

SECTION 07311 - ASPHALT SHINGLES

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. Section Includes:
 - 1. Asphalt shingles.
 - 2. Underlayment.
- B. Related Sections:
 - 1. Section 01524 "Demolition/Construction Waste Management."
 - 2. Section 02070 "Selective Demolition" for removal of existing asphalt roofing shingles and components.
 - 3. Section 07620 "Sheet Metal Flashing and Trim."
 - 4. Section 07920 "Joint Sealants."

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 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Initial Selection: For each type of asphalt shingle 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.
 - 2. Underlayment: 12 inches square.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer.
- B. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for asphalt shingles.
- C. Warranties: Sample of special warranties.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For each type of asphalt shingle to include in maintenance manuals.

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. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project as required by 50-year warranty requirements.
- B. Source Limitations: Obtain underlayments from single source from single manufacturer.
- C. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Build mockups for asphalt shingles including related roofing materials.
 - a. Size: 48 inches long by 48 inches wide.
 - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- D. Pre-installation Conference: Conduct conference at Project site. SHPO or their designated representative shall attend.

1.9 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.

1.10 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install asphalt shingles until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.
 - 1. Install self-adhering sheet underlayment within the range of ambient and substrate temperatures recommended by manufacturer.
- B. Protect building to be reroofed, adjacent buildings, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from reroofing operations.
- C. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.
- D. Weather Limitations: Proceed with reroofing preparation only when existing and forecasted weather conditions permit Work to proceed without water entering existing roofing system or building.

1.11 WARRANTY

- A. The Contractor shall warrant all materials for a period of five (50) years and workman-ship for a period of five (50) years from the date of acceptance of the completed work by the Owner. The Contractor shall make good any defects in materials or workman-ship which may develop during said five (50) year period by the repairing of such defects at his own expense without cost to Owner.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. Manufacturer: GAF Materials Corporation, 1361 Alps Rd., Wayne NJ 07470. Tel: 1-973-628-3000. Or approved equal.

2.2 SHINGLES – 50 year warranty

- A. Self sealing, granule surfaced, asphalt shingle with a strong fiberglass reinforced Micro Weave® core and StainGuard® protection, which prevents pronounced discoloration from blue-green algae through formulation/unique blends of granules. Features GAF's patented High Definition® color blends and enhanced shadow effect. UL 790 Class A rated with UL 997 Wind Resistance Label; ASTM D 7158, Class H; ASTM D 3161, Type 1; ASTM D 3018, Type 1; ASTM D 3462; CSA 123.5-98.
 - 1. Product: Grand Slate Shingles by GAF.
 - a. Color: (Welsh Grey) or as selected by the Architect from manufacturer's full range.
 - 2. Or VA approved equal.

2.3 STARTER STRIP

- A. Self sealing starter shingle designed for premium roof shingles.
 - 1. Product: WeatherBlocker™ Eave/Rake Starter Strip by GAF.

2.4 UNDERLAYMENT MATERIALS

- A. Self-Adhering Sheet Underlayment, Granular Surfaced:
 - 1. Product: WeatherWatch® Leak Barrier by GAF.
 - 2. Or approved equal.
- B. Shingle Underlayment: Premium, water repellant, breather type non-asphaltic underlayment. UV stabilized polypropylene construction. Meets or exceeds ASTM D 226 and D 4869.
 - 1. Product: Deck-Armor™ Premium Breathable Roof Deck Protection, by GAF.
 - 2. Or approved equal.

2.5 ACCESSORIES

- A. Asphalt Roofing Cement: ASTM D 4586, Type II, asbestos free.
- B. Roofing Nails: ASTM F 1667; aluminum, or hot-dip galvanized-steel wire shingle nails, minimum 0.120-inch-diameter, barbed or smooth shank, sharp-pointed, with a minimum 3/8-inch-diameter flat head and of sufficient length to penetrate 3/4 inch into solid wood decking or extend at least 1/8 inch through OSB or plywood sheathing.
 - 1. Where nails are in contact with metal flashing, use nails made from same metal as flashing.
 - 2. Felt Underlayment Nails: Plastic cap corrosion resistant nails.

2.6 METAL FLASHING AND TRIM

- A. General: Comply with requirements in Section 07620 "Sheet Metal Flashing and Trim."
 - 1. Sheet Metal: Prefinished zinc-coated (galvanized) steel sheet.
- B. Fabricate sheet metal and copper 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 and to exactly match existing historic details on this building.
 - 1. Apron Flashings: Fabricate with lower flange a minimum of 5 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. Cricket Flashings: Fabricate with concealed flange extending a minimum of 24 inches beneath upslope asphalt shingles and 6 inches beyond each side of chimney and 6 inches above the roof plane.
 - 4. Open-Valley Flashings: Fabricate in lengths not exceeding 10 feet with 1-inch-high, inverted-V profile at center of valley and equal flange widths of 12 inches.
 - 5. Drip Edges: Fabricate in lengths not exceeding 10 feet with 4-inch roof-deck flange and 1-1/2-inch fascia flange with 3/8-inch drip at lower edge.
- C. 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 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 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 PREPARATION

- A. Remove existing roofing down to the roof deck.
- B. Verify that the deck is dry, sound, clean, and smooth. It shall be free of depressions, waves, and projections. Cover with sheet metal, holes over 1-inch in diameter, cracks over 1/2-inch in width, loose knots, and excessively resinous areas.
- C. Replace damaged deck with new materials.
- D. Clean deck surfaces thoroughly prior to installation of eaves protection membrane and underlayment.

3.3 UNDERLAYMENT INSTALLATION

- A. General: Comply with underlayment manufacturer's written installation instructions applicable to products and applications indicated unless more stringent requirements apply.
 - 1. If local codes and application instructions are in conflict, the more stringent requirements shall take precedence.
- B. Self-Adhering Sheet Underlayment: Install, wrinkle free, on entire roof deck. Comply with low-temperature installation restrictions of underlayment manufacturer if applicable. Install over entire roof surface and as indicated on Drawings, lapped in direction to shed water. Lap sides not less than 3-1/2 inches. Lap ends not less than 6 inches staggered 24 inches between courses. Roll laps with roller. Cover underlayment within seven days.
- C. Metal-Flashed, Open-Valley Underlayment: Install 36-inch-wide felt underlayment centered in valley as indicated on Drawings. Lap ends at least 12 inches in direction to shed water. Fasten each layer to roof deck with felt underlayment nails.
- D. Single-Layer Felt Underlayment: Lap sides a minimum of 2 inches over underlying course. Lap ends a minimum of 4 inches. Stagger end laps between succeeding courses at least 72 inches. Fasten with felt underlayment nails and install over entire roof surface.
- E. Penetrations:
 - 1. Vent Pipes: Install a 24 inch square piece of self-adhering sheet underlayment lapping over roof deck underlayment; seal tightly to pipe.

3.4 METAL FLASHING INSTALLATION

- A. General: Install metal flashings and other sheet metal to comply with requirements in Section 07620 "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 headlap 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 centered 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. Adhere 12-inch-wide strip of self-adhering sheet underlayment to metal flanges and to adjacent self-adhering sheet underlayment.
- 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.

3.5 ASPHALT SHINGLE INSTALLATION

A. General:

1. 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," and local building codes. When local codes and application instructions are in conflict, the more stringent requirements shall take precedence.
2. Minimize breakage of shingles by avoiding dropping bundles on edge, by separating shingles carefully (not by "breaking" over ridge or bundles), and by taking extra precautions in temperatures below 40 degrees F.
3. Handle carefully in hot weather to avoid scuffing the surfacing, or damaging the shingle edges.

B. Placement and Nailing:

1. For maximum wind resistance along rakes and eaves, install starter strip containing sealant or cement shingles to underlayment and each other in a 4-inch width of asphalt plastic roof cement.
2. Secure with 4, 5, or 6 nails per shingle per manufacturer's instructions or local codes.
3. Placement of nails varies based on the type of shingle specified. Consult the application instructions for the specified shingle for details.
4. Nails shall be driven flush with the shingle surface. Do not overdrive or under drive the nails.
5. Shingle offset varies based on the type of shingle specified. Consult the application instructions for the specified shingle for details.
6. Vertical Sidewalls and Near Vertical Roof Surfaces (as recommended by manufacturer):
 - a. Fasten asphalt shingles to vertical sidewalls and Near Vertical Roof Surfaces with six nails per shingle and hand seal butt edges of shingles to underlying shingles with 1-inch diameter spots of asphalt roof cement, 6 spots minimum, at ends of shingles and equally spaced between, unless noted otherwise by manufacturer.

C. Valleys:

1. Install valleys using the "open valley" method:
 - a. Snap diverging chalk lines on the metal flashing, starting at 3 inches each side of top of valley, spreading at 1/8 inch per foot to the eaves.
 - b. Run shingles to chalk line.
 - c. Trim last shingle in each course to match the chalk line; do not trim shingles to less than 12 inches wide.
 - d. Apply a 2 inch wide strip of plastic cement under ends of shingles, sealing them to the metal flashing.

D. Penetrations:

1. Penetrations shall be flashed according to manufacturer, recommendations in ARMA's "Residential Asphalt Roofing Manual," and asphalt shingle recommendations in NRCA's "The NRCA Roofing and Waterproofing Manual."

END OF SECTION 073110

(This Page Left Intentionally Blank)