

PURPOSE

The purpose of a building permit is to ensure that new construction meets minimum code standards, which are designed to protect life and property. To accomplish this, building permit applications are reviewed by city staff against applicable state and local building and land development codes and regulations. Initial application submittals that are complete and accurate help streamline the department's review processes, which allows the city to issue permits quicker thereby saving applicants time and money.

To help ensure a complete and accurate submittal, the Building Division has developed this submittal requirement checklist that applies to the installation of residential solar photovoltaic systems. To learn more about the permitting and inspection process, please consult [Information Bulletin 210](#), Residential Solar Photovoltaic Systems.

SUBMITTAL REQUIREMENT CHECKLIST

The items in the checklist below represent the minimum application submittal requirements necessary to initiate plan check review. Building Division staff may reject submittal of a building permit application if the application submittal fails to include all the appropriate items listed in this checklist. After submittal and following initial review of the permit application, additional information and/or corrections may be requested by city staff in order to complete review of the application. Please contact the Building Division with any questions.

- Residential permit application ([B-1](#)), signed and dated by the contractor or property owner ([info](#))
- Property owner consent form if application filed by contractor ([B-13A](#))
- Building Plans (three sets):
 - Site Plan ([info](#))
 - Roof Plan ([info](#))
 - Single-Line Diagram ([info](#))
 - Manufacturer's Specifications ([info](#))
 - Design Professional Stamp and Signature ([info](#))
 - Building Integrated Photovoltaic Shingles ([info](#))
- SDG&E work order form ([info](#))

ADDITIONAL DOCUMENTS THAT MAY BE REQUIRED

- Structural Review, Plans and Calculations (three sets):
 - When Required ([info](#))
 - Structural Plans ([info](#))
 - Structural Calculations ([info](#))
- ROW Permit ([info](#))

APPLICATION SUBMITTAL

Residential solar submissions are accepted using the city's [Customer Self Service portal](#). The documents described above must be individually saved in .PDF format and uploaded to the portal. Depending upon workload, the city's review following submittal of the initial permit application typically takes three to five days to complete.

ADDITIONAL INFORMATION (to assist in completing Form B-13)

BUILDING PLANS

PV Installation plans are required to include the following information:

- ✓ **Site Plan** [\[top\]](#). The site plan must show the location of all existing and proposed PV panels, AC or DC combiners, all disconnects, inverters, and sub-panels connected to the PV system and the meter panel. The site plan for ground-mounted PV systems must show all information in [Information Bulletin 201](#), Minimum Requirements for Building Permit Site Plans.
- ✓ **Roof Plan** [\[top\]](#). The roof plan must show the roof slope and location of the existing and proposed PV panels on the roof in relation to any ridge, hip or valley, as well as the location and size of any existing roof-mounted equipment. Include the weight of the PV system in pounds per square feet and the connection to the roof details on the plans.
- ✓ **Single-Line Diagram** [\[top\]](#). The single-line diagram must show the number of PV panels (including manufacturer model number) with voltage and kilowatt output, disconnects, combiners, inverters (include manufacturer model number) with input ratings, ampere rating of subpanels connected to the PV system, ampere rating of meter panel bussing, ampere rating of main service disconnect, ampere rating of PV circuit breaker, size and type of all raceways and the size and type of all conductors in compliance with California Electric Code Article 690.
- ✓ **Manufacturer's Specifications** [\[top\]](#). Provide the manufacturer's specifications for the proposed PV modules, racking, inverter(s), batteries, and meter. Specifications for PV panels and racking systems must include the UL listings indicating that a Class A fire rating for the proposed system is provided, except for ground-mounted PV systems with no use underneath the panels.
- ✓ **Design Professional Stamp and Signature** [\[top\]](#). All plans must be stamped and signed in accordance with the California Business and Professions Code by the registered design professional.
 - PV plans must be stamped and signed by a California registered Civil or Electrical Engineer or a licensed Electrical Contractor (C-10 License), General Contractor (B License) or a Solar Contractor (C-46 License) who is responsible for the design and installation of the system.
 - A California registered Electrical Engineer or a C-10 must sign and stamp plans when an electrical panel upgrade is proposed.
 - A California registered Architect, Civil or Structural Engineer must stamp and sign structural calculations and plans.
- ✓ **Building Integrated Photovoltaic Shingles** [\[top\]](#). Where building integrated photovoltaic shingles are provided, the following requirements must be shown on plans:
 - Shingles must be applied to a solid or closely fitted deck, except where the shingles are designed to be applied over spaced sheathing.
 - Shingles shall not be installed on roof slopes less than 2:12 slope (17%).
 - Shingles shall be listed as a Class A roof assembly
 - Shingles shall be listed and labeled in accordance with UL 7103.
 - Shingles must be tested in accordance with ASTM D3161 for wind resistance per CRC 905.16.7 or CBC 1507.17.8, as applicable.
 - For shingles on commercial or multi-dwelling units (MDUs) buildings, provide fasteners in accordance with CBC 1507.17.5.

STRUCTURAL REVIEW, PLANS AND CALCULATIONS

✓ **When Required** [\[top\]](#)

Structural review is required for the installation of PV systems where any of the following conditions occur:

- Alterations to a structure as required for support and/or attachment for PV systems.
- Weight of PV system exceeds six pounds per square foot.
- Weight of any ground-mounted or roof-mounted equipment exceeds 400 pounds.
- PV mounting height, at any point, is greater than 24 inches above the roof level.
- PV system installed on a ballasted roof.
- Ground-mounted PV system located more than five feet above the ground.
- Batteries not installed in accordance with the manufacturer's instructions.

✓ **Structural Plans** [\[top\]](#)

Provide the following information when structural review is required.

- Structural plans that demonstrate the required load path to the ground.
- A roof framing plan with the following information:
 - Size and location of all roof framing members and vertical support elements.
 - PV support structure framing plan with size and location of all framing members.
 - Location, size and weight of any existing or new roof-mounted equipment.
 - Maximum weight, number and location of PV panels.
 - Size, weight and number of ballasts at each location.
 - Attachment of panels to the support structure and the support structure to the roof or to the ground.
- Manufacturer's installation specifications for pre-manufactured racking systems.
- Cross-section showing the height of the proposed PV panels above the roof or ground, the supporting structure, slope, and the distance down the slope from any roof ridge.

✓ **Structural Calculations** [\[top\]](#)

Structural calculations must be provided to evaluate the existing roof framing system for roof dead load, PV dead load (panels, ballasts, support platform, etc.) and roof design live load. For roof areas covered by the PV panels, where the clear space between the PV panels and the rooftop is 24 inches or less, roof design live load may be ignored. The adequacy of the following must be evaluated by a California licensed civil/structural engineer or architect:

- Existing gravity load-carrying structural elements (joists, beams, girders, trusses, columns, foundation) where installation of the PV system causes an increase in design gravity load of more than 5% and,
- Existing lateral load-carrying structural elements (horizontal diaphragms, shear walls, braced/moment frames) where installation of PV system causes an increase in the demand to capacity ratio under earthquake loading more than 10%.

• **ROW Permit** [\[top\]](#)

If the solar installation requires trenching or other required work within the city's public right-of-way, an encroachment permit ([Form E-6](#) and [Form E-11](#)) shall be required. Please contact one of our staff in Land Development Engineering at 760-602-2750 or via email at LandDev@CarlsbadCA.gov for more information.

- **SDG&E Work Order** [\[top\]](#)

When the proposed solar photovoltaic system requires an upgrade to the home's existing electrical meter, a copy of the SDG&E work order that describes the scope of the upgrade must be included as part of the permit application. Contact SDG&E's Residential Service Hotline at 1-800-411-7343 or via email at <https://www.sdge.com/apply-service>