

STATE OF TEXAS: Architectural Specifications for Concrete Roof Tile

CONCRETE TILE ROOF

Part 1 GENERAL

1.1 SECTION INCLUDES

- A. Concrete roof tiles and roof system components
- B. Metal roof flashing. Underlayments and self seal membrane.
- C. Related roof accessories.

1.2 RELATED SECTIONS

- A. Section 0310 – 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; gutters and downspouts.
- E. Section 07720- roof Accessories.
- F. Division 15 – Mechanical: Mechanical work projecting through roof.
- G. Division 16 – Electrical: Electrical work projecting through roof.

1.3 REFERENCES

- A. ASTM C 1492 – Standard Specification for Concrete Roof Tile
- B. AWPA C2 – Lumber, Timber, Bridge Ties and Mine Ties – Preservative Treatment by Pressure Processes; 2001.
- C. ICC ER 2656 (ICBO-ES) – International code council Evaluation Services.
- D. ICBO 34-6043P Concrete and Clay Roof Tile Installation Manual for Moderate climate Regions (Sept 2002)
- E. International Code Council Evaluation Services _ ICC ES 946C (SBCCI _ES)
- F. ICC AC 180 – Acceptance Criteria for Clay and Concrete Roof Tiles. September 2002
- G. ICCES 2203 Hanson Roof Tile
- H. ICCES ER-3748 Hanson Roof Tile
- I. Texas Product Approval as applicable in coastal counties

1.4 DESIGN REQUIREMENTS

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

1.5 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. [Product Date]: Manufacturer’s data sheets on each product to be used, including:
 - a. Preparation instructions and recommendations.

- i. Storage and handling requirements and recommendations.
 - 1. 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. Verification Samples: for each finish product specified, two full size samples representing actual product, color, and patterns.
- E. Certification 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 Roofing 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.
 - a. Finish areas designated by Architect.
 - b. Mock-up shall be a minimum of a 20 foot (3.05 M) by a10 foot (3.05 M) area and include the edge, ridge, valley and other typical transition conditions anticipated.
 - c. Do not proceed with remaining work until installation workmanship and appearance is approved by Architect.
 - d. Accepted mock-up may remain as part of Work.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging 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 (305mm) in height.

1.9 WARRANTY

- A. Roof Tile: Limited Lifetime, Fully Transferable, Non-Prorated Product Warranty against defects in roof tile for the life of the structure.

- B. 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: Hanson Roof Tile: 230 West Davis, Luling, TX 78648, Tel: 830.875.5182 fax:830.875.9054 www.hansonrooftile.com
- B. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 CONCRETE ROOF TILE – TEXAS

- A. Standard Weight tile: Hanson Roof Tile Regal profile
 - 1. Finishing Tile: Provide manufacturer's Trim, and Hip starter.
 - 2. Size: 17.25 inches (419 mm) by 13 3/8 inches (330mm), nominal.
 - 3. Coverage: 86 field tiles per 100 square feet (9.29 sm) of roof area.
 - 4. Installed weight per square: Approximately 990 lbs. (408kg)
 - 5. Color and Finish: R-615

2.3 ACCESSORY MATERIALS – TEXAS

- A. Underlayment:
 - a. Type No. 30, complying with ASTM D 228.
- B. Nails: Conforming to ASTM A 641, Class 1, Sized to penetrate deck minimum 3/4 inch (19mm) or through thickness of deck or batten.
 - a. Type: Electro galvanized.
- C. Screw Fasteners: Sized to penetrate deck minimum 3/4 (19mm) or through thickness of deck or batten.
 - a. Fastener Type L Corrosion resistant fasteners formed from coated or planted steel.
- D. Storm clips:
 - a. As per manufacturers recommendations for I-90 requirements.
- E. Flashings:

- a. Material, Unless Otherwise indicate. Steel sheet galvanized to G90/Z275 complying with ASTM A 653/A 653M;26 gauge, 0.018 inch (0.45 mm) minimum thickness.
 - b. Valley Flashings: See ICBO EN -6034P Sept 2002 for approved alternates
 - 1. Type: Single center diverter.
 - 2. Width: 24 inches (610 mm), minimum, stock prior to forming design.
 - 3. Height of Center Diverter: 1 ½ inch (38 mm), minimum.
 - 4. Edge Returns: 1 inch (25mm), minimum
 - 5. Lap Joints: 6 inch (152 mm) minimum
 - c. Plumbing stacks and Other Pipes penetrating roof for medium and high profile tiles. Lead sheet, 2.5 pounds per square foot (12 kg/ sq m) minimum thickness; or dead soft aluminum sheet, 0.032 inch (0.8 mm) minimum thickness. Gang thru roof plumbing stacks and vents where possible.
- F. Adhesive:
- a. Asphalt plastic roof cement, Type II, non-asbestos, non-running, heavy body material composed of asphalt and other mineral ingredients, formulated for use with concrete roof tile.
 - b. Concrete tile adhesive, must be identified by manufacturer as specifically formulated as a concrete roof tile adhesive.
- G. Eave closures:
- a. Prefabricated metal eave closure; profile to match tile, fastened at minimum 18 inches (4576 mm) on center along eave.
- H. Horizontal Battens:
- a. Material: Standard or better Douglas Fir, pressure treated, and complying with AWWPA C2 for above ground use.
 - b. Size: 1 inch (25mm) by 2 inches (51 mm); for standard installation.
 - c. Do not use bowed or twisted battens.
- I. Tile Battens: Standard or better Douglas Fir.
- a. Size: 1 inch (25mm) by 2 inches (51 mm).
- J. Hip & Ridge
- a. Ridge Riser- Elevates ridge board to proper height.
 - b. Hip & Ridge weather blocking Asper TRI 1c30 6034A, Black
- K. Rake & Gable End
- a. Prefabricated Rake and Ridge tile. Choose to match tile profile and color.
- L. Field Venting
- a. O'Hagin Cloaked Vent Tile to match tile profile and color.
 - 1. O'hagin's Inc. 2861 Gravestien Hwy So, Suite 107, Sebastopol, CA 95472- phone 1.800.394.3864 fax 1.707.823.2508

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. Verify surfaces are uniform, 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 results under the project conditions.

3.3 INSTALLATION – GENERAL

- A. Install in accordance with manufacturer's instructions and the following:
 - a. ICBO ER_6034P Concrete and Clay Roof Tile Installation Manual for Moderate Climate Regions Sept. 2002

3.4 UNDERLAYMENT APPLICATION:

- A. Underlayment – Two Ply No. 30:
 - a. Install 19 inch (483 mm) wide started strip.
 - b. Secure near top edge with nails, spaced 24 inches (610 mm) on center.
 - c. Install 36 inch (914 mm) wide sweat sheet down center of valley.
 - d. Secure near top edge with approved nails, spaced 24 inches (610 mm) on center.
 - e. Install with minimum 19 inches (483 mm) head tap and 6 inches (152 mm) side laps.
 - f. Extend underlayment up vertical surfaces minimum 4 inches (102 mm)
 - g. Extend underlayment onto adjacent roof planes a minimum of 6 inches (152 mm).
- B. Install nailer boards at hips and ridges:
 - a. Use fasteners of sufficient length to penetrate minimum $\frac{3}{4}$ inch (19mm) into trusses.
 - b. Attach with No. 26 gauge (0.018 inch) galvanized strapping minimum 24 inches (610 mm) on center (where required by local building officials.)

3.5 FLASHING INSTALLATION

- A. Install flashings to shed water and prevent water penetration under tiles.
- B. Valleys: Install preformed metal flashing over underlayment.
 - a. Closed Valley: Miter tile to form straight border at center of valley.
 - i. Open Valley: Miter tile to form straight border a minimum of 2 inches (51mm) back from the center of the valley on each side.
- C. Side Wall Flashing:
 - a. Install preformed metal pan flashing at base of wall over underlayment starting at lower end and working up.
 - b. Vertical Flange: 4 inches (102 mm), minimum; nail vertical metal flange near to of metal edge.
 - c. Base Flange: 6 inches (152 mm) minimum
 - d. Metal Edge Return: 1 inch (25 mm) secure to either deck or batten strip with roofing nail through metal strap.
 - e. Lap Joints: 6 inches (152 mm) minimum.
- D. Counter Flashings:
 - a. Lap Top Flange of Base Flashing: 3 inches (76 mm), minimum
 - b. Nail metal near edge 6 inches (152 mm) on center.
 - c. Lap Joints 3 inches (76mm) minimum.
- E. Install batten extenders to support tile over flashing.
- F. Install tiles so as not to inhibit water flow on flashings.
- G. Head and Apron flashing:
 - a. Nail near to edge of vertical flange with minimum 4 inches (102 mm) on tile surface.
 - b. Lap metal 6 inches (152 mm) and seal laps with flashing cement.
- H. Flashing at Plumbing Stacks, Pipes, Turbines, Vents, Etc.
 - a. Install base flashing sealed or lapped by underlayment.
 - b. Install second flashing interlaced with tile coursing.
 - c. Seal with sealant.
- I. Coatings: Apply color coordinated paint to all exposed metal flashings.

3.6 BATTEN INSTALLATION

- A. Locate vertical strapping at maximum 24 inches (610 mm) on center and fasten with nails or screws of sufficient length to penetrate sheathing minimum of $\frac{3}{4}$ inch (19 mm) as required by local building officials.
- B. Install horizontal battens to horizontal line at spacing to suite tile size with last course at 1 $\frac{1}{2}$ inches (38 mm) from ridge.
- C. Allow $\frac{1}{2}$ inch (13 mm) space between batten ends and between batten and metal edge return.

3.7 TILE INSTALLATION

- A. Layout:
 - a. Overhang at Eave: $\frac{3}{4}$ inch (19 mm) past drip edge, uniformly aligned.
 - b. Overhang at Eave: 2 inches (51 mm) pst drip edge, uniformly aligned.
 - c. Minimum Head Lap: 3 inches (76 mm).
 - d. Coursing: Straight bond.
- B. Set perimeter tiles in mortar; apply sealer to exposed mortar on 1st 3 courses around perimeter or as required by local building officials
- C. Secure field and perimeter tile in accordance with UBC Table 15-D-2.
- D. Cut field tile to form straight edge at center of hip, ridge and valley
- E. Install eave closures.
- F. Hips and Ridges, Mechanically fastened:
 - a. Install nailer board of sufficient height to support trim tile.
 - b. Protect nailer board with Type 30 asphalt fell, pressure sensitive adhesive, mortar, or preformed metal closure.
 - c. Mechanically fasten trim to nailer board with minimum $\frac{3}{4}$ inch (19 mm) penetration.
 - d. Use approved sealant or clips.
 - e. Point mortar and finish to match tile surfaces.
- G. Rakes and Gables: Use rake tile
 - a. Adjust first course to match field tile.
 - i. Nail rake tile with minimum two corrosion resistant fasteners of sufficient length to penetrate:
 - 1. Framing minimum $\frac{3}{4}$ inch (19mm)
 - 2. Abut eave succeeding rake tile to nose of field tile above.

3.8 CLEANING

- A. Remove all broken tile, debris and excess tile from roof.
- B. Sweep cut tiles clean.

3.9 REPAIR AND REPLACEMENT

- A. Damaged Tile:
 - a. Break out damaged roof tile
 - b. Repair torn underlayment
 - c. Drive fastener flush
 - d. Apply minimum $\frac{3}{8}$ inch (10mm) by 2 inch (51mm) bead of approved adhesive on tile in course below replacement tile.
 - e. Immediately set replacement tile in position assuring proper contact.

3.10 PROTECTION

- A. Protect Installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION.