



DEPARTMENT OF REGULATORY AND ECONOMIC RESOURCES (RER)
BOARD AND CODE ADMINISTRATION DIVISION

MIAMI-DADE COUNTY
PRODUCT CONTROL SECTION
11805 SW 26 Street, Room 208
Miami, Florida 33175-2474
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www.miamidade.gov/economy

NOTICE OF ACCEPTANCE (NOA)

GAF Energy LLC
5981 Optical Court
San Jose, CA. 95138

SCOPE:

This NOA is being issued under the applicable rules and regulations governing the use of construction materials. The documentation submitted has been reviewed and accepted by Miami-Dade County RER - Product Control Section to be used in Miami Dade County and other areas where allowed by the Authority Having Jurisdiction (AHJ).

This NOA shall not be valid after the expiration date stated below. The Miami-Dade County Product Control Section (In Miami Dade County) and/or the AHJ (in areas other than Miami Dade County) reserve the right to have this product or material tested for quality assurance purposes. If this product or material fails to perform in the accepted manner, the manufacturer will incur the expense of such testing and the AHJ may immediately revoke, modify, or suspend the use of such product or material within their jurisdiction. RER reserves the right to revoke this acceptance, if it is determined by Miami-Dade County Product Control Section that this product or material fails to meet the requirements of the applicable building code.

This product is approved as described herein, and has been designed to comply with the Florida Building Code including the High Velocity Hurricane Zone of the Florida Building Code.

DESCRIPTION: Timberline Solar™ Model TLS-1 BIPV Shingle Roofing System and Accessories

LABELING: Each unit shall bear a permanent label with the manufacturer's name or logo, city, state and following statement: "Miami-Dade County Product Control Approved", unless otherwise noted herein.

RENEWAL of this NOA shall be considered after a renewal application has been filed and there has been no change in the applicable building code negatively affecting the performance of this product.

TERMINATION of this NOA will occur after the expiration date or if there has been a revision or change in the materials, use, and/or manufacture of the product or process. Misuse of this NOA as an endorsement of any product, for sales, advertising or any other purposes shall automatically terminate this NOA. Failure to comply with any section of this NOA shall be cause for termination and removal of NOA.

ADVERTISEMENT: The NOA number preceded by the words Miami-Dade County, Florida, and followed by the expiration date may be displayed in advertising literature. If any portion of the NOA is displayed, then it shall be done in its entirety.

INSPECTION: A copy of this entire NOA shall be provided to the user by the manufacturer or its distributors and shall be available for inspection at the job site at the request of the Building Official.

This NOA consists of pages 1 through 15.

The submitted documentation was reviewed by Alex Tigera.

03/07/24



NOA No.: 23-1214.08
Expiration Date: 03/07/29
Approval Date: 03/07/24
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ROOFING COMPONENT APPROVAL

Category: Roofing
Sub-Category: Photovoltaic Devices
Material: TPO

SCOPE:

This approves **Timberline Solar Model TLS-1 BIPV Shingle Roofing System and Accessories** as a BIPV roofing assembly, manufactured by GAF Energy, as described in this Notice of Acceptance, designed to comply with the Florida Building Code and the High Velocity Hurricane Zone of the Florida Building Code.

TRADE NAMES OF PRODUCTS MANUFACTURED OR LABELED BY APPLICANT:

<u>Product</u>	<u>Dimensions</u>	<u>Test Specification</u>	<u>Product Description</u>
Timberline Solar (TLS-1) BIPV Solar Shingle	17.125" x 65"	UL 61730 UL 7103 TAS 131	GAF EverGuard Extreme® TPO shingle with an integrated PV panel. Designed to be used with asphalt shingle roof systems.
Step Flap	10" x 15.125"	TAS 131	GAF EverGuard Extreme® TPO accessory used in the left-hand side of the Timberline Solar Shingle Assembly.
Wire Cover	4.7" x 15.6"	UL 746C	Plastic accessory to cover the wire columns on the Timberline Solar Shingle Assembly.
Bottom Cap	4.7" x 1.2"	UL 746C	Plastic accessory used to close the bottom of the wire column.
Top Flashing Assembly	19.5" x 13.7"	UL 746C	Accessory used to enclose the top of the wire column.
Jumper Module	17.125" x 65"	TAS 131	TPO junction accessory used at top of the Timberline Solar Shingle Assembly.
Pass Through Device	N/A	UL 746C	Accessory used to route conduit through the attic.
Transition Box	18.5" x 17.6"	UL 746C	Plastic connector box used to house electrical accessories.
Flex Seal Caulk Grade	N/A	Proprietary	Field applied synthetic solvent-based adhesive/sealant.
GAF Timberline® Solar HDZ®	17.125" x 40"	ASTM D3462	Fiberglass reinforced heavy weight asphalt roof shingle, with a laminate profile



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PRODUCTS MANUFACTURED BY OTHERS:

<u>Product</u>	<u>Dimensions</u>	<u>Test Specification</u>	<u>Product Description</u>	<u>Manufacturer</u>
Tiger Paw Premium Roof Deck Protection	48" x 250' rolls 48" x 100' rolls	ASTM D8257	A UV-stabilized polypropylene non-breathable underlayment.	GAF
QuickStart® Peel & Stick Starter Strip	9" x 33'	ASTM D1970	Field installed; self-adhered starter rolls for asphalt shingles.	GAF

EVIDENCE SUBMITTED

<u>Test Agency</u>	<u>Test Identifier</u>	<u>Description</u>	<u>Date</u>
Intertek	M9548.02-109-18-R1	TAS 100	02/02/22
	G104816064	ASTM E108 / UL 790	01/04/22
	N298.01-109-44-R1	TAS 107 / ASTM D 3161	02/07/22
	104736078LAX-001	UL 61703-1 and UL 61730-2	04/27/22
Underwriters Laboratories Inc.	QIMS.E84658	UL 746C (f1)	10/17/18
	4789952734	ASTM D3161 / ASTM D3462	05/23/22
Farabaugh Engineering and Testing Inc	T174-22-GAF	TAS 100	04/11/22
PRI Construction Materials Technologies	376T0467	Proprietary	01/30/24



INSTALLATION

System (1):	Timberline Solar Model TLS-1 BIPV Shingle Roofing System and Accessories
Roof System Types:	New Asphalt Shingle Roof Systems
Deck Type:	Wood, non-insulated
Deck Description:	New Construction ¹⁹ / ₃₂ " or greater plywood or wood plank, or for re-roofing existing ¹⁵ / ₃₂ " or greater plywood.
Slope Range:	2:12 or greater
Deck Attachment:	In accordance with applicable Building Code, but in no case shall it be less than 8d annular ring shank nails spaced 6" o.c. In reroofing, where the deck is less than ¹⁹ / ₃₂ " thick (Minimum ¹⁵ / ₃₂ ") The above attachment method must be in addition to existing attachment.
Underlayment:	Minimum underlayment shall be an ASTM D226 Type II, D4869, D1970, D8257, or D6757 underlayment installed as per current NOA. Underlayments shall comply with the requirements of 1518.2 HVHZ FBC in regards to slope limitations and the number of required layers. One layer of QuickStart® Peel & Stick Starter Strip shall be adhered to the front edge of the roof deck.
Starter Shingle and First Row:	Place starter shingle along eave of the deck and installed as per RAS 115. First row of shingles shall be a full row of GAF Timberline® Solar HDZ® shingles installed with 6 nails per shingle.
Array Layout:	Timberline Solar Energy Shingles shall be installed in landscape orientation only. Prep roof deck and install necessary roofing components, including underlayment and an approved starter strip. Install a minimum of one row of Timberline Solar HDZ asphalt shingles along the eave edge. Installation of asphalt shingles shall comply with the GAF current published instructions, using minimum six (6) nails per shingle. Maintain a 10 inch (254 mm) horizontal shingle offset from the bottom left array corner. Roofing shingles installed directly under the array should be offset to the right by 10 inches (254 mm) from the array starting point, which is the lower left corner. Any roofing shingle that is overlapped by a Solar Shingle requires an additional 4 nails at the top of each headlap. Compute array dimensions. Locate bottom left corner of the array. Install roofing shingles below the array.

Solar Shingle and Accessories:

Bottom Row:

Position the Step Flap center line at the array starting point. Align the bottom of Step Flap 2 inches (51 mm) above roofing shingle exposure. Nail the top right and left corners of the Step Flap. Later the roofing shingle will be nailed in place over the left side of the Step Flap.

Flip the Solar Shingle over and remove the release liner from the underside. Carefully flip the Solar Shingle back over and position it on the roof, lining up the front edge of the Solar Shingle with the chalk line.

Place first Solar Shingle's J-box flap over the top of the Step Flap. The Solar Shingle J-box flap left edge should align with the center line of the Step Flap.

Install the Solar Shingle starting above a minimum of one course of Timberline Shingles using (6) 1-¼" or longer corrosion resistant, annular ring shank nails in the designated nailing zone located on the solar shingle.

Continue installing Solar Shingles across the first row, going from left to right. No step flap is required on the right side of the array.

Proceed with the installation of the first column of Solar Shingles.

First Column:

Align Step Flap bottom edge to the top of the lower J-box bracket of the previous Solar Shingle in the column, but without covering the bracket.

Align the Step Flap center line with the vertical butt joint between the roofing shingle and the Solar Shingle.

Align the bottom of the Step Flap 2 inches (51 mm) above the shingle exposure line. Nail the Step Flap on the top right and left corners.

Align the next Solar Shingle up the column. Position the next Solar Shingle, aligning left edge of J-box flap with Step Flap center line.

Use the Alignment Jig to align the bottom edge of the Solar Shingle correctly with the Solar Shingle below.

The J-box flap should cover the right half of the Step Flap.

Use the alignment feature on the Solar Shingle's J-box bracket to align with the corresponding bracket on the Solar Shingle below. Visually check to ensure that the alignment brackets are fully engaged. Secure the Solar Shingle using 6 evenly spaced nails, in the outlined nailing zone above the active area of the Solar Shingle only. Do not nail above the J-box or right-side flaps.

Remaining Columns:	Interweave all Solar Shingle flaps. When installed, all flaps should lay flat. Ensure that vertical wire channels are straight. Interweave the Solar Shingle flaps as you go. Interweaving the flaps is essential to ensure proper water-shedding integrity of the array. J-box flap on next Solar Shingle covers right side flap of Solar Shingle from previous column. The top portion of the J-box flap of next Solar Shingle will be underneath the right-side flap of the Solar Shingle above it and to the left, in the previous column. The J-box bracket should not be covered. Engage the J-box bracket alignment feature.
Jumper Modules:	Locate the Jumper Module positions from the plan set. Position a Jumper Module at the top of each column that requires it. Apply QuickStart on top of columns without Jumper Modules. Cut a 55 ¾ inch (1416 mm) piece of QuickStart and run across the headlap of the Solar Shingle directly above the solar laminate. Align the QuickStart strip with the laminate below at the exposure line, using the Alignment Jig for reference. Remove the release liner from the QuickStart and apply pressure to stick it in place. Nail the QuickStart in place with 6 evenly spaced nails along the nail strip of the Solar Shingle below.
Top Flashings:	Position Top Flashings at the top of every column over the J-boxes. Align Top Flashing. When the Top Flashing is aligned, secure it using 4 nails: two at the top corners, and two on either side, aligned with the Jumper Modules' nail targets. Make sure to only nail in the targets of the Top Flashing.
Install roofing shingles on the left side of array:	Install roofing shingles on the left any time after the first column of Solar Shingles with Step Flaps has been installed. Trim roofing shingles flush to edge of the J-box bracket, covering the topmost Step Flap. The roofing shingle is placed on top of that course's Step Flap, and under the Step Flap above. Lift the Step Flap above to place the right most nail roughly 3 inches up above the nail line and under the Step Flap. Continue installing roofing shingles up roof on the left side of the array, stopping at the last Solar Shingle. Follow roofing best practices for roofing shingle offsets. Maintain a 10 inch (254 mm) offset, and follow the instructions in the GAF product manual for roofing shingles. Be sure to install left side roofing shingles before installing the left most Top Flashing.

**Install roofing shingles
along array right edge:**

Install remainder of roofing shingles on the right side of the array, after all columns of Solar Shingles are installed, maintaining a 10-inch (254 mm) shingle offset.

No Step Flap is needed on the right side of the array. The roofing shingle is placed on top of the adjacent Solar Shingle's side flap, but under the side flap above.

Install the adjacent roofing shingle over the lowest exposed Solar Shingle right side flap while tucking under the right side flap immediately above.

Continue this process up the entire last column.

When nailing the roofing shingle, lift the Solar Shingle's side flap and nail the roofing shingle below.

For arrays with an even number of columns, the array lands 10 inches (254 mm) short of the roofing shingle butt joint. This represents the shingle offset. For arrays with an odd number of columns, the array lands 10 inches (254 mm) past the roofing shingle butt joint.

**Finish Shingle
Installation:**

Cut the shingles to fit around the Top Flashings and across the top of the array. Leave a ½ inch (13 mm) water channel along the edge of the Top Flashing.

Cut top ear of roofing shingle to prevent water from traveling across the top of the shingle. This is also referred to as dog earing a shingle.

Be sure to maintain the same shingle offset at the top of the array.

Apply approved sealant to the top side of the Top Flashing base. Use a continuous bead of sealant in an upside-down U shape.

Apply the sealant inside of the Top Flashing nail zone. Make sure all nails are located outside of the bead of sealant.

Carefully flip the roofing shingle and align it over top of the Jumper Module.

Nail the roofing shingle in place. Repeat this process across the top of the array.

**GAF Timberline®
Solar HDZ®,
Flashings, Valleys, Hips
and Ridges, and
Penetrations:**

Shall be in compliance with Roofing Application Standard RAS 115.

This NOA is limited to the use of the **Timberline Solar TLS-1** PV shingles and accessories as a roof covering; the electrical and solar performance of this system is outside the scope of this approval. (See **General Limitation # 2**).



BUILDING PERMIT REQUIREMENTS:

1. Any other documents required by the Building Official or applicable Building Code in order to properly evaluate the installation of this system.

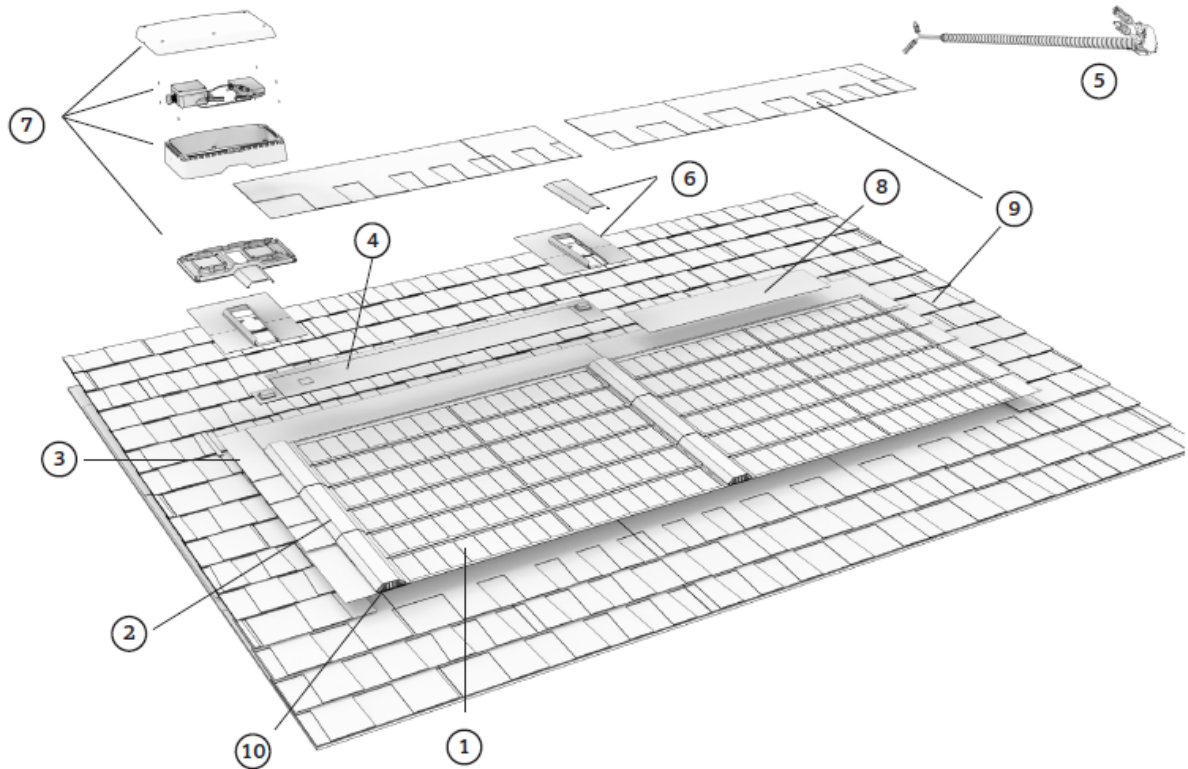
GENERAL LIMITATIONS:

1. Fire classification is not part of this acceptance, refer to a current Approved Roofing Materials Directory for fire rating of this product.
2. This NOA is limited to the use of the **Timberline Solar TLS-1** PV shingles and accessories as a roof covering; the electrical and solar performance of this system is outside the scope of this approval.
3. In addition to a Roofing Permit, a separate Electrical/Solar Permit(s) shall be obtained by a properly licensed Contractor as required by the Authority Having Jurisdiction (AHJ) when installing **Timberline Solar TLS-1** PV shingles and accessories.
4. All electrical components and wiring installations shall be in compliance with applicable Building Code requirements and in strict accordance with the manufacturer's published installation instructions.
5. Any defects in the roofing substrates shall be corrected by Contractor prior to project commencement.
6. **Timberline Solar TLS-1** PV shingles, accessories, and integrated flashing pieces shall be applied in strict accordance with manufacturer's published application instructions and with the conditions and limitations specified herein.
7. **Timberline Solar TLS-1** PV shingles, accessories, and integrated flashing pieces shall only be used with Miami-Dade Approved Asphalt Shingle Roof Systems.
8. **Timberline Solar TLS-1** PV shingles and accessories shall not be installed on roof mean heights in excess of 33 ft.
9. Location of installation is limited to the areas within the roof system that provides adequate drainage and does not pond water.
10. All products listed herein shall have an unannounced follow-up quality control program from an approved listing agency. Follow up test results shall be made available to Miami-Dade Product Control upon request.
11. Change in materials, use, or manufacture of any of the products listed herein shall be cause for termination of the NOA.
12. All products listed herein shall have a quality assurance audit in accordance with the Florida Building Code and Rule 61G20-3 of the Florida Administrative Code.
13. **Timberline Solar TLS-1** PV shingles and its accessories shall be properly labeled for manufacturing traceability.
14. **Timberline Solar TLS-1** PV shingles and its accessories shall only be installed by GAF Energy trained and approved contractors.
15. All approved products listed herein shall bear the imprint or identifiable marking of the manufacturer's name or logo and following statement: "Miami-Dade County Product Control Approved" or the Miami-Dade County Product Control Seal as shown below.
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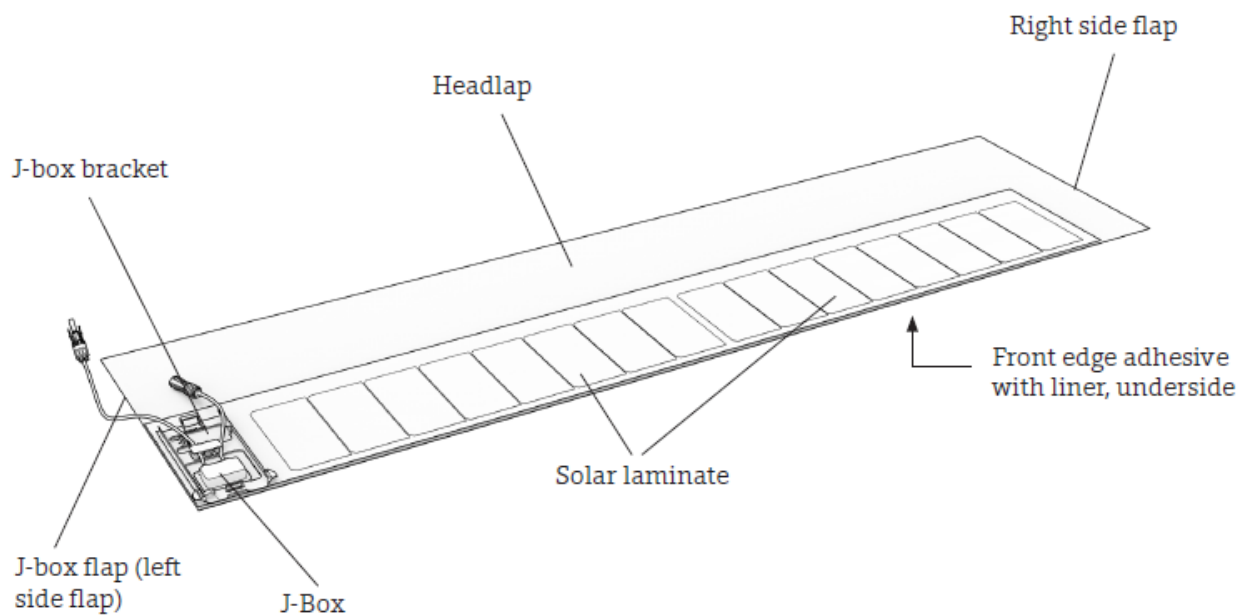
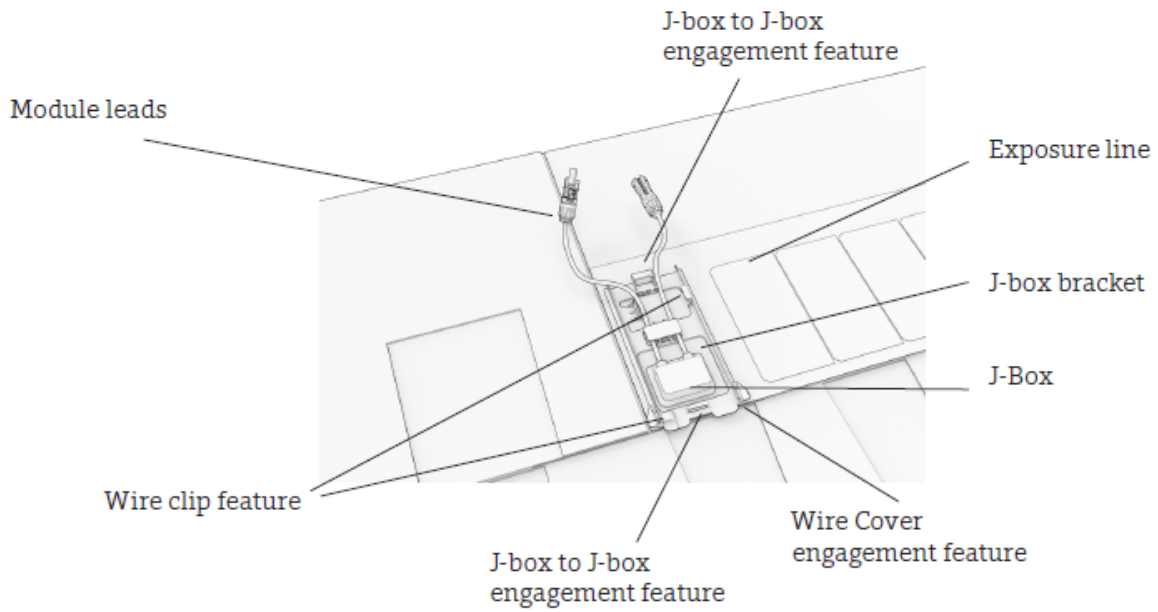
DETAIL DRAWINGS

System Hardware Components

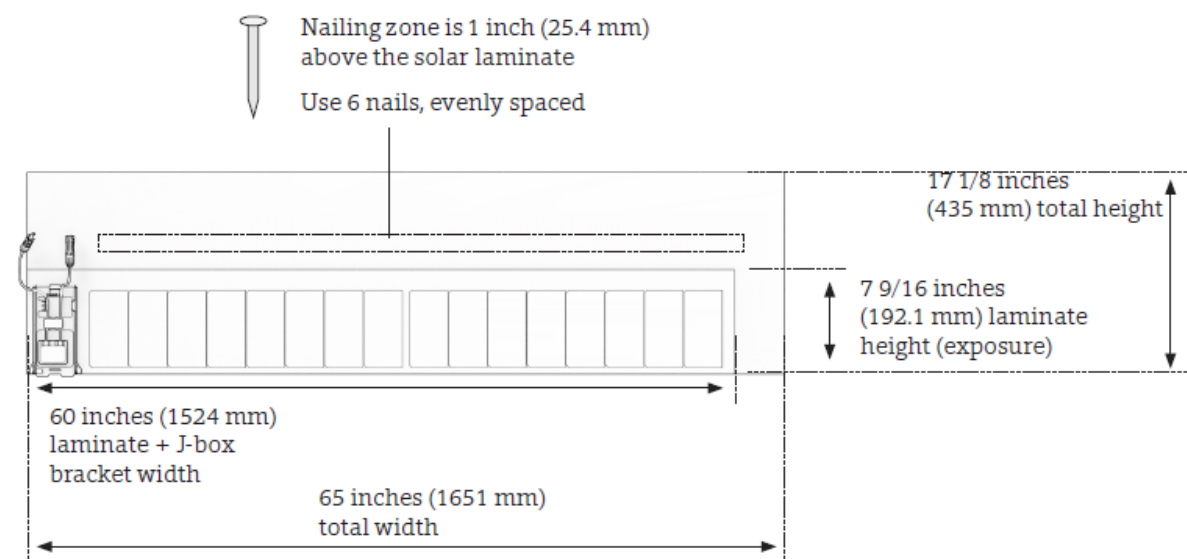


- ① Solar Shingle
- ② Wire Cover
- ③ Step Flap
- ④ Jumper Module
- ⑤ Option 1: Pass Through Device for in-attic wiring

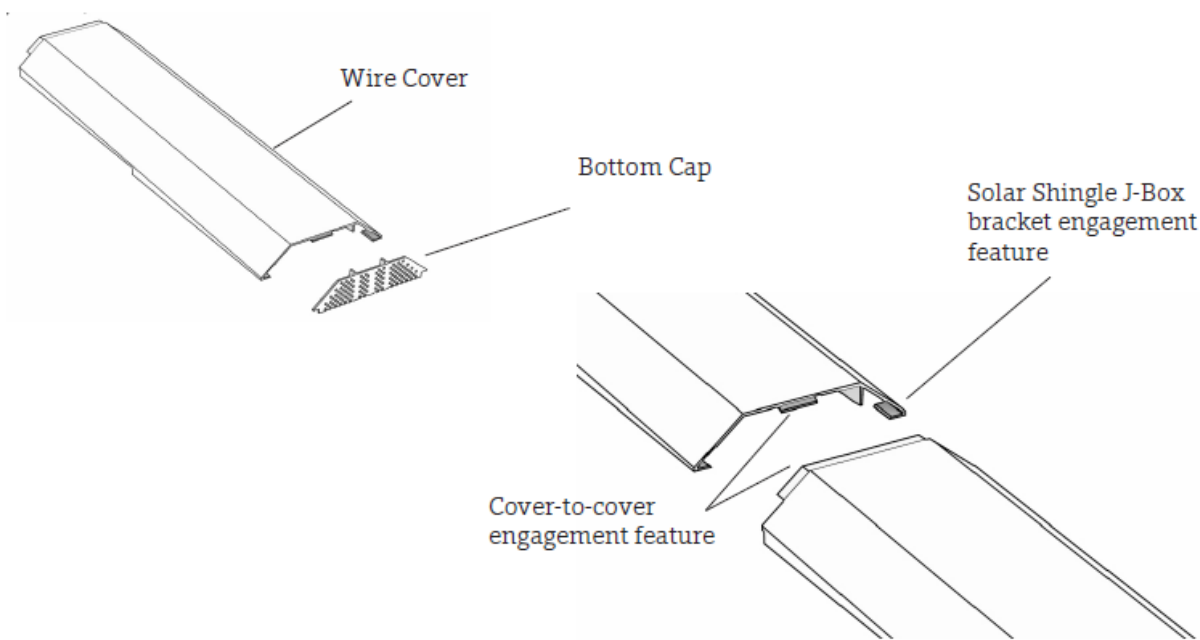
- ⑥ Top Flashing
- ⑦ Option 2: Transition Box for wiring on the exterior of the home
- ⑧ GAF QuickStart® Peel & Stick Starter Roll
- ⑨ Roofing shingles
- ⑩ Bottom Cap



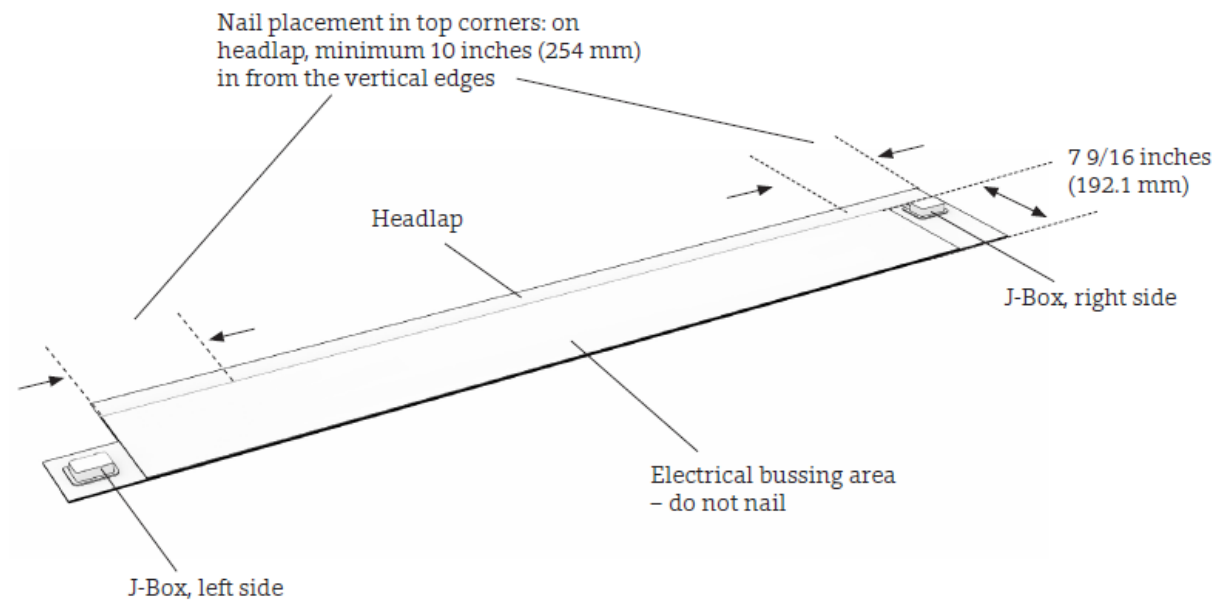
Solar Shingle dimensions



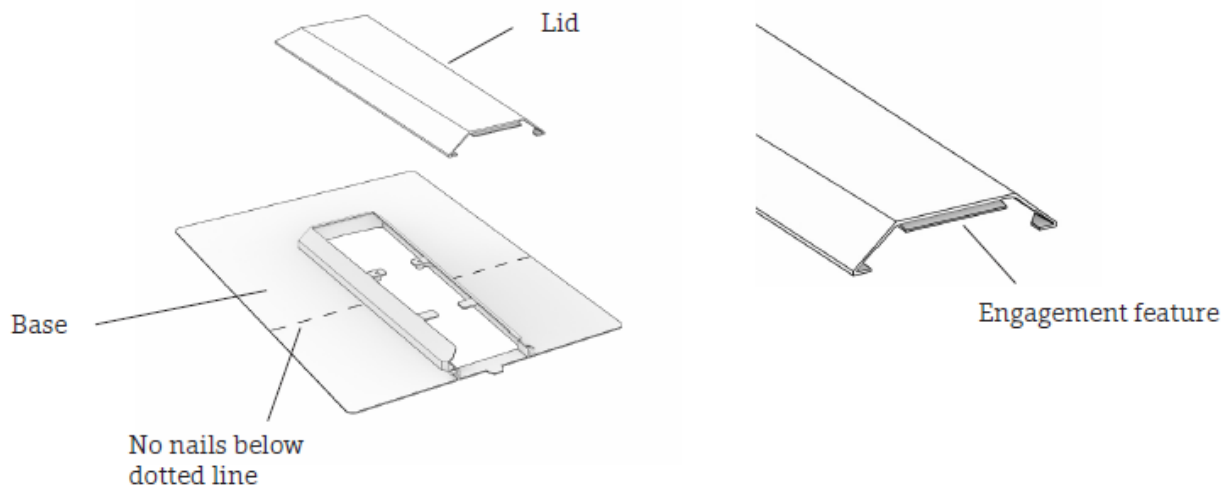
Wire Cover and Bottom Cap



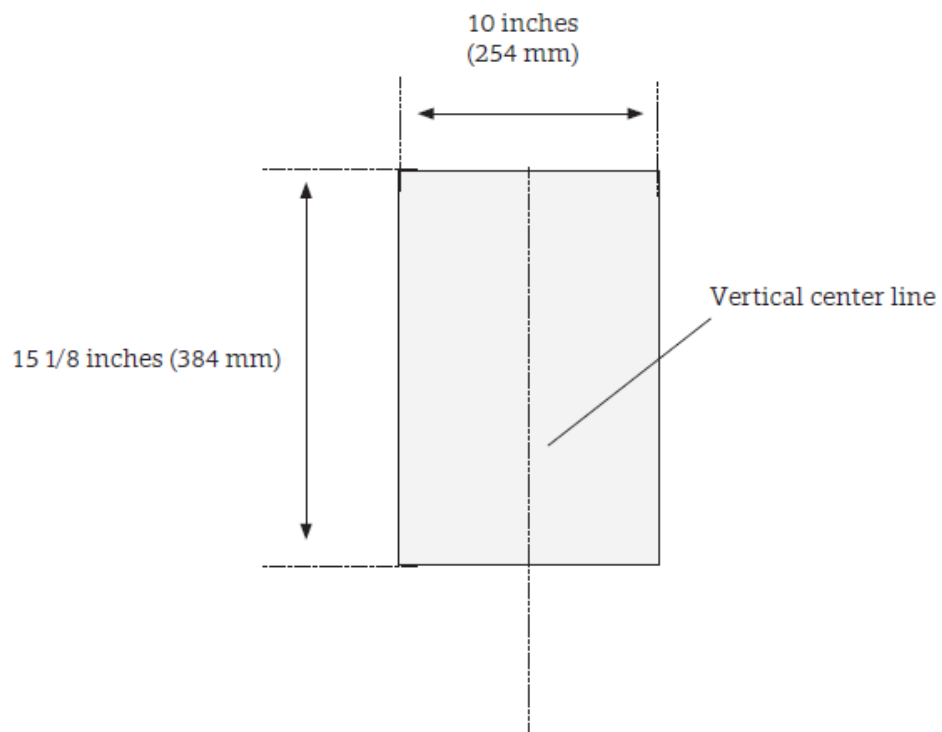
Jumper Module



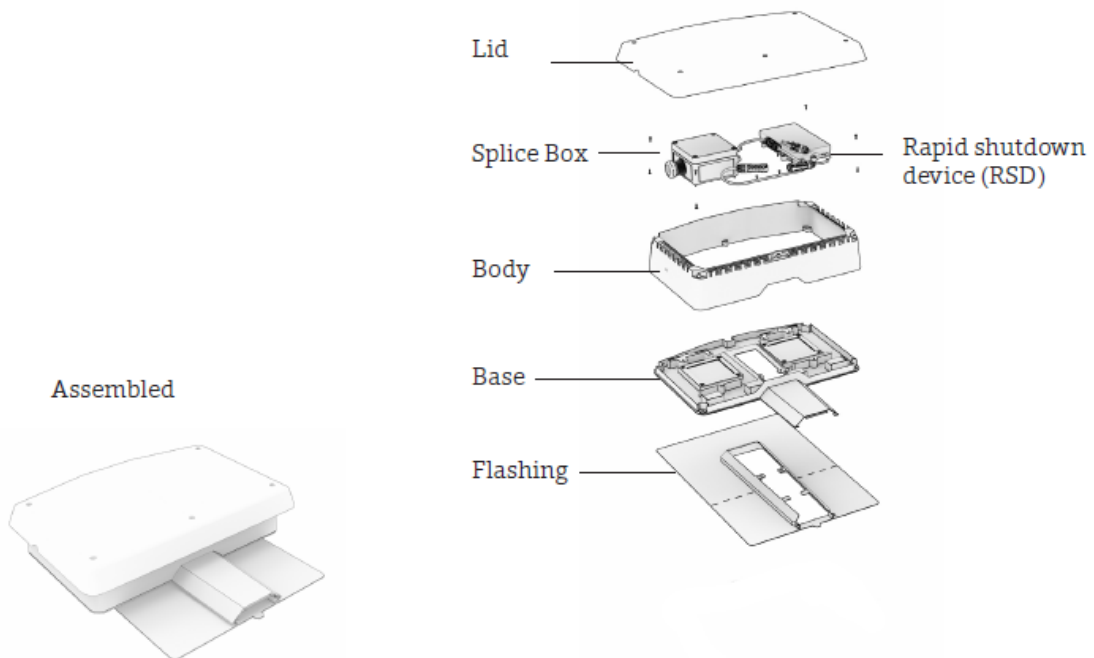
Top Flashing



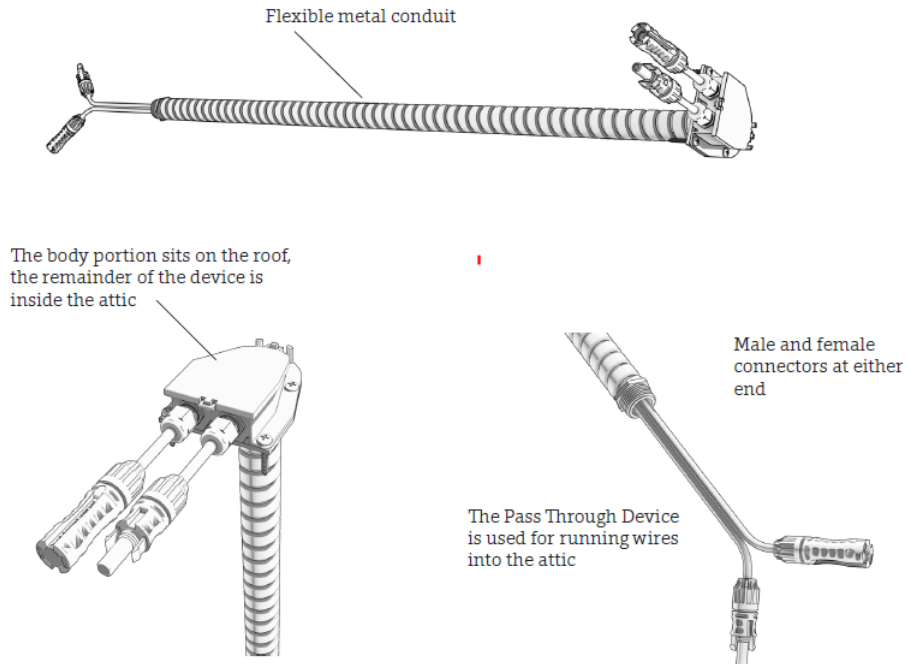
Step Flap



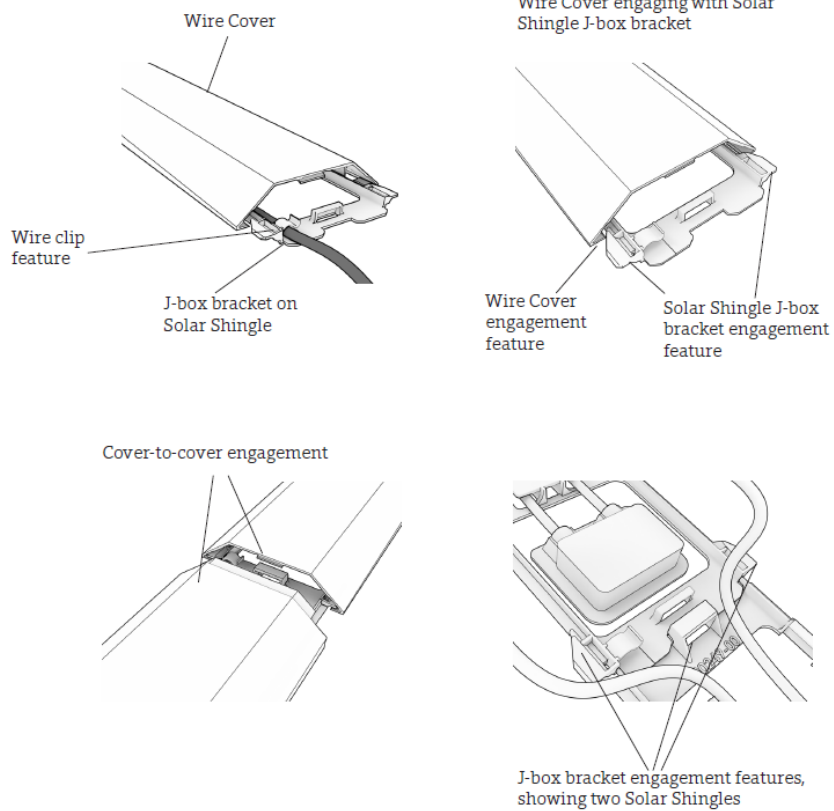
Transition Box



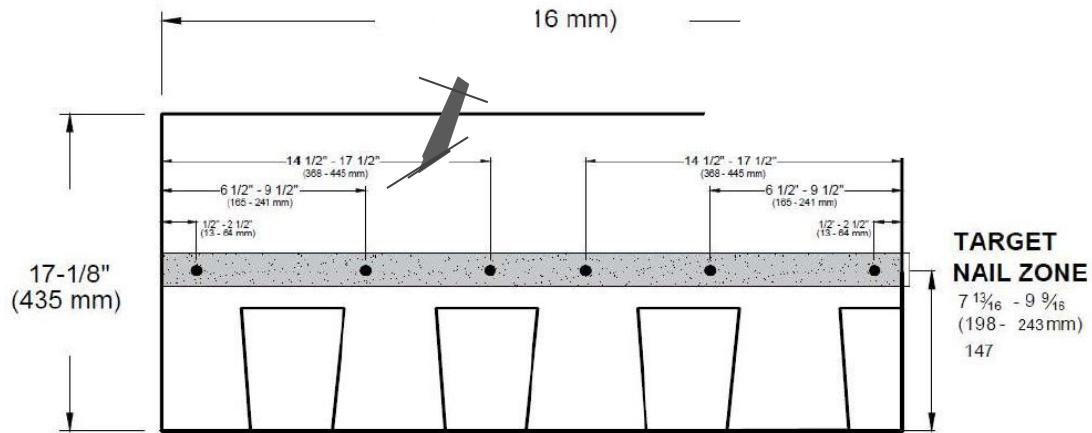
Pass Through Device



Alignment and Engagement Features, Fitting



TIMBERLINE SOLAR HDZ NAILING PATTERN



ENHANCED NAILING PATTERN*: Nail shingles with 6 nails approximately 8-3/16" (208 mm) from bottom of shingle, in nailing area, as shown. Nails must not be exposed. For roofs (12:12 and above), nail a nominal 8" (203 mm) from the bottom of the shingle and hand-seal shingles.

END OF THIS ACCEPTANCE