

## **SECTION 07 31 13 - FIBERGLASS-BASED ASPHALT SHINGLES & ACCESSORIES**

### **PART 1 GENERAL**

#### **1.1 SECTION INCLUDES**

- A. Roof shingles and accessories including the following:
  - 1. Fiberglass-based asphalt shingles.
  - 2. Hip and ridge shingles.
  - 3. Starter shingles.
  - 4. Self-adhering ice and water barrier.
  - 5. Shingle underlayment.
  - 6. Attic ventilation.
  - 7. Fasteners.
  - 8. Metal flashing and trim.

#### **SCOPE OF WORK:**

- 1. Tear off and properly dispose of existing roof systems down to the wood deck.
- 2. Replace all dry rot wood decking, wood nailers, wood fascia, etc.
- 3. Install new metal flashings-edge metal.
- 4. Install rake flashing, properly tie into single ply wall.
- 5. Replace any damaged metal penetration flashings
- 6. Paint penetration flashing to match roof color
- 7. Install all new thru wall scuppers
- 8. Install new gutters and downspouts if necessary
- 9. Raise all curbs to NRCA 8" height
- 10. Install one (1) layers of RMer-Seal reinforced underlayment per manufactures specification over the entire wood deck.
- 11. Properly shingle RMer-Seal underlayment over the KEE 60 mil single ply in the valleys.
- 12. Install Duration Cool Roof asphalt shingles per manufacturers specification (color: per Owner)
- 13. Install 10" DecoRidge
- 14. Install 6 low profile attic vents if required
- 15. Contractor to provide a 2-year warranty.
- 16. Contractor is responsible to "field measure" entire roof. Owner is not responsible for errors in drawings provided.
- 17. Contractor to coordinate with any other trades working on this building
- 18. Contractor to install "Owner Supplied Material"
- 19. Contractor to provide all permits.
- 20. Contractor is solely responsible for all material not supplied by the City of Placerville
- 21. Contractor to abide to all rules and regulations of the City of Placerville.

#### **1.2 RELATED SECTIONS**

- A. Section 061000 - Rough Carpentry.
- B. Section 071300 – Sheet Waterproofing.

#### **1.3 REFERENCES**

- A. ASTM International (ASTM):
  - 1. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  - 2. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
  - 3. ASTM B370 – Standard Specification for Copper Sheet and Strip for Building Construction.
  - 4. ASTM D226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
  - 5. ASTM D228 - Standard Test Method for Sampling, Testing, and Analysis of Asphalt Roll Roofing, Cap Sheets, and Shingles Used in Roofing and Waterproofing.

6. ASTM D1970 - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
  7. ASTM D3018 - Standard Specification for Class A Asphalt Shingles Surfaced with Mineral Granules.
  8. ASTM D3161 - Standard Test Method for Wind-Resistance of Asphalt Shingles (Fan-Induced Method).
  9. ASTM D3462 - Standard Specification for Asphalt Shingles Made from Glass felt and Surfaced with Mineral Granules.
  10. ASTM D4869 - Standard Specification for Asphalt-Saturated Organic Felt Underlayment Used in Steep Slope Roofing.
  11. ASTM D6381 - Standard Test Method for Measurement of Asphalt Shingle Mechanical Uplift Resistance.
  12. ASTM D6757 – Standard Specification for Underlayment Felt Containing Inorganic Fibers Used in Steep-Slope Roofing.
  13. ASTM D7158 - Standard Test Method for Wind Resistance of Sealed Asphalt Shingles (Uplift Force/Uplift Resistance Method).
  14. ASTM E108 - Standard Test Methods for Fire Tests of Roof Coverings.
  15. ASTM F1667 - Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.
- B. International Code Council (ICC):
1. International Residential Code (IRC).
  2. International Building Code (IBC).
  3. ICC-ES Evaluation Reports.
  4. ICC-ES Acceptance Criteria.
- C. Underwriters Laboratories (UL):
1. UL 790 - Standard Test Methods for Fire Test of Roof Coverings.
  2. UL 997 – Wind Resistance of Prepared Roof Covering Materials.
  3. UL 2218 - Impact Resistance of Prepared Roof Covering Materials.
  4. UL 2390 - Test Method for Wind Resistant Asphalt Shingles with Sealed Tabs.
- D. Underwriters Laboratories Evaluation Services (UL-ES):
1. UL-ES Evaluation Reports.
- E. Environmental Protection Agency (EPA): ENERGY STAR Rating System.
- F. Cool Roof Rating Council (CRRC): Product Rating Program.
- G. US Green Building Council (USGBC): Leadership in Energy and Environmental Design (LEED).

#### **1.4 SUBMITTALS**

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's data sheets and detail drawings for each product to be used, including:
1. Preparation instructions and recommendations.
  2. Storage and handling requirements and recommendations.
  3. Product literature.
  4. Installation methods.
- C. Verification Samples: For each product and finish specified, two samples representing actual products and colors.
- D. Copy of Warranty: For warranty specified in Par. 1.8 in this Section.

#### **1.5 QUALITY ASSURANCE**

- A. Installer Qualifications:
1. Installer shall follow Owens Corning Roofing and Asphalt published installation instructions.
  2. Installer shall be an Owens Corning Roofing Preferred Contractor as defined and certified by manufacturer.
  3. Installer shall be a Garland/Imetco West approved contractor with a minimum of 5 years' experience.

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

- A. Deliver materials to site in manufacturer's unopened bundles with labels intact and legible.
- B. Store all products in manufacturer's unopened, labeled packaging until they are ready for installation.

- C. Handle and store materials on site to prevent damage. Store products in a covered, ventilated area, at temperature not more than 110 degrees Fahrenheit (43 degrees Celsius); do not store near steam pipes, radiators, or in direct sunlight.
- D. Store bundles on a flat surface. Do not stack product more than 2 pallets high. If stacking 2 pallets high, use separator boards to protect the shingles below. Store all rolls on end.
- E. Do not install underlayment or shingles on wet surfaces.
- F. Store and dispose of solvent-based materials in accordance with all federal, state and local regulations.
- G. For rooftop loading, lay shingle bundles flat. Do not bend over the ridge.

## 1.7 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install systems under environmental conditions outside manufacturer's recommended limits.
  - 1. Proceed with work only when existing and forecasted weather conditions will permit work to be performed in accordance with manufacturer's recommendations.

## 1.8 WARRANTY

- A. Manufacturer's Warranty: Provide to the Owner manufacturer's standard warranty coverage labor and materials in the event of a material defect. Refer to actual warranty for complete details, limitations and requirements.
- B. Contractor to provide a 2-year warranty

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Acceptable Manufacturer for shingles:
  - 1. Owens Corning – Basis of Design
  - 2. CertainTeed
- B. Acceptable Manufacturer underlayment and metal:
  - 1. The Garland Company - Area Rep Tim Samaniego (775) 772-9822 (provide all underlayment, edge metal)

### 2.2 ROOF SHINGLES-

- A. Duration® Premium Cool (Algae Resistant) Shingles: As manufactured by Owens Corning Roofing and Asphalt, LLC.
  - 1. Nominal Size: 13-1/4 in (337 mm) by 39-3/8 in (1000 mm).
  - 2. Exposure: 5-5/8 in (143 mm).
  - 3. Shingles per Square: 64.
  - 4. Bundles per Square: 4 bundles of 16 shingles.
  - 5. Coverage per Square: 98.4 sq. ft. (9.1 sq. m).
  - 6. Color: chosen by Washoe County
  - 7. Standards/Qualifications: ASTM D228, ASTM D3018 (Type 1), ASTM D3161 (Class F Wind Resistance), ASTM D3462, ASTM D7158 (Class H Wind Resistance), ASTM E108/UL 790 (Class A Fire Resistance), meets the ENERGY STAR® requirements for initial solar reflectance of 0.25 and 3-year aged solar reflectance of 0.15, Rated by the Cool Roof Rating Council (CRRRC), Florida Product Approval (FL10674), ICC-ES AC438, and UL ER2453-01.

### 2.3 HIP AND RIDGE SHINGLES

Provide hip and ridge shingles color formulated to complement field of roof.

- A. DecoRidge® Hip and Ridge (Non Algae Resistant) Shingles with Sealant
  - 1. Durable, heavyweight laminate construction with SBS-modified asphalt provides maximum dimension and style to the hip and ridge.

2. Nominal Size: 11-1/2 in (292 mm) by 8 in (203 mm) and 11-1/2 in (292 mm) by 10 in (254 mm) with 8 in (203 mm) exposure.
3. Standards/Qualifications: ASTM D228, ASTM D3018 (Type 1), ASTM D3161 (Class F Wind Resistance), ASTM D3462, ASTM E108/UL 790 (Class A Fire Resistance), and CSA A123.5.

## 2.4 STARTER SHINGLES

- A. Starter Strip Shingle: As manufactured by Owens Corning Roofing and Asphalt, LLC.
  1. Nail applied starter course. Individual starter shingle is 6-5/8 in (168 mm) by 39-3/8 in (1000 mm).
  2. Standards/Qualifications: ASTM D3462, ASTM D3161 (Class F Wind Resistance), ASTM E108/UL 790 (Class A Fire Resistance), CSA A123.5, ICC-ES AC438, UL ER2453-01, and Florida Product Approval (FL10674).

## 2.5 SELF-ADHERING ICE AND WATER BARRIER

## 2.6 SHINGLE UNDERLAYMENT

- A. RMer-Seal by The Garland Company.
  1. High temp rubberized asphalt self-adhering roofing underlayment.
  2. Roll Width: 36 in (0.91 mm).
  3. Roll Length: 67.0 ft. (19.96 m).
  4. Coverage Per Roll: 2 roof squares.

## 2.7 ATTIC VENTILATION

- A. VentSure® Low Profile Slant Back Roof Vent with Exterior Louver
  1. Rooftop mounted, low-profile, slant back metal exhaust ventilator designed to evacuate hot and/or moisture-laden air from attics- mounted per manufacturers guidelines
  2. Each vent provides 72 sq. in (46500 sq. mm) NFVA.
  3. Galvanized steel available in Black, White Brown, Light Grey, Dark Gray, or Mill finish.
  4. 32 in (813 mm) by 23 in (584 mm) base, 11 in (279 mm) by 11 in (279 mm) opening. Available with extended flange 36 in (914 mm) by 28 in (711 mm).
  5. Suitable on roofs with a 3:12 pitch or greater.
  6. Standards/Qualifications: Miami-Dade County Product Approval (11-0512.02).

## 2.8 SKYLIGHTS

## 2.9 FASTENERS

- A. Fasteners: Galvanized steel, stainless steel, or aluminum nails complying with ASTM F1667, minimum 12 gauge, 0.0808 in (2.05 mm) shank with 3/8 in (9.5 mm) diameter head.
- B. All fasteners must be driven flush with the shingle surface and penetrate at least 3/4 in (19.1 mm) into the wood deck. Where the deck is less than 3/4 in (19.1 mm) thick, the fastener should be long enough to penetrate fully and extend through roof sheathing.

## 2.10 METAL FLASHING

- A. Flashing: Provide edge metal flashing, by The Garland Company – (775) 772-9822

# PART 3 EXECUTION

## 3.1 EXAMINATION

- A. Prior to starting work, examine all roof decks on which work is to be applied for defects in materials and workmanship which may be detrimental to the proper installation or long-term performance of the shingles.
- B. Underlayment and shingles installed directly over roof insulation or similar type decks is not approved.
  1. Roof deck must be dry, minimum 25/32 in (19.8 mm) thick, minimum 6 in (152 mm) wide boards with maximum 1/4 in (6.4 mm) spaces, or APA rated sheathing (exposure 1): minimum 3/8 in (9.5 mm) plywood, minimum 7/16 in (11.1 mm) oriented strand board. Consult your manufacturer for other approved constructions.
  2. Ventilation under the roof deck must meet local code requirements.
- C. Do not begin installation until the roof deck has been properly prepared.

- D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding. Commencement of installation constitutes acceptance of conditions.

### 3.2 PREPARATION

- A. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- B. Remove all existing roofing down to the roof deck.
- C. Verify installed roof deck is acceptable to receive shingles. Acceptable roof decks include the following:
1. Lumber sheathing: 6 in (152 mm) minimum width, 25/32 in (19.8 mm) minimum thickness.
  2. Plywood sheathing: 3/8 in (9.5 mm) minimum thickness Exposure 1 grade plywood sheathing as recommended by APA and in compliance with applicable Codes.
  3. OSB panels: 7/16 in (11.1 mm) minimum thickness non-veneer structural panels as recommended by APA and in compliance with applicable Codes.
  4. Spacing between boards or panels shall not exceed 1/4 in (6.4 mm) between roof boards or between plywood or OSB sheathing panels.
- D. Verify that the deck is dry, structurally sound, clean and smooth. It shall be free of any depressions, waves, and projections. Cover with minimum 28 gauge; 0.0187 in (0.475 mm) galvanized steel, 0.0156 in (0.396 mm) stainless steel, or 0.0126 in (0.320 mm) aluminum sheet metal all holes 1 in (25 mm) or less in diameter, cracks over 1/2 in (13 mm) in width, loose knots and excessively resinous areas. Decking or deck boards with holes greater than 1 in (25 mm) in diameter shall be replaced.
- E. Verify that the deck is structurally sound and free of deteriorated decking. All deteriorated and damaged decking shall be removed and replaced with new materials.
- F. Clean deck surfaces thoroughly prior to installation of self-sealing ice and water barrier and underlayment.
- G. Verify that the existing shingles are dry, sound, clean and smooth. All curled, buckled or loose tabs shall be nailed down or removed.

### 3.3 UNDERLAYMENT APPLICATION

- A. Install in accordance with manufacturer's instructions.
1. Install using methods recommended by shingle manufacturer and in accordance with local building codes. When local codes and application instructions are in conflict, the local code requirements shall take precedence.
  2. Install self-adhering ice and water barrier from the eaves edge of roof up the slope a full 36 in (914 mm) but not less than 24 in (610 mm) beyond the interior edge of the exterior wall. Lap ends 6 in (152 mm) on roof decks sloped 5:12 and greater. On roofs with pitch from 2:12 up to 4:12, see application instructions printed on each package.
- B. Drip Edge
1. Drip edge shall be installed on all roof edges.
  2. Install drip edge on eaves first with underlayment installed over the drip edge.
  3. Install drip edge on rakes after underlayment is installed, with the drip edge fastened over the underlayment.
  4. Joints in drip edge shall be lapped minimum 2 in (51 mm) with the upslope piece lapped over the down slope piece.
  5. Install fastener 8 in to 10 in (203 mm to 254 mm) on center, approximately 1-3/4 in (44 mm) from the outside edge of the drip edge.
- C. Hips
1. Install self-adhering ice and water barrier at least 36 in (914 mm) wide and centered on the valley. Lap ends 12 inches and seal.
  2. Where valleys are indicated to be "open valleys", install metal flashing over self-adhering ice and water barrier before roof deck underlayment is installed; DO NOT nail through the flashing. Secure the flashing by nailing at 18 in (457 mm) on center just beyond edge of flashing so that nail heads hold down the edge, or use valley metal with a formed edge and secure with clips.
- D. Roof Deck
1. On roofs with pitch greater than 4:12, lap horizontal edges at least 2 inches (51 mm) and at least 2 inches (51 mm) over self-adhering ice and water barrier. Lap ends at least 4 inches (102 mm). End laps in succeeding course should be located at least 6 ft. (1.8 m) from end laps in the preceding course.
  2. On roofs with pitch between 2:12 to less than 4:12, see application instructions printed on each shingle wrapper, or follow local code requirements.
  3. Lap underlayment over hip protection at least 12 inches.

- E. Penetrations
  - 1. Vent pipes: Install a 24 in (610 mm) square piece of self-adhering ice and water barrier lapping over roof deck underlayment; seal tightly to pipe.
  - 2. Vertical walls: Install self-adhering ice and water barrier extending at least 3 in to 4 in (76 mm to 102 mm) up the wall and 12 in (305 mm) on to the roof surface. Lap the membrane over the roof deck underlayment.
  - 3. Chimneys: Install self-adhering ice and water barrier around entire chimney extending at least 6 in (152 mm) up the wall and 12 in (305 mm) on to the roof surface. Lap the membrane over the roof deck underlayment.

### **3.4 SHINGLE INSTALLATION**

- A. Install shingles in accordance with manufacturer's printed installation instructions.
- B. Install starter course at lowest roof edge and along rake with edge of shingles extending 1/4 in (6.4 mm) over edge of roof.
- C. Install first and successive courses of shingles stepping diagonally up and across roof deck with manufacturer's recommended offset at each succeeding course. Maintain uniform exposure of shingles at each succeeding course.
- D. Fasten shingles to deck with manufacturer's recommended number of roofing nails per shingle, or in accordance with local codes.
- E. Install ridge vents and shingles at valleys, hips and ridges in accordance with manufacturer's recommendations and local code requirements.

### **3.5 PROTECTION**

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION