

**SECTION 07 31 26
SLATE SHINGLES**

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

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Slate shingles over underlayment nailed to roof sheathing.

1.2 RELATED REQUIREMENTS

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

- A. Counterflashing and Flashing of Roof Projections: Section 07 60 00, FLASHING AND SHEET METAL.
- B. Roof Hatches (Scuttles) and Roof Vents: Section 07 71 00, ROOF SPECIALTIES.
- C. Slate Color: Section 09 06 00, SCHEDULE FOR FINISHES.

1.3 APPLICABLE PUBLICATIONS

- A. Comply with references to extent specified in this section.
- B. ASTM International (ASTM):
 1. C406/C406M-15 - Roofing Slate.
 2. D226/D226M-09 - Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
 3. D1970/D1970M-15a - Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
 4. D4586/D4586M-07(2012)e1 - Asphalt Roof Cement, Asbestos-Free.
 5. F1667-15 - Driven Fasteners: Nails, Spikes, and Staples.

1.4 PREINSTALLATION MEETINGS

- A. Conduct preinstallation 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:
 - a. Contracting Officer's Representative.

- b. // Architect/Engineer. //
- c. Contractor.
- d. Installer.
- e. // Manufacturer's field representative. //
- f. Other installers responsible for adjacent and intersecting work, including flashing and sheet metal // and skylights //.

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

- 2. Meeting Agenda: Distribute agenda to participants minimum 3 days before meeting.
 - a. Installation schedule.
 - b. Installation sequence.
 - c. Preparatory work.
 - d. Protection before, during, and after installation.
 - e. Installation.
 - f. Terminations.
 - g. Transitions and connections to other work.
 - h. 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. Manufacturer's Literature and Data:
 - 1. Description of each product.
 - 2. Installation instructions.
- C. Samples:
 - 1. Shingles: Full sized, each type and color. Submit quantity required to show full color and texture range.
- D. Qualifications: Substantiate qualifications comply with specifications.
 - 1. Installer // with project experience list //.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications:
 - 1. Regularly installs specified products.
 - 2. Installed specified products with satisfactory service on five similar installations.

- a. // Project Experience List: Provide contact names and addresses for completed projects. //

1.7 DELIVERY

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

1.8 STORAGE AND HANDLING

- A. Protect products from damage during handling and construction operations.

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

2.1 PRODUCTS - GENERAL

- A. Basis of Design: Section 09 06 00, SCHEDULE FOR FINISHES.
- B. Provide each product from one manufacturer.

2.2 SLATE SHINGLES

- A. Slate Shingles: ASTM C406/C406M, Grade S1, unfading color, with no ribbons.
 - 1. Nail Holes: 2 per shingle, pre-punched or predrilled.
 - 2. // Match existing slate in color, size, exposure and texture. //

SPEC WRITER NOTE: When slate is not required to match existing slate, specify architectural characteristics, including size, thickness, face texture, color or color range. If the roof is specified or noted as "graduated" specify size and thickness ranges.

- 3. Thickness: // 5 mm (3/16 inch) // 6 mm (1/4 inch) // 10 mm (3/8 inch) //.

4. Length: // 400 mm (16 inches) // 450 mm (18 inches) // 500 mm (20 inches) //.
5. Width: // 150 mm (6 inches) // 175 mm (7 inches) // 200 mm (8 inches) // 225 mm (9 inches) // 250 mm (10 inches) // 275 mm (11 inches) // 300 mm (12 inches) // 350 mm (14 inches) //.
6. Exposure: // 300 mm (12 inches) // 350 mm (14 inches) // 400 mm (16 inches) // 450 mm (18 inches) //.
7. Texture: // Smooth // Medium // Natural Cleft //.

SPEC WRITER NOTE: Select 50 mm (2 inch) minimum head lap for roof slopes greater than or equal to 20/12. Select 75 mm (3 inch) minimum head lap for roof slopes 8/12 to 20/12. Select 100 mm (4 inch) minimum head lap for roof slopes 4/12 to 8/12.

8. Head Lap: // 50 mm (2 inches) // 75 mm (3 inches) // 100 mm (4 inches) // minimum.

2.3 ROOFING NAILS

A. Roofing Nails:

1. Nails for Slate Shingles: ASTM F1667, Type 1, Style 23 copper slating nails, 25 mm (1 inch) longer than thickness of slate.
2. Nails for Felt: ASTM F1667, Type I, Style 20, galvanized steel, smooth shanks.

2.4 ROOFING UNDERLAYMENT

- A. Organic Felt: ASTM D226/D226M, Type II, No. 30.
- 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.
 - a. Valleys: 1 mm (20 oz., 0.039 inches).
 - b. Other Locations: 0.55 mm (16 oz., 0.022 inches).

SPEC WRITER NOTE: Retain article below if ridge vents are required. Ensure drawings detail slate fastening.

2.6 RIDGE VENTS

- A. Ridge Vents: Manufacturer's standard ridge vent intended for long-term use under slate shingles.
 - 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, designed not to penetrate slate shingles.

2.8 ACCESSORIES

- A. Asphalt Roof Cement: ASTM D4586/D4586M.

PART 3 - EXECUTION

SPEC WRITER NOTE: This specification is for slate secured to wood or plywood roof deck. If slate is secured to another material, edit specification accordingly.

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 shingles.
- B. Protect existing construction and completed work from damage.

3.2 INSTALLATION - GENERAL

- A. Install products according to manufacturer's instructions.
 - 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 minimum 250 mm (10 inches) on center along inner edges.

3.4 FLASHING INSTALLATION

- A. Install copper flashings at intersections of roofs, adjoining walls, roof slope changes, under ridges, hips, and valleys, and at 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.
- B. Install step flashing at intersections with vertical surfaces.
 - 1. Length: Length of shingle plus 50 mm (2 inches).
 - 2. Vertical Leg Height: 200 mm (8 inches) minimum.
 - 3. Horizontal Leg Width: 150 mm (6 inches) minimum.
- C. Valley Flashing: Shingle type, as shown and as specified in Section 07 60 00, FLASHING AND SHEET METAL.
 - 1. Secure valley flashing according to shingle manufacturer's instructions.
 - 2. Width: 300 mm (12 inches) minimum, both sides of valley.
- D. // Hip and // Ridge Flashing: Step flashing.
 - 1. Length: Length of shingle plus 50 mm (2 inches).
 - 2. Width: 13 mm (1/2 inch) less than shingle on both sides of hip or ridge.
 - 3. Install step flashing as each course of slate shingles is installed. Extend upper edge of flashing 50 mm (2 inches) minimum above each course of shingles. Extend lower edge 13 mm (1/2 inch) above butt of shingle forming next course.

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.
 - a. 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 100 mm (4 inches) minimum.
 5. Roll underlayment to ensure adhesion to roof deck and metal flashings.
- B. Install two layers organic felt underlayment, shingled, on roof deck not covered by self-adhering sheet underlayment, with 100 mm (4 inches) minimum end laps, 50 mm (2 inches) minimum head laps, and 300 mm (12 inches) minimum ridge laps. 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 shingles.
- B. Lap underlayment and slate shingles over upslope base flanges of roof accessory flashings.
- C. Install underlayment and slate shingles over sideslope base flanges of roof accessory flashings.
- D. Install downslope base flanges of roof accessories over slate shingles.

3.7 SLATE SHINGLE INSTALLATION

- A. Install starter course of roof shingles with 50 mm (2 inch) overhang at eaves. Install first course over starter course.
- B. At rake, overhang roof edge 25 mm (1 inch).
- C. Install shingles with specified head lap.
- D. Fasten shingles using two nails per shingle, concealed by head lap.
- E. Valleys: // Open // Closed, to match existing //.

3.8 RIDGE VENT INSTALLATION

- A. Construct ridge vents. Fasten with roofing nails to penetrate through roof sheathing.

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

1. Extent: Continuous along ridges extending to within <distance> of rakes.

3.9 // HIP AND // RIDGE SHINGLE INSTALLATION

- A. Fasten nailing strips to both sides of // hip and // ridge.
- B. Install step flashing at // hips and // ridges.
 1. Begin ridge shingle installation at leeward end of ridge. // Cover ridge vents with step flashing and shingles. Do not cover ridge vent openings with ridge shingles. //
 2. // Begin hip shingle installation at eave. //
- C. Install // hip and // ridge shingles in pairs, over step flashing. Butt shingles together, nail in place, then install the next course of flashing.
- D. Seal ridge joint with asphalt roof cement.

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 shingles. Do not penetrate shingles.

3.11 PROTECTION

- A. Protect slate shingles from construction operations.
- B. Repair damage.

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