



PERENNIAL™

PORCELAIN ROOFING

EXTRAORDINARY STRONG PORCELAIN ROOFING TILES

INSTALLATION GUIDE

Daltile Perennial Roofing Tile: Basic Installation Guide

It is the responsibility of the roofing contractor to abide by all local building requirements and codes. Dal-Tile makes no warranties or guarantees of any type, including the accuracy of the information in this manual. Check your geographic area for special or prevailing code requirements that may require an engineering report. As with any roofing material, considerations for weight must be made. When considering roofing material, the designer should always consider the weight of the underlayment, fastening system, roof accessories and special hip/ridge treatments in addition to the roof tiles themselves. Dal-Tile does not assume responsibility for ensuring the structural viability of the building/roof system is sufficient to support Dal-Tile roofing products. It is the responsibility of the home owner, contractor, architect or an engineer to ensure the structure is viable for the application of Dal-Tile products. It is recommended that the structural design of the building itself also be evaluated by a registered engineer to determine that it can support the roof.

WARNING: Please refer to the Perennial SDS by [clicking this link](#)

Product storage and handling:

- Once properly installed, The Perennial tile is designed to perform to industry standards. Improper handling, and storage, of the Perennial can lead to cracked tiles.
- Perennial tile should be stacked vertically on a pallet and stay banded until ready for use.
- With care, unopened, factory banded, field tile pallets may be stacked 2 high.
- Perennial tiles come packaged in cardboard cartons (boxes) which can be weather sensitive. Prolonged exposure to the weather will deteriorate the packaging. The Perennial tile should be stored inside if the factory wrapper has been removed or cut into. If exterior storage is necessary the product should be weather protected to prevent damage to the cartons.
- For roof top storage, the Perennial cartons can be stacked on a roof using Peak Pallets, toe boards, or with securely fastened braces. Improper storage and stacking can lead to cracked tiles and unforeseen injuries.
- Interlayer rolls must be stored in a temperature controlled environment. Interlayer rolls that are stored below 40°F (4.44°C) for a prolonged period may experience membrane wrinkling when unrolled. If cold storage is necessary move the HDPE rolls into a temperature controlled atmosphere overnight at a minimum temperature of 55°F (12.8°C) prior to their application. Allowing adequate time for the Interlayer roll to heat up to reduce wrinkles.
- All products should be inspected upon delivery from the factory. If product damage has occurred due to shipping please contact Customer Service.
- When storage at the jobsite is necessary, Daltile suggests leaving the Perennial wrapped, and banded, in the factory cartons until ready for use. The chosen location should be level and the product should be secure to the pallet to prevent damage.



PERENNIAL™

PORCELAIN ROOFING

EXTRAORDINARY STRONG PORCELAIN ROOFING TILES

INSTALLATION GUIDE

Deck preparation and considerations:

- Decks should be free of clean, dry and sound. The deck should be free of noticeable deflections. High and low spots should be addressed before the install of the tile.
- Roof truss and over-all roof design should be examined by a local engineer.
 - Standard tile system is approximately 550lbs per sq. installed weight.
 - Heavy Duty (HD) system is approximately 770lbs per sq. installed weight.
- The Perennial was designed for steep slope roofing applications only with a min slope of 4:12
 - For pitch 5:12 and above a synthetic underlayment may be used. Must meet or exceed ASTM standards D226/D4869
 - For a 4:12 pitch a full Self-Adhered underlayment (ASTM D1970) must be applied.
- Invulnerable areas, such as but not limited to, valleys and eaves, use of a self-adhered membrane (ASTM D1970) directly to the deck is recommended.

Approved fasteners:

- Perennial Perennial Interlayer:
 - Must be tacked into place using staples or roofing nails.
- For the Perennial tile:
 - When fastening the tile, it should be installed so that the tile lighting hangs from the fastener. Over fastening the tile (too tight to the deck) will result in tile breakage. Tiles should be secured so that the deck is still allowed to expand and contract under normal conditions.
 - Fasteners should be long enough to penetrate the roof sheathing at least (\geq) $\frac{3}{4}$ inch and completely through any sheathing that is less than ($<$) $\frac{3}{4}$ inch thick.
- Nails:
 - Hot Dipped, Copper or Stainless Steel are preferred for nails.
 - Ring shank nails also known as annular thread, offer superior holding power in wood and plywood roof decks.
- Screws:
 - #8 Exterior grade coated screws or stainless steel.
 - STD system: Min 2" in length.
 - HD system: Min 2-1/2" in length.

Metals:

- Flashing is required where a wall, chimney, vent, plumbing stack, or other structural protrusions meets the roof. Where flashing is metal, it shall be a.) 0.019" Galvanized, b.) 0.019" Aluminum, or c.) 16 oz. Copper. Flashing installations are critical for a water-tight roof. Always refer to and follow applicable building codes and standards and best roofing practices (NRCA and Tile Roofing Institute examples).
- Approved metals may also be used for the Starter Shim and T-Metal flashing.
- Flashings, such as the T-Metal and Starter Shim can be fabricated at the local level.



PERENNIAL™

PORCELAIN ROOFING

EXTRAORDINARY STRONG PORCELAIN ROOFING TILES

INSTALLATION GUIDE

Ventilation Guideline

- The need for proper attic ventilation is required by most building code authorities, in accordance with the IBC and IRC. These codes recognize that the proper ventilation is a necessary component of any successful steep slope roof system. Generally building codes require that a minimum net free ventilating area for attic vents be a 1:150 ratio of the attic space being ventilated; the codes generally allow for the reduction of the ratio from 1:150 to 1:300 if the attic vents are a balanced system on a roof and/or a vapor retarder is installed on a ceiling assembly's warm side. Check with local building official for regional requirements.

Required Tools and Equipment

Safety: Safety is priority! Protect yourself and your crew by following all safety tips included in this guide, safety labels on your power tools and always follow OSHA requirements in your area.

Hand Tools:

- Hammer
- Tinsnips
- Chalk line
- Tape measure
- Utility knife
- Marker/pencil
- Square
- Caulk gun
- Score and snap tile cutter.

Power Tools:

- Extension cords
- Screw gun or driver
- Tile "wet" saw (porcelain quality diamond blade)
- Drill Bits: Tile quality bits 1/8"-1/4" are recommended. The key to drilling regular porcelain tile is to use a brand-new carbide-tipped masonry drill bit and a drill that has a variable-speed trigger. 100 or 200 revolutions per minute, is perfect to drill standard porcelain tile.

Specialty Equipment:

- Toe jacks for toe boards
- Forklift or conveyor lift

Safety Equipment:

- Per local OSHA Standards and Guidelines



PERENNIAL™

PORCELAIN ROOFING

EXTRAORDINARY STRONG PORCELAIN ROOFING TILES

INSTALLATION GUIDE

Daltile Recommended – Order of Installation

- Install approved underlayment.
 - Must meet or exceed ASTM standards D226/D4869
 - Best practice is a high quality synthetic underlayment rated for tiles.
 - For a 4:12 pitch a full Self-Adhered underlayment (ASTM D1970) must be applied.
 - Best practice is to use an SBS modified underlayment.
- Install “nailers” over the underlayment in preparation for the Hip/Ridge tiles. Nailers should be mitered and installed as close as possible to the center of hip/ridge line. It is recommended that a chalk be used to help find the center of the hip/ridge first. Field tile should be installed within a ¼” of the nailer boards.
 - [See Details: 1A - Phase 1](#)
- Install T-Metal rake flashing, Starter Shim, W Valleys and necessary flashings per local code. Make sure to use a self-adhered membrane to dry in all flashings materials.
 - [See Details: 2A, 2B, 4A, 5A](#)
- All Rakes:
 - [See Details: 4A](#)
 - T- Metal may be fabricated at a local level. See details for measurement.
 - After the T-Metal is installed secure with 6-inch strip of self-adhered underlayment strip. (ASTM D 1970).
- At all Perimeter Eaves:
 - [See Details: 2A, 2B, 2C](#)
 - Install Starter Shim (sometimes refer to as a “can’t strip”) on top of the underlayment.
 - For the Standard tile use a 3/8” tall shim.
 - For the HD tile use a 1/2” tall shim.
 - Starter Shims can be made of metal, treated lumber, cedar, HDPE or PVC. Please check with your local codes. Geographical weather should be taken into consideration when selecting a material.
- Drip Edge should be installed on top of the Starter Shim and secured in place with a Self-Adhering Roofing Membrane (ASTM D1970).
- Install W Valleys.
 - [See Details: 5A](#)
 - Exposed W-Valley Flashing should be nailed no less than 10" from centerline of valley, at 16" centers each side of valley. Nails should match the metal of valley.



PERENNIAL™

PORCELAIN ROOFING

EXTRAORDINARY STRONG PORCELAIN ROOFING TILES

INSTALLATION GUIDE

- Tape in metal with 4"- 6" self-adhered water blocking material/tape/self-adhered membrane (ASTM D1970).
- Wpeak should tall enough to exceed the height of the tiles.
 - No less than 1-1/2" tall at the center of the peak.
- Tiles should be installed within 3" of the Valley W.

Field tile:

- Each box of Perennial tile is pre-packaged (pre-mixed) from the factory for ideal shading. There is no need to "mix" in the field.
- The length of the field tiles is nominal in length and can vary 1/4" in size.
- A cut tile should have at least 2 factory pre-punched holes when possible. A min of at least fasteners are needed per tile. Use **all** pre-punched holes to secure the tile. 4=4 fasteners, 3=3 fasteners and 2=2 fasteners.
- When installing field tiles, pull each piece out of the box as it is packaged and install one after the other, right to left or left to right...horizontally. Finishing each row before moving on to the next.
- The field tile must have at least a 2.5" overlap. A 3" overlap will yield an 8" exposure. A maximum of 5" overlap can be achieved for the desired layout.
- Perennial tile offsets are critical to avoiding a "seem on seem" situation. Please use the following offsets when installed the Perennial tile.
 - a. **See Details: 3A**
 - b. Row 1: Start with a full tile.
 - c. Row 2: Cut 6" off the tile and continue with a full tile.
 - d. Row 3: Cut 12" off the tile and continue with a full tile.
 - e. Row 4: Use a full tile.
- **Perennial Interlayer is required under ALL tiles.**
 - a. Interlayer should be cut to 10' lengths and overlapped by at least 6".
 - b. Interlayer should be "laced in" between each row of tile.
- It is best practice is to end with a row with a full tile. Evenly space courses vertically from eave to ridge to avoid short coursing.
 - a. Stop 3'-5' before the end of the run and work your way back to complete the run.
 - b. This applies to valley cuts as well.
 - i. Always work with a full piece in the valley and work your way back.



PERENNIAL™

PORCELAIN ROOFING

EXTRAORDINARY STRONG PORCELAIN ROOFING TILES

INSTALLATION GUIDE

Pipe Penetrations Details:

- See Details: 7A, 7B

Wall to Roof Flashing details

- See Details: 8A

Hip Tiles and Nailers:

- See Details: 1A, 1B

- Phase 1:
- HIP nailers must be to the following specifications:
 - For standard tile: Rip down 2x4 material to be 1" tall by 3-1/2" wide.
 - For the HD tile: Rip down 2x4 material to be 1-1/4" tall by 3-1/2" wide.
- HIP NAILERS: Nailers are must be mitered in the center for maximum tile support.
 - Nailers can be made from PVC, treated lumber, cedar or HDPE.

Nailers should be installed 6" up from the bottom of the hip.

- Phase 2:
 - Install field tile within a 1/4" of the nailers.
 - The first tile will need to be tailored to fit the specific roof pitch and application.
- Phase 3:
 - Install a layer of Interlayment over the nailers.
 - Trim the interlayment so that is no wider than the hip tiles.
 - Work in 10' sections and overlap by 6".
- Phase 4:
 - Install hip tile from bottom to the top.
 - Overlap each tile to yield an 8" exposure.
 - Install a dap of exterior grade adhesive on top of the fasteners and lay the next tile on top of the adhesive.

Hip and Ridge Junction:

- See Details: 1C



PERENNIAL™

PORCELAIN ROOFING

EXTRAORDINARY STRONG PORCELAIN ROOFING TILES

INSTALLATION GUIDE

Ridges: Non-vented:

- See Details: 6A
- The Perennial tile does not allow for a vented ridge application. Please choose a locally code approved venting application for your roof.
- RIDGE nailers must be to the following specifications:
 - For both the standard and HD tile use standard 1x4 material.
- RIDGE nailers: Ridge nailers must be mitered in the center for maximum tile support.
 - Ridge nailers can be made from PVC, treated lumber, cedar or HDPE.
- For both and Standard tile system, and the HD system, 1x4 material may be used.
- After the underlayment is installed, chalkline a straight line from end to end. This will help to ensure a straight install and avoid “waves” in the sightline.
- Install the nailers.
- Install a layer of interlayment over the nailers.
 - Interlayment should be trimmed to so that it does not extend past the ridge tiles.
 - Work in 10’ sections and overlap by 6”.
- Working from end to end, install the ridge tiles so that each tile covers the fasteners of the previous tile.
- Install a dab of exterior grade adhesive on top of the fasteners and lay the next tile on top of the adhesive.

Replacement of the Perennial:

- Perennial tiles can be replaced by using slate hooks.
 - Remove the existing tile, and fasteners, by using a slate ripper and hammer.
 - Examine the deck, interlayer and underlayment and repair is necessary.
 - Install slate hooks above the tile that is below the tile that is being replaced.
 - When installing the hooks make sure the bottom of the hook is in-line with the bottom of the tiles that are on either side of the tile that was removed.
 - Lower the tile into the hooks of the slate hooks.
 - For added security a dollop of sealant adhesive may be added in between the tiles.

For questions regarding installation, warranty and claims please contact:

Dal-Tile- Technical Services
7834 CF Hawn Freeway, Dallas, TX 75217

E-Mail: Perennial.TechHelp@daltile.com