ETERNATILE ROOFING SUBSTRATE APPLICATION STANDARD

This application standard covers the procedures for installation of EternaTile roof tile systems. This standard shall be used in conjunction with the EternaTile manufacturer's Product Approval and RAS 127.

NOTE #1:-The following table provides the contractor with the choices available for underlay systems. These systems can only be used on pitches designated in the table below.

Definitions

For definitions of terms used in this application standard refer to ASTM 1079 and the *Florida Building Code, Building.*

Root Pitch	Substrates and Underlayment	Plastic or compatible roof cement at all metal and flashing overlaps and valley areas	Reference
3:12 or greater up to 12:12	1.Georgia Pacific DensDeck ¼" or ½" board type secured to decking placed with staggered seam techniques using approved ring-shank roofing fasteners or approved simplex fasteners or approved screws and plates place in approved spacing in field, laps, corners, rakes valleys and walls..	Required	3.0
3:12 or greater up to 12:12	2.Any product approved (#30 or #43) 2-ply inorganic base sheet mechanically fastened to DensDeck with same simplex nails or roof fasteners w/tin-tags placed in approved spacing techniques. 3. Any product approved underlayment system with a 6-inch back-nailed under-lap mechanically fastened base hot, cold, or self adhered.	Required Per product approval	RAS 111 3.01 A 3.01 B,C, D or E

This Roofing Application Standard covers all EternaTile roof systems. Every EternaTile head-lap has a design limited head-lap, and all EternaTile products are installed on minimum ¼ inch of Georgia Pacific DensDeck

over 15/32 in solid decking in compliance with Chapter 23 of the *Florida Building Code.* For 200 mph sustained wind resistance, 15/32 solid decking shall be nailed in compliance with Chapter 23 (High-Velocity Hurricane Zones) of the *Florida Building Code* and all nails used shall be fully ring-shank by design as defined under Section 1523 of the *Florida Building Code*.

PART I - GENERAL

1.01

A. Adhesive Foam

EternaTile tiles shall be installed using 3M tile bond foam or any other approved tile bond adhesive.

When using any adhesive, at the time of installation, EternaTile shall not be installed over wet substrate and/or underlayment where moisture prohibits adhesion of tile bond adhesives.

Gaps in wood deck located in valley, hip and ridge areas shall be filled with approved insulation foam.

PART II-MATERIALS

2.01 Fasteners:

A. "Z" Track Fasteners:

Only EternaTile prefabricated "Z" Track fasteners made of copper, monel, aluminum or stainless steel shall be used with the EternaTile roofing system. All nails used to fasten tiles to substrates shall be tested for corrosion in compliance with TAS 114 Appendix E Section 2 (ASTM G 85), for salt spray for 1000 hours, and shall be "like metal" matched with copper, monel, aluminum, or stainless steel EternaTile "Z" Tracks.

All Substrate and Underlayment fasteners shall be of sufficient length to penetrate a minimum ½ in, through the thickness of the deck or penetrate into a 1 inch or greater thickness of lumber not less than 1 in.

If insulation board is used above the roof deck and beneath DensDeck, the underlayment fasteners must be of sufficient length to penetrate through the insulation board plus the minimum ½ in through the wood deck.

B. Substrate and Underlayment Fasteners

Fasteners shall be in compliance with Section 1523 of the Florida Building Code. Building (herein referred to as "Approved Fasteners").

(aa) Nails shall be minimum 12 gage, annular ring shank nails having not less than 20 rings per inch; heads not less than ¾ in diameter; and lengths sufficient to penetrate through the plywood panel or wood plank decking not less than 3/4 in or to penetrate into a 1 in., or greater, thickness of lumber not less than 1 in.. Nails shall be hot dipped: electro or mechanically galvanized to a thickness sufficient to resist corrosion in compliance with Appendix E of TAS 114. All nails shall have Product Approval. All nail cartons or carton labels shall be labeled to note compliance with corrosion-resistance requirements.

(bb) Such fasteners used on substrates shall be applied through "tin caps" not less than 3/4 in. and not more than 2 in. in diameter and of not less than 32 gage (0.010 in) sheet metal. All tin caps shall have Product Approval. All tin caps and simplex nails shall be Miami-Dade listed for corrosion resistance.

(cc) Prefabricated fasteners systems complying with Section 1517.5. Florida Building code Building may be used provided they are Miami-Dade listed for corrosion resistance.

2.02 Metal Flashing:

In all coastal areas, all flashing material shall comply with the requirements set forth in Chapter 15 (High-Velocity Hurricane Zones) of the *Florida Building Code, Building.*

1 Metal accessories for roofs shall be not less than 24 gage aluminum with baked on enamel both sides, 26 gage galvanized, 28 gage stainless steel, 16 ounce copper, 0.024 inch (0.61 mm) thick aluminum, lead sheet with a minimum 2.5 lb/sf or equivalent non- corrosive lead metal alloys or composite materials manufactured for use as roof termination. All composite and nonmetallic flashing materials shall have Product Approval when used in Miami-Dade Code compliance zones.

2. Metal accessories may be of a manufactured, shop fabricated or field fabricated type provided the materials and fasteners in coastal areas are in compliance with the minimum requirement of this Code and shall be installed in compliance with methods set forth in RAS 111.

2.03 Asphaltic Adhesive:

A. Asphalt plastic roof cement shall conform to ASTM TD 1586. Type non-asbestos non-running heavy body material composed of asphalt and other mineral ingredients.
B. Cold process modified bitumen roofing mastic conforming to ASTM D 3019. Type III.
C. Asphalt - conforming to ASTM D 312, Type IV.
D. Modified Bitumen with granular surface of either; peal and stick adhesive or installed using fully adhered asphalt methods. See 3.0 Execution.

2.04 Adhesive/Sealant:

A. Structural bonding adhesive conforming to ASTM 3498.

2.05 Drip Edging:

A. Anti-ponding drip edge.

2.06 Sheathing Material shall conform to APA rated sheathing, in compliance with Chapter 23 (High-Velocity Hurricane Zones) of the *Florida Building Code, Building*.

3.0 PART III – EXECUTION

All underlayments must be installed over approved Primed DensDeck board with primer side facing up/on top.

3.01 Underlayment Applications –CHOOSE ONE of the following:

NOTE #1: Anchor/base sheet shall have a minimum of two plies in the valleys. Cap-sheets for foam set systems shall be mineral surfaced. A No. 30 or No. 43 can be used as a dry-in prior to installing the underlayment with 3.01.A, 3.01.B or 3.01.C (all deemed Single Ply with Cap Sheet Underlayment Systems).

A. Hot Mop 30/90 and/or Hot Mop 43/90 Product Approved Underlayment System. A No. 30 or No 43 anchor/base sheet ASTM D 226, Type II, or ASTM D 2626 shall be mechanically attached to the wood deck with approved fasteners spaced in a 12 in. grid standard in two rows in the field and 6

in. on center at the laps. Extend anchor/base sheet a minimum of a 4 in. up vertical surface. Anchor/base sheet end laps shall be a minimum of 6 in. and head laps shall be minimum of 4 in. Over installed anchor/base sheet, apply one layer of mineral surfaced cap sheet surfaced installed cap sheet ASTM D 6380M in full 25 Ib/sq, ± 15 percent mopping of asphalt. End laps shall be a minimum of 6 in.; head laps shall be a minimum of 3 in. and back nailed 12 in. on center with approved nails through tin caps or by Miami-Dade listed pre- fabricated fasteners in accordance with *Florida Building Code Building* 1517.5. 1 and 1517.5.2.

B. Hot Torched Applied Product Approved Underlayment System. An anchor/base sheet shall be mechanically attached to the wood deck (unless directed otherwise by Product Approval) with approved fasteners spaced in a 12 in. grid staggered in two rows in the field, and 6 in. on center at the laps or as specified in the underlayment manufacturer's Product Approval. Anchor/base sheet end laps shall be a minimum of 6 in. and head laps shall be a minimum of 4 in. Over installed anchor/base sheet, apply one layer of cap sheet in a full 25#/sq. ±15 percent mopping of asphalt. End laps shall be a minimum of 6 in. on center; head laps shall be a minimum of 3 in. and back nailed 12 in. on center with approved nails through tin caps or by prefabricated fasteners in accordance with Florida Building Code, Building 1517.5.1 and 1517.5.2.

NOTE:#2: System "A" and "B" may be upgraded by hot mopping an interplay of ASTM listed fiber glass or perforated organic felt to the anchor sheet before applying the cap sheet. Asphalt application shall be per above specifications.

C. Cold Applied Product Approved Underlayment System. An anchor/base sheet shall be mechanically attached to the wood deck with approved fasteners spaced in a 12 in. grid staggered in two rows in the field and 6 in on center at the laps or as specified underlayment manufactures Product Approval. Anchor/base sheet end laps shall be a minimum of 6 in and head laps shall be a minimum of 4 in. Over anchor/base sheet, apply one layer of cap sheet in a continuous layer of cold process adhesive at the rate of 1.5 gallons per 100 square feet or at the rate if so stated in the Product Approval. Adhesive shall be applied uniformly in accordance with Product Approval with a squeegee on knotted brush. Cap sheet side laps shall be a minimum of 6 in.; head laps shall be a minimum of 3 in. and back nailed 12 in. on center with approved nails through tin caps or by prefabricated fasteners in accordance with Florida Building Code Building 1517.5.1 and 1517.5.2.

D. (Two Ply Base Sheet Underlayment System) Product Approved Anchor No 30# or No 43#. A No. 30 or No 43 anchor/base sheet ASTM D 226, Type II, or ASTM D 2626 shall be mechanically attached to the wood deck with approved fasteners spaced in a 12 in. grid standard in two rows in the field and 6 in. on center at the laps. Extended anchor/base sheet a minimum of a 4 in. up vertical surface. Anchor/base sheet end laps shall be a minimum of 6 in. and head laps shall be minimum of 4 in. Anchor/base sheet shall have a minimum of three plies in the valleys.

E. (Single Ply Cap Sheet) Product Approved Self-Adhered Underlayment from No 90 to NO 110 granular underlayment system shall he terminated at approved metal flashings. Apply one layer of any self-adhered underlayment in compliance with the underlayment manufacture approval /requirement

3.02 Drip edge metal – CHOOSE ONE of the following.

NOTE #3: Drip edge deck flange shall be primed with ASTM D41 asphalt primer.

A. Single Ply with Cap Sheet Underlayment Systems: 3.01.A, 3.01.B or 3.01.C

1. Drip edge metal shall be installed over anchor/base sheet fastened 4 in, on center with length approved roofing fasteners. All joints shall be; lapped a minimum of 4 in. ensuring water shedding capabilities approved apply approved plastic roof convent between laps.

2. When drip edge metal shall be installed at caves and gables over a two ply underlayment system: The metal profile shall be placed in a minimum 1/2 in. of continuous coverage over fascia areas and fastened 4 in. on center with length approved roofing fasteners. All metal joints shall be lapped a minimum of 4 in. ensuring water shedding capabilities and apply approved plastic roof cement between laps. The metal profile and cap sheet shall be joined with a two ply application or cotton or fiberglass fabric reinforcement, both set in a full bed of approved plastic roof cement. As an alternate the metal may be stripped in with a 6" strip of torch, hot asphalt or cold adhesive polyester reinforced modified bitumen. Joints shall be feathered with cold adhesive hot asphalt or a torch to enhance water flow across the "back lap"

B. Two-Ply Base Sheet Underlayment Systems: 3.01.D

1. Drip edge metal shall comply with 3.02.A.1 and 3.02.A.2. Drip edge metal shall be stripped in with a 6" strip of torch, hot asphalt or cold adhesive polyester reinforced modified bitumen. Joints shall be feathered with cold adhesive hot asphalt or a torch to enhance water flow across the "back lap"

C. Single Ply Cap Sheet Underlayment Systems: 3.01.E

1. Drip edge metal shall comply with 3.02.A.1 and 3.02.A.2.

3.03 Valley metal - CHOOSE ONE of the following:

NOTE#4: All metal surfaces shall be primed with ASTM D-41 asphalt primer to receive cap sheet.

A Single Ply with Cap Sheet Underlayment Systems: 3.01.A, 3.01.B or 3.01.C - choose one of the following:

1. Preformed or roll metal without returns 16 in. wide shall be placed over the two ply anchor/base sheet in the valley and shall be fastened 6 in. on center with 12 ga corrosion-resistant roof nails, or other approved fastener of compatible metals near the outside edge of the valley metal. All joints shall be lapped a minimum of 6 in. ensuring water shedding capabilities and apply approved plastic roof cement between laps. The valley metal and two ply anchor/base sheet shall be joined with 1/8 -in. thick bed of plastic root cement and a 4 in. strip of asphalt saturated cotton or fiberglass fabric. The fabric shall be fully embedded in the plastic roof cement.

2. An optional #90 sweat sheet 36 in. wide may be applied prior to the installation of the valley metal and cap sheet.

B. Two-Ply Base Sheet Underlayment Systems: 3.01.D - choose one of the following:

1 Preformed or roll metal without returns 16 in. wide shall be placed over the three ply anchor/base sheet in the valley and shall be fastened 6 in. on center with 12 ga corrosion-resistant roof nails, or other approved fastener of compatible metals near the outside edge of the valley metal. All joints shall be lapped a minimum of 6 in. ensuring water shedding capabilities and apply approved plastic roof cement between laps. The valley metal and two ply anchor/base sheet shall be joined with 1/8 -in. thick bed of plastic root cement

and a 4 in. strip of asphalt saturated cotton or fiberglass fabric. The fabric shall be fully embedded in the plastic roof cement.

2. An optional #90 sweat sheet 36 in wide may be applied prior to the installation of the valley.

C. Single Ply Cap Sheet Underlayment Systems: 3.01.E

1 Preformed or roll metal without returns 16 in. wide shall be placed over the DensDeck in the valley and shall be fastened 6 in. on center with 12 ga corrosion-resistant roof nails, or other approved fastener of compatible metals near the outside edge of the valley metal. All joints shall be lapped a minimum of 6 in. ensuring water shedding capabilities and apply approved plastic roof cement between laps.

2. An optional #90 sweat sheet 36 in wide may be applied prior to the installation of the valley metal cap sheet.

3.04 Flashing and Counter Flashings at Wall Abutments

NOTE #5: In no case shall top of vertical flashing be less than 2 in. above tile surface.

NOTE#6: Flashing deck flange shall be primed with ASTM D 41 Asphalt Primer.

NOTE#7: Head/apron flashing may be installed on top of cap sheet in accordance with 3.04.A.3.

A. **Single Ply with Cap Sheet and Two-Ply Base Sheet Underlayment Systems:** (Choose 1 or 2)

1 Install minimum 4 in. x 5 in. "L" metal flush to base of walls with 4 in. flange on the anchor/base sheet and fasten 6 in. on center within 1 in. of outside edge. All joints shall be lapped a minimum of 4 in., ensuring water shedding capabilities and apply approved plastic roof cement between laps. Fasten the vertical and horizontal flange of metal within 1 in. of outside edge a minimum of 6 in. on center.

2. Install minimum 4 in. x 5 in. "L" metal on the top ply and fastened 6 in. on center with 12ga. corrosion resistant roof nails, or other approved fasteners of compatible metals within 1 in. of outside edge of the metal. All joints shall be lapped a minimum of 4 in, ensuring water shedding capabilities and apply approved plastic roof cement between laps. Fasten vertical flange of metal within 1 in. of outside edge a minimum of 6 in. on center. Cap sheet shall be joined with a bed of plastic roof cement and a 4 in. strip of asphalt saturated cotton or fiberglass fabric. The fabric shall be fully embedded in the plastic roofing cement.

3. Head/apron flashing may be installed on top of cap sheet. Ensure the deck flange conforms to the pitch of the roof and extend minimum 4 in. onto deck fasten according to 3.04, A.1. Seal along edge with plastic roof cement and membrane.

4. Seal along top edge within 1 in. of vertical flange, covering all fastener penetrations with approved plastic roof cement and membrane.

5 When installing optional counter flashing, lap top flange of base flashing minimum 3 in. Fasten metal within 1 in. of the outside edge a minimum of 6 in. on center or set into reglets (secured properly) and thoroughly caulk. Lap joints minimum 4 in. ensuring water shedding capabilities and apply approved plastic roof cement/sealant between laps.

B. **Single Ply Cap Sheet Underlayment Systems:**

1. Install 4 in x 5in "L" metal flush to base of side walls with 4 in. flange over the single-ply underlayment and fasten 6 in. on center near the metal edge. All joints shall be lapped a minimum or 4 in. ensuring water shedding capabilities and apply approval plastic roof cement between laps. Mechanically fasten vertical flange of metal within 1 in. or outside edge a minimum of 6 in. on center near the edge of the metal.
2. Seal along top edge of vertical flange, covering, all fastener penetrations with approved plastic roof cement and membrane.
3. All head/apron flashing shall be installed under cap sheet. Ensure the deck flange conforms to the pitch of the roof and extend minimum 4 in. onto deck and fastened in accordance with 3.04.A.1. Seal along edge with plastic roof cement and membrane.
4. When installing optional counter flashing, lap top flange of base flashing a minimum of 3 in. fasten metal within 1 in. of outside edge a minimum of 6 in. on center or set metal into reglets and seal thoroughly. Lap joints a minimum of 4 in. ensuring water shedding capabilities and apply plastic roof cement or sealant between the laps.

3.05 Standard Curb Mounted Skylights, Chimneys, etc.

A. Curbs shall be a minimum 2 in. x 6 in and a minimum 2 in. above upper-most adjacent finished tile surfaces.

Flashing shall follow instructions in 3.04 A or B in this system.

NOTE#8: For self-curbing or prefabricated skylights, curb height shall be min. 6 in. and 2 in. above most adjacent finished tile surface and installation shall be in accordance with skylight manufactures Product Approval. For turbines and other Product approved accessories refer to the accessories manufacturer's Product Approval.

3.06 Pipes, Stacks, Vents, etc.

A. Apply approved plastic roof cement around base of protrusion and on the under and around sides of metal flanges sealing unit base flashing to the underlayment.

B. Nail all sides within 1in. of outside edge of base flashing 6 in. on corner. Make certain base is flush to deck.

NOTE #9: If pipes, vents and/or stacks are installed after finished cap sheet has been applied. Follow instructions in 3.06 A & B. Cap sheet and metal flange shall be stripped in with at least same cap sheet felt in use on this system. Stripping must extend at least 4 in. beyond flange in all directions.

PART III - ETERNATILE INSTALLATION:

3.07 Flat and Roll Tile installation:

A. Standard Application.

1. Set start tile tile in horizontal fashion.

2. Structural bonding adhesive shall be applied to underside of foam tile directly in pocket (domed asterisk cut out area) at approx 8-grams in weight, no more no less. This better prevents unsightly and excessive tile lift or rise thereby creating a more even and desirable top surface area while providing enough foam for maximum bonding capabilities.

3. Lay succeeding course of field tile in stepped course fashion and/or in a brick-like manner.

4. Cut all tiles to form straight edges using a fine tooth hand saw.

3.08 Valleys - CHOOSE ONE of the following:

NOTE #11: It may be necessary break a center-bend on valley metal to assure proper positioning of cut field tiles on non-granular and/or anchor/base sheet substrates.

A. Standard Valley

1. Closed valley - miter tile to meet at center of valley. Apply thin bead of foam along exposed core of cut tile and slide Eterna-J track (or shop fabricated or field fabricated "J" track) over exposed core. Screw apposing Eterna-J track against newly installed "J" track. Miter tile to meet valley from each side.

2. Open valley - Chalk a line a minimum 2 in. on both sides of tile valley center. Miter tile to form straight border and point to match tile surface. Apply thin bead of foam along exposed core of cut tiles and slide Eterna-J track (or shop fabricated or field fabricated "J" track) over exposed core. Repeat for opposing side.

3.09 Wall Abutments

A. Cut tile to fit snug against wall flashing. Fill void between wall with 100% silicone caulk and smooth to finish.

3.10 Plumbing stacks

A. Cut tiles to fit close to plumbing stack with drywall hole saw. Fill void between tile and stack with 100% silicone caulk and smooth to finish.

3.11 Rake and Gable tile installation - CHOOSE ONE of the following:

1. Cut back field tiles even to gable ends with a hand saw. Apply a bead of Polyfoam adhesive to exposed tile core.

2. Fit first rake tile even with the starter tile course of field tile with factory finish end of rake file at the bottom eve of roof and cut end of rake tile against field tile.

3. Install first rake tile by vertically fasten minimum of two 3.5 in. length wood screws to sufficiently penetrate the cut field tile's core a minimum of 2 in. at the rake tile's higher end to gain overlap concealment.

3. Abut each succeeding rack tile with a bead of Polyfoam adhesive & vertically fasten minimum of two 3.5 in. length wood/deck to sufficiently penetrate the cut field tile's core a minimum of 2 in.

4. Miter rake tile at the peak. Fill void with 100% silicone caulk and smooth.

3.12 Hip and Ridge Installation:

A. Set hip and ridge tile shall be set in a continuous bed of adhesive Polyfoam lapping tile as prefabricated, ensure bed of polyfoam does not protrude from center of hip and ridge junction. Trim back and out of site any cured polyfoam with a sharpened blade. No polyfoam adhesive shall extend beyond exposed substrates.

Details 1 and 2 are the accepted methods of installing hip tiles.

1 Use polyfoam adhesive and standard hip and ridge tile as starter. Insert tile "end block/cap" under hip starter to fill in bottom gap.
2 Continue installing hip tile toward hip peak using adhesive foam applied on exposed substrates.

Details 3 and 4 are the accepted methods of installing ridge tiles.

3 Use standard hip and ridge tile as starter. Saw off overlap on first tile and butt against miter rake tile. Fill void between rake and ridge tile with 100% silicone caulk and smooth.
4 Continue installing ridge tile across roof peak using adhesive foam applied on exposed substrates.