

ICC-ES Evaluation Report

ESR-1900

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DIVISION: 07—THERMAL AND MOISTURE PROTECTION
Section: 07320—ROOF TILES**REPORT HOLDER:****EAGLE ROOFING PRODUCTS, A DIVISION OF
BURLINGAME INDUSTRIES, INC.**
3546 NORTH RIVERSIDE AVENUE
RIALTO, CALIFORNIA 92377
(909) 822-6000
www.eagleroofting.com**EVALUATION SUBJECT:****EAGLE® AND EAGLELITE® INTERLOCKING CONCRETE
ROOFING TILES: CAPISTRANO, MALIBU, BEL AIR, BEL
AIR ESTATE, BEL AIR DOUBLE EAGLE, PONDEROSA,
PONDEROSA ESTATE, PONDEROSA DOUBLE EAGLE
AND PONDEROSA GOLDEN EAGLE****1.0 EVALUATION SCOPE****Compliance with the following codes:**

- 2006 *International Building Code*® (IBC)
- 2006 *International Residential Code*® (IRC)
- Other Codes (see Section 8.0)

Properties evaluated:

- Fire classification
- Weather resistance
- Wind-uplift resistance

2.0 USES

The Eagle® and Eaglelite® concrete roof tiles installed over solid sheathing are used as Class A roof coverings in accordance with the exception stated in IBC Section 1505.2 and IRC Section R902.1.

3.0 DESCRIPTION**3.1 Eagle® Tiles:**

These roof tiles are interlocking extruded concrete roof tiles composed of Type II portland cement, washed sand, and proprietary additives and comply with ASTM C 1492. Mineral coloring oxides are mixed with the portland cement and water for through-color or for surface application following extrusion. All roof tiles are cured to reach required strength before shipment. Tiles are manufactured with ³/₄-inch-wide (19 mm) interlocking sidelaps designed to resist surface water penetration and maintain proper alignment. All tiles have protruding head lugs on the underside, which provide for mechanical attachment over battens, or provide a stable foundation for nail attachment

to solid decking. Two nail holes are provided in each tile, except that three nail holes are provided in each tile for the Malibu and Capistrano tiles produced at the Florida plant. Ridge and rake trim units, as illustrated in Figure 1, are produced to match each product.

Product designations, dimensions and installed dry weights are indicated in Table 1. Roof tile profiles are illustrated in Figure 1.

3.2 Eaglelite® Tiles:

Eaglelite® tiles are produced in the same size, manner and shapes as the conventional-weight Eagle® tiles described in Section 3.1, except for substitution of lightweight aggregates and additives for sand. Product designations, dimensions and installed dry weights are indicated in Table 1. Roof tile profiles are illustrated in Figure 1.

4.0 INSTALLATION**4.1 General:**

Installation of the Eagle® and Eaglelite® concrete roof tiles must be in accordance with the Concrete and Clay Roof Tile Installation Manual for Moderate Climate Regions, dated July 2006, published by the Tile Roofing Institute and Western States Roofing Contractors Association (hereinafter referred to as the TRI/WSRCA installation manual), and recognized in ICC-ES [ESR-2015P](#), except as otherwise noted in this report. This report and the TRI/WSRCA installation manual must be available at the jobsite at all times during installation. The minimum roof slope on which the roof tiles are installed must be 2¹/₂:12 (20.83%). Care must be taken during field installation to ensure that horizontal joints are kept parallel to the eave and vertical joints are at right angles to the eave in order to ensure uniform contact between the tiles and proper fit. All cracked and broken roof tiles must be replaced. Underlayment must comply with and be installed in accordance with IBC Section 1507.3.3 or IRC Section R905.3.3, as applicable.

4.2 Adhesive Set Systems:

The roof tiles may be installed with roof tile adhesives that are recognized in a current ICC-ES evaluation report for use in concrete roofing tile applications. Installation of tiles using these adhesive set systems must be in accordance with the adhesive manufacturer's ICC-ES evaluation report.

4.3 Fire Classification:

When installed in accordance with this report, the Eagle® and Eaglelite® concrete roof tiles are Class A roof coverings in accordance with the exception stated in IBC Section 1505.2 and IRC Section R902.1.

4.4 Wind Resistance:

The tiles are limited to the following locations:

4.4.1 IBC: For applications beyond the prescriptive parameters specified in IBC Table 1507.3.7, the tiles and the fastening systems must be designed to withstand the aerodynamic wind uplift moment. The required aerodynamic uplift moment must be determined in accordance with IBC Section 1609.5.3, or may be determined from Table 2, 3 or 4, for each respective tile profile. The maximum allowable aerodynamic uplift moment must be determined in accordance with Table 5. The roof tiles must be mechanically fastened such that the allowable aerodynamic uplift moment for the roof tile/fastener/deck combination, noted in Table 5, exceeds the required aerodynamic uplift moment determined in accordance with IBC Section 1609.5.3 or Table 2, 3 or 4, for each respective tile profile. The fastening requirement determined from the use of Table 5 applies over the entire roof.

4.4.2 IRC: For applications beyond the prescriptive parameters specified in IRC Section R905.3.7, the tiles and the fastening systems must be designed to withstand the aerodynamic wind uplift moment. The required aerodynamic uplift moment must be determined in accordance with Table 2, 3 or 4, for each respective tile profile. The maximum allowable aerodynamic uplift moment must be determined in accordance with Table 5. The roof tiles must be mechanically fastened such that the allowable aerodynamic uplift moment for the roof tile/fastener/deck combination, noted in Table 5, exceeds the required aerodynamic uplift moment determined by Table 2, 3 or 4, for each respective tile profile. The fastening requirement determined from the use of Table 5 applies over the entire roof.

4.2 Reroofing:

Eagle® and Eaglelite® tiles may be installed over existing asphalt shingles, provided the requirements set forth in IBC Section 1510 or IRC Section R907, as applicable, are met. Damaged or rusted flashing must be replaced. Existing framing must be adequate for the additional load. Structural data verifying adequacy must be submitted to the code official. The existing roof must be inspected in accordance with the requirements of the applicable code. The roof classification is as noted in Section 4.3.

When reroofing wood shake roofs, existing shakes must be removed and solid decking and tile must be installed, as with new construction. When installation is over existing spaced sheathing boards, underlayment complying with the requirements of the applicable code or an underlayment recognized specifically for this type of use in an ICC-ES evaluation report, installed with or without battens, may be used. One layer of No. 30 felt or approved equivalent underlayment must be installed on the roof prior to application of tile. Details not covered under this section are identical to those described in Section 4.1.

5.0 CONDITIONS OF USE

The Eagle® and Eaglelite® concrete roof tiles described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 The roof tiles must be installed in accordance with this report, the applicable code and the TRI/WSRCA installation manual ([ESR-2015P](#)). In case of a conflict between the installation manual and this report, this report governs.

5.2 The roof decking and roof framing system must be designed for the appropriate loads determined in accordance with the applicable code.

5.3 The tiles are limited to installation on roofs with a slope of 60 degrees or less from horizontal.

Exception: Installation on roof slopes exceeding 60 degrees from the horizontal require an approved wind clip on the bottom edge of each tile in addition to two fasteners per tile.

5.4 Mechanical fastening requirements in Table 5 are applicable for areas where this report indicates that the fastening is adequate to resist wind loads as noted in Sections 4.4.1 and 4.4.2. This report evaluates the uplift resistance of the tile system only. Other items, such as batten design, batten fastening, sheathing design (other than the minimum thickness required for fastening of the roof tile), fastening of the sheathing to the structure, etc., are outside the scope of this report and must be required to resist the forces prescribed by the applicable code.

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Clay and Concrete Roof Tiles (AC180), dated August 2007.

7.0 IDENTIFICATION

Each Eagle field tile is imprinted with the EAGLE logo (see Figure 2). Tiles produced at the Sumterville, Florida, plant have the EAGLE logo and "FLORIDA" (see Figure 3) imprinted on each field tile. Each Eaglelite tile is identified by the product name "Eaglelite" on a tag and a light-colored strip across the headlap area. Each shipping pallet must have a label bearing the Eagle Roofing Products name; the tile designation; manufacturing location and address; color; quantity of tiles per pallet; production date; installed weight; and the evaluation report number (ESR-1900).

8.0 OTHER CODES

The products in this report were evaluated for compliance with the requirements of the 1997 *Uniform Building Code*™ (UBC).

8.1 Uses:

The Eagle® and Eaglelite® concrete roof tiles installed over solid or spaced sheathing are noncombustible roof coverings in accordance with Section 1504.2 of the UBC.

8.2 Description:

See Section 3.0.

8.3 Installation:

For new construction, see Section 4.0, except that for wind resistance, the installation must be justified as equivalent to that specified in UBC Tables 15-D-1 and 15-D-2. For reroofing, the existing roof must be inspected in accordance with UBC Appendix Chapter 15, Section 1515, and installed in accordance with UBC Appendix Chapter 15, Section 1517, and Section 4.5 of this report.

8.4 Conditions of Use:

See Section 5.0.

8.5 Evidence Submitted:

See Section 6.0.

8.6 Identification:

See Section 7.0.

TABLE 1—TILE DIMENSIONS, INSTALLED WEIGHTS AND MANUFACTURING FACILITIES

TILE DESIGNATION	PROFILE	DIMENSIONS ² (inch)		INSTALLED DRY WEIGHT ¹ (psf)		MANUFACTURING FACILITY
		LENGTH	WIDTH	Eagle®	Eaglelite®	
Capistrano	High	17	12 ³ / ₈	8.8	---	Sumterville, Florida
				9.0	5.7	Rialto & Stockton, California
				9.0	---	Phoenix, Arizona
Malibu	Medium			7.7	---	Sumterville, Florida
				9.03	5.5	Rialto & Stockton, California
				9.03	---	Phoenix, Arizona
Bel Air, Bel Air Estate, Bel Air Double Eagle, Ponderosa, Ponderosa Estate, Ponderosa Double Eagle and Ponderosa Golden Eagle	Flat (Low)	9.7	---	Phoenix, Arizona & Sumterville, Florida		
		9.7	7.0	Rialto & Stockton, California		

For SI: 1 inch = 25.4 mm, 1 psf = 4.88 kg/m².

¹Installed dry weight is based on a 3-inch headlap.

²All dimensions are nominal.

TABLE 2—REQUIRED AERODYNAMIC UPLIFT MOMENT, M_a (ft-lb)¹—CAPISTRANO TILES

EXPOSURE B—Gable 7° < θ ≤ 27° (1 ¹ / ₂ :12 < θ 6:12) Hip ≈ 25° < θ ≤ 27° (5:12 < θ ≤ 6:12)											
Height (feet)	Basic Wind Speed, V (mph—3-second gust)—Importance Factor = 1.00										
	85	90	100	105	110	120	125	130	140	145	150
0 - 30	11.6	13.0	16.1	17.1	17.7	23.1	25.1	27.1	31.5	33.8	36.1
40	12.6	14.1	17.4	19.2	21.1	25.1	27.2	29.5	34.2	36.6	39.2
50	13.4	15.0	18.6	20.5	22.5	26.7	29.0	31.4	36.4	39.1	41.8
60	14.1	15.9	19.6	21.6	23.7	28.2	30.6	33.1	38.4	41.1	44.0
EXPOSURE B—Hip 7° < θ ≤ 25° (1 ¹ / ₂ :12 < θ ≤ 5:12)											
Height (feet)	Basic Wind Speed, V (mph—3-second gust)—Importance Factor = 1.00										
	85	90	100	105	110	120	125	130	140	145	150
0 - 30	8.7	9.8	12.0	13.3	14.6	17.3	18.8	20.3	23.6	25.3	27.1
40	9.4	10.6	13.1	14.4	15.8	18.8	20.4	22.1	25.6	27.5	29.4
50	10.1	11.3	13.9	15.4	16.9	20.1	21.8	23.5	27.3	29.3	31.3
60	10.6	11.9	14.7	16.2	17.8	21.1	22.9	24.8	28.8	30.9	33.0
EXPOSURE B—Gable 27° < θ ≤ 45° (6:12 < θ ≤ 12:12)											
Height (feet)	Basic Wind Speed, V (mph—3-second gust)—Importance Factor = 1.00										
	85	90	100	105	110	120	125	130	140	145	150
0 - 30	7.1	7.9	9.8	10.8	11.9	14.1	15.3	16.6	19.2	20.6	22.1
40	7.7	8.6	10.7	11.7	12.9	15.3	16.6	18.0	20.9	22.4	24.0
50	8.2	9.2	11.4	12.5	13.7	16.3	17.7	19.2	22.2	23.9	25.5
60	8.6	9.7	12.0	13.2	14.5	17.2	18.7	20.2	23.4	25.1	26.9
EXPOSURE B—Monoslope 10° < θ ≤ 30° (2 ¹ / ₈ :12 < θ ≤ 6 ⁷ / ₈ :12)											
Height (feet)	Basic Wind Speed, V (mph—3-second gust)—Importance Factor = 1.00										
	85	90	100	105	110	120	125	130	140	145	150
0 - 30	12.6	14.1	17.4	19.2	21.0	25.0	27.2	29.4	34.1	36.6	39.1
40	13.6	15.3	18.9	20.8	22.8	27.2	29.5	31.9	37.0	39.7	42.5
50	14.5	16.3	20.1	22.2	24.3	29.0	31.4	34.0	39.4	42.3	45.3
60	15.3	17.2	21.2	23.4	25.7	30.5	33.1	35.8	41.6	44.6	47.7

For SI: 1 foot = 304.8 mm, 1 ft-lb = 1.356 N.m, 1 mph = 1.61 km/h.

¹This table is based on a Tile Factor of 1.4625 ft³ (0.0414 m³). The Tile Factor has been determined from a multiplication of the exposed width of the roof tile, the length of the roof tile and the moment arm of the roof tile. In this case, the exposed width and the length of the tile are 11.506 inches (292 mm) and 17 inches (432 mm), respectively. The table will provide conservative required aerodynamic wind uplift moments for any roof tile that has a Tile Factor less than 1.4625 ft³ (0.0414 m³).

TABLE 3—REQUIRED AERODYNAMIC UPLIFT MOMENT, M_a (ft-lb)¹—MALIBU TILES

EXPOSURE B—Gable $7^\circ < \theta \leq 27^\circ$ ($1\frac{1}{2}:12 < \theta \leq 6:12$) Hip $\approx 25^\circ < \theta \leq 27^\circ$ ($5:12 < \theta \leq 6:12$)											
Height (feet)	Basic Wind Speed, V (mph—3-second gust)—Importance Factor = 1.00										
	85	90	100	105	110	120	125	130	140	145	150
0 - 30	11.8	13.2	16.3	18.0	19.7	23.5	25.5	27.6	32.0	34.3	36.7
40	12.8	14.3	17.7	19.5	21.4	25.5	27.7	29.9	34.7	37.2	39.8
50	13.6	15.3	18.9	20.8	22.8	27.2	29.5	31.9	37.0	39.7	42.5
60	14.4	16.1	19.9	21.9	24.1	28.6	31.1	33.6	39.0	41.8	44.7
EXPOSURE B—Hip $7^\circ < \theta \leq 25^\circ$ ($1\frac{1}{2}:12 < \theta \leq 5:12$)											
Height (feet)	Basic Wind Speed, V (mph—3-second gust)—Importance Factor = 1.00										
	85	90	100	105	110	120	125	130	140	145	150
0 - 30	8.8	9.9	12.2	13.5	14.8	17.6	18.1	20.7	24.0	25.7	27.5
40	9.6	10.8	13.3	14.6	16.1	19.1	20.8	22.4	26.0	27.9	29.9
50	10.2	11.5	14.2	15.6	17.1	20.4	22.1	23.9	27.7	29.8	31.8
60	10.8	12.1	14.9	16.4	18.0	21.5	23.3	25.2	29.2	31.4	33.6
EXPOSURE B—Gable $27^\circ < \theta \leq 45^\circ$ ($6:12 < \theta \leq 12:12$)											
Height (feet)	Basic Wind Speed, V (mph—3-second gust)—Importance Factor = 1.00										
	85	90	100	105	110	120	125	130	140	145	150
0 - 30	7.2	8.1	10.0	11.0	12.1	14.4	15.6	16.8	19.5	21.0	22.4
40	7.8	8.8	10.8	11.9	13.1	15.6	16.9	18.3	21.2	22.8	24.3
50	8.3	9.3	11.5	12.7	14.0	16.6	18.0	19.5	22.6	24.3	26.0
60	8.8	9.8	12.2	13.4	14.7	17.5	19.0	20.5	23.8	25.5	27.3
EXPOSURE B—Monoslope $10^\circ < \theta \leq 30^\circ$ ($2\frac{1}{8}:12 < \theta \leq 6\frac{1}{8}:12$)											
Height (feet)	Basic Wind Speed, V (mph—3-second gust)—Importance Factor = 1.00										
	85	90	100	105	110	120	125	130	140	145	150
0 - 30	12.8	14.3	17.7	19.5	21.4	25.4	27.6	29.9	34.6	37.2	39.8
40	13.9	15.5	19.2	21.2	23.2	27.6	30.0	32.4	37.6	40.3	43.2
50	14.8	16.6	20.4	22.5	24.7	29.4	31.9	34.6	40.1	43.0	46.0
60	15.6	17.4	21.5	23.7	26.1	31.0	33.7	36.4	42.2	45.3	48.5

For SI: 1 foot = 304.8 mm, 1 ft-lb = 1.356 N.m, 1 mph = 1.61 km/h.

¹This table is based on a Tile Factor of 1.4860 ft³ (0.0421 m³). The Tile Factor has been determined from a multiplication of the exposed width of the roof tile, the length of the roof tile and the moment arm of the roof tile. In this case, the exposed width and the length of the tile are 11.691 inches (297 mm) and 17 inches (432 mm), respectively. The table will provide conservative required aerodynamic wind uplift moments for any roof tile that has a Tile Factor less than 1.4860 ft³ (0.0421 m³).

TABLE 4—REQUIRED AERODYNAMIC UPLIFT MOMENT, M_a (ft-lb)¹—FLAT PROFILE TILES

EXPOSURE B—Gable $7^\circ < \theta \leq 27^\circ$ ($1\frac{1}{2}:12 < \theta \leq 6:12$) Hip $\approx 25^\circ < \theta \leq 27^\circ$ ($5:12 < \theta \leq 6:12$)											
Height (feet)	Basic Wind Speed, V (mph—3-second gust)—Importance Factor = 1.00										
	85	90	100	105	110	120	125	130	140	145	150
0 - 30	11.6	13.1	16.1	17.8	19.5	23.2	25.2	27.2	31.6	33.9	36.3
40	12.8	14.2	17.5	19.3	21.2	25.2	27.3	29.6	34.3	36.8	39.4
50	13.5	15.1	18.6	20.6	22.6	26.9	29.1	31.5	36.6	39.2	42.0
60	14.2	15.9	19.6	21.7	23.8	28.3	30.7	33.2	38.5	41.3	44.2
EXPOSURE B—Hip $7^\circ < \theta \leq 25^\circ$ ($1\frac{1}{2}:12 < \theta \leq 5:12$)											
Height (feet)	Basic Wind Speed, V (mph—3-second gust)—Importance Factor = 1.00										
	85	90	100	105	110	120	125	130	140	145	150
0 - 30	8.7	9.8	12.1	13.3	14.6	17.4	18.9	20.4	23.7	25.4	27.2
40	9.5	10.6	13.1	14.5	15.9	18.9	20.5	22.2	25.7	27.6	29.5
50	10.1	11.3	14.0	15.4	16.9	20.1	21.9	23.6	27.4	29.4	31.5
60	10.6	11.9	14.7	16.2	17.8	21.2	23.0	24.9	28.9	31.0	33.2
EXPOSURE B—Gable $27^\circ < \theta \leq 45^\circ$ ($6:12 < \theta \leq 12:12$)											
Height (feet)	Basic Wind Speed, V (mph—3-second gust)—Importance Factor = 1.00										
	85	90	100	105	110	120	125	130	140	145	150
0 - 30	7.1	8.0	9.8	10.9	11.9	14.2	15.4	16.6	19.3	20.7	22.2
40	7.7	8.7	10.7	11.8	12.9	15.4	16.7	18.1	21.0	22.5	24.1
50	8.2	9.2	11.4	12.6	13.8	16.4	17.8	19.3	22.3	24.0	25.6
60	8.7	9.7	12.0	13.2	14.5	17.3	18.8	20.3	23.5	25.2	27.0
EXPOSURE B—Monoslope $10^\circ < \theta \leq 30^\circ$ ($2\frac{1}{8}:12 < \theta \leq 6\frac{7}{8}:12$)											
Height (feet)	Basic Wind Speed, V (mph—3-second gust)—Importance Factor = 1.00										
	85	90	100	105	110	120	125	130	140	145	150
0 - 30	12.6	14.1	17.5	19.2	21.1	25.1	27.3	29.5	34.2	36.7	39.3
40	13.7	15.4	19.0	20.9	22.9	27.3	29.6	32.0	37.2	39.9	42.7
50	14.6	16.4	20.2	22.3	24.4	29.1	31.6	34.1	39.6	42.5	45.5
60	15.4	17.2	21.3	23.5	25.8	30.6	33.3	36.0	41.7	44.7	47.9

For SI: 1 foot = 304.8 mm, 1 ft-lb = 1.356 N.m, 1 mph = 1.61 km/h.

¹This table is based on a Tile Factor of 1.4863 ft³ (0.0421 m³). The Tile Factor has been determined from a multiplication of the exposed width of the roof tile, the length of the roof tile and the moment arm of the roof tile. In this case, the exposed width and the length of the tile are 11.552 inches (293 mm) and 17 inches (432 mm), respectively. The table will provide conservative required aerodynamic wind uplift moments for any roof tile that has a Tile Factor less than 1.4863 ft³ (0.0421 m³).

TABLE 5—ALLOWABLE AERODYNAMIC UPLIFT MOMENT (ft-lb)

Tile designation: Capistrano			
Fasteners	¹⁵ / ₃₂ " Plywood Sheathing	¹⁹ / ₃₂ " Plywood Sheathing	Batten Installation
2-10d ring shank nails	28.6	41.2	26.8
1-#8 screw	28.7	28.7	25.5
2-#8 screws	51.3	51.3	37.1
1-10d smooth or screw shank nails	11.3	13.0	8.2
2-10d smooth or screw shank nails	13.1	15.4	12.7
1-10 smooth or screw shank nails—field clip	29.3	29.3	24.4
1-10d smooth or screw shank nails—eave clip	35.5	35.5	29.4
2-10d smooth or screw shank nails—field clip	33.8	33.8	44.0
2-10d smooth or screw shank nail—eave clip	44.3	44.3	47.2
Tile designation: Malibu			
2-10d ring shank nails	36.1	45.5	36.4
1-#8 screw	33.3	33.3	30.1
2-#8 screws	55.5	55.5	41.9
1-10d smooth or screw shank nails	12.9	15.2	8.7
2-10d smooth or screw shank nails	19.1	23.4	11.9
1-10 smooth or screw shank nails—field clip	30.5	30.5	29.6
1-10d smooth or screw shank nails—eave clip	25.2	25.2	27.5
2-10d smooth or screw shank nails—field clip	41.7	41.7	40.2
2-10d smooth or screw shank nails—eave clip	38.1	38.1	37.6
Tile designation: Flat Profile Tiles			
2-10d ring shank nails	39.1	46.4	24.6
1-#8 screw	39.1	39.1	25.6
2-#8 screws	50.1	50.2	36.1
1-10d smooth or screw shank nails	13.5	16.0	10.1
2-10d smooth or screw shank nails	20.2	25.0	12.8
1-10 smooth or screw shank nails—field clip	30.5	30.5	29.6
1-10d smooth or screw shank nails—eave clip	25.2	25.2	27.5
2-10d smooth or screw shank nails—field clip	41.7	41.7	40.2
2-10d smooth or screw shank nails—eave clip	38.1	38.1	37.6

For **SI**: 1 inch = 25.4 mm, 1 ft-lb = 1.356 N.m.

General notes for Table 5:

¹See the Note for Figure 1 for the hole that must be used when a single nail or screw is required.

²Ring shank must be 10d ring shank polymer coated galvanized steel nails [nominally 3 inches (76 mm) long, nominally ⁵/₁₆-inch-diameter (7.9 mm) flat heads, nominally 0.121-inch (3.07 mm) shank diameters, and nominally 0.131-inch (3.33 mm) ring diameters].

³No. 8 screws must be coarse-threaded and 2¹/₂-inch-long (64 mm), plastic-coated, galvanized steel wood screws [square drive, flat countersunk head having a nominal diameter of 0.335 inch (8.51 mm), shank diameter of 0.131 inch (3.33 mm) and a screw thread diameter of 0.175 inch (4.45 mm)].

⁴Smooth or screw shank nails must be 10d galvanized (mechanically plated complying with ASTM A 641, Class I) steel [nominally 3-inch-long (76 mm), nominally ⁵/₁₆-inch-diameter-flat-head (7.9 mm), nominally 0.128-inch (3.25 mm) screws or screws with 0.131-inch (3.33 mm) smooth shank diameter].

⁵When using eave and field clips, attachment of the tiles must be accomplished by a combination of nails and clips. Tiles must be nailed to the sheathing or battens with one or two 10d galvanized nails (conforming to the requirements noted in Note 4 above) as indicated in the table. Additionally, each tile must be secured with a 0.060-inch-thick (1.52 mm) and 0.5-inch-wide (12.7 mm) clip which is secured to plywood sheathing or eave fascia, as appropriate, with a single nail per clip. For clips having more than one nail hole, place nail in the innermost nail hole (the one closest to the upright of the clip). The following clip/nail combinations must be permitted:

- Aluminum alloy clip with 1.25-inch (32 mm) HD galvanized roofing nail [0.128-inch (3.25 mm) shank diameter].
- Galvanized steel deck clip with 1.25-inch (32 mm) HD galvanized roofing nail [0.128-inch (3.25 mm) shank diameter].
- Stainless steel clip with 1.25-inch (32 mm) HD galvanized roofing nail [0.128-inch (3.25 mm) shank diameter].

⁶On field clips, the clip position is appropriate for a tile head lap of 3 inches (76 mm).

⁷For eave clips, the clip position is appropriate for a ³/₄- (19.1 mm) to 2-inch (51 mm) overhang at the eaves.

⁸Corrosion-resistant roofing nails must have 0.124-inch (3.15 mm) shank diameters, 2¹/₂-inch (64 mm) length, and 0.395-inch (10.03 mm) head diameters.

⁹When a single fastener is used, the nail hole nearest the tile overlap (far-right) must be used for the Flat and Mailbu profiles. The nail hole in the right-hand pan must be used for the Capistrano profile.

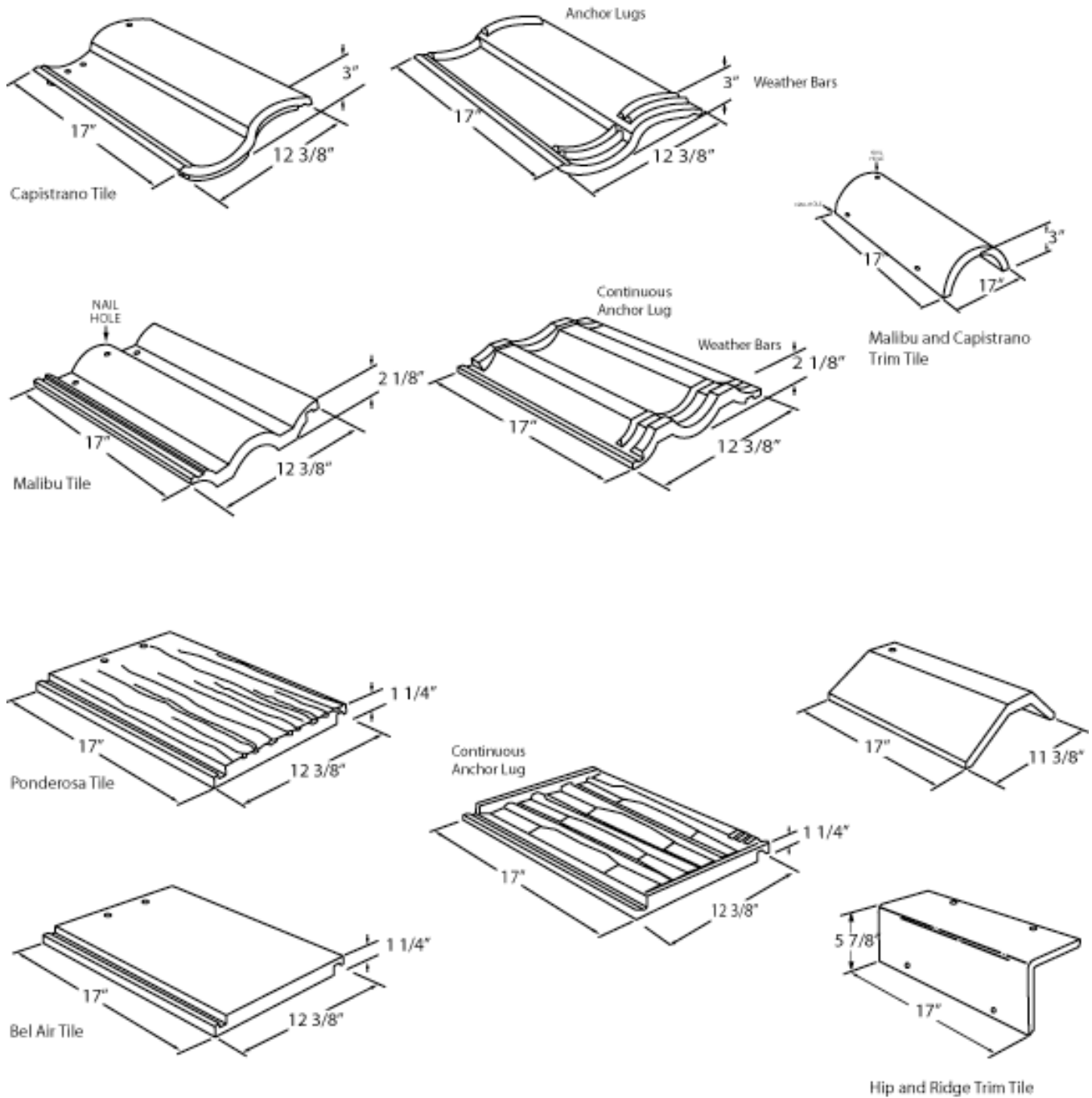


FIGURE 1—FIELD TILE AND TRIM UNITS



FIGURE 2—EAGLE ROOFING PRODUCTS LOGO



FIGURE 3—FLORIDA LOGO