

**SECTION 07 32 13
CLAY ROOF TILES**

SPEC WRITER NOTE: Delete text between // // not applicable to project. Edit remaining text to suit project.

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

- 1. Clay roof tiles over underlayment nailed to roof sheathing.

1.2 RELATED WORK

SPEC WRITER NOTE: Update and retain references only when specified elsewhere in this section.

- A. Section 06 10 00, ROUGH CARPENTRY:
- B. Section 07 60 00, FLASHING AND SHEET METAL: Counterflashing and Flashing of Roof Projections. Miscellaneous Wood Carpentry.
- C. Section 07 71 00, ROOF SPECIALTIES: Roof Hatches (Scuttles) and Roof Vents.
- D. Section 07 92 00, JOINT SEALANTS: Sealants.
- E. Section 09 06 00, SCHEDULE FOR FINISHES: Clay Tile shape, Size, and Color.

1.3 APPLICABLE PUBLICATIONS

- A. Comply with references to extent specified in this section.
- B. ASTM International (ASTM):
 - B3-13(2018).....Soft or Annealed Copper Wire.
 - C270-19ae1.....Mortar for Unit Masonry.
 - C920-18.....Elastomeric Joint Sealants.
 - C1167-11(2017).....Clay Roof Tiles.
 - D226/D226M-17.....Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
 - D1970/D1970M-20.....Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
 - D4586/D4586M-07(2018)e1. Asphalt Roof Cement, Asbestos-Free.
 - F1667-18a..... Driven Fasteners: Nails, Spikes, and Staples.

1.4 PREINSTALLATION MEETINGS

- A. Conduct pre-installation meeting // at project site // minimum 30 days before beginning Work of this section.

SPEC WRITER NOTE: Edit participant list to ensure entities influencing outcome attend.

1. Required Participants:

- 1) Contracting Officer's Representative.
- 2) // Architect/Engineer. //
- 3) Contractor.
- 4) Installer.
- 5) // Manufacturer's field representative. //
- 6) Other installers responsible for adjacent and intersecting work, including flashing and sheet metal.

SPEC WRITER NOTE: Edit meeting agenda to incorporate project specific topics.

2. Meeting Agenda: Distribute agenda to participants minimum 3 days before meeting.

- 1) Installation schedule.
- 2) Installation sequence.
- 3) Preparatory work.
- 4) Protection before, during, and after installation.
- 5) Installation.
- 6) Terminations.
- 7) Transitions and connections to other work.
- 8) Other items affecting successful completion.

3. Document and distribute meeting minutes to participants to record decisions affecting installation.

1.5 SUBMITTALS

A. Submittal Procedures: Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Submittal Drawings:

1. Show size, configuration, and details of custom shapes.

C. Manufacturer's Literature and Data:

1. Description of each product.
2. Installation instructions.

D. Samples:

1. Clay Roof Tiles: Full sized, each type and color.
 - 1) Submit quantity required to show full color range.

E. Operation and Maintenance Data:

1. Care instructions for clay roof tiles.

1.6 DELIVERY

- A. Deliver products in manufacturer's original sealed packaging.
- B. Mark packaging, legibly. Indicate manufacturer's name or brand, type, // color, // production run number, and manufacture date.
- C. Before installation, return or dispose of products within distorted, damaged, or opened packaging.

1.7 STORAGE AND HANDLING

- A. Store tiles according to manufacturer's instructions. Store roll goods on end in upright position.
- B. Protect products from damage during handling and construction operations.
- C. Keep materials dry, covered completely and protected from weather.

1.8 FIELD CONDITIONS

- A. Environment: Mortaring Ambient Temperature: Minimum 4 degrees C (40 degrees F) and rising.

1.9 WARRANTY

SPEC WRITER NOTE: Always retain construction warranty. FAR includes Contractor's one-year labor and material warranty.

- A. Construction Warranty: FAR clause 52.246-21, "Warranty of Construction."

PART 2 - PRODUCTS

SPEC WRITER NOTES:

- 1. Indicate clay tile type desired (English, French, Greek, Mission, Roman or Spanish) in Section 09 06 00.
- 2. Ensure tile are clearly detailed on drawings, especially edges and flashings at penetrations, and hips, ridges, and valleys.
- 3. Ensure plywood deck is minimum 19 mm (3/4 inch) thick.
- 4. Do not use clay roof tiles for roof slopes shallower than 3/12, or steeper than 19/12.

2.1 PRODUCTS - GENERAL

- A. Basis of Design: Section 09 06 00, SCHEDULE FOR FINISHES.
- B. Provide clay roof tile from one manufacturer and from one production run.

2.2 CLAY ROOF TILES

- A. Clay Roof Tiles: ASTM C1167, Grade 1, providing resistance to severe frost action. // Type I, High profile // Type II, low profile // Type III, other, including flat //.
- B. Special Shapes: // Eave closure tiles, // top fixtures // gable rakes // rolled rakes // ridge covers // hip covers // ridge cover starters // hip cover starters // hip/ridge terminals // and other shapes indicated on drawings.
- C. Tiles for Repairs: Match existing tile color, size, and shape.

2.3 ROOFING NAILS

- A. Nails for Clay Roof Tiles: ASTM F1667, Type I, Style 23, copper slating nails.
 - 1. Length: Penetrate roof deck minimum 19 mm (3/4 inch).

2.4 ROOFING UNDERLAYMENT

- A. Organic Felt: ASTM D226/D226M, Type II, No. 30, non-perforated.
- B. Self-Adhering Modified Bituminous Underlayment: ASTM D1970/D1970M.

2.5 METAL FLASHING

- A. Provide metal roof flashings, including apron flashings, step flashings, valley flashings, drip edges, and vent pipe flashings specified in Section 07 60 00, FLASHING AND SHEET METAL.
 - 1. Metal: Copper.
 - 1) Valleys: 1 mm (20 oz., 0.039 inches) minimum.
 - 2) Other Locations: 0.55 mm (16 oz., 0.022 inches) minimum.
- SPEC WRITER NOTE: Retain article below if ridge vents are required.

2.6 RIDGE VENTS

- A. Ridge Vents: Manufacturer's standard ridge vent intended for long-term use under clay roof tiles.
 - 1. Provide ridge vents with internal filters, internal baffles, or external baffles, for weather protection.
 - 2. Free Area: Minimum 25400 square mm net free area per meter length (12 square inches per foot).
- SPEC WRITER NOTE: Retain article below if snow guards are required.

2.7 SNOW GUARDS

- A. Snow Guards: Individual copper snow guards for clay tile roofs, designed not to penetrate roof tiles.

2.8 ACCESSORIES

- A. Asphalt Roof Cement: ASTM D4586/D4586M, Type II.
- B. Mortar: ASTM C270, Type N or O. Match tile color.
- C. Joint Sealant: ASTM C920, nonstaining silicone, Type S, Grade NS, Class 100/50.
- D. Nailers: Preservative-treated wood complying with Section 06 10 00, ROUGH CARPENTRY.

SPEC WRITER NOTES: Nose clips are required for high wind areas. Retain paragraph below for buildings with design wind speed of 180 km/hr. (110 mph) or higher, and with design wind speed of 160 km/h (100 mph) or higher and mean roof height greater than 12 (40 feet).

- E. // Nose Clips: Manufacturer's standard copper nose clip. //
- F. Copper Wire: ASTM B3, 2.11 mm (0.083 inch) diameter, minimum.

PART 3 - EXECUTION

SPEC WRITER NOTES:

1. This specification is for clay roof tiles secured to plywood roof sheathing or roof deck. If roof tiles are secured to another material, edit specification accordingly.
2. Battens are not included. They are optional for most tile installations, but are required for tiles with projecting anchor lugs to be installed at 7/12 slope or steeper. Edit this specification accordingly if battens are required.

3.1 PREPARATION

- A. Examine and verify substrate suitability for roofing installation.
 1. Verify roof substrates are sound, within manufacturer's tolerances, and free from defects which would interfere with roofing installation.
 2. Verify roof accessories, vent pipes and other projections through roof are in place and roof flashing is installed, or ready for installation, before installing clay roof tiles.
 3. Ensure other construction operations requiring roof deck traffic are complete.
- B. Protect existing construction and completed work from damage.

3.2 INSTALLATION - GENERAL

- A. Install products according to manufacturer's instructions // and approved submittal drawings //.
 - 1. When manufacturer's instructions deviate from specifications, submit proposed resolution for Contracting Officer's Representative consideration.

3.3 METAL DRIP EDGE INSTALLATION

- A. At eaves and rakes, install copper drip edges specified in Section 07 60 00, FLASHING AND SHEET METAL.
 - 1. Eaves: Install metal drip edge before underlayment.
 - 2. Rakes: Install metal drip edge after underlayment.
- B. Secure metal drip edges with compatible nails spaced maximum 250 mm (10 inches) on center along inner edges.

3.4 FLASHING INSTALLATION

- A. Install metal flashings at valleys and projections through deck such as chimneys and vent stacks. Install metal flashings to comply with requirements in Section 07 60 00, FLASHING AND SHEET METAL.

SPEC WRITER NOTE: Include channel flashing for S-tile.

- B. Install channel flashing at intersections with sideslope vertical surfaces.
 - 1. Vertical Leg Height: 125 mm (5 inches) minimum.
 - 2. Horizontal Leg Width: 75 mm (3 inches) minimum.
 - 3. Lap each length of channel flashing 200 mm (8 inches) minimum.
 - 4. Fasten vertical leg of channel flashing, 300 mm (12 inches) on center.

SPEC WRITER NOTE: Include step flashing for flat tile.

- C. Install step flashing at intersections with vertical surfaces.
 - 1. Length: Length of tile plus 50 mm (2 inches).
 - 2. Vertical Leg Height: 200 mm (8 inches) minimum.
 - 3. Horizontal Leg Width: 150 mm (6 inches) minimum.
- D. Install apron flashing to cover roof tiles at downslope sides of projections.
- E. Install crickets on upslope sides of projections.
- F. Overlap vertical leg of channel flashing and apron flashing with counterflashing 50 mm (2 inches) minimum.

G. Valley Flashing: Shingle type, as indicated in Section 07 60 00, FLASHING AND SHEET METAL.

1. Secure valley flashing according to manufacturer's instructions.
2. Width: 300 mm (12 inches) minimum, both sides of valley.

3.5 UNDERLAYMENT INSTALLATION

A. Install self-adhering sheet underlayment, working from low point to high point. Lap sides 90 mm (3-1/2 inches) minimum, and lap ends 150 mm (6 inches) minimum. Install at the following locations:

1. Eaves and Rakes: From edge of eave and rake to 600 mm (24 inches) minimum beyond inside face of exterior wall.
 - 1) Lap underlayment over eave metal drip edge.
2. // Valleys, // Hips // and // Roof Slope Transitions: Centered over change in slope, and extended 450 mm (18 inches) minimum on both sides.
3. Ridges: Centered on ridge, and extended 900 mm (36 inches) minimum on both sides. // Do not cover ridge vent opening. //
4. Sidewalls and Projections through Roof: Extended 450 mm (18 inches) from projection, and extended up projection 150 mm (6 inches) minimum.
5. Roll underlayment to ensure adhesion to roof deck and metal flashings.
 - a. Install two layers organic felt underlayment on roof deck not covered by self-adhering sheet underlayment, with 150 mm (6 inches) minimum end laps, 75 mm (3 inches) minimum head laps, and 300 mm (12 inches) minimum ridge laps.
6. Lap in direction of flow.
7. Stagger vertical joints.
8. Nail felt 125 mm (5 inches) on centers along laps.

3.6 ROOF ACCESSORY INSTALLATION

- A. Install // roof hatches (scuttles), // and roof vents, // specified in Section 07 71 00, ROOF SPECIALTIES before installing clay roof tiles.
- B. Lap underlayment over base flanges of roof accessory flashings.
- C. Install channel flashing and counterflashing at base of roof accessories.

3.7 NAILER INSTALLATION

- A. Fasten wood nailers to roof deck at ridges // hips, // and rakes.

3.8 CLAY ROOF TILE INSTALLATION

- A. Lay courses parallel with eaves.

- B. Do not stretch courses.
- C. Space courses to finish even and parallel upper level terminations.
- D. Use special shapes to start and finish // hips, // ridges, and rakes.
- E. Fit tiles closely at ridges, around vent pipes, flashing and other projections through roof.
- F. Secure each tile with two nails, where possible.
 - 1. Use copper wire fastening where nails are not possible.

SPEC WRITER NOTES:

Retain paragraph below if retaining NOSE
CLIPS paragraph in Part 2.

- G. // Install nose clips according to manufacturer's instructions. //
- H. Cover nails and wire fastenings in finished work.
- I. Lay tile with minimum 75 mm (3 inches) end lap unless otherwise required by manufacturer.
- J. Recess eave closure tile minimum 38 mm (1-1/2 inches) from lower end of tile.
- K. Fill laps at the following locations with roof cement:
 - 1. End bands.
 - 2. Ridge cover tiles.
 - 3. Gable rakes at end bands.
 - 4. Gable rakes at field tiles.
- L. Use maximum 6 mm (1/4 inch) thick roof cement to level tile.
 - 1. Use mortar to level and bed tile where off-level dimension exceeds 6 mm (1/4 inch).
- M. Use sealant to point around eave closures, ridge cover joints, and top fixtures.
 - 1. Apply sealant cap bead over exposed fasteners.
 - 2. Comply with Section 07 92 00, JOINT SEALANTS.
- N. 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.
- O. Valleys: Open.
 - 1. Do not nail within valley.

3.9 RIDGE VENT INSTALLATION

- A. Install ridge vents over nailers.

SPEC WRITER NOTE: Coordinate ridge vent
location and extent with drawings.

1. Extent: Continuous along ridges extending to within <distance> of rakes.
- B. Install clay roof tiles over ridge vents according to ridge vent manufacturer's instructions.

SPEC WRITER NOTE: Retain article below if snow guards are required.

3.10 SNOW GUARD INSTALLATION

- A. Install snow guards in layout recommended by manufacturer.
 1. Fasten snow guards with fasteners concealed by tiles. Do not penetrate tiles.

3.11 REPAIR

- A. Replace damaged and stained tiles.

3.12 CLEANING

- A. Upon completion remove cement splatter and excess roof cement from clay roof tile and adjacent surfaces.

3.13 PROTECTION

- A. Protect clay roof tiles from construction operations.
- B. Do not allow traffic on roof after completion.

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