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LEVEL 2 AC ELECTRIC VEHICLE SUPPLY EQUIPMENT

PART 1 GENERAL

1.0 REFERENCES

1. The ChargePoint charging stations shall be designed, manufactured and tested in accordance with the latest applicable standards of UL and SAE:
 1. UL 1998 – Standard for Software in Programmable Components
 2. UL 2251 – Standard for Plugs, Receptacles, and Couplers for Electric Vehicles
 3. FCC Part 15 – Radio Frequency Devices
 4. OCPP 2.0.1 – Open Charge Point Protocol, version 2.0.1
 5. NFPA 70 (NEC) Article 625 – Electric Vehicle Power Transfer System
 6. Energy Star Certified
 7. FedRAMP LI-SaaS – Federal Risk and Authorization Management Program of the United States for Software as A Service
 8. AICPA SOC 2 – Standard Control at a Service Organization Relevant to Security, Availability, Processing, Integrity, Confidentiality, or Privacy
 9. ADA Standards – 2010 ADA Standards for Accessible Design; 2010
 10. NTEP – National Type Evaluation Program to certify weights and measures
 11. ISO/IEC 9001 - Quality management systems — Requirements is a document of approximately 30 pages available from the national standards organization in each country.
 12. ISO/IEC 14443 – Standard for Identification Cards, Contactless Integrated Circuit Cards, Proximity Cards
 13. ISO/IEC 15693 – Standard for Vicinity Cards
 14. ISO/IEC 15118 – Standard Defining Vehicle-to-Grid Communication, Plug-and-Charge, Secure Communication, Smart Charging and other features
 15. ISO/IEC 27001 – Standard to manage information security, cybersecurity and privacy protection
 16. NEMA 250 – Enclosures for Electrical Equipment (1000 Volts Maximum); 2020
 17. SAE J1772 – SAE Electric Vehicle and Plug-in Hybrid Electric Vehicle Conductive Charge Coupler; 2017
 18. SAE J3400 – SAE Electric Vehicle and Plug-in Hybrid Electric Vehicle Conductive Charge Coupler, 2023, also known as North American Charging Standard (NACS)
 19. UL 50E – Enclosures for Electrical Equipment, Environmental Considerations; Current Edition, Including All Revisions.
 20. UL 2202 – Standard for Electric Vehicle (EV) Charging System Equipment; Current Edition, Including All Revisions

21. UL 2231-1 – Standard for Safety for Personal Protection Systems for Electric Vehicle (EV) Supply Circuits: General Requirements; Current Edition, Including All Revisions
22. UL 2231-2 – Standard for Safety for Personal Protection Systems for Electric Vehicle (EV) Supply Circuits: Particular Requirements for Protection Devices for Use in Charging Systems; Current Edition, Including All Revisions
23. UL 2594 – Standard for Electric Vehicle Supply Equipment (EVSE); Current Edition, Including All Revisions

1.1 SUBMITTALS – FOR REVIEW/APPROVAL

1. The following information shall be submitted to the Engineer:
 1. Dimension outline / station elevation drawing
 2. Product data sheets
 3. Service level and warranty documents
 4. Cloud plan documents
 5. Certificates (UL, OCPP 2.0.1, CTEP/NTEP, etc.) where applicable

1.2 SUBMITTALS – FOR CONSTRUCTION

1. The following information, if applicable and available, shall be submitted for record purposes:
 1. Final as-built drawings and information for items listed in Section 1.2
 2. Wiring diagrams and/or installation guide
 3. Manufacturer's site design documentation

1.3 QUALIFICATIONS

1. The manufacturer of the assembly shall be the manufacturer of the major components within the assembly.
2. The EVCS shall be certified to comply with the applicable codes, industry standards, and applicable federal and state regulations.
3. For the equipment specified herein, the manufacturer shall be ISO 9001 or 9002 certified.
4. The manufacturer of this equipment shall have experience in designing and manufacturing EV charging stations for a minimum period of ten (10) years.

1.4 WARRANTY

1. Provide a minimum two-year manufacturer warranty covering repair or replacement due to defective materials or workmanship. See PART 2 for Basis of Design warranty selected.

1.5 REGULATORY REQUIREMENTS

1. The ChargePoint commercial style charging station shall be NRTL certified to the UL standard.

1.6 DELIVERY, STORAGE AND HANDLING

1. Equipment shall be handled and stored in accordance with the manufacturer's instructions.

1.7 OPERATION AND MAINTENANCE MANUALS

1. Equipment operation and maintenance manuals shall be provided with each kit shipped and shall include instruction leaflets and instruction bulletins for the complete assembly and each major component.

PART 2 PRODUCTS

2.0 MANUFACTURERS

1. Basis of Design (BoD) Manufacturer: **ChargePoint; www.chargepoint.com**
2. Other Acceptable Manufacturers
 1. ChargePoint powered by Eaton
3. The listing of specific manufacturers above does not imply acceptance of their products that do not meet the specified ratings, features and functions. Manufacturers listed above are not relieved from meeting these specifications in their entirety. Products in compliance with the specification and manufactured by others not named will be considered only if pre-approved by the Engineer a minimum of (10) days prior to bid date.

2.1 GENERAL REQUIREMENTS

1. Hardware and software shall be produced by and obtained from a single manufacturer.
2. Selected hardware and software solution must meet: ISO 27001, ISO 9001, PCI DSS, AICPA SOC2, FedRAMP LI-SaaS certifications.

2.2 ELECTRIC VEHICLE CHARGING STATIONS (EVCS)

1. Ratings
 1. cULus Listed to UL2594
 2. Energy Star Certified
 3. NTEP Certified
 4. Storage temperature: -40°F to +140°F (-40°C to +60°C)
 5. Ambient operating temperature: -40°F to +122°F (-40°C to +50°C)
 6. Input & Output voltage: 208VAC or 240VAC, 60 Hz
 7. Ground fault detection: 20mA CCID with auto retry
 8. Surge protection: 6 kV @ 3,000 A
 9. Short circuit current rating (SCCR): 5 kA, per UL 2594 standard
2. Models
 1. **ChargePoint CPF50**
 - a. Connector: J1772 OR J3400
 - b. Port configuration: dual port
 - c. Mounting: pedestal mount
 - 1) EVCS shall come with a mounting plate for pedestal mounted stations.
 - a) Product: **CPF50 Concrete Mounting Template (CPF25-CCM)**
 - d. Electrical Capabilities

- 1) Maximum output current: 50A (10.4kW at 208V or 12kW at 240V)
- 2) Selected EVCS must have optional Power Select settings. See project drawings for circuit sizes.
 - a) 50A Model: 48A (60A breaker)
- 3) Selected EVCS must have optional Power Share settings, where a single input feed circuit is split between the (2) ports on applicable dual-port models. See project drawings for circuit configurations.
- 4) EVCS shall have integrated metering capabilities.
 - a) Voltage
 - b) Current
 - c) Power (kW) - Accuracy: +/- 2% (certified per NTEP)
 - d) Energy (kWh) - Accuracy: +/-2% (certified per NTEP)
- e. Charger cord length: 18 feet
 - 1) Charger cords shall have the ability to be swapped in the field with cut-resistant cords, constructed using stainless steel and Kevlar® reinforcement.
 - 2) EVCS shall have the option for integral cable management.
- f. Enclosure shall be NEMA 250, Type 3R.
- g. EVCS shall have an integral, real-time status indicator light.
- h. EVCS shall support authentication and payment:
 - 1) RFID: ISO 15693, ISO 14443
 - 2) Digital RFID card in Apple or Google wallet
 - 3) Remote start sessions via mobile app and in-vehicle (if supported by vehicle).
- i. EVCS shall seamlessly integrate with the Charge Point Operator (CPO) software.
 - 1) Product: **ChargePoint Platform**
 - a) An annual subscription license is required per charging port, available in one year increments up to five years.
 - i. Model: CPCLD-COMMUNITY-1 (1 year)
 - b) Refer to section 2.3 SOFTWARE for more information about the ChargePoint Platform.
 - 2) EVCS shall support the Open Charge Point Protocol (OCPP) version 2.0.1 for monitoring and control into Charge Point Operator (CPO) software that supports OCPP communications.
- j. EVCS shall support over-the-air (OTA) software updates.
- k. EVCS shall have a modular architecture, allowing for field-replaceable parts.
- l. EVCS shall have the ability to be branded with customizable vinyl inserts, where applicable.

2.3 SOFTWARE

1. Charge Point Operator (CPO) Software

1. Product: **ChargePoint Platform**
2. The software shall support license subscriptions and renewals in one year increments up to five years in length.
3. The software platform shall:
 - a. Enable 24/7 access to tools for remote monitoring and real-time status updates of EVCS across multiple installation sites.
 - b. Provide a user-friendly dashboard to create aggregated reporting and analytics.
 - c. Grant the site host (owner) administrative controls, including user management tools and the ability to set station access and pricing policies. Pricing policies shall:
 - 1) Be fully customizable to support the owner's specific needs.
 - 2) Support free charging, tiered pricing, and time of use pricing.
 - 3) Support time-based (per hour charging or per hour plugged in) or energy-based (per kilowatt-hour energy delivered).
 - 4) Support different pricing structures in time increments designated by the site host (owner).
 - 5) Provide a discount structure to allow the site host greater control and flexibility based on their customer profiles.
 - d. Allow for unlimited number of driver groups for custom pricing, access and other policies based on the driver group
 - e. Offer, as an option, EV charging station power management capabilities. The power management function shall:
 - 1) Allow balancing of EV charging station energy so that total output stays within an infrastructure's capacity which complies with NFPA 70 NEC 625.42.
 - 2) Support the following strategies:
 - a) Circuit Level – Facilitates oversubscription of a single branch circuit across multiple ports and/or stations
 - b) Panel Level – Facilitates oversubscription of a breaker panel allowing for any number of ports and stations to be installed onto that panel
 - c) Site Level – Facilitates oversubscription of the combined charging ports and stations in aggregate to a site, or transformer
 - d) Hierarchical Sharing allows for circuit, panel and site level strategies to be used simultaneously
 - f. Integrate with networked EVCS through annual subscriptions providing the following features at the charging station:
 - 1) Provide optional access to the station's proprietary API.
 - 2) Enable 24/7 support for both drivers and station owners.
 - 3) Provide Waitlist functionality for virtual queueing of drivers.
2. Driver Mobile Application
 1. Selected hardware and software solution must provide a mobile driver application that is free to download and use.

2. Product: **ChargePoint mobile application**
3. Driver mobile application shall allow drivers to:
 - a. Find available charging stations
 - b. Pay for and receive notifications about their charging sessions.
3. Installer Mobile Application
 1. Manufacturer of EVCS hardware shall provide a mobile application for station installers.
 2. Product: **ChargePoint Installer mobile application**
 3. Installer application shall:
 - a. Provide access to EVCS installation documentation
 - b. Provide guided, step-by-step instructions during on-site installation of charging equipment
 - c. Allow installer to view and clear station faults

2.4 COMMUNICATIONS

1. EVCS and the ChargePoint Platform communicate together through ChargePoint Cloud Services via an active internet connection.
2. Each EVCS shall have an in-built cellular modem (4G LTE); an external gateway shall not be required for communication with ChargePoint Cloud Services.
 1. Contractor to confirm with Engineer that cellular signal strength is strong at EVCS location(s) and meets connectivity guideline specs outlined in Manufacturer's Site Design Guide document or equivalent.
 2. EVCS manufacturer shall provide alternate options for communication with ChargePoint Cloud Services, such as Wifi.

2.5 WARRANTY

1. Electric Vehicle Supply Equipment hardware and software must provide 24/7/365 driver and station owner support. Support must be provided as a single point of contact for both software-related issues and hardware-related issues.
2. Installation of EVCS must be performed by an installer that is certified and/or authorized by EVCS manufacturer.
3. Station shall be purchased with Parts and Labor warranty program.
 1. Product: **ChargePoint Assure**
 - a. One annual license required per charging station; CPF-ASSURE1 (1 year)
 2. Parts and labor warranty program shall include:
 - a. Parts cost coverage for issues covered by warranty
 - b. Delivery of parts to certified service partner
 - c. Certified technician dispatched for on-site repair once parts are received
 - d. Labor cost coverage, including labor for issues not covered by warranty such as vandalism and accidents

- e. Proactive monitoring and diagnostics
 - f. Unlimited remote configuration changes and optimization support
3. The parts and labor warranty program shall support subscriptions and renewals in one year increments up to five years in length.

PART 3 EXECUTION

3.0 INSTALLATION

1. The equipment shall be installed in accordance with manufacturer's recommendations.
2. The equipment shall conform to all NEC and local codes.
3. The equipment shall be activated by a member of the ChargePoint Activations team.
 1. Product: **CPF50-ACTIVATION**; one activation service required per charging station.
 - a. Station Installation/Activation cannot be completed without qualified credentials from the installer.
 - 1) Contractor must be a ChargePoint certified installer and must be qualified to install the ChargePoint station model specified through ChargePoint University (<https://www.chargepoint.com/partners/training-certification>).
 - b. Contractor must provide the manufacturer with contact information for the individual responsible for management of the EVCS (facility manager or other). The station Activation process and the appropriate onboarding and software setup cannot be completed without an appropriate contact being identified.

3.1 EXAMINATION

1. Verify that field measurements are as indicated
2. Verify that ratings of the electric vehicle supply equipment (EVSE) are consistent with indicated requirements
3. Confirm network connectivity meets manufacturer's minimum requirements
4. Verify proper mounting and installation of EVSE per manufacturer's installation guide
5. Verify that EVSE and accessories are free from obstructions and meet manufacturer's minimum clearance requirements
6. Verify that mounting surfaces are ready to receive EVSE and conform to manufacturer's specifications or have been verified by an authorized consultant.
7. Verify that branch circuit wiring installation is completed, tested, and ready for connection to the charging units.
8. Verify that conditions are satisfactory for installation prior to starting work

3.2 COMMISSIONING

1. Prepare and start system in accordance with manufacturer's instructions.

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2. Program system parameters according to requirements of owner.
3. Test system for proper operation.
4. Correct defective work, adjust for proper operation and retest until entire system complies with Contract Documents.
5. Submit detailed reports indicating inspection and testing results and corrective actions taken.