1. General

1.1 REFERENCES

.1 Society of Automotive Engineers:
  .1 SAE J1722, Electric Vehicle conductive Charge Coupler.
  Underwriter Laboratories:
  .2 UL® 2331, Personnel Protection Systems for Electric Vehicle Charging circuit.
  .3 UL 2594 Electric Vehicle Supply Equipment.
  .4 UL 991, Standard for Safety Tests for Safety-Related Controls Employing Solid-State Devices.

.2 Canadian Electrical Code section 86 – Electric Vehicle Charging Systems.
  .1 NFPA® 101-2006, Life Safety Code.

.3 National Fire Protection Association:
  .1 NFPA 70 article 625 – Electric Vehicle Charging Systems

.4 LEED® Canada-NC 1.0, Credit 4.3, Alternative Transportation: Hybrid and Alternative Fuel Vehicles.

1.2 SUBMITTALS

.1 Submit shop drawings and product data in accordance with Section 26 or 01 – Common Work Results – Electrical.

.2 Submit product data sheets for EV Charging Station. Include product characteristics and ratings, performance criteria, dimensions, limitations, compliance, listings and approvals, finish, and installation details.

.3 Manufacturer Instructions: Provide to indicate installation sequence, cleaning procedures and scheduled maintenance.

.4 User Manual: Include O&M manuals illustrating the modes of operation, user instructions, safety, precautions and standard operating instructions.

2. Product

2.1 EV CHARGING STATION Addenergie Core+

.1 Free standing cUL certified level 1 and 2 AC electric vehicle charging station. The EV charging station shall comply with the applicable requirements of all codes and standards listed in article 1.1 of this specification and shall be so listed and so marked legibly.

.2 Housing: NEMA 3R sun and heat resistant free standing bollard mount natural aluminum finish.

.3 Supply voltage: 208 VAC or 240 VAC

.4 Standby power: 10 W typical.

.5 Output charging power: 1.2kW to 7.2 kW Maximum

.6 Output Current: 6A to 30A

.7 Output charging connector: Shall be SAE J1772 EV connector on 5.48 m approved cable, and holster.
.8 Locking mechanism: to protect power insertion point and retain the EV charging cord to prevent theft during charging.
.9 Display bright, easy to read display for instructive, informative and protection alarm display.
.10 Card reader: ISO 15693, 14443.
.11 Ground Fault protection:
  .1 20 mA CCID with auto retry for level II
  .2 Three retries with 15-minute delay for both levels.
.12 Plug-Out detection:
  .1 Power terminated per SAE J1772™ specifications for level 2.
  .2 Algorithm to disengage power and notify the driver when a plug is removed.
.13 Over-current protection: To disconnect power at the charging device to prevent breaker trip at branch circuit panel. To have auto retry and driver notification.
.14 Charging complete detection: Algorithm to detect completion of EV charge and notify the driver.
.15 Power measurement: 2% at 15 minute intervals for both levels.
.16 Local Area Network: 2.4 GHz 802.15.4 dynamic mesh network.
.17 Surge protection: 6 kV at 3 KA.
.18 EMC compliance to FCC part 15 class A.
.19 Operating temperature: -30^0C to $+50^0$C, 95% non-condensing humidity.
.20 Terminal block temperature rating: 100^0C.
.21 To be Addenergie Core+ or alternate as approved by **Lower Mainland Health Care Organizations.**

2.2 SOURCE QUALITY CONTROL

.1 Factory tests shall be performed in accordance with the latest version of all applicable CSA, NEMA, UL and ULC standards.
.2 Factory test the EV Charging Station in accordance with manufacturer source quality control instructions including pilot and proximity pin resistance readings, cable insulation properties and ground fault interruptance testing.
.3 Notify the station owner in advance of the dates and times of the test. Include all costs associated with testing and or maintenance.
.4 Demonstrate successful results for the following tests:
  .1 Visually inspect all equipment for signs of damage or foreign materials as well as cleanliness of the installed system and any other safety related factors.
  .2 Mechanical Inspection:
    .1 Check all the power connections for tightness.
    .2 Check all the control wiring terminations and plugs for tightness or proper seating.

3. Execution

3.1 INSTALLATION

.1 Provide concrete base for pedestal or wall mount bracket for wall mounted application and install the unit as per manufacturer instructions in accordance with Canadian Electrical Code.
.2 Connect to branch circuit breakers as per submitted drawings.
.3 Provision station/stations and web portal access (provide training & orientation).
.4 Provide a permanent sign to read ELECTRIC VEHICLE CHARGING STATION and/or other parking signage, wrap and groundmarking as required by the organizations. Method of attachment shall be pre-approved by the station owner so as to have no deteriorating effect on ratings, performance and warranty of the unit.

3.2 FIELD QUALITY CONTROL

.1 Start-up shall be provided by a certified technician/integrator designated by the Lower Mainland Health Care Organizations. Start-up service shall be provided at no extra charge and shall include one visit to perform all procedures, test and verifications specified by manufacturer within the unit's installation, testing and verification manual. Electrum Charging Solutions shall also perform the following services:
    .1 Inspect installation prior to energizing as required.
    .2 Ensure EVSE are working as designed by the manufacture and are communicating on the network (where applicable).
.2 The following procedures and tests shall be performed by Field Service personnel during the startup:
    .1 Visual Inspection: Visually inspect all equipment for signs of damage or foreign materials as well as cleanliness of the installed system and any other safety related matters.
    .2 Mechanical Inspection:
        .1 Check all the power connections for tightness
        .2 Check all the control wiring terminations and plugs for tightness or proper seating.

.3 EV Charging station tests: Perform testing of station output current and ground fault interruption.:
- .1 Unit's proper functioning;
- .2 Proper functioning of all protections;
- .3 Proper functioning of the power metering system and output current;
- .4 Proper operation of alarms;
- .5 Proper functioning of the local area network device; and
- .6 Proper display of all the above.

.3 Tests shall be performed upon completion of installation.

.4 Operational Training: Before leaving the site, Electrum Charging Solutions shall familiarize responsible personnel with the operation of the EV charging station. The training shall include station use and portal operation.

.5 Arrange with facility's maintenance representative prior to testing.

.6 Include a copy of the field test report completed by the manufacturer certified technician in the O&M manuals.

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