

**SECTION 07 32 13**  
**CLAY ROOF TILES**

**PART 1 - GENERAL****1.1 DESCRIPTION**

- A. This section specifies the installation of roofing tiles.
- B. Related work
  - 1. Metal Flashing: Section 07 60 00, FLASHING AND SHEET METAL.
  - 2. Sealants: Section 07 92 00, JOINT SEALANTS.

**1.2 SUBMITTALS**

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. ~~Samples.~~ **Provide mock-ups for verification as specified herein to show that proposed tiles match existing tiles as specified and include the color ranges that match existing area specified.**
- C. Shop Drawings: Details of fabricated custom shapes.

**1.3 PRODUCT DELIVERY, STORAGE AND HANDLING**

- A. Deliver tiles and setting materials in manufacturer's original, unopened containers clearly identifying manufacturer and the contents.
- B. Do not store tiles in flat position.

**1.4 WARRANTY**

- A. Warrant materials and workmanship to be free from defects and leaks and subject to the terms of the "Warranty of Construction", FAR clause 52.246-21, except that warranty period is two years.
- B. Leakage shall be defined as water in liquid form which enters the roof system or building interior from external sources through roof components installed by the Contractor.
- C. Perform repairs within seven (7) days of notification at no expense to the Owner.
- D. Repair visible defects, whether leak related or not including slippage of materials, separated flashing joints, or other defects resulting from defective workmanship.
- E. Provide manufacturer's material warranty for membrane underlayment.

**1.5 APPLICABLE PUBLICATIONS**

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. American Society for Testing and Materials (ASTM):  
A580-08.....Stainless Steel Wire

- B99-06.....Copper - Silicon Alloy Wire for General Applications
- C270-10.....Mortar for Unit Masonry
- C920-10.....Elastomeric Joint Sealants
- C1167-03.....Clay Roof Tiles
- D226-09.....Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing
- D1970-09.....Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roof Underlayment for Ice Dam Protection
- D4586-07.....Asphalt Roof Cement, Asbestos Free
- F1667-05.....Driven Fasteners: Nails, Spikes, and Staples
- C. National Roofing Contractor's Association (NRCA): The NRCA Roofing and Waterproofing Manual.

#### **1.6 QUALITY ASSURANCE:**

**A. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.**

**1. Build 1200 mm (48 inch) square mockups for clay roof tiles including related roofing materials.**

**2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless the PM/COTR specifically approves such deviations in writing.**

**3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion. Otherwise mockups are to be disassembled and removed at project completion.**

**4. It is incumbent upon the bidder to field site verify, ie."review" roofing tiles on buildings adjacent to Building 11 for tile colors. The VA will not be providing sample tiles. Section 07 32 13 requires submittal of tile samples by the Contractor for the VA to select colors and tile mock-ups shall be required to be provided by the Contractor thus allowing the VA PM/COTR to select blend.**

#### **PART 2 - PRODUCTS**

##### **2.1 CLAY ROOF TILES**

- A. Spanish Roofing Tile **(NO SUBSTITUTIONS), ~~matching existing tile in design, color blend and texture, manufactured by Ludowici-Celadon or approved substitute.~~**

**1. ASTM C1167, molded or extruded clay kiln fired to verification and free of surface imperfections with fastening holes pre-punched before firing.**

2. As approved by the PM/COTR, match existing clay roof tiles on existing section of Building 11 that are identified as following:

- a.. Manufacturer: Ludowici Roof Tile.
- b. Type: Barrel (pan and cover).
- c. Color and Texture: Match existing.
- d. Size: Approximately 475 mm (19 inches) long with a 100 mm (4 inch) overlap.

B. Special shapes: Eave closures, under eave piece, gable rake, and hands, valley, ridge covers, top fixtures, and other shapes required.

C. Contractor shall include in Base Bid tiles that are damaged during shipping, storage, handling, installation or due to roof traffic until Project completion.

**2.2 ROOF CEMENT**

- A. ASTM D4586, Type II.
- B. Modified bituminous types are acceptable.

**2.3 NAILS BRADS, STAPLES AND SPIKES**

- A. ASTM F1667.
- B. Nails: Type I, Style 23, Hard copper roofing nails length for 19 mm (3/4 inch) penetration into deck.
- C. Staples: Type IV, Style 3, Flat top crown staple, zinc coated.

**2.4 FELT UNDERLAYMENT**

- A. ASTM D226, Type II, nominal 13.6 kg (30 pounds.)
- B. Without perforations.

**2.5 MORTAR**

- A. ASTM C270.
- B. Type N or O.

**2.6 SEALANT**

- A. ASTM C920, Type S or M, Grade NS Class 25.
- B. Use Polyurethane, Shore hardness 15-25.

**2.7 WIRE**

- A. Stainless steel: ASTM A580, Type 302 or 304, minimum 0.74 mm (0.029 inch) diameter.
- B. Copper: ASTM B99, minimum 1.27 mm (0.05 inch) diameter.

**2.8. SELF-ADHERING SHEET UNDERLAYMENT**

- A. Modified bituminous waterproofing sheet, self-adhering, high temperature resistant, Vycor Ultra by W.R. Grace, or approved substitute. Provide complete with all required primers.

**2.9 ROOF TILE TREATED WOOD BATTENS AND BLOCKING**

- A. Southern Pine No. 2 (SPIB), preservative treated accordance with AWPA Standard Specification P-5 with a dry salt retention of 0.25-lb./cu. ft. and kiln dry members after treatment to 15% MC. Mark

each treated item with the Quality Mark Requirements of an inspection agency approved by ALSC's Board of Review. Provide 1" (5/4) x 2" (or proper height) treated wood battens and blocking to carry cover, hip and ridge tile.

### **2.10 CONTINUOUS RIDGE VENT**

- A. Cloaked extruded plastic continuous ridge vent fabricated to provide a minimum of 6 square inches of net free area per foot of length and fabricated with flashing flanges arranged to trap and weep blowing water to the plane of the roof underlayment and receive cemented-on cover tiles for nearly invisible installation.

## **PART 3 - EXECUTION**

### **3.1 JOB CONDITIONS**

- A. Do not set tiles in mortar when the ambient temperature is less than 4 °C (40 °F).
- B. Do not start installation until other trades requiring traffic on roof have completed their work.
- C. Do not start installation until vent pipes and other projections through roofs and flashing materials are in place.
- D. Protect existing roofs from damage.

### **3.2 WOOD SUPPORT BATTENS**

Install treated wood support battens by toe-nailing through opposite sides of batten base into roof deck in accordance with roof tile manufacturer's printed installation instructions. Place and space battens accurately at pan-cover tile module and perpendicular to eaves. Install and secure supplemental wood at ridge locations.

### **3.3. Self-Adhering Sheet Underlayment:**

- A. Install wrinkle free, complying with low-temperature installation restrictions of underlayment manufacturer if applicable. Install at locations indicated below, lapped in direction to shed water. Lap sides not less than 3-1/2 inches (89 mm). Lap ends not less than 6 inches (150 mm), staggered 24 inches (600 mm) between succeeding courses. Roll laps with roller. Cover underlayment within seven days.
1. Prime concrete and masonry surfaces to receive self-adhering sheet underlayment.
  2. Extend self-adhering sheet underlayment over entire roof deck.
- c. Valleys: Extend from lowest to highest point 18 inches (450 mm) on each side.
- d. Hips: Extend 18 inches (450 mm) on each side.
- e. Ridges: Extend 36 inches (914 mm) on each side.
- f. Sidewalls: Extend 18 inches (450 mm) beyond sidewalls and return vertically against sidewalls not less than 4 inches (100 mm).
- g. Roof-Penetrating Elements: Extend 18 inches (450 mm) beyond penetrating elements and return vertically against penetrating elements not less than 4 inches (100 mm).
- h. Roof Slope Transitions: Extend 18 inches (450 mm) on each roof slope.

### **3.4 LAYING FELT UNDERLAYMENT**

- A. Lay single thickness of felt parallel to eaves with double thickness at hips, valleys, and ridges, under tile roofing.

- B. Lap horizontal joints 75 mm (3 inches) and vertical joints 150 mm (6 inches) with vertical joints staggered. Lap in direction of flow.
- C. Extend felt up 150 mm (6 inches) at abutting vertical walls, chimneys and parapets.
- D. Lap felt not less than 100 mm (4 inches) under edges at built-in gutters, valleys, flashing, and metal flashings.
- E. Staple felt 125 mm (5 inches) on centers along laps and edges.

### 3.5 CONTINUOUS RIDGE VENTS

- A. Install continuous ridge vents in longest lengths possible (up to 48"), setting base flanges flush with plane of underlayment. Strip ridge vent flanges onto main roof underlayment with a 6" width of rubberized asphalt underlayment, lapping stripping end joints 4" minimum. Turn up flashings minimum of 4-inches at abutting construction. Cover cloaked ridge vents with tile in accordance with roof tile manufacturer's printed instructions to provide a continuous ridge vent installations that is nearly invisible in the completed construction.

### 3.6 LAYING TILE

- A. Tile Installation: Beginning at the eaves, install clay tile roofing in accordance with manufacturer's written instructions and with details and recommendations of NRCA's "The NRCA Roofing and Waterproofing Manual." Provide minimum 3" lap between succeeding courses of tile. Drive nails to clear the tile so that tile hangs from nail and is not drawn up tight.
  - 1. Color Blend: Install tile with color blend to match existing clay tile roof areas and approved mock-ups. Install matching, specially shaped units at ridges, rakes and hips.
- B. Lay courses parallel with eaves.
- C. Do not stretch courses.
- D. Space course to finish even and parallel at top of level terminations.
- E. Fit tiles closely at ridges, around vent pipes, flashing and other like projections through roof.
- F. Secure tile by at least two nails, where practicable.
- G. Use copper or stainless steel wire fastening where nails are not used through tile.
- H. Cover nails and wire fastenings in finished work.
- I. Lay tile with an end lap of at least 75 mm (3 inches).
- J. Recess eave closure of pan and cover tile at least 38 mm (1-1/2 inches) from lower end of tile.
- K. Fill laps of ends bands, of cover tile on ridges, and of gable rakes to end bands and field tiles with roof cement.

1. Limit amount of roof cement used for leveling tile to 6 mm (1/4 inch) thickness.
  2. Use mortar for leveling and bedding tile where thickness exceeds 6 mm (1/4 inch).
- K. Use sealant for pointing around eave closures ridge cover joints, and top fixtures.
1. Apply sealant cap bead over exposed fasteners sealing opening.
  2. Apply as specified in Section 07 92 00, JOINT SEALANTS.
- L. Coordinate with Section 07 60 00, FLASHING AND SHEET METAL for installation of flashing with tile work. Keep flashing concealed except where exposed on vertical surfaces or Counterflashing (cap).
- M. Contractor shall be responsible for all roofing tiles, new and existing, that are broken by Contractor activities.
- 3.7 CLEANING AND REPAIR**
- A. Upon completion remove any cement splatter from tile and adjacent surfaces.
  - B. Replace broken, cracked, or stained tile with discolored surface.

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