

**PEP Stations PS2000
Electric Vehicle Charging Station**

Divisions, 26, 27, 29

ELECTRIC VEHICLE CHARGING STATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other applicable specification sections in the Project Manual apply to the work specified in this Section.

1.2 SUMMARY

- A. **Scope:** Provide design and engineering, labor, material, equipment, related services, and supervision required, including, but not limited to erection, and installation for PEP Stations as required for the complete performance of the work and as shown on the Drawings and as herein specified.

1.3 QUALITY ASSURANCE

- A. **General:** The publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only. The edition/revision of the referenced publications shall be the latest date as of the date of the Contract Documents, unless otherwise specified.
- B. **International Code Council (ICC):**
 - 1. ICC IBC, "International Building Code."
- C. **National Fire Protection Association (NFPA):**
 - 1. NFPA 70, "National Electrical Code" (copyrighted by NFPA, ANSI approved) - hereinafter referred to as NEC.
- D. **SAE International (SAE):**
 - 1. SAE J1772, "Standard for Electric Vehicle Conductive Charge Coupler."
- E. **Underwriters Laboratories, Inc. (UL):**
 - 1. UL 2231-1, "Standard for Personnel Protection Systems for Electric Vehicle (EV) Supply Circuits: General Requirements."
 - 2. UL 2231-2, "Standard for Personnel Protection Systems for Electric Vehicle (EV) Supply Circuits: Particular Requirements for Protection Devices for Use in Charging Systems."
 - 3. UL 2594, "Standard for Electric Vehicle Supply Equipment."

1.4 SUBMITTALS

- A. **General:** See Section 01 33 00 - SUBMITTAL PROCEDURES
- B. **Product Data:** Submit product data showing material proposed. Submit sufficient information to determine compliance with the Drawings and Specifications, including, but not limited to, manufacturer's product data and installation instructions for each component and system.
- C. **Shop Drawings:** Include information not fully detailed in manufacturer's standard product data, including, but not limited to, list of components and equipment to be supplied, including, but not limited to, proposed locations, clearances, and power requirements.
 - 1. **Panel Drawings:** Submit dimensional drawings.
 - 2. **One-Line Diagrams:** Submit one-line diagrams of the system configuration proposed if it differs from that illustrated in the riser diagram included in these Construction Documents. Submit one-line drawings indicating location and addresses of all hardware, including, but not limited to, panelboard or load center, circuit breaker, and charging stations.
- D. **Wiring Diagrams:** Submit wiring diagrams detailing power, signal, and control systems, clearly differentiating between manufacturer-installed wiring and field-installed wiring, and between components provided by the manufacturer and those provided by others.
 - 1. Submit typical connection diagrams for all components including, but not limited to, panelboards, communications devices, and personal computers.
- E. **Qualification Data:** Submit qualification data for firms and persons specified in Quality Assurance Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names of architects and owners, and other information specified.
- F. **Contract Closeout Submittals:**
 - 1. **Operation and Maintenance Data:** Submit operation and maintenance data for electric vehicle charging stations to include in operation and maintenance manuals specified in Division 01 - GENERAL REQUIREMENTS
 - 2. **Warranty Data:** Submit manufacturer's standard warranty documents.

1.5 QUALITY ASSURANCE

- A. **Qualifications:**
 - 1. **Manufacturer Qualifications:** Manufacturer shall be a firm engaged in the manufacture of electric vehicle charging stations of types and sizes required.
 - a. The manufacturer shall be ISO 9001 certified and shall be designed to internationally accepted standards.
 - b. Fax/telephone/email system support shall be available from the manufacturer during normal business hours.

2. **Installer Qualifications:** Installer shall be a licensed electrical firm that shall have successful installation experience with projects utilizing electric vehicle charging stations or similar equipment that is required for this project.
- B. **Regulatory Requirements:** Comply with applicable requirements of the laws, codes, ordinances, and regulations of Federal, State, and local authorities having jurisdiction. Obtain necessary approvals from such authorities.
- C. **Standards:** Comply with applicable requirements of the following standards:
 1. **NEMA Compliance:** Applicable portions of NEMA standards pertaining to types of electrical equipment and enclosures.
 2. **NEC Compliance:** Applicable portions of the NEC, including, but not limited to, Article 625.
 3. **UL Compliance:** Applicable UL standards for electric vehicle supply equipment, panelboards, circuit breakers, and energy management equipment.
 4. **FCC Emissions:** Comply with FCC emissions standards.
- D. **Electrical Components, Devices, and Accessories:** Electrical components, devices, and accessories shall be listed and labeled as defined in NEC, Article 100, by an inspecting and testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- E. **Coordination:** Coordinate the work in this Section with all of the trades covered in other sections of the Specification to provide a complete and operable system. Furnish inserts and anchors that must be built into other work. Work closely with installers of finish materials so that units are properly aligned with adjacent materials.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the Project site in supplier's or manufacturer's original wrappings and containers, labeled with supplier's or manufacturer's name, material or product brand name, and lot number, if any.
- B. Store materials in their original, undamaged packages and containers, inside a well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity. Ambient temperature range between -22°F to 131°F (-30°C to 55°C). Ambient humidity range 0%-95%, non-condensing.
- C. Store on a pallet or shelf elevated from the ground.

1.7 WARRANTY

A. **General:** There is a one year warranty on parts and service. Annual extended warranties are available for and cover all repair costs except for physical damage, vandalism or theft. The standard warranty terms are as follows:

a. Products and accessories are warranted to the original Customer to be free of defects in material and workmanship for a period of twelve (12) months from Installation Date. PEP Stations' sole obligation under this warranty is to repair or replace any defective part or component. Notwithstanding anything to the contrary herein, this warranty does not cover replacement of expendable items, such as fuses, switches and connectors shipped with or integrated into the Products.

b. This is the sole and exclusive warranty given by PEP Stations with respect to the products, and is in lieu of and excludes all other warranties, express or implied, arising by operation of law or otherwise, including without limitation, merchantability or fitness for a particular purpose whether or not the purpose or use has been disclosed to pep stations in specifications, drawings or otherwise, and whether or not PEP Stations' products are specifically designed and/or manufactured for customer's use or purpose.

PEP Stations' total warranty expense with respect to any Product and/or installation is limited to a maximum of the original purchase price of that Product. PEP Stations will not be liable for any costs of removal, disposal, installation, transportation or any other charges which may arise in connection with a warranty claim. This warranty will be voided by damage or wear to Products caused by abnormal operating conditions (including exposure to acid, chemical fumes, metallic dust or extreme temperatures), accident, abuse, damage, misuse, vandalism, unauthorized alteration or service to a Product by a person not authorized by PEP Stations, or if the Product was not operated or maintained in strict compliance with PEP Stations' operating instructions. Any evidence of an attempt to disassemble or reverse engineer the Products will void the warranty.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. **Basis of Design:** Product specified is "Electric Vehicle (EV) Charging Station" as manufactured by PEP Stations, LLC. Items specified are to establish a standard of quality for design, function, materials, and appearance. Equivalent products by other manufacturers are acceptable. The Architect/Engineer will be the sole judge of the basis of what is equivalent.

1. **Substitutions:** If a system from another manufacturer is submitted for review and acceptance, the following submittals shall be required:
 - a. Short circuit study demonstrating NEC 110-10 compliance for remotely operated switching devices.
 - b. Elevation drawing showing placement of equipment in equipment rooms.

2.2 CIRCUIT BREAKERS

- A. **Branch Circuit Breakers:** Branch circuit breakers shall provide overload and short circuit protection suitable for the location in the electrical system, as defined in the panelboard and load center schedules. Circuit breaker devices shall have, but shall not be limited to, the following:
1. Integral branch circuit overcurrent protection as required by the NEC. Circuit breakers shall have an UL-listed interrupting rating sufficient for the application or UL-listed series connected ratings for the maximum available fault current at that point in the system.
 2. UL-listed SWD ratings for 40 ampere two-pole branch devices, HID ratings, and HACR ratings.
 3. There shall be built-in auto ground fault reset functionality in the charging station that shall reset automatically after ground fault waits for 15 minutes and then shall attempt to supply power. This trial shall happen four times and at the end of fourth attempt the auto reset function shall quit. This functionality shall be nullified if a ground fault breaker is installed ahead of the charging station (so, always use a non-GFCI breaker).
 4. Provide visible flag that shall clearly indicate the status of the circuit breaker contacts with the panel trim installed. Flag shall indicate, but shall not be limited to, on, off, and tripped circuit breaker states. The visible flag shall be mechanical in nature, directly tied to the circuit breaker mechanism, and shall be provided in addition to any status indicator supplied by the system electronics.
 5. Provide switching full load endurance rating of 200,000 open/close/open remote operations.

2.3 MASTER PANELBOARD

- A. Master panelboards shall provide power and control for operating and monitoring operated branch circuit breakers located in both master and slave panelboards.
- B. Master panelboards shall contain a nameplate label, located on the panel trim, indicating its designation and the designations of associated slave panels.

2.4 SLAVE PANELBOARDS

- A. Slave panelboards shall contain a nameplate label, located on the panel trim, indicating its designation and the designations and address of its associated master panel.

2.5 ELECTRIC VEHICLE SUPPLY EQUIPMENT OUTDOOR (EVSE)

- A. **Power Specifications (Each charging unit):**
1. **Input Power:** (2) circuits of 208 volts AC to 240 volts AC/30 amperes, single-phase, 60 hertz.
 2. **Input Power Connection:** Line 1, line 2, and ground.
 3. **Feeder Circuit Breaker:** (2) Two-pole, 40 amperes, non-GFCI type.
 4. **Output Power:** (2) circuits of 208 volts AC to 240 volts AC, 30 amperes.

CSI Specifications



B. Physical Specifications:

1. **Enclosure Type:** NEMA 3R per NEMA 250-1997, stainless steel construction.
2. **Enclosure Dimensions:** (W)9"x(D)9"x(H)24½"
3. **Enclosure Mounting:** Wall-mounted or pedestal mounted.
4. **Cable Type:** SAE J1772.
5. **Cable Length:** 18 feet (5486 mm).
6. **Cable Management:** Non-retractable coiled cord, integral with the enclosure.

C. User Interface:

1. 8" diagonal sunlight readable touch screen interface.
2. Step by step on-screen instructions
3. Charge time remaining indicator
4. Fault indicator

D. Authentication:

1. Magnetic stripe card reader configurable for:
 - a. Access cards
 - b. Credit cards
 - c. Unrestricted charging

E. Network:

1. 10/100/1000 Base-T Ethernet
2. The Contractor shall coordinate work with the network administrator to assure that proper connection points are available with an RJ48 connector at the station base. The contractor shall also secure static IP address for each individual power monitoring web server.
3. Network shall support Ethernet communications.

F. Protection:

1. Ground fault protection integral, CCID 20 mA, 15 minute delay, 4 tries
2. Ground fault protection system test automatic at the beginning of each charge cycle.

G. Environmental:

1. **Operating Temperature:** -22°F (-30 °C) to 131°F (55 °C).
2. **Terminal Block Temperature Rating:** 212°F (100 °C)
3. **Surge:** 6 kV @ 3,000A.

H. Standards Compliance:

1. NEC, Article 625.
2. SAE J1772.
3. UL 2231-1, UL 2231-2 and UL 2594.

For more information contact Hubbell Wiring Device Kellems
Toll free (800) 288-6000 or www.hubbell-wiring.com

CSI Specifications



2.6 SOURCE QUALITY CONTROL

- A. **Component Testing:** Electronic component board assemblies are factory tested and burned in prior to installation.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. **Verification of Conditions:** Examine areas and conditions under which the work is to be installed, and notify the Contractor in writing, with a copy to the owner and the Architect/Engineer, of any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.
 1. Beginning of the work shall indicate acceptance of the areas and conditions as satisfactory by the Installer.

3.2 INSTALLATION

- A. Preparation and installation shall be in accordance with reviewed product data, final shop drawings, manufacturer's written instructions and recommendations, and as indicated on the Drawings. System installation shall be coordinated with related and adjacent work.

3.3 DEMONSTRATION

- A. As required by the manufacturer for installations, Diebold Incorporated will provide the services of a factory-authorized service representative of the manufacturer to provide start-up service and to demonstrate and train the owner's personnel.
 1. Test and adjust controls and safeties. Replace damaged or malfunctioning controls and equipment.
 2. Demonstrate functionality to the owner's maintenance personnel on procedures and schedules related to start-up and shutdown, troubleshooting, servicing, and preventive maintenance.
 3. Review data in operation and maintenance manuals with the owner's personnel.
 4. Commission and test the PEP Station and confirm Internet connectivity.

END OF SECTION