



SECTION 07 32 00  
ROOF TILES

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PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Concrete tile roofing.
- B. Vented roof deck construction for tile roofing.

1.2 RELATED SECTIONS

- A. Section 06 10 00 - Rough Carpentry.
- B. Section 07 22 16 - Roof Board Insulation.
- C. Section 07 60 00 - Flashing and Sheet Metal.
- D. Section 07 72 63 - Waste Containment Assemblies.

1.3 REFERENCES

- A. ASTM International (ASTM):
  1. ASTM A 641 - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
  2. ASTM C 1492 - Standard Specification for Concrete Roof Tile.
  3. ASTM D 226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing; 1997a.
  4. ASTM D 249 - Standard Specification for Asphalt Roll roofing (Organic Felt) Surfaced with Mineral Granules: 1989 (reapproved 1996).
  5. ASTM D 1970 - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
  6. ASTM D 2626 - Standard Specification for Asphalt-Saturated and Coated Organic Felt Base Sheet Used in Roofing; 1997b.
  7. ASTM D 4798 - Standard Practice for Accelerated Weathering Test Conditions and Procedures for Bituminous Materials (Xenon-Arc Method).
  8. ASTM D 4869 - Standard Specification for Asphalt-Saturated Organic Felt Underlayment Used in Steep Slope Roofing. B. CAN/CSA-A220. 1-Series-06 Concrete Roof Tiles.

- C. City of Los Angeles Research Report - LA RR 25021.
- D. FRSA/TRI - Concrete and Clay Roof Tile Installation Manual Fifth Edition Revised (For Outside HVHZ Wind Zones).
- E. High Wind Applications: Florida Refer RAS 118, 119, 120.
- F. IAPMO ER 1900.
- G. IAPMO ER 2015 Concrete and Clay Roof Tile Installation Manual.
- H. ICC AC 180 - Acceptance Criteria for Clay and Concrete Roof Tiles. August 2007.
- I. ICC ER ESR 1787 Flex Seal, Flex Flash, Flex Vent.
- J. Concrete and Clay Roof Tile Installation Manual (TRI) - Concrete and Clay Design Criteria for Cold and Snow Regions.

#### 1.4 DESIGN REQUIREMENTS

- A. Roofing tile materials and installation shall conform to the requirements of IAPMO ER 1900 and LA RR 25021, and the 2015 Concrete and Clay Roof Tile Installation Manual.
- B. Roofing tile materials and installation shall conform to the requirements of Miami Dade County Notice of Acceptance.
- C. Roofing tile materials and installation shall conform to the, International Building code for one and Two Family Dwelling and the Florida Building Code 5<sup>th</sup> Edition.
- D. Roofing tile materials and installation shall conform to the requirements of the Applicable Building Code.

#### 1.5 SUBMITTALS

- A. Submit under provisions of Section 01 30 00 - Administrative Requirements.
- B. Product Data: Manufacturer's data for each product to be used including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation methods.
- C. Shop Drawings: Indicate metal flashing profiles, joint locations, fastening locations and installation details. Indicate tile layout with location of cut and special shaped tiles identified.
- D. Selection Samples: For each finish product specified, submit samples indicating manufacturer's full range of available colors and patterns.
- E. Verification Samples: Submit two representative samples of each material specified indicating visual characteristics and finish. Include range samples if variation of finish is anticipated.
- F. Certificates of Compliance: Submit to certify compliance with referenced standards.

#### 1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Member of the Tile Roofing Institute.
- B. Installer Qualifications: License by the local/state authority, and have the proper insurance to operate in your area.

- C. Installation: Refer to the Concrete and Clay Roof Tile Installation Manual ER 2015, FRSA/TRI Concrete and Clay Roof Tile Installation Manual Fifth Edition Revised, TAS 101 and RAS 118,119,120 for High Wind Zones (HVHZ).
- D. Compliance Reports for Eagle Roofing Products, Florida Department of Community Affairs Approved Application #FL7473, Miami Dade NOA's:
  - 1. IAPMO ER 1900.
  - 2. IBC 2015.
  - 3. IRC 2015.
  - 4. Fire Classifications.
  - 5. Weather Resistance.
  - 6. Wind-uplift Resistance.
  - 7. NOA 16-0314.07 Malibu.
  - 8. NOA 16-0314.08 Capistrano.
  - 9. NOA 16-0314.06 Flat.
- E. Product Requirements:
  - 1. Comply with governing codes and regulations. Provide products of acceptable manufacturers, which have been in satisfactory use in similar service for three years.
- F. Mock-Up:
  - 1. Provide mock-up as required to demonstrate quality of workmanship.
  - 2. Finish areas designated by Architect.
  - 3. Do not proceed with remaining work until material and workmanship are approved by Architect.
  - 4. Modify mock-up area as required to produce acceptable work.

#### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, handle, and store materials in accordance with manufacturer's instructions.
  - 1. Refer to the FRSA TRI 07320/8-05 Concrete and Clay Roof Tile Installation Manual Fifth Edition Revised section #1.04.
  - 2. Refer to roof loading guide MC-09 of the Concrete and Clay Roof Tile Installation Manual IAPMO ER 2015.
- B. Store products in manufacturer's unopened packaging until ready for installation.
- C. Maintain dry storage area for products of this section until installation of products.

#### 1.8 PROJECT CONDITIONS

- A. Anticipate environmental conditions (temperature, humidity, and ventilation) to schedule work within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

#### 1.9 WARRANTY

- A. Manufacturer shall warrant the products against manufacturing defects and shall include material and labor to repair or replace defective materials as specified in manufacturer's warranty.
  - 1. Warranty Period - Concrete Roof Tile: Lifetime Transferable Limited Product Warranty for concrete roof tile.

### PART 2 PRODUCTS

## 2.1 MANUFACTURERS

- A. Acceptable Manufacturer:
1. Eagle Roofing Products - Rialto: 2352 N. Locust Ave., Rialto, CA 92377. ASD. Tel: (800) 400-3245. Fax: (909) 822-5940. Website: [www.eagleroofing.com](http://www.eagleroofing.com).
  2. Eagle Roofing Products - Stockton: 4555 S. McKinley, Stockton, CA 95206. ASD. Tel: (800) 998-3245. Fax: (209) 234-4366. Website: [www.eagleroofing.com](http://www.eagleroofing.com).
  3. Eagle Roofing Products - Phoenix: 4602 W. Elwood, Phoenix, AZ 85043. ASD. Tel: (800) 346-5260. Fax: (602) 442-8841. Website: [www.eagleroofing.com](http://www.eagleroofing.com).
  4. Eagle Roofing Products Florida LLC - Sumterville: 1575 E. C R 470, Sumterville, FL 33585. ASD. Tel: (877) 300-3245. Fax: (877) 300-3248. Website: [www.eagleroofing.com](http://www.eagleroofing.com).
- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

## 2.2 TILE

- A. Concrete Roof Tile: As manufactured by Eagle Roofing Products.
- B. Standard Concrete Tile:
1. Malibu Low Profile Tile:
    - a. Weight: Standard Weight.
    - b. Weight: Lightweight.
    - c. Product Number/Name: \_\_\_\_\_.
    - d. Cool Roof Color / Number: \_\_\_\_\_.
    - e. Trim Tile: Barrel type.
    - f. Trim Tile Color: \_\_\_\_\_.
    - g. Hip Starters: Barrel.
    - h. Hip Starters Color: \_\_\_\_\_.
    - i. Boosted Cap Color: \_\_\_\_\_.
  2. Capistrano High Profile Tile:
    - a. Weight: Standard Weight.
    - b. Weight: Lightweight
    - c. Product Number/Name: \_\_\_\_\_.
    - d. Cool Roof Color / Number: \_\_\_\_\_.
    - e. Trim Tile: Barrel type.
    - f. Trim Tile Color: \_\_\_\_\_.
    - g. Hip Starters: Barrel.
    - h. Hip Starters Color: \_\_\_\_\_.
    - i. Boosted Cap Color: \_\_\_\_\_.
  3. Bel Air Flat Profile Tile:
    - a. Weight: Standard Weight.
    - b. Weight: Lightweight.
    - c. Product Number/Name: \_\_\_\_\_.
    - d. Cool Roof Color/Number: \_\_\_\_\_.
    - e. Trim Tile: Flat type.
    - f. Trim Tile Color: \_\_\_\_\_.
    - g. Hip Starters: Flat smooth.
    - h. Hip Starters Color: \_\_\_\_\_
  4. Estate Flat Profile Tile:
    - a. Weight: Standard Weight.
    - b. Weight: Lightweight.
    - c. Product Number / Name: \_\_\_\_\_.
    - d. Cool Roof Color / Number: \_\_\_\_\_.

- e. Trim Tile: Rake/Ridge Type.
  - f. Trim Tile Color: \_\_\_\_\_.
  - g. Hip Starters: Flat smooth
  - h. Hip Starters Color: \_\_\_\_\_.
5. Ponderosa Flat Profile Tile:
- a. Weight: Standard Weight.
  - b. Weight: Lightweight.
  - c. Product Number / Name: \_\_\_\_\_.
  - d. Cool Roof Color / Number: \_\_\_\_\_.
  - e. Trim Tile: Rake/Ridge Type.
  - f. Trim Tile Color: \_\_\_\_\_.
  - g. Hip Starters: Flat brushed.
  - h. Hip Starters Color: \_\_\_\_\_.
6. Golden Eagle Flat Profile Tile:
- a. Weight: Standard Weight.
  - b. Weight: Lightweight.
  - c. Profile Name / Number: \_\_\_\_\_.
  - d. Cool Roof Color / Number: \_\_\_\_\_.
  - e. Trim Tile: Rake/Ridge Type.
  - f. Trim Tile Color: \_\_\_\_\_.
  - g. Hip Starters: Flat brushed.
  - h. Hip Starters Color: \_\_\_\_\_.
7. Double Eagle Bel Air Flat Profile Tile:
- a. Weight: Standard weight.
  - b. Profile Name / Number: \_\_\_\_\_.
  - c. Cool Roof Color / Number: \_\_\_\_\_.
  - d. Trim Tile: Flat type.
  - e. Trim Tile Color: \_\_\_\_\_.
  - f. Hip Starters: Flat smooth.
  - g. Hip Starters Color: \_\_\_\_\_.
8. Double Eagle Ponderosa Tile:
- a. Weight: Standard weight.
  - b. Weight: Light weight.
  - c. Shape: Flat profile.
  - d. Color and Finish: \_\_\_\_\_.
  - e. Trim Tile: Rake/Ridge Type.
  - f. Trim Tile Color: \_\_\_\_\_.
  - g. Hip Starters: Flat brushed.
  - h. Hip Starters Color: \_\_\_\_\_.
9. Tapered Slate:
- i. Weight: Standard weight.
  - j. Weight: Light weight.
  - k. Shape: Flat profile.
  - l. Color and Finish: \_\_\_\_\_.
  - m. Trim Tile: Rake/Ridge Type.
  - n. Trim Tile Color: \_\_\_\_\_.
  - o. Hip Starters: Flat brushed.
  - p. Hip Starters Color: \_\_\_\_\_.

## 2.3 RELATED Material's

- A. Eagle Ventilated Roof:
  - 1. Eave Ventilation: Eagle Roofing Products, Ventilated Bird Stop/Eave Riser.
  - 2. Bird Stop for Low Profile Tiles:
    - a. Color: Black.
    - b. Color: Brown.
    - c. Color: White (special order).
  - 3. Bird Stop for High Profile Tiles:
    - a. Color: Black.
    - b. Color: Terracotta.
    - c. Color: White (special order).
  - 4. Eave Riser for Flat Profile Tiles:
    - a. Color: Black.
    - b. Color: Terracotta.
    - c. Color: White (special order).
  - 5. Arched Battens Type: 1 by 1-3/16 inch wood.
  - 6. Batten Type: Counter Batten System.
  - 7. Ridge Ventilation: Eagle Roofing Products, Flex Vent.
  - 8. Ridge Ventilation: Eagle Roofing Products, Ridge Riser. Provide 2 inches by 2 inches (51 mm by 51 mm) ridge board.
- B. Decking: Comply with FRSA/TRI 07320/8.05 Concrete and Clay Roof Tile Installation Manual.
- C. Underlayment: Comply with FRSA/TRI Manual Fifth Edition Revised 07320/8-05, Concrete and Clay Roof Tile Installation Manual.
- D. Arched Battens:
  - 1. Nominal 1 inch by 1-3/16 inches complying with IBC Chapter 23, section 2302.
  - 2. Comply with Section #3.11 pages #16-#17 and #82 of the FRSA/TRI 07320/8-05 Concrete and Clay Roof Tile Installation Manual Fifth Edition Revised.
  - 3. The Arched Batten as manufactured by Eagle Roofing Products. Product for elevating battens off of the roof deck.
- E. Eave Closure/Riser/Bird Stop: Comply with MC 10, MC-10A, 10B, 10C & or 10D (Concrete and Clay Roof Tile Installation Manual Installation Guide IAPMO ER 2015). Refer to drawings.
  - 1. Bird Stop for Low Profile Tiles:
    - a. Color: Black.
    - b. Color: Terracotta.
    - c. Color: White (special order).
  - 2. Bird Stop for High Profile Tiles:
    - a. Color: Black.
    - b. Color: Terracotta.
    - c. Color: White (special order).
  - 3. Eave Riser for Flat Profile Tiles:
    - a. Color: Black.
    - b. Color: Brown.
    - c. Color: White (special order).
- F. Eave Closure/Riser/Bird Stop:
  - 1. Comply with Section # 2.09 and #2.10 (FRSA TRI 07320/8-05 Fifth Edition Revised installation Guide IAPMO ER 2015). Refer to drawings.

2. Eagle Roofing Products Eave Riser/Flat Profile:
    - a. Color: Black.
    - b. Color: Brown.
    - c. Color: Gray.
    - d. Color: Red.
    - e. Color: Tan.
    - f. Color: White.
  3. Eagle Roofing Products Bird Stop Malibu/Low Profile:
    - a. Color: Black.
    - b. Color: Brown.
    - c. Color: Red.
    - d. Color: Tan.
    - e. Color: Terracotta.
    - f. Color: White.
  4. Eagle Roofing Products Bird Stop Capistrano/High Profile:
    - a. Color: Black.
    - b. Color: Brown.
    - c. Color: Red.
    - d. Color: Tan.
    - e. Color: Terracotta.
    - f. Color: White.
- G. Rake and Ridge Flashing: Flashing shall be a minimum No. 26 gauge Galvanized steel G90 or equal.
1. Standard Metal Rake for Low Profile Tiles:
    - a. Color: Black.
    - b. Color: Brown.
  2. Standard Metal Rake for Flat Profile Tiles:
    - a. Color: Black.
    - b. Color: Brown.
  3. Raised Metal Rake Trim for All Profiles, 1-1/2 inches (38 mm):
    - a. Color: Black.
    - b. Color: Brown.
  4. Ridge Weather Block for High Profile Tiles:
    - a. Color: Black.
    - b. Color: Terracotta.
- H. Gable Treatment
1. Underlayment Wrapped Gable:
    - a. Extend underlayment beyond rake/gable end. Fold down onto fascia or barge board, minimum of 1 inch (25 mm). Secure with nails and tin tags, round cap nails or other fasteners 6 inches (152 mm) on center.
    - b. Trim underlayment at fascia or barge board. Install a peel and stick underlayment extending underlayment beyond rake/gable end. Fold down and seal onto fascia or barge board.
- I. Rake/Gable Finish:
1. Rake Gable Tile:
    - a. Install first rake tile the exposed length of first course of field tile with factory finish of rake tile towards the eave.
    - b. Fasten rake tile with a minimum two 10D nails and /or of sufficient length to penetrate the framing a minimum of 3/4 inch (19 mm).
    - c. About each succeeding rake tile to the nose of the field tile above and maintain a constant head lap.
  2. Mortar Finish:

- a. Place mortar bed along roof edge.
  - b. Point smooth to a straight edge finish.
- J. Valley Flashings:
  - 1. No. 26 Gauge (G90) Galvanized 24 inches (610 mm) Flashing.
  - 2. Comply with Tile Roofing Institute Moderate Climate Installation Guide MC 12B.
  - 3. Comply with FRSA/TRI 07320/8-05 Fifth Edition Revised Installation Guide.
- K. Wall Trays (Pans) Flashing:
  - 1. No. 26 Gauge (G90) Galvanized minimum 6 inches (152 mm) trough.
  - 2. Comply with Concrete and Clay Roof Tile Installation Manual MC 12B.
  - 3. Comply with FRSA/TRI 07320/8-08 Fifth Edition Revised Installation Guide.
- L. Roof to Wall Flashing: No. 26 Gauge (G90) Galvanized or flexible flashing to provide minimum 3 inches (76 mm) coverage.
- M. Pipe Flashing:
  - 1. No. 26 Gauge (G90) Galvanized deck flashing installed with underlayment.
  - 2. Flat tile flashing - No. 26 Gauge (G90) Galvanized.
  - 3. High/Low profile tile flashing - 2-1/2 lb. lead, dead soft aluminum or copper.
- N. In Wall Counter Flashing:
  - 1. No. 26 Gauge (G90) Galvanized Z-Bar flashing recommended or surface mount ringlet (pin) flashing for reroofing applications.
- O. Tile Fasteners:
  - 1. Corrosive resistant fastener meeting ASTM A641 Class I or approved equal. Number 11 gauge diameter and of sufficient length to penetrate 3/4 inch (19 mm) into or through the thickness of the deck or the batten. Comply with Concrete and Clay Roof Tile Installation Manual Table 1A and 1B.
  - 2. Comply with FRSA/TRI 07320/8-05 Fifth Edition Revised Installation Guide.
  - 3. Screw Fasteners:
    - a. Corrosion resistant meeting ASTM A641 Class 1 and/or corrosion resistance equal (according to ASTM B 117). Screws shall be 2-1/2 inches (64 mm) in length or penetrate a minimum 3/4 inch (19 mm) into the deck or batten. ASTM A641 Class 1 is a nail specification that can be converted to screw fasteners through performance testing (ASTM B 117). Each fastener manufacturer is responsible for supplying this support this data. Minimum #8 course thread.
  - 4. High Wind Areas:
    - a. Eagle Roofing Products Wind Clips - Low profile, 2-7/8 inches (73 mm).
    - b. Eagle Roofing Products Wind Clips - High profile, 3-3/8 inches (86 mm).
    - c. Eagle Roofing Products Wind Clips - Flat profile, 2-1/4 inches (57 mm).
    - d. Eagle Roofing Products Wind Clips - Flat fascia, 3/4 inch (19 mm).
  - 5. Special Application: Boosted Capistrano Installations.
    - a. Wire Ties: Bronze.
    - b. Wire Ties: Stainless Steel.
- P. Adhesive/Sealant: Tile adhesive formulated for use with concrete roof tile.
- Q. Ventilation: Per local building code requirement.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Examine areas to receive tile to verify conditions. Do not commence tile installation until unsatisfactory conditions are corrected.



### 3.2 TILE INSTALLATION

- A. Install in accordance with manufacturer's instructions and the following standards as applicable to the location of the project:
  - 1. Concrete and Clay Roof Tile Installation Manual IAPMO ER 2015 (TRI Guide).
  - 2. TRI/WSRCA Standard Installation Guides for Concrete and Clay Tile in Cold Weather Applications.
  - 3. FRSA/TRI 07320/8-05 Fifth Edition Revised Installation Guide IAPMO ER 2015.
  - 4. Florida High Wind Applications. RAS 118, 119,120.
  - 5. CAN/CSA-A220. 1-Series-06 Concrete Roof Tiles.
  - 6. FRSA/TRI 07320/8-05 Fifth Edition Revised Installation Guide.
- B. Roof Layout: Layout according to TRI Guide MC 07, MC 08, MC 08A, MC 09. Roof Layout: Layout according to FRSA/TRI 07320/8-05 Fifth Edition Revised. Refer to section # (3.08, 3.12).
- C. Battens: Install according to TRI Guide Table 1, Table 2, Table 3, MC 04 or MC-05, MC 06, MC 06A. FRSA/TRI 073020/8-05 Fifth Edition Revised. Refer to section #3.11 pages 16-17 and 82.
- D. Underlayment: Install according to TRI Guide MC 01A, MC 01B and manufacturer's instructions. FRSA/TRI 07320/8-05 Fifth Edition Revised. Quick Reference charts on pages 2, 23, 45, 67 and manufacturer's instructions.
- E. Vent Pipes: Install according to TRI Guide MC 02. FRSA/TRI Fifth Edition Revised. See drawings 11,12,12,14 and 11-b, 12-b, and 14-b.
- F. Eave/Gable: Install according to MC 10, MC 10A, MC 10B, MC 20, MC 20A. FRSA/TRI 07320/8-05 Fifth Edition Revised. Refer to section 3.03 for eave and refer to sections 3.05, 3.15 and 4.09 for gable.
- G. Venting: Install according to TRI Guide MC 21, manufacturer's instructions and local code requirements.
- H. Hip and Ridge: Install according to TRI Guide MC 18, MC 18A, MC 18B. FRSA/TRI 07320/805 Fifth Edition Revised.
- I. Rake: Install according to TRI Guide MC 19, MC 19A, MC 19B. FRSA/TRI 07320/8-05 Fifth Edition Revised, refer to sections 4.09, 3.14 and 3.18.
- J. Valleys: Install according to TRI Guide MC 03, MC 03A, MC 17, MC 17A, MC 17B, MC 17C, MC 17D. FRSA/TRI 07320/8-05 Fifth Edition Revised, refer to sections 3.05 and 3.04 drawings 3, 4, 5 and 3b, 4b, 5b.
- K. Side Wall Flashing: Install according to TRI Guide MC 12, MC 12A, MC 13, MC 13A. FRSA/TRI 07320/8-05 Fifth Edition Revised drawing 7.
- L. Head and Apron Flashing: Install according to TRI Guide MC 11, MC 11A. FRSA/TRI 07320/8-05 Fifth Edition Revised drawings 8, 9, and 10.
- M. Chimneys: Install according to TRI Guide MC 14, MC 14A, MC 15, MC 15A.
- N. Skylights: Install according to TRI Guide MC 16, MC 16A, MC 16B. Florida. Install in compliance with regular flashing installation procedures. For self-curbing or prefabricated skylights, refer to skylight manufacturer's installation instructions.
- O. Gutters: Install according to TRI Guide MC 23. Florida installs according to manufacturer's instructions and local code requirements.

### 3.3 SPECIAL APPLICATIONS

- A. Slope changes - Refer to TRI Guide MC 22.
- B. Pre-Engineered Roof - Metal Deck - Refer to TRI Guide MC 25, MC 25A, MC 25B, MC 25C.
- C. Pre-Engineered Roof - Concrete Deck - Refer to TRI Guide MC 26, MC 26A.
- D. Spaced Sheathing - Refer to TRI Guide Appendix B.
- E. Adhesive Fastening - Refer to TRI Guide Appendix B.
- F. Adhesive Fastening Set Tile Guidelines;
  - 1. FRSA/TRI 07320/8-05 Fifth Edition Revised. System four underlayment Option "A".  
And system Four Underlayment Option "B".
- G. Mortar Set Tile Guidelines:
  - 1. Refer to FRSA/TRI 07320/8-05 System Three.
- H. Design for High Wind - Refer to TRI Guide Appendix B. RAS 118, 199,120. 3.4

### CLEAN-UP

- A. Remove all debris, including any cut dust, from roof daily.

### 3.5 REPAIR AND REPLACEMENT

- A. Comply with requirements of TRI Guide MC 24.

### 3.6 PROTECTION

- A. Protect material and take precautions to prevent other trades from damaging roof materials during and after installation.

END OF SECTION