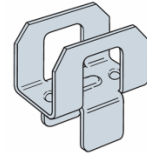


Residential Roofing Requirements
Chapters 8 & 9 California Residential Code (CRC)

Roof Sheathing

- Spaced lumber sheathing is not allowed in Seismic Design Category D₂. (CRC § 803.1).
- New construction minimum 1/2" thickness with rafter/truss spans 24" on-center or less. Rafter/truss spans greater than 24" on-center require 1 1/2" T&G solid sheathing. (CRC § 803.1).
- Fastening requirements. 8d common nails (2 1/2" x 0.131") are required (Table CRC 602.3(1)), 6" on-center at edges and 12" on-center intermediate supports (field). Panel Sheathing Clips or "H" clips are required in some cases based on the span rating of the panels.

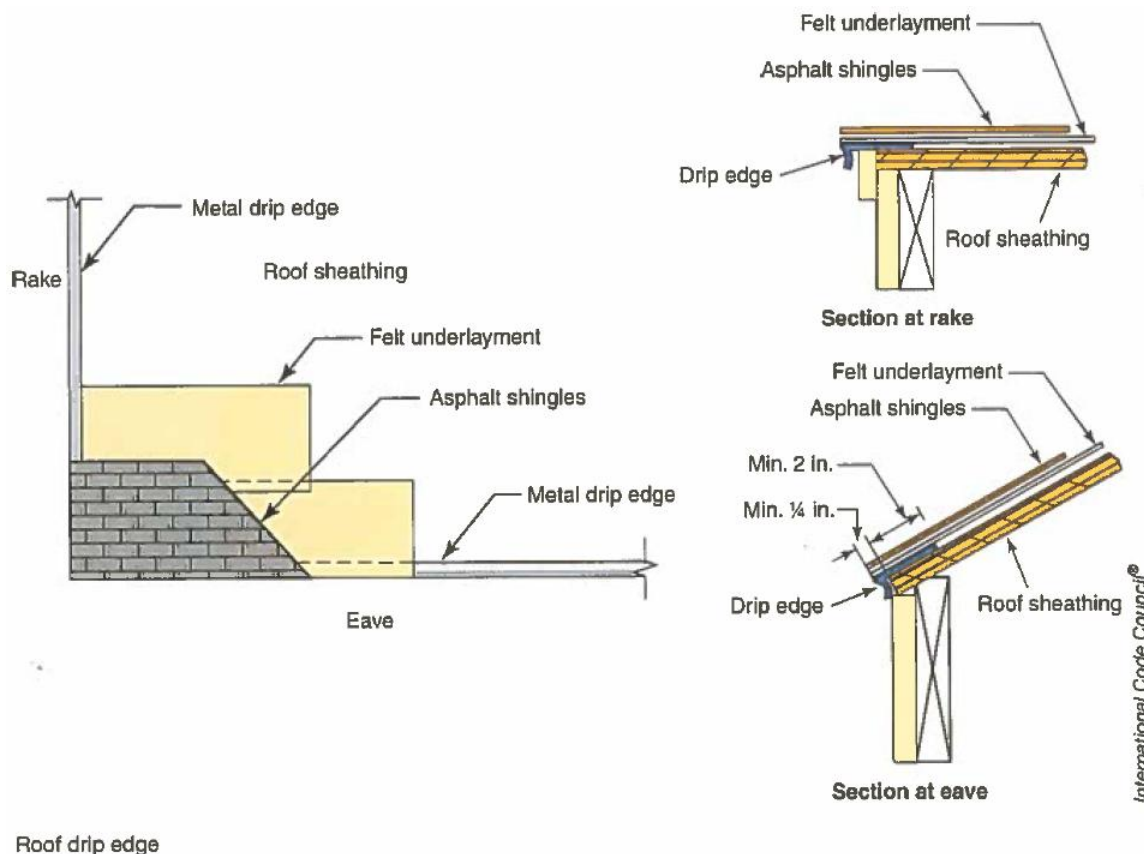


Composition Shingles (Slopes 2:12 or Greater)

- 1 overlay is allowed (CRC § 907.3.3)
- Solid sheathing required. Rio Dell is in Seismic Category D₂. (CRC § 803.1 & 905.2.1). Any gaps or holes greater than 1/2" must be covered with 26 gauge galvanized steel. Solid sheathing not required when applying over existing composition shingles.
- Roof slopes 4/12 or greater one layer of 15 lb underlayment required unless overlaying existing composition shingles per ASTM D226, Type I. (CRC § 905.2.3)
- Nails 12 gage 3/8" heads or meets ASTM F1667. Fasteners must penetrate 3/4" into or through sheathing. (CRC § 905.2.5)
- Number of fasteners and exposure as per manufacturer's instructions, but not less than 4 fasteners per strip shingle or 2 fasteners per individual shingle. Check bundle for nailing location requirement. (CRC § 905.2.6)
- Slopes 2:12 to 4:12 are as above except 2 layers of 15 lb underlayment are required & shingles must be self sealing. Underlayment shall be applied in the following manner: Apply a 19-inch strip of underlayment felt parallel to and starting at the eaves, fastened sufficiently to hold in place. Starting at the eave, apply a 36-inch wide sheet of

underlayment, overlapping successive sheets 19-inches, and fastened sufficiently to hold in place. End laps shall be offset by at least 6 feet. (CRC § 905.2.7)

- Counter (kick-out) flashing required when flashing meets vertical surface. Metal flashing shall be a minimum 4-inches high and 4-inches widebe corrosion resistant with a thickness of not less than 0.019 inch (No. 26 gauge galvanized). (CRC § 903.2.1 & 905.2.8.3)
- A drip edge shall be provided at eaves and gables of shingle roofs. Adjacent pieces of drip edge shall be overlapped a minimum of 2-inches. Drip edges shall extend a minimum of 0.25-inches below the roof sheathing and extend up the roof deck of a minimum of 2-inches. Drip edges shall be mechanically fastened to the roof deck at a maximum of 12-inches on center with fasteners as specified in Section CRC905.2.5. Underlayment shall be installed over the drip edge along the eaves and under the drip edge on the gables. Unless specified differently by the shingle manufacturer, shingles are permitted to be flush with the drip edge. (CRC § 905.2.8.5)



Built-Up/Modified Bitumen/Single-Ply/Sprayed Foam/Liquid-Applied Coatings (CRC § 905.9, 905.11, 905.12, 905.13 & 905.14)

- Built-up roofs shall have a design slope of a minimum of 1/4 vertical unit in 12 horizontal units (2-percent slope) for drainage, except for coal-tar built-up roofs, which shall have a design slope of a minimum of 1/8 vertical unit in 12 horizontal units (1-percent slope). (CRC § 905.9.1)
- Built-up roof coverings materials shall comply with the standards in Table CRC905.9.2 or UL 55A. (CRC § 905.9.2)
- Built-up roofs shall be installed according to Chapter 9 of the CRC and the manufactures installation instructions. (CRC § 905.9.3)

Metal Roof Panels (CRC § 905.10)

- Solid sheathing is required. Rio Dell is in Seismic Category D₂. (CRC § 803.1 & 905.10.1)
- Minimum slopes for metal roof panels shall comply with the following:
 - The minimum slope for lapped, nonsoldered-seam metal roofs **without** applied lap sealant shall be 3 vertical units in 12 horizontal units (25-percent slope).
 - The minimum slope for lapped, nonsoldered-seam metal roofs **with** applied lap sealant shall be 1/2 vertical units in 12 horizontal units (4-percent slope). Lap sealants shall be applied in accordance with the approved manufacturer's installation instructions.
 - The minimum slope for standing-seam roof systems shall be 1/4 vertical units in 12 horizontal units (2-percent slope). (CRC § 905.10.2)
- Metal roof panels shall be secured to the sheathing in accordance with Sections CRC 905.10 et. seq. and the manufacturer's installation instructions. In the absence of manufacturer's installation instructions, the following fasteners shall be used:
 - Galvanized fasteners shall be used for steel roofs.
 - Copper, brass, bronze, copper alloy and 300-series stainless steel fasteners shall be used for copper roofs.
 - Stainless steel fasteners are acceptable for metal roofs. (CRC § 905.10.4)

- Underlayment shall be installed in accordance with the manufacturer's installation instructions. (CRC § 905.10.5)

Roof Ventilation (CRC § 806)

- The minimum net free ventilation are shall be 1/150 (1 square foot for every 150 square feet) of the area of the vented space. **Exception:** The minimum net free ventilation area shall be 1/300 (1 square foot for every 300 square feet) of the vented space provided the following condition is met:
 - At least 40% and not more than 50% of the required venting area is provided by ventilators located in the upper portion of the attic or rafter space. Upper ventilators shall be located no more than 3 feet below the ridge or highest point of the space, measured vertically, with the balance of the required ventilation provided by eave or cornice vents. Where the location of wall or roof framing members conflicts with the installation of upper ventilators , installation more than 3 feet below the ridge or highest point of the space shall be permitted.
- Vent and Insulation Clearance. Where eave (soffit) or cornice vents are installed, insulation shall not block the free flow of air. A minimum of a 1-inch space shall be provided between the insulation and the roof sheathing and at the location of the vent.

Permits/Inspections

- Permits are usually issued the same day they are applied for. The following inspections are made. Typically, depending on the timing, the inspections can be made in two or three site visits.
- **Sheathing/Nailing**
- **Flashing**
- **Underlayment**
- **Attic Ventilation**
- **Shingle Nailing**
- **Final Inspection**

