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 guaranties 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 color and shading:

- Perennial is designed to mimic the look of real slate, concrete tile, wood shakes and natural stone products. A natural color variation is expected to mimic the look of the desired product. When selecting a color, multiple tiles should be used for a full blend appearance.

Product storage and handling:

- Perennial is a hard surface product. With any hard surface product, a small amount of damage and breakage may occur during shipping and handling. This is common and is factored into the waste factor of the job.
- The product is shipped form the factory in factory condition. Product should be inspected upon arrival and excessive damaged should be reported to Customer Service.
- Once properly installed, The Perennial tile is designed to perform to industry standards. Improper handling, and storage, of 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 rooftop 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.
- Perennial 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 job site is necessary, Daltile suggests leaving the Perennial wrapped, and banded, in the factory cartons until ready for use. The product should be secure to the pallet to prevent damage.

©2021 Daltile (08/21)

Deck preparation and considerations:

- Decks should be clean, dry and sound. The deck should be free of noticeable deflections. High and low spots should be addressed before the installation of the tile.
- Roof truss and overall roof design should be examined by a local engineer.
  - Standard tile system is approximately 550 lbs per square installed weight.
  - Heavy Duty (HD) system is approximately 770 lbs per square installed weight.
- Perennial tile was designed for steep slope roofing applications 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.
- In vulnerable areas, such as but not limited to, valleys and eaves, the use of a self-adhered membrane (ASTM D1970) directly to the deck is recommended.

Approved fasteners:

- Perennial Interlayment:
  - 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 lightly hangs from the fasteners. Over fastening of 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 (≥) ¾ inch and completely through any sheathing that is less than (<) ¾ 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.

©2021 Daltile (08/21)

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.

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 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 officials for regional requirements.
- Acceptable vents are as follows:
  - Static roof vents.
  - Off ridge vents.
  - Standard and solar powered vents.
- Ridge vents, designed for asphalt shingles, are not allowed.

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
- Tin snips
- Tack Hammer and staples
- Chalk line
- Tape measure
- Utility knife
- Marker/pencil
- Square
- Caulk gun
- Score and snap tile cutter

©2021 Daltile (08/21)

Power Tools:

- Extension cords
- Screw gun or driver
- 4.5" thin diamond blade and grinder
- Sawzall with woods and metal blades
- Tile “wet” saw (porcelain-quality diamond blade)
- Drill: tile-quality bits 1/8"-1/4" – 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

Daltile Recommended – Order of Installation

INSTALLATION OF THE HIP NAILERS

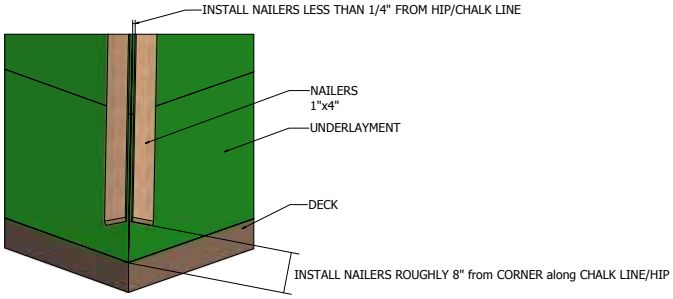
- Install “nailers” over the underlayment in preparation for the Hip tiles. Nailers should be mitered and installed as close as possible to the center of hip/ridgeline. Using a chalkline will help to keep the tiles on center. Field tile should be installed within a ¼” of the nailer boards.
    - HIP nailers must be to the following specifications:
    - Standard tile:
        - Rip down 2 x 4 material to be 1" tall by 3-1/2" wide.
- HD tile:
    - Rip down 2 x 4 material to be 1-1/4" tall by 3-1/2" wide.
- Nailers can be made from PVC, treated lumber, cedar, or HDPE.
- Nailers should be installed 6" up from the bottom of the hip.
- **See Details: 1A and 1C**

©2021 Daltile (08/21)

HIP ASSEMBLY

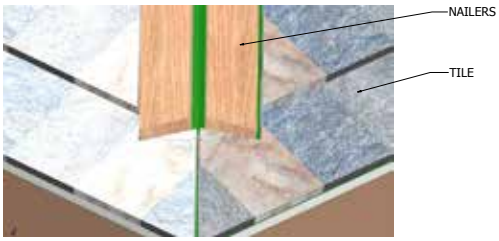
PHASE 1

1) INSTALL UNDERLAYMENT
2) INSTALL NAILERS



PHASE 2

INSTALL FIELD TILES



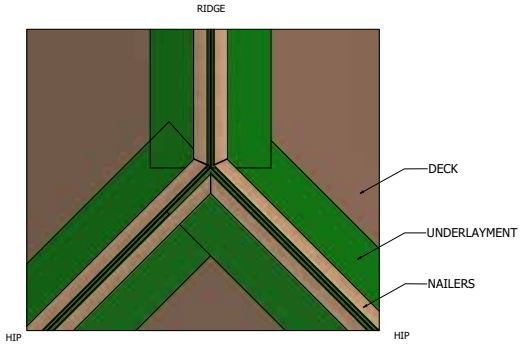
NOTES:

TILES SHOULD BE INSTALLED WITHIN ¼" OF NAILERS

DRAWN: Jeff	7/19/2020	
CHECKED: QA		TITLE: 1A
PEG: APPROVED:		SIZE: D · DWG NO: Hip Assembly · REV:
		SCALE: 15/100 · SHEET 1 OF 1

HIP AND RIDGE JUNCTION

PHASE 1 : UNDERLAYMENT AND NAILERS



PHASE 2: INTERLAYMENT AND TILES AT RIDGE/HIP JUNCTION

DISASSEMBLED VIEW

NOTES:

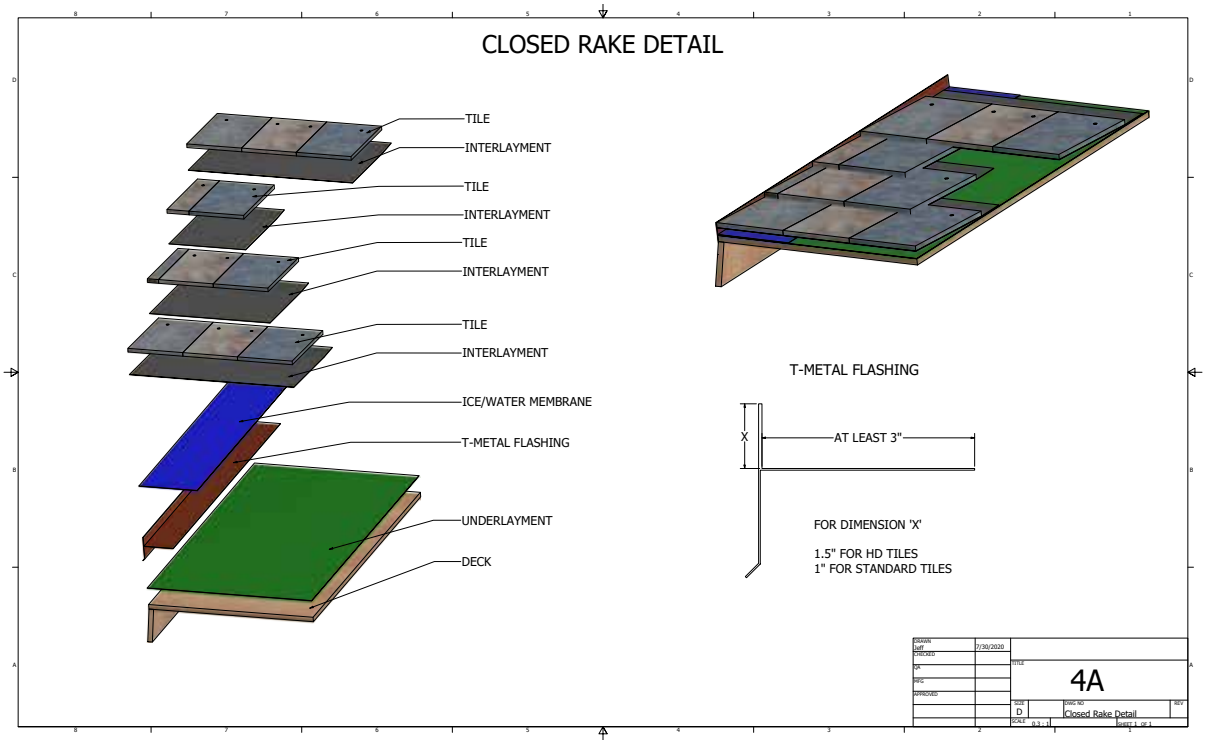
- NAILERS RUN PARALLEL AND LESS THAN 1" FROM CHALKLINE/HIP/RIDGE
- NAILERS SHOULD BE MITERED
- RUN YOUR HIP AND RIDGE TILES SO THAT THE OVERLAPS FACE AWAY FROM WINDS

DRAWN: Jeff	7/27/2020	
CHECKED: QA		TITLE: 1C
PEG: APPROVED:		SIZE: D · DWG NO: Hip Ridge Junction · REV:
		SCALE: 10 / 100 · SHEET 1 OF 1

©2021 Daltile (08/21)

INSTALLATION OF THE RAKE FLASHING

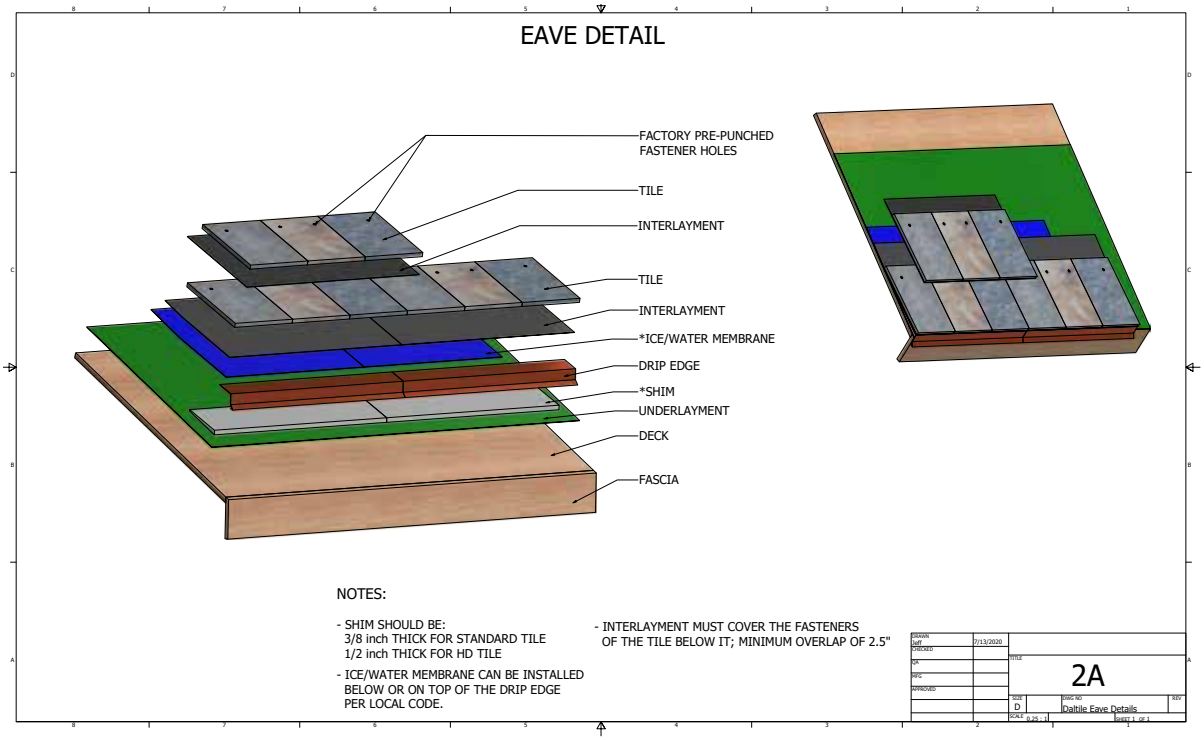
- **See Details: 4A**
- T- Metal may be fabricated at a local level. See details for measurement.
- After the T-Metal is installed, secure with 6-inch strip of self-adhered underlayment strip. (ASTM D 1970).



©2021 Daltile (08/21)

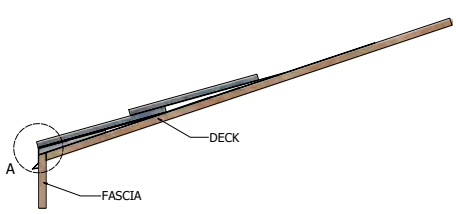
INSTALLATION OF THE STARTER SHIM AT THE EAVES

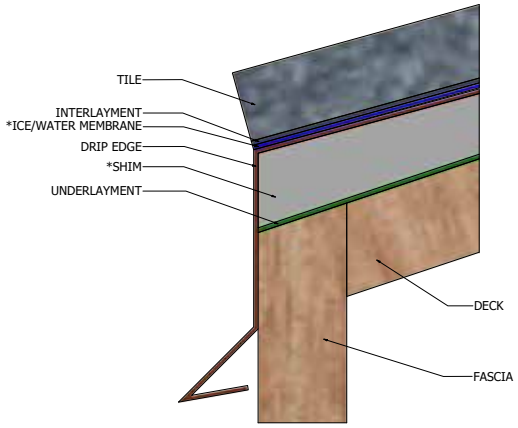
- **See Details: 2A, 2B**
- Install Starter Shim (sometimes refer to as a “can’t strip”) on top of the underlayment.
- For the Standard tile use a 3/8" tall shim.
- For the HD tile use a 1/2" tall shim.
- Starter Shims can be made of metal, treated lumber, cedar, HDPE or PVC. Please check with your local 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).



©2021 Daltile (08/21)

EAVE CROSS-SECTION





DETAIL: A

NOTES:

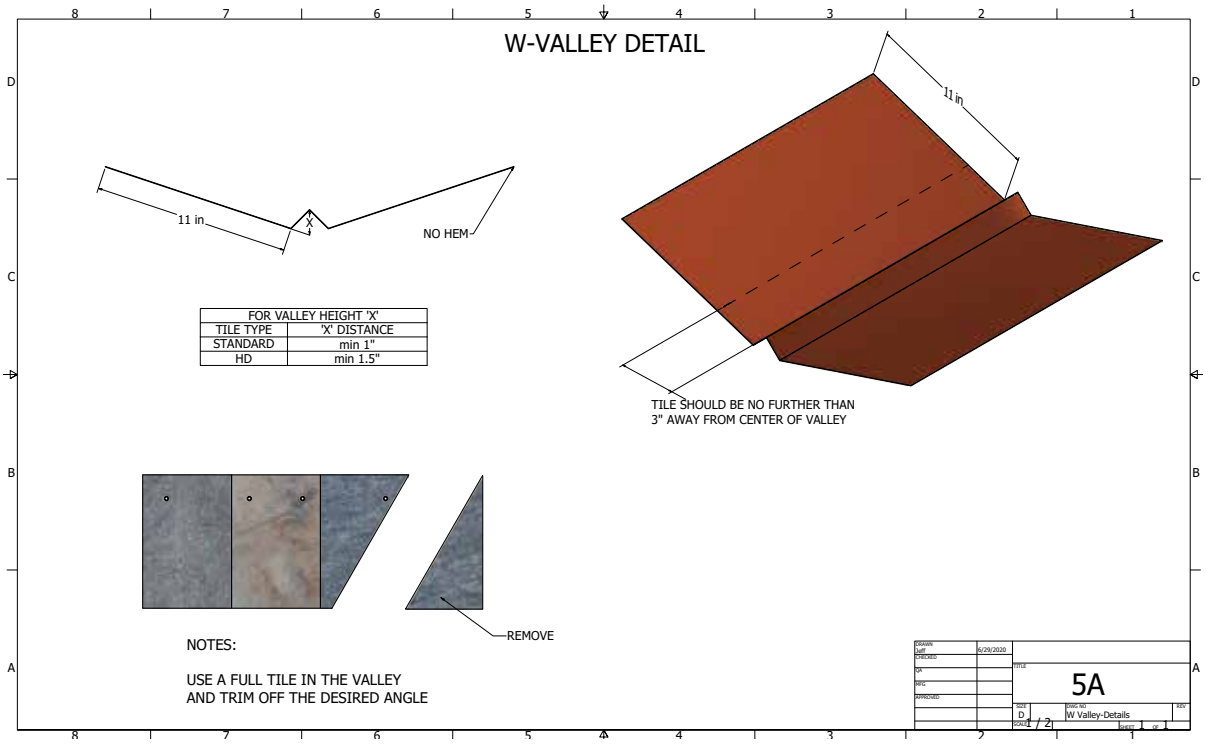
- SHIM DEFAULTS:
  3⁄8 inch FOR STANDARD TLIE
  ½ inch FOR HD TILE
- ICE/WATER MEMBRANE CAN BE INSTALLED BELOW OR ON TOP OF THE DRIP EDGE PER LOCAL CODE.

DESIGN: Jeff	8/3/2020	
CHECKED		TITLE: 2B
QA		
MFG		
APPROVED		SIZE: D; DWG NO: Eave Cross Section; REV
		SCALE: 1 / 3; SHEET 1 OF 1

©2021 Daltile (08/21)

INSTALLATION OF THE W VALLEYS FLASHING

- **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. Fastener meta should match the metal of the valley to avoid galvanic corrosion.
- Tape in metal with 4"- 6" self-adhered water blocking material/tape/self-adhered membrane (ASTM D1970).
- The "peak" of the W should no less than 1-1/2" tall.
- Tiles should be installed within 3" of the Valley W.

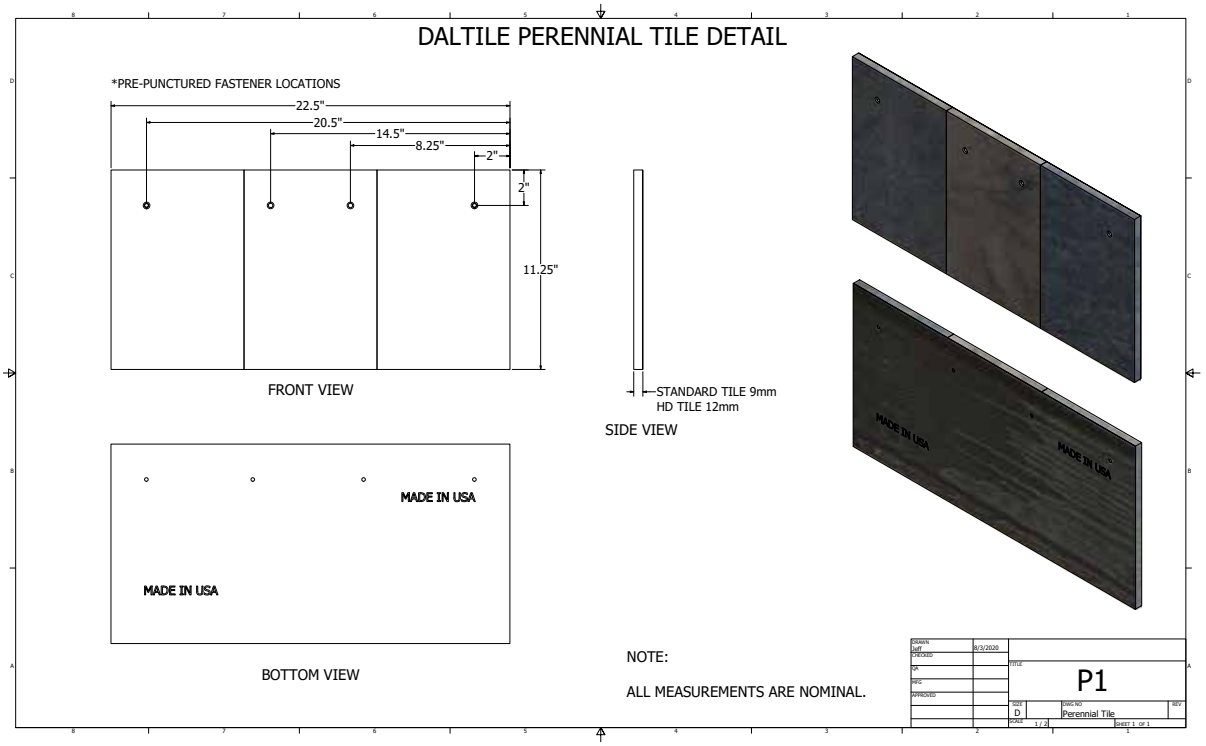


FOR VALLEY HEIGHT 'X'	
TILE TYPE	'X' DISTANCE
STANDARD	min 1"
HD	min 1.5"

©2021 Daltile (08/21)

The 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 ¼” in size.



- A cut tile should have at least 2 factory pre-punched holes.
- 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.
- 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 keyway on keyway.

©2021 Daltile (08/21)

- **See Details: 3A**
- Row 1: Start with a full tile.
- Row 2: Cut 6” off the tile and continue with a full tile.
- Row 3: Cut 12” off the tile and continue with a full tile.
- Row 4: Use a full tile.

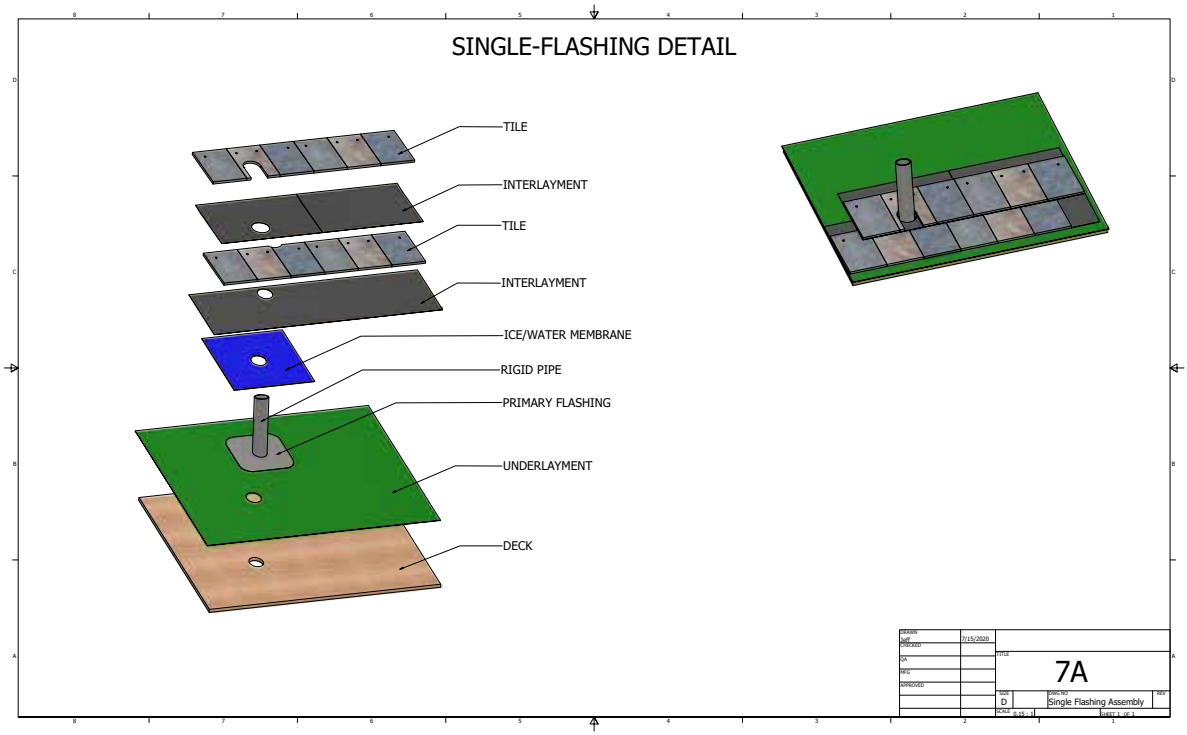
PERENNIAL INTERLAYER IS REQUIRED UNDER ALL TILES

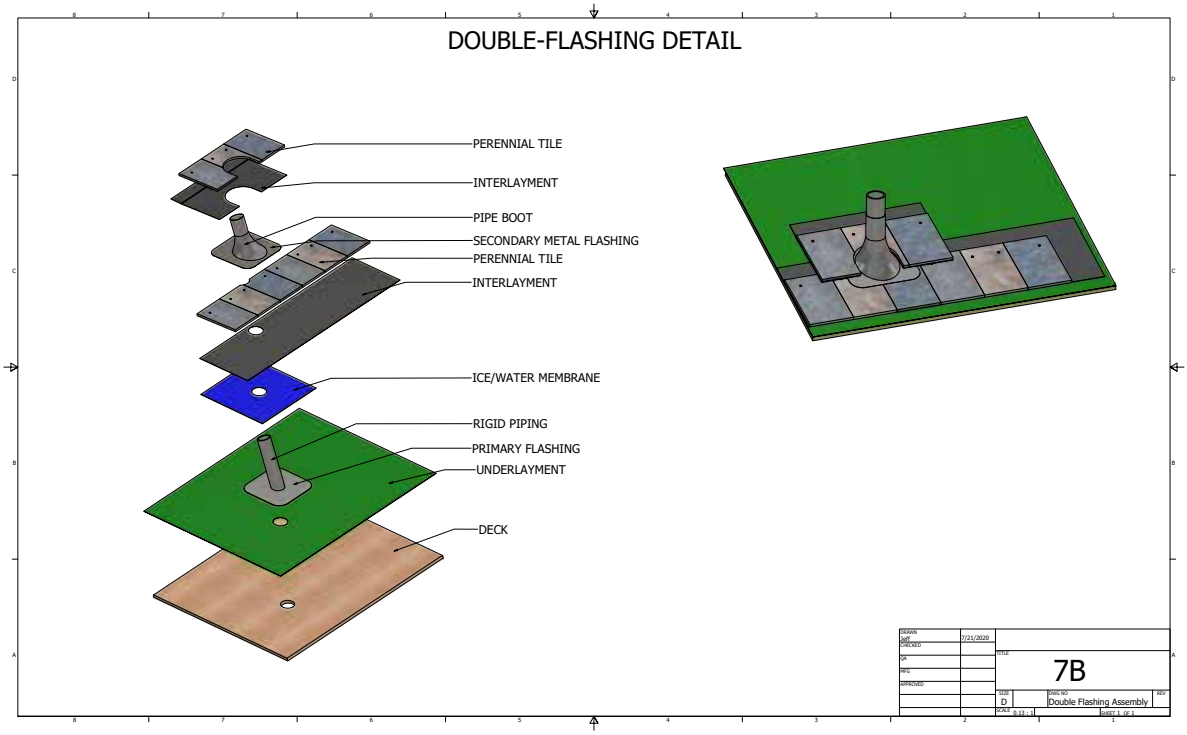
- Interlayer should be cut to 10' lengths and overlapped by at least 6".
- Interlayer should be "laced in" between each row of tile.
- Stop 3' – 5' before the end of the run and work your way back to complete the run so that you end up with a tile that has at least 2 pre-punched holes.
- Always work with a full piece in the valley and work your way back.

©2021 Daltile (08/21)

PIPE PENETRATIONS DETAILS

- **See Details: 7A, 7B**

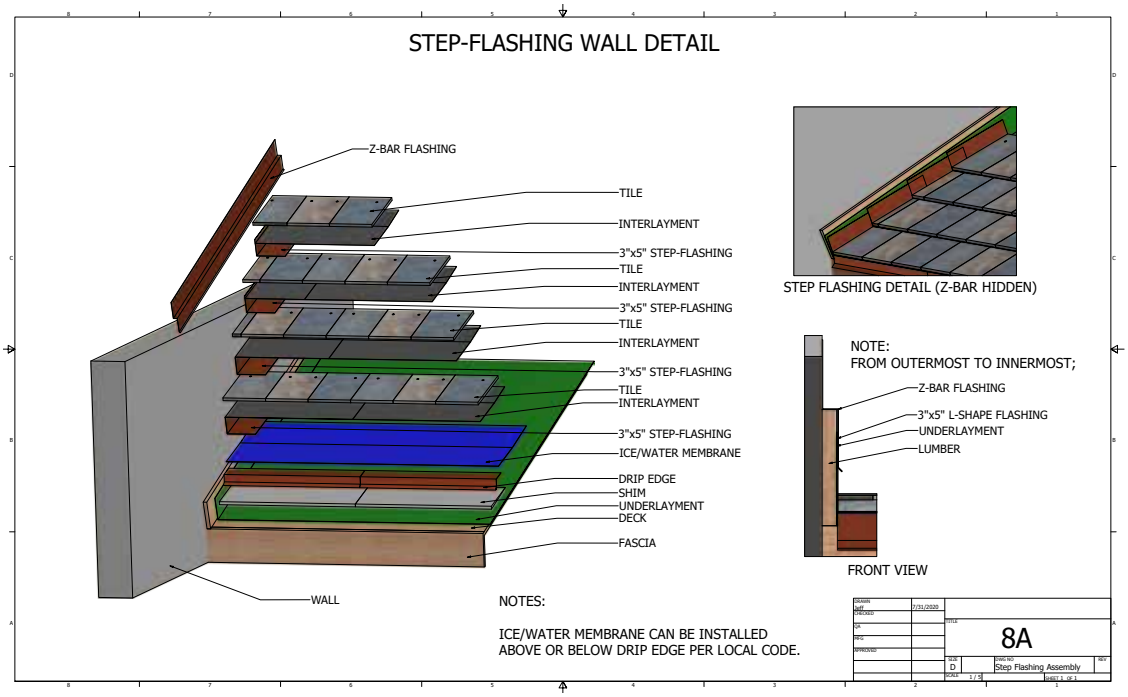




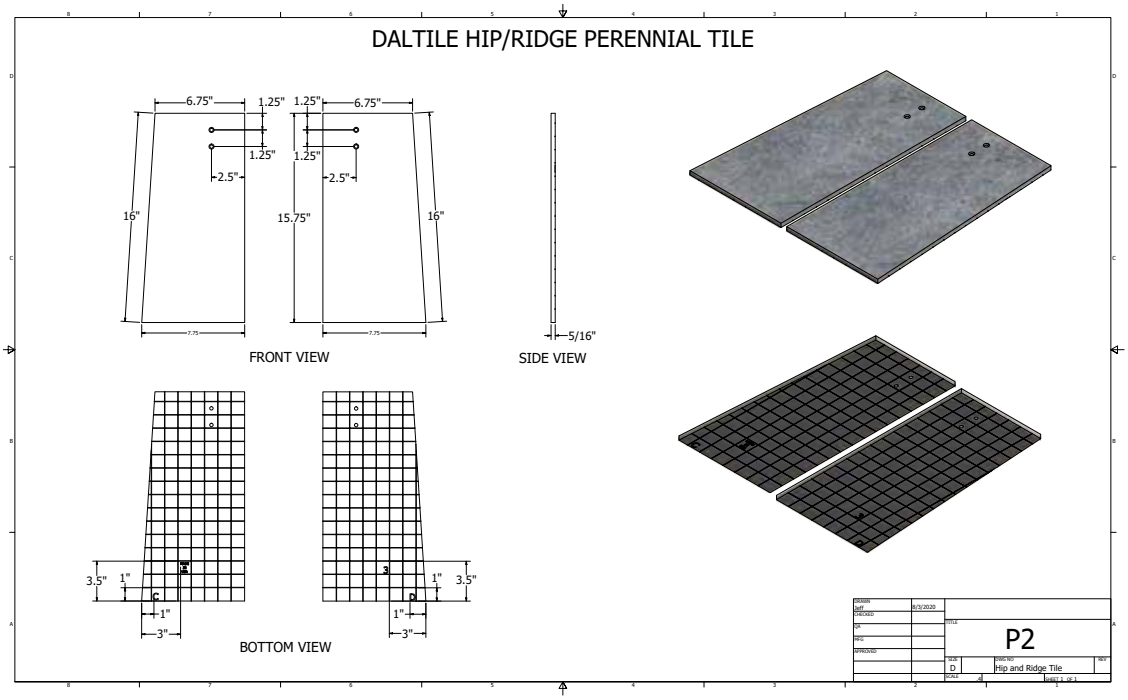
©2021 Daltile (08/21)

ROOF TO WALL FLASHING DETAILS

- **See Details: 8A**



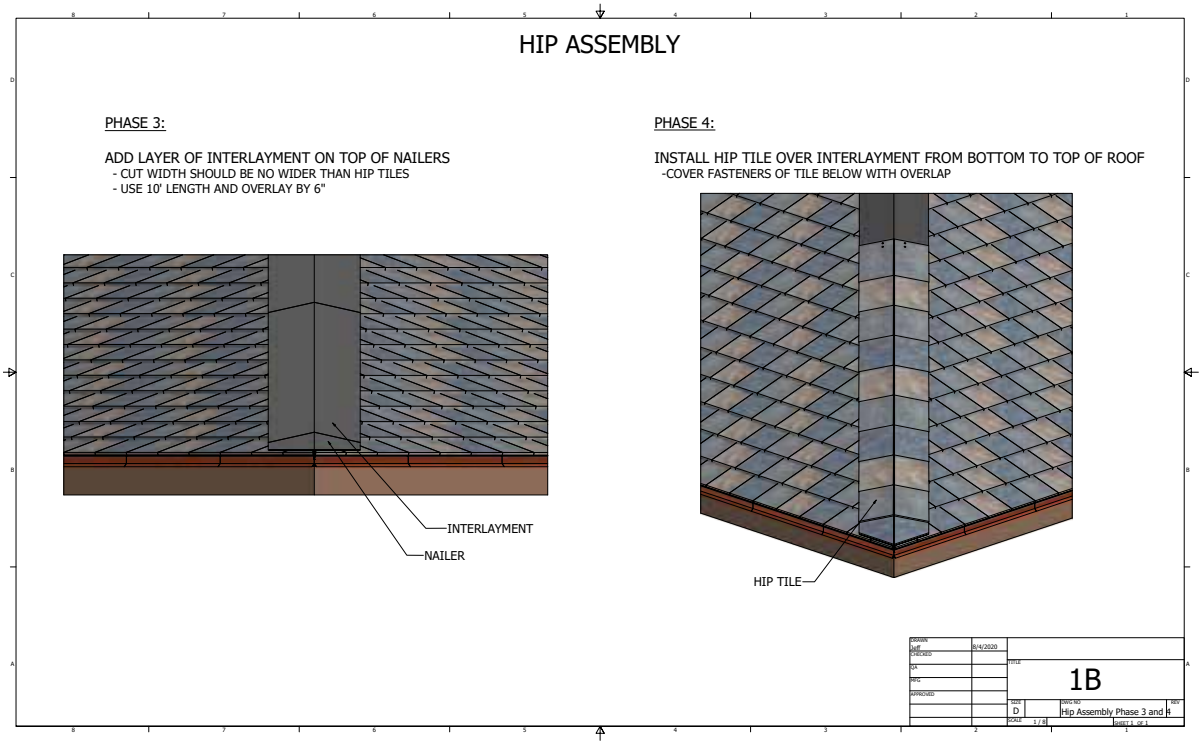
HIPE AND RIDGE TILE



©2021 Daltile (08/21)

HIP TILE INSTALLTION

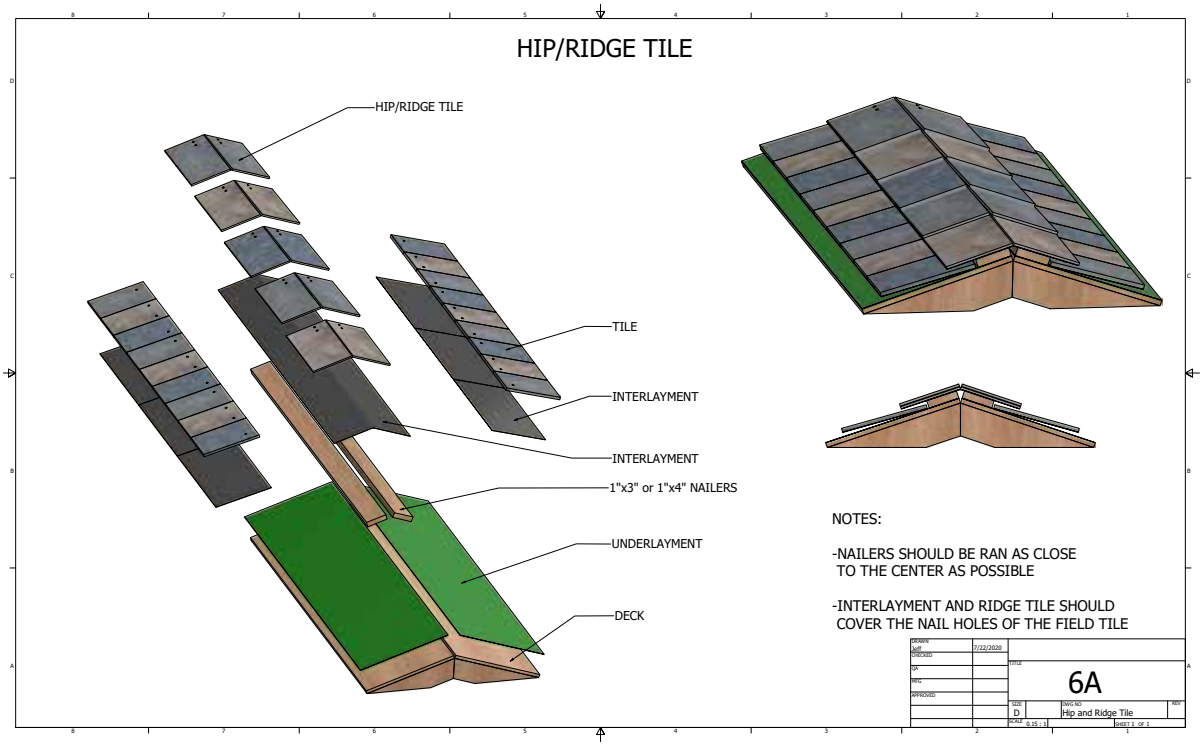
- Step 1:
  - After the nailers have been installed, install a trimmed section of interlayer over the nailers.
  - Working with 10’ sections of the interlayer. Start at the bottom of the and work your way to the top. Overlapping by 6”.
  - Trim the interlayer so that it is no wider than the hip/ridge tile.
- Step 2:
  - You will need to custom fit the first tile by the eave so that is in-line with the field tile.
  - Install hip tile from bottom to top. Overlap each tile for 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.
  - Finish the row by using a dap of adhesive to secure the final 2 tiles.



©2021 Daltile (08/21)

INSTALLATION OF RIDGE TILE

- **See Details: 6A**
- **The Perennial tile does not allow for a vented ridge application. Please check your local code for an approved vent for your roof.**
- Both the standard and HD tiles use standard 1x4 material.
  - Ridge nailers can be made from PVC, treated lumber, cedar, or HDPE
- Ridge nailers must be mitered in the center for maximum tile support.
  - Working in 10’ sections of the Perennial Interlayer, cover the ridge nailers and overlap by 6”.
  - Interlayer should be trimmed to so that it does not extend past the ridge tiles.
- Working from end to end, install the ridge tiles so that each tile covers the fasteners of the previous tile.
  - Keep an 8" exposure to match the field and hip tiles.
- Install a dap of exterior grade adhesive on top of the fasteners and lay the next tile on top of the adhesive.



©2021 Daltile (08/21)

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.
  - Screws and fasteners may also be removed by cutting flush to the deck using a handheld reciprocating saw with a metal cutting blade.
  - Examine the deck, interlayer, and underlayment and repair as 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 contact, warranty and claims please contact:

Daltile Technical Services
7834 CF Hawn Freeway, Dallas, TX 75217

E-Mail: PerennialTechHelp@daltile.com

©2021 Daltile (08/21)