SECTION 26 33 43
ELECTRIC VEHICLE SUPPLY EQUIPMENT – LEVEL 3 60kW DC FAST CHARGER

PART 1 - GENERAL

1.1 SCOPE

A. The requirements of the Contract, Division 26, applies to work in this section for a 60kW DC Fast Charger electric vehicle solution, as Specified and as shown on the contract drawings which shall be furnished and installed by the Contractor.

1.2 RELATED DOCUMENTS

A. ***[Related Sections include the following:***
   1. ***[Section 26 28 16 – Substations]***
   2. ***[Section 26 13 13 – Medium Voltage Switchgear]***
   3. ***[Section 26 23 00 – Low Voltage Switchgear]***
   4. ***[Section 26 24 13 – Switchboards]]***

1.3 SUBMITTALS

A. For review:
   1. The following information shall be submitted to the Engineer:
      a. Product data sheets
      b. Installation manuals

B. For construction:
   1. The following information shall be submitted for record purposes:
      a. Final as-built overview drawings
      b. Wiring diagrams
      c. General layout floor plans

C. Installation information including equipment anchorage provisions. The manufacturer shall provide final, as- built drawings, recording the general location of the supplied equipment, Installation layout, Operation and Maintenance manuals shall be supplied.

1.4 RELATED STANDARDS

A. The Level 3 DC Fast Charger electric vehicle supply equipment shall be designed, manufactured and tested in accordance with the latest version of the following standards (unless otherwise noted):
   1. CCS, Type-1, Electric Vehicle Conductive Charge Coupler
   2. NEMA Type 3R
   3. FCC Part 15.105
   4. Internal security: SSH with EC keys & Unique password
   5. Charging standard: EN61851-1
   6. Charging standard: EN61851-23
   7. Communications: CCS using DIN 70121
   8. Communications: ISO15118-1/2/3 ed1
   9. EV General Requirements: IEC 61851-1
   10. DC Electric Charging station: IEC 61851-23
   11. Vehicle connectors and inlets: 47 CFR FCC Part 15, Subpart B
   12. ANSI C62.4: 2014
   13. ICES-003, Issue 7
   14. ICES-GEN, Issue 1
   15. Charging mode: Mode 4 (DCFC)
   16. Charging Connector: CCS type 1
   17. UL 2202 / UL 2231
   18. CSA C22.2 No. 346
   19. Energy Star

20. Open Charge Point Protocol (OCPP) v1.6J, v2.01

B. Products shall be listed or approved by Underwriters Laboratories, Inc.

1.5 QUALITY ASSURANCE

A. The manufacturer shall have been manufacturing 60kW DC Fast chargers or similar transportation electrification equipment for a minimum of three years.

B. The DC Fast Charger supplier shall manufacture “Make Ready” electrical infrastructure equipment to power and protect the charging equipment, providing an integrated EVSE solution.

1.6 DELIVERY, STORAGE AND HANDLING

A. DC Fast charger provider shall build the Level 3 60kW power chargers in the United States to conform to the Buy America Act requirement for FTA and FHWA.

B. The DC Fast charger manufacture shall stock the units and power components in the United States to facilitate fast and easy deliveries to the job site.

C. If DC Fast charger is being stored prior to installation, the unit shall be stored to maintain the equipment in a clean and dry condition as required by the manufacturer’s instructions, in accordance with manufacturer’s instructions (1) copy of these instructions shall be included with the equipment at time of shipment.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. ***[The 60kW DC Fast Charger Electric Vehicle Supply Equipment shall be provided by Siemens eMobility or pre-approved equal. Approved manufacturers are as follows:***
1. ***SIEMENS eMobility – 60kW DC Fast Charger Product Line***
2. ***.]***

B. Manufacturers listed above shall meet these specifications in their entirety. Products in compliance with the specification and manufactured by others not named shall be considered only if pre-approved by the Engineer ten (10) days prior to bid date.

C. The 60kW charger shall be built / assembled in the U.S. to meet Buy America compliant regulations.

2.2 PERFORMANCE REQUIREMENTS

A. 60kW power with 417.6 to 508V ac range, 3 phase

B. Input Power needed:
a. 3 phase + G, 480V AC Supply (+6/-13%), 4 wires, 65kVA

C. Frequency: 47-63Hz

D. Input Current Limit: 90A common

E. Output Current: 150A Max

F. Output voltage: 200V – 1000V

G. Noise Level: 0 to 60dB with fan running

H. Temperature: -22deg F to 113deg F (-30deg C to 45deg C)

I. Humidity
a. 95% relative humidity, non-condensing

J. Corrosion Resistance
a. The enclosure coating or design shall have a corrosion resistance

K. Single Charging Port:

a. The unit shall allow up to one EV vehicle dispensers supporting a single vehicle

L. Integrated Power control / power module unit shall be used to provide one free-standing unit. No dual cabinet designs will be provided.

2.3 CONSTRUCTION

A. Provide a national recognized 60kW, free-standing, single unit design, DC Fast Charger; quantities and locations as shown on the drawings.

B. An Integrated DC Power and Control cabinet design shall be provided. No two-piece designs shall be permitted increasing the installation and wiring costs.

C. The DC Fast Charger shall come standard supporting one port.

D. The dispenser types shall include at least CCS type 1.

E. Enclosure shall be rated for outdoor, NEMA 3R to withstand severe weather requirements.

F. The integrated fast charger cabinet size shall be:
a. 26.4” (W) x 35”(H) x 17” (D) / (671mm (W) x 889 mm (H) x 432mm (D)

G. Cabinet installed weight: 194 pounds (88 kg)

H. A rectifier bridge shall be incorporated into the cabinet to convert AC to DC current.

I. A Cooling fan shall be provided to ensure proper air quality.

J. Charging cable shall be at least 16.4ft long with integrated provision for plugging in cable when not in use.

K. Support for 4G modem cellular network.

L. Power shall be provided either through a bottom (pedestal) or side (wallmount) conduit open to ensure ease of installation.

M. Integrated forklift brackets shall be provided into the charger for ease of mounting.

2.4 INTERFACE PANEL

Integrated interface panel shall be provided to facilitate end-user ease of use. This interface will supply at least these icons and readings:

A. Plug in Cable to Start
B. Authorization
C. Charging
D. Unavailable
E. Session Finished
F. LED charging indicator. Glows SOC status when the charging session is in progress.
G. LED informational display showing:
a. Minutes
b. Battery percentage during charge
c. Kilowatts delivered
d. Voltage
e. Amperage

2.5 COMMUNICATIONS

A. An integrated 4G Cellular communications model shall be provided.

B. Communications shall be fully compatible with v1.6J (JSON) open protocol for backend systems.

C. Standard data communicated via OCPP will include:
   a. Session ID
   b. Vendor ID
   c. EVSEID
   d. Port ID
   e. Number of ports on the EVSE
   f. Charge Start date and time
   g. Charge End date and time
   h. Charge Duration – time power being provided to EV
   i. Session (connection) start date and time – when port is connected to EV
   j. Session (connection) send date and time – when port is disconnected to EV
   k. Session Connection Time
   l. Charge kWh usage - per session
   m. Charge Max Demand kW – per session
   n. Session Sale Amount – Fees charged to end user
   o. Vehicle Make - optional
   p. Vehicle Model – optional
   q. User ID – Anonymous user ID – optional

D. No access of live parts shall be required to update the communication elements of the charging station.

2.6 CUSTOMER FACING DESIGN

A. A large HMI display integrated into the DC Fast Charger unit.

2.7 DATA COLLECTING AND MONITORING

A. The manufacture shall offer a “Cloud” based solution to provide a customer with hosted data and monitoring from a web-based device.

B. Remote maintenance shall be provided by a web server (IP) connection.

C. Visibility to all aspects of the charger will be provided for troubleshooting, maintenance, updating charging software and support.

2.8 MOUNTING

A. Enclosure shall come with mounting plate, pedestal, or mobile version detailed descriptions for installing the cabinet.

B. Complete wiring diagrams shall be provided to show wire type, size and terminations points.

C. Locations for entry / exit of wiring shall be shown.

D. Manufacture shall provide minimum space clearances for the cabinet to ensure accurate operations. Installer will need to reference local codes to ensure material in installed per regulations.

E. Power shall be provided either through a bottom or side conduit open to ensure ease of installation.

F. Integrated lifting straps shall be provided into the charger for ease of mounting.

PART 3 - EXECUTION

3.1 INSTALLATION

A. All installation work shall be performed by a qualified person who is familiar with the installation, construction and operation of the equipment and the hazards involved.

B. Install per manufacturer's recommendations and contract documents.

C. Install units' plumb, level and rigid without distortion.

D. Installation of the 60kW Fast Charger shall follow the procedure in the published literature.

E. The Contractor shall install all equipment per the manufacturer's recommendations and contract drawings.

F. All necessary hardware to secure the assembly in place shall be provided by the Contractor.

3.2 ADJUSTMENTS AND CLEANING

A. Remove debris from the Electric Vehicle Supply Equipment and wipe dust and dirt from all components.

B. Repaint marred and scratched surfaces with touch up paint to match original finish.

3.3 TESTING

A. Check tightness of all accessible mechanical and electrical connections to assure they are torqued to the minimum acceptable manufacture's recommendations.

B. Check all installed charging systems for proper grounding, fastening and alignment.

C. Each EVSE shall undergo factory testing of all operational and protective features prior to shipment. No Onsight testing shall be required.

3.4 WARRANTY

A. Equipment manufacturer warrants that all goods supplied are free of non-conformities in workmanship and materials for one (1) year from date of shipment.

B. Changes or modifications to this product not authorized by the manufacturer shall void the warranty. The contractor shall contact the manufacturer in order to avoid non-compliant modifications.

3.5 OPERATIONS AND MAINTENANCE MANUALS

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

3.6 SERVICE

A. DC Fast Charger supplier shall offer a managed service offering if required by end user.

B. 9-5 M-F, Level 1 technical support line via a 1-800 number shall be provided at no cost.

C. On-site startup assistance by the supplier shall be offered as part of the package.

END OF SECTION