

This handout is designed for assistance in submitting plans for electric vehicle (EV) charging stations to the Building and Safety Department. Omission of any of the following plan review items shall be deemed an incomplete submittal and the plans will not be accepted for plan review.

All plans submitted for EV charging systems must comply with, and reference, the 2022 California Building Code, 2022 California Residential Code (CRC), 2022 California Electric Code (CEC), 2022 California Plumbing Code (CPC), and 2022 California Mechanical Code (CMC), 2022 California Fire Code (CFC) as appropriate including any amendments and/or errata.

The City of Menifee does not perform over-the-counter plan reviews and we do not accept hard copy (paper) plans for review.

TYPES OF ELECTRIC VEHICLE (EV) CHARGERS

Be aware that there are different types of Electric Vehicle (EV) chargers. There are 2 types of EV chargers approved for residential use: Level 1 and Level 2.

Commercial/industrial only developments may also use Level 3 (DCFC) charging stations.

LEVEL 1

Level 1 chargers are smaller units that plug directly into a standard 120-volt receptacle outlet. These types of chargers typically require a longer period to recharge the vehicle. If the receptacle outlet being used to plug in the Level 1 charger exists, there is no requirement to secure a permit from the Building and Safety Division. On the other hand, if you will be installing a new 120-volt receptacle outlet for the charger, you will need to obtain a permit and provide the required information in this handout. CBC 105.1

Level 2

A Level 2 EV charging system requires a 240-volt electrical circuit and charges the vehicle battery much faster than a Level 1 charger. Level 2 charger installations typically require an electrical permit and inspections of the installation. To obtain the permit, you will need to provide some basic information to show that your existing electrical service can handle the added load. CBC 105.1

Level 3 Direct Current Fast Charge (DCFC)

A level 3 charging system, also called DC Fast Chargers (DCFC), these chargers use a 480-volt circuit to provide direct current (DC) electricity to the battery. Fast charging equipment enables rapid charging at installed stations. Level 3 chargers are not allowed on residential properties.

Requirements for Permit Submittal

Before approval and issuance of permit(s) for electric vehicle charging station, the applicant shall submit one (1) set of complete digital plans which are drawn to scale (or at the very minimum are fully dimensioned), readable, and legible with a minimum of #12 font for text and one (1) set of supporting documents. Electronic plans shall be designed to be printed at a minimum of 11" x 17" in size and meeting the requirements listed above. Electronic signatures will be accepted on the application and plans. Electronic plans shall be submitted to building_submittals@cityofmenifee.us

All plans shall include the following information:

1. **Cover Sheet** showing the following information: (a) project address; (b) owner's name, address, and phone number; (c) name, address, and phone number of the person preparing the plans; (d) scope of work statement; (e) number of stories and number of dwelling units; (f) sheet index indicating each sheet title and number; (g) legend for symbols, abbreviations, and notations used in the drawings; CBC 107.2.5
2. **Site Plan** showing: Building footprint with locations of property lines, distances of building walls to property lines, location of the EV charging system, location of the main service and the exterior and interior locations of all equipment and disconnects with working space clearances, and locations of other structures (if any) on the property; CBC 107.2.5
3. **Electrical Plan** showing: A single line diagram indicating all conductor sizes and conductor types; location and size of all disconnects; location and size of all electrical service and electrical sub-panels; size of all overcurrent protection devices (circuit breakers); location of size of all receptacles outlets that will be installed; CBC 107.2.1
4. **Load Calculations:** Load calculations shall be provided for the existing electrical system to determine if the new loads of the EV charger can be added to the system; 2022 CEC Article 220
5. **Manufacturer's Specification Sheets** with make, model, and listing for all components. Provide one (1) set of all manufacturer installation manuals for the charger as well as the manufacturer's specification sheets for any addition electrical equipment that will be installed; CBC 107.2.1
6. **Additional Information:** Please see the additional material provided below and on the other attached sheets to assist in the design of the system.

Equipment height

The coupling means of the Electric Vehicle Supply Equipment shall be stored at a height of not less than 18 inches above the floor level for indoor locations and not less than 24 inches above the grade level for outdoor locations. CEC 625.50

Listed equipment

All Electric Vehicle Supply Equipment shall be listed by a nationally recognized testing laboratory. CEC 110.3(B)

Fastened in place

Indicate the support and anchorage for the Electric Vehicle Supply Equipment will be permanently connected and fastened in place in accordance with the manufacturer’s installation instructions.

Protection from physical damage

Electrical Vehicle Supply Equipment shall be protected against vehicle impact damage when located in the path of a vehicle. To avoid the installation of a substantial pipe bollard as an equipment guard, locate the Electrical Vehicle Supply Equipment on a garage side wall, out of the vehicular path. (CEC 110.27(B))

Commercial and Multi-Family Installations

Accessibility – Indicate compliance with California Building Code Chapter 11B-228.3, 11B-812, and Chapter 11B, Table 11B-208.2

The table below illustrates the type and size of wire and conduit to be used for various EV charger circuits.

Size of EV Charger Circuit Breaker	Required Minimum Size of Conductors (THHN wire; THHW wire for exterior)	Conduit Type and Size *		
		Electrical metallic Tubing (EMT)	Rigid Nonmetallic Conduit - Schedule 40 (RNC)	Flexible Metal Conduit (FMC)
20 amps	#12	1/2"	1/2"	1/2"
30 amps	#10	1/2"	1/2"	1/2"
40 amps	#8	3/4"	3/4"	3/4"
50 amps	#8	3/4"	3/4"	3/4"
60 amps	#6	3/4"	3/4"	3/4"
70 amps	#4	3/4"	3/4"	3/4"

* Based on 4 wires in the conduit (2-current carrying conductors, 1-grounded conductor, and 1-equipment ground). (CEC Chapter 9 Tables) As an alternate, Nonmetallic Sheathed Cable (NMC) (e.g., Romex cable) may be used if it is protected from physical damage by placing the cable inside a wall cavity or attic space which is separated from the occupied space by drywall or plywood.

The table below illustrates the required supports for various types of electrical conduit or cable.

Conduit Support	Electrical Metallic Tubing (EMT) (CEC 358.30(A))	Rigid Nonmetallic Conduit - Schedule 40 (RNC) (CEC 352.28 (B))	Flexible Metal Conduit (FMC) (CEC 348.42 (B))	Nonmetallic Sheathed Cable (NMC) (CEC 334.30)
Conduit Support Intervals	10'	3'	4-1/2'	4-1/2'
Maximum Distance from Box to Conduit Support	3'	3'	1'	1'

Free to use code books are available from the State of California Building Standards commission at:

<https://www.dgs.ca.gov/BSC/Codes>