SECTION 07 32 00

SLATE ROOFING

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\*\* NOTE TO SPECIFIER \*\* GAF; Slate Roofing.
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This section is based on the products of GAF, which is located at:
1 Campus Dr.
Parsippany, NJ 07054
 Toll Free Tel: 888-LEAK-SOS.
 Tel: 973-628-3000.
 Fax: 973-628-3866.
 Email: AIS@gaf.com
 Web: <https://www.gaf.com/en-us/products/truslate>.

The TruSlate system from GAF can make your dream of owning genuine slate roof a reality. The TruSlate system features:
-Real hand-split quarried slate (not a synthetic imitation)
- An ingenious installation system (that typically eliminates the expensive structural modifications that old-fashioned slate requires)
- An affordable price (often comparable to the cost of the cheap imitations)

1. GENERAL
	1. SECTION INCLUDES

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

* + 1. Slate roofing system.
		2. Leak barrier and roof deck protection.
		3. Metal flashing associated with slate roofing system.
		4. Attic Ventilation.
	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. ASTM C 406 - Specification for Slate Roofing.
		2. ASTM C 120-90 - Standard Test Method of Flexure Testing of Slate.
		3. ASTM C 121-90 - Standard Test Method for Water Absorption of Slate.
		4. ATI - CCR 0142
		5. Florida Building Code Approved - FL5429.
		6. FM 4473 - Class 4 - Test for Ice Ball Resistance.
		7. Miami-Dade County Notice of Acceptance.
		8. National Roofing Contractors Association (NRCA).
		9. Texas Department of Insurance - RC-101.
		10. UL 790 - Tests for Fire Resistance of 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, including:
			1. Preparation instructions and recommendations.
			2. Storage and handling requirements and recommendations.
			3. Installation methods.

\*\* NOTE TO SPECIFIER \*\* Delete selection samples if colors have already been selected.

* + 1. Selection Samples: Two complete sets of color cards representing manufacturer's full range of available colors and patterns.
		2. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.
	1. QUALITY ASSURANCE
		1. Manufacturer Qualifications: Provide all primary roofing products, including the slate system roof deck protection, underlayment, leak barrier, and ventilation, by a single manufacturer.
		2. Installer Qualifications:
			1. Installer must be approved for installation of all roofing products to be installed under this section.
			2. Installer must have a GAF SlateCrafter Specialist Certification and be a part of one of the GAF Certified Contractor programs including Master Elite Contractor, Certified Contractor or Authorized Installers.
		3. Installers are encouraged to review the installation video/DVD, website video, and all printed installation instructions. The GAF Technical Services Dept. is always available to assist with technical questions (1-800-ROOF-411or 1-800-766-3411).

\*\* NOTE TO SPECIFIER \*\* The following pre-installation meeting is suggested for all projects over 250 squares (2300 sm) total roofing. Delete if not required.

* + 1. Pre-Installation Meeting: Conduct a pre-installation meeting not more than 2 weeks after the start of the roofing project and before start of roofing installation.
			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.

\*\* NOTE TO SPECIFIER \*\* The following mandatory inspection is only available when GAF's enhanced Golden Pledge warranty is offered. Delete if not required.

* + 1. Final Warranty Inspection: Provide manufacturer's roofing inspector to review completed project for compliance with the conditions of the warranty specified below as well as normal 40-point inspection checklist.
	1. REGULATORY REQUIREMENTS
		1. Provide a roofing system achieving an Underwriters Laboratories (UL) Class A fire classification.
		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.
	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 GAF's recommendations.
	4. PROJECT CONDITIONS
		1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
	5. WARRANTY

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

* + 1. Provide to the owner a GAF Smart Choice TruSlate Limited Warranty.
		2. Provide to the owner a GAF TruSlate Ultimate Pledge Limited Warranty.
1. PRODUCTS
	1. MANUFACTURERS
		1. Acceptable Manufacturer: GAF TruSlate®, which is located at: 1 Campus Dr.; Parsippany, NJ 07054; Toll Free Tel: 888-LEAK-SOS; Tel: 973-628-3000; Fax: 973-628-3866; Email: AIS@gaf.com; Web: <https://www.gaf.com/en-us/products/truslate>

\*\* 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.
	1. SLATE SYSTEM
		1. Dense, tough, durable, natural rock or stone sorted to eliminate any that have been cracked or broken, having a porosity of approximately 0.15 to 0.40 percent making this material practically nonabsorbent. 1/4 inch (6mm) to 3/8 inch (8mm) thick, 12 inch by 12 inch size with a 10 inch (254 mm) exposure. Meets; ASTM C 120-90 and ASTM C 121-90, the testing results of these slates meets or exceeds ASTM S1 or S2 Grade, FM 4473 Class 4, UL 790 Class B rated, UL 580 Class 90, UL 1897. Florida Building Code, Texas Department of Insurance (TDI) Approval, Miami Dade Approval and Architectural Testing (ATI) Approval. TruSlate Premium Roofing System by GAF.

\*\* NOTE TO SPECIFIER \*\* Select Colors from Manufacturer's available options and delete those not required. Retain only the first paragraph if colors have not been determined.

* + - 1. Colors: To be selected from manufacturers' full range of core and accent colors.
			2. Core Color: Onyx Black.
			3. Core Color: Greystone.
			4. Core Color: Mystic Grey.
			5. Core Color: Meadow Green.
			6. Core Color: Charcoal.
			7. Accent Color: Antique Purple.
			8. Accent Color: Autumn Dusk.
		1. High density polyethylene (HDPE) Interlayment protects against UV, moisture and weather infiltration. Approximately 250 sq. ft. (23.23 sq. m) per roll. UnderBlock UV and Moisture Barrier by GAF.
		2. Stainless steel 4 foot batten strips pre-assembled with spring tempered stainless steel , powder coated hangers available in standard or long lengths. Hangers and Battens assembly covers approximately 250 sq. ft. (23.23 sq m). TruGrip Batten and Hanger System by GAF.
		3. Layout tape used as a guide for installing the battens and hangers system on the roof. Each roll contains approximately 180 linear feet or 600 sq feet (55.74 m) of coverage. Lay-Straight Alignment Tape by GAF.
	1. HIP AND RIDGE SLATES
		1. Dense, tough, durable, quarried slate approximately 16 inches x 7 inches (406mm x 178mm). Each crate covers approx. 100 lineal feet (30.5m). TruSlate Trim Slate by GAF.
		2. Corrugated plastic pieces used as a fastening base for installing Trim Slates at hip & ridge areas. Sized at 1/2 inch x 8 inches x 48 inches (13 mm x 203 mm x 1.22 m), each box covers approximately 100 lineal feet (30.5 m). Hip & Ridge Spacer by GAF.

\*\* NOTE TO SPECIFIER \*\* Delete the following paragraph if Leak Barrier is not specified.

* 1. LEAK BARRIER

\*\* NOTE TO SPECIFIER \*\* Select Leak Barrier. Delete three of the next four paragraphs.

* + 1. Self-adhering, flexible SBS-modified compound and reinforced with a specially formulated reinforced polyester mat. Flexible design conforms to irregular surfaces. Each roll contains approx. 200 sq ft, 39.4 inches X 61 feet (1m x 18.6m). UnderRoof HT High Temperature Leak Barrier by GAF.
		2. Self-adhering, self-sealing, bituminous leak barrier surfaced with fine, mineral surfacing. Each Roll contains approx. 150 sq ft, 65 lbs (29.9 kg), 36 inches X 50 feet (914mm x 15.25m) or 200 sq ft, 85 lbs (38.6 kg), 36 inches X 66.7'. 58 mils thick. WeatherWatch Leak Barrier, by GAF.
		3. Self-adhering, self-sealing, bituminous leak barrier surfaced with a smooth polyethylene film. Each Roll contains approx. 200 sq ft, 85 lbs (38.6 kg), 36 inches X 66.7'. 60 mils thick. StormGuard Leak Barrier, by GAF.
		4. Self-adhering, flexible SBS-modified compound and reinforced with a fiberglass-reinforced polyester core. Flexible design conforms to irregular surfaces. Each roll contains approx. 222.5 sq ft, 39.4 inches X 67.8'. UnderRoof 2 Leak Barrier by GAF.
	1. ROOF DECK PROTECTION

\*\* NOTE TO SPECIFIER \*\* Select Roof Deck Protection. Delete one of the next two paragraphs.

* + 1. Premium, water repellant, breathable type non-asphaltic underlayment. UV stabilized polypropylene construction. Meets or exceed ASTM D226 and D4869. Approved by Miami- Dade Country, Florida Building Code, and has ICC Report ESR-2808 Approval. Deck-Armor Roof Deck Protection, by GAF.
		2. Non-Asphaltic water and fire resistant underlayment. Meets or exceeds ASTM D226, ASTM D4869 and ASTM D6757 type I and II. Approved by Underwriters Laboratory, Miami -Dade County, Florida building Code and ICC report ESR-2053. VersaShield Fire-Resistant Roof Deck Protection, by GAF.

\*\* NOTE TO SPECIFIER \*\* Delete the following paragraph if Roof Ventilation is not specified.

* 1. RIDGE VENTILATION SYSTEM
		1. Rigid plastic ridge ventilator designed to allow the passage of hot air out of attics. Includes filter to help prevent weather infiltration. For use in conjunction with eave/ soffit intake ventilation products. Provides 18.0 sq inches in NFVA per lineal foot. Each package contains 10- 4 foot pieces covering 40 lineal feet (12.19 m) of ridge. TruSlate Ridge Vent, by GAF.
	2. ROOFING CEMENT

\*\* NOTE TO SPECIFIER \*\* Select Roof Cement. Delete two of the next three paragraphs.

* + 1. General purpose asphalt roofing cement meeting the requirements of ASTM D 4586, Type I or II. TOPCOAT Matrix 203 Plastic Roof Cement, by GAF.
		2. General purpose asphalt roofing cement meeting the requirements of ASTM D 4586, Type I or II. TOPCOAT Matrix Standard Wet/Dry Roof Cement #204, by GAF.
		3. Asphalt Plastic Roofing Cement meeting the requirements of ASTM D 4586, Type I or II.
	1. FASTENERS

\*\* NOTE TO SPECIFIER \*\* Select required fasteners from the following ten options and delete those not necessary.

* + 1. 2 1/2 inch (64 mm) copper slating nails
		2. 2 1/2 inch (64 mm) stainless steel nails
		3. 2 1/2 inch (64 mm) #8 coated decking screws
		4. 2 inch (51 mm) copper slating nails (when not using ridge ventilation)
		5. 2 inch (51mm) stainless steel nails (when not using ridge ventilation)
		6. 2 inch (51mm) #8 coated decking screws (when not using ridge ventilation)
		7. 1 3/4 inch (44 mm) roofing nails (fastening ridge vent).
		8. 1 1/2 inch (38 mm) roofing nails (fastening Hip and ridge spacer).
		9. 1 1/4 inch (32 mm) 0.120 stainless steel ring shank coil roofing nails. (Battens).
		10. 1 1/4 inch (32 mm) copper slating nails (fastening copper flashings).
	1. METAL FLASHING

\*\* NOTE TO SPECIFIER \*\* Select flashing material. Delete two of the next three paragraphs.

* + 1. Copper: 16-oz/sq.ft. (0.66 mm) sheet, complying with ASTM B 370
		2. Stainless Steel: 26 gauge.
		3. Lead: 4 lb. (1.81kg) 0.062 inch (1.75mm) thickness.
1. EXECUTION
	1. EXAMINATION
		1. Do not begin installation until the roof deck has been properly prepared.
		2. If roof deck preparation is the responsibility of another installer, notify the architect or building owner of unsatisfactory preparation before proceeding.
		3. Roof deck must be a minimum 4 inch per foot (4:12) slope.

\*\* NOTE TO SPECIFIER \*\* Retain the next paragraph only if existing roofing is to be removed and replaced.

* 1. PREPARATION
		1. Remove all existing roofing down to the roof deck. Note: roof deck should be a minimum 7/16 inch OSB or 15/32 inch plywood.
		2. Verify that the deck is dry, sound, clean and smooth. It shall be free of any depressions, waves, and projections. Cover with sheet metal, all holes over 1 inch (25 mm) in diameter, cracks over 1/2 inch (12 mm) in width, loose knots and excessively resinous areas.
		3. Replace damaged deck with new materials.
		4. Clean deck surfaces thoroughly prior to installation of eaves protection membrane and underlayment.

\*\* NOTE TO SPECIFIER \*\* Retain the next paragraph for new construction applications.

* 1. PREPARATION
		1. Roof deck should be a minimum 3/8 inch (10 mm) APA-The Engineered Wood Association rated exterior grade plywood or 7/16 inch (11 mm) APA - The Engineered Wood Association rated exterior grade oriented strand board (OSB).
		2. Clean deck surfaces thoroughly prior to installation of eaves protection membrane and underlayment.
		3. At areas that receive eaves protection membrane, fill knotholes and cracks with latex filler.
		4. Install crickets on the upslope side of all chimneys in the north, any chimney wider than 24 inches, and on all roofs steeper than 6 inches per foot (6:12).
	2. APPLICATION - UNDERLAYMENT
		1. General:
			1. Install using methods recommended by GAF, in accordance with local building codes. When local codes and application instructions are in conflict, the more stringent requirements shall take precedence.
		2. Leak Barrier
			1. Install a full deck of leak barrier protection on roofs with a minimum slope of 4 inches per foot (4:12) up to and including 5 inches per foot (5:12). Install leak barrier at all vulnerable areas on roof slopes greater than 5 inches per foot (5:12).
		3. Eaves:
			1. Install approved eave edge metal flashing tight with fascia boards; lap joints 2 inches (50 mm) and seal with plastic cement; nail at the top of the flange.
			2. Install leak barrier membrane up the slope over the approved drip edge metal up to 1/4 inch (6mm)
			3. Install eave protection membrane at least 24 inches (610 mm) beyond the interior "warm wall". Lap ends 6 inches (150 mm) and bond.
			4. For roof slopes greater than 5 inches per foot (5:12), apply self-adhering underlayment over the deck extending from the eave edge to a point at least 24 inches beyond the inside wall of the living space below.
		4. Valleys - Metal
			1. Install eaves protection membrane at least 36 inches (914mm) wide and centered on the valley. Overlap all side laps with minimum 6 inches (150 mm) and head lap with minimum 2 inches seal.
			2. Install approved valley metal on top valley underlayment. Nail 1 inch (25mm) from edge of metal 16" (406mm) on center.
			3. Install 10" (254mm) wide strips of self-adhering membrane over valley metal edges 3" (76mm) from valley center. Make sure underlayment covers all fasteners.
		5. Roof Deck:
			1. Install one layer of roof deck underlayment over the entire area not protected by eaves or valley membrane. Install sheets horizontally so water sheds and nail in place with minimum 2" head lap and 6" side lap. (4" head lap in wet or snow areas)
			2. Nail underlayment 12" on center at the head lap and 36" on center at the center of roll.
		6. Penetrations:
			1. Vent pipes: Install a 24 inch (610 mm) square piece of eave protection membrane lapping over roof deck underlayment; seal tightly to pipe.
			2. Vertical walls: Install eave protection membrane extending at least 6 inches (150 mm) up the wall and 12 inches (305 mm) on to the roof surface. Lap the membrane over the roof deck underlayment.
			3. Skylights and roof hatches: Install eaves protection membrane from under the built-in counterflashing and 12 inches (305 mm) on to the roof surface lapping over roof deck underlayment.
			4. Chimneys: Install eaves protection membrane around entire chimney extending at least 6 inches (150 mm) up the wall and 12 inches (305 mm) on to the roof surface. Lap the membrane over the roof deck underlayment.
			5. Rake Edges: Install approved metal edge flashing over eaves protection membrane and roof deck underlayment; set tight to rake boards; lap joints at least 2 inches (50 mm) and seal with plastic cement; secure with nails.
			6. 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 will not be covered.
	3. INSTALLATION - SLATE
		1. General:
			1. Install in accordance with GAF's instructions and local building codes. When local codes and application instructions are in conflict, the more stringent requirements shall take precedence.
			2. Minimize breakage of slates by avoiding dropping crates or individual slates.
		2. Batten Placement:
			1. Start bottom batten row at drip edge, 5" (127mm) from eave edge. Hangers along bottom batten should extend to drip edge.
			2. Chalk a line every 10" (254 mm) up the roof to the ridge spacer or ridge vent.
			3. Install battens every 10" (254 mm) on-center, four courses at a time starting from the ridge spacer or ridge vent. (Do NOT install all battens at once)
			4. Batten spacing may be increased or decreased to accommodate fraction spacing.
			5. Stop battens 1/2" (13 mm) from hip spacers or gable/rake edge metal.
		3. Hanger Placement:
			1. Hangers can be relocated on the batten as needed by squeezing the top wires together, placing where needed and releasing. The hangers should snap securely in place.
			2. Each slate must have a minimum of two hangers supporting the top and 2 hangers supporting the bottom.
			3. Position each batten so hangers are aligned vertically to ensure a uniform slate pattern and provide the necessary support.
			4. Hangers for field slates should maintain a 6" spacing (or three empty slots).
		4. High Wind Installation Requirements: Hanger Placement:
			1. Every piece of slate requires two hangers and each hanger must have a ring shank nail put so that the lip of the nail is over the edge of the hanger wire where it is attached to the batten.
		5. UnderBlock UV & Moisture Barrier
			1. Install UnderBlock UV and moisture barrier dull finish up and shiny side down.
			2. Install along rows of battens not exceeding 12 ft long lengths with side laps overlapping a minimum 12 inches (305 mm).
			3. Do not nail through UnderBlock UV and moisture barrier when installing field slate.
		6. Slate Installation
			1. Begin installation at hips and valley leaving the field clear to walk.
			2. Place slates on hangers being careful to keep hangers centered on slates and evenly spaced from each side. On full slates, hangers should be approximately 3 inches (76 mm) from each side edge.
			3. Start every other course with a half slate for staggering appearance. Minimize traffic over finished roof surface. If necessary, wear soft-soled shoes and walk on the "butt" of the slates in order to avoid breakage.
			4. Slate pieces should not be smaller than 4 inches (102mm) wide.
		7. High Wind Installation Requirements: Slate Installation:
			1. Slates must not overhang the eave edge. The bottom edge of the slates must be flush to the eave edge.
		8. Valleys
			1. Prepare the valley with approved metal flashings.
			2. Prior to Hanging the last horizontal batten for the field slate, chalk a line parallel to the valley center line at least 1 inch (25 mm) out from the valley center line. The chalk line will mark where the field slates should be cut to form the valley.
			3. Measure 5 inches (127 mm) out on to the roof plane (parallel to the valley center line), from the previously chalked line and chalk a second line.
			4. Apply a row of battens vertically with the top of the batten on the second chalk line. The hangers on the vertical batten should extend into the valley to the first chalk line.
			5. Continue installing the horizontal field battens during the installation of the slope, extending them over the vertical valley battens. They should be just short of the first chalked line near the centerline of the valley. Slates will have two hangers on both the bottom edge and side edge.
		9. Penetrations
			1. All Penetrations are to be flashed according to GAF, ARMA and NRCA application instructions and construction details.
		10. Skylights and Roof Hatches
			1. Consult the manufacturer of the skylight or roof hatch for specific installation recommendations.
			2. Skylights and roof hatches shall be installed with pre-fabricated approved metal flashings specifically designed for the application of the unit.

\*\* NOTE TO SPECIFIER \*\* Delete the following paragraph if Roof Ventilation is not specified.

* 1. VENTILATION
		1. General
			1. Ventilation must meet or exceed current F.H.A., H.U.D. and local code requirements.
		2. Ridge / Soffit ventilation
			1. Calculate the total length of TruSlate Ridge Vent needed. This will determine the necessary slot opening required.
			2. For roofs without a ridge board, cut a 7/8 inch opening along the ridge on each side.
			3. For roofs with a ridge board, cut a 1-5/8 inch opening along the ridge on each side.
			4. Note: The total maximum slot opening is 3-1/4 inches wide.
			5. Mark off and cut the slot opening. Ensure that the ends of the opening stop at least 6 inches from end walls. The ends of the opening must stop at least 12 inches from hip and ridge intersections or chimneys.
			6. Where short ridges (dormers, ridge intersections) are used mark and cut the slot and ensure that the end of the opening stops at least 12 inches from the ridge intersection
			7. Install ridge vent material along the entire length of ridge, including uncut areas. Cover exposed fastener heads with exterior grade caulk.
			8. Butt ends of ridge vent material together and cover joints with 6 inches strip of self-adhering leak barrier. Leave a 1/8 inch gap between ridge vent sections for installations in cold climates.
			9. Install under eave vents with sufficient quantity of Net Free Area (NFA) to equal or exceed the ridge vent Net Free Area (NFA).
			10. Install hip and ridge slates over ridge vent material; use nails of specified length.
		3. Roof Louvers:
			1. Cut vent hole through sheathing as specified by the manufacturer for the type of vent to be installed.
			2. Install a 36 inch (914 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 of Net Free Area (NFA) to equal or exceed the exhaust vent Net Free Area (NFA), calculated as specified by manufacturer.
		4. Powered Ventilators:
			1. Cut vent hole through sheathing as specified by the manufacturer for the type of vent to be installed.
			2. On roof top applications, install a 36 inch (914 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.
	2. PROTECTION
		1. Protect installed products from foot traffic until completion of the project.
		2. Any roof areas that are not completed by the end of the workday are to be protected from moisture and contaminants.
		3. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION