

**SECTION 07 31 00****SLATE SHINGLES****PART 1 - GENERAL****1.1 DESCRIPTION**

- A. This section specifies slate shingles secured to wood or plywood sheathing.

1. Work of this Section Includes:

- a. Slate shingles.
- b. Underlayment.
- c. Snow guards.

B. System Description:

1. Assembly 5 - Slate Roofing

- a. Slate shingles.
- b. Underlayment: Type I or II.
- c. Existing Sheathing.
- d. Location: As indicated.

**1.2 RELATED WORK:**

- A. Flashing at projections through roof and other flashing: Section 07 60 00, SHEET METAL FLASHING AND TRIM.
- B. Slate color: Section 09 06 00, SCHEDULE FOR FINISHES.
- C. Section 07 01 50, ROOFING DEMOLITION AND PREPARATION.
- D. Section 072100, THERMAL INSULATION.

**1.3 WARRANTY**

A. Special Warranty

- 1. Warrant slate shingle roofing assembly against workmanship and leaks, except leaks caused by abuse, lightning, hurricane, tornado, hail storm, unusual climatic phenomena or failure of related work installed by other parties.
- 2. During the warranty period, restore defective Work to the standard of the Contract Documents, including all materials, labor, refinishing and other costs incidental to the Work. Within 24 hours after receipt of notice from the Owner, inspect the Work and immediately repair leaks. Restore Work found to be defective as defined in the Contract Documents within 10 days after receipt of notice from the Owner.
- 3. Warranty shall be written on form at the end of this Section.
- 4. Warranty Period: Five years from date of Substantial Completion.

- B. Special Material Warranty for Slate Shingle Roof System: Material warranty shall be in accordance with format of sample warranty at end of Section in which manufacturer agrees to repair or replace slate shingle roof assemblies including slate shingles, underlayment, nail-base composite insulation and substrate boards against defective materials, within specified warranty period.

#### 1.4 SUBMITTALS

- A. Comply with requirements of Section 01 33 00, SUBMITTAL PROCEDURES regarding electronic submittals.
- B. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.
- C. Shop Drawings: Including but not limited to material layout and fastener types and spacing.
  - 1. Shop drawings shall be signed and sealed by an Engineer registered in the District of Columbia indicating that drawings comply with wind load criteria.
- D. Samples for Verification: For the following products, of sizes indicated, to verify color selected:
  - 1. Slate Shingle: Full size, of each color, size, texture, and shape.
  - 2. Ridge and Hip Caps: 305mm (12 inches)-long Sample of each.
  - 3. Fasteners: Three fasteners of each type, length, and finish.
  - 4. Exposed Valley Lining: 305mm (12 inches) square.
  - 5. Snow Guard: Full-size unit.
- E. Material Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each slate variety.
- F. Warranty: Sample of special warranty.
- G. Survey existing roof prior to demolition and prepare detailed drawings documenting the patterns of existing slate roof. Submit drawings for review. Prior to installing new work, provide new drawings documenting how the existing patterns are being replicated in the new work.

#### 1.5 QUALITY ASSURANCE

- A. Roofing contractor shall be experienced in slate roofing work, and upon request, shall provide the names and addresses of three successfully completed similar projects.
- B. Comply with governing codes and regulations. Provide products of manufacturers pre-approved by VA. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
- C. Workforce Requirements: Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods

needed for proper performance of the work.

- D. Installation Supervisor: Installer must maintain full-time supervisor on job site during times that roofing Work is in progress. Supervisor must have minimum of five (5) years experience as supervisor of roofing work similar in nature and scope to Work of this Project.
- E. Preliminary Roofing Conference: Before starting roof construction, conduct conference at Project site. Comply with requirements for preinstallation conferences in Division 01 Section "Project Management and Coordination."
  - 1. Review methods and procedures related to roof sheathing construction and sheet metal roofing including, but not limited to, items listed for the Preinstallation Conference.
- F. Preinstallation Conference: Conduct conference at Project site.
  - 1. Meet with VA, sheet metal roofing Installer, manufacturer's representative for slate shingle roofing, underlayment manufacturer's representative, and sheathing Installer, and installers whose work interfaces with or affects sheet metal roofing including installers of roof accessories and roof-mounted equipment.
  - 2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
  - 3. Review methods and procedures related to slate shingle roofing installation.
  - 4. Examine sheathing conditions for compliance with requirements, including flatness and attachment to structural members.
  - 5. Review structural loading limitations of sheathing during and after roofing installation.
  - 6. Review flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect slate shingle roofing.
  - 7. Review governing regulations and requirements for insurance, certificates, and testing and inspecting if applicable.
  - 8. Review temporary protection requirements for slate shingle roofing during and after roofing installation.
  - 9. Review roof observation and repair procedures after slate shingle roofing installation.
- G. Document proceedings, including corrective measures and actions required, and furnish a digital copy of record to each participant.
- H. Source Limitations: Obtain each color of slate shingle from single quarry capable of producing slate of consistent quality in appearance and physical properties.

#### 1.6 MOCK-UPS

- A. Prior to commencing Work and after pre-installation conference, provide mock-up of slate roof to demonstrate aesthetic effects and set quality standards for materials, fabrication, and installation.

- B. Size and Location: Areas located on Drawings to incorporate shingle sizes, colors, patterns, attachment methods and substrate materials.
    - 1. Include hip, ridge and eave conditions.
  - C. Materials: Incorporate complete materials as required for finished Work.
  - D. VA Review:
    - 1. VA will review mock-up for acceptance of workmanship.
    - 2. Obtain VA approval of mock-up before proceeding with subsequent Work.
  - E. Maintain accepted sample installation during construction as standard for subsequent Work.
    - 1. Do not remove mock-up from Site until end of Work.
- 1.7 DELIVERY, STORAGE, AND HANDLING
- A. Store underlayment rolls on end, on pallets or other raised surfaces. Do not double stack rolls.
    - 1. Handle, store, and place roofing materials in a manner to avoid significant or permanent damage to roof deck or structural supporting members.
  - B. Protect unused underlayment from weather, sunlight, and moisture when left overnight or when roofing work is not in progress.

## **PART 2 PRODUCTS**

### **2.1 SLATE SHINGLES**

- A. Slate Shingles, General: ASTM C 406, Grade S1; hard, dense, and sound; chamfered edges, with nail holes machine punched or drilled and countersunk. No broken or cracked slates, no broken exposed corners, and no broken corners on covered ends that could sacrifice nailing strength or laying of a watertight roof.
  - 1. Field Slate:
    - a. Color: Match existing.
    - b. Size: As indicated on Drawings.
- B. Starter Slate: Slate shingles with chamfered nail holes front-side punched.
  - 1. Length: As indicated on Drawings.
- C. Ridge Slate: Slate shingles fabricated with horizontal grain orientation.

### **2.2 UNDERLAYMENT MATERIALS**

- A. Type I:
  - 1. Felt: Asphalt saturated and coated organic felt, minimum weight 30

lbs./square; ASTM D 226.

B. Type II:

1. Self-Adhering, High-Temperature Sheet Waterproofing: Minimum 1.0 mm thick, consisting of slip-resisting polyethylene-film top surface laminated to layer of butyl or SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer.
  - a. Thermal Stability: ASTM D 1970; stable after testing at 116 deg C.
  - b. Low-Temperature Flexibility: ASTM D 1970; passes after testing at 29 deg C.

2.3 ACCESSORIES

- A. Felt Underlayment Nails: Stainless steel, or hot-dip galvanized-steel wire nails with low-profile capped heads or disc caps, 25-mm minimum diameter.
- B. Slate Nails: Hard copper slating nails, No. 10 stubbs gauge, length as required to penetrate 22mm beyond the face of the wood deck.
- C. Wire: No. 8 hard copper wire.
- D. Asphalt Roofing Cement: ASTM D 4586, Type II, asbestos free.
- E. Sealant: Silicone Elastomer, ASTM C 920, Type and Grade as recommended by manufacturer.
  1. Color: Dark grey or slate color.

2.4 FLASHING

- A. Coated copper sheet: Comply with requirements of Section 07 62 00, SHEET METAL FLASHING AND TRIM.

2.5 SUBSTRATE BOARDS

1. Gypsum Substrate Board: ASTM C 1177, glass-mat, water-resistant gypsum substrate, 13 mm thick. Product: Acceptable products include, but are not limited to:
  - a. DensDeck by Georgia-Pacific.
  - b. Securock by USG.
- B. Substrate Board Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FMG 4470, designed for fastening substrate board to substrate.

2.6 SNOW GUARDS

- A. Snow Guard Pads: Fabricated stainless steel units, designed to be installed without penetrating slate shingles, and complete with predrilled holes or hooks for anchoring.

**PART 3 EXECUTION****3.1 EXAMINATION**

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
  - 1. Examine roof sheathing to verify that sheathing joints are supported by framing and blocking or metal clips and that installation is within flatness tolerances.
  - 2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and completely anchored and that provision has been made for flashings and penetrations through roofing.
- B. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

**3.2 UNDERLAYMENT INSTALLATION**

- A. General: Comply with underlayment manufacturer's written installation instructions applicable to products and applications indicated unless more stringent requirements apply.
- B. Felt Underlayment: Install on dry roof deck parallel with and starting at the eaves. Lap sides a minimum of 50mm over underlying course. Lap ends a minimum of 100mm. Stagger end laps between succeeding courses at least 1830mm. Fasten with felt underlayment nails. Lap in direction of flow.
  - 1. Install felt underlayment on roof deck not covered by self-adhering sheet underlayment. Lap sides of felt over self-adhering sheet underlayment not less than 75mm in direction to shed water. Lap ends of felt not less than 152mm over self-adhering sheet underlayment.
- C. Self-Adhering Sheet Underlayment: Install, wrinkle free, on roof deck. Comply with low-temperature installation restrictions of underlayment manufacturer if applicable. Install at locations indicated on Drawings, lapped in direction to shed water. Lap sides not less than 89mm. Lap ends not less than 152mm, staggered 600mm between courses. Roll laps with roller. Cover underlayment within allowable time period as recommended by manufacturer.
  - 1. Eaves: Extend from edges of eaves 914mm (36 inches) beyond interior face of exterior wall.
  - 2. Rakes: Extend from edges of rakes 914mm (36 inches) beyond interior face of exterior wall.
  - 3. Valleys: Extend from lowest to highest point 455mm (18 inches) on each side.
  - 4. Hips: Extend 455 mm (18 inches) on each side.
  - 5. Ridges: Extend 914mm (36 inches) on each side.
  - 6. Sidewalls: Extend 455mm (18 inches) beyond sidewalls and return

vertically against sidewalls not less than 100mm.

7. Dormers, Chimneys, Skylights, and Other Roof-Penetrating Elements: Extend 455mm (18 inches) beyond penetrating elements and return vertically against penetrating elements not less than 100mm.
8. Roof-Slope Transitions: Extend 455mm (18 inches) on each roof slope.

- D. Metal-Flashed, Open-Valley Underlayment: Install two layers of 914mm-wide (36 inches) felt underlayment centered in valley. Stagger end laps between layers at least 1830mm. Lap ends of each layer at least 305mm in direction to shed water, and seal with asphalt roofing cement. Fasten each layer to roof deck with felt underlayment nails.

1. Lap roof-deck felt underlayment over first layer of valley felt underlayment at least 152mm.

### 3.3 METAL FLASHING INSTALLATION

- A. General: Install metal flashings and other sheet metal to comply with requirements in Section 07 62 00, SHEET METAL FLASHING AND TRIM.
  1. Install metal flashings according to recommendations in NRCA's "The NRCA Roofing and Waterproofing Manual."
- B. Apron Flashings: Extend lower flange over and beyond each side of downslope slate shingles and up the vertical surface.
- C. Step Flashings: Install with a head lap of 75mm and extend both horizontally and vertically. Install with lower edge of flashing just upslope of, and concealed by, butt of overlying slate shingle. Fasten to roof deck only.
- D. Cricket Flashings: Install against the roof-penetrating element, extending concealed flange beneath upslope slate shingles and beyond each side.
- E. Hip Flashings: Install centrally over hip with lower edge of flashing concealed by butt of overlying slate shingle. Fasten to roof deck.
- F. Eave Drip Edges: Install beneath underlayment and fasten to roof deck.
- G. Pipe Flashings: Form flashing around pipe penetrations and slate shingles. Fasten and seal to slate shingles.

### 3.4 SLATE-SHINGLE INSTALLATION

- A. General: Beginning at eaves, install slate shingles according to manufacturer's written instructions and to details and recommendations in NRCA's "The NRCA Roofing and Waterproofing Manual."
  1. Install wood nailer strip cant at eave edges.
  2. Install shingle starter course chamfered face down.
- B. Install first and succeeding shingle courses with chamfered face up. Install full-width first course at rake edge.
  1. Offset joints of uniform-width slate shingles by half the shingle

width in succeeding courses.

- C. Maintain a 76-mm (3 inch) - minimum head lap between succeeding shingle courses.
- D. Maintain uniform exposure of shingle courses midway between eaves and ridge and increase head lap of succeeding shingle courses to ensure uniform exposure on remaining shingle courses.
- E. Cut and fit slate neatly around roof vents, pipes, ventilators, and other projections through roof.
- F. Hang slate with two slating nails for each shingle with nail heads lightly touching slate. Do not drive nails home drawing slates downward or leave nail head protruding enough to interfere with overlapping shingle above.
- G. Ridges: Install ridge slate in strip configuration.
  - 1. Install and anchor wood nailer strips of thicknesses to match abutting courses of slate shingles, terminating nailer strip 75 to 100mm from the eave. Cover with felt underlayment strip, extending to underlying slate but concealed by ridge slate.
  - 2. Lay ridge slate in bed of asphalt roofing cement.
  - 3. Anchor ridge slate to supporting wood nailer strip with two nails for each slate shingle without nails penetrating underlying slate.
  - 4. Extend combing slate over leeward ridge slate by 3 to 6mm. Seal ridge joint with elastomeric sealant.
  - 5. Cover heads of exposed nails at final ridge shingle with asphalt roofing cement.
- H. Hips: Install and anchor slate hips in mitered configuration at Pavilions Towers.
  - 1. Install and anchor wood nailer strips as required of thickness to match abutting courses of slate shingles. Cover nailer strip with felt underlayment strip, extending on to underlying slate but concealed by hip slate. Anchor hip slate to nailer strip with two nails located in upper third of hip-slate length.
  - 2. Notch starter shingle and first shingle course at hip to fit around nailer strips so no wood is exposed at ridge eave.

### 3.5 SNOW-GUARD INSTALLATION

- A. Comply with manufacturer's installation instructions. Use manufacturer's recommended installation materials and tools. Attach snow guards securely. Clean adjacent surfaces after installation.

### 3.6 FIELD QUALITY CONTROL

- A. Independent Agency Responsibilities:
  - 1. Inspect and test proficiency sample installations for compliance with requirements.
  - 2. Provide visual examination of each phase of execution of roofing installation. If deficiencies are found, re-examine areas after Contractor has corrected deficiencies.



3. Inspect flashing as Work is performed to assure flashing is properly performed.
4. Provide daily written reports.
5. Final Inspection: Inspect completed installation with Contractor to evaluate slate roofing application.
  - a. Provide written report.

B. Contractor Responsibilities:

1. Make arrangements for independent agency to perform inspections.
2. Final Inspection: Inspect completed installation with independent testing agency to evaluate roofing application.
  - a. Correct deficiencies as identified in written report.

3.7 ADJUSTING AND CLEANING

- A. Remove and replace damaged or broken slate shingles.
- B. Remove excess slate and debris from Project site.

--- END OF SECTION---

## ROOF SYSTEM WARRANTY FORM

Project Title: \_\_\_\_\_  
Project Address: \_\_\_\_\_  
Architect's Project No. Contractor's Job Number: \_\_\_\_\_  
Warranted Work (and location description if less than full roof): \_\_\_\_\_  
\_\_\_\_\_

Specification Section No. and Title: \_\_\_\_\_

Length of warranty: \_\_\_\_\_ years

The undersigned herewith warrant that the above stated Work has been executed in conformance with the requirements of the Contract Documents for the Project named, and warrant said Work to perform as specified and without failure for the above stated period of time, starting on \_\_\_\_\_, 20 \_\_, and ending on \_\_\_\_\_, 20\_\_.

This warranty does not apply to failure to perform due to abuse or neglect by the Owner, or the Owner's successor in interest, or damage by vandalism.

<b>Contractor</b>	Firm
(the entity	Representative*
holding direct	Signed
contract with	Title
Owner)	Notary
	Date

<b>Roofing Installer</b>	Firm
Same as	Representative*
Contractor (if	Signed
same as	Title
Contractor, check	Notary
box; leave line	Date

<del>blank)</del>	
<b>Roofing System</b>	Firm
<b>Manufacturer</b>	Representative*
(if neither	Signed
Contractor nor	Title
Installer)	Notary
	Date

\*The Firm's Representative affirms they are authorized to bind the Firm to this Warranty.

END OF WARRANTY FORM