



## GUIDELINES FOR ROOFING

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This handout addresses only some of the roofing requirements to comply with the City of Greenwood Village Building Code and Design Criteria and manufacturer's specifications. It does not cover all roofing materials or all circumstances that occur with roofing installations. Refer to the City of Greenwood Village's current Building Code (2018 IBC and IRC), ICC ES Reports, Roofing Manufacturer's Association Installation Manuals, and Manufacturer's Installation Specifications for further information and requirements. Contact manufacturers or roofing supply yards for current manuals and specifications.

Contact the City of Greenwood Village Building Division for any other questions at 303-486-5783.

### **The following applies to all Residential and Commercial structures.**

#### **Roof Inspections**

A Mid Roof Inspection is required for all roof installations. For Clay and Concrete Tile and Metal Panel Roofs after base felt, flashing, and the batten system has been installed. 25% of the roofing material may be installed at the mid-roof inspection.

A Final Roof Inspection is required for all roofing materials once the roofing has been completed. Contractors must complete roofing within six (6) months after the building permit issue date.

#### **Corrections**

Corrections must be completed and called in for a re-inspection within thirty (30) days of the date listed on the correction notice. Call 303-486-5783 if there are mitigating circumstances.

#### **Design Criteria for Roofing (Weather conditions that affect the use of roofing materials and their installation.)**

- 100 mph 3-second gust wind speed or 85 mph fastest mile wind speed
- Wind-Driven Snow Area
- 30 pounds per square foot roof snow load
- Ice damming at eaves
- 3.0 inches per hour for 100-Year, 1-Hour Rainfall (for roof drain sizing)
- Exposure Category "C"

#### **General Requirements for Roofing:**

Both new construction roofs and re-roofs over existing buildings are to be installed to the current Design Criteria of the City of Greenwood Village.

All underlayment is required to be labeled with the appropriate ASTM numbers.

An underlayment of ice and water membrane is required at all eaves applied directly to the decking and up the roof slope two (2) feet past the exterior wall line—exception: Detached accessory structures that contain no conditioned floor area.

Fastener heads shall be flush with the roofing material's surface, NOT overdriven, under-driven, or crooked.

The contractor shall not exceed maximum weather exposure. Check manufacturer's specifications before installation.

The maximum number of roofing layers is two (2) except for Wood Shake, Slate, Clay Concrete Tile, and Asphalt Shingles, where one (1) layer is the maximum. All roofing and possibly the decking must be removed where an existing roof covering or decking is water-soaked or deteriorated and will not provide a sound, level, and rigid surface for an additional layer of roofing.

When two (2) or more roofing layers exist, the installer must remove all roofing layers before installing a new roof.

All rusted, damaged, or deteriorated vent flashing, metal edgings, drain outlets, collars, and metal counter flashing shall not be reinstalled.

Siding, Stucco, Brick, Stone, and any other type of Cladding must be up off the roof surface a minimum of 1 ½" for Steep-Sloped Roofing and 6" for Flat Roofing or Decks at all rake walls, headwalls, parapet walls, and chimneys.

#### **Asphalt Shingles:**

A metal drip edge is required at eaves and gables.

A minimum of six (6) nails is required for all strip-type shingles or per the manufacturer's specifications.

Corrosion-resistant nails shall be located per the manufacturer's instructions and not placed in the factory-applied adhesive. Nails must also penetrate both parts of a laminated shingle. See manufacturer's specifications and association manuals for correct placement of nails.

Mansard roof applications also require the butts of all asphalt shingles to be hand-sealed down per the manufacturer's specifications.

The minimum slope is 4:12 for standard installation. For slopes above 2:12 and less than 4:12, an underlayment of two (2) plies of Type I or II (15 or 30 base felt) lapped 19-inches is required.

#### **Cedar Shakes:**

In addition to the interlayment of 18-inch Type II (30 felt) laced in between each course of shakes, an underlayment of a single-ply Type II (30 pounds felt) or equal is required.

The minimum slope is 4:12 for cedar shakes. For roofs over non-living areas with slopes above 3:12 and less than 4:12, an underlayment of an ice and water membrane is acceptable for re-roofing.

Corrosion-resistant nails shall be placed to the manufacturer's specifications and industry standards, not too high or too low or too far from the sides of each cedar shake or shingle.

#### **Clay and Concrete Tile:**

For roof slopes of less than 4/12, an underlayment of two (2) plies of Type II (30-pound base felt) lapped 19-inches or equal is required.

For roof slopes greater than 4/12, an underlayment of (1) ply Type II (30-pound base felt), vertical battens of a minimum 3/8-inch thickness and made of cedar, or decay-resistant treated wood or other decay-resistant materials are required under the horizontal battens. (See manufacturer's specifications.) the spacing depends on the size of the horizontal battens based on the total roof loads for deflection.

The installer may use Staples to fasten down the horizontal battens if the vertical battens are on 12-inch centers.

Greater spacing of the vertical battens requires 8d galvanized nails.

Every tile in every course is required to be fastened. Approved fasteners with a minimum of 5/16" heads shall penetrate through the horizontal battens but not penetrate the underlayment.

Hurricane clips are required for each tile at all eaves.

To keep water on the surface of the field tile, all openings at the hip, ridges, and headwalls, including chimneys, skylights, solar panels, and downslope horizontal abutments, shall be fitted with approved weather blocking material.

A double flashing is required at all jacks and vents, with one roofed into the underlayment and the second over the tile's surface.

The minimum slope is 3:12 for standard installation of most concrete and clay tile. For slopes 2 1/2:12 to 3:12 an approved flat roofing membrane is required. The tile and battens are attached without fasteners penetrating the flat roofing membrane. However, the

minimum slope is only 5:12 for some clay tile. Always check with the manufacturer for low slope application specifications.

**Flat Roofing Membranes:**

New construction shall have a minimum  $\frac{1}{4}$ " slope to ensure positive roof drainage without standing water after 48 hours.

Re-roof installations to ensure positive roof drainage shall have crickets and/or drains added if  $\frac{1}{4}$ " slope is not obtainable.

Secondary or overflow drains/scuppers are required on all roofs with parapet walls and shall discharge above grade and separate primary drains/scuppers.

Gravel or stone is no longer permitted on buildings where the mean roof height is above 15 feet in Exposure Category "C." See Section 1504.8 of the 2018 IBC.