

## Electric Vehicle (EV) Chargers on Wood Poles



### 1. Scope

This standard covers the requirements for the installation of electric vehicle (EV) chargers on wood poles served by an overhead City Light (SCL) Looped Radial or Network distribution system.

See SCL 0093.04 for general information on attachments on wood poles.

### 2. Application

This standard is intended for use by SCL engineers, crews, and contractors responsible for designing and installing EV chargers on wood poles.

SCL owns and manages EV chargers. Third-party contractors install, operate, and maintain EV chargers.

This standard applies to the following chargers:

- EVSE Dual EV charger model 5068-051/052
- EVSE Single EV charger model 5068-053/054

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### 3. Definitions

**Radio Frequency Identification (RFID) Reader:** A radio frequency transmitter and receiver that can read and write information to an RFID tag. In the case of an EV charger, it is used to identify users and their payment information to activate the EV charger.

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### 4. Requirements

#### 4.1 Codes, Permits, Approvals, and Restrictions

All installations shall meet or exceed all applicable structural and clearance requirements of the latest revision of the National Electrical Safety Code (NESC), as well as SCL construction standards. In case of conflict, the most stringent requirement will prevail.

Electrical service to provide power to EV chargers shall meet or exceed all requirements of the latest revision of the National Electrical Code (NEC).

Permits and applications for all proposed work, which include installation, modifications, and relocations, shall be reviewed and approved by SCL Joint Use Engineering.

Any radio frequency (RF) emitting device shall require a Non-Ionizing Electromagnetic Radiation (NIER) report to be submitted to the pole owner(s) and retained on file for each equipment type/model. See SCL 0095.06, "Non-Ionizing Electromagnetic Radiation (NIER) Report Requirements."

A maximum of two (2) EV chargers, mounted side by side, shall be allowed on each pole.

The maximum allowable size for a single or dual pole-mounted EV charger enclosure shall not exceed 26 in W by 30 in H by 13 in D as approved by SCL Joint Use Engineering.

EV chargers shall not be installed on poles with primary distribution conductors.

EV chargers shall not be installed on corner poles.

EV chargers, including all equipment, shall have a maximum combined weight of 750 lb.

EV chargers shall not be installed on poles with the following equipment:

- Switches
- Terminations
- Macrocell antennas and Small Wireless Facilities (SWFs)
- Strand-mount antennas
- Communications enclosures

#### 4.2 Electric Service Requirements

Overhead single-phase, 120/240 Vac, service will be made available at the installation site.

A service disconnect switch shall be required at each EV charger pole location.

The disconnect switch shall be mounted directly below the EV enclosure or integrated into the EV charger setup.

SCL is responsible for the final service connection.

The contractor is responsible for the installation of all EV equipment, including conduit and service wire between the EV charger and the weatherhead. A 3-ft service wire coil beyond the weatherhead shall be provided for SCL to make the final connection. See Figure 4.3.

Meter sockets shall not be allowed on poles.

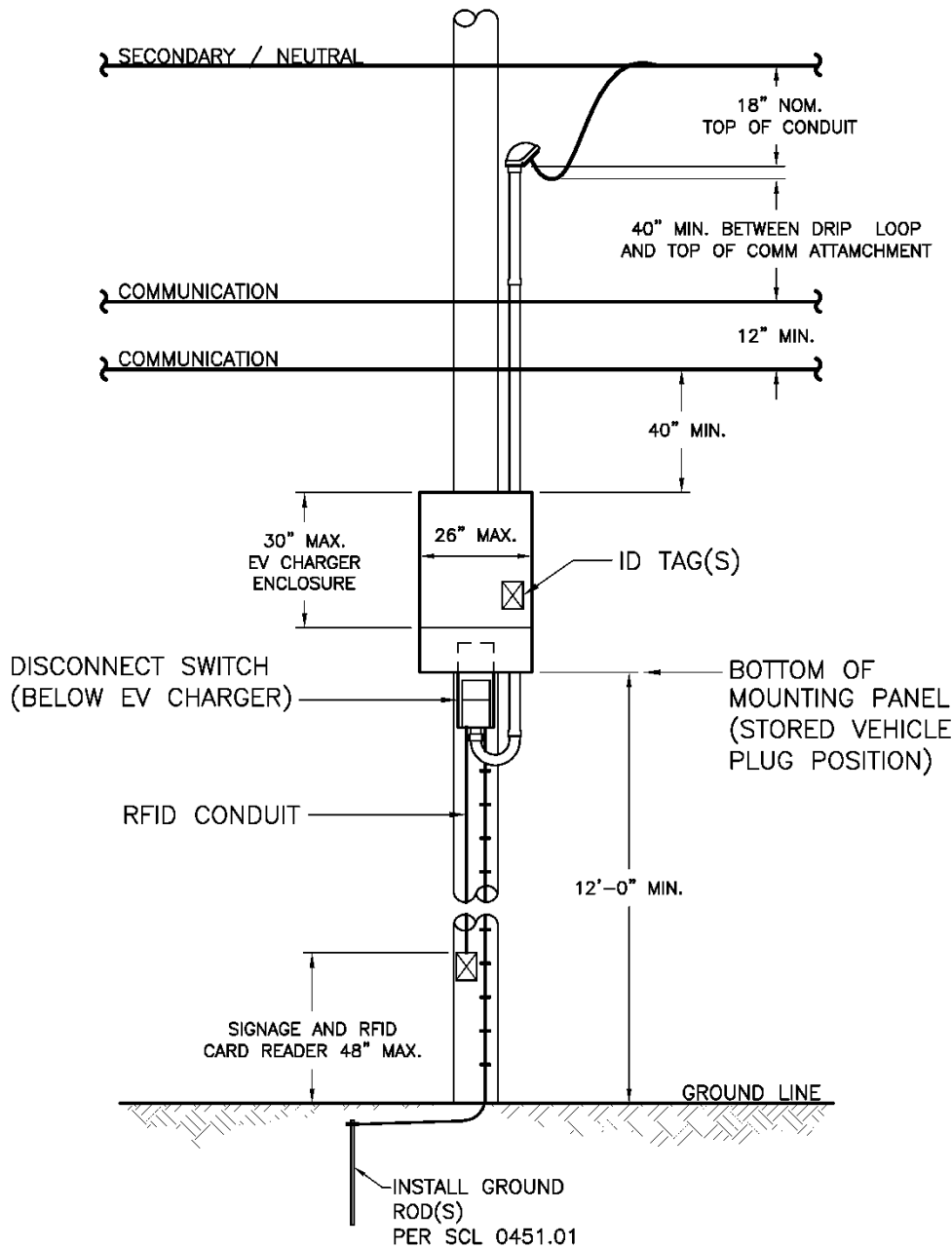
### 4.3 Equipment Mounting and Orientation

EV chargers shall be located on the pole below any communications attachments as shown in Figure 4.3.

For poles less than 4 ft 9 in from the face of the curb, EV chargers shall be located on the field side of the pole.

For poles 4 ft 9 in or more from the face of the curb, EV chargers shall be located on the street side of the pole.

**Figure 4.3. EV Charger on a Wood Pole**



#### 4.4 Clearances

The location of the EV charger shall meet the clearance requirements as stated below and in Figure 4.3:

- A minimum clearance of 12 ft above ground line to the bottom of the mounting panel
- A minimum clearance of 40 inches between lowest SCL secondary hardware or conductor, including secondary drip loops, and the top of any communications attachment
- A minimum clearance of 40 inches between the bottom of any communications attachments and the top of the EV charger enclosure

In addition, a minimum clearance of 4-1/2 inches shall exist between the EV charger pole-mounted equipment to the pole.

Signage and the RFID reader shall be installed a maximum of 48 inches above the ground line.

#### 4.5 Conduit Installation

For conduit 2 inches nominal in diameter and greater, see SCL 0224.34 and SCL 0126.04.

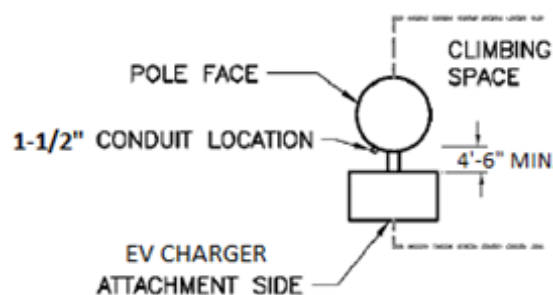
For conduit 1-1/2 inches nominal in diameter, the service riser shall be installed on the surface of the pole in the quadrant between the pole face and the EV charger attachment side. Only one surface-mounted conduit is allowed per pole as shown in Figure 4.5.

Nonmetallic flexible conduit 1-1/2 inches in diameter can be used to accommodate the tight bend between the service riser conduit and the disconnect switch.

For surface-mounted conduit, a conduit strap shall be required at a minimum of every 3 ft.

Conduit used to connect the RFID to the EV charger shall be 3/4-in rigid steel (RGS) or Schedule 80 PVC. See Figure 4.3.

**Figure 4.5. Conduit Risers**



#### 4.6 Grounding and Bonding

All conductive equipment attached to the pole shall be effectively grounded and bonded per the National Electrical Safety Code (NESC).

A copper-clad steel ground wire, #4 AWG minimum, shall connect conductive equipment to a pole ground rod using an irreversible connection. Where a pole ground rod and ground wire do not exist, the Customer shall install them to meet or exceed the requirements of SCL 0451.01.

The copper-clad steel ground wire shall be protected by a 10-ft section of 3/4-in Schedule 80 PVC conduit starting 6 in below the ground line. The 3/4-in conduit shall be attached to the pole with conduit straps every 18 in from the ground line. See Figure 4.3.

#### 4.7 Signage and Identification (ID) Tags

Identification of equipment attachments is necessary to assist in repair, restoration, and coordination of work on the poles by SCL or other customers who shares the pole.

Instruction signage for EV charging shall not be larger than 12 in by 18 in.

Signage shall contain, at a minimum, the site identification name or ID code and the EV charger customer service contact information.

SCL ID Tags shall be installed on each EV charger enclosure. ID tags shall contain, at a minimum, a SCL logo, the site ID name or number, and a SCL contact phone number for emergency, information, or notification.

All signage and ID tags shall be installed flush with its mounted surface, where depicted in Figure 4.3.

#### 4.8 Aesthetics

Equipment aesthetics and coloring shall meet the requirements of the Authority Having Jurisdiction (AHJ).

#### 4.9 Inspection

Inspection points are put in place to ensure conformity to SCL requirements.

An inspection by an SCL Electrical Reviewer is required for the following points:

- Grounding and bonding inspection and test
- Fixture wiring
- Foundations, poles, and fixtures
- Equipment installation and clearances

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### 5. Construction Notes

For installation instructions for the dual EV charger, see “5068-051/052 Dual Charger Mounting Instructions” provided by the manufacturer.

For installation instructions for the single EV charger, see “5068-053/054 Mounting Instructions” provided by the manufacturer.

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### 6. References

**“5068-051/052 Dual Charger Mounting Instructions,”** EVSE, LLC

**“5068-053/054 Single-Charger Mounting Instructions,”** EVSE, LLC

**SCL Construction Standard 0093.04;** “Pole Attachments, Customer Requirements”

**SCL Construction Standard 0095.06;** “Non-Ionizing Electromagnetic Radiation (NIER) Report Requirements.”

**SCL Construction Standard 0126.04;** “Riser Extensions”

**SCL Construction Standard 0224.34;** “Steel Conduit Risers”

**SCL Construction Standard 0451.01;** “Grounding Electrodes for Distribution Poles”

## 7. Sources

**Crume, Stephen**; SCL Joint Use Manager and subject matter expert for 0098.51

**National Electric Code (NEC)**, NFPA-70; 2011 Edition, National Fire Protection Association, Quincy, MA, 2010

**National Electrical Safety Code (NESC)**, C2-2012 Edition; Institute of Electrical and Electronics Engineers (IEEE), Inc., New York, NY, 2011

**Neuansourinh, Ponet**; SCL Standards Engineer, originator, and subject matter expert for 0098.51

**Orenberg, Jacob**; SCL Sr Capital Project Coordinator and subject matter expert for 0098.51

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