**SECTION 26XXYY - ELECTRIC VEHICLE SUPPLY EQUIPMENT – LEVEL 3 350kW DC FAST CHARGER**

**PART 1 - GENERAL**

* 1. **SCOPE**

1. The requirements of the Contract, Division 26, applies to work in this section for a 350kW 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. **SUBMITTALS**

**For review:**

1.2.1. The following information shall be submitted to the Engineer:

1. Product data sheets
2. Installation manuals

**For construction:**

1.2.2. The following information shall be submitted for record purposes:

1. Final as-built overview drawings
2. Wiring diagrams
3. General layout floor plans
4. Installation information including equipment anchorage provisions. The installer/site designer/contractor shall provide final, as- built drawings, recording the general location of the supplied equipment, Installation layout. Operation and Maintenance manuals shall be supplied by the manufacturer.
   1. **RELATED STANDARDS**
5. 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):
6. CHAdeMO 1.2, Electric Vehicle Conductive Charge Coupler
7. CCS, Type 1, Electric Vehicle Conductive Charge Coupler
8. OCPP 1.6J agnostic to any OCPP 1.6J platform, OCPP 2.0 ready for future upgrade via software update over the air without any hardware modifications
9. UL 2202 Standard for Electric Vehicle (EV) Charging System Equipment
10. NEC Article 625 Electric Vehicle Charging Systems
11. FCC part 15 Class A (Charging post – Class B). If the power cabinet must comply with Class B (residential), installation of an external Schaffner type FN 3359HV-400-99 EMC filter is needed.
12. UL 2231 - Personal Protection Systems for Electric Vehicle Supply Circuits
13. UL 2263 - Liquid cooled cables
14. CSA Std. C22.2 No. 107.1, Power Conversion equipment.
15. NEMA Type 3R, indoor and outdoor rated
16. ADA compliance ready
17. Products shall be listed or approved by a Nationally Recognized Test Laboratory – NRTL
18. Plug and Charge/ISO15118-2 **[enabled or have plans to implement in the near future, eg.: next 12 months]**
19. CTEP/NTEP/HB 44, **[or plans to be compliant in the next 12 months]**
    1. **QUALITY ASSURANCE**
20. The manufacturer shall have been manufacturing 350kW DC Fast chargers or similar transportation electrification equipment for a minimum of **[three]** years.
21. The manufacturer shall have its operations certified under ISO 9001.
    1. **DELIVERY, STORAGE AND HANDLING**

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, **[either a hardcopy or electronic]**.

**PART 2 – PRODUCTS**

**2.1. MANUFACTURERS**

1. The 350 kW DC Fast Charger Electric Vehicle Supply Equipment shall be provided by ABB E- mobility Inc.
2. 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 **[X]** days prior to bid date

**2.2. PERFORMANCE REQUIREMENTS**

Chargers up-time shall be greater than **[94 %]**

1. Charging Post:
   1. DC output current: 500Amps CCS with two power cabinets
   2. DC output voltage range: 150Vdc to 920Vdc
   3. Efficiency: 94% or higher
   4. User Interface:
      1. 15” high brightness full color touchscreen
      2. HMI Customization: Ability to fully customize the screen remotely for branding purposes, with screen saver capabilities (ads)
   5. Radio Frequency Identification (RFID):
      1. ISO/IEC 14443A/B
      2. ISO/IEC 15393,
      3. FeliCa1
      4. NFC
      5. Mifare
      6. Calypso
   6. Network Connections:
      1. 4G to allow remote updates and troubleshooting
      2. Ethernet
      3. OCPP 1.6J
      4. OCPP 2.0.1: shall have plans or if available, provide the ability to remotely upgrade from OCPP 1.6J to OCPP 2.0.1 over the air without any hardware modifications
   7. Connector Types:
      1. Combined Charging System Combo Type 1 (CSS1) with 920Vdc rating.
      2. CHAdeMO with 500Vdc rating.
   8. Charging Cables:
      1. Charging cables to be a minimum 5.3meters in length and equipped with a retraction system.
      2. Charging cables to be liquid cooled to accommodate 500A continuous charging.
   9. Charing post to be equipped with LED strip (with customizable colors) lighting along perimeter to provide visibility of unit at night.
   10. Noise level of the operating charging point cannot be higher than 60dB at 500A continuous charging (up to 35°C) at 1 m
   11. Charger has to deliver continuous 500A charging with every new charging session
   12. Derating at - +35°C to +55°C to 350 A @ ≤68 dB(A) at 1 m
   13. Altitude: 2000m/6560ft
   14. EMC rating for the charge post FCC part 15 Class B (residential)
   15. The weight of the charge post does not exceed 250kg
   16. Pre-installed payment terminal
   17. Integrated chiller within the charge post
   18. Customer-specific branding options
2. Power Cabinets supplying Charging Posts:
   1. **Two Power Cabinets:** Two Power Cabinets must be provided and communicate with one another to provide the maximum specified power output power to the vehicle being charged. The Power Cabinets must be configurable such that if one Power Cabinet fails the other Power Cabinet can still charge the vehicle, but at half the power output capacity. The cabinets can be installed up to 60m from charging points
   2. Input Power per power cabinet: **[600/377 Vac (+/-10%), 3-Phase, 185A, 192kVA nominal, 60 Hz]** / **[480/277 Vac (+/- 10%), 3-Phase, 231A at 480 VAC +/- 10%, 192kVA nominal, 60 Hz]**
   3. Input Power Connection: Phase A, Phase B, Phase C, and ground.
   4. Output Power: Two 175kW units when operating in an ambient temperature of 40⁰C or less environment.
   5. Output power derating: 5% or less for each 5⁰C increase in ambient temperature above 40⁰C.
   6. Output Current of Power cabinets:

* Two power cabinets with a combined current output of 500Amps. Each power cabinet should have an output current capacity of 375Amps when operating independently from each other.
  1. Power sharing: ability to charge two vehicles simultaneously in Dynamic mode and one vehicle at full 350kW/500A in Static mode
  2. Short Circuit Rating - 65kA at 600VAC
  3. Performance:
* Greater than 94% efficiency at full load.
* At least 0.97 power factor.
* Less than 8% Total harmonic Distortion (THDi)

9. EMC Emissions: Class a (Class B (residential) with dedicated external EMC filter)

10. Noise level: Less than 65dBA at 1meters.

**PART 3 - EXECUTION**

* 1. **INSTALLATION**
  2. 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.
  3. Install per manufacturer’s recommendations and contract documents.
  4. Install units’ plumb, level and rigid without distortion.
  5. Installation of the 350kW Fast Charger shall follow the procedure in the published literature.
  6. The Contractor shall install all equipment per the manufacturer’s recommendations and contract drawings.
  7. All necessary hardware to secure the assembly in place shall be provided by the Contractor.

**3.2. WARRANTY**

1. Equipment manufacturer warrants that all goods supplied are free of non-conformities in workmanship and materials for two (2) years from date of installation or 30 months from the date of delivery. Equipment manufacturer shall provide extended warranty and Service Level Agreement options.
2. 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.

**3.3 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.

**3.4 SERVICE**

1. DC Fast Charger supplier shall offer a managed service offering or ticketing system if required by end user.
2. 24/7 Level 1 technical support line via a 1-800 number shall be provided at no cost.
3. On-site or remote startup assistance by the supplier shall be offered as part of the package.