

SECTION 073113 - ASPHALT SHINGLES**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Scope: Installation of new asphalt shingles is limited to modifications made to the existing hip roof required to pitch water out of pockets created by new construction. See drawing roof plans.
- B. Section Includes:
 - 1. Asphalt shingles.
 - 2. Underlayment.
- C. Related Requirements:
 - 1. Section 061600 "Sheathing" for nailable substrate for asphalt shingles

1.3 DEFINITION

- A. Roofing Terminology: See 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 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: A pre-installation meeting is required with contractor, installer, owner, and roofing manufacturer.

1.5 SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For each exposed product and for each color and texture specified.
 - 1. Asphalt Shingles: Full size.

1.6 CLOSEOUT SUBMITTALS

- A. Materials warranties.
- B. Roofing Installer's warranty.

1.7 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials 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.

1.8 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Provide all primary roofing products, including shingles, underlayment, and leak barrier by a single manufacturer.

- B. Installer Qualifications: Installer must be approved for installation of all roofing products to be installed under this section.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Store roofing materials in a dry, well-ventilated location protected from weather, sunlight, and moisture in accordance with manufacturer's written instructions.
- B. Store underlayment rolls on end, on pallets or other raised surfaces. Do not double-stack rolls.
- C. Protect unused roofing materials from weather, sunlight, and moisture when left overnight or when roofing Work is not in progress.
- D. Handle, store, and place roofing materials in a manner to prevent damage to roof deck or structural supporting members.

1.10 FIELD CONDITIONS

- A. Environmental Limitations: Proceed with installation only when existing and forecasted weather conditions permit product installation and related Work to be performed in accordance with manufacturer's written instructions and warranty requirements.

1.11 WARRANTY

- A. Manufacturer's Warranty: Manufacturer agrees to repair or replace asphalt shingles that fail within specified warranty period.
 - 1. 40 year material warranty for shingles, prorated no sooner than 10 years.
 - 2. Arbitration is not allowed.
 - 3. 15 year wind warranty.
 - 4. Warranty shall be adjudicated in Arkansas.
 - 5. Be warranted for wind speeds up to 90 mph as defined by the three second gust listed in ASCE-7.
 - 6. Warranty shall include labor and material to repair leaks resulting from manufacturer defects. This shall include tear-off and all materials required to replace defective shingles.
 - 7. Time limits for legal action shall be established by state and local statutes and may not be changed by the warranty.
 - 8. Require not less than 30 day notice to manufacturer after observance of a potential warranty defect.
- B. Roofing Installer's Warranty: On warranty form at end of this Section, signed by Installer, in which Installer agrees to repair or replace components of asphalt shingle roofing that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Exterior Fire-Test Exposure: Provide asphalt shingles and related roofing materials identical to those of assemblies tested for Class A fire resistance according to ASTM E 108 or UL 790 by Underwriters Laboratories or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify products with appropriate markings of applicable testing agency.

2.2 GLASS-FIBER-REINFORCED ASPHALT SHINGLES

- A. Laminated Asphalt Shingles: ASTM D 3462/D 3462M, laminated, multi-ply overlay construction, glass-fiber reinforced, mineral-granule surfaced, and self-sealing.

1. Provide 3-tab strip or dimensional shingles to match shingle appearance of existing shingled roofing. Field verify size and edge cut of existing prior to bid. Other characteristics of new shingles to be as specified.
2. Manufacturers: Provide asphalt shingle roofing products by one of the following:
 - a. CertainTeed Corporation.
 - b. GAF.
 - c. Owens Corning.
3. Self-sealing, 250 lb. per square (minimum) architectural heavy weight shingles matching colors dictated otherwise. Notify Architect and UA if matching shingles are not available at this weight.
4. Double layer fiberglass mat, random-cut saw tooth design.
5. Algae resistant
6. Impact Resistance: Meet UL 2218, Class 4 or FM 4470 Severe Hail Rating, AND pass ASTM D3746 impact testing.
7. Wind Resistance: Meet ASTM D7158 Class D and ASTM D3161, Type 1, Class F (110 mph) wind resistance.
8. Shall comply with requirements of ASTM D3462, and ASTM D3018, Type 1 and FM 4475 Class 1A.
9. Fire Resistance: Roofing material shall meet Exterior Fire-Test Exposure: ASTM E 108 Class A, or UL 790 Class A for application and roof slopes indicated, FM 4475 Class 1A and shall pass UL Standard 997

B. Hip and Ridge Shingles: Manufacturer's standard units to match asphalt shingles.

2.3 UNDERLAYMENT MATERIALS

- A. Synthetic underlayment shall be vapor permeable material that is mechanically fastened to the deck to ease shingle removal for future roof replacement projects (GAF Tiger Paw or equivalent). ASTM 226 No. 30 felt also acceptable. Underlayment must be approved (if applicable) by the roofing manufacturer.
- B. SBS underlayment shall be 40 mil cross laminated, high-density polyethylene film and self- adhesive SBS asphalt sheet (SBS underlayment) embossed with or without a slip resistant or sanded surface and with removable contact/release paper or approved equal capable of withstanding 250 degree temperatures and self-healing at fastener penetrations. Use WR Grace Ice and Water Shield or equal.

2.4 ACCESSORIES

- A. Asphalt Roofing Cement: ASTM D 4586, Type II, asbestos free.
- B. Nails: Hot-dip galvanized or stainless steel 11 or 12-gauge, sharp-pointed, conventional roofing nails with barbed or ringed shanks, minimum 3/8" diameter head, and of sufficient length to penetrate 3/4" into solid decking or to penetrate through plywood sheathing. All fasteners shall be approved by the roofing manufacturer. Zinc plated fasteners are not allowed. **All shingles to be hand nailed. Coiled nails not permitted.**
- C. Fasteners other than that required for attaching roof cladding, to be stainless steel or contain a corrosion resistant coating to resist 1000 hours of 5% salt spray testing per ASTM B117 without showing red rust, and meet FM 4470 corrosion resistance requirements. Fasteners for pressure treated wood shall be stainless.
- D. Drive pin expansion anchors typically used to anchor metallic elements to concrete and masonry are not allowed. SS hammer screws shall be used instead.
- E. All exposed sealants shall be silicone.

2.5 METAL FLASHING AND TRIM

- A. General: Comply with requirements in Section 076200 "Sheet Metal Flashing and Trim."
 1. Sheet Metal: Copper.
- 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 the item.

1. Apron Flashings: Fabricate with lower flange a minimum of 4 inches over and 4 inches beyond each side of downslope asphalt shingles and 6 inches up the vertical surface.
2. Step Flashings: Fabricate with a headlap of 2 inches and a minimum extension of 5 inches over the underlying asphalt shingle and up the vertical surface.
3. Counterflashings: Fabricate to cover 4 inches of base flashing measured vertically; and in lengths required so that no step exceeds 8 inches and overall length is no more than 10 feet.
4. Open-Valley Flashings: Fabricate from metal sheet not less than 24 inches wide in lengths not exceeding 10 feet, with 1-inch- high, inverted-V profile water diverter at center of valley and equal flange widths of not less than 11 inches.
 - a. Hem flange edges for fastening with metal cleats.
 - b. Add stiffening ribs in flashings to promote drainage.

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. The structural roof deck shown in the plans shall be smooth and level and free of water or debris before the ventilated insulation is installed.
 2. Examine roof sheathing to verify that sheathing joints are supported by framing and blocking or metal clips and that installation is within flatness tolerances.
 3. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and completely anchored; and that provisions have been made for flashings and penetrations through asphalt shingles.
- 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. Comply with asphalt shingle and underlayment manufacturers' written installation instructions and with recommendations in NRCA's "The NRCA Roofing Manual: Steep-Slope Roof Systems" applicable to products and applications indicated unless more stringent requirements are specified in this Section or indicated on Drawings.
- B. Synthetic Underlayment: Install on roof deck parallel with and starting at the eaves. Lap sides and ends and treat laps as recommended in writing by manufacturer. Stagger end laps between succeeding courses at interval recommended in writing by manufacturer. Fasten according to manufacturer's written instructions. Cover underlayment within period recommended in writing by manufacturer.
 1. Install in single layer on roofs sloped at 4:12 and greater.
 2. Install in double layer on roofs sloped at less than 4:12.
 3. Install synthetic underlayment on roof deck not covered by self-adhering, polymer-modified bitumen sheet unless otherwise specified in this Section or indicated on Drawings.
 - a. Lap sides of underlayment over self-adhering sheet not less than 4 inches in direction to shed water.
 - b. Lap ends of underlayment not less than 6 inches over self-adhering sheet.
- C. Self-Adhering, Polymer-Modified Bitumen Sheet: Install, wrinkle free, on roof deck.
 1. Comply with low-temperature installation restrictions of underlayment manufacturer.
 2. Install lapped in direction that sheds water.

- a. Lap sides not less than 4 inches.
 - b. Lap ends not less than 6 inches, staggered 24 inches between succeeding courses.
 - c. Roll laps with roller.
3. Prime concrete, masonry, and metal surfaces to receive self-adhering sheet.
 4. Valleys: Extend from lowest to highest point 18 inches on each side of centerline.
 5. Sidewalls: Extend 18 inches beyond sidewalls and return vertically against sidewalls not less than 4 inches.
 6. Cover underlayment within seven days.

3.3 FLASHINGS

- A. Install SBS underlayment up 30 inches around the perimeter of all deck discontinuities (ridges, eaves, rakes, valleys, changes in slope).
 1. Lap mechanically attached underlayment over SBS underlayment at roof deck perimeter elements. 2 layers of underlayment are required for slopes less than 4 to 12.
 2. SBS underlayment is not allowed as underlayment immediately below the roof covering elements unless required by the manufacturer.
- B. Use only open valleys. Line valleys with a single 36 inch wide strip of SBS underlayment centered on the valley in addition to that required at the deck element perimeter. Show underlayment lapping a minimum of 3 inches over valley metal. Lap roof covering a minimum of 5" over valley metal.
- C. No penetrations are allowed in valley flashings.
- D. SBS underlayment shall be installed below metal flashings and contractor fabricated metallic roofing elements.
- E. Step Flashings: Install with a headlap of 2 inches and extend over the underlying asphalt shingle and up the vertical surface. Fasten to roof deck only.
 1. Step flashing is required at side wall rake conditions. Runner flashing not allowed.
 2. Last piece of step flashing at eave to be formed into a kickout flashing to divert water away from the end wall and into the gutter.
- F. Flashing anchorage shall meet SPRI ES-1 Standards.
- G. Minimum Anchorage of Wood Blocking: No. 12 screws installed at 12 inches on center staggered. Anchor lengths to be sized to provide adequate strength to resist induced loads.
- H. No fasteners through exposed sloping legs of vents or boots. Strip in upper half of vent and boot flanges with SBS underlayment.

3.4 ASPHALT-SHINGLE INSTALLATION

- A. General: Install asphalt shingles according to manufacturer's written instructions, recommendations in NRCA's "NRCA Guidelines for Asphalt Shingle Roof Systems."
- B. Install starter strip along lowest roof edge, consisting of an asphalt-shingle strip with self-sealing strip face up at roof edge.
 1. Extend asphalt shingles 1/2 inch to 3/4 inch over fasciae 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. Use a minimum of six nails per shingle or the manufacturer's standard nail pattern, whichever is greater. Using less than six nails will require a statement from the manufacturer that using less than six nails will be detrimental to the system.
- E. **Shingles are to be hand nailed only. Nail guns are not permitted.**

- F. Use starter shingles at eaves and rakes.
- G. Use manufacturer's hip and ridge shingles. **Cut 3 tab shingles are not allowed.**

3.5 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 073113