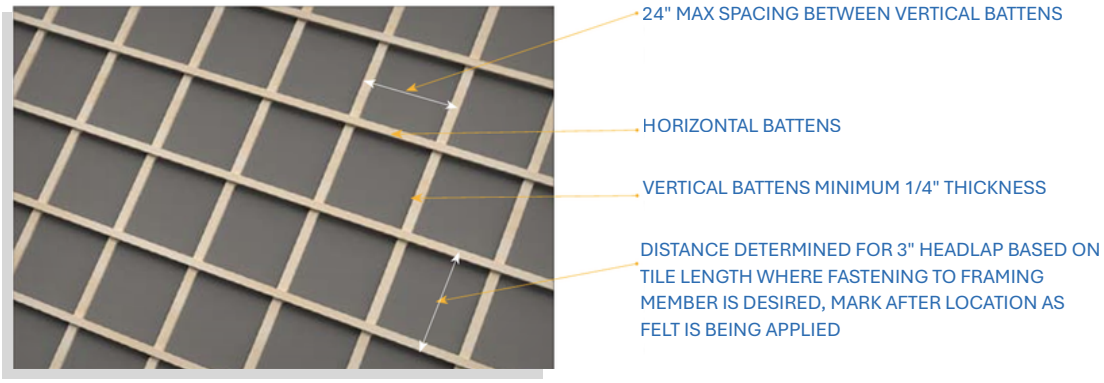
Technical Bulletin

Counter Batten Systems for Tile Roofing

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Overview of Counter Batten Systems

Counter batten systems are a method of tile roof installation that involves securing wood strips vertically along the roof surface. These strips are typically installed at **intervals of either 16 or 24 inches on center.** Once the vertical battens are in place, horizontal or anchor battens are fastened directly across them. The sizing of both vertical and horizontal batten strips depends on the specific spacing and load requirements for the roof, but the **vertical strips should be at least 3/8 inch thick.** For **horizontal battens, a nominal size of 1 by 3 inches is recommended.** Battens with nominal dimensions of 1 by 2 inches are generally not suitable, particularly when vertical battens are spaced more than 16 inches apart.



NOTE: Consideration should be given to climate roof orientation to determine if it is beneficial to specify/use vertical battens over underlayment, with horizontal battens secured over the vertical battens.

Advantages of Counter Batten Systems

Also known as strapping systems, counter batten installations provide a **robust and long-lasting solution for securing roof tiles.** By elevating the anchor battens and tiles above the roof deck, this system improves several aspects of tile roofing performance. One key benefit is the **mitigation of wind-driven rain issues:** any water that penetrates beneath the tiles can drain away freely, as the design prevents water from being blocked by battens or tiles. This reduces the risk of water ponding, thereby extending the life and performance of the roofing system's components. Additionally, the **number of nail penetrations through the underlayment is minimized,** and those that do occur are less likely to encounter moisture since they pass only through vertical battens aligned with the flow of water.

Applications and Thermal Performance



Counter batten systems are **commonly used for low-slope tile roofs** and **in areas with harsh winter weather,** though their **benefits are applicable to all tile roof installations.** The air cavity created between the roof deck and the tile serves as an effective **thermal barrier,** helping to ventilate and cool the roof in warm climates and reducing the formation of ice dams in colder regions.

This strapping system maximizes these thermal benefits under any conditions. Research from the Florida Department of Energy has demonstrated that a standard tile roof can reduce heat transfer through the ceiling by 38% compared to black asphalt shingles; **this reduction increases to 48% when a counter batten system is used.**

Ice Damming Prevention

In colder climates, ice damming often results from heat loss through the roof, which causes snow to melt and then refreeze at the eaves. With a counter batten system, even if attic ventilation is insufficient, the air gap beneath the tile usually dissipates enough heat to prevent snow from melting and refreezing, thus minimizing the risk of ice dam formation.

Installation Considerations

Special attention must be given to flashing and edge treatments, as the added thickness of the vertical battens needs to be accounted for to maintain an even roof plane and proper water flow. Additional nailer boards and edge metals are typically required at rake edges to accommodate these adjustments. For further information and detailed guidance on installing counter batten systems, refer to the TRI Alliance Cold & Snow Concrete and Clay Tile Design Criteria for Cold and Snow Regions.

Key Facts About Counter Batten Systems

- The counter batten system greatly reduces the number of nails that penetrate the underlayment.
- Building codes require battens to be fastened at 24 inches on center with 8d nails, or at 12 inches on center with 1 1/2 inch staples.
- Typically, nine courses of tile are installed per 100 square feet, requiring 90 linear feet of battens.

Underlayment Penetrations

- **With Staples:**
  Five staples per four-foot batten result in 10 holes, totaling 225 holes per 100 square feet.
  If all tiles are nailed (four tiles = four holes), there will be 315 holes per 100 square feet; with alternate courses nailed, the total is 270 holes.
- **With Nails:**
  Three nails per four-foot batten result in three holes, totaling 68 holes per 100 square feet.
  If all tiles are nailed, the total is 158 holes per 100 square feet; with alternate courses nailed, 113 holes.
- **With Counter Battens:**
  Vertical strips installed at 16 inches on center result in 63 holes per 100 square feet.
  It is important that fasteners used to attach tiles to battens do not penetrate the underlayment. For Eagle Roofing Products tile profiles, fastener lengths are typically 2-inch nails or screws.

For more information, contact your local Eagle Account Representative by visiting eagleroofing.com.