

SECTION 07 3100

ASPHALT SHINGLE ROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Asphalt shingles.
 - 2. Underlayment.
 - 3. Ridge vents.
- B. Related Sections include the following:
 - 1. Section 06 1000 – Rough Carpentry: Framing, wood decking and roof sheathing
 - 2. Section 07 6000 – Flashing and Sheet Metal: Sheet metal flashing associated with shingle roofing; gutters and downspouts.

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.
 - 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- long Sample.
- 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. Research/Evaluation Reports: For asphalt shingles.

- G. Maintenance Data: For asphalt shingles to include in maintenance manuals.
- H. Warranties: Special warranties specified in this Section.

1.5 QUALITY ASSURANCE

- A. Comply with California Building Code Section 15 and Table 15-B-1: Asphalt Shingle Application, unless more stringent requirements are specified or indicated on Drawings.
- B. Installer Qualifications: A firm or individual that is approved, authorized, or licensed by asphalt shingle roofing system manufacturer to install roofing system indicated.
- C. Source Limitations: Obtain ridge and hip cap shingles through one source from a single asphalt shingle manufacturer.
- D. 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.
- E. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Provide mock-up of 12 sq ft, including underlayment. Locate where directed.
 - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless such deviations are specifically approved by Architect in writing.
 - 3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- F. Preliminary Roofing Conference: Before starting roof sheathing construction, conduct conference at Project site. Review methods and procedures related to roof sheathing construction and asphalt shingle roof including, but not limited to, the following:
 - 1. Meet with Owner, Architect, testing and inspecting agency representative, asphalt shingle roof Installer, asphalt shingle roof manufacturer's representative, sheathing Installer, and installers whose work interfaces with or affects asphalt shingle roof tiles 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 asphalt shingle roof installation, including manufacturer's written instructions.
 - 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.
 - 6. Review flashings, special roof details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect asphalt shingle roof.

7. Review governing regulations and requirements for insurance, certificates, and testing and inspecting if applicable.
8. Review temporary protection requirements for asphalt shingle roof during and after installation.
9. Review roof observation and repair procedures after asphalt shingle roof installation.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store roofing materials in a dry, well-ventilated, weathertight 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. Install self-adhering sheet underlayment within the range of ambient and substrate temperatures recommended by manufacturer.

1.8 WARRANTY

- A. Special 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. Warranty Period: 30 years.
 2. Wind-Speed Warranty Period: Asphalt shingles will resist blow-off or damage caused by wind speeds up to 70 mph for 5 years.
- B. Special Project Warranty: Roofing Installer's warranty, 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: 2 years.

1.9 EXTRAMATERIALS

- 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. Asphalt Shingles: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
 - 1. Landmark Shingles by CertainTeed (Basis of Design).
 - 2. GAF Materials Corporation.
 - 3. Malarkey Roofing Products Inc.
 - 4. Or equal.

2.2 GLASS-FIBER-REINFORCED ASPHALT SHINGLES

- 1. Product: Landmark Solaris Platinum Shingles by CertainTeed or equal.
 - a. Description: Shingles are composed of a fiber glass mat base. Ceramic-coated mineral granules with high solar reflectance are tightly embedded in carefully refined, water-resistant asphalt. Two pieces of the shingle are firmly laminated together in special tough asphaltic cement. Shingles have self-sealing adhesive strips.
 - b. 250 lbs. per square.
 - c. UL Class A fire resistance.
 - d. UL certified to meet ASTM D3462.
 - e. UL certified to meet ASTM D3018 Type I.
 - f. ASTM D7158 Class H Wind Resistance.
 - g. ASTM D3161 Class F Wind Resistance.
 - h. ICC-ES ESR-3537 and 1389.
 - i. Conforms to CSA standard A123.5.
 - j. Meets California Title 24, Part 6 Compliant (Steep Slope) for reflectance and emittance.
 - k. Meets ENERGY STAR® requirements.
 - l. Color: As selected by Owner from manufacturer's full range.
- B. Hip and Ridge Shingles: Manufacturer's standard units to match asphalt shingles.

2.3 UNDERLAYMENT MATERIALS

- A. Underlayment:
 - 1. On slopes 4" per foot or greater, CertainTeed recommends one layer of DiamondDeck® Synthetic Underlayment, or Roofers' Select™ High-Performance shingle underlayment, or shingle underlayment meeting ASTM D226, D4869 or ASTM D6757. Always ensure sufficient deck ventilation, and take particular care when DiamondDeck or other synthetic underlayment is installed. For UL fire rating, underlayment may be required. Corrosion-resistant drip edge is recommended and should be placed over the underlayment at the rake and beneath the underlayment at the eaves. Follow manufacturer's application instructions.
 - 2. On low slopes (2" up to 4" per foot), one layer of CertainTeed's WinterGuard Waterproofing Shingle Underlayment (or equivalent meeting ASTM D1970) or two layers of 36" wide felt shingle underlayment (Roofers' Select High-Performance Underlayment or product meeting ASTM D226, D4869 or ASTM D6757) lapped 19" must be applied over the entire roof, ensure sufficient deck ventilation. When DiamondDeck or other

synthetic underlayment is installed, weather-lap at least 20" and ensure sufficient deck ventilation. When WinterGuard is applied to the rake area, the drip edge may be installed under or over WinterGuard. At the eave, when WinterGuard does not overlap the gutter or fascia, the drip edge should be installed under WinterGuard. When WinterGuard overlaps the fascia or gutter, the drip edge or other metal must be installed over it. Follow manufacturer's application instructions.

2.4 ROOF VENTS

A. Flat Vents:

1. Product: Fire & Ice Line Tapered Low-Profile Composition Vent by The O'Hagin or equal.
 - a. Designed for slate, shake or composition shingle roofs provides 72 square inches of Net Free Ventilation Area (NFVA). Designed to seamlessly blend form and function, the tapered vent provides superior airflow without detracting from the aesthetics of the roof.
 - b. 24, 3-1/2 inch louvers on each side, water diverters and splashguards. Each side has a 4-inch flange with a top flange of 6-1/2 inches. The vent opening is an 11-inch circle with a 1/4-inch screen and 1/2-inch lip.
 - c. Class A fire rated.
 - d. All vents manufactured using standard finish 26 gauge, G90 galvanized steel.
 - e. Color: As selected by Owner from manufacturer's full range.

2.5 RIDGE VENTS

- A. Rigid Ridge Vent: Manufacturer's standard rigid section high-density polypropylene or other UV-stabilized plastic ridge vent with nonwoven geotextile filter strips and with external deflector baffles; for use under ridge shingles.
- B. Flexible Ridge Vent: Manufacturer's standard compression-resisting, three-dimensional open-nylon or polyester-mat filter bonded to a nonwoven, non-wicking geotextile fabric cover.

2.6 ROOF DECK

- A. Comply with requirements of Section 06 1000 Rough Carpentry.
 1. Minimum 3/8 inch thick plywood, minimum 7/16 inch thick non-veneer (e.g. OSB), or minimum 1 inch thick (nominal) wood decks.
 2. Plywood or non-veneer decks shall comply with specifications of APA-The Engineered Wood Association.

2.7 ACCESSORIES

- A. Asphalt Roofing Cement: ASTM D 4586, Type II, asbestos free.
- B. Roofing Nails:
 1. ASTM F 1667; corrosion-resistant, minimum 12-gage 3/8 inch head, or approved corrosion-resistant staples, minimum 16 gage 15/16 inch crown width per CBC Table 15-B-1.

2. Fasteners shall be long enough to penetrate into sheathing, whichever is less per CBC Table 15-B-1.

2.8 METAL FLASHING AND TRIM

- A. Sheet Metal Flashing and Trim: Comply with requirements Section 07 6000 Flashing and Sheet Metal.
 1. Sheet Metal: Zinc-coated (galvanized) steel. Field paint exposed metal, color as selected by Architect.
- 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. Provide apron, step, cricket, backer, valley, and drip flashings as required for complete roof assembly.
 2. Valley Flashing:
 - a. 24 galvanized sheet gage corrosion-resistant metal, complying with ASTM A 653/A 653M, G90/Z275
 3. Vent Pipe Flashings: ASTM B 749, Type L51121, at least 1/16 inch 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 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.
 3. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 UNDERLAYMENT INSTALLATION

- A. Double-Layer Felt Underlayment:
 1. For areas roof slope is less than 4:12: Install double layers of felt underlayment on roof deck perpendicular to roof slope in parallel courses. Install a 19-inch- wide starter course at eaves and completely cover with full-width second course. Install succeeding courses lapping previous courses 19 inches in shingle fashion. Lap ends a minimum of 6 inches. Stagger end laps between succeeding courses at least 72 inches. Fasten with felt underlayment nails.

2. Install felt underlayment on roof sheathing not covered by self-adhering sheet underlayment. Lap edges over self-adhering sheet underlayment not less than 3 inches in direction to shed water.
3. Terminate felt underlayment extended up not less than 4 inches against sidewalls, curbs, chimneys and other roof projections.

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. Closed Cut Valley Flashings: Install shingles half way over the valley on one side and then the other side comes over to the center of the valley and then cut overlapping shingles in a straight line.
- C. Rake Drip Edges: Install rake drip edge flashings over underlayment and fasten to roof deck.
- D. Eave Drip Edges: Install eave drip edge flashings below underlayment and fasten to roof sheathing.
- E. Pipe Flashings: Form flashing around pipe penetrations and asphalt shingles. Fasten and seal to asphalt shingles as recommended by manufacturer.

3.4 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 and at least 7 inches wide with self-sealing strip face up at roof edge.
 1. Extend asphalt shingles 1/2 inch over metal drip edge 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 four roofing nails per CBC Table 15-B-1, located according to manufacturer's written instructions.
 1. Where roof slope exceeds 20:12, seal asphalt shingles with asphalt roofing cement spots after fastening with additional roofing nails.
 2. Where roof slope is less than 4:12, seal asphalt shingles with asphalt roofing cement spots.
 3. When ambient temperature during installation is below 50 deg F, seal asphalt shingles with asphalt roofing cement spots.

- E. Fastening (NailTrak):
1. Low & Standard Slopes: On low and standard slopes, four nails are required per shingle. There are three nail lines on NailTrak shingles. Position nails vertically between the upper and lower nailing-guide lines. It is acceptable to nail between the middle and lower lines or between the upper and middle lines. Nails must be of sufficient length to penetrate into the deck 3/4" or through the thickness of the decking, whichever is less. They are to be located 1" and 12" in from each side of the shingle (see instructions on product wraps.) Nails are to be 11 or 12 gauge, corrosion-resistant roofing nails with 3/8" heads.
 2. Steep Slopes: On slopes greater than 21" per foot, fasten each shingle with six nails and four spots of roofing cement placed under each shingle according to application instructions provided on the shingle package. Fasteners must penetrate the two-layer common bond area that is indicated by the middle and lower NailTrak lines, also illustrated on the shingle package.
- F. Ridge Vents: Install continuous ridge vents over asphalt shingles according to manufacturer's written instructions. Fasten with roofing nails of sufficient length to penetrate sheathing.
- 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.
1. Fasten ridge cap asphalt shingles to cover ridge vent without obstructing airflow.

END OF SECTION