CITY OF MANTECA
COMMUNITY DEVELOPMENT DEPARTMENT
BUILDING SAFETY DIVISION
1001 West Center Street • Manteca, CA 95337 • PHONE (209) 456-8550 FAX (209) 923-8955

Solar (Photovoltaic) System - Residential

Submittal Requirements

Administrative:

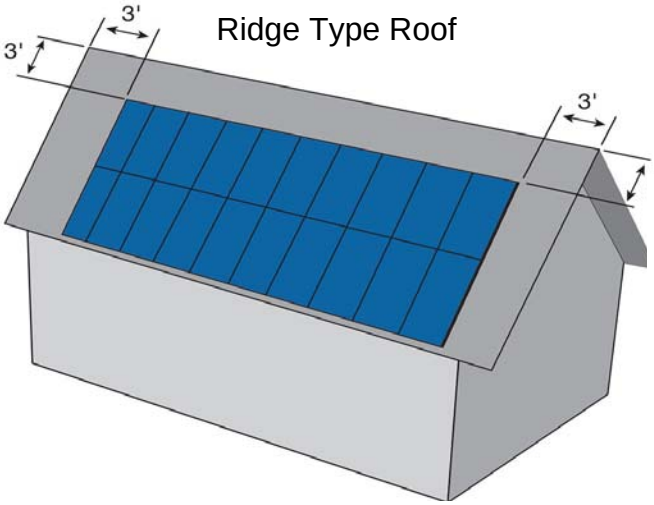
- Provide three sets of plans (minimum of 11”x17”), one building permit application, and an Owner/Builder Form (if applicable).
- Attach all manufacturers specification sheets, installation instructions, and U.L. listings to the plans.
- Plans are to be signed by a State of California licensed Engineer or contractor with any of the following classifications: A, B, C-46, C-10. (Signature and license number to be provided on each sheet).

Drawings:

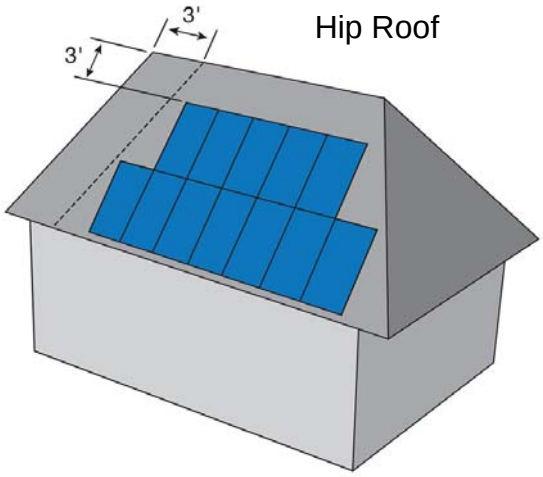
- Provide site plan and a roof plan projected on a site plan. Show the location and dimensions of all solar photo voltaic equipment and PV arrays. Be sure to show fire setbacks and emergency egress per CEC 690 and as amended by the City of Manteca (see back for more information).
- Provide a partial roof framing plan. Show supporting trusses, rafters, beams and headers include rafter size, span, and spacing. Identify roof sheathing thickness, roofing materials and number of layers of existing roofing.
- Detail equipment support connections to roof. Provide a detail for flashing and water proofing at system supports and roof penetrations per CRC Chapter 9.
- Provide calculations by a licensed professional engineer or architect to verify supporting members are adequate for existing and proposed loads. (ALTERNATE: Calculations not required if arrays are supported at a maximum spacing of 4 ft. and less than 5 psf).
- Provide lateral calculations by a licensed professional engineer or architect per CBC showing that affected existing lateral resisting elements are no more than 10% overstressed according to the CBC. (ALTERNATE: Calculations are provided showing that the system is less than 5 psf.)

Electrical:

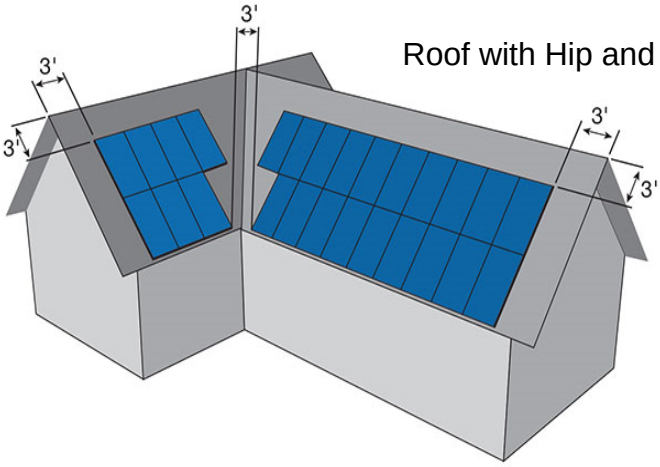
- Provide Electrical drawings to show compliance with the applicable provisions of the California Electrical Code.
- Show the location of the main electrical service, AC/DC disconnects, all solar photovoltaic equipment, and PV arrays on the roof plan.
- Single Line Diagram: show array configuration, conduit and conductors. Include sizes with derating calculations.
- Please include pictures showing if the panel is end feed (120% of bus rating) or centerfed (100% of bus rating).
- Inverter Information: show model number and maximum D.C. input.
- PV Module Information: show open circuit voltage (VOC), short – circuit current (ISC) max series fuse, cut sheets.
- Array Information: show number of modules in series, number of parallel source circuits.
- Wiring and Over Current Protection: show conductor ampacities, adjusted with all derating factors show rating and location of all Over Current Devices (OCD.)
- System Labels and Warnings: show required signage on the plans per CEC Article 690.
- Grounding Details: show equipment ground conductor, ground electrode conductor from inverter to ground.
- Disconnects: show AC/DC disconnects at inverter.
- Rapid Shutdown: Show method utilized to comply with CEC 690.12 for rapid shutdown
- System Calculations: show (VOC) calculated 1.13 (temperature correction factor for City of Manteca) (ISC) calculated x 1.25% (NEC 690) x 1.25% (UL 1703)
- Cut Sheets/Specifications for: PV Modules, Inverter, Combiner Box, Disconnects, Rapid Shutdown, and Racking/Mounting.



Ridge Type Roof



Hip Roof



Roof with Hip and Valley

Roof Layout Basics

R324.7.1 Roof access points. Roof access points shall be located in areas that do not require the placement of ground ladders over openings such as windows or doors, and located at strong points of building construction in locations where the access point does not conflict with overhead obstructions such as tree limb s, wires or signs.

R324.7.2.2 Hip roof layouts. Panels and modules installed on dwellings with hip roof layouts shall be located in a manner that provides a clear access pathway not less than 3 feet (914 mm) in width from the eave to the ridge on each roof slope where panels and modules are located. The access pathway shall be located at a structurally strong location on the building capable of supporting the live load of fire fighters accessing the roof.

R324.7.2.3 Single ridge roofs. Panels and modules installed on dwellings with a single ridge shall be located in a manner that provides two, 3-foot-wide (914 mm) access pathways from the eave to the ridge on each roof slope where panels or modules are located.

R324.7.2.4 Roofs with hips and valleys. Panels and modules installed on dwelling s with roof hips or valleys shall not be located less than 18 inches (457 mm) from a hip or valley where panels or modules are to be placed on both sides of a hip or valley. Where panels are to be located on one side only of a hip or valley that is of equal length, the 18-inch (457 mm) clearance does not apply.

R324.7.2.5 Allowance for smoke ventilation operations. Panels and modules installed on dwellings shall not be located less than 3 feet (914 mm) below the roof ridge to allow for fire department smoke ventilation operations.

R324.7.2.8 Emergency Egress. Amended. Where solar installations occur below emergency escape and egress openings, the installation shall be designed to provide a pathway that shall be over areas capable of supporting the live load of firefighters accessing the roof and shall be a straight line, perpendicular to the edge of the roof, not less than 3 feet in clear width to the emergency escape and egress opening from the edge of the roof. A roof access point, shall comply with the requirements of Section R324.7.1, to the egress pathway. (Please note that this three feet clearance also needs to be around fireplace chimney or HVAC equipment on the roof.)