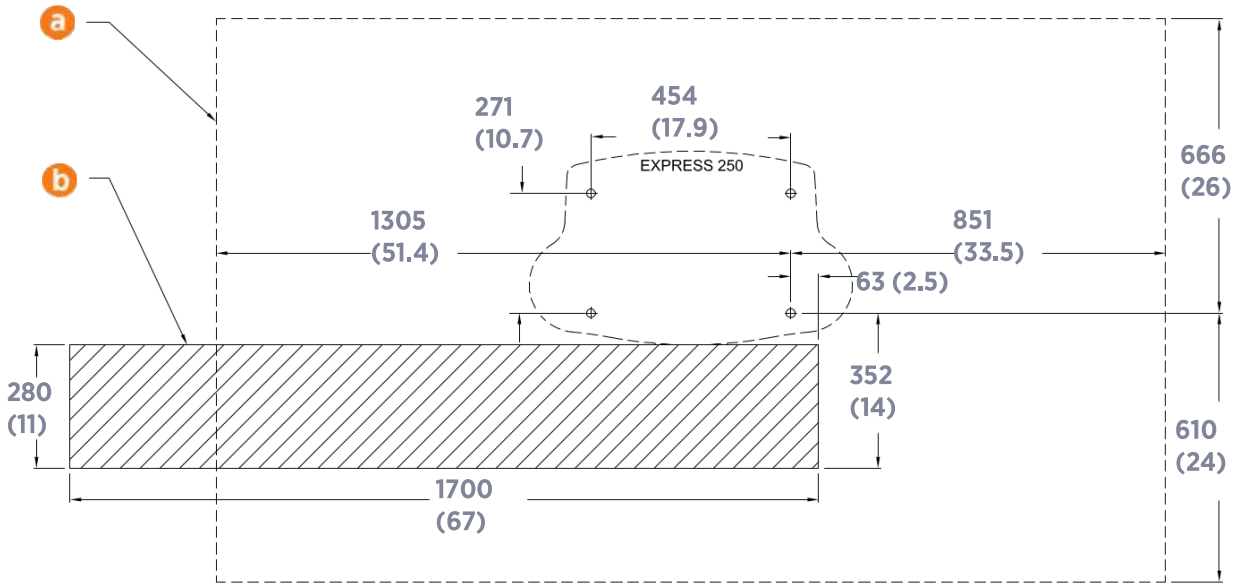
The Express 250 requires minimum functional and service clearances as listed in the table below.

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).*

Measurements are provided in millimeters (inches).



a. Service clearance of open space (not necessarily at system grade)

b. Power Module service 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 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.

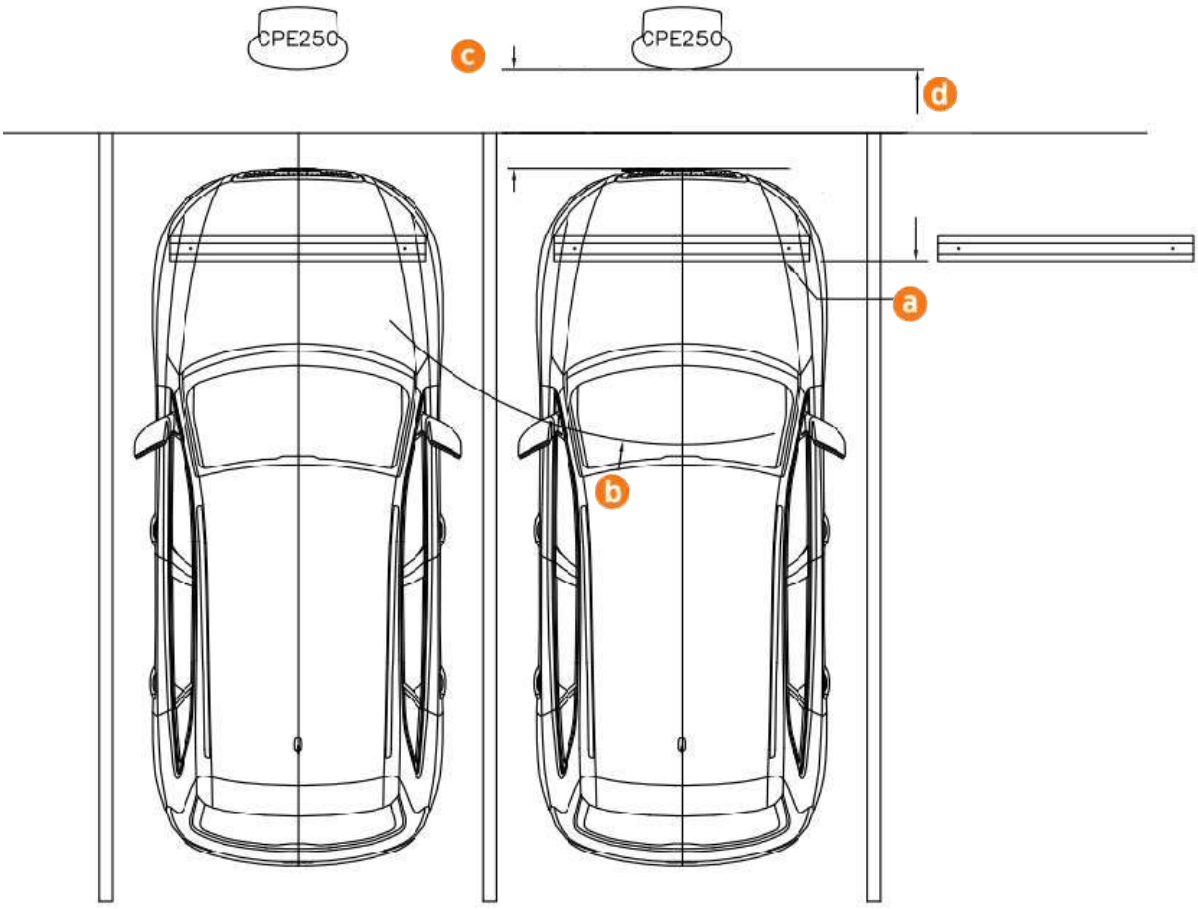
In addition to the service clearances listed in the "Clearances" section, consider these figures for site layout:

- If a charging station will have a wall directly behind it, minimum rear clearance is 305 mm (12 in).
- If two Express 250 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 Express 250: 1371 mm (54 in) for passenger vehicles

CAUTION: 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.

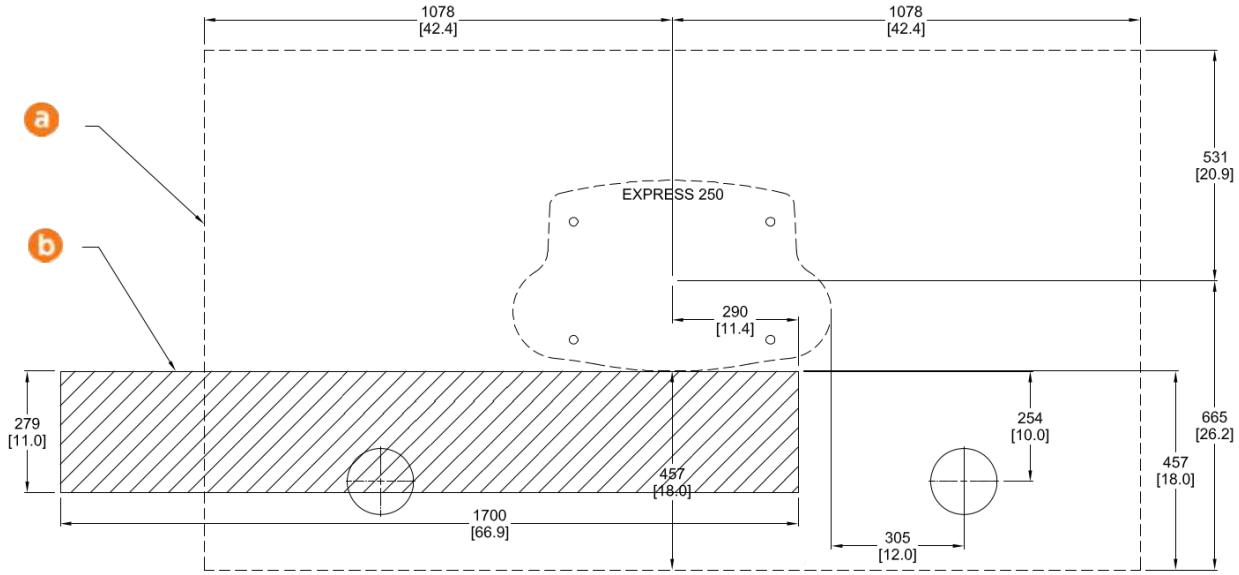
Bollards

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.

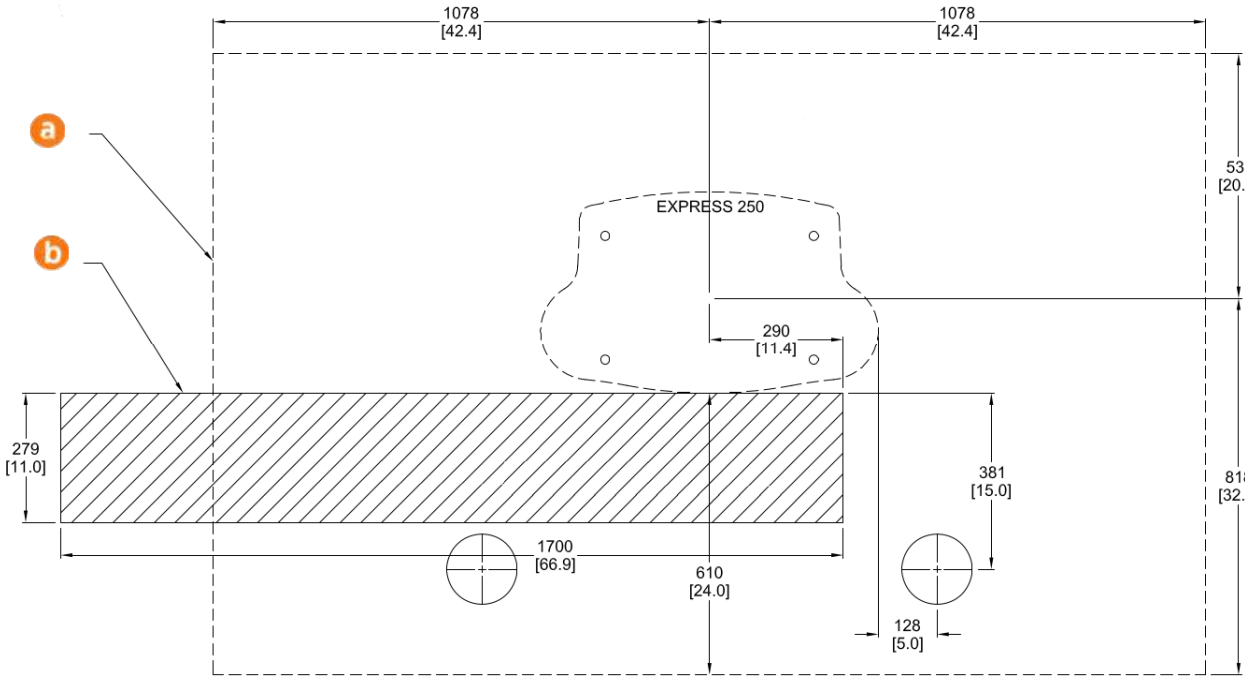
Curbside bollard installation:



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:



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 Express 250 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 250s 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

The Express 250 touchscreen and charging cables are accessible at a height of less than 1219 mm (48 in) from the ground. 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.

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

APPENDIX 1

3 Electrical Design

The default Express 250 installation requires service wiring to be installed underground. (If a site requires surface mounting, contact ChargePoint before beginning work, to obtain an approved surface 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 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 (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 and Ethernet conduit per Pairing Previously Installed Charging Stations (page 14), 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 Express 250 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 Express 250 does not contain an internal breaker. Therefore, its KAIC rating (KiloAmps

Interrupt) is related to the station's upstream breaker.

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.

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*

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 Express 250 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 Express 250 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 ChargePoint for more information.

Grounding/Earthing Requirements

- The Express 250 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 on the Express 250.
  - 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

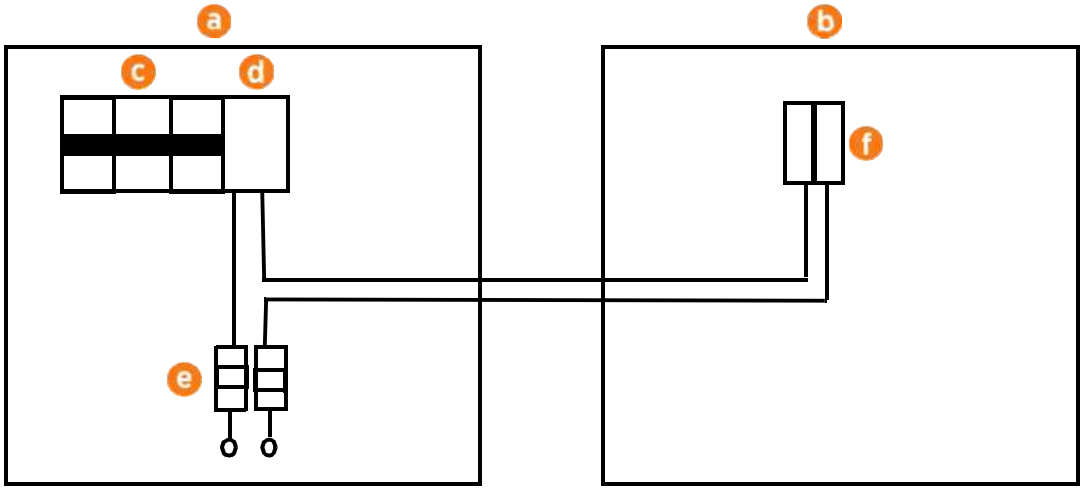
ChargePoint advises against installing an emergency stop (E-stop) button on charging stations. Drivers can unintentionally trip the emergency shutoff, causing inconvenience and downtime to site hosts. However, wiring to enable a remote shunt trip is standard on each Express 250. This shunt trip wiring 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 Express 250 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.

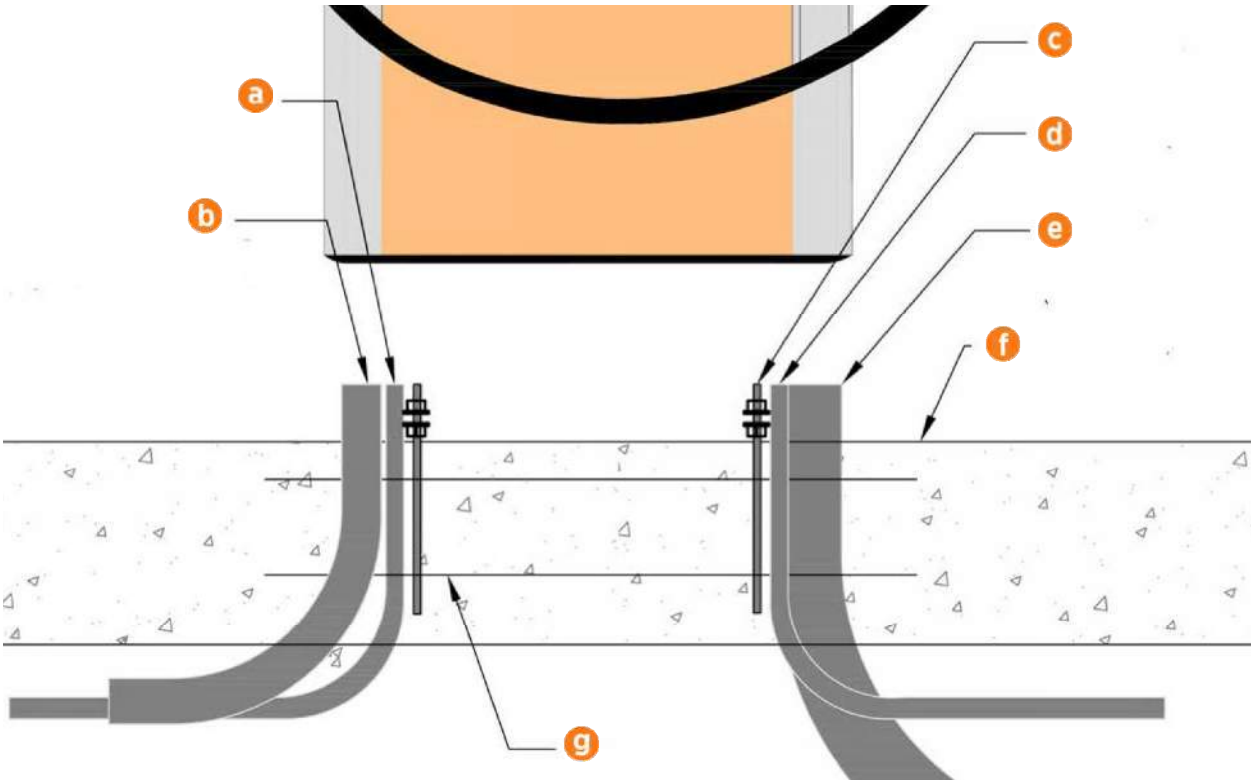


a. Electrical panel
b. Express 250
c. Circuit breakers
d. Shunt trip
e. Control power (fused)
f. Express 250 shunt trip terminal block (near AC terminals)

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 section, "The Express 250 Concrete Mounting Template (page 27)". 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. Shunt trip conduit: 19.1 mm (3/4 in trade size)
b. AC conduit: 50.8 mm (2 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.

Note: 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 on the Express 250 accept a maximum wire size of 35 mm^2 (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 *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:

- 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^2 (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^2
EU armored: 600/1000 V	90°C	35 mm^2 multi-core
NA: 600 V	90°C	2 AWG

Additional Wiring Requirements for Paired Stations

Important: The DC terminal blocks on the Express 250 can accept a maximum wire size of 120 mm^2 (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

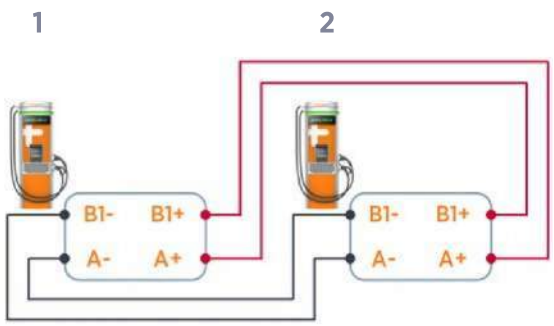
- DC conductors (x4):

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

  - **NOTE:** 95 mm^2 (3/0 AWG) is sufficient for most sites unless ambient temperatures are >= 40°C per regional code (ASHRAE Table D101 Summer Dry Bulb Temperature for North America or IEC 60364-5-54 in Europe)
  - 2 positive and 2 negative conductors; 1 positive and 1 negative in each direction
  - USA/Canada: Copper only, minimum current carrying capacity 160 A
  - EU/UK: Rated at 1000 V conductor to conductor (+/-500 V conductor to ground, LV), copper only, minimum current carrying capacity 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^2 (3/0 AWG) is sufficient for most sites unless ambient temperatures are >= 40°C per regional code (ASHRAE Table D101 Summer Dry Bulb Temperature for North America or IEC 60364-5-54 in Europe)
  - North America lug size: 3/0 or 4/0 AWG
  - Example UK/EU lugs for average conductor size are Weidmuller 1494410000 120 mm^2 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

APPENDIX 1

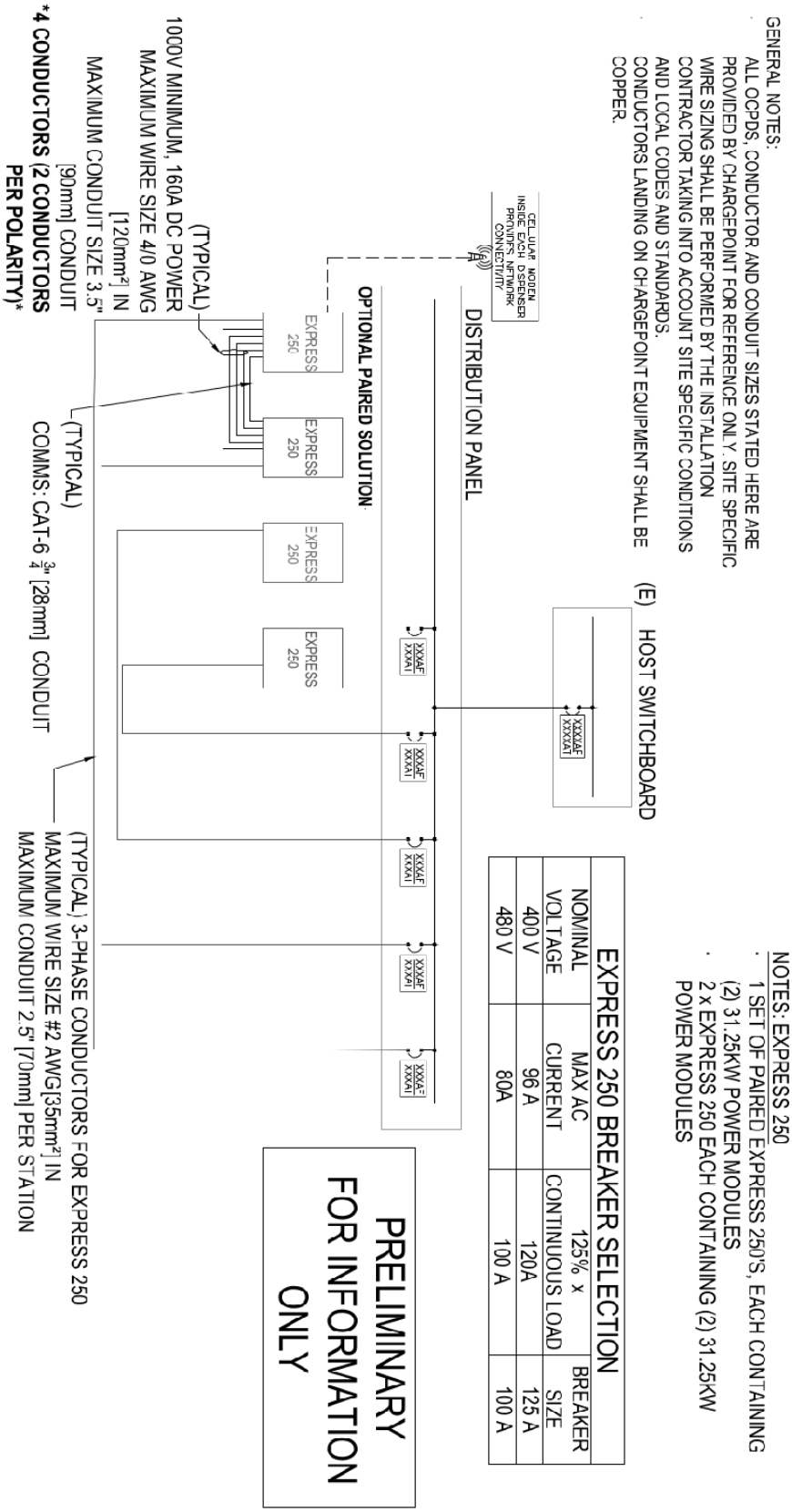
When DC conductors are pulled through conduit, label each end of each DC conductor to aid installation as follows:



- “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.

Wiring Diagram



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 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.

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 Snyper, Octopus, or equivalent) 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 charging stations in an underground garage or enclosed parking structure.

When repeaters are needed to boost signal, ChargePoint strongly recommends installing multi-carrier and multi-band units where allowed by local code. Weak or sporadic signal can affect crucial aspects of the charging station, including: accuracy in reporting, ability for drivers to use their mobile app, ability for customer support to troubleshoot problems, and support for advanced features such as Power Management or Waitlist. Strong signal is also required for the Assure maintenance and management program.

Note: Do not use microcells or femtocells, as they are inadequate for this use case.

In the US, the Express 250 supports AT&T 4G/LTE. There must be viable AT&T signal on one or more of the supported bands listed below. For other regions, contact your ChargePoint representative for more detail on carrier support.

- LTE 1900 (B2)
- LTE 1700 (B4)
- LTE 850 (B5)
- LTE 700 (B17)
- LTE 700 (B13)

4 The Express 250 Concrete Mounting Template

The Express 250 is a DC fast charging station for electric vehicles. The default Express 250 installation requires service wiring to be installed underground and run to a concrete pad. (If a site requires surface mounting, contact ChargePoint before beginning work, to obtain an approved surface installation method.) The ChargePoint Express 250 Concrete Mounting Template (CPE250-CMT) correctly aligns anchor bolts and conduit openings to ensure the Express 250 can be easily installed and connected.

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, 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 CPE250-CMT in the concrete

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

Bring Tools and Materials

In addition to the CPE250-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
- 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)

CPE250-CMT Overview

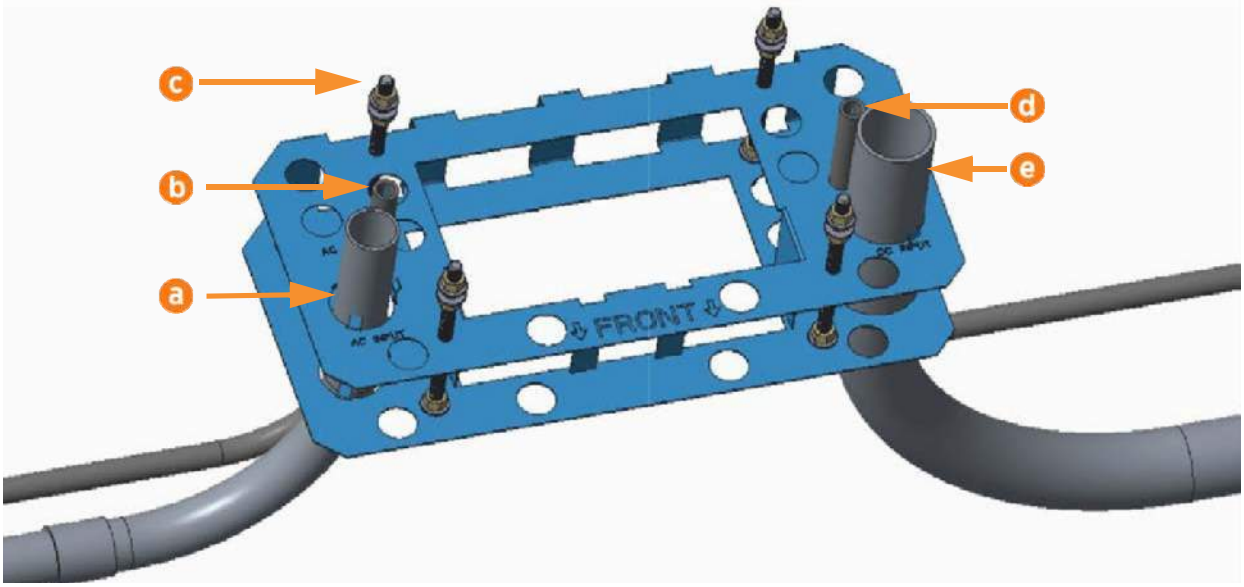
The Express 250 is a DC fast charging station for electric vehicles. It converts three-phase power from its associated building (callout a in the image below) to DC power to charge the vehicle. A ground conductor also runs in conduit a. Shunt trip wiring (b, optional) is run from the station to the breaker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

If two Express 250 stations are “paired”, they share DC power to allow faster (higher amperage) charging to a vehicle as needed. In this case, DC conductors (d) are run between the stations, as is an Ethernet wire (c) for communication.

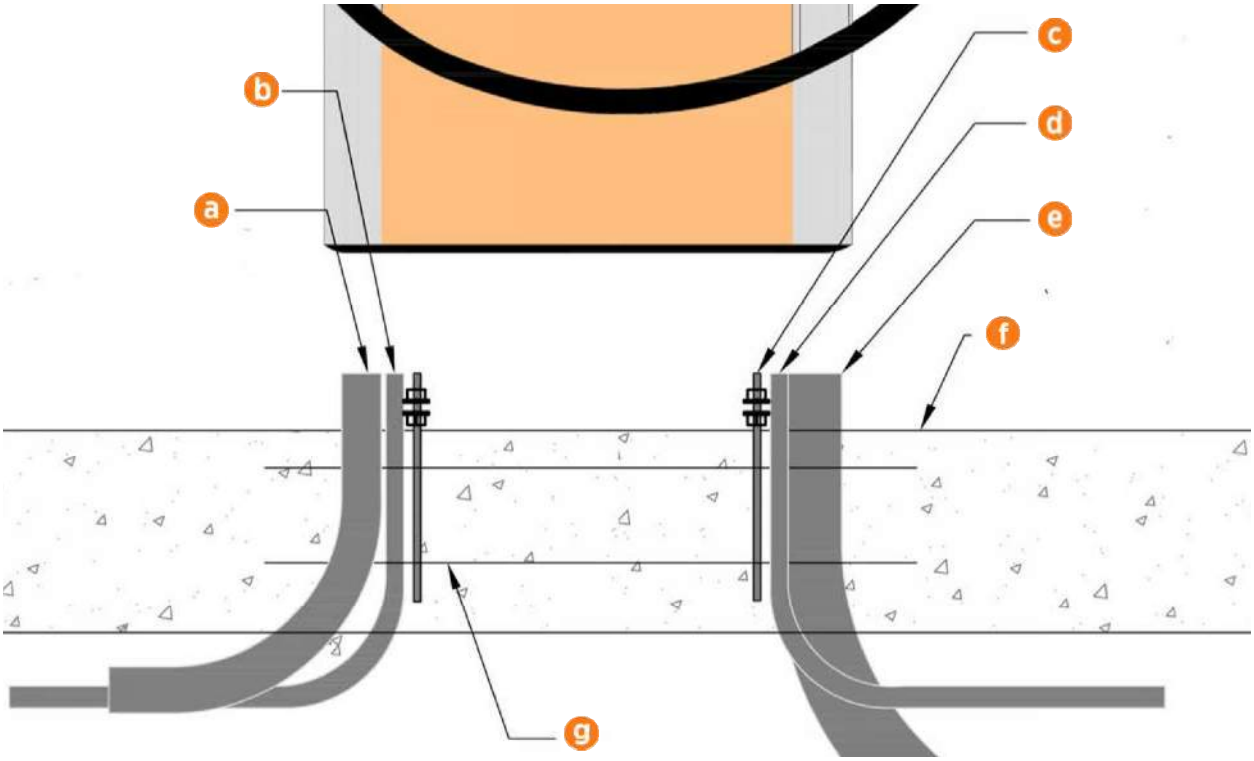
Note: Each Express 250 communicates with ChargePoint using a cellular network. No communication wiring is needed between the station and the building.

An assembled CPE250-CMT template is shown below with the positions of all conduit and anchor bolts.

Note: A separate CPE250-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.

Note: 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.

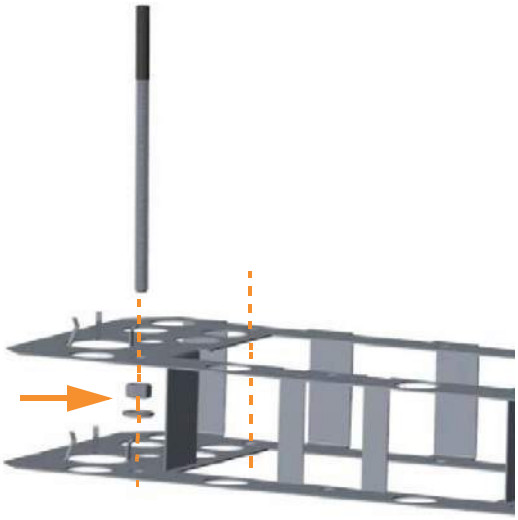
Assemble the CPE250-CMT

CAUTION: The CPE250-CMT can have sharp edges. Wear cut-resistant gloves.

Important: Although the CPE250-CMT 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.

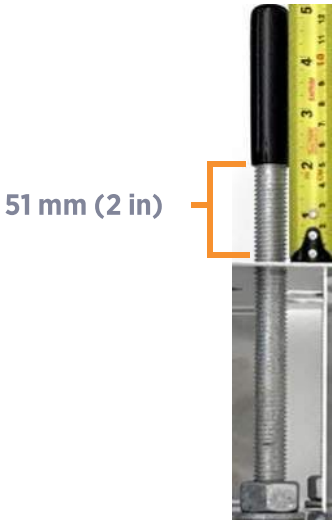
Before pouring concrete, assemble the CPE250-CMT with its anchor bolts, washers, and nuts.

1. Holding a mounting bolt by its plastic cap, insert the bare end into a corner 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.

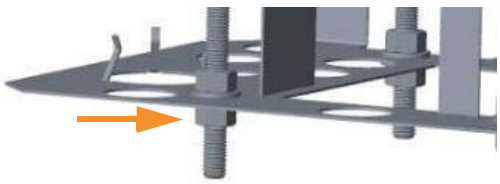


4. Holding the bottom nut and washer flush against the top surface of the bottom plate, thread the bolt onto the nut until the distance between the bottom of the plastic cap and the surface of the top plate is 51 mm (2 in).
5. Repeat Steps 1 to 4 for the remaining three corner bolts.

   Note: Do not insert bolts into the center two holes. Only the four corner bolts are required for system stability.



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 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 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 CPE250-CMT, locate the “FRONT” marking and the conduit guide fingers. Position the conduit guide fingers facing up.
5. Place the assembled CPE250-CMT so that the “FRONT” marking aligns with the specified front of the station.
6. 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.
   - Ensure the conduits are plumb.
   - Use a level to check that the CPE250-CMT is level from front to back and from side to side.
7. Tie or shim the CPE250-CMT to the rebar to prevent movement during concrete pouring.

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.

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* provided by ChargePoint to verify that the site is correctly completed and ready for product installation.

Examples of Express 250 Paired Wire Sizing A

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 x 1.25, or 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

The continuous duty derating per 625.41 is 80 x 1.25, or 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 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.

APPENDIX 1

APPENDIX 1

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.

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/

APPENDIX 1

CP6000 Construction Signoff Form

Submit this form and required photos to installdispatch@chargepoint.com. Review datasheets, site design, and installation guides defining ChargePoint specifications at: chargepoint.com/guides.

IMPORTANT: All installations must comply with local and regional code. ChargePoint provides concrete pad guidance in the CP6000 Site Design Guide that is applicable for most sites; however, pad sizes may vary. Ensure site drawings have been completed and approved by a structural engineer for this site.

Customer Information	
Customer name	
Customer contact name	
Customer contact phone	
Customer contact email	

Site Information	
Street and number	
City	
State	
Country	
Zip code	
Number of chargers to be installed	
Expected start of construction works	
Expected installation and commissioning date	

Site Contractor Information		
Contractor type	ChargePoint designated	[ ]
	Customer designated	[ ]
Contractor company name		
Contractor site lead name		
Contractor site lead phone		
Contractor site lead email		

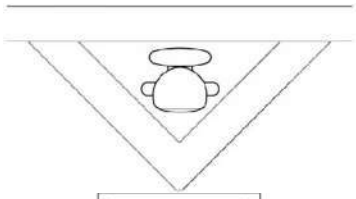
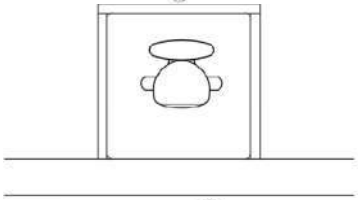
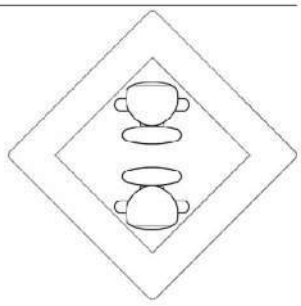
Installer Information		
Installer type	ChargePoint recommended	[ ]
	Customer recommended	[ ]
Installation company name		
Installer contact name		
Installer contact phone		
Installer contact email		

APPENDIX 1

Note: If the station installer arrives to install the charging station and finds these items incomplete, you will incur a separate re-dispatch fee.

Take the following photos for each location throughout the site construction process.

Required Pictures	
1. All trenching completed and conduit/ducting is in place.	
2. Concrete pad completed, showing anchor bolts and duct or conduit stub-ups in place. -or - Wall station location with flex conduit and wire for each station.	
3. Overall space around each mounting location, showing all service clearances are available.	
4. The electrical panel's specification label, to show total panel configuration and capacity.	
5. Open electrical panel with the dead front panel removed, showing terminations.	
6. The open electrical panel with the dead front panel on, showing breaker amperage ratings and labels for CP6000 connections.	
7. CP6000 charging station sites are oriented correctly. The front of the station must face the path of travel, for example.	
8. Circuit capacity.	

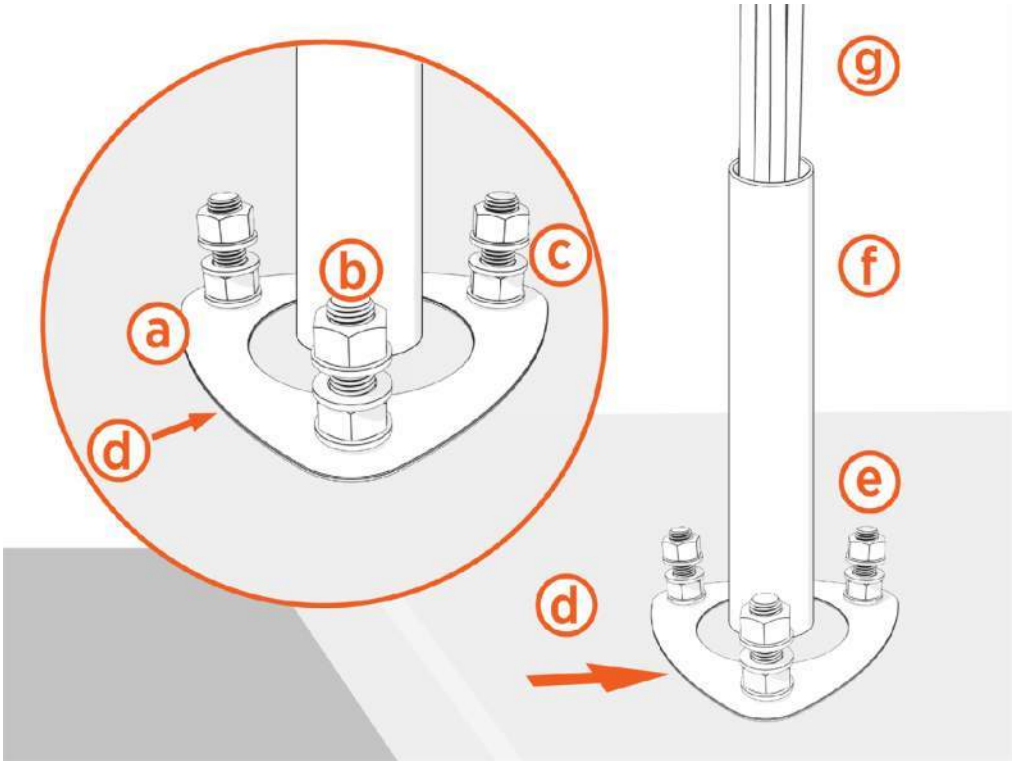
Civil Work, Pedestal Mount	
	ChargePoint recommends: 1. The concrete pad was designed and approved by a structural engineer for this specific site, or supports these specifications: • Concrete 2,500 PSI minimum - Follow concrete manufacturer mix recommendations • At least 600 mm (24 in) on each side, including depth • Follows one of the three recommended pedestal patterns in the Site Design Guide: In front of a curb 900 mm (3 ft) x 2 Area: 0.42 m^2 (4.5 ft^2) Volume: 0.26 m^3 (9 ft^3)  Behind a curb in a planter or berm 600 mm (2 ft) on each side Area: 0.37 m^2 (4 ft^2) Volume: 0.23 m^3 (8 ft^3)  Two stations back to back, centered between four spaces 900 mm (3 ft) on each side Area: 0.84 m^2 (9 ft^2) Volume: 0.51 m^3 (18 ft^3) -or- Existing concrete with: • A minimum concrete volume of 0.23 m^3 (8 ft^3) • A minimum concrete depth of least 150 mm (6 in) thick • Mounting bolts or chemical anchors (not expanding bolts) positioned at least 153 mm (6 in) from the edges of the pad when measured from the center of any bolt 
	2. Three anchor bolts must extend 60 mm (2 1/3 in) but not more than 100 mm (4 in) above the concrete, with two bolts in the front and one bolt behind the duct or conduit stub-up. Bolts are plumb and secure in concrete or epoxy.
	3. The center of the duct or conduit stub-up for a pedestal mount station with a CMK is at least 245 mm (9.65 in) from obstructions to the rear.
	4. Ducts or conduit stub-ups measure between 152 mm (6 in) and 590 mm (2 ft) above grade.
	5. Ensure any site slopes, walls, or fencing do not trap water around the charging station installation site. The system is only built to withstand water to the height of the duct or conduit stub-up.

IMPORTANT: You must use a ChargePoint CP6000 Concrete Mounting Template (CMT) for pedestal mount station installations. Refer to the CP6000 Site Design Guide on chargepoint.com/guides for more information.

APPENDIX 1

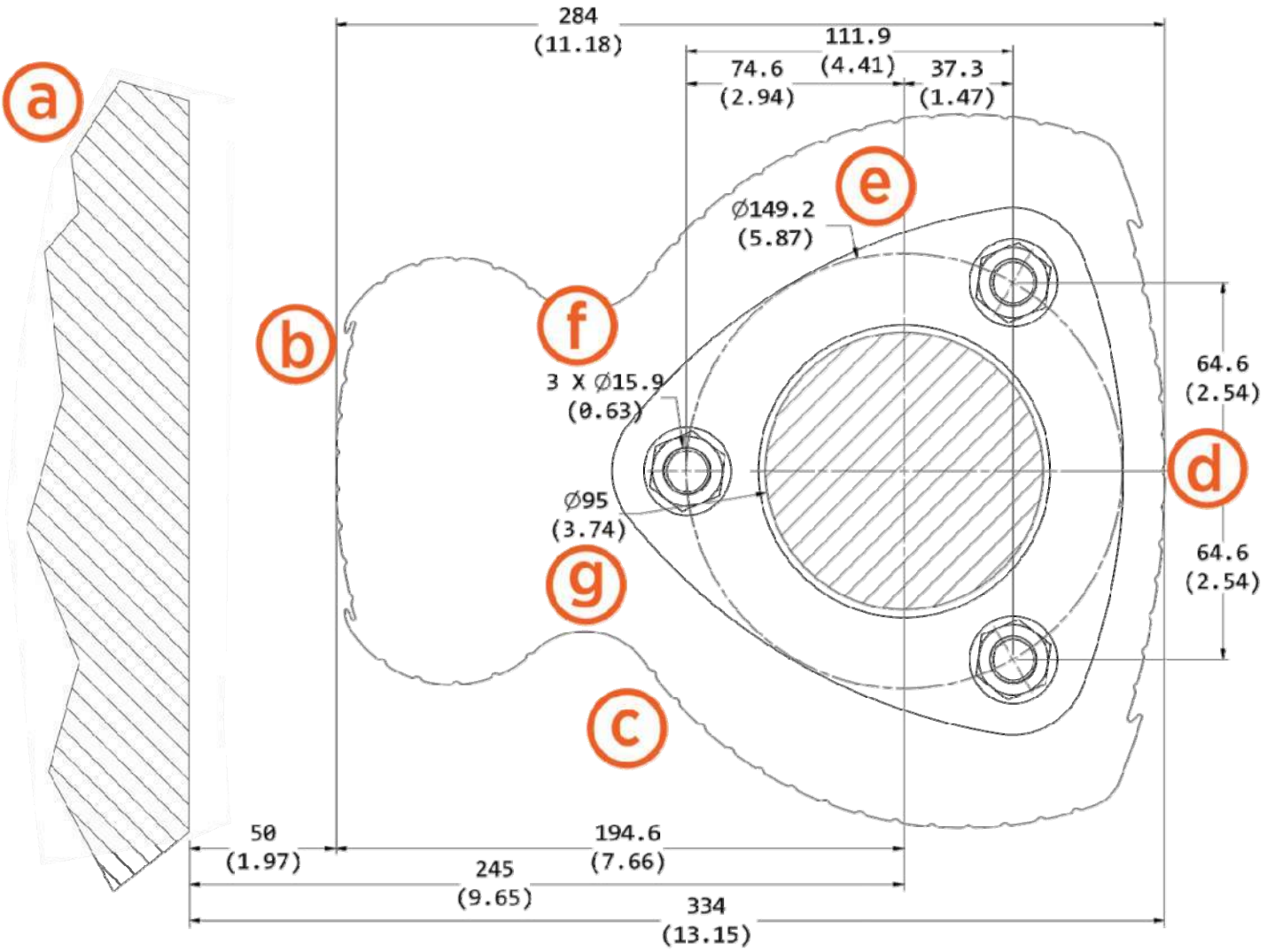
You should see the following:

a. Concrete mounting template
b. Three bolts set into concrete
c. Two nuts and three washers on each bolt
d. Template front
e. Bolts extending 60 mm (2 1/3 in) to 100 mm (4 in)
f. Conduit stub-up measuring 152 mm (6 in) to 590 mm (2 ft)
g. Approximately 1.5 m (5 ft) of service wiring
h. CPF50 adapter cover (only if replacing CPF50)

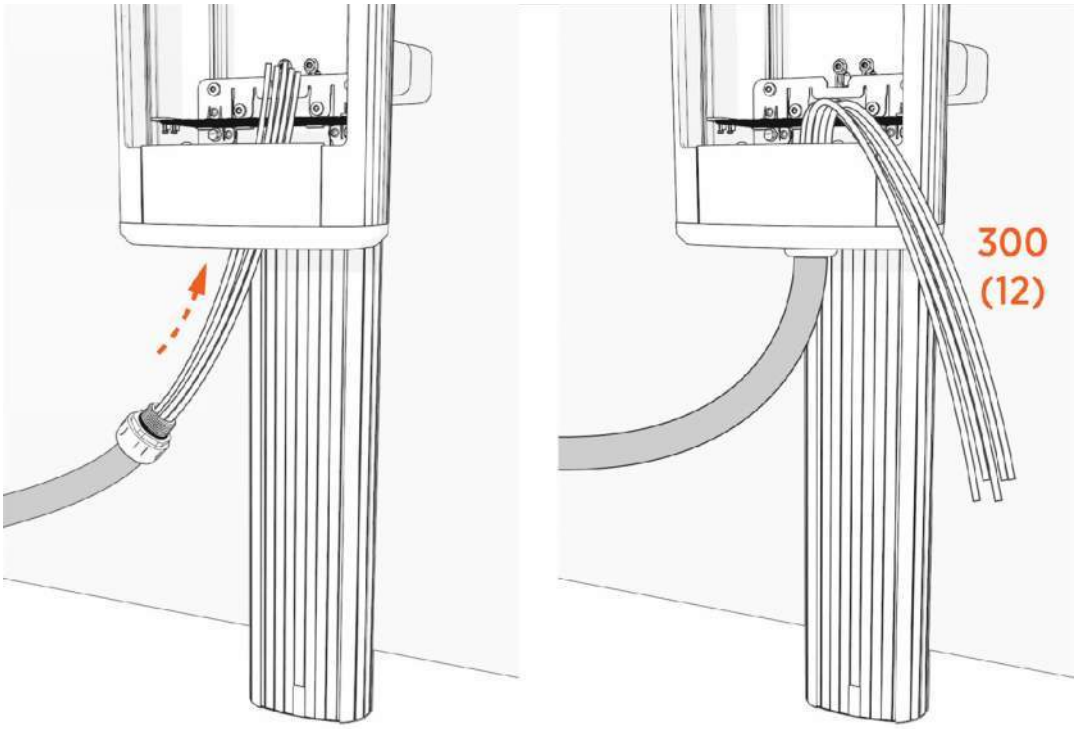


Pedestal Mount With CMK

Note: Images are not to scale. Measurements appear in metric units (mm), followed by imperial equivalents (inches).



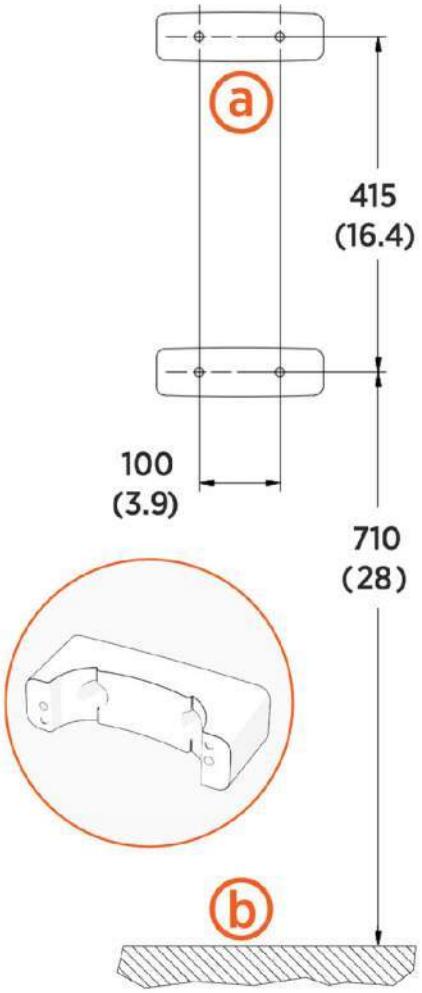
a. Wall
b. CMK footprint
c. Pedestal footprint
d. Front
e. Bolt circle
f. Bolt or anchor
g. Conduit stub-up within this area (new concrete only)

Civil Work, Wall Mount	
	1. Conduit brings wire to the station. Conduit diameter must be at least 19 mm (3/4 in) and cannot exceed 38 mm (1 1/2 in). If larger capacity is required, create two entry points, one on either side of the station, for parallel conductors.
	2. The length of wire available from the end of the conduit or the wall mount base needs to be at least 300 mm (12 in). **Note:** Measurements appear in metric units (mm), followed by imperial equivalents (inches). 

Wall Mount Bracket Hole Locations

Note: Images are not to scale. Measurements appear in metric units (mm), followed by imperial equivalents (inches).

a. Wall mount brackets
b. Ground level



APPENDIX 1

Electrical Work	Select/Value
Electrical infrastructure has been completed in accordance with all applicable codes and ChargePoint specifications.	
Each of these types of non-GFCI circuit breakers feeds each port. Select the applicable configuration.	
Breaker type feeding each port	
Two pole non-RCD overcurrent protection	
One pole non-RCD overcurrent protection (circuit sharing)	
Circuit breaker rating:	20 A 30 A 40 A 50 A 60 A 70 A 80 A 100 A
Each circuit breaker is new or in good working order.	
Check each connection and ensure each one is clean and torqued to specifications.	
Breakers in the panel are labeled correctly.	
System neutral is bonded.	
The transformer nameplate shows that wiring is Wye(Y) connected, 3-phase or single phase with bonded neutral plus Ground. **Note:** Delta (floating or grounded) configuration is not supported.	
Specifications for wire used: Type AWG/mm^2 Insulation type Voltage rating Temperature rating	

Network Connectivity			
Validate Mobile Network and Carrier availability. 2G is only applicable for early version stations. If applicable, 4G Signal RSSP should be better than -90dB. A minimum of -85dB is recommended for good connectivity and smooth operation.			
Carrier name	**4G (dBi)**	**3G (dBi)**	**2G (dBi)**
1.			
2.			
3.			
Note: For 3G and 2G, is a signal repeater necessary? Are the readings in the table outside an acceptable range? The installation of signal repeaters is recommended for areas with poor cellular connectivity.			

Accessibility

Comply with regional accessibility laws, regulations, and ordinances. The charging station must not block ramps or pathways and the height of the interactive display cannot exceed the maximum height as dictated by local laws.

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

Site Comments

I, _____ hereby certify that the scope of work in this form has been correctly completed.

Signature	Date

CP6000

Networked Charging Station

Site Design Guide

APPENDIX 1

IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS

WARNING:

1. **Read and follow all warnings and instructions before servicing, installing, or operating the ChargePoint® charging station.** Install and operate only as instructed. Failure to do so may lead to death, injury, or property damage, and will void the Limited Warranty.
2. **Only use licensed professionals to install your ChargePoint charging station and adhere to all national and local building codes and standards.** Before installing the ChargePoint charging station, consult with a licensed contractor, such as a licensed electrician, and use a trained installation expert to ensure compliance with local building and electrical codes and standards, climate conditions, safety standards, and all applicable codes and ordinances. Inspect the charging station for proper installation before use.
3. **Always ground the ChargePoint charging station.** Failure to ground the charging station can lead to risk of electrocution or fire. The charging station must be connected to a grounded, metal, permanent wiring system, or an equipment grounding conductor shall be run with circuit conductors and connected to the equipment grounding terminal or lead on the Electric Vehicle Supply Equipment (EVSE). Connections to the EVSE shall comply with all applicable codes and ordinances.
4. **Install the ChargePoint charging station on a concrete pad using a ChargePoint-approved method.** Failure to install on a surface that can support the full weight of the charging station can result in death, personal injury, or property damage. Inspect the charging station for proper installation before use.
5. **This charging station is not suitable for use in Class 1 hazardous locations, such as near flammable, explosive, or combustible vapors or gases.**
6. **Supervise children near this device.**
7. **Do not put fingers into the electric vehicle connector.**
8. **Do not use this product if any cable is frayed, has broken insulation, or shows any other signs of damage.**
9. **Do not use this product if the enclosure or the electric vehicle connector is broken, cracked, open, or shows any other signs of damage.**
10. **Use only copper conductor wire rated for 90 °C (194 °F).**

IMPORTANT: Under no circumstances will compliance with the information in a ChargePoint guide such as this one relieve the user of the responsibility to comply with all applicable codes and safety standards. This document describes approved procedures. If it is not possible to perform the procedures as indicated, contact ChargePoint. **ChargePoint is not responsible for any damages that may result from custom installations or procedures not described in this document or that fail to adhere to ChargePoint recommendations.**

Product Disposal

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

Document Accuracy

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

Copyright and Trademarks

Symbols

This guide and product use the following symbols:

DANGER: Risk of electric shock

WARNING: Risk of personal harm or death

CAUTION: Risk of equipment or property damage

IMPORTANT: Crucial step for installation success

Read the manual for instructions

Ground/protective earth

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.

Contents

APPENDIX 1

Site Design Guidelines 1

This document describes how to design a project site for the ChargePoint® CP6000 networked charging station for electric vehicles. This includes guidelines and best practices for electrical infrastructure and capacity planning, construction, and concrete work required prior to installation of charging stations and cellular signal requirements.

Note: CP6000 charging stations are available in several configurations. The images in this guide might not match your station exactly; however, the information is applicable unless otherwise noted.

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

Access ChargePoint documents at chargepoint.com/guides.

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	Site construction contractor
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 on	Installer
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

Initial Site Guidelines

Designing electrical infrastructure to support current and future EV charging demand can help avoid costly upgrades later as EV adoption grows.

Complete an on-site evaluation 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 Construction Signoff Form by a ChargePoint Operations and Maintenance (O&M) partner is required to certify compliance with electrical code, and to ensure everything was prepared to ChargePoint specifications.

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

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.

Electrical Requirements

At a minimum, each Level 2 charging station, either single or dual port, requires the following:

- A dedicated single phase electrical circuit from 40 A to 80 A
- A new circuit breaker at the electrical panel
- Conductor wiring and circuit protection sized in accordance with all applicable codes

Consequently, CP6000 charging station with two charge ports typically requires two power input circuits, one circuit per port. There may be situations where both ports share a main single circuit. If power capacity is limited at a site or to reduce costs for electrical infrastructure, consider ChargePoint Power Management options for power sharing at the circuit level, panel level, transformer, or site level.

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

Additional Electrical Considerations

- CP6000 charging stations are AC electrical vehicle (EV) supply equipment and are permanently connected to AC networks.
- Evaluate existing electrical infrastructure to determine if the existing utility service and electrical panel capacity is sufficient.

- Ensure appropriate electrical wiring, over current circuit protection, and metering, if required, is in place.
- Identify costs for any necessary upgrades and/or a new dedicated electrical panel.
- ChargePoint recommends using a licensed 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 charging stations.
- Determine raceway or conduit runs for electrical wiring from the electrical panel.

Charging Station Placement

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

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

Layout Considerations

- Identify station locations for EV charging spots.
- CP6000 charging stations can be installed either indoors or outdoors.
- They can be mounted on walls or in the ground (pedestal mount).
- CP6000 charging stations do not have an integrated active ventilation system.
- To help minimize costs, choose station locations that are as close as possible to the available electrical infrastructure.
- Consider locations where it will be easy to add future stations.
- Consider how easily drivers can find the stations they need to access.
- Identify suitable locations with smooth, plumb surfaces for wall mount stations or suitable floor surfaces for pedestal mount stations.
- Consider a layout to minimize electrical infrastructure costs to all proposed EV parking spaces.
- Avoid or minimize trenching requirements.
- Comply with regional accessibility laws, regulations, and ordinances. The CP6000 charging station must not block ramps or pathways and the height of the interactive display cannot exceed the maximum height as dictated by local laws.
- For stall parking, ChargePoint recommends using perpendicular parking stalls to better accommodate EVs with front and rear charge ports.

- Use dual-port pedestal mount stations where possible in open areas for adjacent parking or adjoining parking spaces.
- Consider protective bollards and wheel blocks where appropriate, especially for open tandem parking spaces.
- If the charging station has a camera, orient the camera towards the parking space.
- Use professional cellular test equipment to 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. Use an indoor antenna located near EV parking spaces and an outdoor antenna typically located at the garage entrance ceiling or on the rooftop where cellular signals are best. See Connectivity for more details.
- When the charging stations cannot be placed close enough to the source of power to avoid undesirable line losses, consider increasing the size of the conductors. When the circuit conductors must be larger than 1/0 AWG, you must add a disconnect immediately adjacent to the station and terminate the upsized conductor at the line side lug of the disconnect. Then, connect a short length of 1/0 AWG conductor to the load side lug of the disconnect and the station. Adding disconnects close to the stations is also helpful when the circuit breakers are relatively far away.

Plan for the Future

Consider current EV charging needs and also potential future needs as EV adoption grows.

- Consider running raceway or conduit to all planned EV parking spots and pulling electrical wiring from the panel to meet current needs.
- Consider installing a dedicated electrical panel for EV charging and leveraging ChargePoint Power Management. This efficiently uses available power at a site to support more EV charging ports than would otherwise be possible.

Civil and Mechanical Design 2

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

Each charging station can be installed attached to a wall or on a concrete pedestal with a Cable Management Kit (CMK). The pedestal can be mounted on a newly poured pad or an existing concrete surface.

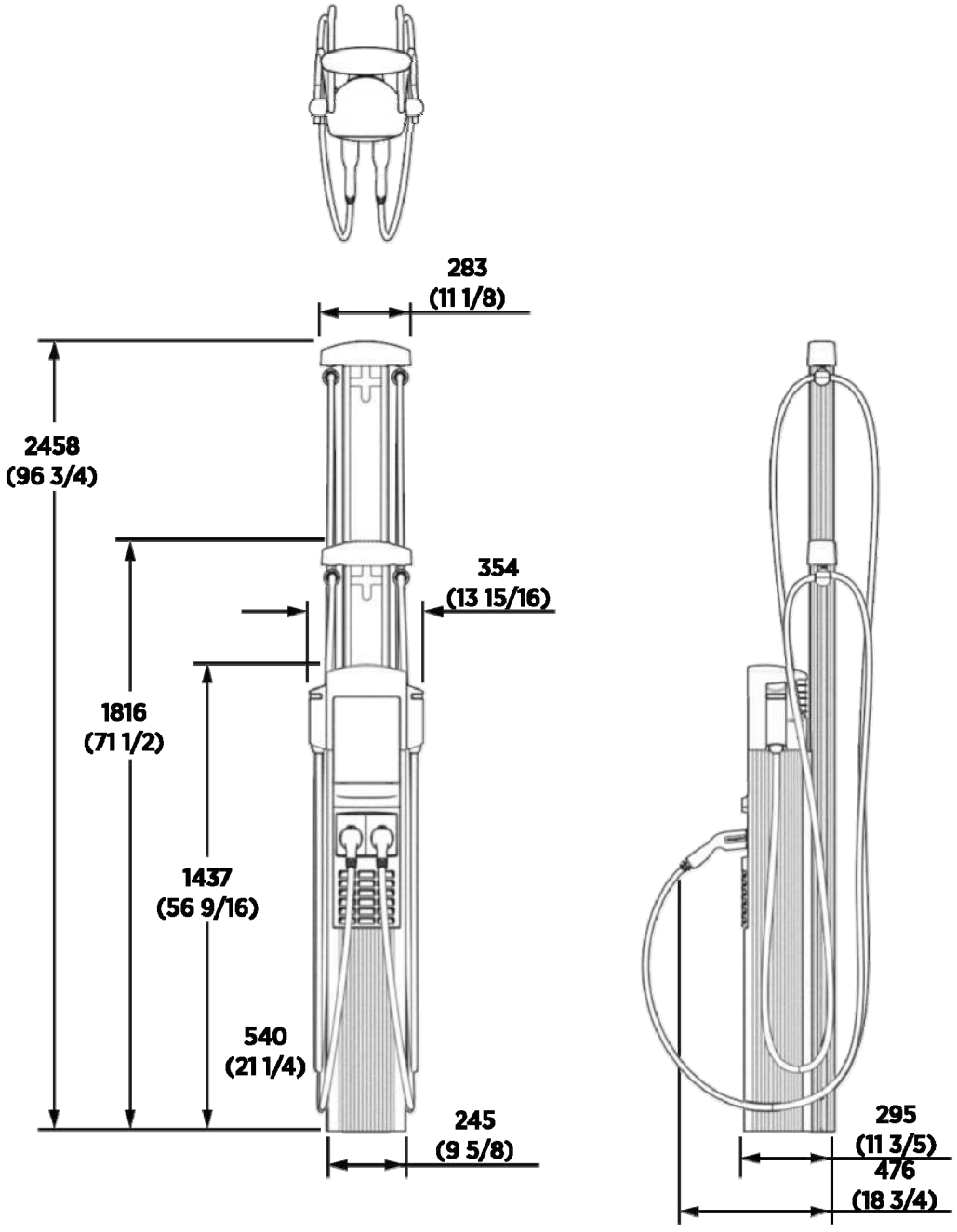
Component Dimensions and Weights

Each CP6000 charging station can be mounted on a pedestal or on a wall with a Cable Management Kit (CMK). The station is a vertical enclosure with the weights and dimensions shown below.

Station Configuration	Approximate Weight
Single port, wall	62 kg (136 lb)
Dual port, wall	68 kg (150 lb)
Single port, pedestal	71 kg (155 lb)
Dual port, pedestal	76 kg (168 lb)

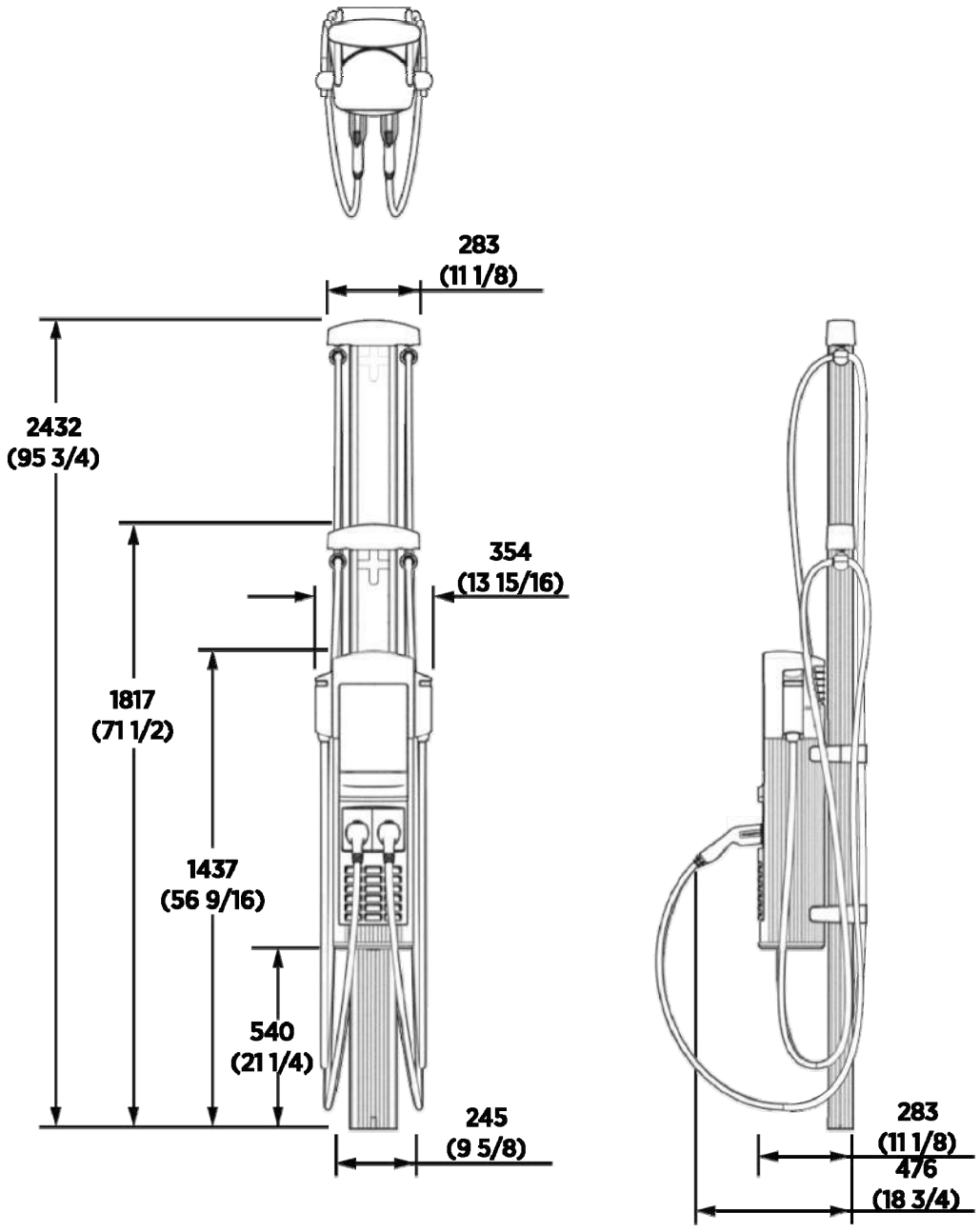
Pedestal Mount With CMK

Note: Images are not to scale. Measurements appear in metric units (mm), followed by imperial equivalents (inches).



Wall Mount With CMK

Note: Images are not to scale. Measurements appear in metric units (mm), followed by imperial equivalents (inches).



Mounting Specifications - Pedestal Mount Stations

IMPORTANT: Use a ChargePoint Concrete Mounting Template (CMT) when installing a new pedestal mount charging station or replacing an existing non-ChargePoint pedestal mount station. You do not need a CMT if you are installing a wall mount charging station or replacing an existing ChargePoint station.

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

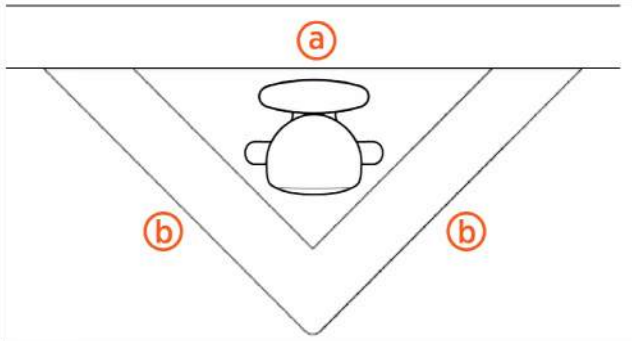
- Must not be installed in asphalt
- Mounting surface must be smooth
- Mounting surface cannot exceed a slope of 6 mm per 300 mm (0.25 in per ft)
- The concrete base must measure at least 600 mm (2 ft) on all sides
- Epoxy anchors can be used (installations in existing concrete)
- No expanding bolts are used
- Consult a civil engineer to ensure sufficient volume and strength of concrete; (installations in existing concrete)

IMPORTANT: If the existing pad does not meet the specifications above, a structural engineer must inspect and approve the pad for CP6000 charging station dimensions and weight.

Pedestal Base Designs

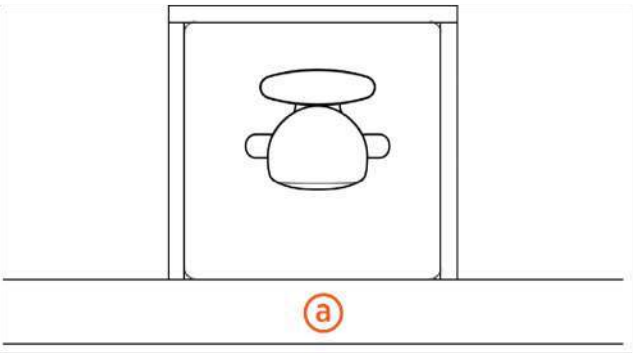
There are three basic pedestal base designs:

- In front of a curb **(a)** - Does not obstruct a pedestrian pathway or disturb landscaping.
  900 mm (3 ft) on each side **(b)**
  Area: 0.42 m^2 (4.5 ft^2)
  Volume: 0.26 m^3 (9 ft^3)



- Behind a curb **(a)** in a planter or berm
  600 mm (2 ft) on each side
  Area: 0.37 m^2 (4 ft^2)
  Volume: 0.23 m^3 (8 ft^3)

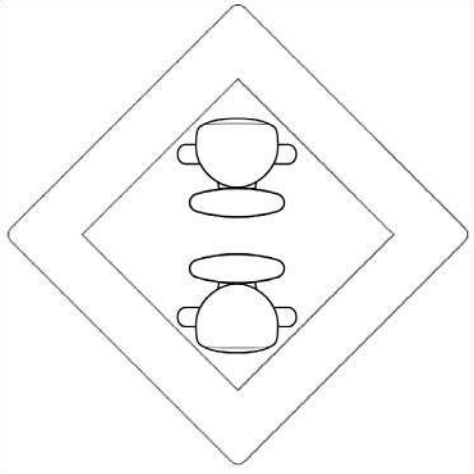
Note: Use a retaining wall as needed to prevent dirt from accumulating on the pad.



- Two stations back to back, centered between four spaces 900 mm (3 ft) on each side

  Area: 0.84 m^2 (9 ft^2)

  Volume: 0.51 m^3 (18 ft^3)

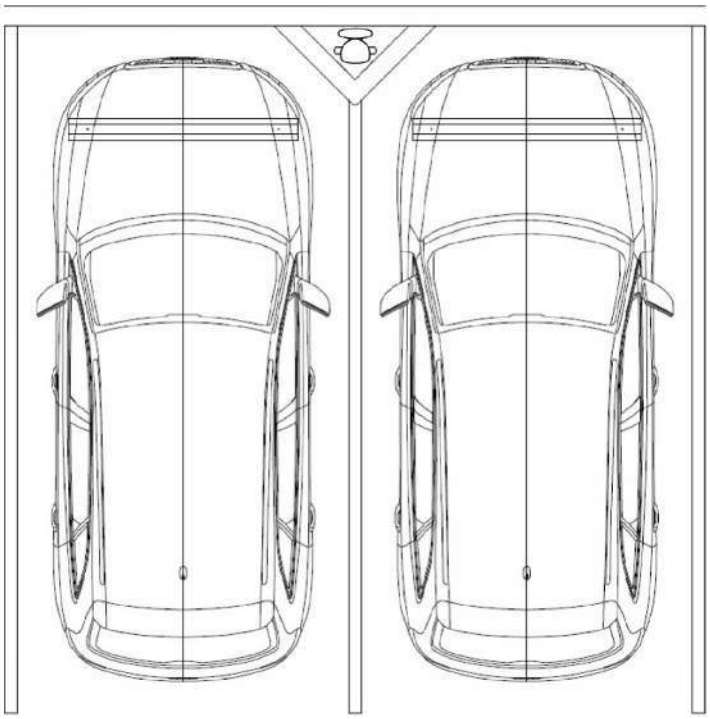


Pedestal Configurations for Different Parking Arrangements

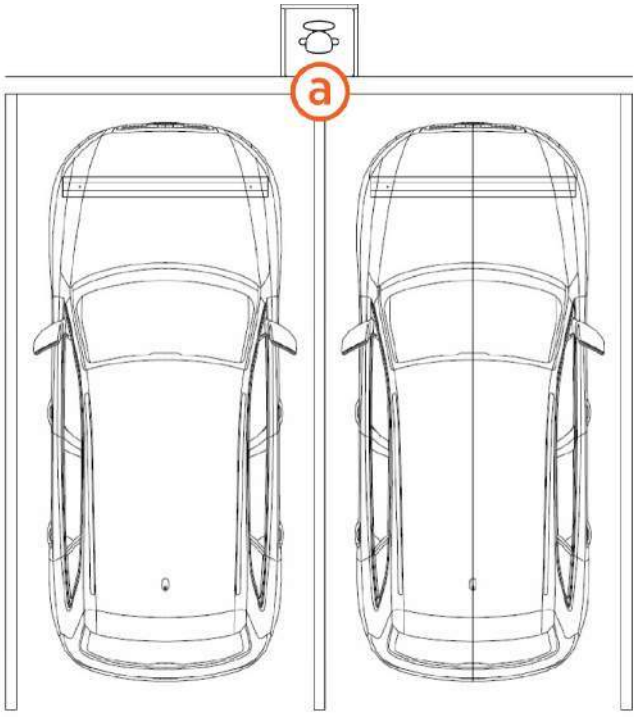
The pedestal base design can be configured in a variety of ways to serve different parking arrangements. Ensure a sufficient volume of concrete to provide anchoring for the charging station.

Note: CP6000 charging stations are available in several configurations. The images in this guide might not match your station exactly; however, the information is applicable unless otherwise noted.

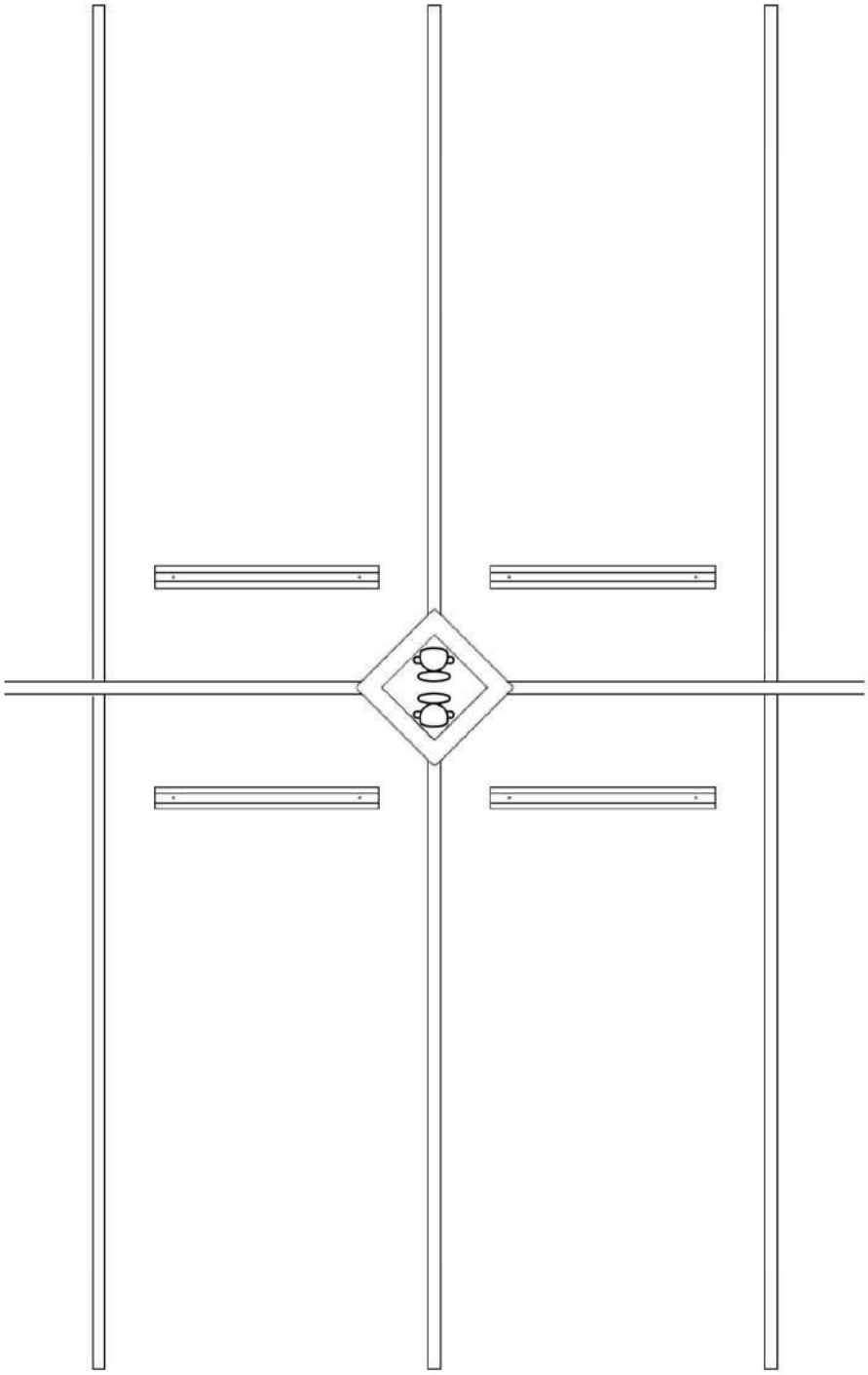
- Place the station against the curb between spaces with wheel stops 900 mm (3 ft) from the front of each stall. The base of the charging station can be flush with the parking spaces or at curb level.



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



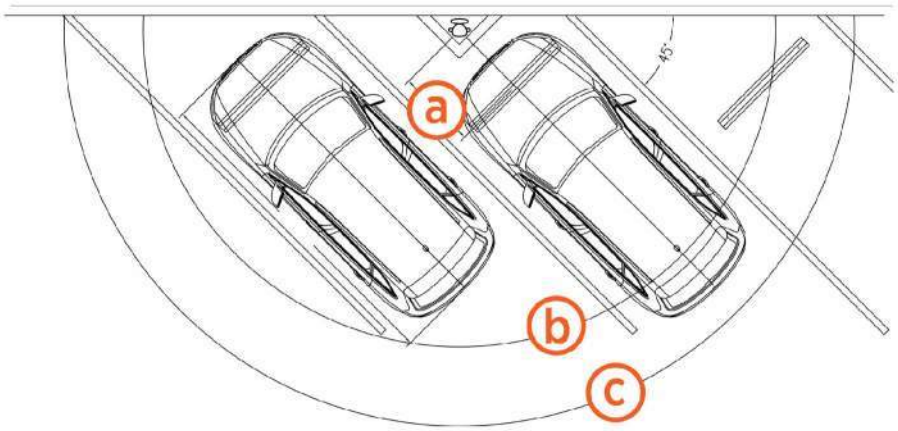
- Place two stations back to back centered on four spaces with wheel stops 900 mm (3 ft) from the front of each stall. The base of the charging station can be flush with the parking spaces or at curb level.



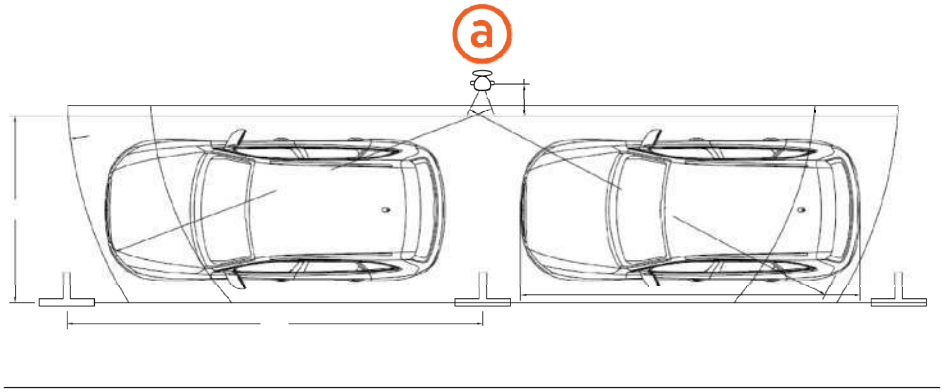
- When placing a dual holster station centered on the right space, the charging cables can reach two vehicles. Place a wheel stop 1220 mm (4 ft) **(a)** from the center of the charging station.

  Note the following details for this arrangement:

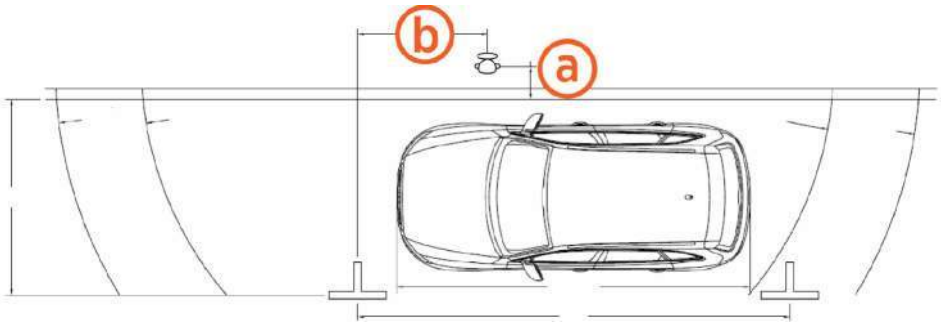
  - The arc shows the usable reach of the two charging cable lengths available: 5.5 m (18 ft) **(b)** and 7 m (23 ft) **(c)**.
  - The 7 m (23 ft) cord option is recommended for this configuration.
  - The base of the charging station can be flush with the parking spaces or at curb level.
  - Be sure to install 'EV Charging Station' signs on both spaces.



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



- Place a single holster station for a single parallel parking space 6 m (20 ft) long. Place the station **(a)** 450 mm (18 in) from the curb, and 1.8 m (6 ft) from the front of the parking space **(b)** This allows the cord to reach any part of the vehicle without blocking the curb side doors.

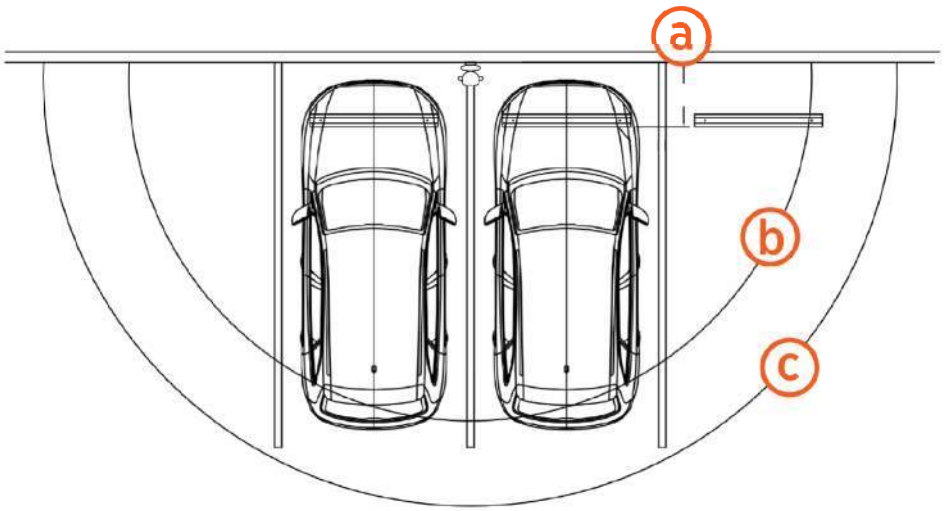


Mounting Specifications - Wall Mount Stations

For wall mounted stations:

- The wall must be smooth, stable, and plumb.
- The minimum height of the wall must be 1160 mm (45.7 in) above a finished floor.
- Place wheel stops 900 mm (3 ft) **(a)** from the wall.
- The arcs show the usable reach of two charging cable lengths available, 5.5 m (18 ft) **(b)** and 7 m (23 ft) **(c)**.

Note: Ensure the space between the wall and the charging station is clear and free of debris.



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

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

Drainage

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

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

Clearances

For pedestal installations, the conduit stub-up must be a minimum of 230 mm (9 in) from any obstructions to the rear. This includes other charging stations. Check applicable codes for any additional clearance requirements.

Accessibility

Comply with regional accessibility laws, regulations, and ordinances. The CP6000 charging station must not block ramps or pathways and the height of the interactive display cannot exceed the maximum height as dictated by local laws.

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 CP6000 charging stations are available with a maximum amperage of either 50 A or 80 A.

If the charging station allows a maximum of 50 A, Power Select current options include 16 A, 24 A, 32 A, 40 A, 48 A, and 50 A.

If the charging station allows a maximum of 80 A, Power Select current options include 16 A, 24 A, 32 A, 40 A, 48 A, 50 A, 56 A, 64 A, 72 A, and 80 A.

Power Share allows a dual-port station to share power from a single circuit across two ports, adjusting power depending on whether one or both are charging. Standard wiring uses an independent circuit for each port. Power Share can be used in combination with Power Select.

Refer the CP6000 datasheet at chargepoint.com/guides for information about the following:

- Electrical input
- Electrical output
- Mounting and functional interfaces
- Safety and connectivity features
- Safety and operational ratings

General Wiring Considerations

Ensure that the installation location is equipped with service wiring that supports the charging station's power requirements.

Conduit and wire size are determined based on the length of runs from the electrical panel to the station location. Service wiring must be run through conduit to comply with local electrical codes. Consult national and local codes or a project engineer to determine the grade, quality, and size of the conduit or cable.

Attach the conduit with a listed adapter. Use a sealing method that meets all applicable code requirements.

The CP6000 Concrete Mount Kit accommodates service wiring through the flare, conduit, or locally appropriate wiring method. Visit Pedestal Mount Concrete Preparation for more information.

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

For full product specifications, refer to the CP6000 Datasheet.

Wall Mount Considerations

- CP6000 wall mounted charging stations use surface mount wiring.
- When pulling electrical wiring for wall mount stations, the conduit and wire must be brought to the location where the stations will be mounted. Flex conduit is typically used to bring the wire to the station. Wiring is brought in through knock outs in the bottom of the charging station.

Pedestal Mount Considerations

- CP6000 pedestal mounted charging stations typically require service wiring installed underground to enter through the bottom of the station.
- When pulling electrical wiring for CP6000 pedestal mount, ensure at least 1.5 m (5 ft) of wire remains above grade.

Conduit

The outside diameter of conduit must not exceed the sizes called out in the pedestal mounting template: 95 mm (3.74 in). Conduit stub-ups must measure between 152 mm (6 in) and 590 mm (23.25 in) above grade.

Conduit stub-ups must not extend higher than 600 mm above ground level.

Electrical Supply Requirements

Wiring must be sized in accordance with all applicable codes for continuous load devices. The main standard for cable size is based on IEC 60364-5-52:2009 and IEC 60364-5-54:2011. The terminal block accepts stranded or solid conductors up to 1/0 AWG (50 mm^2). The appropriate size depends upon the distance between the electrical panel and the charging station installation site and the maximum current in the circuit.

When planning multiple EV charging stations, it is best practice to separate non-continuous from 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.

CP6000 charging stations are designed for connection to and operation on rated voltages of 208 V or 240 V (phase to phase) at 60 Hz. Source must have neutral bonded to ground to establish 120 V phase to ground.

CAUTION: CP6000 charging station is rated Over-voltage Category III and includes surge protection for absorbing transient over voltages. CP6000 charging stations are tested to IEC 61000-4-5 (4 kV) standards. In countries where extra Surge Protection Device protection is required, check the national codes for categorization and installation of the equipment.

CAUTION: Use copper conductors only.

Use new circuit breakers only.

Port Capacity	Breaker Rating
80 A /port	100 A breaker per port
48 A/port	60 A breaker per port
40 A/port	50 A breaker per port

Ensure all power and ground connections (especially those at the breaker) are clean, tight, and torqued to specification. Remove all oxide from all conductors and terminals before connecting wiring.

Be aware of these requirements before installing the charging station:

- CP6000 charging stations comply with Class B.
- The CP6000 is Class I grounded equipment and must be grounded.

Consult your electricity grid operator regarding requirements for local regulations. Depending on the desired rated power, the installation of the charging station may require registration with and approval by your electricity grid operator.

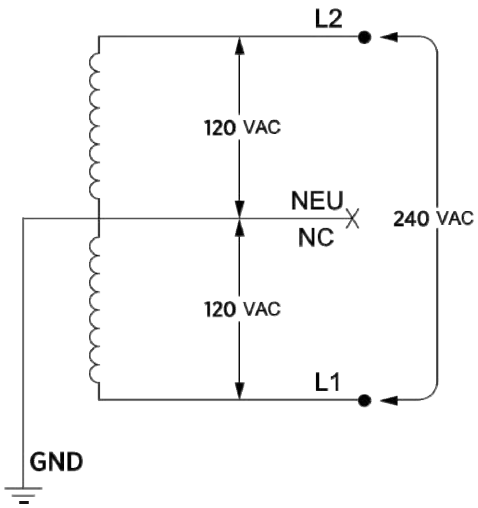
Grounding Requirements

CP6000 charging stations 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 charging station.

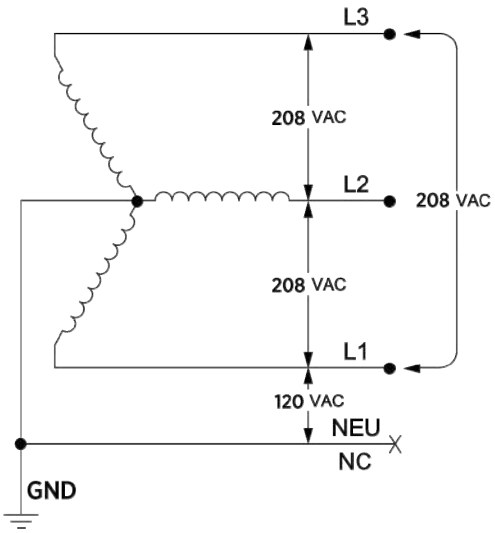
A grounding conductor that complies with applicable codes must be grounded to earth at the service equipment or, when supplied by a separate system, at the supply transformer, or may be grounded to an earth electrode. Ensure the grounding conductor complies with all applicable codes.

Connect To These Systems

- 120/240 V AC, 1Ø Bonded Neutral
  Station is connected to L1 and L2
  Neutral is not used



- 120/208 V AC, 3Ø Wye Bonded Neutral
  Station may be connected to any two lines
  Neutral is not used



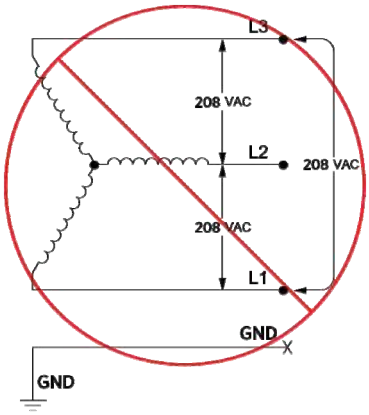
Do Not Connect to These Systems

- 208 V AC 3Ø Wye, ungrounded

  Floating Neutral

  Voltage of either line to ground is undetermined

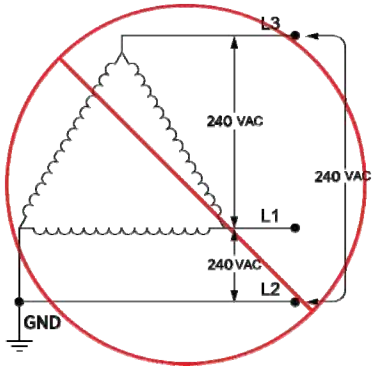
  Neutral is not grounded



- 120/240 V AC 3Ø Delta, corner-grounded

  Voltage of any line is not 120 V nominal relative to ground

- Any system where the center point of the AC power source is not grounded.



APPENDIX 1

Connectivity 4

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.

Signal Strength and Quality

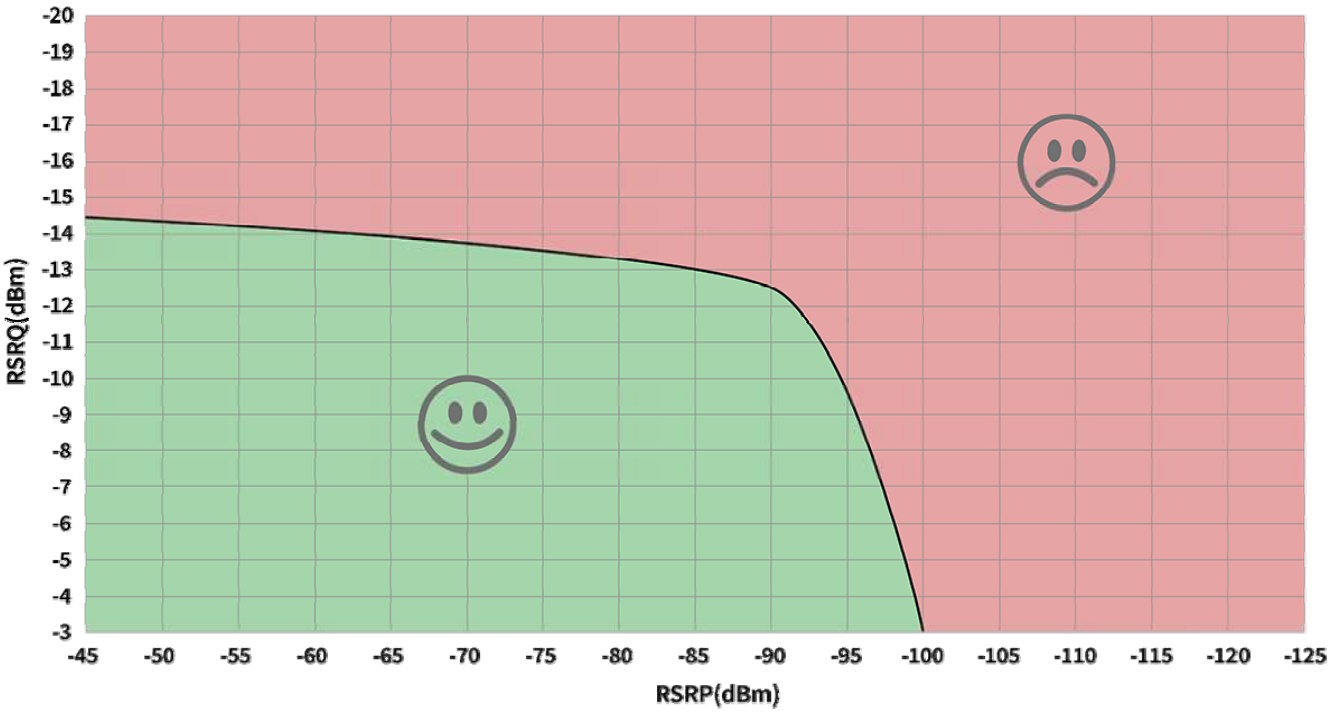
You must use a cellular signal detection device (such as a Siretta Snyper LTE or equivalent) to take signal strength readings at the exact proposed mounting location of the charging station. If the charging station does not have its own cellular connection, take the signal strength reading at the proposed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

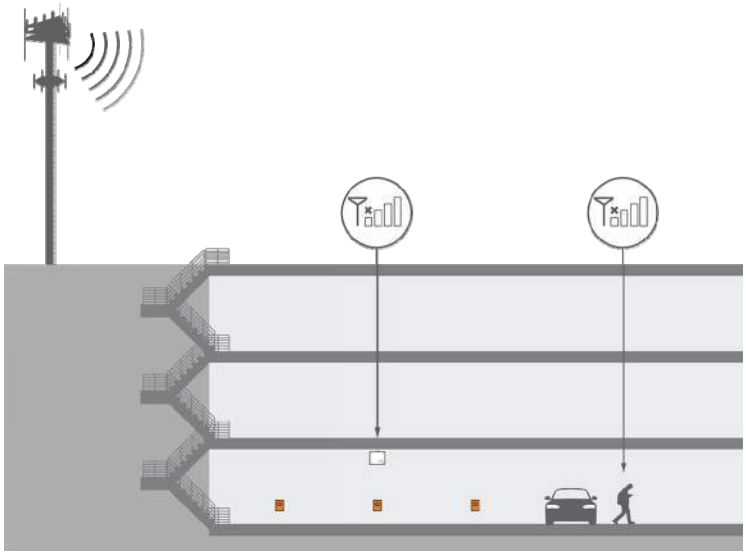
- US: AT&T, T-Mobile, and Verizon
- Canada: Rogers, Telus, and Bell

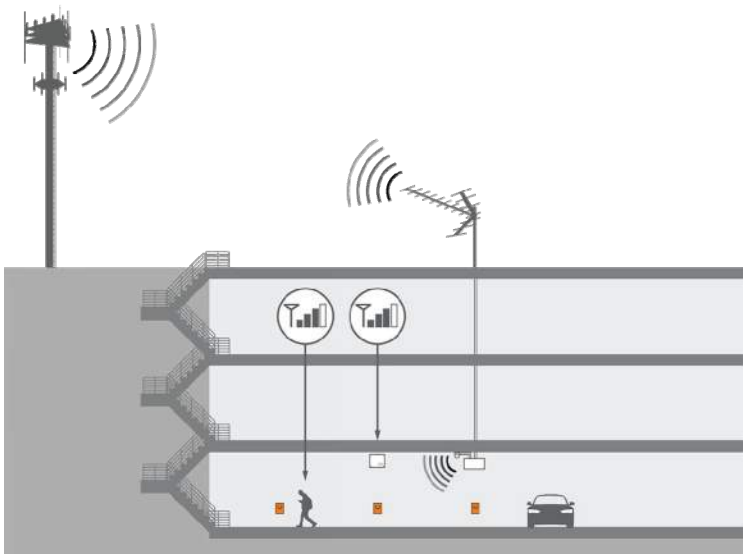
You must test the LTE signal strength at the proposed mounting location of every gateway station and ensure the location meets the minimum RSRQ at -12.5 dB or better, for RSRP measured at -90 dBm or better. Refer to the graph for acceptable combinations.

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



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





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.

APPENDIX 1

5 Pedestal Mount Concrete Preparation

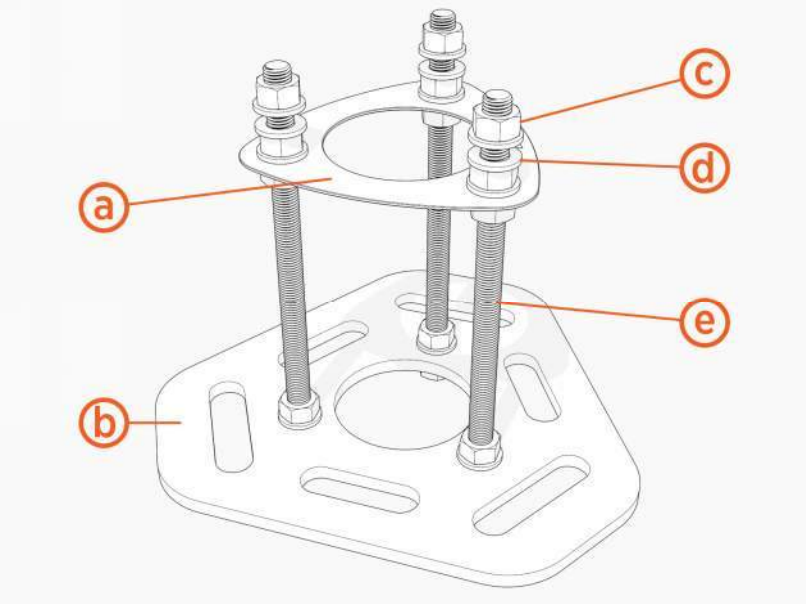
Concrete Mounting Template

You must use a ChargePoint Concrete Mounting Template (CMT) when installing a new pedestal mount charging station or replacing an existing non-ChargePoint pedestal mount station.

Use a CMT when installing charging stations on existing concrete (on an intermediate floor only).

You must order the CP6000 CMT separately, with sufficient lead time before site construction. This kit ships separately from the ChargePoint CP6000 charging station.

a. Upper template
b. Lower template
c. Nuts (x 15)
d. Washers (x 18)
e. Anchor bolts (x 3)



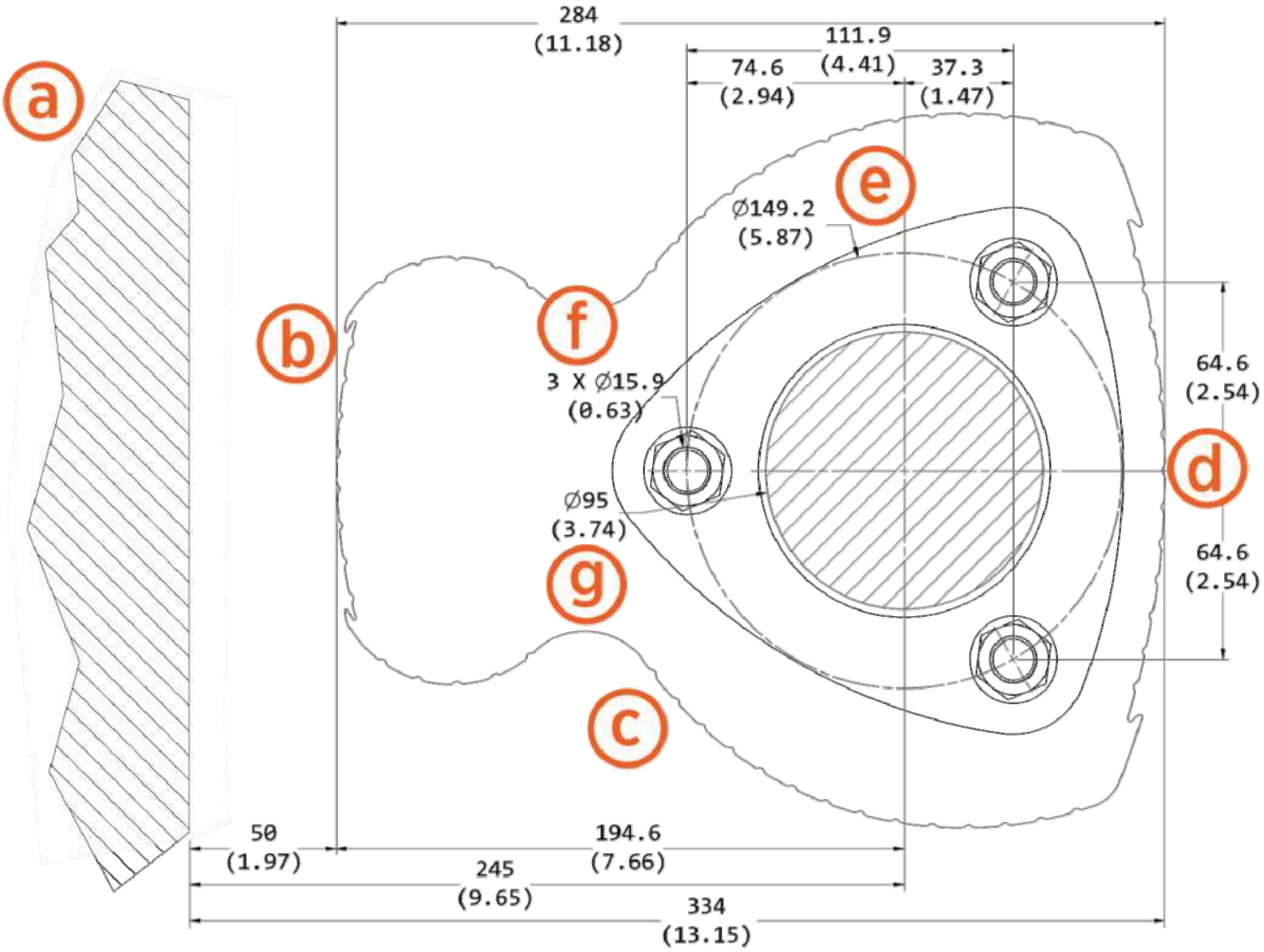
Note: You do not need a CMT if you are installing a wall mount charging station or replacing an existing ChargePoint station.

The Concrete Mounting Template kit components you need to use, the tools required, and the installation steps vary depending on the type of installation: new concrete or existing concrete.

WARNING: Do not use expanding anchor bolts. Do not install the CP6000 on an asphalt surface.

CMT - Pedestal Mount With CMK

Note: Images are not to scale. Measurements appear in metric units (mm), followed by imperial equivalents (inches).



a. Wall
b. CMK footprint
c. Pedestal footprint
d. Front
e. Bolt circle
f. Bolt or anchor
g. Conduit stub-up within this area (new concrete only)

Tools and Materials

In addition to the CP6000 Concrete Mounting Template 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 (1 in) wrench
- Level
- Cut-resistant gloves
- Drill or hydraulic hole punch (if using armored cable)
- 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)

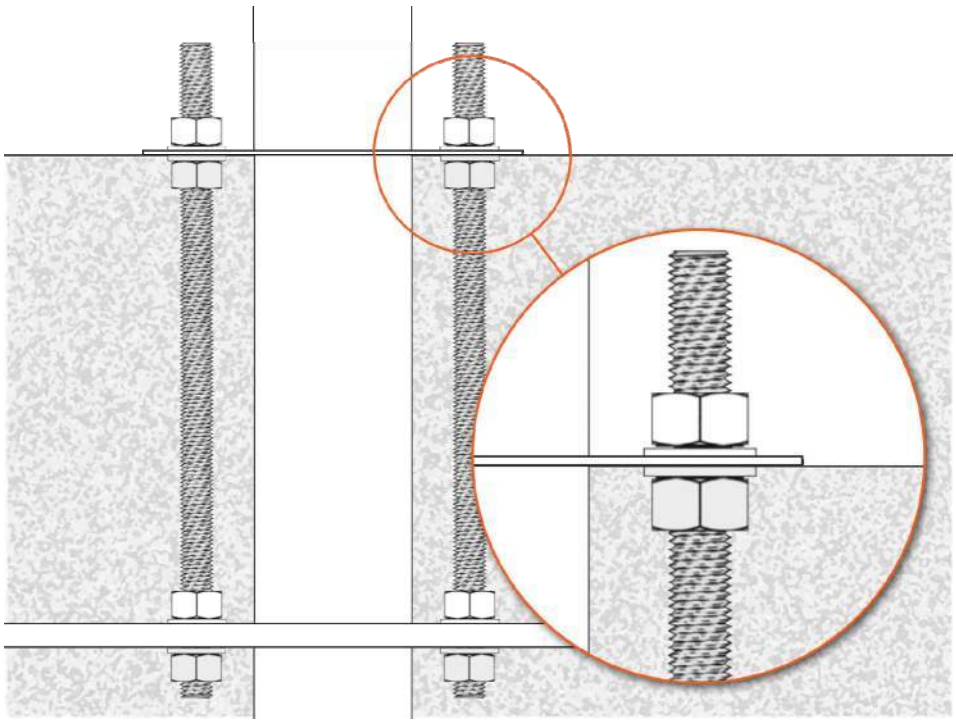
Installation into New Concrete

WARNING: Failure to install the ChargePoint CP6000 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.

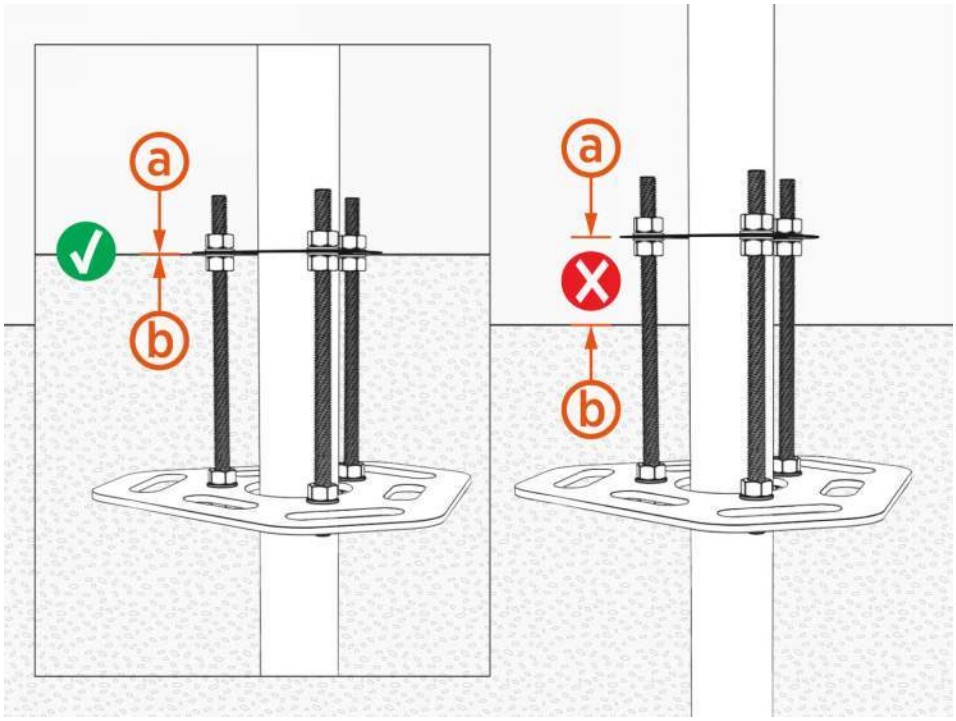
1. Trench and excavate an opening to accommodate the wiring conduit and the concrete mounting pad that meets local codes and requirements, per site drawings.
2. Run conduit to each station as needed. If the station needs wired Ethernet access, run Ethernet conduit.
3. Build the form and lay rebar for the foundation.
    - The concrete block must measure at least 600 mm (24 in) on all sides.
    - The conduit stub-up needs to measure between 152 mm (6 in) and 590 mm (23.2 in) above the concrete surface

    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. Align the CP6000 CMT over the conduit stub-ups with the two bolts facing forward and the third bolt to the rear.

5. Slide the CP6000 CMT over the conduit stub-ups until the top surface of the template is level with the top surface of the concrete when poured.

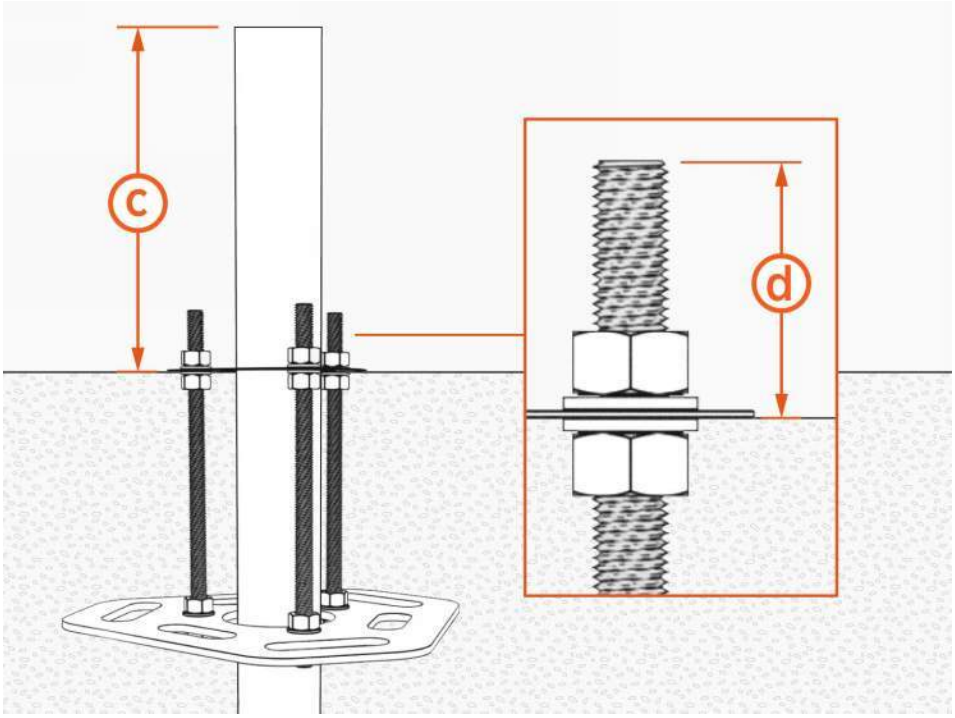


The bottom of the upper template **(a)** must align with the surface of the concrete **(b)**.

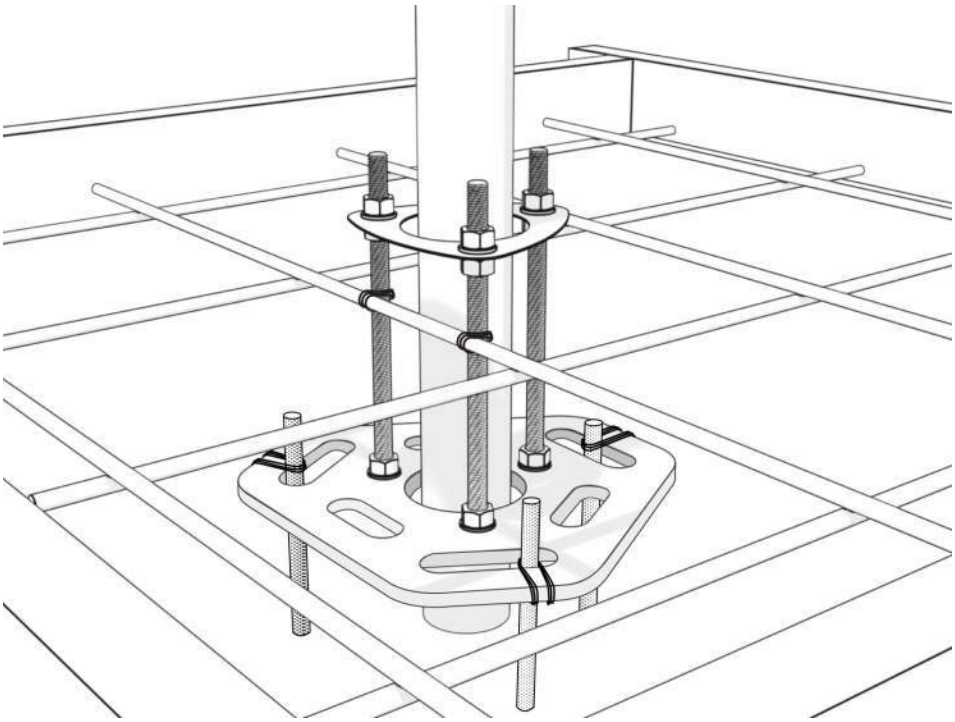


6. Ensure the conduits are plumb.

7. Use a level to check that the CP6000 CMT is level from front to back and from side to side.
8. Conduit height **(c)** must be between 152 mm (6 in) and 590 (23-1/4 in). Each bolt **(d)** must extend between 60 mm (2-1/2 in) and 100 mm (4 in) above the concrete surface.



9. Before pouring concrete, tie the CP6000 CMT to rebar to help hold it in place.



IMPORTANT: The CP6000 CMT and the conduit must be secured in place to prevent them from moving out of position while the concrete is poured and curing.

10. Pour the concrete.

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

11. Refer to the measurements in this guide and ensure the anchor rod locations are correct before the concrete is dry.
12. Use a level to ensure the bolts are plumb.

You are now ready to install the CP6000 pedestal mount charging station.

Install on Existing Concrete

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

Review the CP6000 Site Design Guide and ensure that the dimensions of the existing concrete slab meet the requirements.

If you are installing a Cable Management Kit (CMK), make sure there is adequate clearance behind the power stub-up for the CMK.

To safely mount a CP6000 charging station, the concrete must be at least 150 mm (6 in) thick. At this thickness, all of the CP6000 mounting bolts must be positioned as follows:

- At least 380 mm (15 in) from the front edge
- At least 300 mm (12 in) from the side edges
- At least 150 mm (6 in) from the rear edge of the concrete slab

IMPORTANT: If the existing pad does not meet the specifications above, a structural engineer must inspect and approve the pad for CP6000 charging station dimensions and weight.

Replace an Existing Charging Station

If you are replacing a CPF50 charging station, contact ChargePoint to order a CPF50 Adapter Kit.

If an existing charging station (from a manufacturer other than ChargePoint) is already in place at the installation site, complete these tasks:

- Turn off all power to the station and disassemble according to the original manufacturer's instructions.
- Cut away any existing bolts or non-power conduit stub-up to ground level.
- You may need to plug cut-away conduits at the slab end and disconnect wiring at the other end.

IMPORTANT: If existing conduit stub-up diameter is greater than 32 mm (1-1/4 in), you must remove the concrete and replace it.

Tools Required

Electric hammer drill with 12 mm (1/2 in) or larger chuck.

Consumables Required

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

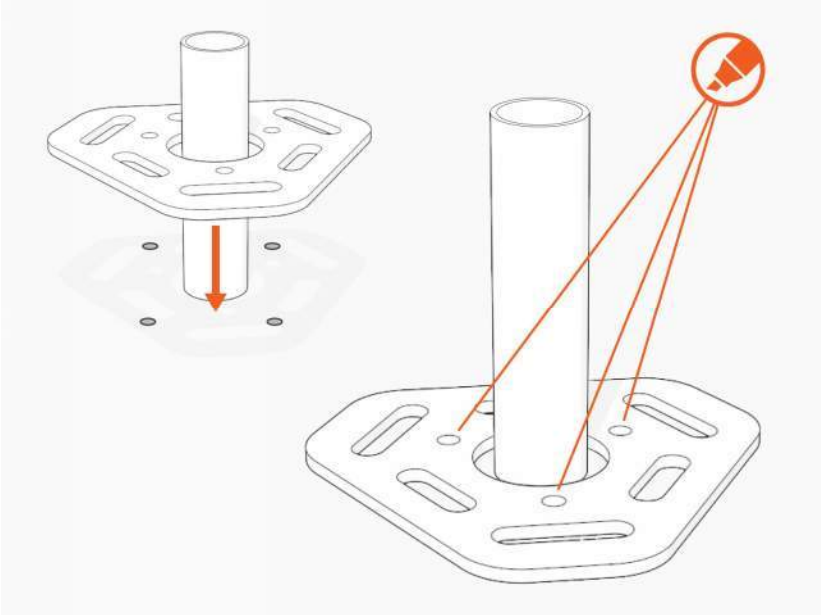
Note: The consumption rate of these products varies depending on conditions at the installation site.

Quantity	Description	Purpose
1	Epoxy adhesive for concrete such as Hilti RE-500	Fill drilled holes.
1	Electrical cleaning and maintenance aerosol, any angle spray duster, 235 ml (8 oz)	Clean drilled holes. Note: Compressed air will work.
1	Slow spiral round-shank masonry drill bit • 19 mm (3/4 in) diameter • 12.5 mm (1/2 in) shank • 254 mm (10 in) drill depth • 305 mm (12 in) length overall	Drill 19 mm (3/4 in) holes in concrete. Note: The holes must be at least 150 mm (6 in) deep.
1	Drill bit for concrete embedded rebar, round • 19 mm (3/4 in) bit size • 12.5 mm (1/2 in) shank diameter • 305 mm (12 in) length overall	Drill 19 mm (3/4 in) hole through rebar.
1	Nylon loop handle brush • 19 mm (3/4 in) brush diameter • 75 mm (3 in) length brush • 216 mm (8 1/2 in) length overall	Clean drilled holes.
1	Push-on round cap, fits 16 mm (5/8 in) - 17.5 mm (11/16 in) OD, 12.7 mm (1/2 in) inside height, pack of 100	Keeps the epoxy inside the drilled holes in situations where the slab is only 150 mm (6 in) deep.

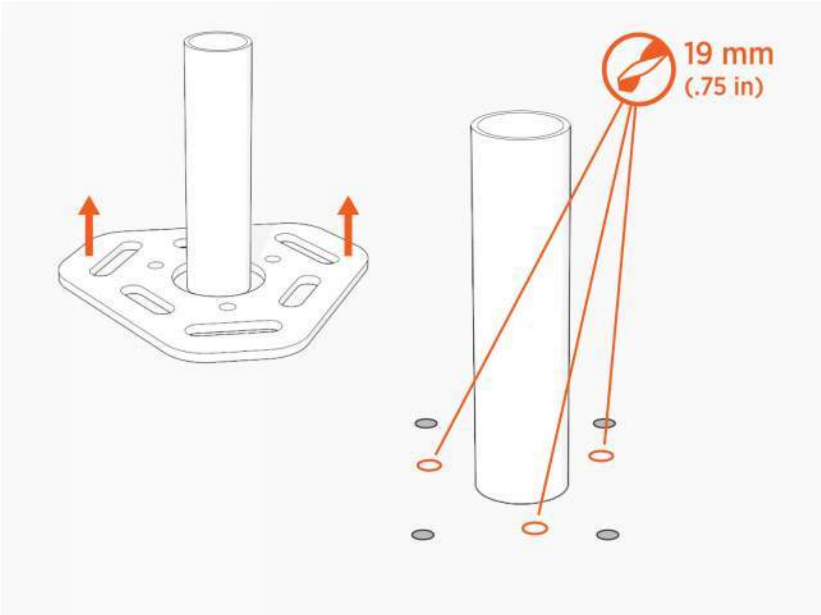
Installation Instructions

1. Remove the lower template and all nuts and washers from below the upper template.

2. Place the lower template on the concrete and mark the hole locations.
    - When placing the template, consider the charging station's total footprint.
    - If installing over an existing conduit stub-up or armored cable, position the center of the template around that stub-up / cable.



3. Remove the template and drill three 19 mm (0.75 in) diameter holes 250 mm (9.85 in) deep into the concrete.
    - You may need two drill bits: one for the concrete (with the pilot) and another for the rebar (without the pilot). Always start the hole using the standard drill bit, and then switch to the rebar drill bit only if drilling through rebar.



4. Remove all dust from inside the drilled holes using compressed air, a vacuum, or a brush.
5. Remove the bolts from the upper template.
6. Fill each hole with epoxy to about 65 to 75 mm (2.5 to 3 in) below the top of the hole. Continue immediately to the next step because the epoxy sets quickly.

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

7. Place the upper template over the holes.
8. Insert the bolts through the upper template into the holes.

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

   Note: Leave the upper template in place.
9. Use a bubble level to ensure the bolts are plumb.
10. Allow the epoxy to cure (depending on cure times recommended by the epoxy manufacturer).

You are now ready to install the CP6000 pedestal mount charging station.

APPENDIX 1

ChargePoint ® AC Commercial Station

Specifications and Ordering Information

Dual port, pedestal mount, 18 ft cable

Ordering Information

The order codes below represent specific product configurations. Please contact ChargePoint Sales for additional information. Specify model number followed by the applicable code(s).

The order code sequence is Model-Options. Software, Services and Other are ordered as separate line items.

Please note that charging stations without EMV-CHIP readers in California may not be publicly visible or discoverable on the ChargePoint map. Please see below for applicable dates.

- Level 2 (AC) stations without EMV-Chip readers: installed/activated on/after July 1, 2023.
- Direct Current Fast Charging (DCFC) stations without EMV-Chip readers: installed/activated on/after January 1, 2022.

(Reference: 13 CCR § 2360.2. Payment Method Requirements for Electric Vehicle Supply Equipment)

Hardware

Description		Order Code
Model	80A Dual port, pedestal mount, 18 ft cable	CP6021B-80A-L5.5
	80A Single port, pedestal mount, 18 ft cable	CP6011B-80A-L5.5
	80A Dual port, pedestal mount, 18 ft cable, EMV chip reader	CP6021B-80A-L5.5-CHIP
	80A Single port, pedestal mount, 18 ft cable, EMV chip reader	CP6011B-80A-L5.5-CHIP
	50A Dual port, pedestal mount, 18 ft cable	CP6021B-50A-L5.5
	50A Single port, pedestal mount, 18 ft cable	CP6011B-50A-L5.5
	50A Dual port, pedestal mount, 18 ft cable, EMV chip reader	CP6021B-50A-L5.5-CHIP
	50A Single port, pedestal mount, 18 ft cable, EMV chip reader	CP6011B-50A-L5.5-CHIP
	80A Dual port, wall mount, 18 ft cable	CP6023B-80A-L5.5
	80A Single port, wall mount, 18 ft cable	CP6013B-80A-L5.5
	80A Dual port, wall mount, 18 ft cable, EMV chip reader	CP6023B-80A-L5.5-CHIP
	80A Single port, wall mount, 18 ft cable, EMV chip reader	CP6013B-80A-L5.5-CHIP
	50A Dual port, wall mount, 18 ft cable	CP6023B-50A-L5.5
	50A Single port, wall mount, 18 ft cable	CP6013B-50A-L5.5
	50A Dual port, wall mount, 18 ft cable, EMV chip reader	CP6023B-50A-L5.5-CHIP
	50A Single port, wall mount, 18 ft cable, EMV chip reader	CP6013B-50A-L5.5-CHIP
	80A Dual port, pedestal mount, 23 ft cable	CP6021B-80A-L7
	80A Single port, pedestal mount, 23 ft cable	CP6011B-80A-L7

	80A Dual port, pedestal mount, 23 ft cable, EMV chip reader	CP6021B-80A-L7-CHIP
	80A Single port, pedestal mount, 23 ft cable, EMV chip reader	CP6011B-80A-L7-CHIP
	50A Dual port, pedestal mount, 23 ft cable	CP6021B-50A-L7
	50A Single port, pedestal mount, 23 ft cable	CP6011B-50A-L7
	50A Dual port, pedestal mount, 23 ft cable, EMV chip reader	CP6021B-50A-L7-CHIP
	50A Single port, pedestal mount, 23 ft cable, EMV chip reader	CP6011B-50A-L7-CHIP
	80A Dual port, wall mount, 23 ft cable	CP6023B-80A-L7
	80A Single port, wall mount, 23 ft cable	CP6013B-80A-L7
	80A Dual port, wall mount, 23 ft cable, EMV chip reader	CP6023B-80A-L7-CHIP
	80A Single port, wall mount, 23 ft cable, EMV chip reader	CP6013B-80A-L7-CHIP
	50A Dual port, wall mount, 23 ft cable	CP6023B-50A-L7
	50A Single port, wall mount, 23 ft cable	CP6013B-50A-L7
	50A Dual port, wall mount, 23 ft cable, EMV chip reader	CP6023B-50A-L7-CHIP
	50A Single port, wall mount, 23 ft cable, EMV chip reader	CP6013B-50A-L7-CHIP
Other	Bollard Concrete Mounting Kit	CP6K-CMT-NA

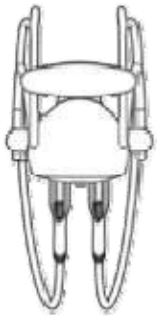
Software and Services

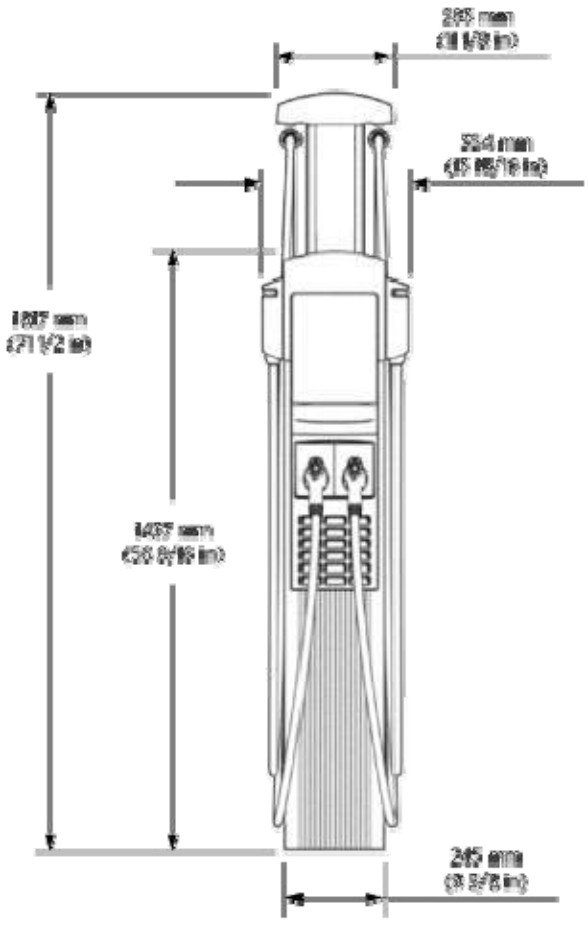
Description	Order Code
ChargePoint Enterprise Plan	CPCLD-ENTERPRISE-*n**
ChargePoint Fleet Commercial	CPCLD-COMMERCIAL-*n**
ChargePoint Assure	CP6000-ASSURE-n*
Station Activation and Configuration	CPSUPPORT-ACTIVE
ChargePoint Site Validation	CPSUPPORT-SITEVALID
ChargePoint Installation and Validation	CP6000-INSTALLVALID

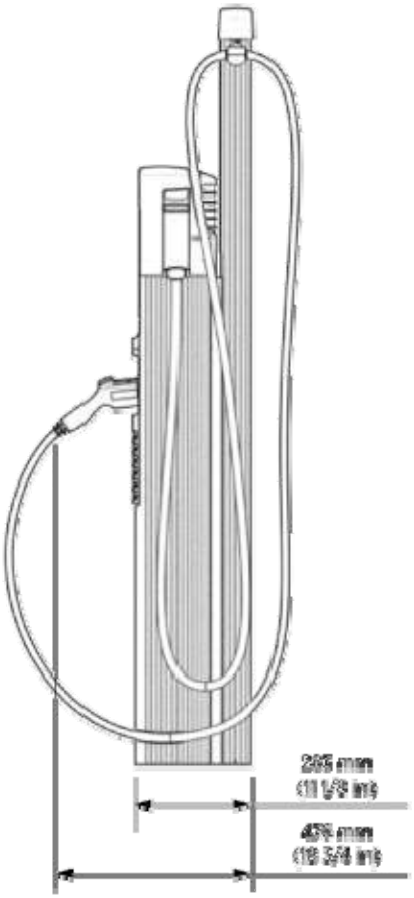
Note: All CP6000 stations require a network service plan per port.
*Substitute *n* for desired years (1, 2, 3, 4 or 5 years)

Architectural Drawings and Dimensions

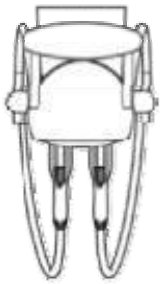
Pedestal Mount

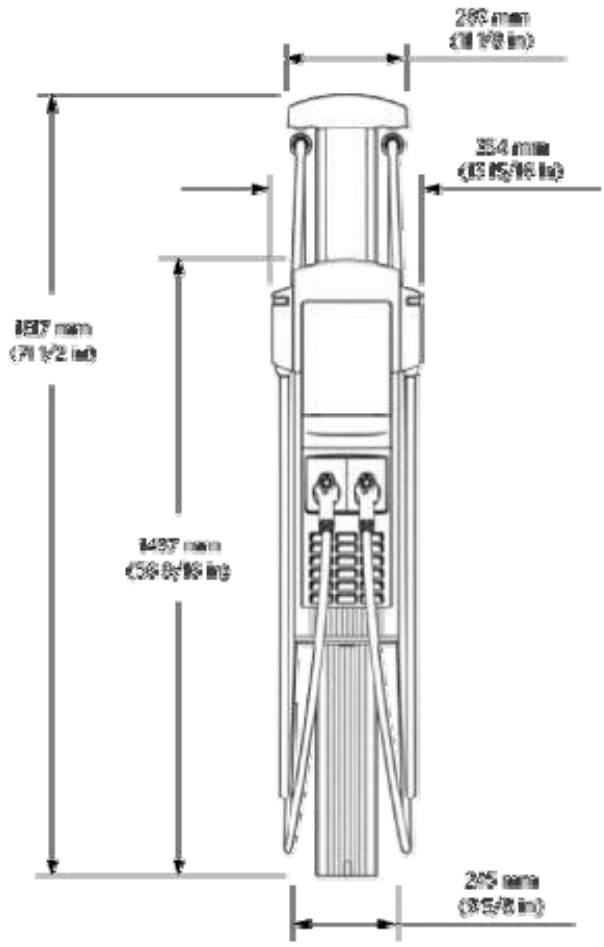


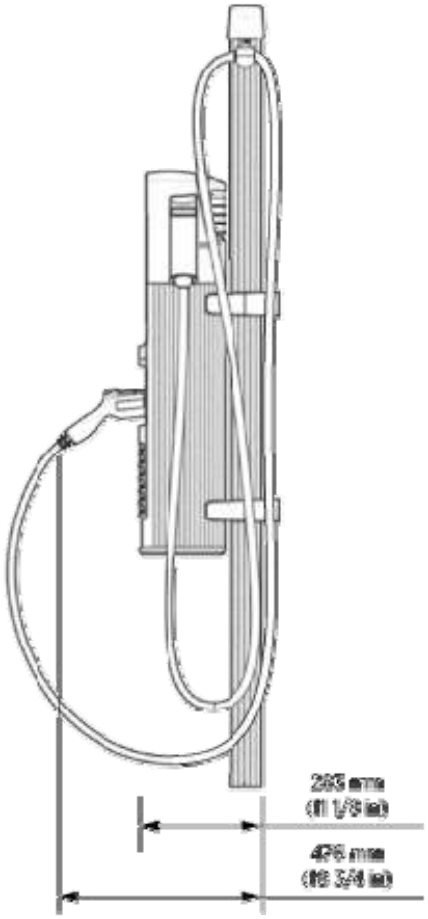




Wall Mount







General Specifications

Electrical Input

The CP6000 AC Commercial Station supports flexible electrical input/output settings up to 80A to fit your fueling needs, whether for a workplace, multi-family dwelling, or other application.

Power Select allows stations to be installed and configured for current lower than the maximum 80A. Power Select current options include 16A, 24A, 32A, 40A, 48A, 50A, 56A, 64A, and 72A.

Power Share allows a dual-port station to share power from a single circuit across two ports, adjusting power depending on whether one or both are charging. Standard wiring uses an independent circuit for each port. Power Share can be used in combination with Power Select.

Station	Electrical Input	Single Port (AC Voltage 208 / 240V AC)			Dual Port (AC Voltage 208 / 240V AC)		
		Input Current	Input Power Connection	Required Service Panel Breaker	Input Current	Input Power Connection	Required Service Panel Breaker
80A	Maximum 80A (Standard)	80A	One 100A branch circuit	100A dual pole (non-GFCI)	80A x 2	Two independent 100A branch circuits	100A dual pole (non GFCI) x 2
	Maximum 80A (Power Share*)	N/A	N/A	N/A	80A	One 100A branch circuit	100A dual pole (non GFCI)
	Power Select** 16A - 72A (Standard)	16A - 72A	One branch circuit rated 125% of input current (20A - 90A)	Dual pole (non-GFCI) rated 125% of input current (20A - 90A)	16A - 72A x 2	Two independent branch circuits rated 125% of input current (20A - 90A)	Dual pole (non-GFCI) rated 125% of input current (20A - 90A) x 2
	Power Select 16A - 72A (Power Share)	N/A	N/A	N/A	16A - 72A	One branch circuit rated 125% of input current (20A - 90A)	Dual pole (non-GFCI) rated 125% of input

APPENDIX 1

CP6000 AC Commercial Station Specifications

							current (20A - 90A)
50A	Maximum 50A (Standard)	50A	One 70A branch circuit	70A dual pole (non-GFCI)	50A x 2	Two independent 70A branch circuits	70A dual pole (non GFCI) x 2
	Maximum 50A (Power Share*)	N/A	N/A	N/A	80A	One 70A branch circuit	70A dual pole (non GFCI)
	Power Select** 16A - 48A (Standard)	16A - 48A	One branch circuit rated 125% of input current (20A - 60A)	Dual pole (non-GFCI) rated 125% of input current (20A-60A)	16A - 48A x 2	Two independent branch circuits rated 125% of input current (20A - 60A)	Dual pole (non-GFCI) rated 125% of input current (20A - 60A) x 2
	Power Select 16A - 48A (Power Share)	N/A	N/A	N/A	16A - 48A	One branch circuit rated 125% of input current (20A - 60A)	Dual pole (non-GFCI) rated 125% of input current (20A - 60A)
Service Panel/Breaker GFCI	Do not provide external GFCI as it may conflict with internal GFCI (CCID)						
Wiring – Standard	3-wire (L1, L2, Earth) No neutral				5-wire (L1, L1, L2, L2, Earth)		
Wiring – Power Share	N/A				3-wire (L1, L2, Earth)		
Station Power	8 W typical (standby), 15 W maximum (operation)						
Line to Ground Voltage	120V +/- 10%						

Electrical Output for 80A Station

Electrical Output	Single Port (AC Voltage 208 / 240V AC)	Dual Port (AC Voltage 208 / 240V AC)
Maximum 80A (Standard)	19.2 kW (240V AC @ 80A)	19.2 kW (240V AC @ 80A)
Maximum 80A (Power Share)	N/A	19.2 kW (240V AC @ 80A) x 1 or 9.6 kW (240V AC @ 40A) x 2
Power Select 16A - 72A (Standard)	3.8 kW - 17.3 kW (240V AC @ 16A - 72A)	3.8 kW - 17.3 kW (240V AC @ 16A - 72A) x 2

Power Select 16A - 72A (Power Share)	N/A	3.8 kW - 17.3 kW (240V AC @ 16A - 72A) x 1 or 1.9 kW - 8.6 kW (240V AC @ 8A - 36A) x 2

Electrical Output for 50A Station

Electrical Output	Single Port (AC Voltage 208 / 240V AC)	Dual Port (AC Voltage 208 / 240V AC)
Maximum 50A (Standard)	12.0 kW (240V AC @ 50A)	12.0 kW (240V AC @ 50A)
Maximum 50A (Power Share)	N/A	12.0 kW (240V AC @ 50A) x 1 or 6.0 kW (240V AC @ 25A) x 2
Power Select 16A - 48A (Standard)	3.8 kW - 11.5 kW (240V AC @ 16A - 48A)	3.8 kW - 11.5 kW (240V AC @ 16A - 48A) x 2
Power Select 16A - 48A (Power Share)	N/A	3.8 kW - 11.5 kW (240V AC @ 16A - 48A) x 1 or 1.9 kW - 5.8 kW (240V AC @ 8A - 24A) x 2

Mounting and Functional Interfaces

Connector Type	SAE J1772™
Number of Ports	Single, dual
Mounting	Pedestal, wall
Cable Length	18 ft (5.5 m), 23 ft (7m)
Cable Management	Yes
Authentication and Payment	RFID: ISO 15693, ISO 14443, NEMA EVSE 1.2-2015 (UR) NFC (Tap to Charge) Remote: mobile and in vehicle (if supported by vehicle) Contactless credit card EMV chip credit card (for -CHIP models only)
Locking Holster	Yes
ISO 15118 Protocol	Supported by hardware
Display	Full color 8-inch interactive display with full motion video, UV protection, gesture touch controls, and multi-language support

Safety and Connectivity Features

Ground Fault Detection	20 mA CCID with auto retry
Open Safety Ground Detection	Continuously monitors presence of safety (green wire) ground connection
Plug-Out Detection	Power terminated per SAE J1772™ specifications
Energy Measurement	Meter accuracy 1% Accuracy class 2.0 Acceptance tolerance 1.0%
Power Report/Store Interval	15-minute interval aligned to hour. Responsive to load management signals.
Local Area Network	Wi-Fi 2.4 GHz and 5GHz (802.11 a/n/b/g)
Wide Area Network	LTE Category 4
Network Communication Protocol	OCPP 2.0.1
Ethernet connection	Capable with accessory

Safety and Operational Ratings

Station Enclosure Rating	Type 3R per UL 50E
Safety and Compliance	UL and cUL listed; complies with UL 2594, UL 2231-1, UL 2231-2, and NEC Article 625 Energy Star (Dual Port Only) CTEP

APPENDIX 1

CP6000 AC Commercial Station Specifications

Station Surge Protection	6 kV @ 3,000A. In geographic areas subject to frequent thunderstorms, supplemental surge protection at the service panel is recommended.
EMC Compliance	FCC Part 15 Class B
Operating Temperature	-40°C to 50°C (-40°F to 122°F)
Non-Operating Temperature	-40°C to 60°C (-40°F to 140°F)
Terminal Block Temperature Rating	105°C (221°F)
Operating Humidity	Up to 85% @ 50°C (122°F) non-condensing
Non-Operating Humidity	Up to 95% @ 50°C (122°F) non-condensing

ChargePoint, Inc. reserves the right to alter product offerings and specifications at any time without notice and is not responsible for typographical or graphical errors that may appear in this document.

ChargePoint, Inc.
240 East Hacienda Avenue
Campbell, CA 95008-6617 USA

Contact Us
Visit chargepoint.com

Express 250

Specifications and Ordering Information

High Power in a Small Footprint

Ordering Information

The order codes below represent specific product configurations. Other product options are available. Please contact ChargePoint Sales for information and order codes.

Hardware

Description		Order Code
Model	Express 250 Station includes 2x Power Modules, 1x CCS1 cable, 1x CHAdeMO cable (NA)	CPE250C-625-CCS1-CHD
	Express 250 Station includes 2x Power Modules, 1x CCS2 cable, 1x CHAdeMO cable (EU)	CPE250C-625-CCS2-CHD
Connector Options	Cable connectors available include CCS1, CCS2, and/or CHAdeMO. Cables can be ordered with a single connector or a combination.	Please contact ChargePoint Sales
Buy America	The Express 250 is compliant with the Federal Transportation Authority (FTA) and Federal Highway Administration (FHWA) Buy America Options.	Please contact ChargePoint Sales

Software & Services

Description	Order Code
ChargePoint Enterprise Cloud Plan *Note: Station activation is included in this plan.*	CPCLD-ENTERPRISE-DC-n*
ChargePoint Assure® — Prepaid Assure Plan for one Express 250 station. Includes Parts and Labor Warranty, Remote Technical Support, On-Site Repairs when needed, Unlimited Configuration Changes, and Reporting.	CPE250-ASSURE-n*
ChargePoint Assure® — Assure Plan for one Express 250 and invoiced annually. Includes Parts and Labor Warranty, Remote Technical Support, On-Site Repairs when needed, Unlimited Configuration Changes, and Reporting.	CPE250-ASSURE-n-COMMIT*

Commissioning Service: includes on-site validation and inspection of electrical, mechanical, installation, wiring and civil parameters for the Express 250 station.	CPE250-COMMISSIONING
Commissioning Service: includes both the installation and commissioning of the Express 250 station.	CPE250-INSTALL-COMMISSIONING

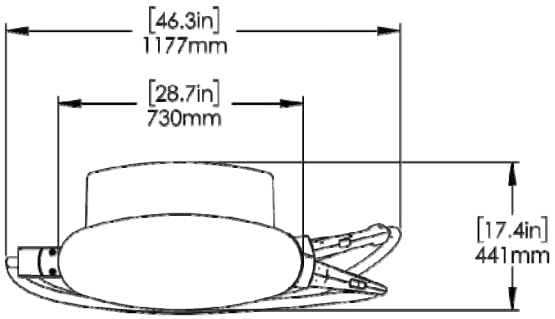
Note: All Express 250 stations require a cloud plan.

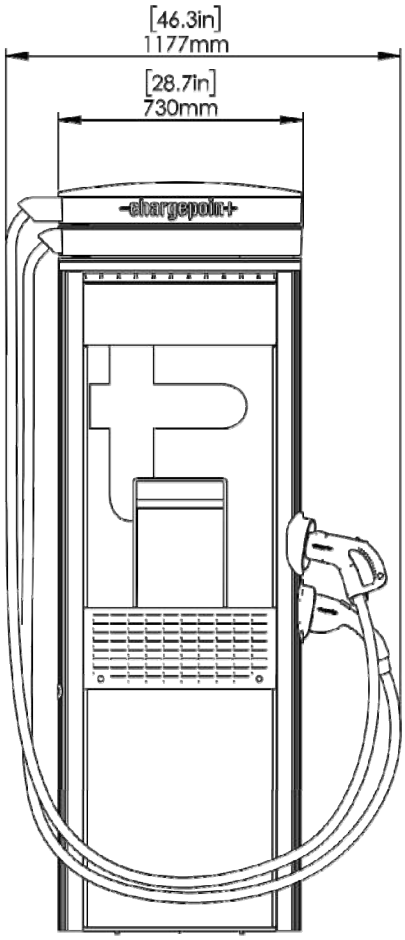
*Substitute *n* for desired years of service (1, 2, 3, 4 or 5 years).

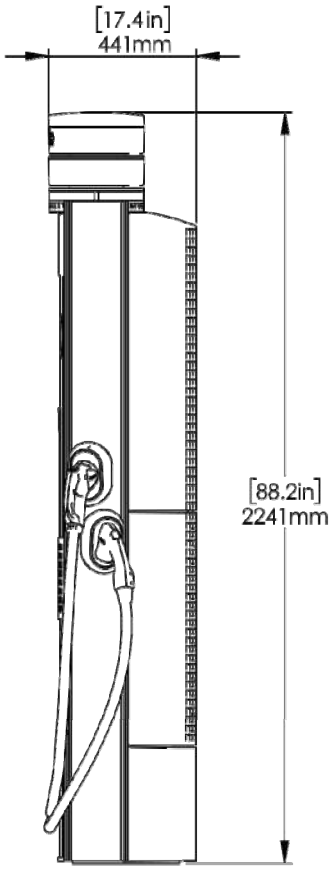
Order Code Information

If ordering this…	…the order code is
Express 250 Station includes 2x Power Modules, 1x CCS1 cable, 1x CHAdeMO cable (NA)	CPE250C-625-CCS1-CHD

Architectural Drawings (Dimensions)







General Specifications

Station Electrical Input

Input Rating	400V AC, 3-phase, 96A, 50 Hz 480Y/277V AC, 3-phase, 80A, 60 Hz
Wiring	L1, L2, L3, Neutral & Earth

Station Electrical Output

Max Output Power	62.5 kW
Output Voltage, Charging	200–1,000V DC
Max Output Current	156A
Max Modules per Station	2

Paired Station Electrical Output

Paired Max Output Power	125 kW
Paired Max Output Current	CCS1: 174A or 200A CCS2: 200A CHAdeMO; US: 140A, EU: 125A

Power Module

Max Output Power	31.25 kW
Max Output Current	78 A
Power Conversion Efficiency	> 95%
Power Factor	0.99 at full load
Harmonics	iTHD < 5% (Complies with IEEE 519 Requirements)
Power Module Cooling	Liquid Cooling Technology

Functional Interfaces

Max Connector Types per Station	Up to two different connector types per station
Supported Connector Types	CHAdeMO, CCS1 (SAE J1772™ Combo), CCS2 (IEC 61851-23)
Cable Length with Swing Arm*	Full Horizontal Reach: 4.27m (14')
LCD Display	Full-color 254 mm (10 in) display for driver interaction
Top Display	Full-color 508 mm (20 in) LED display for notifications
Authentication	RFID: ISO 15693, ISO 14443, NEMA EVSE 1.2-2015 (UR) Tap to Charge (NFC on Apple & Android): 15118-2 (EIM) Remote: Mobile and in vehicle (if supported by vehicle)

*Horizontal reach to typical vehicle charging port: 3.76 (12'4")

Connectivity Features

Vehicle Safety Communication	CHAdeMO – JEVS G104 over CAN, CCS1 – SAE J1772 over PLC and CCS2 — IEC 61851-23
Plug-Out Detection	Power terminated per JEVS G104 (CHAdeMO), SAE J2931 (CCS1) and IEC 61851-23 (CCS2)
Local Area Network	2.4 GHz and 5 GHz WiFi (802.11 b/g/n)
Wide Area Network	4G LTE (fall back to 3G GSM)
Supported Communication Protocols	OCPP
Service and Maintenance	Remote system monitoring, diagnostic, and proactive maintenance

Safety and Operational Ratings

Station Enclosure Rating	Type 3R, IP54
Station Impact Rating	IK10
Safety and Compliance	UL and cUL listed: complies with UL 2202, UL 2231-1, UL 2231-2, CSA 107.1 CE marking: complies with IEC 62196, IEC 61851

Station Surge Protection	Tested to IEC 6100-4-5, Level 5 (6 kV @ 3,000A). In geographic areas subject to frequent thunder storms, supplemental surge protection at the service panel is recommended.
EMC Compliance	U.S.: FCC part 15 Class A; EU: EN55011, EN55022 and IEC61000-4
Storage Temperature	-40°C to 50°C (-40°F to 122°F)
Operating Temperature	-40°C to 50°C (-40°F to 122°F)
Operational Altitude	<3,000 m (<9,800 ft)
Operating Humidity	Up to 95% @ 50°C (122°F) non-condensing

Generic Specifications

Station Enclosure Dimensions	2,241 mm H x 730 mm W x 441 mm D (7'4" x 2'5" x 1'5")
Power Module Dimensions	760 mm H x 430 mm W x 130 mm D (2'6" x 1'5" x 5")
Station Weight (without Power Modules)	250 kg (551 lb)
Power Module Weight	45 kg (98.5 lb)

Energy Management Features

Dynamic Power Management	Allows a fixed maximum power output per station or lets the system dynamically manage the power distribution per station
Remote Energy Management	Manage output power via the ChargePoint Admin Portal, API, and Open ADR 2.0b VEN

ChargePoint, Inc. reserves the right to alter product offerings and specifications at any time without notice, and is not responsible for typographical or graphical errors that may appear in this document

ChargePoint, Inc.
240 East Hacienda Avenue
Campbell, CA 95008-6617 USA

+1.408.841.4500 or
+1.877.370.3802 US and Canada toll-free

chargepoint.com

Contact Us

Visit chargepoint.com

Call +1.408.705.1992

Email sales@chargepoint.com

* Listed by Underwriters Laboratories Inc.

CITY OF FORT BRAGG EV

GEAR SUBMITTAL FOR APPROVAL

10/5/2023

Contractor: **CITY OF FORT BRAGG**

Distributor: **REXEL OAKLAND**

Project Manager: **ERIC WASON**

Approved: Chantell O'Neal
12/11/2023

Chantell Oneal

PROJECT HOUSE

REXEL

APPENDIX 1

Detail Bill of Material

Project Name: FT Bragg EV
General Order No:
Negotiation No: G0260712X3K1
Alternate No: 0000

Item No.	Qty	Product	Description
	1	Switchboards	Pow-R-Line Xpert Switchboard, Front Access/ Front and Rear Align, Type 3R (nonwalk-in) Flat Roof, 480Y/277V 3-Phase 4-Wire, 400 Tin Plated Aluminum, Minimum Interrupting Rating: 65kA, Bus Bracing Rating: 65kA, Depth: 24 In

Catalog No SBANANWBF1A1B2
Designation MSB

Structure 1 **400 Amp AL Main Structure**
Vertical Isol. Barrier (Service Entrance)
Horizontal Isol. Barrier (Service Entrance)
Compartment 1 - Utility 400A Utility Metering - PACIFIC GAS & ELECTRIC
Utility Meter Socket

Structure 2 **400 Amp AL Main Structure**
Horizontal Isol. Barrier (Service Entrance)
Compartment 1 - Breaker 400A, 3P PDG33M Breaker [400A Frame]
Thermal Mag Trip - Standard
Compartment 2 - Breaker PD23SPACE Breaker Space
Compartment 3 - Breaker PD23SPACE Breaker Space
Compartment 4 - Breaker PD23SPACE Breaker Space
Compartment 5 - Breaker PD23SPACE Breaker Space
Compartment 6 - Breaker PD23SPACE Breaker Space
Compartment 7 - Breaker PD23SPACE Breaker Space
Compartment 8 - Breaker 90A, 3P PDG23M Breaker [100A Frame]
Thermal Mag Trip - Standard
Mechanical (1) #14-1/0
Compartment 9 - Breaker PD23SPACE Breaker Space

Qty	List of Materials
2	Type 3R (nonwalk-in) Flat Roof
1	Service Entrance Label
2	Heater Package - (CPT, heater, thermostat, fused disconnect)
2	Seismic Freestanding Label (IBC/CBC Seismic Qualified)
1	400 Amp AL Main Structure
1	400A Utility Metering - PACIFIC GAS & ELECTRIC
1	Utility Meter Socket
1	Vertical Isol. Barrier (Service Entrance)
2	Horizontal Isol. Barrier (Service Entrance)
1	400 Amp AL Main Structure
1	Mechanical (1) #14-1/0
1	90A, 3P PDG23M Breaker [100A Frame], Trip 90 A, Thermal Mag, (1) #14-1/0, Mechanical, Top
7	PD23SPACE Breaker Space, Top
1	400A, 3P PDG33M Breaker [400A Frame], Trip 400 A, Thermal Mag

Item No.	Qty	Product	Description
	1	Panelboards	42 Circuits, 225A, Fully Rated, 208Y/120V 3Ph 4W, Copper Bus, 22kAIC, 200A, 3P PDD23F0200 Main Breaker[Top Fed], Surface Mounted

Catalog No P21A225BT42CH3R
Designation A

APPENDIX 1

Detail Bill of Material

Project Name: FT Bragg EV
General Order No:
Negotiation No: G0260712X3K1
Alternate No: 0000

Qty	List of Materials
1	200A, 3P PDD23F0200 Main Breaker
10	40A, 2P QBHW-H Branch Breaker
20	20A, 1P QBHW Branch Breaker
2	1P Branch Provision Only
1	Copper Main Bus, 225 Amps
1	Std. Bolted Al Ground Bar (Al/Cu Cable)
1	Panel Nameplate - White with Black Letters
1	Type 3R Enclosure: LWPQ2048

Item No.	Qty	Product	Description
	1	Dry Type Transformers	Transformer Type: General Purpose Vented 3 Phase, 75 KVA, 1 K-Factor 480 Primary Volts 208Y/120 Secondary Volts Temperature Rise 150C with 220C Insulation System Aluminum Winding Material Sound Reduction : 0 NEMA ST-20 Audible Sound Level: 50 Efficiency : DOE 10 CFR Part 431 (2016) UL Listed : Y OSHPD Compliant (verify mounting method in OSP) Enclosure Type: TENV NEMA 3R Operating Frequency: 60 HZ **Catalog No** V48M28T75NV

Qty	List of Materials
1	3 Phase, 75 KVA, 480 Primary Volts, 208Y/120 Secondary Volts, 150C with 220C Insulation System Temperature Rise, Aluminum Winding Material, 60 HZ
1	TX Lug Kit/1PH 50-75KVA/3PH 75-112.5KVA

Eaton Selling Policy 25-000 applies.

All orders must be released for manufacture within 90 days of date of order entry. If approval drawings are required, drawings must be returned approved for release within 60 days of mailing. If drawings are not returned accordingly, and/or if shipment is delayed for any reason, the price of the order will increase by 1.0% per month or fraction thereof for the time the shipment is delayed.

Seller shall not be responsible for any failure to perform, or delay in performance of, its obligations resulting from the COVID-19 pandemic or any future epidemic, and Buyer shall not be entitled to any damages resulting thereof.

APPENDIX 1

Switchboard General Information

Pow-R-Line Xpert - Specifications
Quantity: 1
Alignment: Front Access/ Front and Rear Align
Service: 480Y/277V 3-Phase 4-Wire — **Minimum Interrupt Rating: 65 kA**

Bus Specifications
Bus Amps: 400 — **Bus Bracing Rating: 65kA**
Neutral Amps: 400
Bus Material: Tin Plated Aluminum — **Heat Test**
Ground Bus Material: Tin Plated Aluminum Ground Bus Bolted To Frame, (1) #6-350 kcmil Ground Lug

Incoming Information

Structure Specifications
Service Entrance
Enclosure Type: Type 3R (nonwalk-in) Flat Roof
Enclosure: Outdoor Enlosure Configuration Per Euserc Dwg 354
Seismic Label (IBC/CBC Seismic Qualified) - Freestanding
Refer to seismic installation data sheet TD01508002E and drawing 1A32497 for details.
Heater package - (CPT, heater, thermostat, fused disconnect)

Special Notes

Qty	Description	Catalog Number

Utility Specfications
Struct # 1

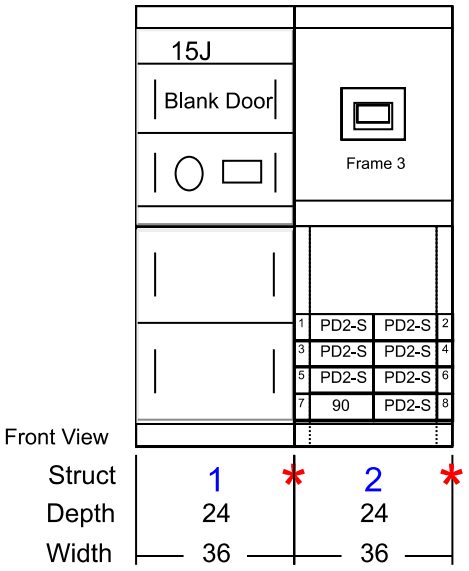
Hot Seq. 400 Amps Util. Mtr. Compt. - PACIFIC GAS & ELECTRIC
Utility Service Requirements Page References:
Lug Drillings Per Dwg. : PG&E 10-32,33,34,35 and EUSERC 347
CT Compartment Per Dwg. PG&E 10-2,3,4,5,6,8,9 and EUSERC 320, 325
UGPS Per Dwg. PG&E 10-25,26,32,33,34,35 and EUSERC 345
Meter Door per Dwg. PG&E 10-3,4,36,37,39 and EUSERC 332
15J Meter Socket(s)
1 Drillings
(1) EUSERC Press Bolts

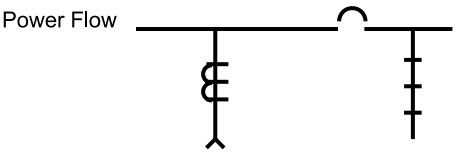
Enclosure properties

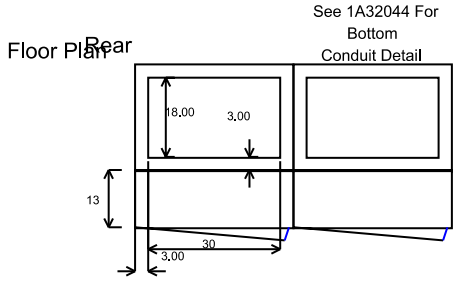
Struct #	Description/Modifications
1	Incoming Utility Structures (Incoming Utility Section) Vertical isolating barrier Horizontal isolating barrier
2	Main device feeding 22x chassis feeders and adjacent structures (Main Structure) Horizontal isolating barrier

PREPARED BY: MATT THATCHER	DATE: 10/5/2023	Eaton	SumterSC		
APPROVED BY: Chantell Oneal	DATE	JOB NAME: FT Bragg EV			
		DESIGNATION: MSB			
VERSION: 9.0.32.2		TYPE: Switchboards		DRAWING TYPE: CustAppr	
NEG-ALT Number: G0260712X3K1-0000	REVISION: 0	DWG SIZE: DwgA	G.O.	ITEM	SHEET: 1 of 3

APPENDIX 1







Total of 2 Structures, Total Weight of 1142 Weight-Lbs. with Front Hinged Doors.
Total of 2 Structures, Total Width of 72 Inches with Front Hinged Doors.

Structure	1	2				
Ship-Inches	36.00	36.00				
Ship-MM	914	914				
Wdth-Inches	36.00	36.00				
Wdth-MM	914	914				
Depth(Inner)-In.	24.00	24.00				
Depth(Inner)-MM	609	609				
Depth(Outer)-In.	37.00	37.00				
Depth(Outer)-MM	939	939				
Height-Inches	90.00	90.00				
Height-MM	2286	2286				
Weight-Lbs.(Est.)	510	632				
Weight-Kg.(Est.)	231	286				

PREPARED BY: MATT THATCHER	DATE: 10/5/2023	**Eaton**	SumterSC
APPROVED BY: Chantell Oneal	DATE	JOB NAME: FT Bragg EV	
		DESIGNATION: MSB	
VERSION: 9.0.32.2		TYPE: Switchboards	DRAWING TYPE: CustAppr

NEG-ALT Number	REVISION	DWG SIZE	G.O.	ITEM	SHEET
G0260712X3K1-0000	0	DwgA			2 of 3

APPENDIX 1

Switchboard Units Information

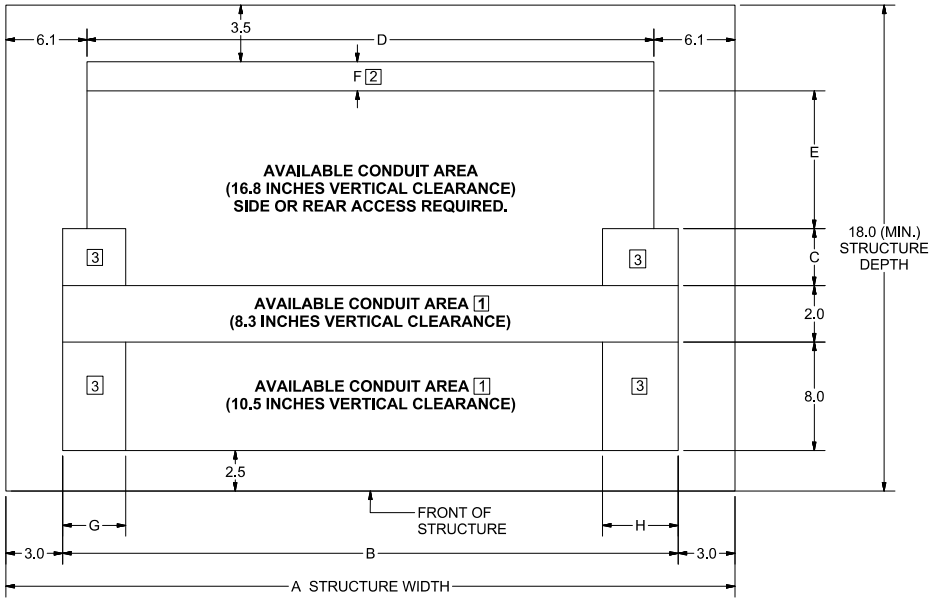
Str#	Unit	Description/Modifications	Nameplate
1			
		400A Utility Metering - PACIFIC GAS & ELECTRIC	
2			
		Main Breaker - Ind Mtd-400A, 3P PDG33M Breaker [400A Frame], Trip(Ir) 400A., Thermal Mag	
	1	Feeder Breaker - Chassis Mtd-PD23SPACE Breaker Space	
	2	Feeder Breaker - Chassis Mtd-PD23SPACE Breaker Space	
	3	Feeder Breaker - Chassis Mtd-PD23SPACE Breaker Space	
	4	Feeder Breaker - Chassis Mtd-PD23SPACE Breaker Space	
	5	Feeder Breaker - Chassis Mtd-PD23SPACE Breaker Space	
	6	Feeder Breaker - Chassis Mtd-PD23SPACE Breaker Space	
	7	Feeder Breaker - Chassis Mtd-90A, 3P PDG23M Breaker [100A Frame], Trip(Ir) 90A., Thermal Mag Terminals, Mechanical, (1) #14-1/0, Top Neutral Terminal, (1) #14-1/0	
	8	Feeder Breaker - Chassis Mtd-PD23SPACE Breaker Space	

PREPARED BY: MATT THATCHER	DATE: 10/5/2023	Eaton	SumterSC		
APPROVED BY: Chantell Oneal	DATE	JOB NAME: FT Bragg EV			
		DESIGNATION: MSB			
VERSION: 9.0.32.2		TYPE: Switchboards		DRAWING TYPE: CustAppr	
NEG-ALT Number: G0260712X3K1-0000	REVISION: 0	DWG SIZE: DwgA	G.O.	ITEM	SHEET: 3 of 3

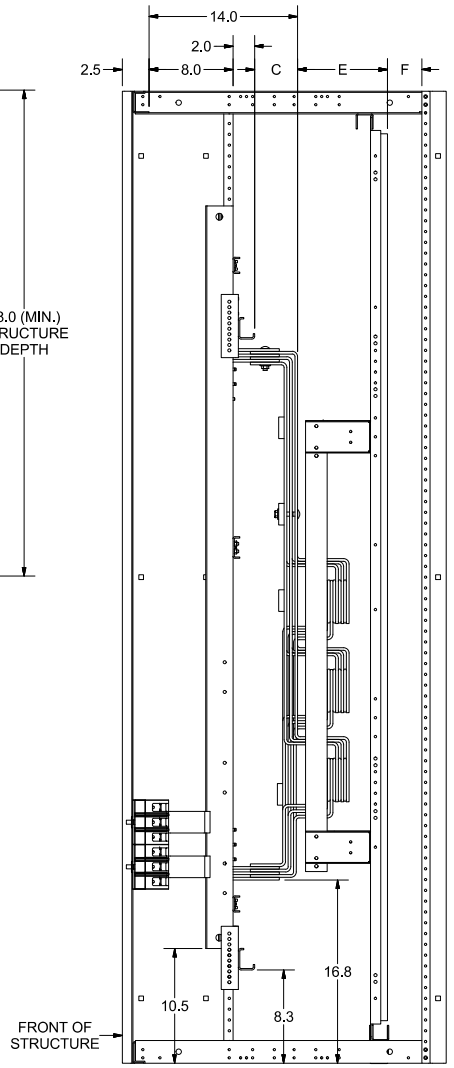
APPENDIX 1

GO/NEG-Air-Date:	G0260712X3K1-0000-10/5/2023
Item Number:	
Catalog Number:	SBANANWBF1A1B2
Job Name:	FT Bragg EV
Designation:	MSB

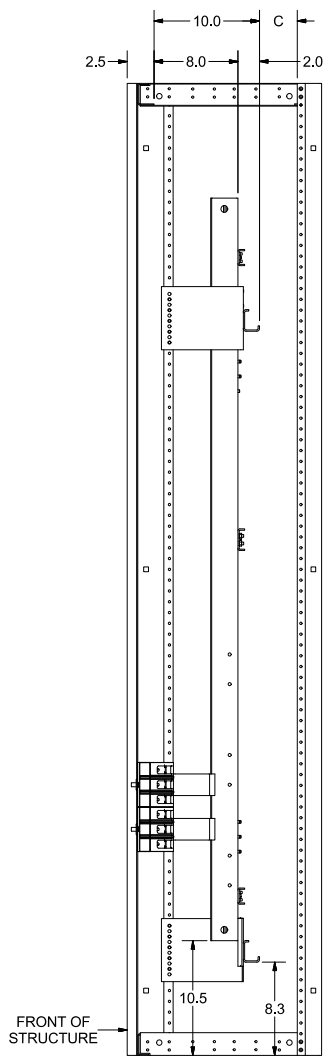
FLOOR PLAN
DISTRIBUTION CHASSIS



STRUCTURE DIMENSIONS	A (INCHES)	B (INCHES)	C (INCHES)	D (INCHES)	E (INCHES)	F (INCHES)	G (INCHES)	H (INCHES)
36W X 18D	36.0	30.0	2.0	23.8	N/A	N/A	3.0	5.0
45W X 18D	45.0	39.0	2.0	32.8	N/A	N/A	5.0	12.0
51W X 18D	51.0	45.0	2.0	38.8	N/A	N/A	11.5	11.5
36W X 24D	36.0	30.0	4.0	23.8	4.0	N/A	3.0	5.0
45W X 24D	45.0	39.0	4.0	32.8	4.0	N/A	5.0	12.0
51W X 24D	51.0	45.0	4.0	38.8	4.0	N/A	11.5	11.5
36W X 30D	36.0	30.0	4.0	23.8	8.5	1.5	3.0	5.0
45W X 30D	45.0	39.0	4.0	32.8	8.5	1.5	5.0	12.0
51W X 30D	51.0	45.0	4.0	38.8	8.5	1.5	11.5	11.5
36W X 36D	36.0	30.0	4.0	23.8	8.5	7.5	3.0	5.0
45W X 36D	45.0	39.0	4.0	32.8	8.5	7.5	5.0	12.0
51W X 36D	51.0	45.0	4.0	38.8	8.5	7.5	11.5	11.5
36W X 48D	36.0	30.0	4.0	23.8	8.5	19.5	3.0	5.0
45W X 48D	45.0	39.0	4.0	32.8	8.5	19.5	5.0	12.0
51W X 48D	51.0	45.0	4.0	38.8	8.5	19.5	11.5	11.5
36W X 54D	36.0	30.0	4.0	23.8	8.5	25.5	3.0	5.0
45W X 54D	45.0	39.0	4.0	32.8	8.5	25.5	5.0	12.0
51W X 54D	51.0	45.0	4.0	38.8	8.5	25.5	11.5	11.5
36W X 66D	36.0	30.0	4.0	23.8	8.5	37.5	3.0	5.0
45W X 66D	45.0	39.0	4.0	32.8	8.5	37.5	5.0	12.0
51W X 66D	51.0	45.0	4.0	38.8	8.5	37.5	11.5	11.5



SIDE VIEW
> 24" DEEP



SIDE VIEW
18" DEEP

NOTES:
1. FOR FUSIBLE SWITCHES, ALL CABLE ENTRY AREA BEHIND DISTRIBUTION CHASSIS AND CROSS BUS, REQUIRES SIDE OR REAR ACCESS.
2. CONDUIT AREA AVAILABLE WITH SIDE OR REAR ACCESS 90.00 INCHES VERTICAL CLEARANCE.
3. OPEN WIREWAY 90.00 INCHES VERTICAL CLEARANCE.

REVISION	
RR#5493	HSB 11/15/11 GL 11/15/11 Added notification block to revision section.
ECR-0023779	JTR 8/3/2020 RBH 8/3/2020 UPDATED DRAWING AND COMBINED 1A32041 - 1A32043 INTO 1A32044.
CR-00024710	JTR 4/16/2021 RBH 4/16/2021 ADDED "C" DIM TO STRUCTURE VIEWS, REVISED FLOORPLAN.
CR-00027110	JTR 7/11/22 RBH 7/11/22 ADDED "G" & "H" TO DRAWING, OPEN WIREWAY.
CR-00027232	JTR 8/19/2022 RBH 8/19/2022 REVISED "G" AND "H" DIMS, ADDED BOX AT "G X C & H X C".

DRAFTER	DSF	DATE	10/7/2011
ENGINEER	RBH	DATE	10/7/2011
REVISION	6	PARTS LIST	
FEDERAL ID NO.	3341	SCALE	NTS
MODEL FILENAME	1A32043G01.IAM	MODEL REV	4
TYPE	STANDARD	UNLESS SPECIFIED TOLERANCES PER	-
SHEET	1 OF 1		

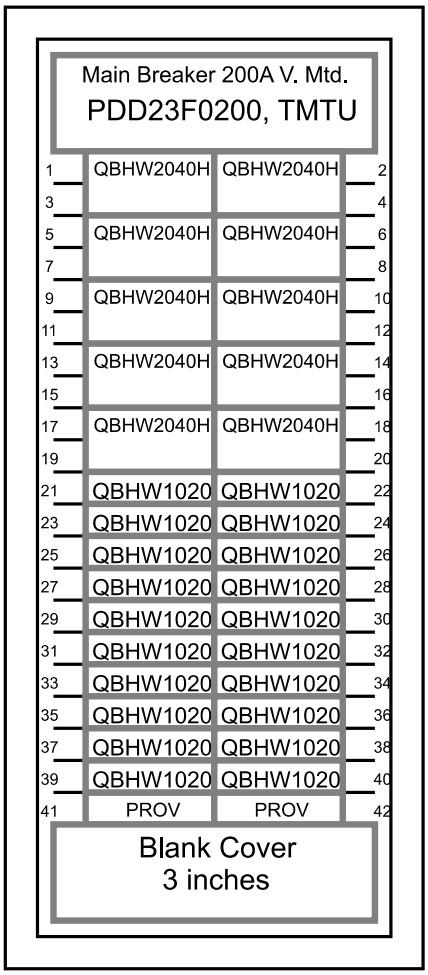
EATON SUMTER, SC

TITLE: POW-R-LINE XPERT / C
FLOOR PLAN - DISTRIBUTION CHASSIS

DWG NO. 1A32044

SUM CUST TITLEBLOCK REV - 1

APPENDIX 1



General Information **(Section 1 of 1)**

Service Voltage:	208Y/120V 3Ph 4W	**Enclosure:**	Type 3R
Bus Rating & Type:	225A Copper	**Neutral Rating:**	225A
Ground Bar:	Std. Bolted Aluminum, Al or Cu cable		
S.C. Rating:	22k A.I.C. Fully Rated		

Main Device Type:	Main Breaker - Top Cable Entry
Main Terminals:	Mechanical - (1) #4-4/0 (Cu/Al)
Neutral Terminals:	Mechanical - (1) #6-300 kcmil (Cu/Al)
Box Catalog No.:	LWPQ2048
Trim:	Standard Trim (Includes Trim)
	Surface Mounted
Box Dimensions:	48.00" [1219.2mm]H x 20.00" [508.0mm]W x 6.5" [165.1mm]D
Min. Gutter Size:	Top = 5.5" [139.7mm] Bottom = 5.5" [139.7mm] Left = 6.0" [152.4mm] Right = 6.0" [152.4mm]

Panel ID Nameplate: **(1) A**
Type: Plastic, adhesive-backed **(2) 208Y/120V 3Ph 4W**
Color: White with Black Letters **(3)**

UL ***Non-Interchangeable Main Device***

Trim Lock: T-Handle Lock Assembly
Circuit Directory: Plastic Sleeve with Card
Painted Box:ANSI 61
Material may ship short or be substituted based on availability at the time of manufacturing.
Main Circuit Breaker Trip Type: Thermal-Magnetic.
Seismic Label (IBC/CBC Seismic Qualified).
Heat Loss - Watts (Est.) = 109
Weight - lbs (Est.) = 138
Wire shall be based on the ampacity of 75°C rated conductors unless otherwise indicated.

Device Modifications:

Ref #	Description

Notes:

Branch Devices

Qty	Poles	Trip	Frame	Amps	kAIC
10	2	40	QBHW-H	100	22
20	1	20	QBHW	100	22
2	1		PROV		

Main Devices

Qty	Poles	Trip	Frame	Amps	kAIC
1	3	200	Frame 2	225	22

PREPARED BY: MATT THATCHER	DATE: 10/5/2023	Eaton	
APPROVED BY: Chantell Onsal	DATE	JOB NAME: FT Bragg EV	DESIGNATION: A
VERSION: 1.0.0.60		TYPE: PRL1X	DRAWING TYPE: Customer Approval
NEG-ALT Number: G0260712X3K1-0000	REVISION: 0 / DWG SIZE: A	G.O.	ITEM / SHEET: 1 of 1

APPENDIX 1

Dry-Type Transformers General Information

- Standard Transformer Catalog Number: V48M28T75NV
- Transformer Type: General Purpose Vented
- Phase: 3
- kVA: 75
- Primary Volts: 480
- Secondary Volts: 208Y/120
- Temperature Rise: 150C with 220C Insulation System
- Winding Material: Aluminum
- Enclosure Type: TENV NEMA 3R
- Frequency (Hz): 60
- Frame: 916AN
- Wiring Diagram: 280B
- Weight (lbs.): 926
- Impedance (%): 2.56
- UL Listed: Y
- OSHPD Compliant (verify mounting method in OSP): Y

Standard Values

- K-Factor: 1
- TAPS: 2@+2.5%, 4@-2.5%
- Sound Reduction (dB): 0
- NEMA ST20 Sound Level (dB): 50
- DOE 10 CFR Part 431 (2016) Efficient: Y
- Infrared Viewing Window: None

Field-Installed Accessories Included

- Lug Kit: LKS2 (1PH 50-75KVA or 3PH 75-112.5KV)

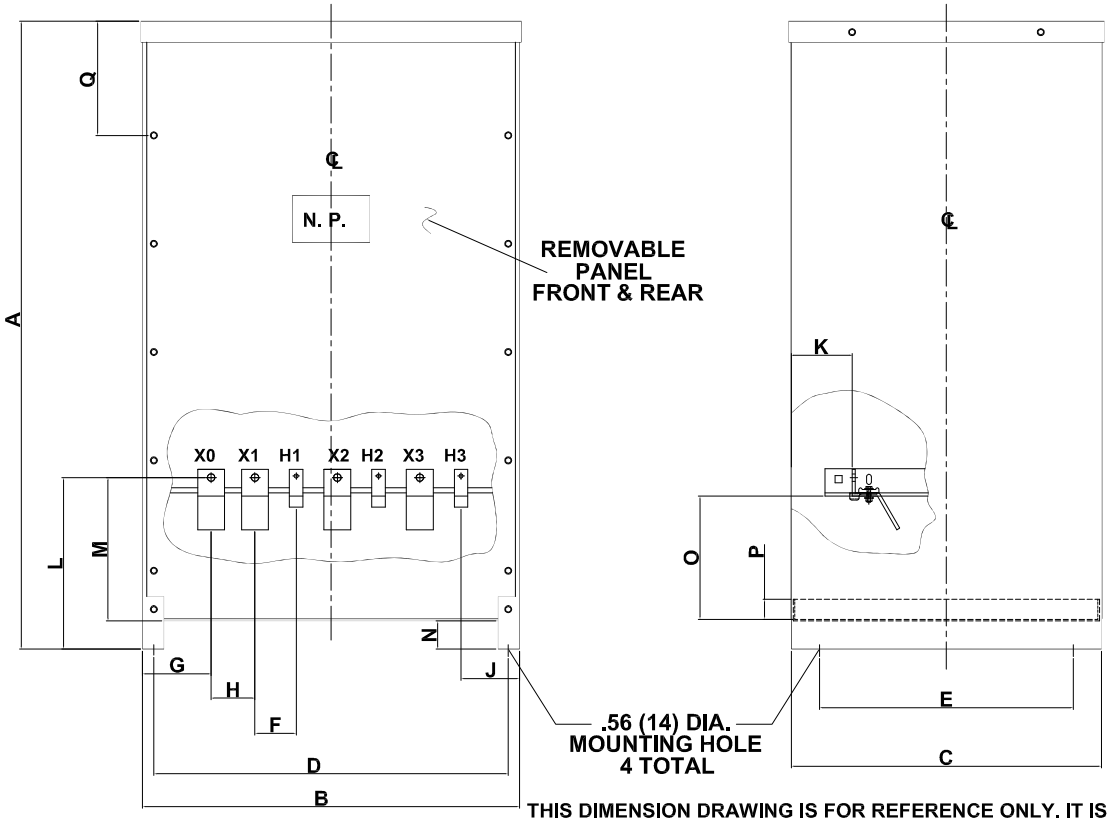
PREPARED BY: MATT THATCHER	DATE: 10/5/2023	Eaton			
APPROVED BY: Chantell Oneal	DATE	JOB NAME: FT Bragg EV	DESIGNATION		
VERSION: 1.0.0.4		TYPE: Dry-Type Transformer		DRAWING TYPE: Customer Appr.	
NEG-ALT Number: G0260712X3K1-0000	REVISION: 0	DWG SIZE: A	G.O.	ITEM	SHEET: 1 of 1

APPENDIX 1

REF.
DWG. NO. 42-5205

NOTES:

1. ALL UNITS ARE DESIGNED IN ACCORDANCE WITH APPLICABLE NEMA, UL, ANSI, AND IEEE STANDARDS.
2. DRY-TYPE VENTILATED, CLASS AA, NEMA TYPE 3R ENCLOSURE.
3. TRANSFORMERS ARE FLOOR MOUNTED.
4. 220°C CLASS INSULATION SYSTEM.
5. PAINT COLOR IS ANSI #61.
6. ALUMINUM UNITS HAVE ALUMINUM WINDINGS AND TERMINATIONS. COPPER UNITS HAVE COPPER WINDINGS AND TERMINATIONS.



THIS DIMENSION DRAWING IS FOR REFERENCE ONLY. IT IS NOT TO BE REGARDED AS INDICATING THE EXACT DETAILS OF CONSTRUCTION.

DIMENSIONS IN INCHES (MM)

FRAME	A	B	C	D	E	F
FR916AN	46.58(1183)	27.97(710)	23.00(584)	26.29(667)	18.82(478)	3.06(78)
	G	H	J	K	L	M
	5.09(129)	3.25(83)	4.34(110)	4.50(114)	12.72(323)	10.51(267)
			N	O	P	Q
			2.12(54)	9.13(232)	1.50(38)	6.00(152)

REV	DESCRIPTION	DFTR	APPD	DATE
08	REMOVER LA LEYENDA OSHPD. ECN076764.	J.C.SOTO	E.ROBLES	7/OCT/13
06	Agregar Leyenda OSHPD ECN068605	ANAVA	C.BADILLO	12/10/12

REVISIONS

PRODUCT CODE: OL
FEDERAL ID NO. ,

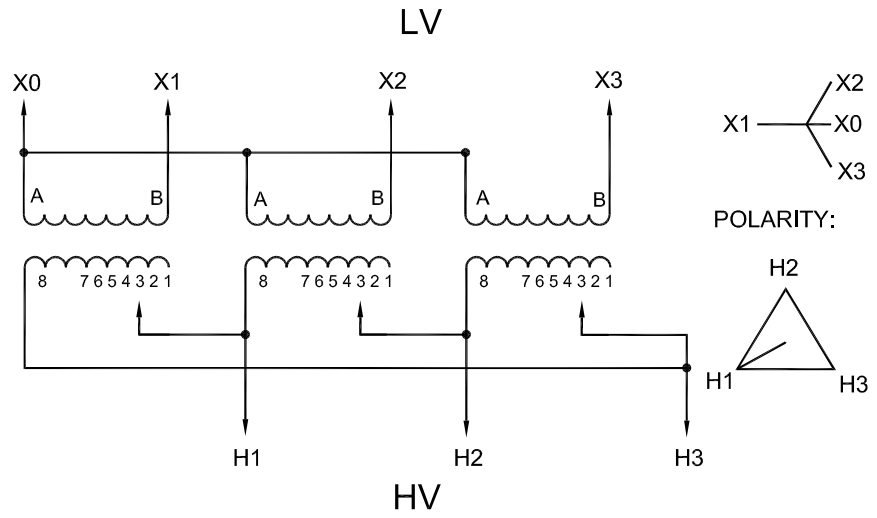
DFTR: S.CASTRO — DATE: 06/17/04
APPD: C.BADILLO — DATE: 06/17/04
S.O.: .

TITLE: DRY TYPE TRANSFORMER OUTLINE
TYPE: TRANSFORMER — OUTLINE
REVISION: 08
G.O.: .
DWG: FR916AN
SHEET: 1 OF 01

GO/NEG-Alt-Date:	Job Name:
G0260712X3K1-0000-10/5/2023	FT Bragg EV
Item Number: / **Catalog Number:** V48M28T75NV	**Designation:**

APPENDIX 1

VOLTS	TAP
504	1
492	2
480	3
468	4
456	5
444	6
432	7



4	UPDATE FORMAT EATON & CHANGE DESC. TO HV/LV	J.C.S.	C.B.	10/JUN/14
REV	DESCRIPTION	DFTR	APPD	DATE

REVISIONS

PRODUCT CODE: TRANSFORMERS | FEDERAL ID NO.

DFTR	HEG	DATE	12/01/01
APPD	EER	DATE	12/01/01
S.O.	.		

EATON

TITLE: DRY TYPE TRANSFORMER WIRING SCHEMATIC

TYPE: DRY TYPE TRANSFORMER | WIRING

REVISION	04	G.O.	.
DWG	280B	SHEET	1 OF 01

GO/NEG-Alt-Date:		Job Name:
G0260712X3K1-0000-10/5/2023		FT Bragg EV
Item Number:	**Catalog Number:** V48M28T75NV	**Designation:**

Type PRL1X

Contents

Type PRL1X

Product Description

- 240 Vac maximum
- Three-phase four-wire, three-phase three-wire, single-phase three-wire, single-phase two-wire
- 600 A maximum mains
- 100 A maximum branch breakers
- Bolt-on or plug-on branch breakers
- Each branch connector is capable of up to a total of 140 A maximum by breaker ampere rating
- Factory assembled
- Refer to **Page V2-T3-7** for additional information

Application Description

- Lighting branch panelboard
- Fully rated or series rated
- Interrupting ratings up to 200 kA symmetrical
- Suitable for use as Service Entrance Equipment, when specified on the order
- See **Pages V2-T3-7** through **V2-T3-32** for additional information

Standards and Certifications

- UL 67, UL 50
- CSA C22.2 No. 29
- Federal Specification W-P-115c
- Refer to **Page V2-T3-10** for additional information

Listed

Product Selection

Type PRL1X

PRL1X

Ampere Rating	Interrupting Rating (kA Sym.) 240 Vac	Breaker Type
Main Lug Only		
100	—	—
225	—	—
400	—	—
600	—	—
Main Breaker		
100	10	BAB
100	35	PDG2xF
100	22	QBHW
100	35	PDD2xF
100	65	PDD2xG
100	65	PDG2xG
100	100	PDD2xM
100	100	PDG2xM
225	35	PDD2xF
225	65	PDD2xG
225	100	PDD2xM
400	65	PDD3xG ⑨
400	65	PDG3xG* ⑨
400	100	PDG3xM* ⑨
400	100	LHH
400	200	PDG3xP* ⑨
600	65	PDG3xG* ⑨
600	85	LGS
600	100	PDG3xM* ⑨
600	200	PDG3xP* ⑨

PRL1X Branch Circuit Breakers

Bolt-on = BAB, QBHW, QBGF, QBHGF, QBGFEP, QBHGFEP, QBAF, QBAG, QBHAF, QBHAG
Plug-on = HQP, QPHW, QPGF, QPHGF, QPGFEP, QPHGFEP

Ampere Rating	Interrupting Rating (kA Sym.) 240 Vac ①	Breaker Type
15–60	10	BAB, HQP
70	10	BAB, HQP
80–100	10	BAB, HQP
15–50 ②	10	QBGF, QPGF ③
15–50 ②	10	QBGFEP, QPGFEP ④
15–20	10	QBCAF ⑤
15–60	10	BAB-D, HQP-D ⑥
15–30	10	BAB-C, HQP-B ⑦
15–30	10	BABRP ⑧
15–30	10	BABRSP ⑧
15–60	22	QBHW, QPHW
70	22	QBHW, QPHW
80–100	22	QBHW, QPHW
15–30	22	QBHGF, QPHGF ③
15–30	22	QBHGFEP, QPHGFEP ④
15–20	22	QBHCAF ⑤
Provision	—	—

Notes

① Single-pole breakers are rated 120 Vac maximum.
② 50 A devices are available as two-pole only.
③ GFCI for 5 mA personnel protection.
④ GFP for 30 mA equipment protection.
⑤ Arc fault circuit breaker.
⑥ HID (High Intensity Discharge) rated breaker.
⑦ Switching Neutral Breaker. single-pole device requires two-pole space, two-pole device requires three-pole space.
⑧ Remote operated circuit breaker.
⑨ The 400 A frame must use trip units of ratings 0100–0400, while the 600 A frame must use trip units of ratings 0500, 0600 or designated by H, such as H250. The H as the leading character of the ampacity indicates a high instantaneous version of the breaker for coordination purposes. H ratings must use 600 A frame.

Box Sizing and Selection

Approximate Dimensions in Inches (mm)

Assembled Circuit Breaker Panelboards and Lighting Controls

Box size and box and trim catalog numbers for all standard panelboard types are found on **Page V2-T3-36**.

Instructions

1. Using description of the required panelboard, select the rating and type of main required.
2. Count the total number of branch circuit poles, including provisions, required in the panelboard. Do not count main breaker poles. Convert two- or three-pole branch breaker to single-poles, i.e., three-pole breaker, count as three poles. Determine sub-feed breaker or through-feed lug requirements.
3. Select the main ampere rating section from table on **Page V2-T3-36**.
4. Select panelboard type from first column, main breaker frame, if applicable, from second column, and sub-feed breaker frame, if applicable, from the third column.
5. From Step #2, determine the number of branch circuits in Column 4.
6. Read box size, box and trim catalog numbers across columns to the right. Specify surface or flush mounting on the order.

Cabinets

Fronts are code-gauge steel, ANSI-61 light gray painted finish.

Boxes are code-gauge galvanized steel without knockouts. Standard depth is 5-3/4 inches (146.1 mm). Standard width is 20 inches (508.0 mm). An optional 28-inch (711.2 mm) wide box is available.

Top and Bottom Gutters

5-1/2 inches (139.7 mm) minimum.

Approximate Dimensions in Inches (mm)

PRL1X Panelboard Sizing

Panelboard Types	Main Breaker Types and Mounting Position (H) = Horizontal (V) = Vertical	Sub-Feed Breaker Types and Mounting Position (H) = Horizontal (V) = Vertical	Maximum No. of Branch Circuits Including Provisions	Box Dimensions ① Height	Width	Depth	YS Box Catalog Number	LT Trim Catalog Number	EZ Box Catalog Number	EZ Trim Catalog Number
100 A										
Main breaker	BAB, QBHW (H)	—	15	36.00 (914.4)	20.00 (508.0)	5.75 (146.1)	**YS2036**	**LT2036S or F**	**EZB2036R**	**EZT2036S or F**
		—	27	48.00 (1219.2)	20.00 (508.0)	5.75 (146.1)	**YS2048**	**LT2048S or F**	**EZB2048R**	**EZT2048S or F**
		—	39	48.00 (1219.2)	20.00 (508.0)	5.75 (146.1)	**YS2048**	**LT2048S or F**	**EZB2048R**	**EZT2048S or F**
		—	42	60.00 (1524.0)	20.00 (508.0)	5.75 (146.1)	**YS2060**	**LT2060S or F**	**EZB2060R**	**EZT2060S or F**
Main lugs or main breaker	PDG2xF PDG2xG, PDG2xM (V)	—	18	36.00 (914.4)	20.00 (508.0)	5.75 (146.1)	**YS2036**	**LT2036S or F**	**EZB2036R**	**EZT2036S or F**
		—	30	48.00 (1219.2)	20.00 (508.0)	5.75 (146.1)	**YS2048**	**LT2048S or F**	**EZB2048R**	**EZT2048S or F**
		—	42	48.00 (1219.2)	20.00 (508.0)	5.75 (146.1)	**YS2048**	**LT2048S or F**	**EZB2048R**	**EZT2048S or F**
Main lugs or main breaker with 100 A through-feed lugs or sub-feed breaker	PDG2xF PDG2xG PDG2xM (V)	PDG2xF PDG2xG PDG2xM (V)	18	48.00 (1219.2)	20.00 (508.0)	5.75 (146.1)	**YS2048**	**LT2048S or F**	**EZB2048R**	**EZT2048S or F**
			30	48.00 (1219.2)	20.00 (508.0)	5.75 (146.1)	**YS2048**	**LT2048S or F**	**EZB2048R**	**EZT2048S or F**
			42	60.00 (1524.0)	20.00 (508.0)	5.75 (146.1)	**YS2060**	**LT2060S or F**	**EZB2060R**	**EZT2060S or F**
225 A										
Main lugs or main breaker	PDD2xF, PDD2xG, PDD2xM, PDG2xG, PDG2xM (V)	—	18	36.00 (914.4)	20.00 (508.0)	5.75 (146.1)	**YS2036**	**LT2036S or F**	**EZB2036R**	**EZT2036S or F**
		—	30	48.00 (1219.2)	20.00 (508.0)	5.75 (146.1)	**YS2048**	**LT2048S or F**	**EZB2048R**	**EZT2048S or F**
		—	42	48.00 (1219.2)	20.00 (508.0)	5.75 (146.1)	**YS2048**	**LT2048S or F**	**EZB2048R**	**EZT2048S or F**
Main lugs or main breaker with 225 A throughfeed lugs or sub-feed breaker	PDG2xG, PDG2xM, PDD2xG PDD2xM (V)	PDG2xG, PDG2xM, PDD2xG PDD2xM (V)	18	48.00 (1219.2)	20.00 (508.0)	5.75 (146.1)	**YS2048**	**LT2048S or F**	**EZB2048R**	**EZT2048S or F**
			30	60.00 (1524.0)	20.00 (508.0)	5.75 (146.1)	**YS2060**	**LT2060S or F**	**EZB2060R**	**EZT2060S or F**
			42	60.00 (1524.0)	20.00 (508.0)	5.75 (146.1)	**YS2060**	**LT2060S or F**	**EZB2060R**	**EZT2060S or F**
400 A										
Main breaker	PDD3xG*, PDG3xG*, PDG3xM*, PDG3xP*, LHH (V)	—	18	48.00 (1219.2)	20.00 (508.0)	5.75 (146.1)	**YS2048**	**LT2048S or F**	**EZB2048R**	**EZT2048S or F**
		—	30	60.00 (1524.0)	20.00 (508.0)	5.75 (146.1)	**YS2060**	**LT2060S or F**	**EZB2060R**	**EZT2060S or F**
		—	42	60.00 (1524.0)	20.00 (508.0)	5.75 (146.1)	**YS2060**	**LT2060S or F**	**EZB2060R**	**EZT2060S or F**
Main lugs or main breaker with 225 A through-feed lugs or sub-feed breaker	PDD3xG*, PDG3xG*, PDG3xM*, PDG3xP*, LHH (V)	PDG2xG, PDG2xM, PDD2xG PDD2xM (V)	18	60.00 (1524.0)	20.00 (508.0)	5.75 (146.1)	**YS2060**	**LT2060S or F**	**EZB2060R**	**EZT2060S or F**
			30	60.00 (1524.0)	20.00 (508.0)	5.75 (146.1)	**YS2060**	**LT2060S or F**	**EZB2060R**	**EZT2060S or F**
			42	72.00 (1828.8)	20.00 (508.0)	5.75 (146.1)	**YS2072**	**LT2072S or F**	**EZB2072R**	**EZT2072S or F**
Main breaker with 400 A through-feed lugs or sub-feed breaker	PDD3xG*, PDG3xG*, PDG3xM*, PDG3xP*, LHH (V)	PDD3xG*, PDG3xG*, PDG3xM*, PDG3xP* (V)	18	72.00 (1828.8)	20.00 (508.0)	5.75 (146.1)	**YS2072**	**LT2072S or F**	**EZB2072R**	**EZT2072S or F**
			30	72.00 (1828.8)	20.00 (508.0)	5.75 (146.1)	**YS2072**	**LT2072S or F**	**EZB2072R**	**EZT2072S or F**
			42	90.00 (2286.0)	20.00 (508.0)	5.75 (146.1)	**YS2090**	**LT2090S or F**	**EZB2090R**	**EZT2090S or F**
600 A										
Main breaker	PDG3xG* LGS, PDG3xM* PDG3xP* (V)	—	18	60.00 (1524.0)	20.00 (508.0)	5.75 (146.1)	**YS2060**	**LT2060S or F**	**EZB2060R**	**EZT2060S or F**
		—	30	60.00 (1524.0)	20.00 (508.0)	5.75 (146.1)	**YS2060**	**LT2060S or F**	**EZB2060R**	**EZT2060S or F**
		—	42	72.00 (1828.8)	20.00 (508.0)	5.75 (146.1)	**YS2072**	**LT2072S or F**	**EZB2072R**	**EZT2072S or F**
Main lugs or main breaker with 225 A through-feed lugs or sub-feed breaker	PDG3xG*, LGS PDG3xM*, PDG3xP*, (V)	PDG2xG, PDG2xM PDD2xG, PDD2xM (V)	18	72.00 (1828.8)	20.00 (508.0)	5.75 (146.1)	**YS2072**	**LT2072S or F**	**EZB2072R**	**EZT2072S or F**
			30	72.00 (1828.8)	20.00 (508.0)	5.75 (146.1)	**YS2072**	**LT2072S or F**	**EZB2072R**	**EZT2072S or F**
			42	90.00 (2286.0)	20.00 (508.0)	5.75 (146.1)	**YS2090**	**LT2090S or F**	**EZB2090R**	**EZT2090S or F**
Main breaker with 400 A through-feed lugs or sub-feed breaker	PDG3xG*, LGS, PDG3xM*, PDG3xP*, (V)	PDD3xG*, PDG3xG* PDG3xM* PDG3xP* (V)	18	72.00 (1828.8)	20.00 (508.0)	5.75 (146.1)	**YS2072**	**LT2072S or F**	**EZB2072R**	**EZT2072S or F**
			30	90.00 (2286.0)	20.00 (508.0)	5.75 (146.1)	**YS2090**	**LT2090S or F**	**EZB2090R**	**EZT2090S or F**
			42	90.00 (2286.0)	20.00 (508.0)	5.75 (146.1)	**YS2090**	**LT2090S or F**	**EZB2090R**	**EZT2090S or F**
Main breaker with 600 A through-feed lugs or sub-feed breaker	PDG3xG*, LGS PDG3xM*, PDG3xP* (V)	PDG3xG*, LGS PDG3xM*, PDG3xP (V)	18	72.00 (1828.8)	20.00 (508.0)	5.75 (146.1)	**YS2072**	**LT2072S or F**	**EZB2072R**	**EZT2072S or F**
			30	90.00 (2286.0)	20.00 (508.0)	5.75 (146.1)	**YS2090**	**LT2090S or F**	**EZB2090R**	**EZT2090S or F**
			42	90.00 (2286.0)	20.00 (508.0)	5.75 (146.1)	**YS2090**	**LT2090S or F**	**EZB2090R**	**EZT2090S or F**

Note

① Smaller panelboard box sizes are available if required. Contact Eaton for application information.

Three-Phase Type DT-3E Totally Enclosed Non-Ventilated

Contents

Totally Enclosed Non-Ventilated Transformers

Product Description

Note: The following pages provide listings for most standard transformer ratings and catalog numbers. For other ratings or catalog numbers not shown, or for special enclosure types (including stainless steel), refer to Eaton.

- Suitable for indoor or outdoor applications
- Totally enclosed, non-ventilated enclosures rated NEMA 3R
- 220°C insulation system
- 150°C rise standard; 115°C or 80°C rise optional
- Totally enclosed non-ventilated transformers are specifically excluded from the scope of U.S. DOE energy efficiency requirements

Application Description

Totally enclosed non-ventilated dry-type transformers are for special applications, where because of adverse atmospheric conditions it is desirable to use a dry-type non-ventilated transformer vs. the ventilated standard unit, which has openings in its enclosure to allow air to flow directly over the core and coil.

In applications where the atmosphere contains conductive, corrosive, or combustible materials, which might damage a transformer, or lint and dust flyings that might block the ventilation passages, the non-ventilated transformer is highly suited. It has no openings in the enclosure. Heat is dissipated by radiating from the surface area of the enclosure. Consequently, the enclosures are larger than those of the standard ventilated type. Non-ventilated transformers are suited for application in the textile, chemical, automotive, petrochemical, foundry, cement, food, paper and other industries.

Features, Benefits and Functions

- 60 Hz operation (50/60 Hz operation available)
- Short-term overload capability as required by ANSI
- Meet NEMA ST-20 sound levels

Standards and Certifications

- UL listed

UL Listed

Industry Standards

All Eaton dry-type distribution and control transformers are built and tested in accordance with applicable NEMA, ANSI and IEEE Standards.

Seismically Qualified

Eaton manufactured dry-type distribution transformers are seismically qualified and exceed requirements of the International Building Code (IBC) and California Code Title 24.

Catalog Number Selection

Please refer to Section 2.7 **Page V2-T2-162**.

2

Product Selection

Additional Product Selection information begins on **Page V2-T2-165**.

Single-Phase—Type DS-3E, 60 Hz ①

240 x 480 Volts to 120/240 Volts +1–5%, –2–5% at 240 Volts Primary; +2–2.5%, –4–2.5% at 480 Volts Primary

kVA	Type	°C Temp. Rise	Frame	Wiring Diagram Number	Weight Lb (kg)	Catalog Number
15	DS-3E	150	FR817N	3XA	350 (159)	**T20P11S15NV**
25	DS-3E	150	FR818N	3XA	350 (159)	**T20P11S25NV**
37.5	DS-3E	150	FR820N	3XA	600 (274)	**T20P11S37NV**
50	DS-3E	150	FR820N	3XA	720 (329)	**T20P11S50NV**

Three-Phase—Type DT-3E, 60 Hz ①

480 Delta Volts to 208Y/120 Volts +2–2.5% FCAN, 4–2.5% FCBN Taps

kVA	Type	°C Temp. Rise	Frame	Wiring Diagram Number	Weight Lb (kg)	Catalog Number
15	DT-3E	150	FR912DN	280B	480 (217)	**V48M28T15NV**
30	DT-3E	150	FR912DN	280B	480 (217)	**V48M28T30NV**
45	DT-3E	150	FR915DN	280B	600 (272)	**V48M28T45NV**
75	DT-3E	150	FR916AN	280B	760 (344)	**V48M28T75NV**
112.5	DT-3E	150	FR917N	280B	1100 (499)	**V48M28T12NV**
150	DT-3E	150	FR918AN	280B	1300 (589)	**V48M28T49NV**
225	DT-3E	150	FR919EN	275A	2400 (1088)	**V48M28T22NV**
300	DT-3E	150	FR920EN	275A	2900 (1315)	**V48M28T33NV**

Notes

① Transformers Type EPT 75 kVA and smaller three-phase, and Type EP 37.5 kVA and smaller single-phase, are furnished in place of non-ventilated transformers as standard. See general-purpose transformers.

Contact your local Eaton sales office for availability of additional totally enclosed non-ventilated transformers. Contact your local Eaton sales office for CE Mark transformer requirements. For other ratings or catalog numbers not shown, or for special enclosure types (including stainless steel), refer to Eaton. Frame drawings/dimensions information begins on **Page V2-T2-204**.

Totally Enclosed Non-Ventilated Transformers

Accessories

Please refer to Section 2.7 **Page V2-T2-167**.

Technical Data and Specifications

Frequency

Eaton standard dry-type distribution transformers are designed for 60 Hz operation. Transformers required for other frequencies are available and must be specifically designed.

Overload Capability

Short-term overload is designed into transformers as required by ANSI. Dry-type distribution transformers will deliver 200% nameplate load for one-half hour, 150% load for one hour and 125% load for four hours without being damaged, provided that a constant 50% load precedes and follows the overload. See ANSI C57.96-01.250 for additional limitations.

Continuous overload capacity is not deliberately designed into a transformer because the design objective is to be within the allowed winding temperature rise with nameplate loading.

Insulation System and Temperature Rise

Industry standards classify insulation systems and rise as shown below:

Insulation System Classification

Ambient	+ Winding Rise	+ Hot Spot	= Temp. Class
40°C	55°C	10°C	105°C
40°C	80°C	30°C	150°C
25°C	135°C	20°C	180°C
40°C	115°C	30°C	185°C
40°C	150°C	30°C	220°C

The design life of transformers having different insulation systems is the same—the lower-temperature systems are designed for the same life as the higher-temperature systems.

Enclosures

Eaton totally enclosed, non-ventilated transformers, Types DS-3E and DT-3E, use a NEMA 3R rated enclosure as standard.

Winding Terminations

Primary and secondary windings are terminated in the wiring compartment. Totally enclosed non-ventilated transformers have leads brought out to aluminum pads that are pre-drilled to accept Cu/Al lugs. **Lugs are not supplied with these transformers.** Eaton recommends external cables be rated 75°C for ventilated designs.

Series-Multiple Windings

Series-multiple windings consist of two similar coils in each winding that can be connected in series or parallel (multiple). Transformers with series-multiple windings are designated with an "x" or "/" between the voltage ratings, such as voltages of "120/240" or "240 x 480." If the series-multiple winding is designated by an "x," the winding can be connected only for a series or parallel. With the "/" designation, a mid-point also becomes available in addition to the series or parallel connection. As an example, a 120 x 240 winding can be connected for either 120 (parallel) or 240 (series), but a 120/240 winding can be connected for 120 (parallel), or 240 (series), or 240 with a 120 mid-point.

Note: The preceding pages provide listings for most standard transformer ratings and catalog numbers. For all-copper and bolt-on-breaker designs, contact Eaton. For other ratings or catalog numbers not shown, or for special enclosure types (including stainless steel), refer to Eaton.

CITY OF FORT BRAGG
EV FLEET CHARGING STATIONS
IMPROVEMENT PLAN

OWNER:
City of Fort Bragg
416 N. Franklin Street
Fort Bragg, CA 95437

SITE:
250 Cypress Street
Fort Bragg, CA 95437
APN 018-040-57

ABBREVIATIONS

A.C.	ASPHALT CONCRETE
A.E.	APPROVED EQUAL
AGG.	AGGREGATE
APPROX.	APPROXIMATE
AVE.	AVENUE
B.C.	BEGIN HORIZONTAL CURVE
BLDG.	BUILDING
BM.	BENCHMARK
BO.	BLOWOFF
BVC.	BEGIN VERTICAL CURVE
B.W.	BOTTOM WALL
C.B.	CATCH BASIN
C&G	CURB AND GUTTER
C.I.P.P.	CAST-IN-PLACE-PIPE
℄	CENTERLINE
CL.	CLASS
C.M.P.	CORRUGATED METAL PIPE
CO.	CLEANOUT
CONC.	CONCRETE
C.O.W.	CITY OF WILLITS
C.P.C.	CENTRAL PRECAST CONCRETE
C.R.	CURVE RETURN OR CURB RETURN
CTR	CENTER
C.Y.	CUBIC YARD
D.I.	DROP INLET
DIA.	DIAMETER
D.I.P.	DUCTILE IRON PIPE
DR	DRIVE
D/W	DRIVEWAY
DWG.	DRAWING
E.C.	END HORIZONTAL CURVE
E.I.	EXPANSION INDEX
EL.	ELEVATION
E.P.	EDGE OF PAVEMENT
ESMT.	EASEMENT
E.V.C.	END VERTICAL CURVE
EX.	EXISTING
F.C.	FACE OF CURB
F.D.C.	FIRE DEPARTMENT CONNECTION
F.E.S.	FLARED END SECTION
F.F.	FINISHED FLOOR
F.G.	FINISHED GRADE
F.H.	FIRE HYDRANT
FL	FLOWLINE
FT.	FOOT
GALV.	GALVANIZED
G.B.	GRADE BREAK
GR.	GRATE
G.V.	GATE VALVE
HMA	HOT MIX ASPHALT
INV.	INVERT
J.P.	JOINT POLE
J.T.	JOINT TRENCH
L	LENGTH
L.F.	LINEAR FEET
L.G.	LIP OF GUTTER
MAX.	MAXIMUM
MIN.	MINIMUM
MH.	MANHOLE
N.A.	NOT APPLICABLE
N.I.C.	NOT IN CONTRACT
N.T.S.	NOT TO SCALE
P.C.C.	PORTLAND CEMENT CONCRETE
P.G.	PAD GRADE
P.I.V.	POST INDICATOR VALVE
⅊	PROPERTY LINE
P.O.C.	POINT OF CURVE
P.P.	POWER POLE
P.R.C.	POINT OF REVERSE CURVE
PT.	POINT
P.U.E.	PUBLIC UTILITY EASEMENT
P.V.C.	POLYVINYL CHLORIDE
P.V.I.	POINT OF VERTICAL INTERSECTION
PVMT.	PAVEMENT
PW	PROCESS WATER
R OR RAD.	RADIUS
R.C.	RELATIVE COMPACTION
R.C.B.	REINFORCED CONCRETE BOX
R.C.P.	REINFORCED CONCRETE PIPE
REF.	REFERENCE
R/W	RIGHT OF WAY
S	SLOPE OR SEWER
S.D.E.	STORM DRAIN EASEMENT
S.E.	SEWER EASEMENT
S.D.	STORM DRAIN
S.D.M.H.	STORM DRAIN MANHOLE
S.G.	SUBGRADE
SPEC.	SPECIFICATION
STD.	STANDARD
ST.	STREET OR SEMI-TANGENT
STA.	STATION
S/W	SIDEWALK
SW.E.	SIDEWALK EASEMENT
S.Y.	SQUARE YARD
TAN.	TANGENT
T.B.	TOP OF BANK OR BOX
T.C.	TOP OF CURB
T.G.	TOP OF GRATE
TOE	TOE OF SLOPE
T.W.	TOP OF WALL
TYP.	TYPICAL
V.C.	VERTICAL CURVE
V.I.F.	VERIFY IN FIELD
V.P.I.	VERTICAL POINT OF INTERSECTION
W	WATER OR WEST
W.M.	WATER METER
W.S.	WATER SERVICE
&	AND
°	DEGREE
Δ	DELTA
'	MINUTE
"	SECOND
%	PERCENT
∢	ANGLE POINT

GENERAL, GRADING, AND DRAINAGE NOTES

1. CONTRACTOR AGREES THAT HE/SHE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY, THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNITY AND HOLD OWNER AND TALL TREE ENGINEERING, INC. HARMLESS FROM ANY AND ALL LIABILITY REAL PR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR ENGINEER.

2. THE ENGINEER ASSUMES NO RESPONSIBILITY OTHER THAN FOR THE ADEQUACY OF THE DESIGN CONTAINED HEREIN.

3. ALL MATERIALS TO BE USED ARE TO BE APPROVED BY THE ENGINEER PRIOR TO THEIR PLACEMENT. ANY MATERIALS INSTALLED PRIOR TO APPROVAL ARE SUBJECT TO REMOVAL.

4. AFTER COMPLETION OF WORK, WORK AREAS SHALL BE RESTORED TO THE ORIGINAL CONDITION BY THE CONTRACTOR.

5. LOCATION OF UNDERGROUND AND OVERHEAD UTILITIES SHOWN ON PLANS ARE APPROXIMATE ONLY. CONTRACTOR SHALL ASSUME RESPONSIBILITY OF SAID UTILITIES SAFETY DURING CONSTRUCTION AND IF DAMAGED CONTRACTOR SHALL RESTORE SERVICES AT HIS EXPENSE. THE OWNER, THE ENGINEER AND THE PERMIT AUTHORITY ASSUME NO RESPONSIBILITY FOR ANY OBSTRUCTIONS EITHER SHOWN OR NOT SHOWN ON THESE PLANS.

6. CONTRACTOR SHALL PERFORM TRENCH WORK IN ACCORDANCE WITH THE STATE OF CALIFORNIA DIVISION OF INDUSTRIAL SAFETY. SAID WORK SHALL CONFORM TO ALL APPLICABLE OCCUPATIONAL SAFETY AND HEALTH STANDARDS, RULES, REGULATIONS AND ORDERS ESTABLISHED BY THE STATE OF CALIFORNIA AND THE CITY OF FORT BRAGG.

7. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS SHOWN AND BRING DISCREPANCIES TO THE ATTENTION OF THE ENGINEER PRIOR TO PROCEEDING WITH THE WORK.

8. ALL WORK SHALL CONFORM TO APPLICABLE CITY OF FORT BRAGG CODES AND STANDARDS.

9. THE OWNER SHALL PROVIDE THE NECESSARY MATERIAL AND SOILS TESTING INSPECTIONS AND OBSERVATIONS. THE CONTRACTOR PROVIDE 48 HOURS NOTICE PRIOR TO REQUIRED TESTING.

10. ALL GRADING ON-SITE SHALL NOT INHIBIT OFF-SITE DRAINAGE. STRIPPING AND CLEARING OF SITE SHALL BE CONFINED TO ONLY AREAS TO BE IMPROVED. STOCKPILE STRIPPING MATERIAL AS AUTHORIZED BY THE OWNER. EQUIPMENT AND MATERIAL STORAGE AREAS SHALL BE APPROVED BY THE OWNER. EXCESS MATERIAL SHALL BE DISPOSED OFF SITE.CONTRACTOR TO USE BEST MANAGEMENT PRACTICES TO CONTROL STORM WATER RUNOFF.

11. PERMITTED WORK IN PUBLIC RIGHT OF WAY SHALL BE INSPECTED BY PUBLIC WORKS DEPARTMENT. THE CONTRACTOR SHALL CALL (707) 961-2824 A MINIMUM OF 24 HOURS IN ADVANCE OF COMMENCING WORK IN ORDER TO ARRANGE REQUIRED INSPECTIONS.

12. SUBGRADE PREPARATION AND COMPACTION SHALL BE PERFORMED AS REQUIRED BY REGULATING AUTHORITY. CONTRACTOR SHALL VERIFY SUBGRADE ELEVATIONS AND ASSUME RESPONSIBILITY FOR THE PROJECT AT COMMENCEMENT OF CONSTRUCTION.

13. THE TOPOGRAPHIC SURVEY SHOWN HEREIN WAS COMPLETED BY TALL TREE ENGINEERING INC. FOR QUESTIONS CONTACT DUSTIN FREDRICEY AT 707.409.4235

14. THE CONTRACTOR SHALL OBTAIN ALL REQUIRED TRENCH PERMITS FROM THE CALIFORNIA DIVISION OF INDUSTRIAL SAFETY PRIOR TO EXCAVATION OF ANY TRENCH.

15. BEFORE ANY EXCAVATION, CALL UNDERGROUND SERVICE ALERT, TOLL FREE AT (800) 642-2444 AT LEAST 2 WORKING DAYS BEFORE EXCAVATION.

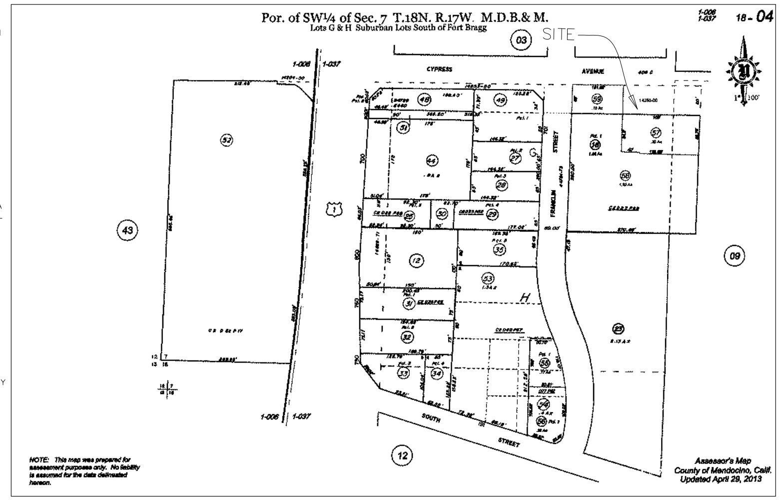
16. THE CONTRACTOR SHALL DO NO EXCAVATION UNTIL ALL EXISTING UTILITIES HAVE BEEN MARKED IN THE FIELD BY THE APPLICABLE ENTITY REPONSIBLE FOR THAT PARTICULAR UTILITY. THE CONTRACTOR SHALL NOTIFY EACH UTILITY COMPANY AT LEAST 48 HOURS PRIOR TO STARTING WORK.

17. CONTRACTOR SHALL PROVIDE FOR INSPECTION OF ALL IMPROVEMENTS, BY THE CITY, TO VERIFY THAT ALL WORK IS IN COMPLIANCE WITH THE APPROVED PROJECT PLANS. THE PROJECT ENGINEER SHALL PROVIDE A LETTER, STAMPED AND SIGNED, STATING THAT SAID WORK IN COMPLIANCE WAS PERSONALLY OBSERVED INCLUDING INSPECTION DATE(S).

18. PERFORM GRADING IN ACCORDANCE WITH THE LATEST EDITION OF CHAPTER 33 OF THE CALIFORNIA BUILDING CODE AND THE APPLICABLE CITY OF FORT BRAGG REGULATIONS.

19. EXISTING DRAINAGE COURSES RECEIVING WATERS FROM THIS SITE AND LOCATED THROUGHOUT THIS SITE SHALL REMAIN OPEN AND CLEAR OF DEBRIS TO PROPERLY CONVEY STORM WATER. IF EXISTING DRAINAGE COURSES RECEIVING WATERS FROM THIS SITE ARE LOCATED IN THE CITY RIGHT-OF-WAY AND NEED MAINTENANCE, CONTACT THE DEPARTMENT PUBLIC WORKS FOR FURTHER ASSISTANCE. IN ANY EVENT, THE OWNER AND/OR CONTRACTOR SHALL BE HELD LIABLE FOR ANY DAMAGE DUE TO OBSTRUCTING NATURAL DRAINAGE PATTERNS.

20. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE DESIGN ENGINEER UPON DISCOVERING SIGNIFICANT DISCREPANCIES, ERRORS OR OMISSIONS IN THE PLANS. PRIOR TO PROCEEDING, THE OWNER SHALL HAVE THE PLANS REVISED TO CLARIFY IDENTIFIED DISCREPANCIES, ERRORS OR OMISSIONS. THE REVISED PLANS SHALL BE SUBJECT TO REVIEW AND APPROVAL BY THE CITY OF FORT BRAGG.



ASSESSORS' PARCEL MAP

NTS

22. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING UNDERGROUND SERVICE ALERT (U.S.A.), TOLL FREE AT 1-800-642-2444, AT LEAST TWO WORKING DAYS PRIOR TO EXCAVATION. THE CONTRACTOR SHALL UNCOVER RELEVANT UTILITIES TO VERIFY THEIR LOCATION AND ELEVATION. IF UNEXPECTED OR CONFLICTING UTILITIES ARE ENCOUNTERED DURING EXCAVATION, NOTIFY U.S.A., THE UTILITY OWNER AND/OR THE PROJECT ENGINEER IMMEDIATELY. UTILITIES INCLUDE BUT ARE NOT LIMITED TO WATER, SEWER, STORM DRAIN, ELECTRICAL, GAS, TELEPHONE AND CABLE/TV.

23. IN THE EVENT CULTURAL RESOURCES (I.E., HISTORICAL, ARCHAEOLOGICAL, AND PALEONTOLOGICAL RESOURCES, AND HUMAN REMAINS) ARE DISCOVERED DURING GRADING OR OTHER CONSTRUCTION ACTIVITIES, WORK SHALL BE HALTED WITHIN A 100 FOOT RADIUS OF THE FIND. THE NORTHWEST INFORMATION CENTER SHALL BE NOTIFIED AT (707) 664-0880. A QUALIFIED ARCHAEOLOGIST SHALL BE CONSULTED FOR AN ON-SITE EVALUATION. ADDITIONAL MITIGATION MAY BE REQUIRED BY THE CITY PER THE ARCHAEOLOGIST'S RECOMMENDATIONS. IF HUMAN BURIALS OR HUMAN REMAINS ARE ENCOUNTERED, THE CONTRACTOR SHALL ALSO NOTIFY THE COUNTY CORONER AT (707) 565-5070.

24. SHOULD GRADING OPERATIONS ENCOUNTER HAZARDOUS MATERIALS, OR WHAT APPEAR TO BE HAZARDOUS MATERIALS, STOP WORK IN THE AFFECTED AREA IMMEDIATELY AND CONTACT 911 OR THE APPROPRIATE AGENCY FOR FURTHER INSTRUCTION.

25. APPLICABLE PERMITS AND AN APPROVED COPY OF THE GRADING PLANS SHALL BE MAINTAINED ON THE PROJECT SITE THROUGHOUT THE DURATION OF CONSTRUCTION ACTIVITIES.

26. WORK SHALL BE INSPECTED BEFORE RECEIVING FINAL APPROVAL. THE CONTRACTOR SHALL CONSULT WITH THE CITY OF FORT BRAGG FOR COORDINATION OF INSPECTION REQUEST.

27. BACKFILL TO BE OF NATIVE OR ENGINEERED SOIL FREE OF ORGANIC MATTER WITH NO ROCKS, ROOTS, OR OTHER MATERIALS LARGER THAN 6"ALLOWED IN MIX. SOIL SHOULD BE COMPACTED TO 90% RC.

28. CONTRACTOR TO COORDINATE WITH POLICE DEPARTMENT PERSONNEL PRIOR TO COMMENCING WORK AND PROVIDE REGULAR STATUS UPDATES TO ENSURE NO DISRUPTIONS TO EMERGENCY SERVICES.

29. CONTRACTOR TO COORDINATE WORK WITH PG&E TO ENSURE NECESSARY COMPLIANCE WITH FLEET PROGRAM CONTRACT, INSPECTION, AND TIMING OF THEIR INSTALLATION.

QUANTITY SUMMARY

APPROXIMATE AC = 70 TONS
1. APPROXIMATE BASE = 15 CY

2. APPROXIMATE TOTAL ELECTRICAL TRENCH LENGTH = 130'

AREA OF DISTURBANCE = 0.2 ACRES

NOTES:

1. CITY TO PROVIDE ELECTRICAL EQUIPMENT AND EV STATION CONCRETE MOUNTING TEMPLATES.

2. THE QUANTITIES LISTED ARE THE ENGINEER'S ESTIMATE OF QUANTITIES. CONTRACTOR TO VERIFY PRIOR TO CONSTRUCTION.

3. SEE PG&E EV FLEET CHARGING PROGRAM SUPPLEMENTARY CONSTRICTION SHEET FOR MORE DETAIL

SHEET INDEX

LEGEND:

300	FINISH GRADE CONTOUR
300	EXISTING GRADE CONTOUR
FG 500.00	FINISH GRADE ELEVATION
FL 500.00	FLOWLINE ELEVATION
	SURFACE FLOWLINE
	EX. TREE
	EX. SANITARY SEWER LINE
	EX. WATER LINE
	EX. OVERHEAD WIRE
	EX STORM DRAIN
	EX. WATER METER
	EX. MANHOLE
	EX. WATER VALVE
	EX. CONCRETE
	PROPOSED CONCRETE/AC

REVISION	DESCRIPTION	BY	DATE

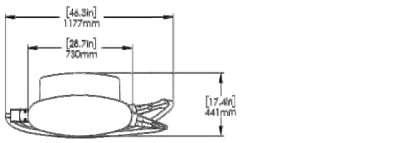
Tall Tree Engineering, Inc.
99 S. Main St.
Willits, CA 95490

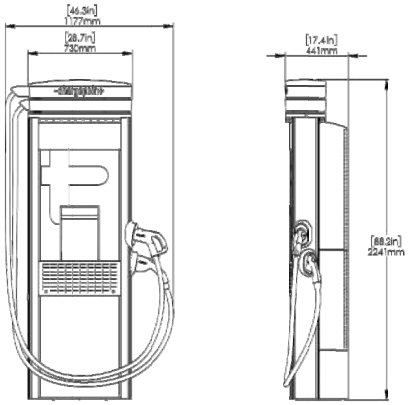
TALL TREE ENGINEERING
CIVIL & GEOTECHNICAL

PROFESSIONAL ENGINEER — STATE OF CALIFORNIA — CIVIL

CITY OF FORT BRAGG
EV FLEET CHARGING STATIONS IMPROVEMENT PLAN
250 Cypress Street
Fort Bragg, CA 95437
TITLE SHEET AND NOTES

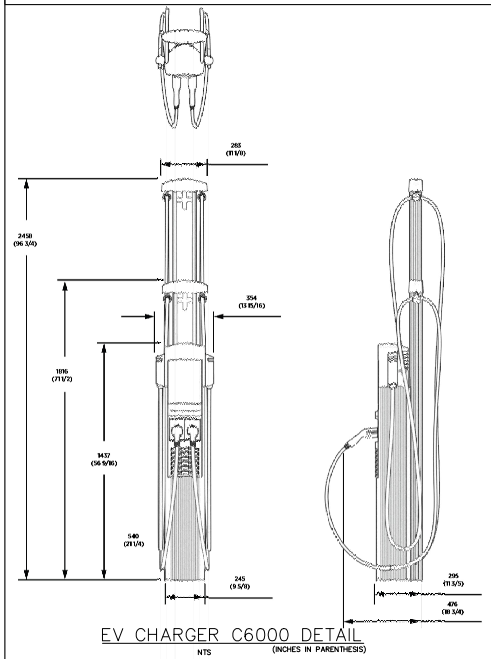
PROJECT: 23-12
DATE: 03/8/2024
SCALE: NTS
DRAWN: SL/NM
SHEET: C1 of 6





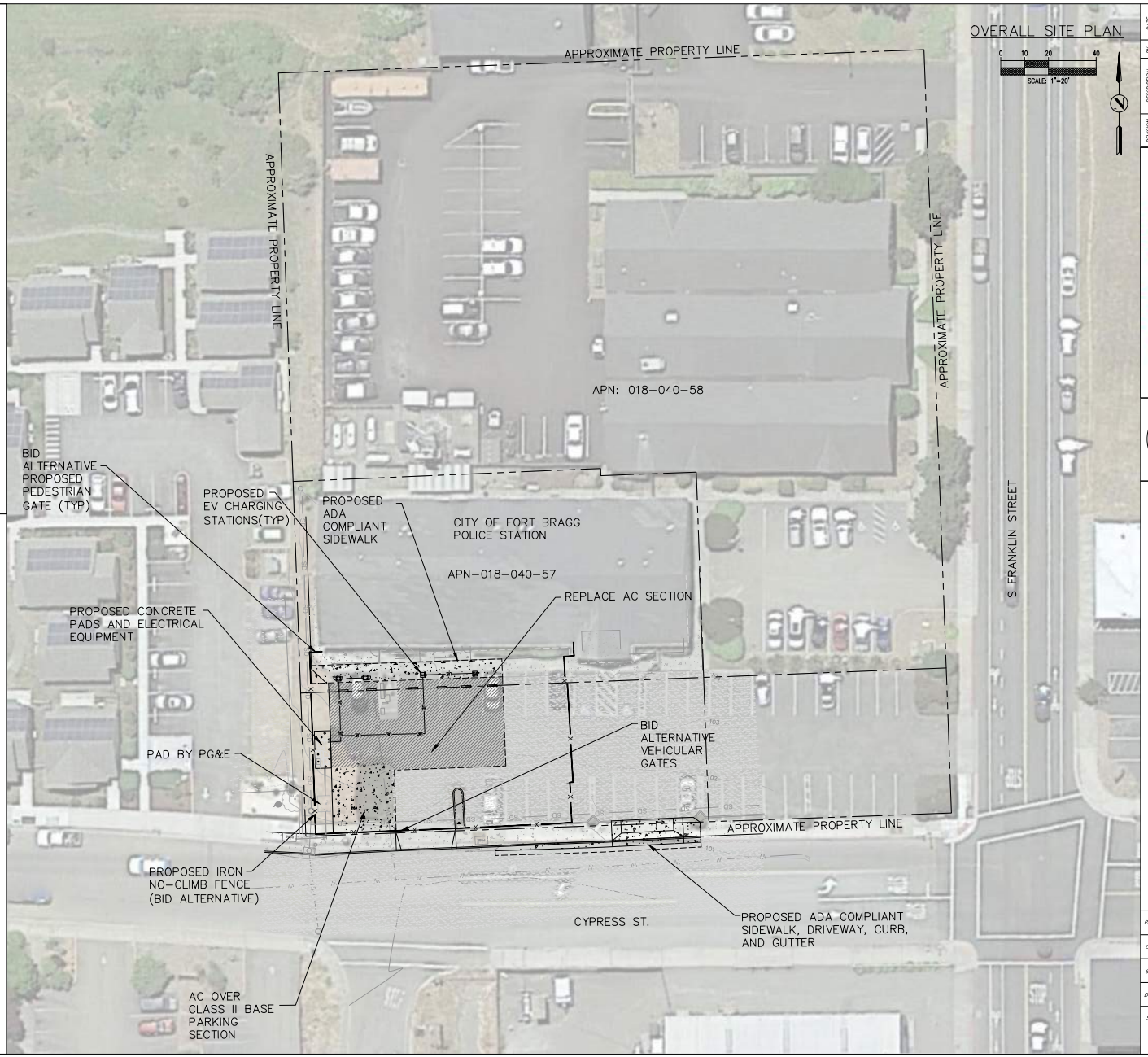
EV CHARGER E250 DETAIL

NTS (INCHES IN PARENTHESIS)



EV CHARGER C6000 DETAIL

NTS (INCHES IN PARENTHESIS)



Tall Tree Engineering, Inc.
99 S. Main St.
Willits, CA 95490

TALL TREE ENGINEERING
CIVIL & GEOTECHNICAL

CITY OF FORT BRAGG
EV FLEET CHARGING STATIONS IMPROVEMENT PLAN
250 Cypress Street
Fort Bragg, CA 95437

OVERALL SITE PLAN AND DETAILS

PROJECT: 23-12
DATE: 03/08/2024
SCALE: 1"=20'
DRAWN: SL/NM
SHEET: C2 of 6

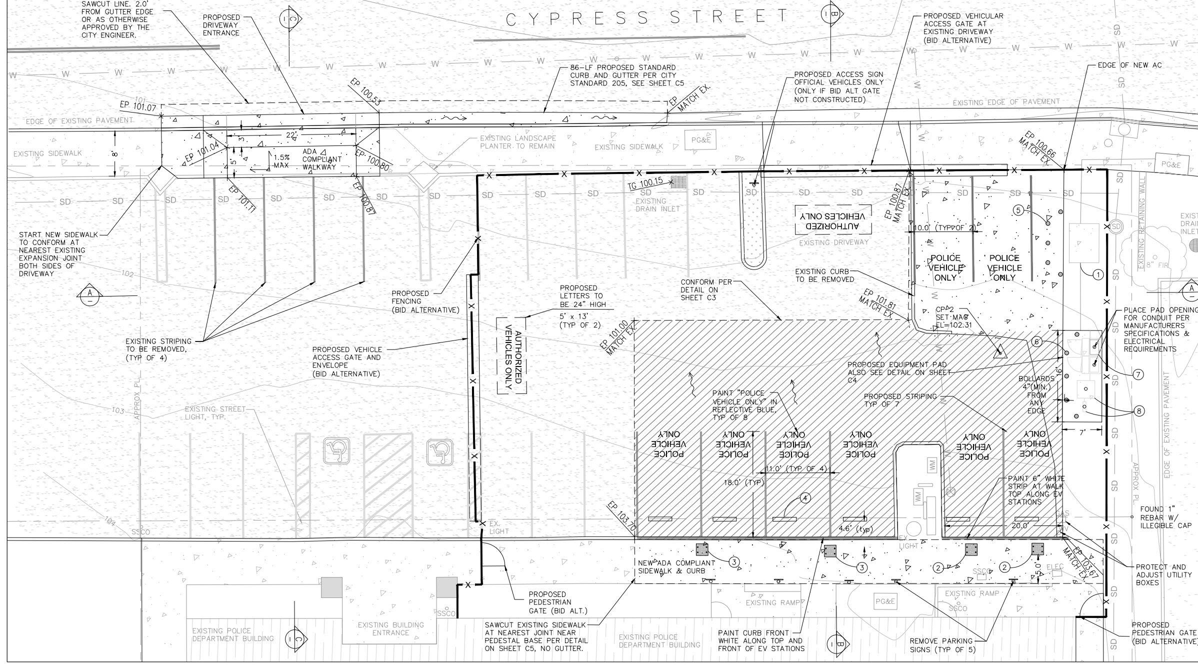
FINISH SURFACE AND DRAINAGE PLAN

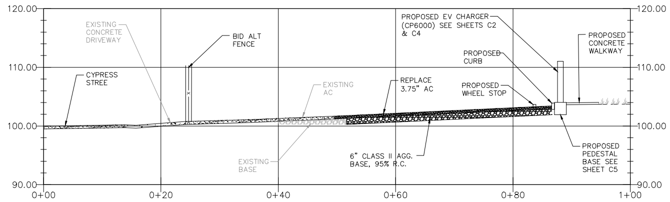
SCALE: 1"=10'

LEGEND:

- APPROXIMATE PROPERTY LINE
- UNDERGROUND ELECTRIC BY PG&E
- UNDERGROUND ELECTRIC
- EXISTING CONTOUR LINE
- SAWCUT LINE
- SURVEY CONTROL POINT
- EXISTING CONCRETE
- EXISTING AC
- PROPOSED CONCRETE OR AC/BASE
- PROPOSED REPLACE AC

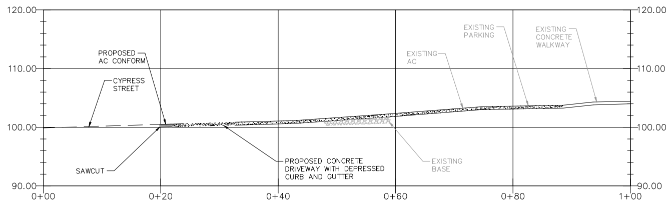
1. NEW TRANSFORMER & PAD BY PG&E
2. CHARGE POINT EXPRESS 250 BASE SEE MOUNTING TEMPLATES AND MANUFACTURER DIRECTIONS FOR STUB OUT LOCATIONS
3. CHARGE POINT CP6000 BASE UNDER SIDEWALK, SEE MOUNTING TEMPLATES AND MANUFACTURER DIRECTIONS FOR STUB OUT LOCATIONS
4. PROPOSED WHEEL STOP, TYP OF 6
5. PROPOSED BOLLARDS TO BE CONTRUCTED BY PG&E. PG&E TO SET FINAL LOCATION.
6. PROPOSED BOLLARDS, TYP OF 5
7. WET SET SAE GRADE 5, ½ - 13 BOLTS WITH 1.375- IN OD WASHER, 6 PER SECTION.
8. WET SET ANCHORS PER MANUFACTURER'S SPECIFICATIONS.





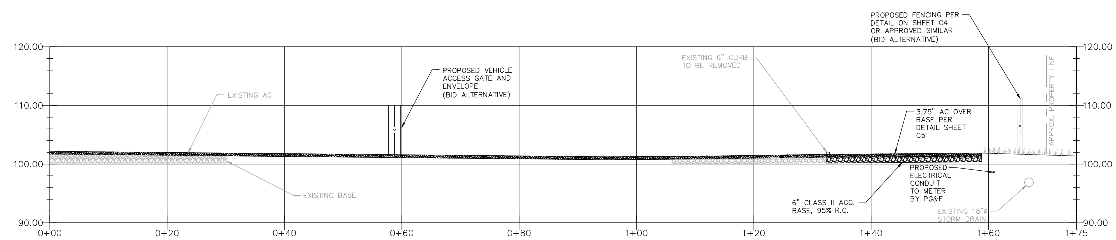
B SITE SECTION

SCALE: VERTICAL: 1"=10' HORIZONTAL: 1"=10'



C SITE SECTION

SCALE: VERTICAL: 1"=10' HORIZONTAL: 1"=10'



A SITE SECTION

SCALE: VERTICAL: 1"=10' HORIZONTAL: 1"=10'

REVISION	DESCRIPTION	BY	DATE

Tall Tree Engineering, Inc.
99 S. Main St.
Willits, CA 95490

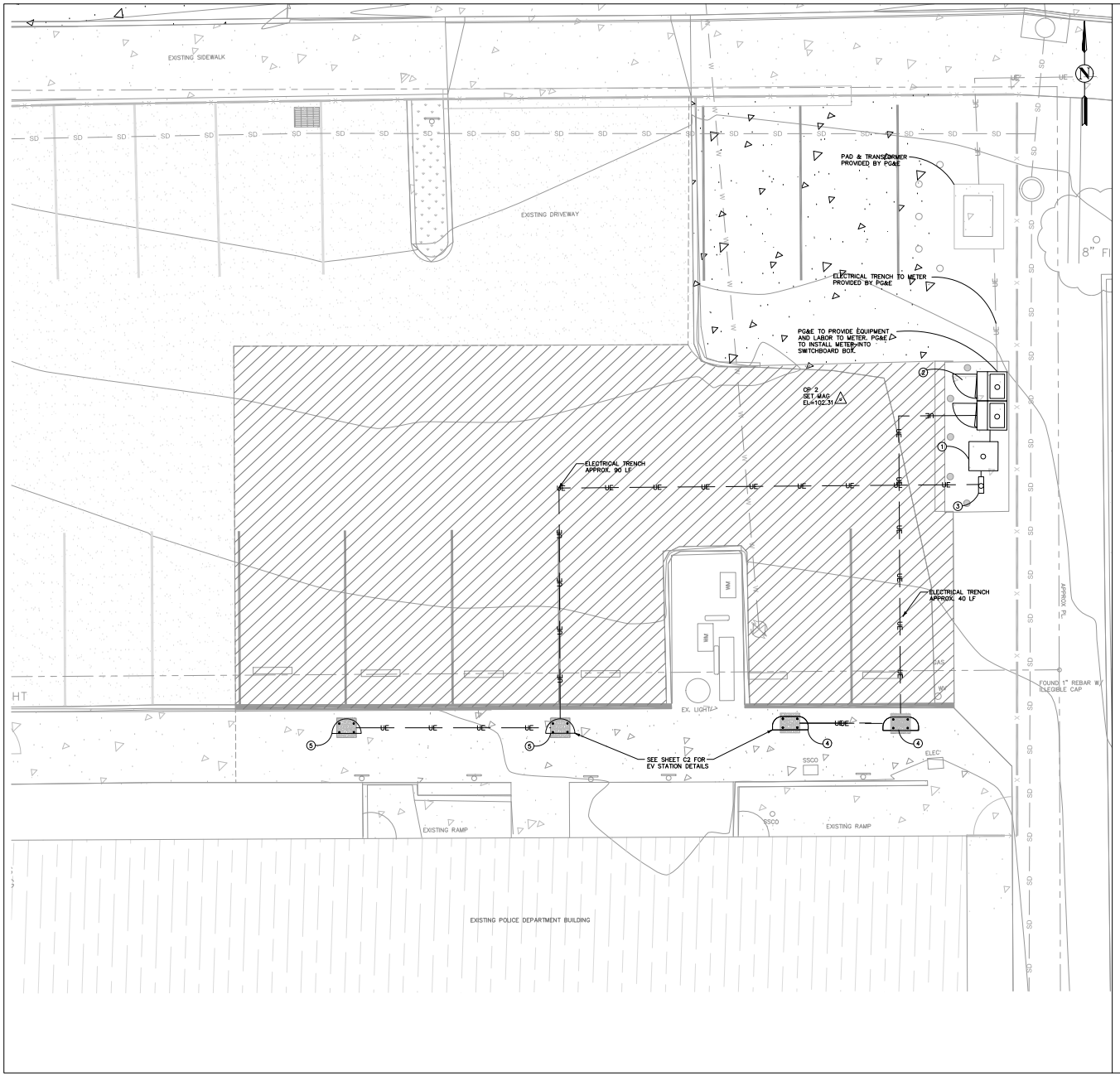
TALL TREE ENGINEERING
CIVIL & GEOTECHNICAL

CITY OF FORT BRAGG

EV FLEET CHARGING STATIONS IMPROVEMENT PLAN
250 Cypress Street
Fort Bragg, CA 95437

FINISH SURFACE AND DRAINAGE PLAN

PROJECT: 23-12
DATE: 03/08/2024
SCALE: AS SHOWN
DRAWN: SL/NM
SHEET: C3 of 6



SCALE

0' 2' 5' 10'

SCALE: 1"=5'

LEGEND

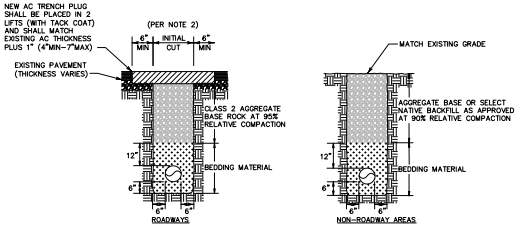
UE UE ELECTRIC TRENCH BY PG&E

UE UE ELECTRIC

1. PROPOSED 75KVA, 480-208/120V STEP DOWN TRANSFORMER
2. PROPOSED 400A, 480/277V METER SERVICE, SWITCHBOARD, AND BOX.
3. PROPOSED 200A, 208/120V, DISTRIBUTION PANEL
4. CHARGE POINT EXPRESS 250. SEE SHEET C2 FOR DETAILS
5. CHARGE POINT CP6000. SEE SHEET C2 FOR DETAILS

NOTES

SEE SUPPLEMENTAL CONSTRUCTION SHEET BY PG&E FOR MORE ELECTRICAL DETAILS



NOTES:

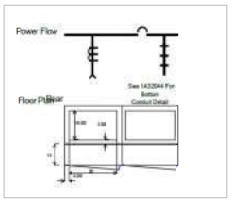
1. WHERE EXISTING STREET IS CONCRETE OVERLAID WITH AC, THE CONCRETE SECTION REMOVED BY TRENCHING SHALL NOT BE REPLACED.
2. FINAL TRENCH PAVING IS REQUIRED TO BE EXPANDED TO A PAINTED LANE STRIPE, EXISTING PAVEMENT PATCH, THE LIP OF GUTTER OR EDGE OF PAVEMENT WHERE SUCH STREET FEATURE IS WITHIN 3 FEET OF THE FINAL SAW CUT.
3. PERMANENT PAVING MUST BE COMPLETED WITHIN 30 DAYS. AC OR CUTBACK (1" THICK) MAY BE PLACED AS A TEMPORARY SURFACE IN ROADWAY AREAS AND SHALL BE MAINTAINED UNTIL PERMANENT PAVING IS COMPLETED. WHERE WARRANTED, AND AT THE DISCRETION OF PUBLIC WORKS INSPECTOR, TRENCH PLATES MAY BE USED FOR UP TO 2 WEEKS. TRENCH PLATES SHALL HAVE A SKID RESISTANT SURFACE, SECURED WITH 24" WIDE COLLAR OF CUTBACK AROUND ALL SIDES OF PLATE, AND TAPERED TO PROVIDE SMOOTH TRANSITIONS.
4. WITHIN STRUCTURAL AND PAVEMENT AREAS, THE UPPER 30 INCHES (MINIMUM) OF STRUCTURE AND UTILITY TRENCH BACKFILL SHOULD BE PLACED IN THIN LIFTS 8 INCHES OR LESS IN LOOSE THICKNESS, MOISTURE CONDITIONED AS NECESSARY, AND COMPACTED TO AT LEAST 90 PERCENT RELATIVE COMPACTION. BELOW 30 INCHES OR OUTSIDE STRUCTURAL AND PAVEMENT AREAS, TRENCH BACKFILL SHALL BE COMPACTED TO AT LEAST 85 PERCENT RELATIVE COMPACTION, OR TO THE DENSITY OF THE INTACT ORIGINAL GROUND ADJACENT, WHICHEVER IS GREATER

TRENCH

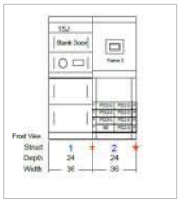
APPROXIMATE ELECTRICAL TRENCH 135 LF

TRANSFORMER

SWITCHBOARD



SWITCHBOARD BOX



SWITCHBOARD BOX

REVISION	DESCRIPTION	BY	DATE
1.	STAMP REMOVED	SCL	3/18/24

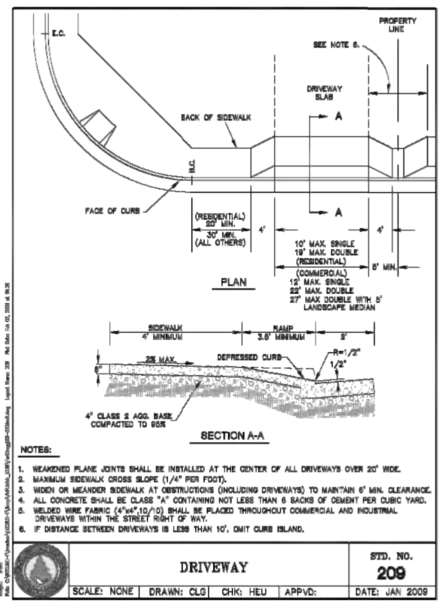
Tall Tree Engineering, Inc.
99 S. Main St.
Willits, CA 95490

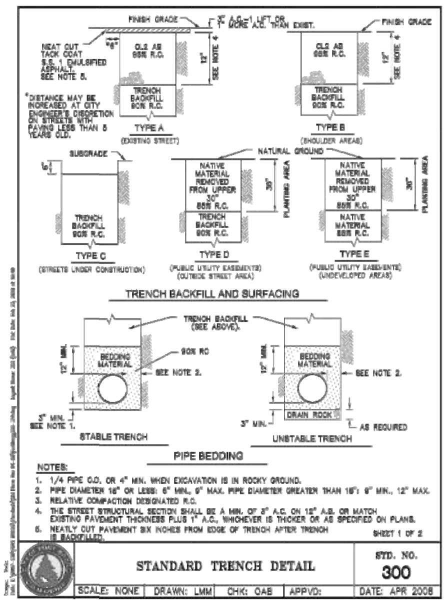
TALL TREE ENGINEERING
CIVIL & GEOTECHNICAL

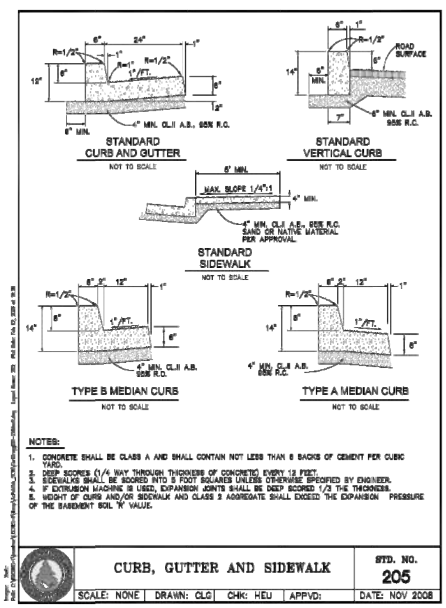
CITY OF FORTBRAGG
EV FLEET CHARGING STATIONS IMPROVEMENT PLAN
250 CYPRESS STREET
FORT BRAGG, CA 95437

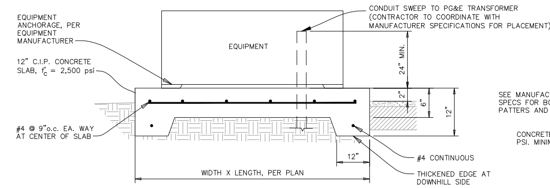
ELECTRICAL IMPROVEMENT PLAN

PROJECT: 23-12
DATE: 02/12/2024
SCALE: 1" = 5'
DRAWN: SL
SHEET: C4 of 6





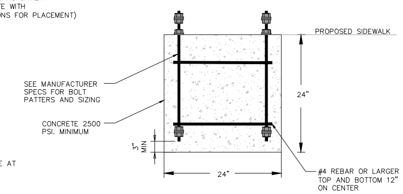




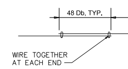
NOTES:

1. ANCHORAGE OF EQUIPMENT TO CONCRETE SLAB PER MANUFACTURE'S RECOMMENDATION OR AS OTHERWISE NOTED ON THE PLANS.
2. 24" MIN. VERTICAL CONDUITS WEEPS FROM PAD TO PG&E CONDUIT TRANSFORMER.
3. SEE SHEET C3 FOR CONDUIT AND EQUIPMENT LOCATIONS.

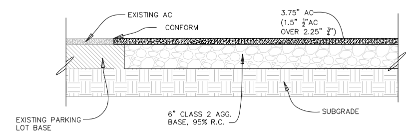
EQUIPMENT CONCRETE SLAB
NTS



PEDESTAL BASE DETAIL
NTS (FOR BOTH CHARGER STYLES)



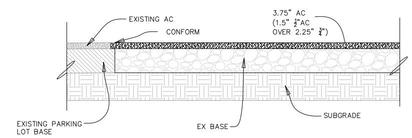
REBAR SPLICES
Db = BAR DIAMETER



NOTES:

1. REMOVE ALL EXISTING WEAK, COMPRESSIBLE, EXPANSIVE SUBGRADE SOILS WITHIN IMPROVEMENT AREA.
2. THE SURFACE EXPOSED AFTER REMOVAL OF EXISTING SOIL SHALL BE SCARIFIED TO A DEPTH OF 6" AND RECOMPACTED TO 95% R.C.
3. SELECT, ENGINEERED FILL IF REQUIRED, SHALL BE USED TO ESTABLISH SUBGRADE. FILL SHALL BE PLACED IN LIFTS NO GREATER THAN 8" THICK, MOISTURE CONDITIONED AND COMPACTED TO 95% R.C.

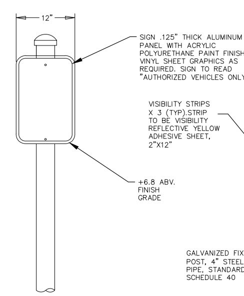
FULL DEPTH AC PARKING LOT SECTION
NTS



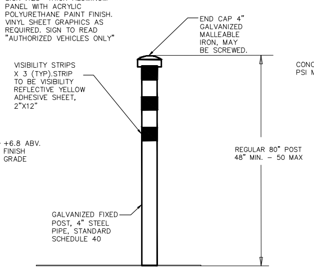
NOTES:

1. SCARIFY, MOISTEN AND RECOMPACT ANY EXPOSED BASE
2. KEEP EXISTING DRAINAGE PATTERN.

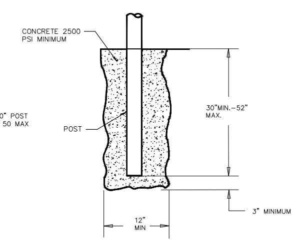
REPLACE AC PARKING LOT SECTION
NTS



SIGN AND POST DETAIL
NTS



BOLLARD DETAIL
NTS



BOLLARD AND SIGN POST BASE DETAIL
NTS

REVISION	DESCRIPTION	BY	DATE

Tall Tree Engineering, Inc.
99 S. Main St.,
Willits, CA 95490

TALL TREE ENGINEERING
CIVIL & GEOTECHNICAL

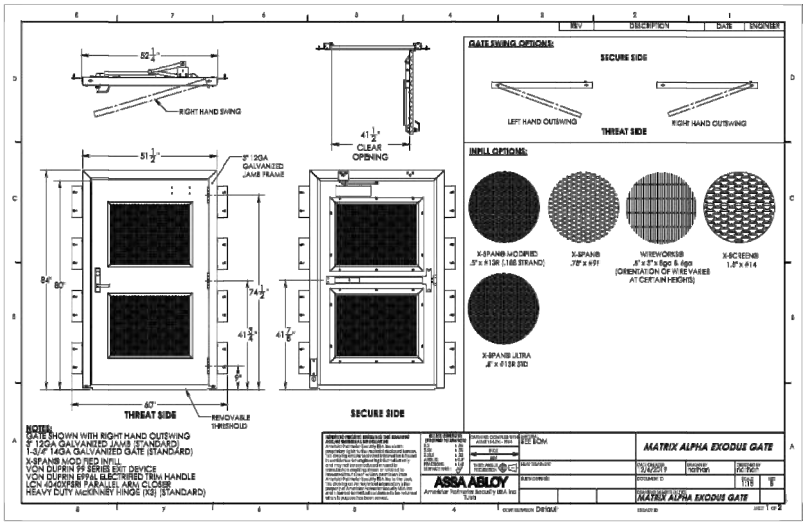
PROFESSIONAL ENGINEER SUSANNE LOUSIS C91288 EXP. 06/30/25 CIVIL STATE OF CALIFORNIA

CITY OF FORT BRAGG

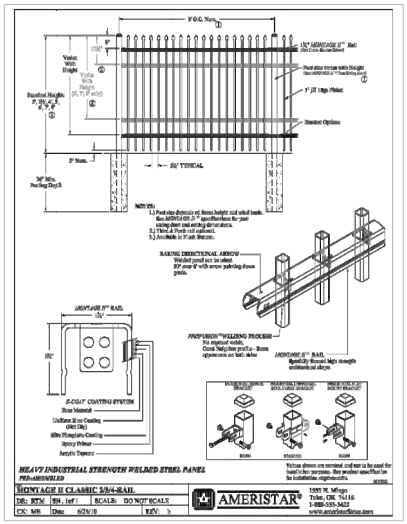
EV FLEET CHARGING STATIONS IMPROVEMENT PLAN
250 Cypress Street
Fort Bragg, CA 95437

CONSTRUCTION DETAILS AND NOTES

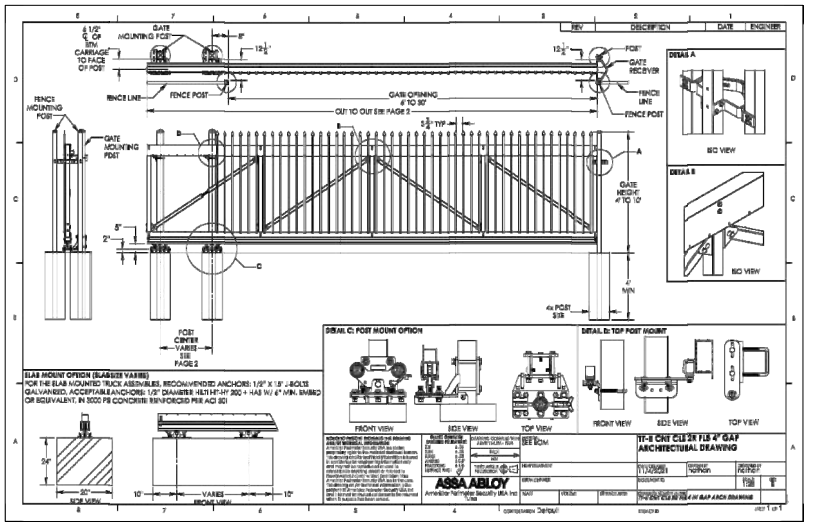
PROJECT: 23-12
DATE: 03/08/2024
SCALE: AS SHOWN
DRAWN: SL/NM
SHEET: C5 of 6



PEDESTRIAN GATE DETAIL: AMERISTAR OR APPROVED EQUAL
NTS



NO-CLIMB FENCING DETAIL: AMERISTAR OR APPROVED EQUAL
NTS



CANTILEVER GATE DETAIL: AMERISTAR OR APPROVED EQUAL
NTS

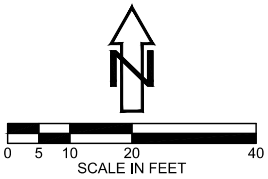
Tall Tree Engineering, Inc.
99 S. Main St.
Willits, CA 95490

TALL TREE ENGINEERING
CIVIL & GEOTECHNICAL

CITY OF FORT BRAGG
EV FLEET CHARGING STATIONS IMPROVEMENT PLAN
250 Cypress Street
Fort Bragg, CA 95437

ALTERNATIVE BID ITEMS, DETAILS, AND NOTES

PROJECT: 23-12
DATE: 03/08/2024
SCALE: NTS
DRAWN: SL/NM
SHEET: C6 of 6



This plan sheet is to be used ONLY for reference to TTM content. If BTM conflicts with Tall Tree (TT) Project Plans, TT Plans prevail for bidding purposes.

BILL OF MATERIALS		
ITEM	UNIT	QUANTITY
TTM 150KVA, 12/21KV-480/277V, PAD MOUNT TRANSFORMER WITH CONCRETE PAD	EACH	1
TTM 4-WAY JUNCTION	EACH	1
BTM 400A, 480/277V, 3Ø, METER SERVICE (COMBINATION) - PEDESTAL MOUNT	EACH	1
BTM 200A, 208/120V, 3Ø, DISTRIBUTION - PEDESTAL MOUNT	EACH	1
BTM 75KVA, 480-208/120V, 3Ø, STEP DOWN TRANSFORMER - PEDESTAL MOUNT	EACH	1
BTM 1" PVC CONDUIT	LF	235
BTM 2" PVC CONDUIT	LF	115
TTM 4" PVC CONDUIT	LF	35
TTM 5" PVC CONDUIT	LF	15
BTM (3) #1 AWG THWN-2 CU + (1) #4 AWG THWN-2 CU EGC	LF	25
BTM (2) #3 AWG THWN-2 CU + (1) #8 AWG THWN-2 CU EGC	LF	270
BTM (4) #3 AWG THWN-2 CU + (1) #8 AWG THWN-2 CU EGC	LF	120
BTM (4) 3/0 AWG THWN-2 CU + (1) #4 AWG THWN-2 CU EGC	LF	25
TTM 1/0AL EPR	LF	200
TTM 750AL QPX	LF	30
TTM 36" WIDE OPEN CUT TRENCH - HARDSCAPE	LF	20
TTM 36" WIDE OPEN CUT TRENCH - SOFTSCAPE	LF	30
BTM 24" WIDE OPEN CUT TRENCH - HARDSCAPE	LF	95
BTM 24" WIDE OPEN CUT TRENCH - SOFTSCAPE	LF	40
BTM RESTORE ASPHALT PAVEMENT	SF	185
TTM RESTORE CONCRETE	SF	60
TTM RESTORE SOFTSCAPE	SF	85
BTM RESTORE SOFTSCAPE	SF	75
BTM BOLLARD	EACH	7
BTM STRIPING	EACH	2
BTM EV CHARGER FOUNDATION	EACH	5

NOTES:
1. ALL QUANTITIES ARE ESTIMATED AND SHOULD BE VERIFIED BY THE CONTRACTOR.
2. ASSUMED STANDARD RATED EQUIPMENT WILL BE USED.
3. THE CUSTOMER IS RESPONSIBLE FOR THE REMOVAL AND RESTORATION OF LANDSCAPING/TREES AND IRRIGATION PRIOR TO CONSTRUCTION.

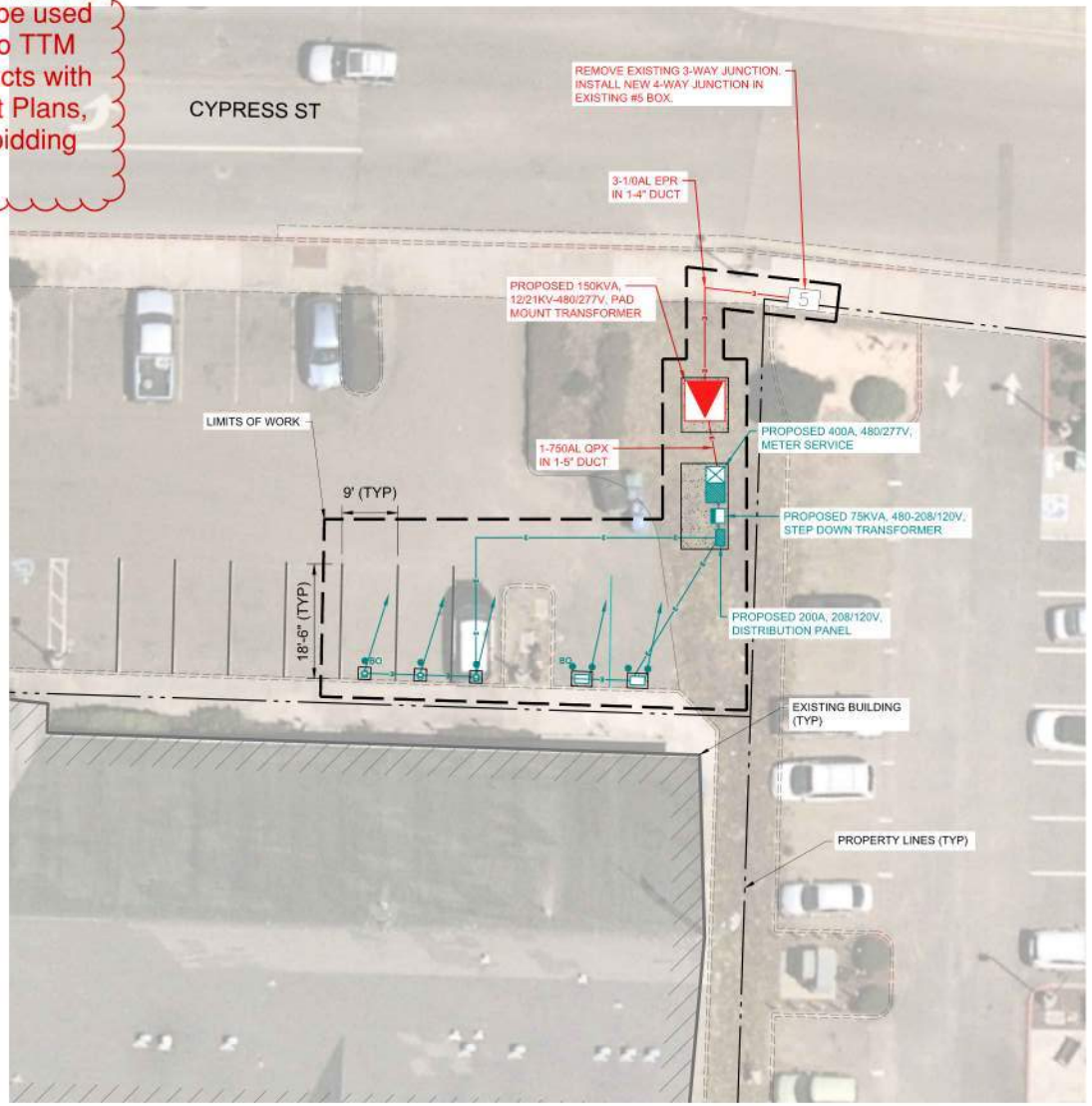
SCOPE OF WORK:
PROJECT SCOPE INCLUDES (5) EV FLEET STALLS. THE STALLS ARE LOCATED IN THE EAST SIDE OF THE PROJECT SITE. THE EV STALLS WILL BE SERVICED BY PEDESTAL MOUNT EVSE. SEE DETAILED SITE LAYOUT FOR MORE INFORMATION.

PROJECT IS LOCATED IN FLOOD ZONE X

PROPOSED SYMBOL LEGEND:

BO	BTM BOLLARD
	CHARGEPOINT [CP6000] SINGLE PORT EVSE
	CHARGEPOINT [CPE250] SINGLE PORT EVSE
	BTM DISTRIBUTION PANEL
	BTM METER SERVICE (COMBINATION)
	BTM STEP DOWN TRANSFORMER
	TTM PAD MOUNT TRANSFORMER
E	TTM UNDERGROUND CONDUIT LINE
E	BTM UNDERGROUND CONDUIT LINE
	LIMITS OF WORK
	BTM STRIPE
	CONCRETE

STALL AND STATION COUNT	
IMPACTED EXISTING	QUANTITY
STANDARD STALLS	3
TOTAL	3
PROPOSED EV CHARGING	QUANTITY
FLEET STALLS	5
TOTAL	5
EV CHARGING STATIONS	QUANTITY
LEVEL 2 (19.2 KW NOMINAL / 16.6 KW ACTUAL) SINGLE PORT - PEDESTAL MOUNT	3
LEVEL 3 (62.5 KW NOMINAL / 66.5 KW ACTUAL) SINGLE PORT - PEDESTAL MOUNT	2
TOTAL	5
ANTICIPATED LOAD	TOTAL KW
CHARGEPOINT CP6000 @ 16.6KW	49.8
CHARGEPOINT CPE250 @ 66.5KW	133
CHARGER BANK DEMAND LOAD (AMPS @ 480V)	219.9



PG&E EV FLEET CHARGING PROGRAM

FLEET004633254 CITY OF FORT BRAGG
700 S FRANKLIN ST, FORT BRAGG, CA 95437
PRELIMINARY DESIGN

CONSULTANT
Blair, Church & Flynn Consulting Engineers
461 Clovis Avenue, Suite 200
Clovis, California 93612
Tel (559) 326-1400
Fax (559) 326-1500

DR. BY DAP
CH. BY CRB
DATE 05-18-2023
SCALE: AS NOTED

SHEET NO. 1
OF 1 SHEETS