SECTION 07322

CLAY ROOF TILE

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PART 1 GENERAL

1.1 SECTION INCLUDES

A. Formed clay roof tiles and roof system components.

B. Metal roof flashing.

C. Underlayments and self seal membrane.

D. Related roof accessories.
1.2 RELATED SECTIONS

A. Section 06100 - Rough Carpentry; Roof sheathing and nailers.

B. Section 07220 - Roof and Deck Insulation.

C. Section 07600 - Flashing and Sheet Metal.

D. Section 07710 - Roof Specialties; Roof gutters and downspouts.

E. Section 07720 - Roof Accessories.

F. Section 08600 - Skylights.

G. Division 15 - Mechanical: Mechanical work projecting through roof.

H. Division 16: - Electrical: Electrical work projecting through roof.

1.3 REFERENCES


1.4 DESIGN REQUIREMENTS
A. Clay Roof Tile materials and installation shall conform to the requirements of ICC-ES, ESR-1017.

B. Roofing tile materials and installation shall conform to the requirements of the applicable building code.

1.5 SUBMITTALS

A. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.

B. 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.

C. LEED Submittals: Provide documentation of how the requirements of Credit will be met:
   1. Product Data for Credit MR 4.1 and MR 4.2: For products having recycled content, documentation including percentages by weight of post consumer and pre-consumer recycled content
      a. Include statement indicating costs for each product having recycled content.
   2. Product Data for Credit MR 5.1 and Credit MR 5.2: Submit data, including location and distance from Project of material manufacturer and point of extraction, harvest or recovery for main raw material.
      a. Include statement indicating cost for each regional material and the fraction by weight that is considered regional.
   3. Product Data for Site Credit 7.2: Submit data to substantiate reduction of heat island effect including roofing material with a SRI of 29 or better on steep sloped roofs.
D. Selection Samples: For each finish product specified, two complete sets of tile colors representing manufacturer's full range of available colors and patterns.

E. Verification Samples: For each finish product specified, two full size samples representing actual product, color, and patterns.

F. Certificates of Compliance: Submit to certify compliance with referenced standards.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Minimum five years documented experience producing concrete roof tile and member of Tile Roof Institute.

B. Installer Qualifications: Minimum five years documented experience installing products specified in this section and/or supervision by a manufacturers authorized installation representative.

C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.

1. Finish areas designated by Architect.

2. Mock-up shall be a minimum of a 10 foot (3.05 M) by 10 foot (3.05 M) area and include the edge, ridge, valley and other typical transition conditions anticipated.

3. Do not proceed with remaining work until installation workmanship and appearance is approved by Architect.

4. Mock-up may not remain as part of Work.

5. Accepted mock-up may remain as part of Work.

1.7 DELIVERY, STORAGE, AND HANDLING
A. Store products in manufacturer's unopened packaging with labels intact until ready for installation.

B. Deliver products to project site in manufacturer's unopened pallets, labeled with data indicating compliance with specified requirements.

C. Maintain dry storage area for products of this section until installation of products.

1.8 PROJECT CONDITIONS

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

B. Do not overload the roof. Distribute stacks of tile uniformly on roof at not greater than 12 inches (305 mm) in height.

1.9 WARRANTY

A. Roof Tile: Boral Roofing’s Transferable Limited 50 year Clay Product warranty.

B. Underlayment: Boral TileSeal HT Self-Adhering Underlayment 30 Year Limited Manufacturer’s Warranty.

C. Underlayment: Boral TileSeal 50 HT Self-Adhering Underlayment 25 Year Limited Manufacturer’s Warranty

D. Underlayment: GatorSeal Granular Heavy Duty Self-Adhering Underlayment 20 Year Limited Manufacturer’s Warranty.
E. Underlayment: Boral Ply 40 Underlayment 10 Year Limited Manufacturer’s Warranty.

F. Installation Warranty: Warrants products of this section, as installed, to be in accord with the Contract Documents and free from faults and defects in materials and workmanship for a period of 3 years after completion.

1.10 EXTRA MATERIALS

A. Provide an additional 1 percent of installed roof tiles, but not less than one full square, for Owner’s use in roof maintenance.

B. Furnish extra materials packaged with protective covering for storage and identified with labels clearly describing contents.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Boral Roofing; 7575 Irvine Center Drive, Suite 100, Irvine, CA 92618. ASD. Toll Free Tel: 800-571-TILE (8453); Tel: 949-585 8202; Fax: (949) 756-2401. Email: request info (Shannon.Delgado@boral.com); Web: www.boralamerica.com/roofing.

2.2 CLAY ROOF TILE

A. Clay Tile General:
   1. Made with up to 59 percent recycled raw materials and are 100 percent recyclable.
   2. Class A fire rated.
4. California Title 24 (Heat Island) Compliant without upgrades.

B. One-Piece Lightweight ClayLite Roofing Tile with matching hip, ridge, rakes, boosters and birdstops:
   2. Size: 18 inches (457 mm) by 13 inches (330 mm), nominal.
   3. Coverage: With 3 inch (76 mm) headlap, 88 field tiles per 100 square feet (9.29 sm) of roof area.
   4. Installed weight per square: Approximately 590 lbs (268 kg).
   5. Color and Finish: ________________.
   6. Color and Finish: As selected by the Architect.

C. One-Piece Lightweight ClayMax Roofing Tile with matching hip, ridge, rakes, boosters and birdstops: Lightweight Collection.
   2. Size: 18 inches (457 mm) by 13 inches (330 mm), nominal.
   3. Coverage: With 3 inch (76 mm) headlap, 88 field tiles per 100 square feet (9.29 sm) of roof area.
   4. Installed weight per square: Approximately 590 lbs (268 kg).
   5. Conforms to ASTM C 1167, Grade 1 all weather tile for freeze-thaw conditions.
   6. Color and Finish: ________________.
   7. Color and Finish: As selected by the Architect.

2. Size: 18 inches (457 mm) by 13 inches (330 mm), nominal.
3. Coverage: With 3 inch (76 mm) headlap, 88 field tiles per 100 square feet (9.29 sm) of roof area.
4. Installed weight per square: Approximately 800 lbs (363 kg).
5. Color and Finish: ________________.
6. Color and Finish: As selected by the Architect.

E. One-Piece Mission “S” Clay Roofing Tile with matching hip, ridge, rakes, boosters and birdstops: Texas Standard Weight Collection Class 2 Hail Rated Tile.
   2. Size: 18 inches (457 mm) by 13 inches (330 mm), nominal.
   3. Coverage: With 3 inch (76 mm) headlap, 88 field tiles per 100 square feet (9.29 sm) of roof area.
   4. Installed weight per square: Approximately 800 lbs (363 kg).
   5. Color and Finish: ________________.
   6. Color and Finish: As selected by the Architect.

F. 2-Piece Tapered Mission Clay Roofing Tile with matching hip, ridge, rakes, boosters and birdstops: Standard Weight Collection.
   1. Size: 18 inches (323 mm) by 7 inches to 8-1/2 inches (179 mm to 216 mm), nominal.
   2. Coverage: With 3 inch (76 mm) headlap, 172 field tiles per 100 square feet (9.29 sm) of roof area.
   3. Installed weight per square: Approximately 1,000 lbs (454 kg).
   4. Color and Finish: ________________.
   5. Color and Finish: As selected by the Architect.

G. 2-Piece Tapered Mission Clay Roofing Tile with matching hip, ridge, rakes, boosters and birdstops: Texas Standard Weight Collection Class 2 Hail Rated Tile.
   1. Size: 18 inches (323 mm) by 7 inches to 8-1/2 inches (179 mm to 216 mm), nominal.
2. Coverage: With 3 inch (76 mm) headlap, 172 field tiles per 100 square feet (9.29 sm) of roof area.
3. Installed weight per square: Approximately 1,000 lbs (454 kg).
4. Color and Finish: ________________.
5. Color and Finish: As selected by the Architect.

H. 2-Piece Tapered Monarch Clay Roofing Tile with matching hip, ridge, rakes, boosters and birdstops: Standard Weight Collection.
1. Size: 18 inches (323 mm) by 5-1/4 inches to 6-3/4 inches (133 mm to 171 mm), nominal.
2. Coverage: With 3 inch (76 mm) headlap, 220 field tiles per 100 square feet (9.29 sm) of roof area.
3. Installed weight per square: Approximately 1,070 lbs (485 kg).
4. Color and Finish: ________________.
5. Color and Finish: As selected by the Architect.

I. Romano Pan and 2 piece Top Tile with matching hip, ridge, rakes, boosters and birdstops: standard weight.
1. Size: 18 inches (457 mm) by 13 inches (330 mm), nominal.
2. Coverage: With 3 inch (76 mm) headlap, 74 field tiles per 100 square feet (9.29 sm) of roof area.
3. Installed weight per square: Approximately 990 lbs (449 kg).
4. Class A fire rated.
6. Color and Finish: ________________.
7. Color and Finish: As selected by the Architect.
2.3 ACCESSORY MATERIALS

A. Underlayment:

B. Battens
   1. Elevated Batten System battens 1 inch by 3 inch by 8 feet (25 mm by 76 mm by 1.4 M) nominal.
   2. Elevated Batten System battens 1 inch by 2 inch by 8 feet (25 mm by 51 mm by 1.4 M) nominal.
   3. Elevated Batten System battens 1 inch by 3 inch by 4 feet (25 mm by 76 mm by 1.2 m) nominal.
   4. Elevated Batten System battens 1 inch by 2 inch by 4 feet (25 mm by 51 mm by 1.2 m) nominal.

C. Fasteners: Sized to penetrate deck minimum 3/4 inch (19 mm) or through thickness of deck or batten.
   1. Quik Drive screws complying with ASTM 641, Class 1, with 2 inch or 2-1/2 inch (51 mm or 64 mm) Screws, Roofing Specific.

D. Wind Clips:
   1. Wind Clips, Galvanized Steel
   2. Wind Clips, Stainless Steel.

E. Rake and Gable End:
1. Prefabricated Rake and Ridge tile. Choose to match tile profile and color.


F. Flashings:
   1. Ribbed Valley Metal, 26 gauge corrosion resistant metal flashing.
   2. Wakaflex universal flashing for abutments at chimneys, walls and other rising structures.
   3. Plumbing Stacks and Other Pipes Penetrating Roofs as recommended by the manufacturer.

G. Mortar materials, plastic cement and sealant: Code approved adhesive suitable to bond to clay roof tile.

H. Nailers:
   1. 2 inch by 6 inch (51 mm by 152 mm) wood nailing strips at all hips and ridges.
   2. 2 inch by 2 inch (51 mm by 51 mm) wood nailing strips at all hips and ridges fastened to Ridge Riser universal hip and ridge brackets.
   3. 2 inch by 4 inch (51 mm by 101 mm) wood nailing strips under first row of cover tile after gable roll, with adjacent 2 inch by 2 inch (51 mm by 51 mm) wood nailing strip along rake sides of profiled tiles only.

I. Snow Retention: Provide as required per local code and snow loads.
PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. Verify surfaces are uniform free of ridges, warp or voids, smooth, clean and dry

C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result under the project conditions.

3.3 INSTALLATION - GENERAL

A. Install in accordance with manufacturer's instructions and the following:


3. TRI Cold & Snow Concrete and Clay Tile Design Criteria for Cold and Snow Regions.

3.4 INSTALLATION:

A. Underlayment: Install in accordance with the manufacturer’s instructions.
   1. For roof slopes of 3:12 to less than 4:12, two layers are required.
   2. For pitches of 4/12 and greater: Minimum one layer is required.

B. Flashings: Install Ribbed Valley Metal according to Boral Roofing’s installation instructions.
   1. Valleys: Install preformed metal flashing over underlayment.
      a. Closed Valley: Miter tile to form straight border at center of valley.
      b. Open Valley: Miter tile to form straight border a minimum of 11 inches (274 mm) back from the center of the valley on each side.
   2. Side Wall Flashing:
      a. Lap Top Flange of Base Flashing: 6 inches (152 mm), minimum.
      b. Nail metal near edge 6 inches (152 mm) on center.
      c. Extend flashing under tile at least 4 inches (102 mm) and turn edge up 1-1/2 inches (38 mm).
      d. Lap Joints: 3 inches (76 mm), minimum.
   3. Sides of dormers, chimneys and other walls, extend flashing at least 6 inches up vertical surface.
      a. Extend flashing under tile at least 4 inches (102 mm) and turn edge up 1-1/2 inches (38 mm).
      b. Lap Joints: 3 inches (76 mm), minimum.
   4. At wood saddles and returns, line with Wakeflex flashing extending up roof slope not less than 14 inches, and up vertical walls not less than 6 inches, and thoroughly counter flash.
   5. Make all counter flashing plugged, pointed and secure.

C. Birdstops, boosters and starters for profiled tiles only:
   1. Install clay birdstops along entire length of all eaves.
2. Install first course of pan tile leaving a 2 to 3 inch overhang at eave.
3. Install 3 inch (76 mm) booster tiles on top of birdstops.
4. Install 15 inch (381 mm) starter tiles on top of booster tiles along perimeter of all eaves.

D. Eave Closures:
   1. Prefabricated metal eave closure; profile to match tile, fastened at minimum 18 inches (457 mm) on center along eave.

E. Fasteners: (Edit to avoid conflicting requirements)
   1. Follow manufacturer’s installation recommendations.

F. Install field tile in courses beginning at eave working up incline of roof deck.
   4. As an alternate, end caps can be embedded in cement mortar for a more rustic appearance.
   5. As an alternate, cover tiles can be added using booster tiles laid dry or laid in cement mortar.
   6. Install hip and ridge tiles:
      a. Provide cement mortar or other approved materials at all hips and ridges to completely fill voids and to weatherproof the roof.
      b. All hip, ridge and first row of cover tiles after gable roll shall be set in cement mortar and fastened by non-corrosive nails.
   7. All tiles in contact with cement mortar shall be immersed in water for two minutes before laying.
8. To avoid color problems on roof:
   a. Load roof tiles from different pallets.
   b. Visually inspect application from the ground level after installing 100 tiles.
   c. Visually verify that roof tile color is uniform and even, and verify that tile courses are straight and true.
9. Correct any color or installation problems before proceeding with the installation.
10. Complete installation to provide weather tight service.

G. Flashing at Curb Mounted Skylights and Other Items:
   1. Follow manufacturer’s installation recommendations.

H. Flashing at Plumbing Stacks, Pipes, Turbines, Vents, Etc:
   1. Follow manufacturer’s installation recommendations.

I. Coatings: Apply color coordinated paint to all exposed metal flashings.

3.5 CLEANING

A. Remove all broken tile, debris and excess tile from roof.

C. Sweep cut tiles clean.

3.6 REPAIR AND REPLACEMENT
A. Damaged Tile:
   1. Break out damaged roof tile.
   2. Repair torn underlayment.
   3. Drive fastener flush.
   4. Apply minimum 3/8 inch (10 mm) by 2 inch (51 mm) bead of approved adhesive on tile in course below replacement tile.
   5. Immediately set replacement tile in position assuring proper contact.

B. Damaged Small Valley and Hip Cuts:
   1. Apply a minimum of 3/8 inch (10 mm) by 2 inch (51 mm) bead of approved adhesive at head of cut tile.
   2. Immediately set tile in course above in position assuring proper contact.

3.7 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION