

VersiGard® EPDM Metal Retrofit Roofing System

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Metal Retrofit Roofing System

July 2013

The information contained in this generic specification represents a part of Versico's requirements for obtaining a roofing systems warranty. Construction materials and practices, building siting and operation, climatic conditions, and other site-specific factors will have an impact on the performance of the roofing system. Versico recommends that the building owner retain a design professional to determine appropriate design measures to be taken in order to address these factors.

This section is to serve as criteria for Specifiers and Authorized contractors regarding the design and installation of Versico's EPDM Metal Retrofit Roofing System. Additional information essential for the design and installation of the roof system mentioned herein are also included in the Design Reference Section and also listed in the form of a Specification Supplement at the end of the Technical Manual. Specifiers and Authorized contractors are advised to reference all applicable sections.

PART I – GENERAL

1.01 Description

- A. Mechanically Fastened Membrane Assemblies incorporates 45, 60 or 75-mil VersiGard Reinforced EPDM membrane (Available in Black Only). An acceptable insulation used to fill between standing seams and an acceptable insulation or underlayment is mechanically secured over the fill insulation, to the existing metal roof with Versico fasteners and plates, then the EPDM membrane is secured with 9" wide Quick-Applied Reinforced Termination Securement Strip (RTS) positioned along the structural purlins in the field of the roof (5' or 10' depending on wind zone). The RTS is attached to the purlins a maximum of 12" on center utilizing Versico Purlin Fasteners and Polymer Seam Plates. The membrane is adhered to the RTS and adjoining sheets are spliced together using VersiGard QAT (factory-applied tape) and Primer or 6" QA Team Tape and Primer
- B. Adhered Membrane Assemblies incorporates VersiGard (black or white) 60 or 90-mil thick non-reinforced OR 45, 60 or 75-mil VersiGard (black) reinforced EPDM membrane An acceptable insulation is mechanically secured over the fill insulation, to the existing metal roof with Versico fasteners and plates. The EPDM membrane is adhered to the insulation with Versico EPDM Bonding Adhesive (G200SA Bonding Adhesive, Low-Voc Bonding Adhesive, Solvent-Free Bonding Adhesive or Water Based Adhesive). Adjoining sheets of EPDM membrane are spliced together using 3" or 6" wide QA Seam Tape and Primer OR factory-applied tape (VersiGard QAT) and Primer.

NOTE: Versico low rise polyurethane adhesive may be used in lieu of fasteners for insulation fill and membrane underlayment.

1.02 General Design Considerations

- A. It is the responsibility of the building owner or his/her designated representative to verify structural load limitation.
- B. Existing venting around edges and wall intersections should not be closed off unless determined by designer of record. Refer to applicable details included in this section for recommended venting methods. Specific details may be submitted for Versico review.



1.03 Quality Assurance

Building Codes are above and beyond the intended purpose of this specification. The respective **owner** or **specifier** should consult local codes for applicable requirements and limitations. It is the responsibility of the specifier to review local, state and regional codes to determine their impact on the specified Versico Roofing System.

NOTE: For code approvals achieved with the Versico Roofing Systems, refer to the Versico Code Approval Guide, Factory Mutual (FM) Approval Guide or Underwriters Laboratories (UL) Fire Resistance or Roofing Materials and Systems Directories.

- A. Versico recommends the use of Versico supplied products for use with these Versico Roofing Systems. The performance or integrity of products by others, when selected by the specifier and accepted as compatible by Versico, is not the responsibility of Versico and is disclaimed by the Versico Warranty.
- B. The specified roofing system must be installed by a Versico Authorized Roofing Contractor in compliance with drawings and specifications as approved by Versico.
- C. There must be no deviations made from Versico's specification or Versico's approved shop drawings without the **PRIOR WRITTEN APPROVAL** of Versico.
- D. After completion of the installation, upon request, an inspection shall be conducted by a Field Service Representative (FSR) of Versico to ascertain that the membrane roofing system has been installed according to Versico's published specifications and details applicable at the time of bid. This inspection is to determine whether a warranty shall be issued. It is not intended as a final inspection for the benefit of the owner.

1.04 Submittals

- A. To ensure compliance with Versico's minimum warranty requirements, the following projects should be forwarded to Versico for review prior to installation, preferably prior to bid:
 - 1. Canopies and buildings with large openings where the total wall openings exceed 10% of the total wall area on which the openings are located (such as airport hangars, warehouses and large maintenance facilities).
 - 2. Projects which incorporate purlin spacing other than 5' on center where a Mechanically Fastened membrane assembly is specified.
 - Projects where the roofing membrane is expected to come in direct contact with petroleum-based products or other chemicals.
 - 4. Retrofit projects being refurbished for different usage.
- B. Along with the project submittals (shop drawings and Request for Warranty), the roofing contractor must include pullout tests when results are below the requirements identified in this specification.
- C. Shop drawings must be submitted to Versico by the Versico Authorized Roofing Applicator along with a completely executed Notice of Award (Page 1 of Versico's Request For Warranty form) for approval. Approved shop drawings are required for inspection of the roof and on projects where on-site technical assistance is requested.
 - **Along with the project submittals** (shop drawing and Request for Warranty), the roofing contractor must include **pullout test** results when the results are below the requirements identified in, Table included in Design Reference DR-06-11 "Withdrawal Resistance Criteria".
- D. Copy-B (Page 2 of the Versico Request for Warranty form)



After project completion, a Notice of Completion must be submitted to Versico to schedule the necessary inspection of the project prior to issuance of the Versico Warranty.

1.05 Warranty

- A. Membrane System Warranty is available for roofing systems on commercial buildings within the United States and applies only to products manufactured or marketed by Versico. The membrane system is defined as membrane, flashings, adhesives, sealants and other Versico brand products utilized in the installation. For a complete description of these products, refer to the Part II "Products" Section in this Specification and Spec Supplement "Related Products" P-01-11.
- B. See Table Below for information regarding Warranted Systems and Design Criteria:

	Metal Retrofit Thermoset (Sure-Seal/Sure-White) Membranes Warranty Options			
Years*	Warranty Wind Speed Coverage		_	
	55, 72 or 80 MPH*	55, 72 and 80 MPH*	Minimum Membrane Thickness	
	Adhered	Mechanically Fastened		
	√	N/A	VersiGard Black/VersiGard White 60-mil	
5,10, or 15 year	\checkmark	√	VersiGard Reinforced 45-mil	
	√	N/A	VersiGard Black/VersiGard White 60-mil	
20 year	V	√	VersiGard Reinforced 60-mil	

Notes: N/A = Not Acceptable $\sqrt{= Acceptable}$

1.06 Job Conditions

- A. When roof slopes exceed 5" per horizontal foot, use of an Automatic Heat Welder may be more difficult, especially when roof seams are parallel to roof slope. A Hand Held Hot Air Welder should be specified.
- B. Wood nailers are required for the securement of metal edgings, scuppers, and insulated pipes. Wood Nailer shall be secured per specifier recommendation or in accordance with Factory Mutual's property Loss Prevention Data Sheet 1-49. Refer to Design Reference DR-08-11 "Wood Nailers Securement Criteria" in Versico Technical Manual shall be referenced.
- C. When fastening to a structural purlin, a trial fastener should be installed when purlins are heavier than 12 gauge to determine the feasibility of the Purlin Fastener. Purlin Fasteners are designed to engage purlins 18 to 12 gauge.
- D. Due to the wide variety of edge conditions found in metal buildings, edge details may be submitted to Versico for review preferably prior to installation.
- E. Fiberglass insulation is not physically compatible with this roofing system and cannot be utilized over the existing metal roof (even when specified in multiple layer applications in conjunction with an acceptable underlayment).



^{*}Contact Versico for recommended enhancements including additional perimeter sheets OR increased fastening density for increased warranty duration or wind speed coverage greater than 80 MPH.

1.07 Product Delivery, Storage and Handling

- A. Deliver materials to the job site in the original, unopened containers.
- B. When loading materials onto the roof, the Versico Authorized Roofing Applicator must be comply with the requirements of the specifier/owner to prevent overloading and possible disturbance to the building structure.
- C. Job site storage temperatures in excess of 90° F (32° C) may affect shelf life of curable materials (i.e. adhesives and sealants).
- D. When the temperature is expected to fall below 40° F (5° C), outside storage boxes should be provided on the roof for temporary storage of liquid adhesives and sealants. Adhesives and sealant containers should be rotated to maintain their temperature above 40° F (5° C).
- E. Insulation/underlayment must be stored so that it is kept dry and is protected from the elements. Store insulation on a skid and completely cover with a breathable material such as tarp or canvas. If the insulation is lightweight, it should be weighted to prevent possible wind damage.

PART II - PRODUCTS

2.01 General

The components of this roofing system are to be products of Versico or accepted by Versico as compatible. The installation, performance or integrity of products by others, **when selected by the specifier and accepted by Versico**, is not the responsibility of Versico and is expressly disclaimed by the Versico warranty.

2.02 Membrane/Related Products

A. Membranes

- 1. For Mechanically Fastened membrane assemblies, any of the membranes listed below may be utilized.
 - **VersiGard Reinforced** (black) 45-mil, 60-mil or 75-mil thick reinforced EPDM (Ethylene, Propylene, Diene Terpolymer) membrane is available in widths up to 10 feet wide.
- 2. For Adhered Membrane Assemblies, any of the membranes listed below may be utilized.
 - a. **VersiGard (Black or White)** 60 or 90-mil think non-reinforced EPDM (Ethylene, Propylene, Diene Terpolymer) membrane is available in various widths, refer to EPDM Specification for additional information.
 - b. **VersiGard Reinforced** (black) 45-mil, 60-mil or 75-mil thick reinforced EPDM (Ethylene, Propylene, Diene Terpolymer) membrane is available in widths up to 10 feet wide.

For membrane physical properties and other related products, refer to the appropriate "Products" Section of the appropriate membrane specification.

B. Related Products

1. **Versico EPS (Flute-Filler):** A custom-made, high performance insulation consisting of a superior closed-cell, lightweight expanded polystyrene (EPS) that meets the requirements of ASTM C578. The product offers a long-term, stable R-Value and has excellent dimensional stability, compressive strength and water resistant properties. It is



- custom-manufactured for each specific application, and is readily available in a variety of lengths, widths and shapes to meet virtually any job condition.
- Versico MP-H Polyisocyanurate (Flute-Filler): A custom-cut insulation consisting of a closed-cell polyisocyanurate
 that meets the requirements of ASTM D2126. It is custom-cut for each specific application, and is readily available in a
 variety of lengths and widths.
- 3. **SecurShield HD:** A rigid roof insulation panel composed of a high-density, closed-cell polyisocyanurate foam core laminated to a premium-performance, coated-glass fiber-mat facer specifically designed for use as a cover board.
- 4. SecurShield CD (Combustibule Deck): A rigid roof insulation panel composed of a closed-cell polyisocyanurate foam core manufactured on-line to an extra durable, dimensionally stable coated-glass facer on each surface side for use as a cover board. Achieves a UL Class A combustible deck assembly rating at a 1" thickness without the use of a fire-rated slip sheet or gypsum coverboard.
- Purlin Fastener: A hex-head, threaded, self-drilling, black epoxy electro-deposition coated (E-Coat) fastener used for membrane/RUSS securement into structural purlins (12-18 gauge) in conjunction with Sure-Tough Metal Retrofit Roofing Systems.
- 6. **HPV Fastener**: A threaded E-coat square head fastener used for insulation and additional membrane attachment (Adhered Roofing Systems) in conjunction with 2" diameter polymer plates.
- 7. **HPVX Fastener:** A heavy duty #15 threaded fastener with a #3 Phillips drive used with Versico's Piranha™ Fastening Plate to secure Mechanically Fastened Roofing Systems.
- 8. **Insulation Fastening Plates**: A nominal 3" diameter metal plate used for insulation attachment in conjunction with the appropriate Versico Fastener.
- 9. **Seam Fastening Plates**: A 2" diameter metal plate used for insulation attachment on Mechanically Fastened Roofing Systems or membrane securement on Adhered Roofing Systems in conjunction with the appropriate Versico Fastener.
- 10. Polymer Seam Plate: A 2" diameter plastic barbed fastening plate used with Versico HP Purlin Fasteners for membrane and Quick Applied RTS securement into the structural purlins for VersiGard Reinforced Mechanically Fastened Roofing Systems. This plate can also be used for securement of insulation/membrane underlayment in mechanically fastened assemblies.
- 11. **HPVX Plate:** A 2-3/8" diameter metal barbed fastening plate used primarily for membrane securement in conjunction with Purlin Fasteners. The plate is also used in conjunction with appropriate fasteners for securement of insulation/membrane underlayments in mechanically fastened assemblies.
- 12. **9" wide Quick-Applied RTS:** Utilized for perimeter membrane securement on VersiGard Reinforced Mechanically Fastened Roofing Systems and primary securement on Metal Retrofit Roofing Systems.

For membrane physical properties and other related products, refer to the appropriate "Products" Section of the appropriate membrane specification.



PART III - EXECUTION

3.01 General

In addition to the criteria contained herein, refer to the specific roof membrane Specification contained in the Versico Technical Manual for additional information.

3.02 Existing Metal Roof Criteria

- A. Defects in the existing metal roof or purlin system must be reported and documented to the specifier, general contractor and building owner for assessment. The Versico Authorized Roofing Contractor shall not proceed unless the defects are corrected.
- B. The following chart identifies the minimum pullout values which must be achieved with both the Purlin Fastener, which is required for RTS/membrane securement, and the HPV or HPVX Fastener, which is required for additional membrane securement around penetrations (i.e. vent pipes) and is recommended for insulation securement:

Pt	ırlins	Metal Roofs		
Gauges	Purlin Fastener Min. Pullouts (lbs./fastener)	Gauges	HPV or HPVX Fastener Min. Pullouts (lbs./fastener)	
12	1,000	24	300	
14	1,000	26	200	
16	800	28*	150	
18	600	28	130	

^{*} Pullouts must be submitted to Versico when an Adhered Assembly is to be selected.

Withdrawal resistance tests are strongly suggested to determine the suitability of the existing metal roof and structural purlins for the application of this roofing system.

CAUTION: Visually inspect existing metal roof and conduct pullout tests at low areas (i.e. eaves and valleys) or areas of concern during visual inspection.

3.03 Substrate Preparation

- A. Clear the substrate of debris and foreign material.
- B. Wood nailers are required at all roof edges where metal edging and gutter systems are specified and must be flush with the top of the specified membrane underlayment.

When treated lumber is specified, it is recommended that only lumber that has been pressure treated with salt preservatives be specified. Lumber treated with other wood preservatives such as, Creosote, Pentachlorophenol, Copper Naphthenate, Copper 8-quinolinolate, will adversely affect the membrane when in direct contact and are, therefore, unacceptable.

C. On standing seam metal roofs, two layers of wood nailers are required with the first layer installed between the raised standing seams, flush with the top surface of the seams. These nailers must be mechanically fastened directly to the structural purlins with Versico Purlin Fasteners spaced a maximum of 16 inches on center.



Sections of wood nailers installed between standing seams must have a minimum of 2 fasteners positioned approximately 3 inches from each end of the nailer (spaced no more than 16 inches apart).

The top layer of wood nailers is then fastened to the bottom layer of wood nailers with HPV or HPVX Fasteners spaced a maximum of 16 inches on center with all fasteners penetrating the bottom layer of wood nailers a minimum of 1 inch.

Note: In lieu of Versico Fasteners, galvanized or coated nails may be used to secure the top nailer when positioned 4 inches on center and staggered 3/4 inch on center. The nails shall be sufficient in length to penetrate the bottom nailer a minimum of 1-1/4 inch.

- D. On corrugated metal roofs, batt insulation or other compressible filler must be used beneath perimeter wood nailers to minimize infiltration of air beneath this roofing system.
- E. On flat seam metal roofs, the underside of the wood nailer should be notched at the flat seam areas to achieve a smooth, stable base.

Note: The existing metal roof may be trimmed at metal edge and gutter locations to minimize the dimension between the edge purlin support and the edge of the metal roof. This will allow standard size nailers (2" x 6") to be fastened to the edge purlin flush with the roof edge.

3.04 Installation

A. Insulation Placement and Attachment

- 1. Membrane underlayment must be butted together with no gaps greater than 1/4 inch. Gaps greater than 1/4 inch are not acceptable.
- 2. On standing seam metal roofs, insulation must be installed in multiple layers. The first layer of insulation is used as a fill between standing seams, relatively flush with the top surface of the seams. A second layer of insulation is placed over the first layer and the standing seams to serve as the membrane underlayment.
- 3. When mechanical fasteners are specified for insulation securement, the bottom layer (fill boards) can be loose laid with the top layer (membrane underlayment) mechanically fastened to the metal roof at the rate of 1 fastener per 4 square feet for Mechanically Fastened Systems.
- 4. When mechanical fasteners are specified for insulation securement, the bottom layer (fill boards) can be loose laid with the top layer (membrane underlayment) mechanically fastened to the metal roof at the rate of 1 fastener per 2 square feet for Adhered Systems.
- When insulation is to be attached with DASH/FAST Adhesive or DASH Dual Cartridges, both the bottom and top layers must be adhered in accordance with installation procedures outlined in the Spec Supplement G-02-11 DASH/FAST Adhesive Application/Coverage Rate in the Versico Technical Manual.

Note: Two-part urethane adhesives may not be compatible with certain types of metal roof coatings. If existing, Versico should be contacted for verification. Mechanical fasteners may be specified in lieu of the adhesive providing the minimum pullouts can be met.

B. Membrane Installation

1. VersiGard Reinforced Mechanically Fastened Roofing Systems

a. Securement for this roofing system is accomplished by splicing the membrane to the Quick Applied RTS (9 inch wide) that is positioned along the structural purlins and spaced 5 feet or 10 feet on center depending on project



wind zone. The RTS is attached to the purlins a maximum of 12 inches on center utilizing Purlin Fasteners and Polymer Seam Plates. Refer to appropriate Versico Details.

- b. Securement of the membrane at the perimeter roof areas shall be achieved by attaching the membrane to the RTS positioned along the first purlin from the roof edge/eave (perpendicular to the roof slope). Along the rake edges, membrane securement is achieved with RTS positioned along all purlins for a distance of no less than 5 feet. Refer to appropriate Versico Details for required fastening density according to project wind zone.
- c. When using Quick-Applied RTS, EPDM primer must be applied to the membrane in accordance with standard procedures.
- d. Install consecutive membrane sheets allowing a minimum overlap onto the adjacent membrane sheets following respective membrane application requirements.
- e. For additional information pertaining to membrane splicing, refer to the appropriate Membrane Specification in the Versico Technical Manual.
- f. Additional membrane securement must be provided at the perimeter of each roof level, roof section, expansion joint, curb flashing, skylight, interior wall, penthouse, etc., at any inside angle change where slope exceeds 2" in one horizontal foot, and at other penetrations in accordance with Versico's details and securement options.

2. VersiGard (Black or White) or VersiGard Reinforced

For installation procedures on Adhered Roofing Systems, refer to appropriate Membrane Specification in the Versico Technical Manual.

C. Other Related Work

Refer to appropriate Membrane Specification in the Versico Technical Manual for additional membrane securement, membrane flashing and other related clean up work.

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VersiGard (Black or White) Non-Reinforced or VersiGard Reinforced

EPDM Metal Retrofit Roofing Systems

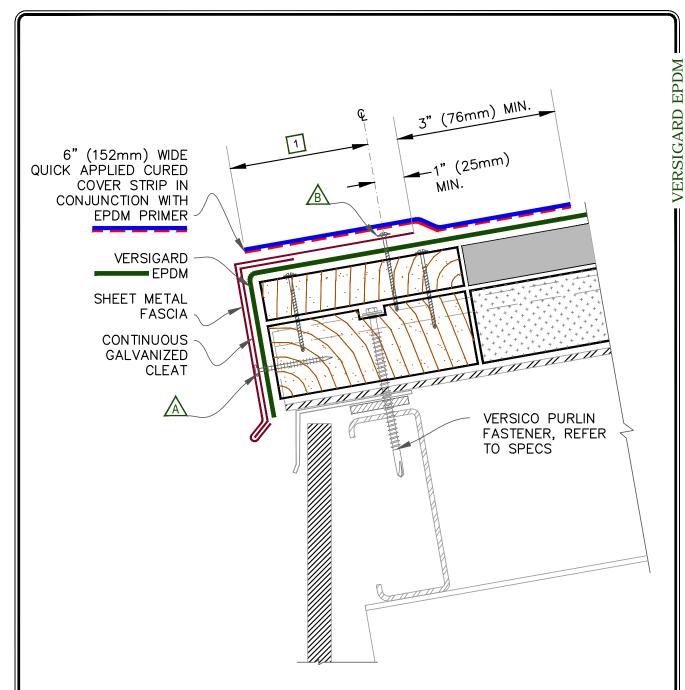
Installation Details

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Metal Edges and Gutters	Details
Eave / Rake Edge	E1.1A
Eave / Rake Edge Eave / Rake Edge	E1.1E
Eave / Rake Edge – Heavy Gauge Fascia	E1.2
Gutter Without Fascia	E1.4
Membrane Attachment	
Membrane Attachment with RTS	E2.1
Membrane Attachment - Up to 100 MPH Wind Zone	
Membrane Attachment - 101 - 120 MPH Wind Zone	E2.3
Ridges	
Roof Ridge/Hip - Non-Vented	E22.1
Roof Ridge - Vented	E22.2
Common Details	
Enlarged Details	Z1.1
ANSI/SPRI FS-1 Compliant Fascia – Shop Fabricated	





NOTE:

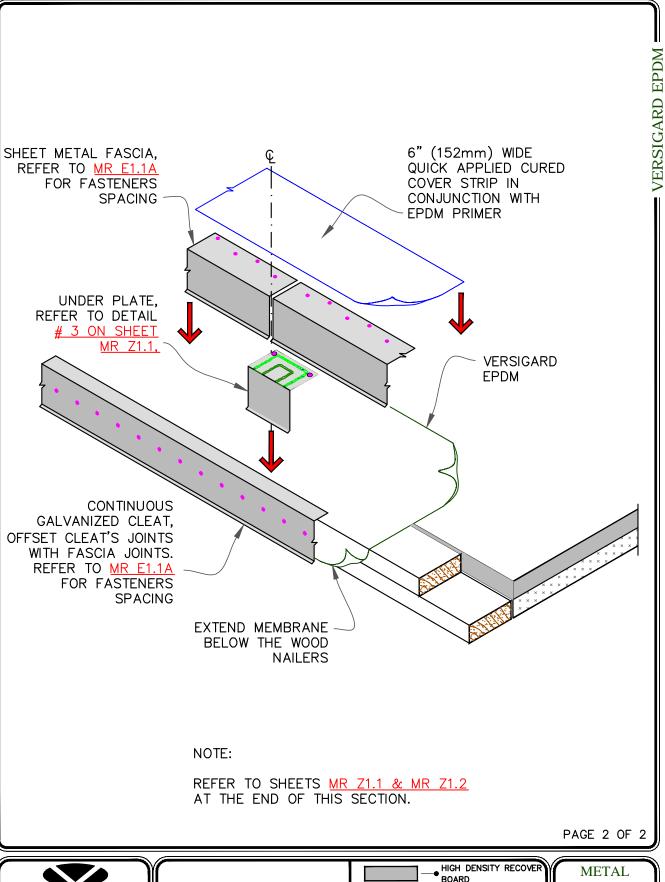
1. FASCIA HORIZONTAL FLANGE MUST BE TOTALLY COVERED WITH CURED EPDM FLASHING, MINIMUM 2" (51mm) BEYOND THE FASTENER HEAD.

1-1/2" (38mm) RING SHANK NAILS @ 6" (152mm) O.C. MAXIMUM

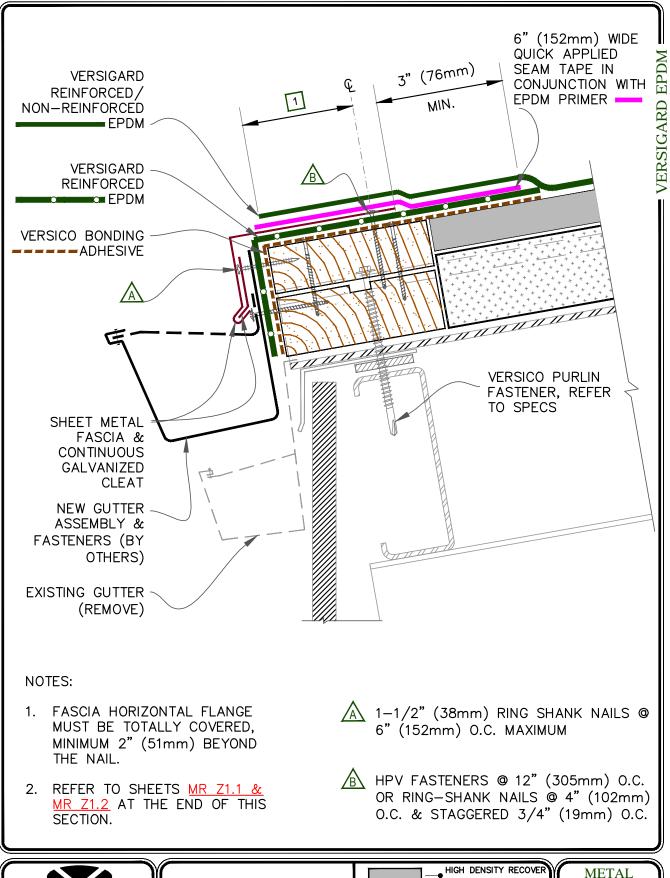
HPV FASTENERS @ 12" (305mm) O.C. OR RING-SHANK NAILS @ 4" (102mm) O.C. & STAGGERED 3/4" (19mm) O.C.

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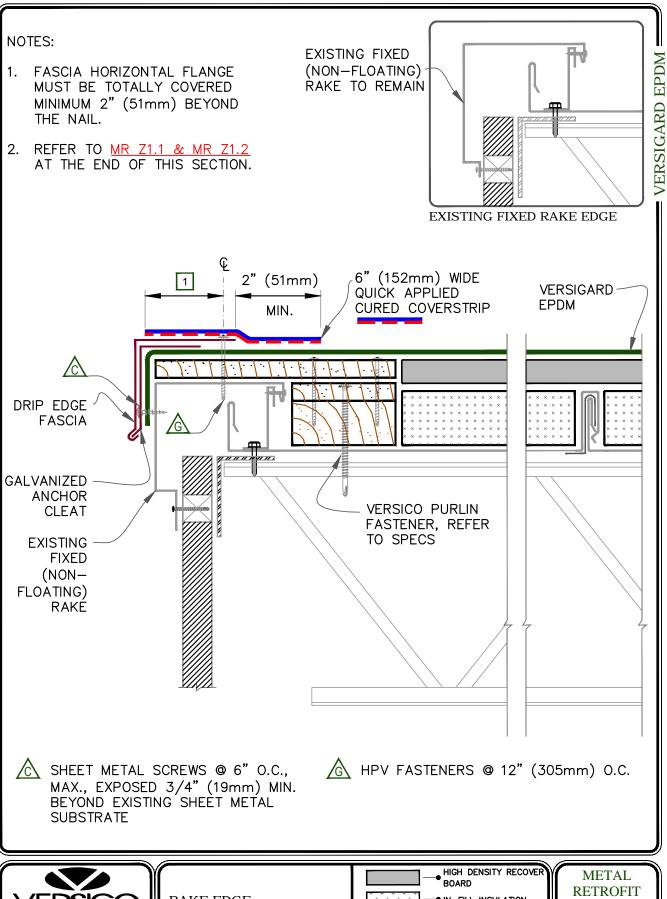




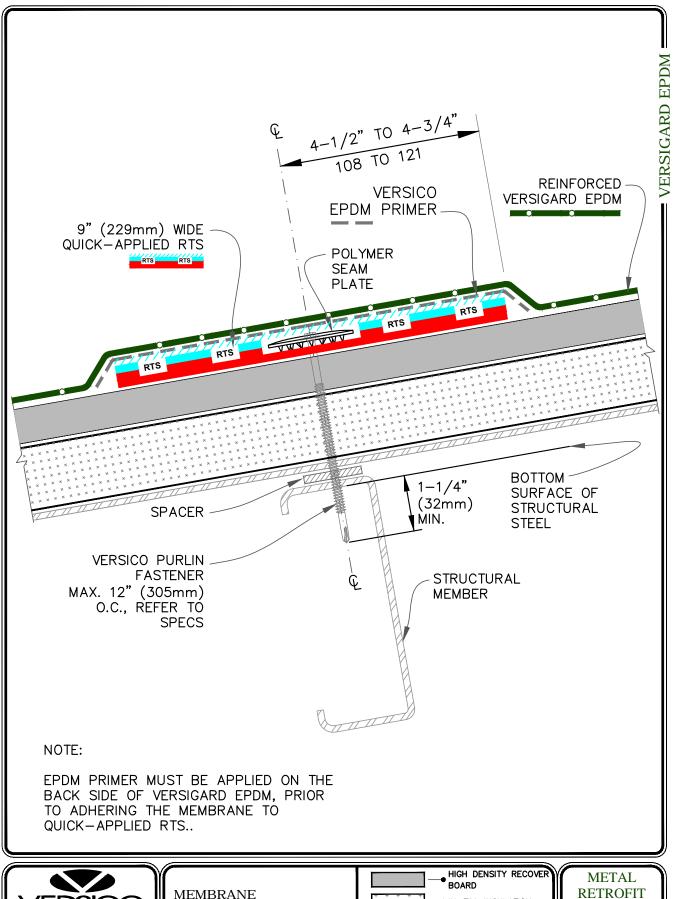




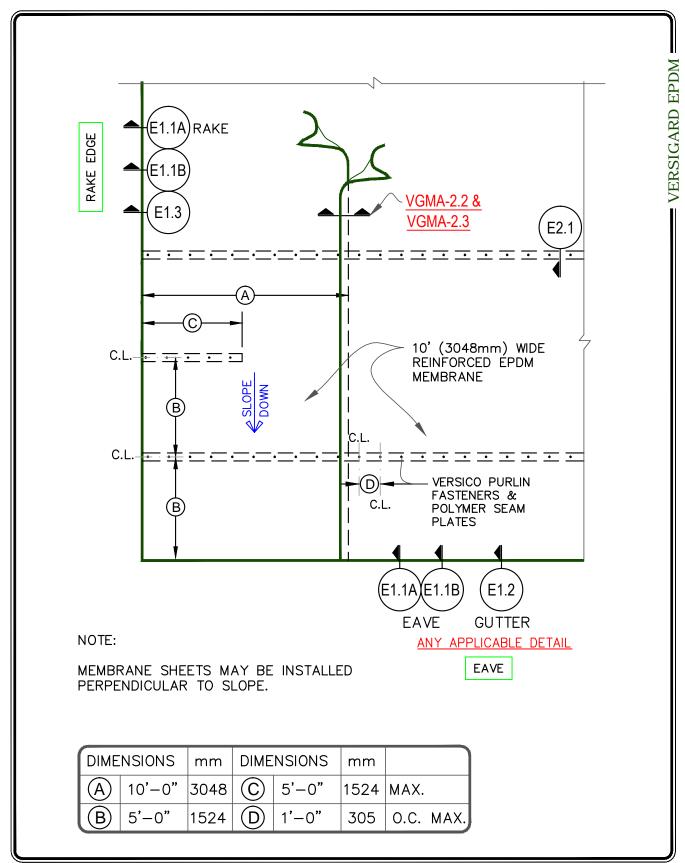




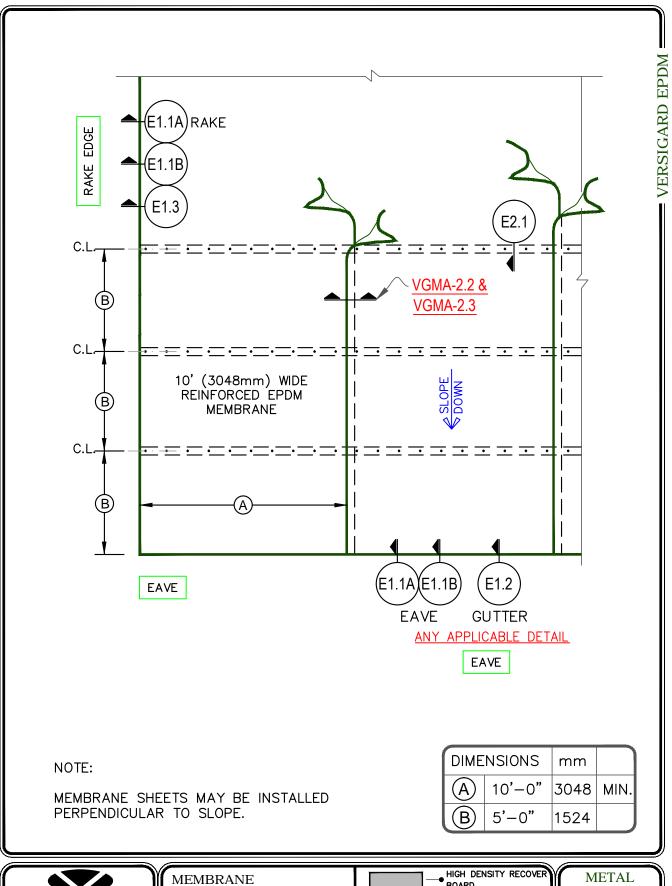




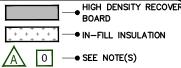




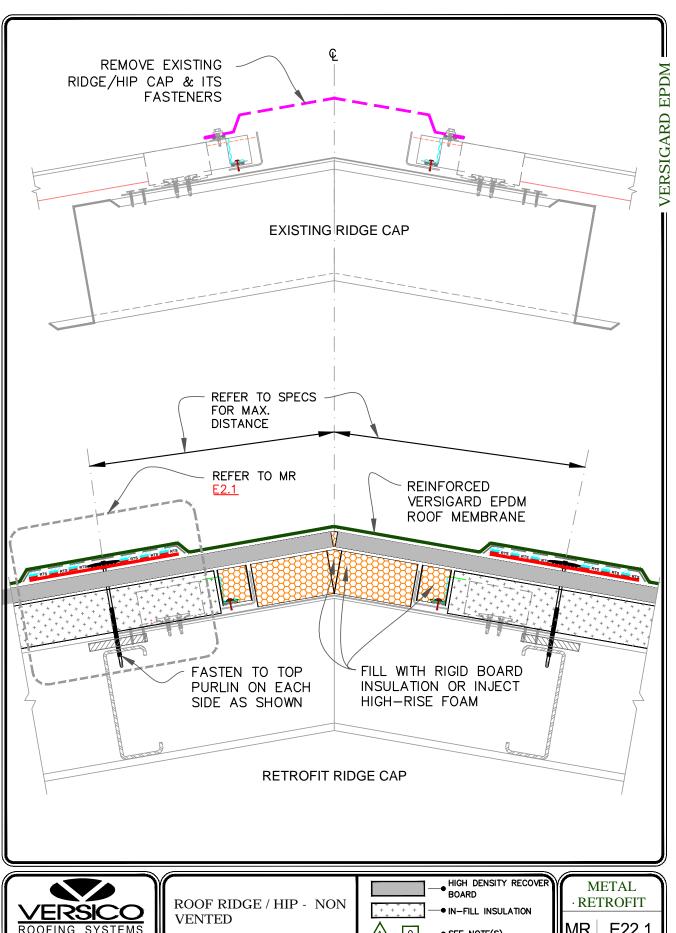




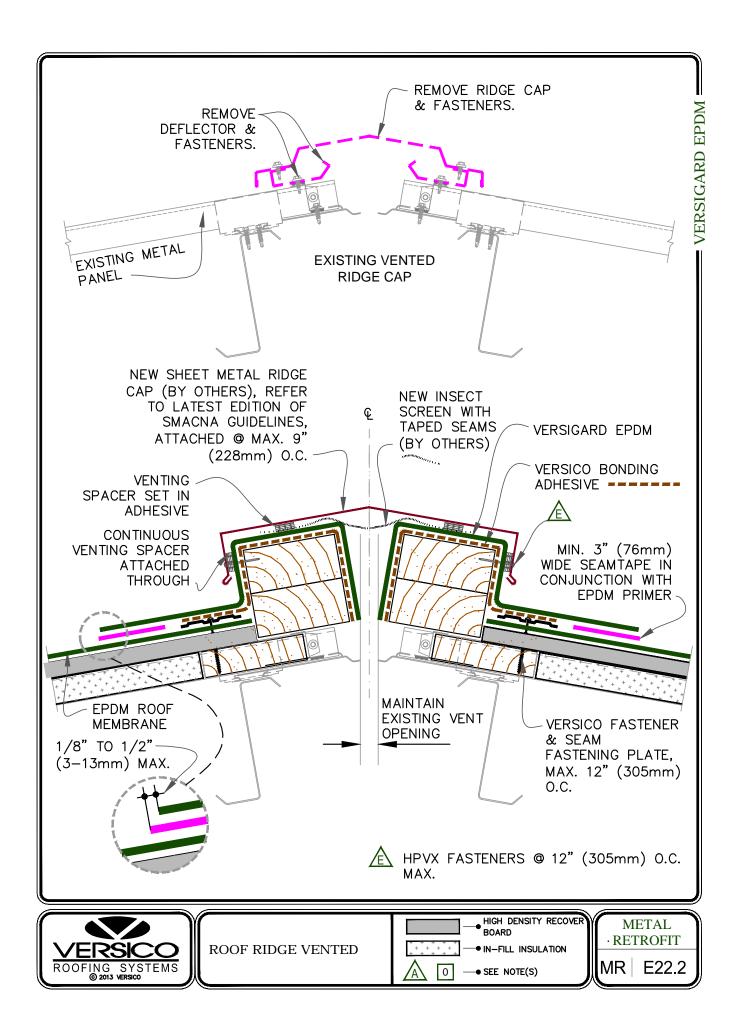


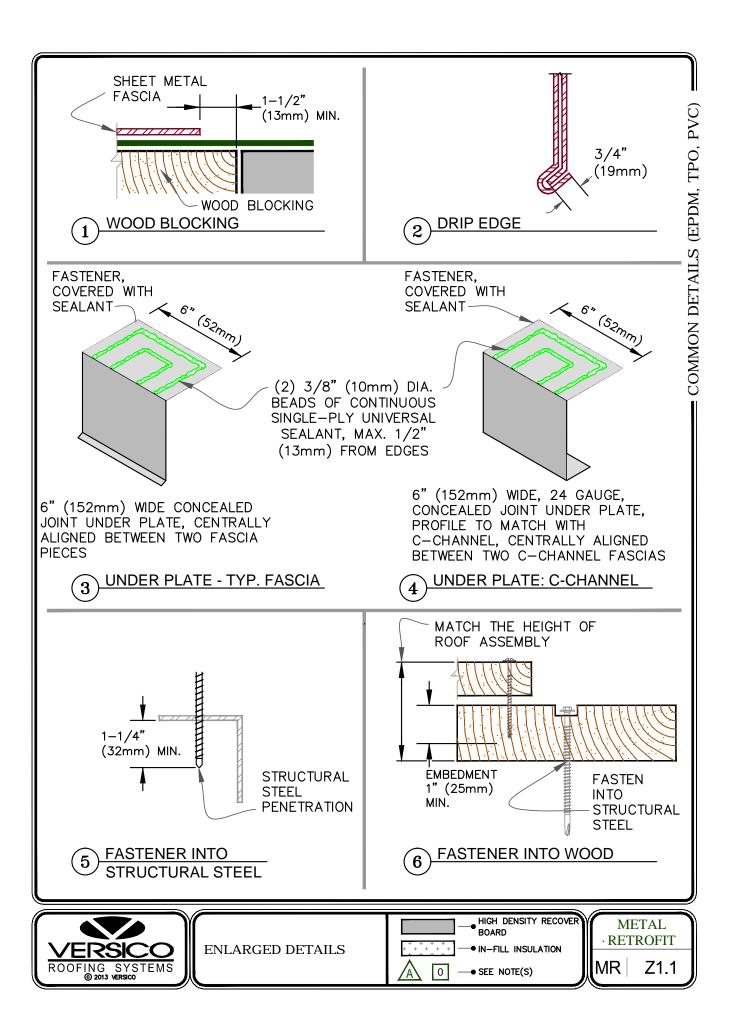


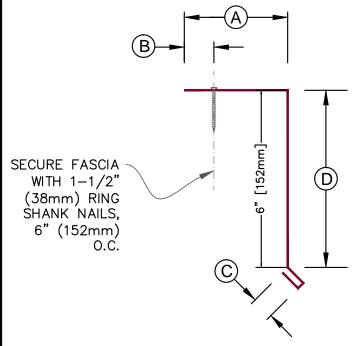












DIME	NSIONS	mm		
A	3-1/2"	28		
B	1"	25		
(C)	3/4	19		
D	4" OR 6"	102	OR	152

NOTE:

ALL 1-1/2" (38mm) RING SHANK NAILS MUST HAVE 1" (25mm) MINIMUM EMBEDMENT INTO WOOD

A ES-1 COMPLIANT FASCIA PROFILE 24 GAUGE (0.59 mm) THICK - 10' (3048mm) LENGTH

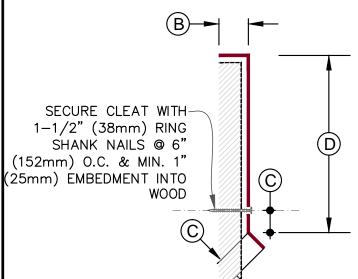


TABLE 1: (TEST DATA)			
ES-1 COMPLIANT			
RE-1	424 62.62 614	PSF (POUNDS/SQUARE FOOT) (kilogram/sq.meter) pascals (Pa)	
RE-2		PSF (POUNDS/SQUARE FOOT) (kilogram/sq.meter) pascals (Pa)	

B GALVANIZED METAL CLEAT
22 GAUGE (0.75 mm) THICK

VERSICO
ROOFING SYSTEMS
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ANSI / SPRI ES-1 COMPLIANT FASCIA -SHOP FABRICATED HIGH DENSITY RECOVER
BOARD

HIGH DENSITY RECOVER
BOARD

METAL RETROFIT

A 0 → SEE NOTE(S)

MR Z1.2