SECTION 07 31 00

ASPHALT SHINGLES

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\*\* NOTE TO SPECIFIER \*\* GAF, Residential Roofing Products; steep slope advanced protection shingles, granular surfaced with reinforced fiberglass.
This section is based on the products of GAF, Residential Roofing Products, which is located at:
1 Campus Drive
Parsippany, NJ 07054
Phone Numbers:
Main Number: (973) 628-3000
Eastern Sales Office: (717) 866-8392
Central Sales Office: (630) 296-1980 or (800) 847-0841
Southeast Sales Office: (813) 829-8880
Southwest Sales Office: (972) 851-0400
Western Sales Office: (951) 360-4200 or (800) 445-9330
Canadian Sales: (905) 642-1278
International Sales: (413) 537-7555
Technical Questions: 1-877-GAF-ROOF (1-877-423-7663)
Fax: (973) 628-3451
Email: AIS@gaf.com
Web: [www.gaf.com](https://www.gaf.com)
[ [Click Here](https://www.arcat.com/arcatcos/cos32/arc32667.html) ] for additional information.
Founded in 1886, GAF is one of the oldest manufacturers of commercial and residential roofing materials in the United States, and its proud tradition of innovation and excellence has made it one of the most respected.
GAF is the only roofing manufacturer that makes all of the critical components for its own shingles. The GAF Smart Choice Weather Stopper System includes all of a steep slope roof's needs. All Smart Choice Weather Stopper System components have earned the Good Housekeeping seal of approval.

1. GENERAL
	1. SECTION INCLUDES

\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.

* + 1. Removal of existing roofing.
		2. Ventilated roof insulation panels.
		3. Asphalt roofing shingles.
		4. Leak barrier and moisture shedding roof deck protection.
		5. Underlayment.
		6. Metal flashing associated with shingle roofing.
		7. Attic ventilation and ventilation accessories.
	1. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Delete any sections below not relevant to this project; add others as required.

* + 1. Section 06 10 00 - Rough Carpentry.
		2. Section 07 62 00 - Sheet Metal Flashing and Trim.
		3. Section 08 63 19 - Vaulted Metal-Framed Skylights.
	1. REFERENCES

\*\* NOTE TO SPECIFIER \*\* Delete references from the list below that are not actually required by the text of the edited section.

* + 1. AC438-1011-R1 - New Acceptance Criteria for Alternative Asphalt Roofing Shingles
		2. American Society of Civil Engineers (ASCE): ASCE 7 - Minimum Design Loads for Buildings and Other Structures.
		3. Asphalt Roofing Manufacturers Association (ARMA).
		4. ASTM International (ASTM):
			1. ASTM D 3018 - Standard Specification for Class A Asphalt Shingles Surfaced with Mineral Granules.
			2. ASTM D 3161 - Standard Test Method for Wind-Resistance of Asphalt Shingles (Fan-Induced Method).
			3. ASTM D 3462 - Standard Specification for Asphalt Shingles Made from Glass Felt and Surfaced with Mineral Granules.
			4. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
			5. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
			6. ASTM B 370 - Standard Specification for Copper Sheet and Strip for Building Construction.
			7. ASTM C 1549 - Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer.
			8. ASTM D 4586 - Standard Specification for Asphalt Roof Cement, Asbestos-Free.
			9. ASTM E 903 - Standard Test Method for Solar Absorption, Reflectance and Transmission of Materials Using Integrating Spheres.
		5. California Title 24 Energy Efficient Standards.
		6. Cool Roof Rating Council (CRRC).
		7. ENERGYSTAR.
		8. National Roofing Contractors Association (NRCA).
		9. Sheet Metal and Air Conditioning Contractors National Association, 1nc. (SMACNA) - Architectural Sheet Metal Manual.
		10. U.S. Green Building Council (USGBC): Leadership in Energy and Environmental Design (LEED).
		11. Underwriters Laboratory (UL)
			1. UL 790 - Tests for Fire Resistance of Roof Covering Materials.
			2. UL 997 - Wind Resistance of Prepared Roof Covering Materials.
	1. DEFINITIONS
		1. Roofing Terminology: Refer to ASTM D1079 and the glossary of the National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual for definitions of roofing terms related to this section.
	2. SUBMITTALS
		1. Submit under provisions of Section 01 30 00 - Administrative Requirements.
		2. Product Data: Manufacturer's data sheets on each product to be used, showing compliance with requirements.
		3. Installation Instructions: Manufacturer's installation instructions, showing required preparation and installation procedures.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + 1. LEED Submittals: Submit documentation indicating solar reflective index, and location for regional materials credit as applicable.

\*\* NOTE TO SPECIFIER \*\* Delete if LEED certification for the project is not required.

* 1. LEED CERTIFICATION
		1. Provide a roofing system that will achieve or aid in the qualification of points satisfying LEED requirements.
			1. Sustainable Site Credit 7.2 - Heat Island Effect - Roof.
			2. Materials and Resource Credit 5 - Local and Regional Materials.
	2. QUALITY ASSURANCE
		1. Manufacturer Qualifications: Provide all primary roofing products, including shingles, underlayment, leak barrier, and ventilation, by a single manufacturer.
		2. Installer Qualifications: Installer must be approved by manufacturer for installation of all roofing products to be installed under this section.
		3. USGBC LEED: Provide products meeting solar reflective index required to achieve LEED Credit for Roof Heat Island Effect.
	3. REGULATORY REQUIREMENTS
		1. Provide a roofing system achieving an Underwriters Laboratories (UL) Class A fire classification.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + 1. Provide a roofing system achieving an ENERGYSTAR rating.
		2. Install all roofing products in accordance with all federal, state and local building codes.
		3. All work shall be performed in a manner consistent with current OSHA guidelines.
	1. PRE-INSTALLATION MEETINGS
		1. Convene a pre-installation meeting a minimum two weeks prior to starting work of this section.
			1. Contractor shall schedule and arrange meeting and meeting place and notify attendees.
			2. Mandatory Attendees: Roofing installer and manufacturer's steep slope technical representative (not sales agent).
			3. Optional Attendees: Owner's representative, Architect's representative, prime Contractor's representative.
			4. Review all pertinent requirements for achieving the warranty specified below and set schedule for final warranty inspection.
	2. DELIVERY, STORAGE, AND HANDLING
		1. Store products in manufacturer's unopened labeled packaging until ready for installation.
		2. Store products in a covered, ventilated area, at temperature not more than 110 degrees F (43 degrees C); do not store near steam pipes, radiators, or in sunlight.
		3. Store bundles on flat surface to maximum height recommended by manufacturer; store rolls on end.
		4. Store and dispose of solvent-based materials, in accordance with requirements of local authorities having jurisdiction.
	3. WEATHER CONDITIONS
		1. Proceed with work only when existing and forecasted weather conditions will permit work to be performed in accordance with roofing shingle manufacturer's recommendations.
	4. WARRANTY
		1. Provide manufacturer's standard limited warranty:

\*\* NOTE TO SPECIFIER \*\* Delete warranty types not required.

* + - 1. Provide to the Owner a GAF Shingle and Accessory Ltd. Warranty.
			2. Provide to the Owner a GAF WeatherStopper Golden Pledge Ltd Warranty.
			3. Provide to the Owner a GAF WeatherStopper Silver Pledge Ltd Warranty.
			4. Provide to the Owner a GAF Weather Stopper System Plus Ltd Warranty.
			5. Provide to the Owner a GAF All American Pledge Guarantee.
			6. Provide to the Owner a GAF Cornell ThermaCal Nail Base Roof Insulation Ltd. Warranty.
				1. Warranty Duration: 15 years.
1. PRODUCTS
	1. MANUFACTURERS
		1. Acceptable Manufacturer: GAF, Residential Roofing Products, which is located at: 1 Campus Drive Parsippany, NJ 07054; Toll Free Tel: 800 ROOF-411; Tel: 800-766-3411; Fax: 973-628-3451; Email: AIS@gaf.com; Web: [www.gaf.com](https://www.gaf.com) .

\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.

* + 1. Substitutions: Not permitted.
		2. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

\*\* NOTE TO SPECIFIER \*\* Delete type not required. Delete if not required for project.

* 1. VENTILATED ROOF INSULATION PANELS
		1. Preassembled panel consisting of a oriented strand board top surface a wood spacer block separating a layer of Isocyanurate insulation on the bottom, ThermaCal 1 Ventilating Roof Insulation Panel by GAF-Cornell.

\*\* NOTE TO SPECIFIER \*\* Delete OSB thicknesses not required.

* + - 1. OSB Thickness: 7/16 inch (11 mm).
			2. OSB Thickness: 5/8 inch (16 mm).
			3. OSB Thickness: 3/4 inch (19 mm).

\*\* NOTE TO SPECIFIER \*\* Delete spacer block thicknesses not required.

* + - 1. Wood Spacer Block Thickness: 1 inch (25 mm).
			2. Wood Spacer Block Thickness: 1-1/2 inches (38 mm)
			3. Wood Spacer Block Thickness: 2 inches (51 mm).
		1. Preassembled panel with two layers of oriented strand board separated by spacer blocks and isocyanurate insulation on the bottom, ThermaCal 2 Ventilating Roof Insulation Panel by GAF-Cornell.

\*\* NOTE TO SPECIFIER \*\* Delete OSB thicknesses not required.

* + - 1. OSB Thickness: 7/16 inch (11 mm).
			2. OSB Thickness: 5/8 inch (16 mm).
			3. OSB Thickness: 3/4 inch (19 mm).

\*\* NOTE TO SPECIFIER \*\* Delete spacer block thicknesses not required.

* + - 1. Wood Spacer Block Thickness: 1 inch (25 mm).
			2. Wood Spacer Block Thickness: 1-1/2 inches (38 mm)
			3. Wood Spacer Block Thickness: 2 inches (51 mm).

\*\* NOTE TO SPECIFIER \*\* Delete types not required.

* 1. SHINGLES
		1. Grand Canyon Lifetime Designer Shingles, by GAF:
			1. Granule surfaced, self-sealing 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.
			2. Special cut tabs and bold profile provide a rugged hand-split shake appearance with an 8in. exposure.
			3. 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; AC438 compliant; CSA 123.5-98; Dade County Approved, Florida Building Code Approved, Texas Dept of Insurance Approved, ICC Report Approval.
		2. Grand Sequoia Lifetime Designer Shingles, by GAF:
			1. Granule surfaced, self-sealing asphalt shingle with a strong fiberglass reinforced Micro Weave core and mineral granule surfacing.
			2. Special cut tabs and bold profile provide a rugged hand-split shake appearance with an 8 in. exposure.
			3. 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; AC438 compliant; CSA 123.5-98; Dade County Approved, Florida Building Code Approved, Texas Dept of Insurance Approved, ICC Report Approval.
		3. Grand Sequoia ArmorShield Lifetime Designer Shingles, by GAF:
			1. UL 2218, Class 4, granule surfaced, self-sealing asphalt shingle with a strong fiberglass reinforced Micro Weave core and mineral granule surfacing.
			2. Special cut tabs and bold profile provide a rugged hand-split shake appearance with an 8 in. exposure.
			3. 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; Passes UL 2218, Class 4 Impact Test ; AC438 compliant; CSA 123.5-98; Dade County Approved, Florida Building Code Approved, Texas Dept of Insurance Approved, ICC Report Approval.
		4. Woodland Lifetime Designer Shingles by GAF:
			1. Granule surfaced, self-sealing 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.
			2. Special cut tabs give the appearance of staggered slate.
			3. 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; AC438 compliant CSA 123.5-98; Dade County Approved, Florida Building Code Approved, Texas Dept of Insurance Approved, ICC Report Approval.
		5. Slateline Lifetime Designer Shingles, by GAF:
			1. Granule surfaced, self-sealing 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.
			2. Dovetail cut tabs and bold shadow lines provide a slate appearance with a 7 1/2 in. exposure.
			3. 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; AC438 compliant; CSA 123.5-98; Dade County Approved, Florida Building Code Approved, Texas Dept of Insurance Approved, ICC Report Approval.
		6. Camelot II Lifetime Designer Shingles, by GAF:
			1. Granule surfaced, self-sealing 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.
			2. Thick tabs and bold profile provide a bold unique appearance with a 7.5 in. exposure.
			3. UL 790 Class A rated with UL 997 Wind Resistance Label; ASTM D 7158, Class H; ASTM D 3161, Class F, Type 1; ASTM D 3018, Type 1; ASTM D 3462; AC438 compliant; CSA 123.5-98, Texas Dept of Insurance Approved, ICC Report Pending,
		7. Timberline Ultra HD Lifetime High Definition Shingles, by GAF:
			1. Granule surfaced, self-sealing 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.
			2. Architectural laminate styling provides a wood shake appearance with a 5-5/8 inch exposure. Features GAF's patented High Definition color blends and enhanced shadow effect. .
			3. 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; AC438 compliant; CSA 123.5-98; Dade County Approved, Florida Building Code Approved, Texas Dept of Insurance Approved, ICC Report Approval.
		8. Timberline HDZ High Definition Lifetime Shingles, by GAF:
			1. Self-sealing, granule surfaced, asphalt shingle with a strong fiberglass reinforced Micro Weave core; with LayerLock Technology, a mechanically fused common bond; larger Strick Zone nailing area and StainGuard protection, which prevents pronounced discoloration from blue-green algae through formulation/unique blends of granules.
			2. Architectural laminate styling provides a wood shake appearance with a 5-5/8 inch exposure. Features GAF's patented High Definition color blends and enhanced shadow effect.
			3. 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; AC438 compliant; CSA 123.5-98; Dade County Approved, Florida Building Code Approved, Texas Dept of Insurance Approved, ICC Report Approval.
		9. Timberline NS Natural Shadow Lifetime Shingles, by GAF:
			1. 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.
			2. Architectural laminate styling provides a wood shake appearance with 5-5/8 inch exposure. Features the classic Natural Shadow effect.
			3. 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; AC438 compliant; CSA 123.5-98; Dade County Approved, Florida Building Code Approved, Texas Dept of Insurance Approved, ICC Report Approval.
		10. Timberline AS II ArmorShield II SBS Modified Shingles, by GAF:
			1. UL 2218, Class 4, granule surfaced self-sealing 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.
			2. Architectural laminate styling provides a wood shake appearance with a 5-5/8 inch exposure.
			3. 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; Passes UL 2218, Class 4 Impact Test; ASTM D 3462; AC438 compliant; Dade County Approved, Florida Building Code Approved, Texas Dept of Insurance Approved, ICC Report Approval.
		11. Timberline CS Cool Series Lifetime Shingles, by GAF:
			1. Granule surfaced, high reflectance, self-sealing asphalt shingle with a strong fiberglass reinforced Micro Weave core and a mineral granule surfacing.
			2. Architectural laminate styling provides a wood shake appearance with a 5-5/8 inch exposure. Features highly reflective roofing granules that bounce back the sun's rays and more effectively release absorbed heat.
			3. Rated by the Cool Roof Rating Council (CRRC), Title 24 compliant and meets initial Energy Star performance levels.
			4. 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; AC438 compliant; CSA 123.5-98; Dade County Approved, Florida Building Code Approved, Texas Dept of Insurance Approved, ICC Report Approval.
		12. Marquis Weathermax Shingles, by GAF:
			1. Granule surfaced self-sealing asphalt shingle with a strong fiberglass reinforced Micro Weave core and a mineral granule surfacing.
			2. Traditional 3-tab styling with a 5 or 5-5/8 inch exposure.
			3. 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; AC438 compliant; CSA 123.5-98.
		13. Royal Sovereign Shingles, by GAF:
			1. Granule surfaced self-sealing 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.
			2. Traditional 3-tab styling with a 5 or 5-5/8 inch exposure.
			3. 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; AC438 compliant; Dade County Approved, Florida Building Code Approved, Texas Dept of Insurance Approved, ICC Report Approval.

\*\* NOTE TO SPECIFIER \*\* Delete all but one of the following styles of hip and ridge shingles.

* 1. HIP AND RIDGE SHINGLES
		1. High profile self-sealing hip and ridge cap shingle matching the color of selected roof shingle. Each bundle covers approx. 20 lineal feet (6.10 m). Timbertex Premium Ridge Cap Shingles, by GAF.
		2. Distinctive self-sealing hip and ridge cap shingle complementing the color of selected roof shingle. Each bundle covers approx. 31 lineal feet (9.45 m) with an 8 inch (203 mm) exposure. Ridglass 10 inch Ridge Cap Shingles by GAF.
		3. Distinctive self-sealing hip and ridge cap shingle complementing the color of selected roof shingle. Each bundle covers approx. 31 lineal feet (9.45 m) with an 8 inch (203 mm) exposure Ridglass 8 inch Ridge Cap Shingles by GAF.
		4. Distinctive self-sealing hip and ridge cap shingle complementing the color of selected roof shingle. Each bundle covers approx. 25 lineal feet (7.62 mm) with a 6-2/3 inch (169 mm) exposure. Seal-A-Ridge Ridge Cap Shingles by GAF.
		5. Distinctive hip and ridge cap shingle complementing the color of selected roof shingle. Each bundle covers approx. 33.3 lineal feet (10.15 m) with a 5-5/8 inch (147 mm) exposure. Z Ridge Shingles by GAF.
		6. Distinctive impact resistant self-sealing hip and ridge cap shingle complementing the color of selected roof shingle. Each bundle covers approx. 25 lineal feet (7.62 m) with a 6-2/3 inch (169 mm) exposure. Seal-A-Ridge ArmorShield Ridge Cap Shingles by GAF.

\*\* NOTE TO SPECIFIER \*\* Field fabricated hip and ridge shingles fabricated from 3-tab shingles only. For use with 3-tab shingles only.

* + 1. Ridge cap shingle field fabricated from the same color and type of field shingle. Each bundle covers approx. 33 lineal feet (10.15 m).

\*\* NOTE TO SPECIFIER \*\* Delete type not required.

* 1. STARTER STRIPS
		1. Self-sealing starter shingle designed for all roof shingles. Each bundle covers approx. 120 lineal feet (36.58 m). ProStart Starter Strip by GAF.
		2. Self-sealing starter shingle designed for premium roof shingles. Each bundle covers approx. 100 lineal feet (30.48 m) for English and metric shingles or 50 lineal feet (15.24 m) for oversized shingles. WeatherBlocker Eave/Rake Starter Strip by GAF.
		3. Pre-cut, color coordinated starter strip shingle designed as a second starter course for shingles with large cut-outs. Each bundle covers approx. 60 lineal feet (18.29 m) StarterMatch Starter Strip by GAF.

\*\* NOTE TO SPECIFIER \*\* Delete type not required.

* 1. LEAK BARRIER
		1. Self-adhering, self-sealing, bituminous leak barrier surfaced with fine, skid-resistant granules. Approved by UL, Dade County, ICC, State of Florida and Texas Department of Insurance. Each roll contains approx. 150 sq ft (13.9 sq m), 36 inches X 50 feet (0.9 m x 20.3 m) or 200 sq ft (18.6 sq m), 36 inches X 66.7 feet (0.9 m x 20.3 m). WeatherWatch Leak Barrier, by GAF.
		2. Self-adhering, self-sealing, bituminous leak barrier surfaced with a smooth polyethylene film. Approved by UL, Dade County, ICC, State of Florida and Texas Department of Insurance. Each Roll contains approx. 200 sq ft. (18.6 sq m), 36 inches x 66.7 feet (0.9 m x 20.3 m). StormGuard Leak Barrier, by GAF.

\*\* NOTE TO SPECIFIER \*\* Delete types not required.

* 1. UNDERLAYMENT
		1. Premium, water repellant, breather type non-asphaltic underlayment. UV stabilized polypropylene construction. Meets or exceeds ASTM D226 and D4869. Approved by Dade Country, Florida Building Code, and ICC. Roll available in 10 squares (approximately 1003 sq ft) of material at 54 inches x 223 ft and 4 square (approximately 400.2 sq ft) of material at 36 inches x 133.4 ft. Deck-Armor Premium Breathable Roof Deck Protection, by GAF.
		2. Non-asphaltic, non-breathable, special moisture control designed synthetic underlayment. UV stabilized polypropylene construction. Meets or exceeds ASTM D226 and D4869. Each roll contains 10 squares (approximately 1,000 sq ft) of material at 48 inches x 250 ft and 4 square (approximately 400 sq ft) of material at 48 inches x 100 ft Tiger Paw Roof Deck Protection, by GAF.
		3. Water repellent, breather type cellulose/glass fiber composite roofing underlayment. Meets or exceed ASTM D226 and D4869. Each roll contains approximately 4 squares (432 sq ft) of material and is 36 x 144 inches. Shingle-Mate Roof Deck Protection, by GAF.
		4. Non-woven fiberglass mat underlayment coated on both sides suing a highly filled polymer. Provides a fire barrier and water resistant. Approved by Dade Country, Florida Building Code, and ICC approval. VersaShield Fire-Resistant Roof Deck Protection by GAF.
		5. No. 15 Roofing Underlayment: Water repellent breather type cellulose fiber building paper. Meets or exceeds the requirements of ASTM D 4869 Type I.
		6. No. 30 Roofing Underlayment: Water repellent breather type cellulose fiber building paper. Meets or exceeds the requirements of ASTM D 4869 Type II.
	2. ROOFING CEMENT
		1. Asphalt Plastic Roofing Cement meeting the requirements of ASTM D 4586, Type I or II.
	3. ROOF ACCESSORIES
		1. Compression Collars: UV stable solid molded PVC compression collar, Kynar PVDF coated 24 gauge galvanized flange, Ultimate Pipe Flashing by Lifetime Tool.

\*\* NOTE TO SPECIFIER \*\* Delete types not required.

* 1. ATTIC VENTILATION
		1. Ridge Vents:
			1. Flexible rigid plastic ridge ventilator designed to allow the passage of hot air from attics, while resisting snow infiltration. For use in conjunction with eave/soffit ventilation products. Provides 12.5 sq inches NFVA per lineal foot (26460 sq.mm/m). Each package contains 20 lineal feet (6.10m) of vent. Cobra Ridge Runner Ridge Vent by GAF.
			2. Flexible ridge ventilator designed to allow the passage of hot air from attics. For use in conjunction with eave/ soffit intake ventilation products. Provides 16.9 inches (1430 mm per m) NFVA (Hand Nail) and 14.1 inches (1193 mm per m) NFVA (Nail Gun) per lineal foot. Cobra Exhaust Vent, by GAF.
			3. Rigid plastic ridge ventilator designed to allow the passage of hot air out of attics. For use in conjunction with eave/ soffit intake ventilation products. Provides 18.0 sq inches (38102 sq mm per m) in NFVA per lineal foot. Each package contains 40 lineal feet (12.19 m) of vent. Cobra Rigid Vent 3 Ridge Vent (includes 3 inch (76 mm) galvanized ring shank nails), by GAF.
			4. Rigid plastic ridge ventilator designed to allow the passage of hot air from attics while prohibiting snow infiltration. For use in conjunction with eave/ soffit intake ventilation products. Provides 18.0 sq inches (19051 sq mm per m) NFVA per lineal foot. Each package contains 40 lineal feet (12.19 m) of vent. Cobra Snow Country or Cobra Snow Country Advanced Ridge Vent (includes 3 inch (76 mm) galvanized ring shank nails), by GAF.
		2. Hip Vents:
			1. Rigid plastic hip ventilator designed to allow the passage of hot air out of attics through the hips. For use in conjunction with eave/ soffit intake ventilation products. Provides 9.0 sq inches (11613 sq mm per m) in NFVA per lineal foot. Each package contains 40 lineal feet (12.19 m) of vent, Cobra Hip Vent Exhaust Vent (includes 1-3/4 inch (44.5 mm) coil nails), by GAF.
		3. Fascia and Soffit/Under Eave Vents:
			1. Flexible rigid plastic ridge ventilator designed to allow the passage of hot air out of attics at the roof top along the eaves. For use in conjunction with ridge ventilation products. Provides 9.0 sq inches (11613 sq mm per m) in NFVA per lineal foot. Each package contains 40 lineal feet (12.19 m) of vent, Cobra IntakePro Rooftop Intake Vent (includes 1-3/4 inches (44.5 mm) coil nails), by GAF.
			2. Surface mounted closeable soffit vent with integral screen to help prevent wildfire embers from being drawn into the attic. 16.5 x 9 inch (419 x 229 mm) paintable finish providing 56 sq in (36,131 sq mm) of NFA, MasterFlow EmberShield Closeable Soffit Vent by GAF.
			3. Surface mounted, screened aluminum, corrosion resistant soffit vent. MasterFlow EAC Soffit Vent by GAF.
			4. Surface mounted, high impact resin, oval snap-in designed soffit vent. MasterFlow EAP Soffit Vent by GAF.
			5. Continuous aluminum 8ft section soffit vent. MasterFlow LSV8 Series Soffit Vent by GAF.
		4. Solar Powered Vents:
			1. Solar powered roof exhaust vent designed to remove damaging heat and moisture from attics. Each vent provides 500 CFM and is solar powered to eliminate related utility costs. MasterFlow Green Machine Solar Powered Roof Exhaust Vent, by GAF.
			2. Solar powered intake booster vent designed for houses with insufficient soffit ventilation. Each vent provides up to 500 CFM airflow and is solar powered to eliminate related utility costs. MasterFlow Green Machine Solar Powered Intake Booster Vent, by GAF.
			3. Solar powered gable mounted exhaust ventilators designed to remove damaging heat and moisture from attics. Each vent provides 500 CFM and is solar powered to eliminate related utility costs. MasterFlow Green Machine Solar Powered Gable Vent, by GAF.
		5. Dual Powered Vents
			1. Dual powered roof exhaust vent designed to remove damaging heat and moisture from attics. Each vent provides 500 CFM and is solar and electric powered to provide continuous operation and reduce related utility costs. MasterFlow Green Machine Dual Powered Roof Exhaust Vent, by GAF.
			2. Dual powered gable mounted exhaust ventilators designed to remove damaging heat and moisture from attics. Each vent provides 500 CFM and is solar and electric powered to provide continuous operation and reduce related utility costs. MasterFlow Green Machine Dual Powered Gable Vent, by GAF.
		6. Powered Vents
			1. Powered, rooftop mounted exhaust ventilators designed to evacuate hot air from attics. Each vent permits the passage of 1000 to 1600 cfm. Thermostat and/or humidistat controlled. MasterFlow ERV Series power roof ventilators, by GAF.
			2. Powered, gable mounted exhaust ventilators designed to evacuate hot air from attics. Each vent permits the passage of 1280 to 1600 cfm. Thermostat and/or humidistat controlled. MasterFlow EGV Series power roof ventilators, by GAF
		7. Roof Louvers:
			1. Rooftop mounted, square-top designed, high-impact resin exhaust ventilator designed to evacuate hot air from attics. Each vent provides 60 sq in NFVA. MasterFlow RT-65 Roof Louver, by GAF.
			2. Rooftop mounted, slant-back designed, metal exhaust ventilator designed to evacuate hot air from attics. Each vent provides 60 sq in NFVA. MasterFlow SSB 960A Passive Roof Louver, by GAF.
			3. Rooftop mounted, slant-back designed, high-impact resin exhaust ventilator designed to evacuate hot air from attics. Each vent provides 65 sq in NFVA. MasterFlow IR65 Roof Louver, by GAF.
			4. Rooftop mounted, low-profile square-top designed, high-impact resin exhaust ventilator designed to evacuate hot air from attics. Each vent provides 37 sq in NFVA. MasterFlow IR-61 Roof Louver, by GAF.
			5. Rooftop mounted, square-top, slant-back, metal exhaust ventilator designed to evacuate hot air from attics. Each vent provides 50 sq in NFVA. MasterFlow NSB50A Roof Louver, by GAF.
			6. Rooftop mounted, square-top metal utility ventilator designed to evacuate hot air from attics, bathrooms, and kitchen ducts. Each vent provides 50 sq in NFVA. MasterFlow RV50A Metal Utility Vent, by GAF.
		8. Gable Louvers:
			1. Surfaced mounted, flush or recessed one piece integral construction in thermoformed plastic or aluminum. MasterFlow DA Series or SL Series Gable Louver by GAF.
			2. Circular surfaced mounted, one piece integral construction high-impact white plastic mini vent. MasterFlow RLSC Series Circular Louver by GAF.
		9. Roof Turbines:
			1. Rooftop mounted, stainless dual bearing, high performance, aluminum rotary turbine exhaust vents. MasterFlow AIC12 and AIC14 Wind Turbine Vents by GAF.
			2. Rooftop mounted, stainless dual bearing, high performance, galvanized rotary turbine exhaust vents. MasterFlow GC12E Wind Turbine Vent by GAF.
		10. Whole House Fans (attic spaces greater than 1000 sq ft only):
			1. Interior ceiling mounted belt drive deluxe house fan. Super quiet 1/3 hp permanent split capacitor motor, wall switch operated. MasterFlow 30BWHFS Belt Drive Deluxe Whole House Fan by GAF.
			2. Interior ceiling mounted direct drive standard house fan. Super quiet 1/4 hp permanent split capacitor motor, chain switch operated. MasterFlow WHFS24M Direct Drive Standard Whole House Fan by GAF.

\*\* NOTE TO SPECIFIER \*\* Delete types not required.

* 1. VENTILATION ACCESSORIES
		1. Chimney Cap:
			1. Stainless steel vented chimney cap. MasterFlow CC1313SS Safety Cap by GAF.
			2. Epoxy powder finished vented chimney cap. MasterFlow CC99, CC913 and CC1313 Safety Cap by GAF
			3. Epoxy powder finished adjustable bracket mount vented chimney cap. MasterFlow CC99, CC913 and CC1313 Safety Cap by GAF.
		2. Foundation Vent:
			1. High Density Polyethylene constructed electric foundation vent provides up to 330 CFM/airflow. Independent laboratory approved. MasterFlow PFV1 Foundation Vent by GAF.
			2. High Density Polyethylene constructed automatic foundation vent. MasterFlow FVRABL Foundation Vent by GAF.
			3. Die Cast aluminum positive open/closed damper foundation vent. MasterFlow 500 Foundation Vent by GAF.
			4. Galvanized steel or aluminum high level ventilation foundation vent. MasterFlow BVSII Foundation Vent by GAF.
	2. NAILS
		1. Nails: Standard round wire, zinc-coated steel or aluminum; 10 to 12 gauge, smooth, barbed or deformed shank, with heads 3/8 inch (9 mm) to 7/16 inch (11 mm) in diameter. Length must be sufficient to penetrate into solid wood at least 3/4 inch (19 mm) or through plywood or oriented strand board by at least 1/8 inch (3.18 mm).
	3. METAL FLASHING

\*\* NOTE TO SPECIFIER \*\* Delete type not required.

* + 1. Galvanized Steel: 24 gauge hot-dip galvanized steel sheet, complying with ASTM A 653/A 653M, G90/Z275.
		2. Copper: 16 oz per sq ft (0.56 mm) copper sheet, complying with ASTM B 370.
		3. Aluminum: 0.032 inch (0.8 mm) aluminum sheet, complying with ASTM B 209.
1. EXECUTION
	1. EXAMINATION
		1. Do not begin installation until roof deck has been properly prepared.
		2. If roof deck preparation is the responsibility of another installer, notify Architect or building owner of unsatisfactory preparation before proceeding.
	2. REMOVAL OF EXISTING ROOFING
		1. Remove all existing roofing down to the roof deck.
		2. Verify that deck is dry, sound, clean and smooth, free of depressions, waves and projections.
		3. Cover with sheet metal all holes over 1 inch (25 mm) diameter, cracks over 1/2 inch (12 mm) in width, loose knots and excessively resinous areas.
		4. Replace damaged deck with new materials.
		5. Clean deck surfaces thoroughly prior to installation of eaves protection membrane and underlayment.
	3. PREPARATION OF SUBSTRATE
		1. Clean deck surfaces thoroughly prior to installation of leak barrier and roof deck protection.
		2. At areas to receive leak barrier, fill knot holes and cracks with latex filler.

\*\* NOTE TO SPECIFIER \*\* Delete the following paragraph if not required.

* + 1. Chimneys: Install crickets on the upslope side of any chimney located in the north, on a roof steeper than 6:12, or wider than 24 inches (610 mm).

\*\* NOTE TO SPECIFIER \*\* For ThermaCal Nail Base Roof Insulation Panels Only. Delete if not needed

* 1. VENTILATED ROOF INSULATION PANELS INSTALLATION
		1. The structural roof deck shown in the plans shall be smooth and level and free of water or debris before the nail base insulation is installed. Apply vapor retarder if required.

\*\* NOTE TO SPECIFIER \*\* GAF recommends that the designer carefully considers the need for a vapor/air retarder.

* + 1. Installation shall follow the GAF written installation instructions.
		2. Fasten with ThermaCal Fasteners to the supporting roof deck shown in the plans.
		3. Protect nail base insulation work from exposure to moisture damage and deterioration, primarily by prompt installation of the roofing, sheet metal and waterproofing work
	1. INSTALLATION OF UNDERLAYMENT
		1. Install using methods recommended by manufacturer in accordance with local building code. When local codes and application instructions are in conflict, the more stringent requirements shall take precedence.
		2. Eaves:
			1. Place eave edge metal flashing tight with fascia boards; lap joints 2 inches (50 mm) and seal with plastic cement; nail at top of flange.

\*\* NOTE TO SPECIFIER \*\* Delete the following paragraph if the conditions described do not apply.

* + - 1. On roofs with slope between 2:12 and 4:12, and on all roofs in the north, install leak barrier up the slope from eave edge to 36 inches from the edge or at least 24 inches (610 mm) beyond the interior face of the warm exterior wall, whichever is greater; lap ends 6 inches (150 mm) and bond.
		1. Valleys:
			1. Install leak barrier at least 36 inches wide centered on valley; lap ends 6 inches (150 mm) and seal.
			2. Where valleys are indicated to be "open valleys", install metal flashing over leak barrier before roof deck protection is installed; DO NOT NAIL THROUGH metal flashing; secure by nailing at 18 inches (457 mm) on center just beyond edge of flashing so that nail heads hold down edge.
		2. Hips and Ridges:
			1. Install GAF leak barrier along entire lengths. If ridge vents are to be installed, position the GAF leak barrier so that the ridge slots will not be covered.
		3. Roof Deck:
			1. Install one layer of roof deck protection over entire area not protected by eave or valley membrane; run sheets horizontally lapped so water sheds; nail in place.

\*\* NOTE TO SPECIFIER \*\* Delete one of the next two paragraphs, unless both slopes are included in project.

* + - 1. On roofs sloped at more than 4 in 12, lap horizontal edges at least 2 inches (50 mm) and at least 2 inches (50 mm) over eave protection membrane.
			2. On roofs sloped between 2 in 12 and 4 in 12, lap horizontal edges at least 19 inches (480 mm) and at least 19 inches (485 mm) over eave protection membrane.
			3. Lap ends at least 4 inches (100 mm); stagger end laps of each layer at least 36 inches (915 mm).
			4. Lap roof deck protection over valley protection at least 6 inches (152 mm).
		1. Deck-Armor Application
			1. Deck-Armor shall be installed over a clean, dry deck.
			2. Install Weather Watch or StormGuard Leak Barrier at eaves, valleys, rakes, skylights, dormers and other vulnerable leak areas.
			3. Lay Deck-Armor over deck and overlap 3 inch (76 mm) at side laps and 6 inch (152 mm) at end laps.
			4. For exposure to rain or snow, overlap 12 inch (305 mm) at end laps.
			5. For side and end laps: fasten Deck-Armor 12 inch (305 mm) o.c. (6 inch (152 mm) o.c. for high wind areas).
			6. For middle of the roll: fasten Deck-Armor 24 inch (610 mm) o.c. (12 inch (305 mm) o.c. for high wind areas).
			7. For exposure to rail or snow, completely cover all side laps, end laps and fasteners with tape.
			8. For long term exposure see complete Deck-Armor installation instructions for side lap detail.
			9. If roof may be exposed to high winds, apply tape over all fasteners at the center of the roll to prevent rain or snow from entering at the fasteners.
		2. Penetrations:
			1. At vent pipes, install a 24 inch (610 mm) square piece of leak barrier lapping over roof deck protection; seal tightly to pipe.
			2. At vertical walls, install leak barrier extending at least 6 inches (150 mm) up the wall and 12 inches (305 mm) on to the roof surface lapping over roof deck protection.
			3. At skylights and roof hatches, install leak barrier up the sides of the frame and 12 inches (305 mm) on to the roof surface on all sides, lapping over roof deck protection.
			4. At chimneys, install leak barrier around entire chimney extending at least 6 inches (150 mm) up the wall and 12 inches (305 mm) on to the roof surface lapping over roof deck protection.

\*\* NOTE TO SPECIFIER \*\* The following leak barrier locations are optional. Delete if not required.

* + - 1. At rake edges, install metal edge flashing over leak barrier and roof deck protection; set tight to rake boards; lap joints at least 2 inches (50 mm) and seal with plastic cement; secure with nails.
			2. At hips and ridges, install leak barrier along entire lengths. If ridge vents are to be installed, position the leak barrier so that the ridge slots are not covered.
	1. INSTALLATION OF SHINGLES
		1. Install in accordance with manufacturer's instructions and requirements of local building code.
			1. Avoid 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 (4 degrees C).
			2. Handle carefully in hot weather to avoid damaging shingle edges.
			3. Secure with 4 to 6 nails per shingle; use number of nails required by manufacturer or by code, whichever is greater. Nails must be long enough to penetrate through plywood or OSB, or 3/4 inch (19 mm) into dimensional lumber.
		2. Install hip and ridge shingles as required by the manufacturer. At ridges, install hip and ridge shingles over ridge or ridge vent material.

\*\* NOTE TO SPECIFIER \*\* Delete all but one of the following three styles of valleys. Open valleys and closed cut valleys are suitable for all styles of shingles. Woven Valleys are only acceptable with Royal Sovereign, Marquis Weathermax and Slateline Shingles.

* + 1. Make valleys using "open valley" technique:
			1. Snap diverging chalk lines on metal flashing, starting at 3 inches (75 mm) each side of top of valley, spreading at 1/8 inch per ft (9 mm per meter) to eave.
			2. Run shingles to chalk line.
			3. Trim last shingle in each course to match chalk line; do not trim shingles to less than 12 inches (305 mm) width.
			4. Apply 2 inches (50 mm) wide strip of plastic cement under ends of shingles, sealing to metal flashing.
		2. Make valleys using "closed cut valley" technique:
			1. Run the first, and only the first, course of shingles from the higher roof slope across the valley at least 12 inches (305 mm).
			2. Run all courses of shingles from the lower roof slope across the valley at least 12 inches (305 mm) and nail not closer than 6 inches (150 mm) to center of valley.
			3. Run shingles from the upper roof slope into valley and trim 2 inches (50 mm) from center of valley.
		3. Make valleys using "woven valley" technique.
			1. Run shingles from both roof slopes at least 12 inches (305 mm) across center of valley, lapping alternate sides in a woven pattern.
			2. Nail not closer than 6 inches (150 mm) to center of valley.
		4. All penetrations are to be flashed according to GAF, ARMA and NRCA application instructions and construction details.
		5. For skylights, consult the manufacturer of the skylight or roof hatch for specific installation recommendations. Skylights and roof hatches shall be installed with pre-fabricated metal flashings specifically designed for the application of the unit.
	1. INSTALLATION OF VENTILATION
		1. Code Requirements: Ventilation shall meet or exceed current FHA, HUD and local code requirements.
		2. Ridge Vents:
			1. Cut continuous vent slot through sheathing, stopping 6 inches (150 mm) from each end of ridge.
			2. On roofs without ridge board, make slot 2 inches (50 mm) wide, centered on ridge.
			3. On roofs with ridge board, make two slots 1-3/4 inches (89 mm) wide, one on each side.
			4. Install ridge vent material full length of ridge, including uncut areas.
			5. Butt ends of lengths of ridge vent material and join using plastic cement.
			6. Install eave vents in sufficient quantity to equal or exceed the ridge vent area, calculated as specified by manufacturer.
			7. Install ridge shingles over ridge vent material; use nails of specified length; do not drive nails home, leaving 3/4 inch (19 mm) slot open between ridge and roof shingles.
		3. Hip Vents and Rooftop Vents:
			1. Install according to manufacturer's instructions.
			2. Install vents in sufficient quantity to equal or exceed the exhaust vent area, calculated as specified by manufacturer.
		4. Roof Louvers:
			1. Cut vent hole through sheathing as specified by the manufacturer for the type of vent to be installed.
			2. Install a 24 inches (610 mm) square of leak barrier, centered around the hole.
			3. Install according to manufacturer's instructions for flashing vent penetrations.
			4. Install eave vents in sufficient quantity to equal or exceed the exhaust vent area, calculated as specified by manufacturer.
		5. Powered (Solar and Dual Powered) Ventilators:
			1. Cut vent hole through sheathing as specified by the manufacturer for the type of vent to be installed.
			2. On rooftop applications, install a 36 inches (610 mm) square of leak barrier, centered around the hole.
			3. Install according to manufacturer's instructions for flashing vent penetrations.
			4. Install eave vents in sufficient quantity to equal or exceed the exhaust vent area, calculated as specified by manufacturer.
		6. Whole House Fans:
			1. Install at desired locations in ceiling below attic space per manufacturer recommended location and application instructions.
	2. INSTALLATION OF VENTILATION ACCESSORIES
		1. Chimney Caps: Install per manufacturer recommendations.
		2. Foundation Vents: Install per manufacturer recommendations
	3. PROTECTION
		1. Stage work progress so that traffic is minimized over completed roofing.
		2. Protect installed products until completion of project

END OF SECTION