**DESIGNER NOTES:** (for designer use only, not to be used at final drawings)

1. THERE ARE 3 LEVELS OF EV CHARGERS USED TO CHARGE ELECTRIC VEHICLES: LEVEL 1 CHARGERS ARE LOWEST VOLTAGE 120V CHARGERS AND ARE NOT USED IN LANL. LEVEL 2 CHARGERS ARE 208V, THESE CHARGERS ARE MID-TIER CHARGERS. LEVEL 3 CHARGERS ARE THE HIGHEST RATED CHARGE THAT OPERATES AT 480V PLUS. LEVEL 3 CHARGERS TYPICALLY REQUIRE A LARGE AMOUNT OF POWER AND CAREFUL CONSIDERATION OF A TYPICAL TRANSFORMER IS REQUIRED TO BE ACCOUNTED FOR CHARGING. ONE-LINE DIAGRAMS SHOULD BE USED AS TEMPLATES AND TAILORED TO EACH SPECIFIC DESIGN, CUSTOMS, BUILDING LIMITATIONS AND COST WILL DETERMINE THE NUMBER AND TYPE OF CHARGERS NEEDED IN THE SPECIFIC ELECTRICAL DESIGNS.

2. THE DESIGN INCLUDES THE STRUCTURAL AND ELECTRICAL DESIGN TEMPLATES FOR USE WITH "CHARGEPOINT" BRAND EQUIPMENT.

3. A "CHARGEPOINT" APP IS REQUIRED TO RUN AND USE THE CHARGING STATIONS. EACH FOD SHALL DETERMINE USE OF THE APP.

4. EQUIPMENT TAGGING SHALL BE IN ACCORDANCE WITH ESM CHAPTER 1 SECTION 200 ITEM NUMBERS AND LABELING.

5. THE CHARGING EQUIPMENT STRUCTURAL MOUNTING DETAILS CAN BE USED FOR EITHER LEVEL OF CHARGERS. WALL MOUNTED AND PEDESTAL MOUNTED DESIGNS CAN BE USED DEPENDING ON PROJECT NEEDS.

6. THE PANEL SCHEDULES WILL BE PROJECT SPECIFIC. ELECTRICAL DESIGNER OFFER THE MAXIMUM NUMBER OF POSSIBLE CHARGERS DEPENDING ON TRANSFORMER AND PANEL SIZES. INSTALLATIONS MAY INCORPORATE FEWER CHARGERS THAN THE MAXIMUM ALLOWED AS SHOWN IN THE TEMPLATES.

7. A PP-A OUTSIDE WILL BE USED AS THE DISCONNECT POINT FOR ALL CHARGERS. THIS WILL BE THE DEDICATED SHUT OFF FOR FIRE DEPARTMENT EMERGENCY RESPONDERS.

8. PANELS ARE WIRED SUCH THAT 120 VOLT CAN BE MADE AVAILABLE IF THE NEED ARISES SUCH AS FOR SMALLER EV VEHICLES.

9. THE NAMEPLATE SCHEDULE WILL BE PROJECT SPECIFIC. EACH CHARGER, TRANSFORMER, BREAKER, AND ELECTRICAL EQUIPMENT WILL HAVE DESIGNATED IDS. CABLING SHALL BE LABELED IN ACCORDANCE WITH THE SPECIFICATIONS.

10. STRUCTURAL ENGINEERING CALCULATIONS HAVE PREDETERMINED LIMITS AS LISTED IN THE STRUCTURAL TABLES AND ARE NOT REQUIRED FOR THE CONDUIT PANELS OR PANELS. THESE CALCULATIONS DETERMINE THE ANCHORS NEEDED, WEIGHT LIMITS AND ENVIRONMENTAL CONDITIONS.

11. SIGNAGE: IN ADDITION TO THE STANDARD NAMEPLATES, THE FOLLOWING SIGNAGE SHALL BE PROVIDED:

   - ELECTRICAL ARC FLASH SIGNAGE ON ALL PANELS AS NOTED IN SPEC.
   - MAIN BREAKER SHUT OFF DISCONNECT ON PP-A FOR FIRE DEPARTMENT USE. DESIGNATED ELECTRICAL PANEL FOR GOVERNMENT USE ONLY IN EMERGENCY CONSIDERED AS SPECIAL USE.
   - EMERGENCY CONTACT NUMBER TO CALL OR FOR UTILITY CONCERNS.
   - DESIGNATED EV PARKING SIGN FOR GOVERNMENT USE ONLY.
   - ELECTRICAL ARC FLASH SIGNAGE ON ALL PANELS AS NOTED IN SPECS.
   - MAIN BREAKER SHUT OFF/ DISCONNECT ON PP-A FOR FIRE DEPARTMENT USE.
   - DESIGNATED ELECTRICAL PANEL FOR GOVERNMENT USE ONLY IN EMERGENCY CONSIDERED AS SPECIAL USE.
   - EMERGENCY CONTACT NUMBER TO CALL OR FOR UTILITY CONCERNS.
   - DESIGNATED EV PARKING SIGN FOR GOVERNMENT USE ONLY.

12. THERE ARE NO SECURITY REQUIREMENTS FOR THESE CHARGING STATIONS UNLESS THERE ARE SITE SPECIFIC REQUIREMENTS.

13. AN ARCHITECTURAL ENGINEER SHOULD BE CONSULTED WITH EACH DESIGN TO ENSURE PROPER EQUIPMENT PLACEMENT FOR PARKING ACCESS AND REGULATIONS ARE OBSERVED.

14. INSTALLERS ARE NOT REQUIRED TO BE CERTIFIED; HOWEVER TRAINING COURSE MUST BE COMPLETED BEFORE INSTALLATION. INFO AND CERTIFICATION CAN BE FOUND AT WWW.CHARGEPOINT.COM. LANL TO DO VALIDATION. FOR LARGER STATIONS CONSULT WITH UTILITIES ENGINEER FOR FURTHER INFORMATION ON DESIGNS.

15. **TABLE 1. CHARGING STATION TYPES**

<table>
<thead>
<tr>
<th>CHARGING STATION TYPES</th>
<th>LEVEL 1</th>
<th>LEVEL 2</th>
<th>LEVEL 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPERATING VOLTAGE</td>
<td>120V</td>
<td>208V</td>
<td>480V</td>
</tr>
<tr>
<td>LOCATION FOUND</td>
<td>RESIDENTIAL, LV NOT USED AT LANL</td>
<td>COMMERICAL/LANL USED</td>
<td>COMMERICAL/LANL USED</td>
</tr>
<tr>
<td>CHARGE RATE MILE/HOUR</td>
<td>0-3</td>
<td>0-5</td>
<td>0-6</td>
</tr>
<tr>
<td>NOTES</td>
<td>FOR LARGE STATIONS CONSULT WITH UTILITIES ENGINEER FOR FURTHER INFORMATION ON DESIGNS.</td>
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</tbody>
</table>

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**Section 210**

- **Table 210**
  - **G CMR**
  - **CMR ELECTRICAL EQUIPMENT**
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**Section 230**

- **Table 230**
  - **G CMR**
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**ENGINEERING STANDARDS**

**ELECTRICAL VEHICLE CHARGING STATIONS**

**DESIGNER NOTES**

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