

## **SECTION 07 31 01 - ASPHALT SHINGLE ROOFING**

### **PART 1 - GENERAL**

#### **1.1 SECTION INCLUDES**

- A. Includes all labor, materials, and equipment to install a composition shingle roofing system over the properly prepared substrate.
- B. Includes removal and disposal of existing roofing system(s), insulation boards, gutters, flashings, sheet metal items, copings, etc. for a complete prepared roof surface to receive the new roofing system.
- C. See section 01 10 00 Summary of Work for a detailed scope of work.

#### **1.2 RELATED SECTIONS**

- A. Section 01 – Summary of Work
- B. Section 07 – Rough Carpentry
- C. Section 07 – Metal Wall Panels
- D. Section 07 – Metal Soffit Panels
- E. Section 07 – Sheet Metal Flashing and Trim

#### **1.3 DEFINITIONS**

- A. Roofing Terminology: Refer to ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" for definitions of terms related to roofing work in this Section.

#### **1.4 SUBMITTALS**

- A. Product Data: For each type of product indicated.
- B. Samples for Initial Selection: For each type of asphalt shingle, ridge and hip cap shingles ridge vent and exposed valley lining indicated.
  - 1. Include similar Samples of trim and accessories involving color selection.
- C. Samples for Verification: For the following products, of sizes indicated, to verify color selected.
  - 1. Asphalt Shingle: Full-size asphalt shingle strip.
  - 2. Ridge and Hip Cap Shingles: Full-size ridge and hip cap asphalt shingle.
  - 3. Ridge Vent: 12-inch- (300-mm-) long Sample.
  - 4. Exposed Valley Lining: 12 inches (300 mm) square.
  - 5. Underlayment: 12 inches (300 mm) square.

- D. Qualification Data: For Installer, including certificate signed by asphalt shingle manufacturer stating that Installer is approved, authorized, or licensed to install roofing system indicated.
- E. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency or by manufacturer and witnessed by a qualified testing agency, for asphalt shingles.
- F. Maintenance Data: For asphalt shingles to include in maintenance manuals.
- G. Warranties: Special warranties specified in this Section.

## **1.5 QUALITY ASSURANCE**

- A. Source Limitations: Obtain specified products as required from warranting manufacturer as outlined in the specifications.
- B. Fire-Test-Response Characteristics: Provide asphalt shingle and related roofing materials with the fire-test-response characteristics indicated, as determined by testing identical products per test method below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.
  - 1. Exterior Fire-Test Exposure: Class A; ASTM E 108 or UL 790, for application and roof slopes indicated.
- C. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

## **D. MANUFACTURER'S INSPECTIONS**

- A. When the project is in progress, the manufacturer will provide the following:
  - 1. Keep the Owner informed as to the progress and quality of the work as observed.
  - 2. Provide job site inspections two (2) days per week during installation.
  - 3. Report to the Owner in writing any failure or refusal of the Contractor to correct unacceptable practices called to the Contractor's attention.
  - 4. Confirm after completion that manufacturer has observed no applications procedures in conflict with the specifications other than those that may have been previously reported and corrected.

## **1.6 DELIVERY, STORAGE, AND HANDLING**

- A. Store roofing materials in a dry, well-ventilated, weather-tight location according to asphalt shingle manufacturer's written instructions. 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.

## **1.7 PROJECT CONDITIONS**

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit asphalt shingle roofing to be performed according to manufacturer's written instructions and warranty requirements.

## **1.8 WARRANTY**

- A. Material Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace asphalt shingles that fail in materials or workmanship within specified warranty period. Materials failures include manufacturing defects and failure of asphalt shingles to self-seal after a reasonable time.
  - 1. Material Warranty Period: 50 Yr Limited
  - 2. Wind-Speed Warranty Period: Asphalt shingles will resist blow-off or damage caused by wind speeds up to 130 mph.
  - 3. Algae-Discoloration Warranty
- B. Installer Warranty: Roofing Installer's warranty, on warranty form at end of this Section, signed by roofing Installer, covering Work of this Section, in which roofing Installer agrees to repair or replace components of asphalt shingle roofing that fail in materials or workmanship within the following warranty period:
  - 1. Warranty Period: Three (3) years from date of Substantial Completion.

## **1.9 EXTRA MATERIALS**

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Asphalt Shingles: 100 sq. ft of each type, in unbroken bundles.

## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURERS**

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
  - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.

### **2.2 GLASS-FIBER-REINFORCED ASPHALT SHINGLES**

- A. The Legacy® shingle and Legacy® featuring Scotchgard™ are laminated asphalt shingles fortified with Flexor™ SBS polymer modified asphalt technology for extreme weather protection. They are to be used whenever increased flexibility, architectural design, tensile strength, and tear-resistance in shingles is desired. The Legacy® line features the exclusive nailing accuracy-enhancing design of The Zone®. The larger nailing area of The Zone® dramatically improves correct fastener placement. The smaller nailing area found in a majority of other shing

- B. Legacy (272) as manufactured by Malarkey Roofing Products.
- C. The Malarkey Legacy shingles hold a Class A Fire Rating.
- D. As manufactured, Legacy meets the requirements of:
  - 1. ASTM D3018 Type 1; ASTM D3161 Class F; ASTM D3462; ASTM D7158 Class H; ASTM E108 Class A; UL 2218 Class 4 Impact Resistance; CSA A123.5. ICC Approval - ESR 3150. FBC Approval - #14809.
- E. Color: by Malarkey Roofing Products

## **2.3 HIP AND RIDGE SHINGLES**

- A. Distinctive self-sealing hip and ridge cap shingle complementing the color of selected roof shingle. Each bundle covers approx. 20 lineal feet (9.45m) with an 8 inch (203mm) exposure. EZ Ridge 8" high profile decorative flexor SBS polymer modified hip and ridge shingles with seal down.

## **2.4 STARTER STRIP**

- A. Self sealing starter shingle designed for all roof shingles. Each bundle covers approx. 115 lineal feet (36.58m). Smart Start™ Starter Strip by Malarkey Roofing Products®.

## **2.5 UNDERLAYMENT MATERIALS**

- A. R-Mer Seal Self-Adhesive underlayment by The Garland Company. Local Representative Richard Jones (559) 647-1196. [rjones@garlandind.com](mailto:rjones@garlandind.com)
- B. R-Mer Seal is a non-slip, cross laminated self-adhering membrane.

## **2.6 DORMER VENT**

- A. Dormer Vent: Construction Metals Inc. low profile dormer vent.
  - 1. Construction Metals Inc. low profile stamped dormer (Simpson) LPSD20

## **2.7 RIDGE VENT**

- A. Ridge Vent: GAF Cobra RIGIDVENT3
  - 1. Cobra RIGIDVENT3 exhaust vent for roof ridge by GAF

## **2.8 ACCESSORIES**

- A. Asphalt Roofing Cement: ASTM D 4586, Type II, asbestos free.

- B. Roofing Nails: ASTM F 1667; aluminum, stainless-steel, copper, or hot-dip galvanized steel wire shingle nails, minimum 0.120-inch- (3-mm-) diameter, barbed shank, sharp-pointed, with a minimum 3/8-inch- (9.5-mm-) diameter flat head and of sufficient length to penetrate 3/4 inch (19 mm) into solid wood decking or extend at least 1/8 inch (3 mm) through OSB or plywood sheathing.
  - 1. Where nails are in contact with metal flashing, use nails made from same metal as flashing.
- C. Underlayment Nails: Aluminum, stainless-steel with low profile capped heads or disc caps, 1-inch (25-mm) minimum diameter.

## **2.9 METAL FLASHING AND TRIM**

- A. Sheet Metal Flashing and Trim: Comply with requirements in Division 7 Section "Sheet Metal Flashing and Trim."
  - 1. Sheet Metal:
- B. Fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item.
  - 1. Step Flashings: Fabricate with a headlap of 2 inches (50 mm) and a minimum extension of 5 inches (125 mm) over the underlying asphalt shingle and up the vertical surface.
  - 2. Cricket Flashings: Fabricate with concealed flange extending a minimum 24 inches (600 mm) beneath upslope asphalt shingles and 6 inches (150 mm) above the roof plane.
  - 3. Open Valley Flashings: Fabricate in lengths not exceeding [10 feet (3 m)] with 1-inch- (25-mm-) high inverted-V profile at center of valley and equal flange widths of 10 inches (250 mm).
  - 4. Drip Edges: Fabricate in lengths not exceeding [10 feet (3 m)] with 2-inch (50-mm) roof deck flange and 1-1/2-inch (38-mm) fascia flange with 3/8-inch (9.6-mm) drip at lower edge.
- C. Vent Pipe Flashings: ASTM B 749, Type L51121, at least 1/16 inch (1.6 mm) thick. Provide lead sleeve sized to slip over and turn down into pipe, soldered to skirt at slope of roof and extending at least 4 inches (100 mm) from pipe onto roof.

## **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 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 asphalt shingles.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 UNDERLAYMENT INSTALLATION**

1. R-Mer Seal shall be installed over a clean, dry deck.
2. Lay R-Mer Seal over deck and overlap 3" (76mm) at side laps and 6" (152mm) at end laps.
3. For exposure to rain or snow, overlap 12" (305mm) at end laps.
4. For side and end laps: fasten R-Mer Seal 12" (305mm) o.c. (6" (152mm) o.c. for high wind areas).
5. For middle of the roll: fasten R-Mer Seal 24" (610mm) o.c. (12" (305mm) o.c. for high wind areas).

### **3.3 METAL FLASHING INSTALLATION**

- A. General: Install metal flashings and other sheet metal to comply with requirements in Division 7 Section "Sheet Metal Flashing and Trim."
  1. Install metal flashings according to recommendations in ARMA's "Residential Asphalt Roofing Manual" and asphalt shingle recommendations in NRCA's "The NRCA Roofing and Waterproofing Manual."
- B. Apron Flashings: Extend lower flange over and beyond each side of downslope asphalt shingles and up the vertical surface.
- C. Step Flashings: Install with a head lap of 2 inches and extend over the underlying asphalt shingle and up the vertical surface. Fasten to roof deck only.
- D. Cricket Flashings: Install against the roof-penetrating element extending concealed flange beneath upslope asphalt shingles and beyond each side.
- E. Open Valley Flashings: Install centrally in valleys, lapping ends at least 8 inches in direction to shed water. Fasten upper end of each length to roof deck beneath overlap.
  1. Secure hemmed flange edges into metal cleats spaced 2 inches apart and fastened to roof deck.
- F. Rake Drip Edges: Install rake drip edge flashings over underlayment and fasten to roof deck.
- G. Eave Drip Edges: Install eave drip edge flashings below underlayment and fasten to roof sheathing.
- H. Pipe Flashings: Form flashing around pipe penetrations and asphalt shingles. Fasten and seal to asphalt shingles as recommended by manufacturer.

### **3.4 STARTER SHINGLE APPLICATION**

- A. General:
  1. Install in accordance with manufacturer instructions and local building codes. When local codes and application instructions are in conflict, the more stringent requirements shall take precedence.

2. Refer to application instructions for the selected starter strip shingles.
3. Placement and Nailing:
4. For maximum wind resistance along rakes & eaves, install starter strip containing sealant or cement shingles to underlayment and each other in a 4" (102mm) width of asphalt plastic roof cement.
5. Place starter strip shingles 1/4" – 3/4" (6 – 19mm) over eave and rake edges to provide drip edge.
6. Nail approximately 1-1/2" – 3" (38 – 76mm) above the butt edge of the shingle.
7. Rake starter course should overlap eave edge starter strip at least 3" (76mm).

### **3.5 ASPHALT SHINGLE INSTALLATION**

- A. Install asphalt shingles according to manufacturer's written instructions, recommendations in ARMA's "Residential Asphalt Roofing Manual," and asphalt shingle recommendations in NRCA's "The NRCA Roofing and Waterproofing Manual."
- B. Install starter strip along lowest roof edge, consisting of an asphalt shingle strip with tabs removed with self-sealing strip face up at roof edge.
  1. Extend asphalt shingles 1/2 inch over fascia at eaves and rakes.
  2. Install starter strip along rake edge.
- C. Install first and remaining courses of asphalt shingles stair-stepping diagonally across roof deck with manufacturer's recommended offset pattern at succeeding courses, maintaining uniform exposure.
- D. Fasten asphalt shingle strips with a minimum of five roofing nails located according to manufacturer's written instructions.
  1. When ambient temperature during installation is below 50 deg F, seal asphalt shingles with asphalt roofing cement spots.
- E. Closed-Cut Valleys: Extend asphalt shingle strips from one side of valley 12 inches beyond center of valley. Use one-piece shingle strips without joints in the valley. Fasten with extra nail in upper end of shingle. Install asphalt shingle courses from other side of valley and cut back to a straight line 2 inches short of valley centerline. Trim upper concealed corners of cut-back shingle strips.
  1. Do not nail asphalt shingles within 6 inches of valley center.
  2. Set trimmed, concealed-corner asphalt shingles in a 3-inch-wide bed of asphalt roofing cement.
- F. Vents: Install vents over within the asphalt shingle roofing system according to manufacturer's written instructions. Fasten with roofing nails of sufficient length to penetrate sheathing. Install vents at the eave and ridge as needed to promote proper air flow and meet the current building code in regards to attic venting.

- G. Ridge and Hip Cap Shingles: Maintain same exposure of cap shingles as roofing shingle exposure. Lap cap shingles at ridges to shed water away from direction of prevailing winds. Fasten with roofing nails of sufficient length to penetrate sheathing.

### **3.6 PROTECTION**

- A. Protect installed products from foot traffic until completion of the project.
- B. Any roof areas that are not completed by the end of the workday are to be protected from moisture and contaminants.

**END OF SECTION 07 31 01**