



**VersiWeld® TPO, VersiFleece® TPO, VersiFlex™ PVC,  
VersiFleece™ FRS PVC and VersiFleece FRS KEE HP  
Thermoplastic Metal Retrofit Roofing System**

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## Thermoplastic Metal Retrofit Roofing System

July 2015

*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 Thermoplastic 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

The installation of this Metal Retrofit Roofing Systems may incorporate a Mechanically Fastened option, Rhinobond Attachment Method or a Fully Adhered Assembly.

The Mechanically Fastened Option is available only with TPO membrane. Both the Rhinobond and the Fully Adhered Option could incorporate either TPO or PVC.

**Note:** The VersiWeld QA membrane is available with TPO as fully adhered alternative.

1. **Mechanically Fastened Option** incorporates 45, 60 or 80-mil thick scrim-reinforced VersiWeld TPO (Thermoplastic Polyolephin) membrane with 10" wide Pressure-Sensitive RUSS positioned along the structural purlins in the field of the roof (5' or 10' depending on wind zone). The RUSS is attached to the purlins a maximum of 12" on center utilizing Versico Purlin Fasteners and HPVX Plates. The membrane is adhered to the RUSS and adjoining sheets are heat welded together a minimum of 1-1/2". This option includes an acceptable loose laid insulation used to fill between standing seams (when applicable) and an acceptable insulation or underlayment is mechanically secured over the fill insulation at a rate 1 fastener per 4 square feet, to the existing metal roof with Versico fasteners and plates.
2. **Rhinobond Attachment Option** incorporates 45, 60 or 80-mil thick polyester reinforced VersiWeld TPO membrane OR 50, 60 or 80-mil thick polyester reinforced VersiFlex PVC or VersiFlex-E KEE HP membranes. Rhinobond plate appropriate for the membrane type is positioned over the structural purlins and fastened with Versico Purlin Fasteners. See Rhinobond Attachment included at the end of this Section.

3. **Conventional Fully Adhered Option - TPO or PVC/KEE HP** incorporates maximum 12' wide white, gray or tan 45, 60 or 80-mil thick scrim-reinforced VersiWeld Thermoplastic Polyolefin (TPO) membrane OR 10' wide, white, 60 or 80-mil thick scrim-reinforced Thermoplastic Polyolefin (TPO) Spectro-Weld membrane OR maximum 10' wide, 50-mil, 60-mil or 80-mil thick Polyester or Fiberglass reinforced VersiFlex Polyvinyl Chloride (PVC) membrane OR maximum 10' wide, 50-mil, 60-mil or 80-mil Polyester reinforced VersiFlex-E KEE HP membrane. The membrane is fully adhered to the substrate with the appropriate Bonding Adhesive. Adjoining sheets of membrane are overlapped and joined together with a minimum 1-1/2" wide heat weld. This option includes an acceptable loose laid insulation used to fill between standing seams (when applicable) and an acceptable insulation or underlayment is mechanically secured over the fill insulation at a rate 1 fastener per 2 square feet, to the existing metal roof with Versico fasteners and plates.

Polyester Reinforced membrane is available in widths of 10' (white only) and 81" wide (white, gray and tan).

Fiberglass Reinforced membrane is available in widths of 10' (white only) and 81" wide (white or gray).

4. **VersiFleece Fully Adhered Option** - incorporates 45, 60 or 80-mil thick, 12' or 6' wide, scrim-reinforced, white, gray or tan VersiWeld Thermoplastic Polyolefin (TPO) membrane laminated to a 55-mil thick non-woven polyester fleece-backing resulting in a total finished sheet thickness of 100, 115 or 135-mil OR 50-, 60- or 80-mil thick, 10' wide, fiberglass reinforced scrim, white VersiFlex (PVC) membrane laminated to a 55-mil thick non-woven polyester fleece-backing resulting in a total finished sheet thickness of 105, 115 or 135-mils OR 50-, 60- or 80-mil thick, 10' wide, polyester reinforced scrim, white, gray or tan VersiFlex-E KEE HP membrane laminated to a 55-mil thick non-woven polyester fleece-backing resulting in a total finished sheet thickness of 105, 115 or 135-mils. The membrane is fully adhered to an acceptable substrate with a spray or extrusion applied, two-component, low-rise FAST Adhesive. Adjoining sheets of VersiFleece TPO or VersiFleece PVC/KEE HP membrane are overlapped and joined together with a minimum 1-1/2" wide hot air weld.
5. **VersiWeld QA (Quick Applied TPO) Option** - is a heat-weldable single-ply thermoplastic polyolefin (TPO) sheet available in 10' wide, white 60-mil reinforced TPO membrane laminated to an elastomeric pressure-sensitive adhesive. Limited to 20 Year Maximum Warranty.

## 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.
- E. Refer to the Design Reference DR-07-15 "CRRC/LEED Information" for information. (i.e. solar emittance, solar reflectance and recycled content).

#### 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.
  - 3. 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 Contractor along with a completely executed Copy-A (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 Job Completion** (Page 2 of the Versico Request for Warranty form)

After project completion, a Copy-B Job 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:**

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.

Years	Metal Retrofit Thermoplastic Membranes (VersiWeld TPO / VersiFlex PVC / VersiFlex-E KEE HP)		
	Warranty Options		
	Warranty Wind Speed Coverage		Minimum Membrane Thickness
	55, 72 or 80 MPH	55, 72 or 80 MPH	
	Adhered	Mechanically Fastened	
5,10, or 15 year	√	√	VersiWeld 45-mil
	√	√	VersiFlex 50-mil
	√	√	VersiFlex-E KEE HP 50-mil
	√	N/A	VersiFleece TPO 100-mil
	√	N/A	VersiFleece FRS PVC 115-mil
	√	N/A	VersiFleece KEE HP 105-mil
20 year	√	√	VersiWeld 60-mil
	√	√	VersiFlex PVC 60-mil
	√	√	VersiFlex-E KEE HP 50-mil
	√	N/A	VersiFleece TPO 115-mil
	√	N/A	VersiFleece FRS PVC 115-mil
	√	N/A	VersiFleece KEE HP 105-mil

Notes:

N/A = Not Acceptable

√ = Acceptable

### 1.06 Job Conditions

- When possible on multiple level roofs, begin the installation on the highest level to avoid or minimize construction traffic on completed roof sections.
- When roof slopes exceed 5" per horizontal foot, use of an Automatic Heat Welder may be more difficult. A Hand Held Hot Air Welder should be specified.
- 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.
- 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 Versico Purlin Fastener. Versico Purlin Fasteners are designed to engage purlins 18 to 12 gauge.

- E. 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.
- F. 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).

### 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 contractor must 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.
- F. Do not store adhesive containers with opened lids due to the loss of solvent that will occur from flash-off.
- G. Store Versico membrane on provided pallets in the original undisturbed plastic wrap in a cool, shaded area and cover with light-colored, breathable tarpaulins.
- H. 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. Mechanically Fastened Option

- a. **VersiWeld** 45-mil, 60-mil or 80-mil thick reinforced TPO (Thermoplastic Polyolefin) membrane available in white, grey or tan. The membrane is available in widths up to 12 feet wide.

##### 2. Rhinobond Attachment Option

- a. **VersiWeld** 45, 60 or 80-mil thick polyester reinforced (Thermoplastic Polyolefin) membrane available in white, grey or tan. The Membrane is available in widths up to 12 feet wide.
- b. **VersiFlex** 50-mil, 60-mil or 80-mil thick polyester reinforced PVC (Polyvinyl Chloride) membrane (white, gray or tan) or **VersiFlex-E** 50-mil, 60-mil or 80-mil thick polyester reinforced KEE HP membrane (white, gray or tan). Either membrane is available in 10 feet wide.

### 3. Conventional Fully Adhered Option

- a. **VersiWeld** 45-mil, 60-mil or 80-mil thick reinforced TPO (Thermoplastic Polyolefin) membrane available in white, grey or tan. The membrane is available in widths up to 12 feet wide.
- b. **VersiFlex** 50-mil, 60-mil or 80-mil thick reinforced PVC (Polyvinyl Chloride) membrane (white, gray or tan) or **VersiFlex-E** 50-mil, 60-mil or 80-mil thick polyester reinforced KEE HP membrane (white, gray or tan). Either membrane is available in 10 feet wide.

### 4. VersiFleece Fully Adhered Option

- a. **VersiWeld VersiFleece TPO** 100, 115, or 135-mil membrane available in white, grey or tan. The membrane is available in various widths up to 10 feet wide.
- b. **VersiFleece FRS PVC** 115 or 135-mil membrane available in white, grey or tan OR **VersiFleece KEE HP** 105, 115 or 135-mil membrane available in white. The membrane is available in various widths up to 10 feet wide.

### 5. VersiWeld QA TPO (Quick Applied) Option

- a. **VersiWeld QA** 60-mil reinforced TPO (Thermoplastic Polyolefin) membrane available in white. The membrane is available in 10' wide sheets.

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.
2. **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 (Combustible 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.

5. **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 VersiWeld Metal Retrofit Roofing Systems.
6. **HPV Fastener:** A threaded E-coat square head fastener 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 HPVX 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. **HPVX Plate:** A 2-3/8" diameter metal barbed fastening plate used primarily for membrane securement in conjunction with Versico Purlin Fasteners. The plate is also used in conjunction with appropriate fasteners for securement of insulation/membrane underlayments in mechanically fastened assemblies.
11. **10" wide TPO Pressure-Sensitive RUSS:** Used as a primary securement for the TPO membrane in Mechanically Fastened TPO assemblies. A 45-mil thick reinforced TPO membrane with 3" wide and 35-mil thick cured synthetic rubber pressure-sensitive adhesive laminated along both sides. Used in conjunction with TPO Membrane Primer.
12. **VersiWeld Coated Metal:** A 24 gauge, galvanized steel sheet coated with a layer of non-reinforced VersiWeld Flashing. The sheet is cut to the appropriate width and used to fabricate metal drip edges or other roof perimeter edging profiles. VersiWeld Membrane may be heat welded directly to the coated metal. Available in white, gray or tan. Refer to appropriate Versico Detail for additional information.
13. **VersiFlex PVC Coated Metal:** A 24 gauge, galvanized steel sheet coated with a layer of 40-mil non-reinforced VersiFlex Flashing. The sheet is cut to the appropriate width and used to fabricate metal drip edges or other roof perimeter edging profiles. VersiFlex Membrane may be heat welded directly to the coated metal. Coated metal is available in sheets 4' x 10' and comes packaged 10 sheets per pallet. Available in white, gray or tan.
14. **PVC Contour Rib:** an extruded PVC profile used to simulate standing seam metal roofing system. Heat welded directly to an adhered PVC membrane.

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, the "Installation" Section for the specified roof assembly should be referenced in its entirety.

When feasible, begin the application at the highest point of the highest roof level and work to the lowest point to prevent moisture infiltration and to minimize construction traffic on completed sections. This will include completion of all flashings and terminations.

### 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 Versico Purlin Fastener, which is required for RUSS/Rhinobond Plate 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:

Purlins		Metal Roofs	
Gauges	Versico 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		

\* 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 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.
5. 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 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. Mechanically Fastened Option

- a. Securement for this roofing system is accomplished by splicing the membrane to the Pressure-Sensitive RUSS (10 inch wide for TPO) that is positioned along the structural purlins and spaced 5 feet or 10 feet on center depending on project wind zone. The RUSS is attached to the purlins a maximum of 12 inches on center utilizing Versico Purlin Fasteners and HPVX Plates (TPO). Refer to appropriate Versico Details.
- b. Securement of the membrane at the perimeter roof areas shall be achieved by attaching the membrane to the RUSS positioned along the first purlin from the roof edge/eave (perpendicular to the roof slope). Along the rake

edges, membrane securement is achieved with RUSS 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 Pressure-Sensitive RUSS, appropriate membrane 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. Rhinobond Attachment Method Option**

**Refer to RhinoBond Attachment**

**3. VersiWeld QA TPO or VersiFleece TPO or VersiFleece PVC Adhered Roofing Systems**

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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# Metal Retrofit Roofing System RhinoBond Attachment Method

## “Attachment I”

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This is an alternate method for securing the Versico's VersiWeld (TPO) or VersiFlex (PVC/KEE HP) membranes and is intended to be used in conjunction with the Versico's Thermoplastic Mechanically Fastened Specification and Details.

### A. Description

The RhinoBond Attachment Method incorporates 3" diameter corrosion-resistant plates with a hot melt TPO or PVC coating. The RhinoBond Plates are installed with Versico Purlin Fasteners to secure an acceptable insulation to minimum 18 gauge steel purlin.

Versico's Polyester Reinforced Thermoplastic membrane is positioned over the secured RhinoBond plates and welded to the top surface of the plate with the RhinoBond Induction Welding Tool.

RhinoBond Metal Retrofit – Warranty Table				
Warranty Wind Speed	Number of Perimeter Sheets		Field Fastened – Purlins**	O.C. Spacing
	110 MPH Max	110-120 MPH Max		
55 MPH	1 @ 5’	2 @ 5’	10’	12”
72 MPH	2	2	10’	12”
80 MPH	2*	3	5’	12”
Greater Than 80 MPH	Contact Versico			
*Maximum building height of 60'-0".				
**From eave, first two consecutive purlins. Every other purlin thereafter. See Metal Retrofit Attachment Details.				

### B. Products/Heat Welding Equipment

Products listed in "Part II" of the Versico Thermoplastic Mechanically Fastened Roofing System Specification can be used as part of this alternate securement method in conjunction with the RhinoBond Welding Plates.

1. **RhinoBond TPO or PVC Welding Plate:** A 3" diameter, 0.028" thick, corrosion-resistant steel plate with hot melt coating on the top surface. The plate is used in conjunction with Versico's HPVX Fasteners to attach the roofing assembly and is activated using the RhinoBond Induction Welding Tool.
2. **RhinoBond Induction Welding Tool:** An induction heating tool is used to emit the magnetic field that activates the hot melt coating on the top surface of the RhinoBond Welding Plate to fuse with the roofing membrane. Refer to RhinoBond Owner's Manual for additional information.
3. **Cooling Clamp Device:** A stand-up device that allows the weld to cool as it clamps the membrane to the heated plate. Refer to RhinoBond Owner's Manual for additional information.

### C. RhinoBond Induction Tool Calibration

Prior to proceeding with membrane attachment to the plate, the RhinoBond Induction Welding Tool must be calibrated with

samples of the project specified insulation thickness and type and project specified membrane thickness. Refer to RhinoBond Owner's Manual for additional information.

1. Loose lay five RhinoBond Plates in a row about 12-24" apart on the specified membrane substrate.
2. Place membrane over the RhinoBond Plates.
3. Centering over the RhinoBond Plate under the membrane, place the Induction Welding Tool and use the device's default setting. Weld the membrane to the first plate, and when ready, completely remove Welding Tool. Immediately place the Cooling Clamp on the membrane over the plate and leave in place for 60 seconds.
2. Place Induction Welding Tool on the next plate as previously done and increasing induction energy one level by depressing the "up" button once. After welding, immediately place the Cooling Clamp.
3. Repeat above procedure for the remainder of the plates, increasing induction energy one level for each plate.
4. After allowing the membrane and plates to cool to ambient temperature, remove Cooling Clamp and use a pliers by apply force to peel RhinoBond Plate from underside of membrane to determine bonding strength. Desired result is welded ply of membrane stays fused to RhinoBond Plate.
5. Repeat trial process, if needed, adjusting energy level up or down until desired results are achieved.

**Note:** Recalibrate induction tool settings is necessary when ambient temperature changes more than +/- 15°F or power to device has been interrupted.

#### **D. Installation**

1. After placement of insulation on substrate, attach insulation using mechanical fasteners or DASH Adhesive. See installation section of Metal Retrofit specification for further information.
2. Secure Rhinobond Plates and Versico Purlin Fasteners at a rate designated by the Warranty Table.

**Note: Avoiding fastener overdrive to prevent plate from deforming.**

3. Place VersiWeld or VersiFlex membrane over the appropriate RhinoBond Plates and allowing membrane to relax.
4. Place RhinoBond Induction Tool centered over the RhinoBond PVC Welding Plate (+/- 1") under the roofing membrane.
5. Elevate the temperature of plate from ambient to 400-500°F using induction tool.
6. Immediately place Cooling Clamp on the membrane over the plate and leave in place for at least 60 seconds.
7. Resume process ensuring membrane is attached to all plates.

#### **E. Membrane Hot Air Welding Procedures & Additional Securement**

1. Adjoin membrane sheets by overlapping and heat welding the seam following standard Hot Air Welding Procedures as outlined in the "Part III" of the Thermoplastic Mechanically Fastened Roofing System Specification.
2. Base wall securement and securement around roof penetrations as well as flashings of walls and penetrations must comply with Versico requirements for the Thermoplastic Mechanically Attached Roofing System.

#### **F. Associated Installation Details**

See Details at the end of this specification.

End of Section



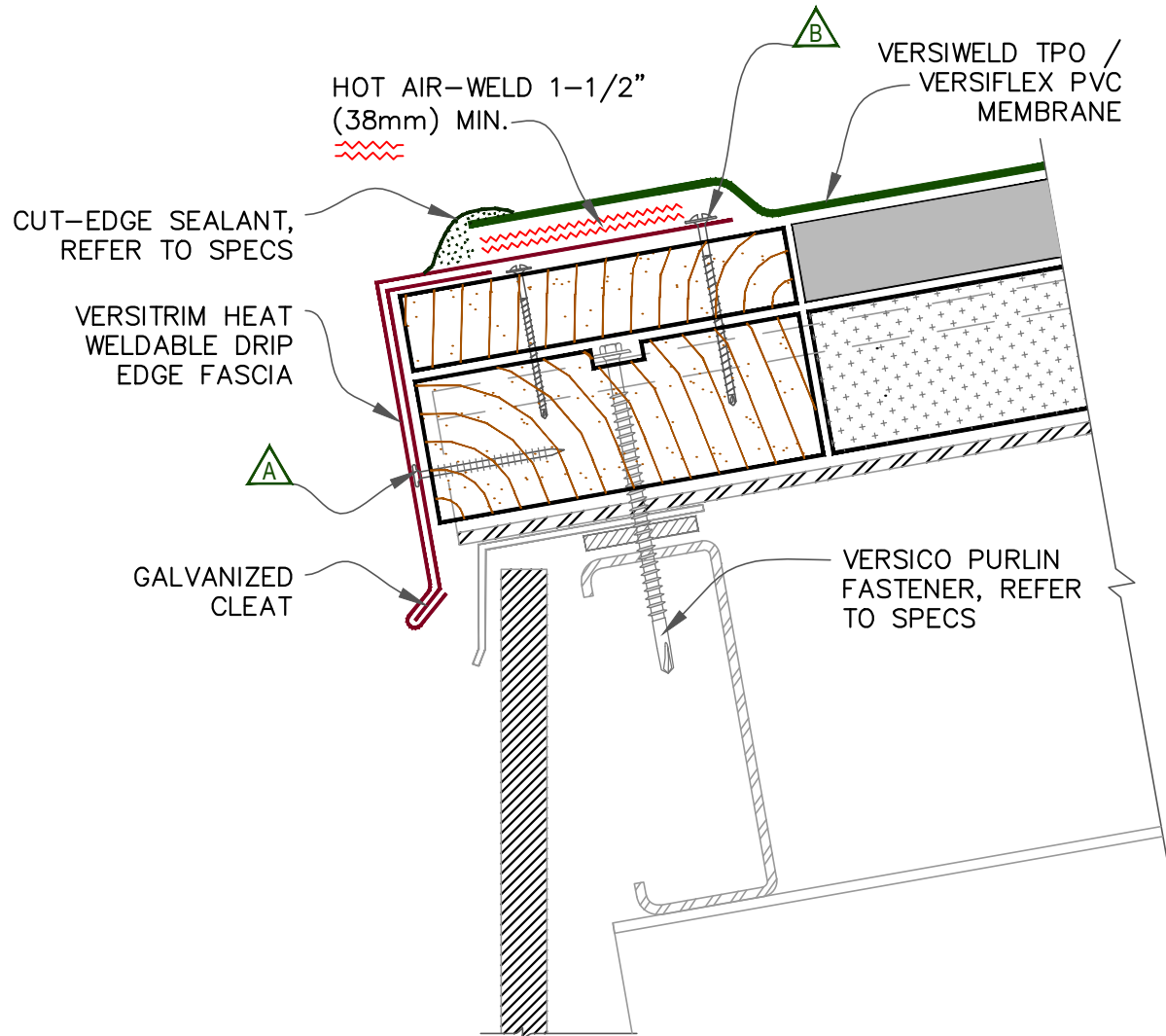
## Thermoplastic Metal Retrofit Roofing Systems

### Installation Details

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July 2015

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## NOTE:

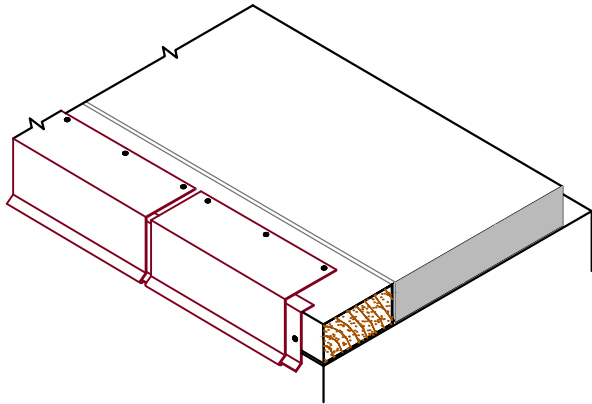
REFER TO [MR Z1.1](#) & [MR Z1.2](#) AT THE END OF THIS SECTION.

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

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

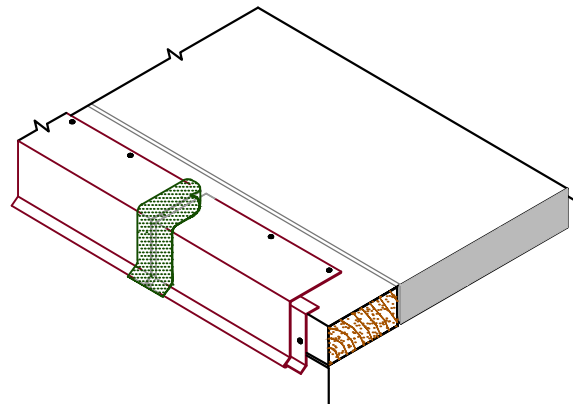


1



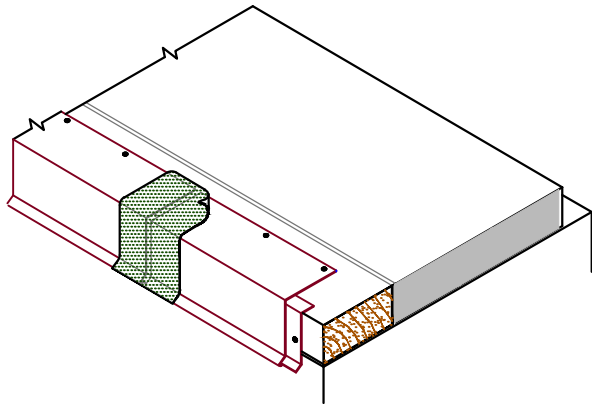
INSTALL CONTINUOUS CLEAT AND COATED METAL WITH 1/8"–1/4" (3mm–6mm) JOINTS BETWEEN ADJOINING SECTIONS.

2



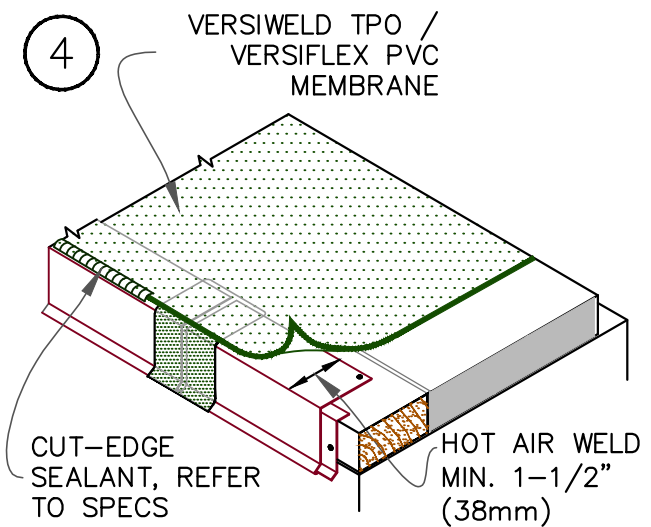
HEAT WELD 3" (76mm) WIDE PIECE OF NON-REINFORCED THERMOPLASTIC MEMBRANE OVER JOINT.

3

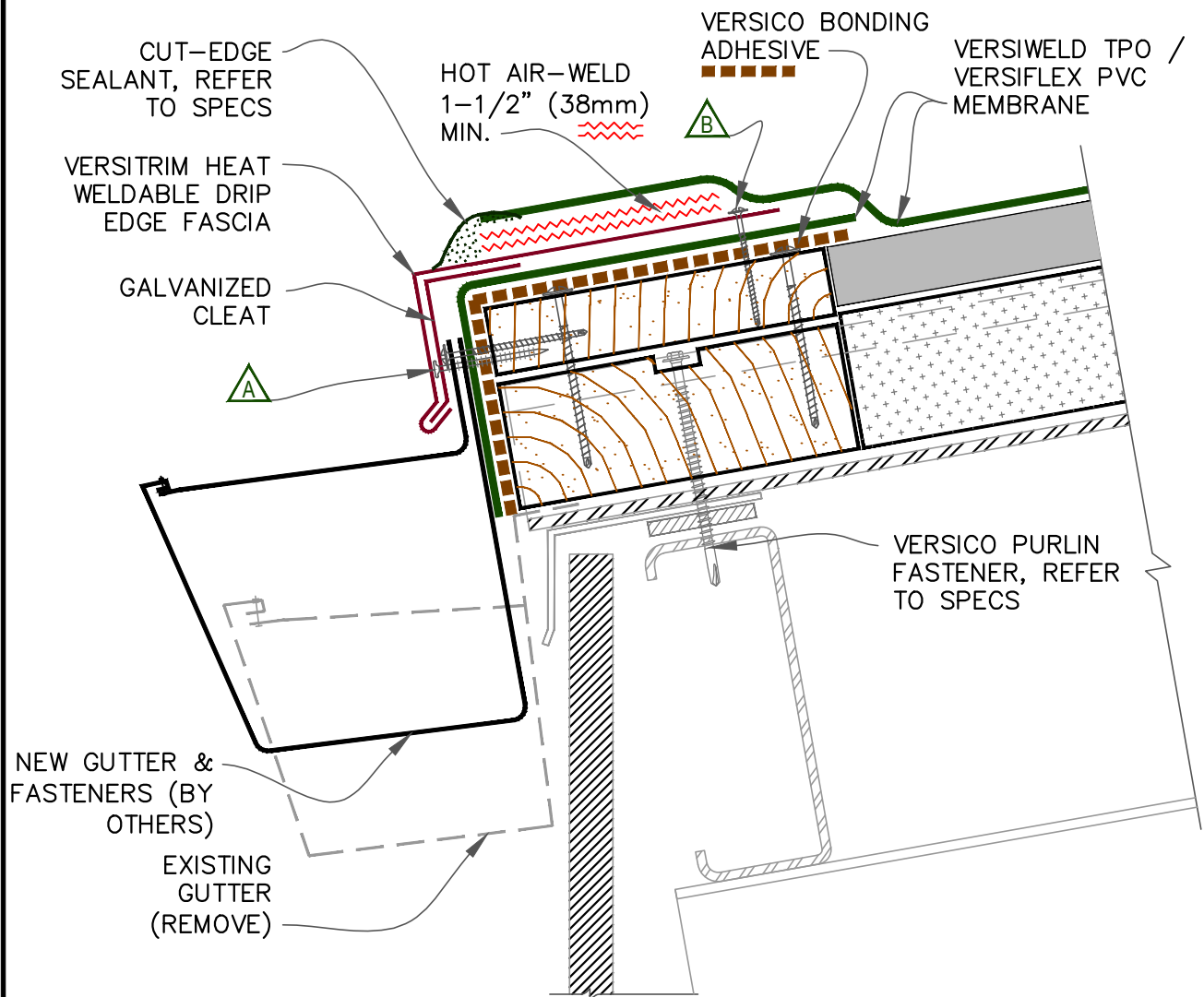


HEAT WELD 6" (152mm) WIDE PIECE OF NON-REINFORCED MEMBRANE OVER THE JOINT.

4



POSITION FIELD MEMBRANE AND HEAT WELD TO COATED METAL A MINIMUM OF 1-1/2" (38mm) AS SHOWN.



## NOTE:

REFER TO [MR Z1.1](#) & [MR Z1.2](#)  
AT THE END OF THIS SECTION.

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

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

6" (152mm) WIDE  
VERSIWELD  
PRESSURE-SENSITIVE  
COVER STRIP IN  
CONJUNCTION WITH  
TPO PRIMER

VERSITRIM HEAT  
WELDABLE DRIP  
EDGE FASCIA

GALVANIZED  
CLEAT

VERSICO  
BONDING  
ADHESIVE

NEW GUTTER &  
FASTENERS (BY  
OTHERS)

EXISTING  
GUTTER  
(REMOVE)

2" (51mm)  
MIN.

VERSIWELD TPO  
MEMBRANE

VERSICO PURLIN  
FASTENER, REFER  
TO SPECS

NEW GUTTER WITH  
FASCIA

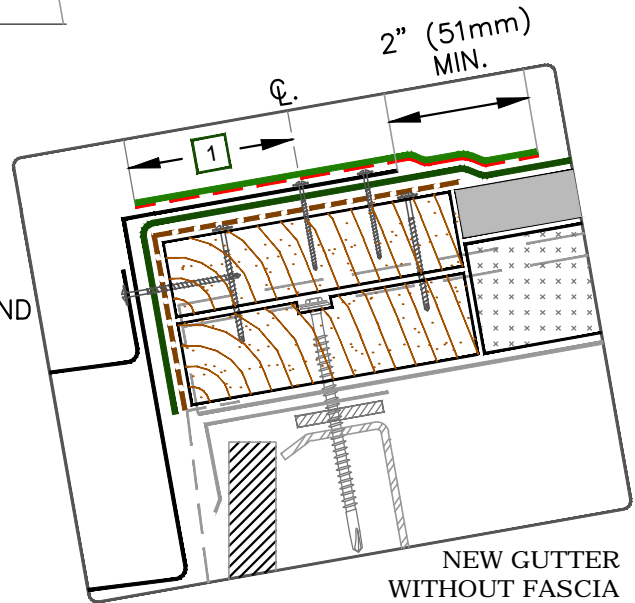
**TPO ONLY**  
(NOT FOR PVC)

#### NOTES:

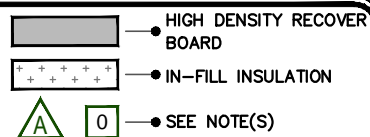
1. FASCIA DECK FLANGE MUST BE TOTALLY COVERED BY TPO PRESSURE SENSITIVE COVER STRIP WITH MINIMUM 2" (51mm) COVERAGE PAST NAIL HEADS.
2. REFER TO [MR Z1.1](#) & [MR Z1.2](#) AT THE END OF THIS SECTION.

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

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



GUTTER WITH AND  
WITHOUT FASCIA



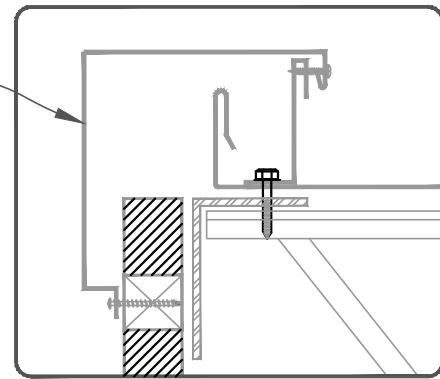
**METAL  
RETROFIT**

MR | T1.3

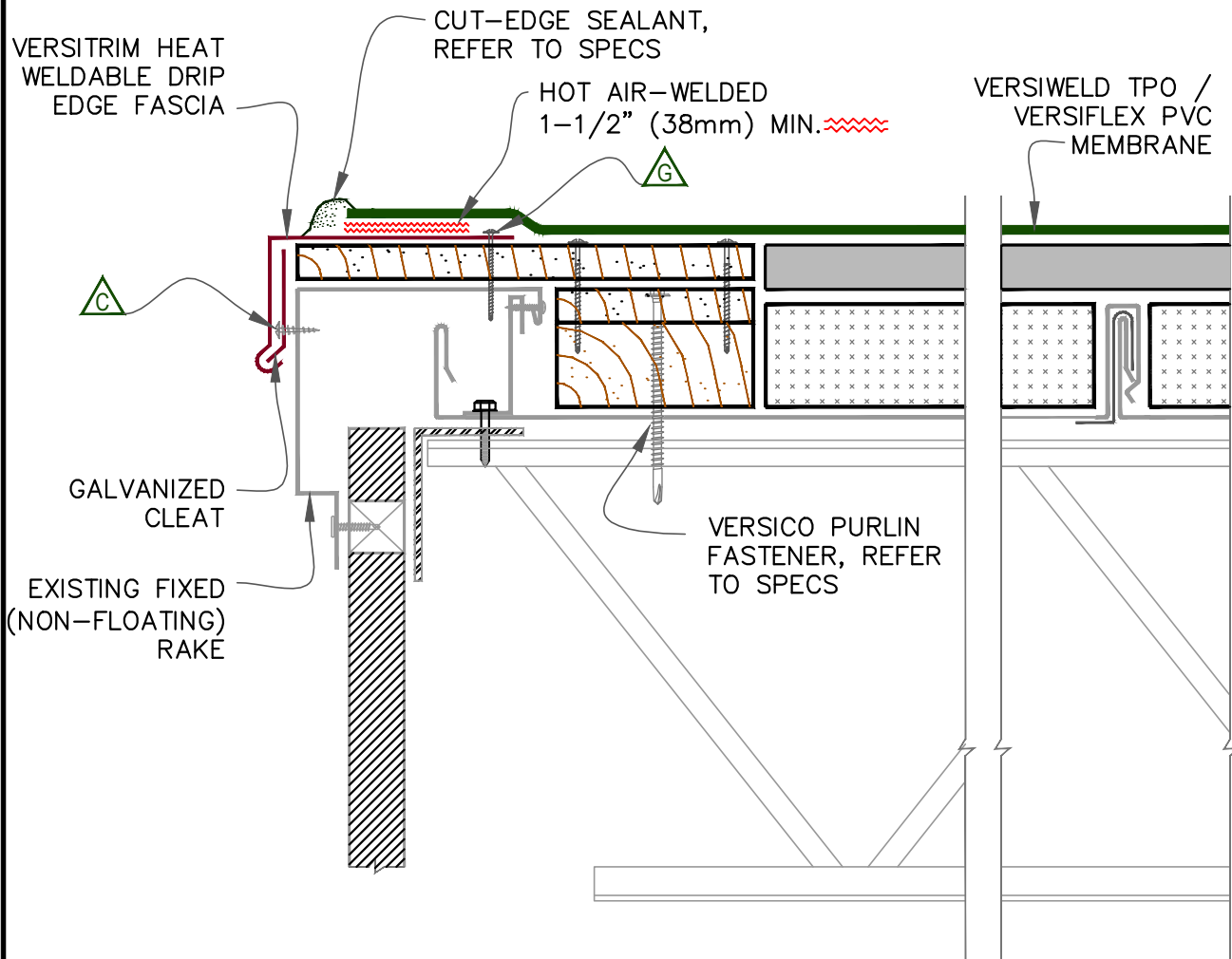
NOTES:

1. FASCIA HORIZONTAL FLANGE MUST BE TOTALLY COVERED MINIMUM 2" (51mm) BEYOND THE NAIL.
2. REFER TO [MR Z1.1](#) & [MR Z1.2](#) AT THE END OF THIS SECTION.

EXISTING FIXED (NON-FLOATING) RAKE TO REMAIN

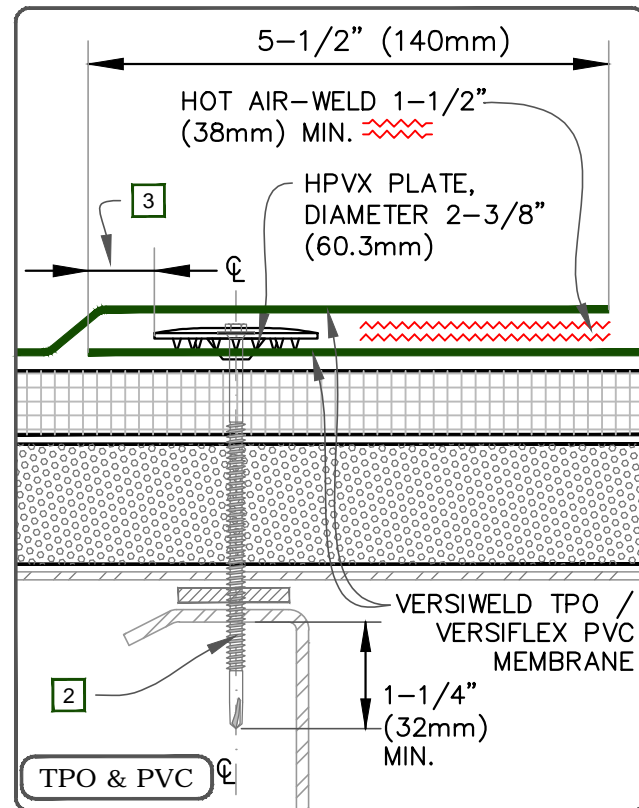
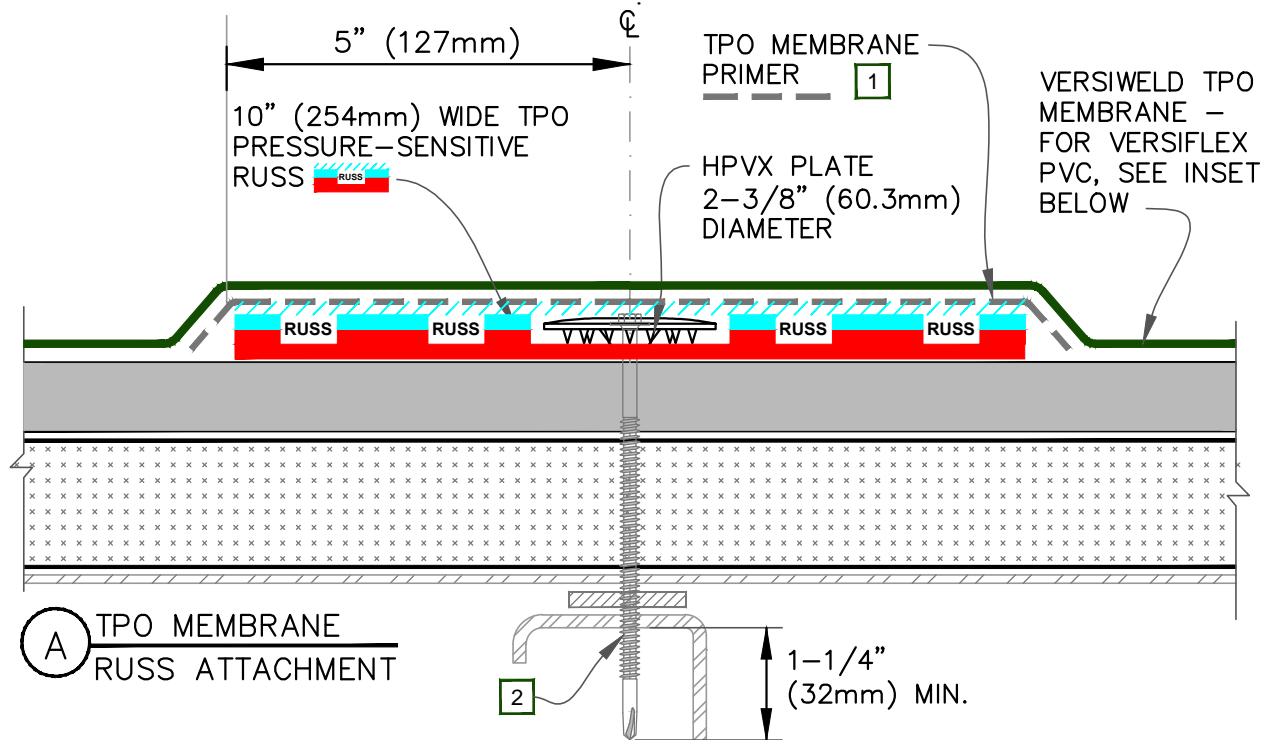


EXISTING FIXED RAKE EDGE



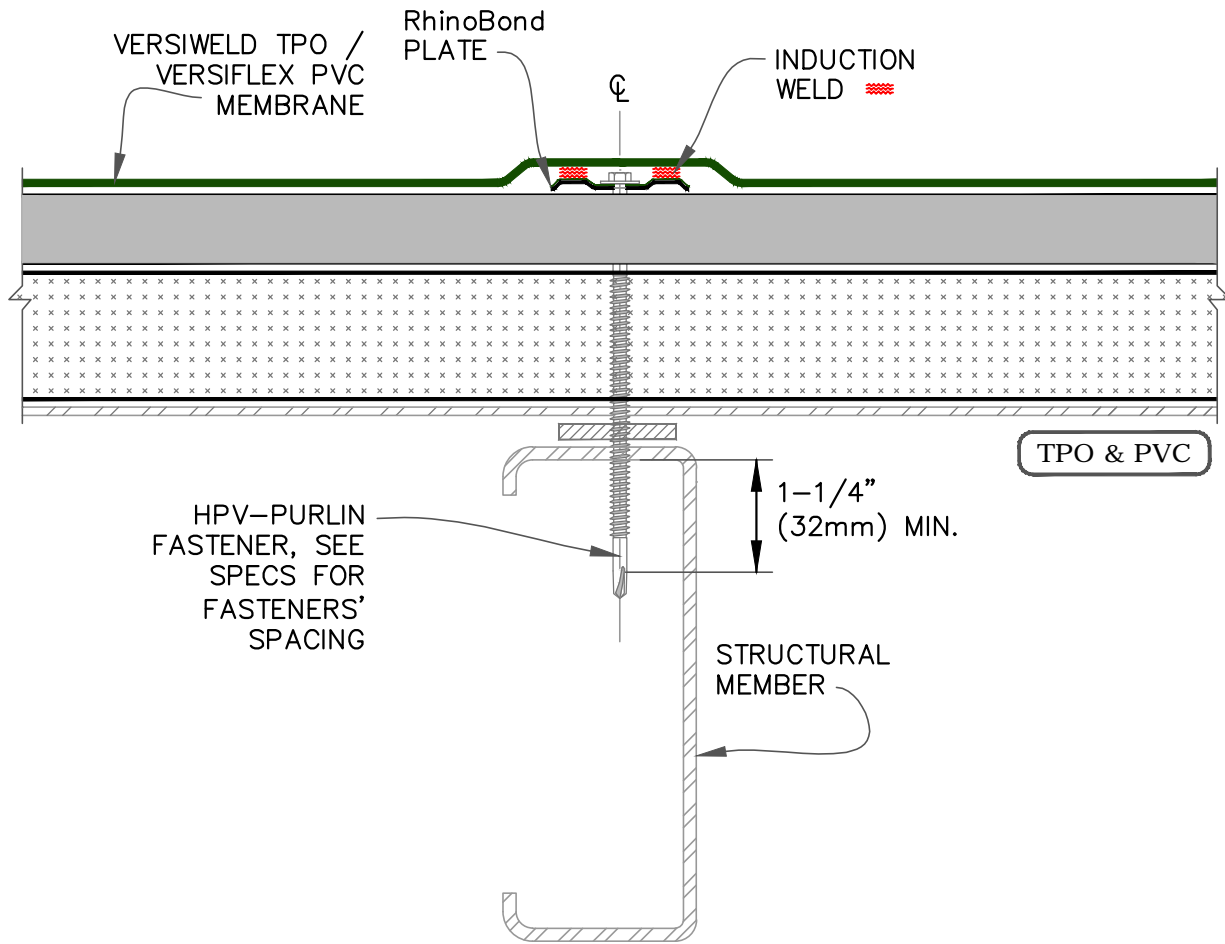
SHEET METAL SCREWS @ 6" O.C., MAX., EXPOSED 3/4" (19mm) MIN. BEYOND EXISTING SHEET METAL SUBSTRATE

HPV FASTENERS @ 12" (305mm) O.C.



NOTES:

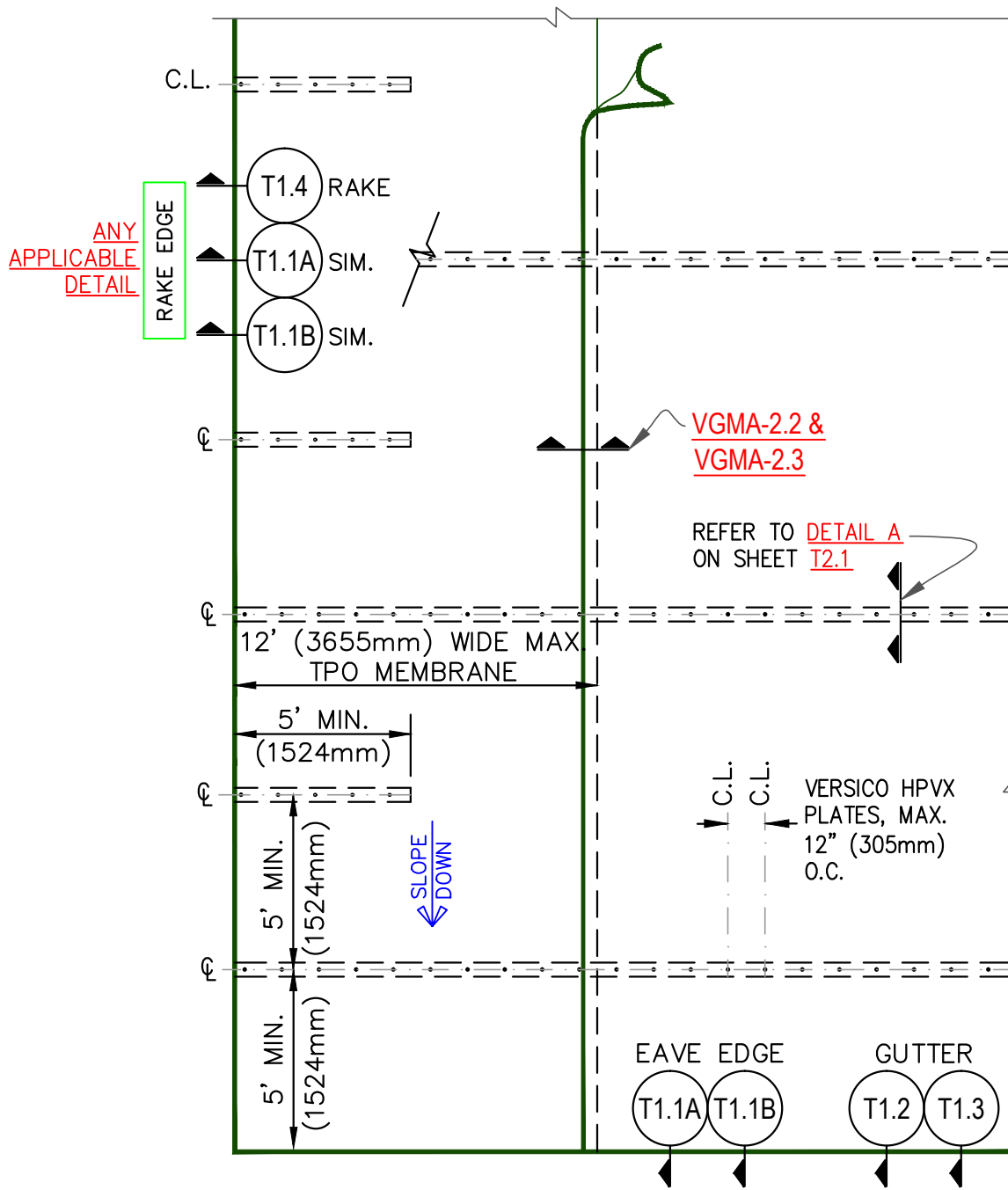
1. TPO MEMBRANE PRIMER MUST BE APPLIED ON THE BACK SIDE OF TPO MEMBRANE, PRIOR TO ADHERING THE MEMBRANE TO PRESSURE-SENSITIVE RUSS.
2. VERSICO PURLIN FASTENER MAX. 12" (305mm) O.C.
3. 1/2" (13mm) MIN.



## TPO & PVC MEMBRANES

### NOTE:

THIS METHOD OF MEMBRANE ATTACHMENT IS NOT FOR USE WITH NON-FACED EPS OR XPS INSULATION.






NOTE:

MEMBRANE SHEETS MAY BE INSTALLED PERPENDICULAR TO SLOPE.

**TPO ONLY**  
(NOT FOR PVC)

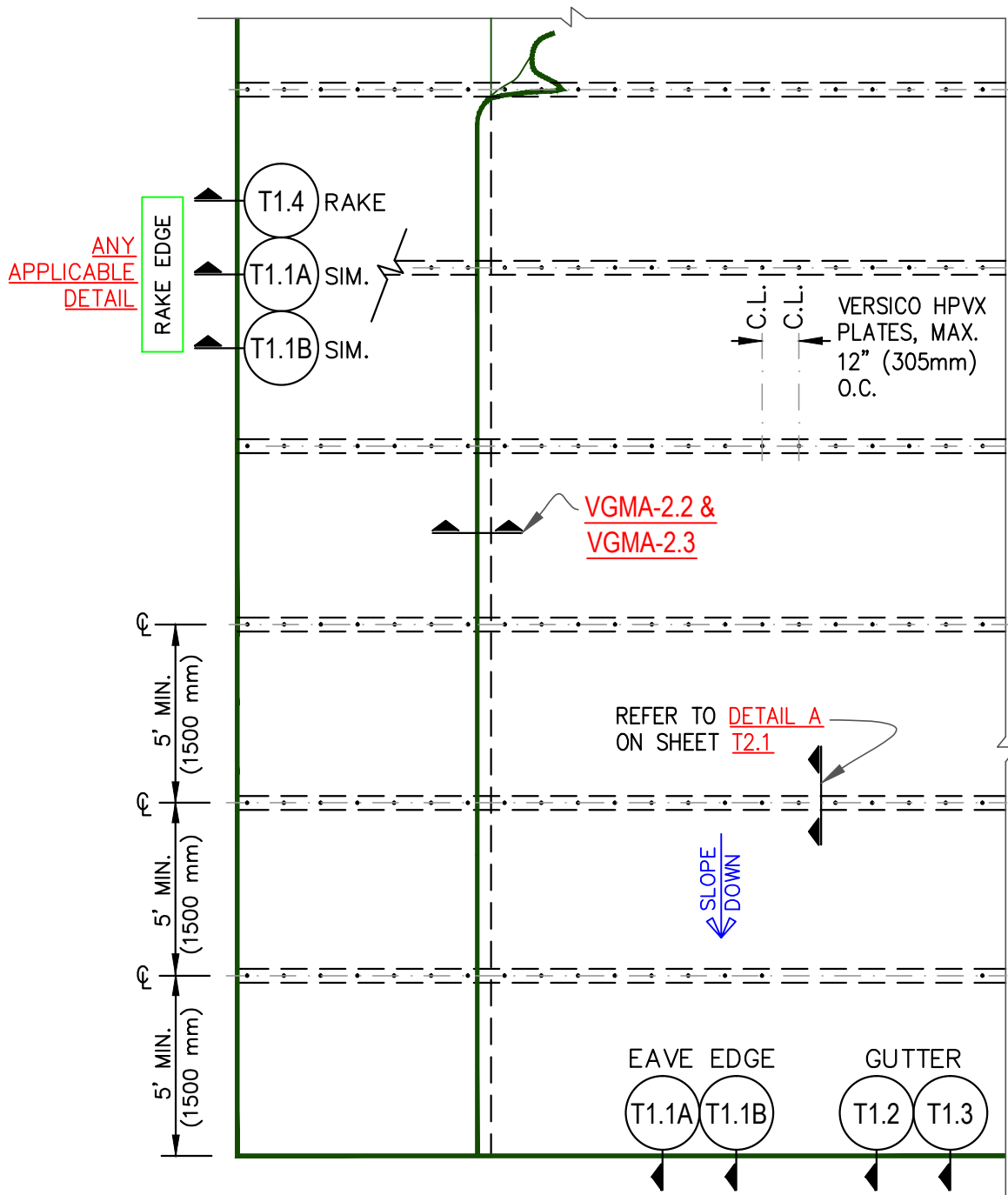


MEMBRANE ATTACHMENT - WIND UP TO 100 MPH WIND ZONE

-  HIGH DENSITY RECOVER BOARD
-  IN-FILL INSULATION
-  SEE NOTE(S)

METAL RETROFIT

MR | T2.3



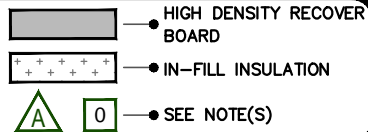
## NOTE:

MEMBRANE SHEETS MAY BE INSTALLED PERPENDICULAR TO SLOPE.

**TPO ONLY**  
(NOT FOR PVC)



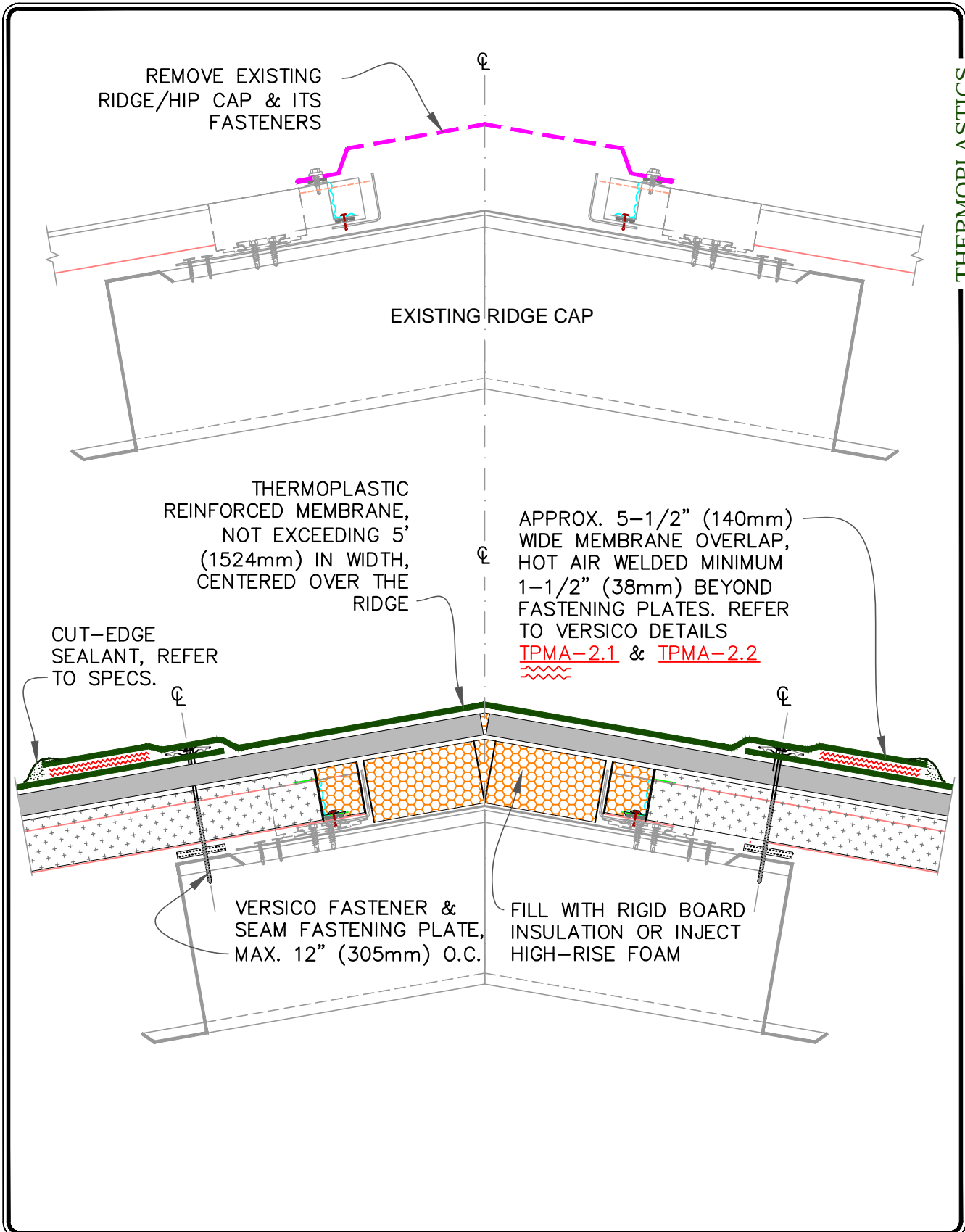
MEMBRANE ATTACHMENT - WIND UP TO 101-120 MPH WIND ZONE

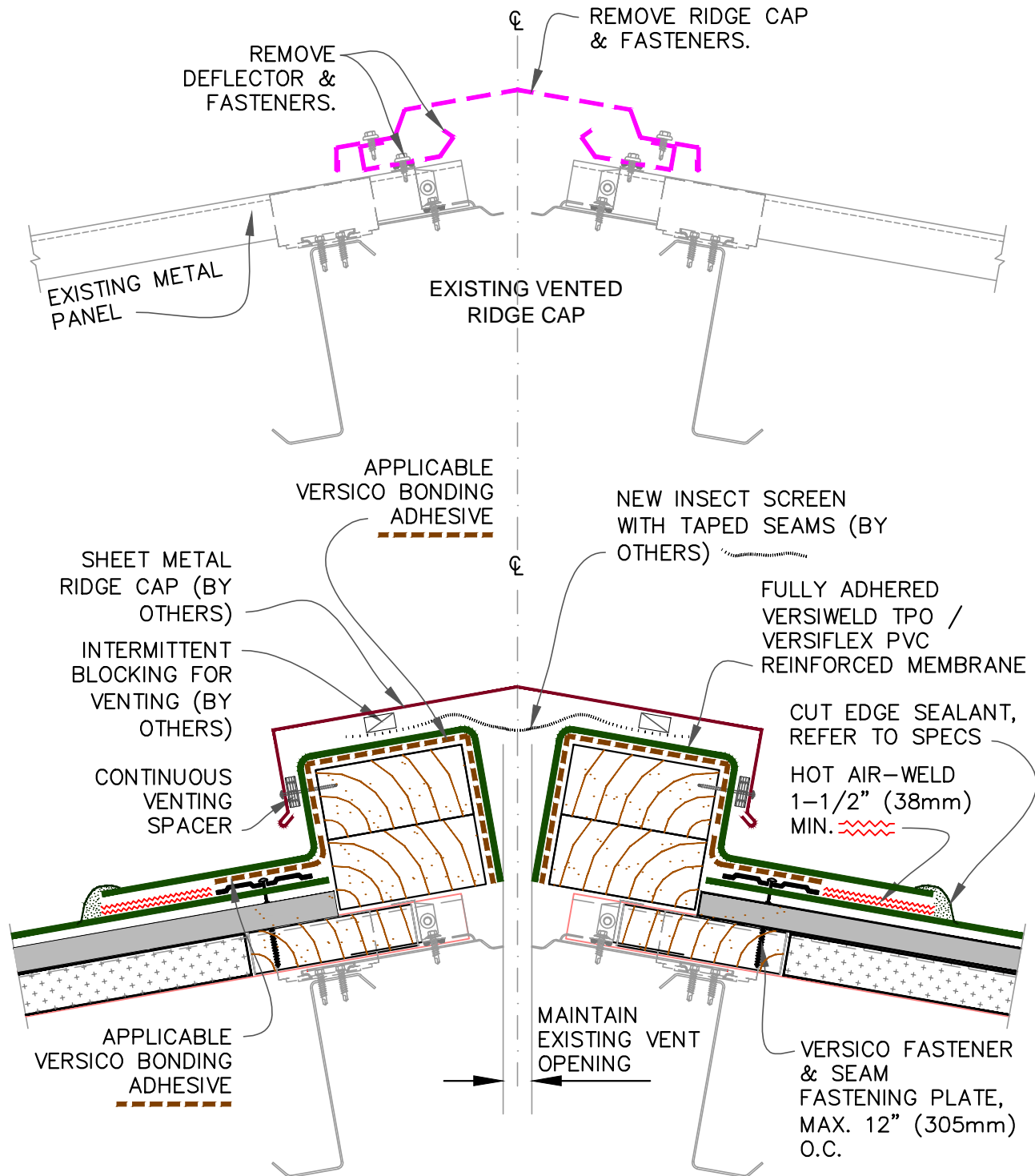


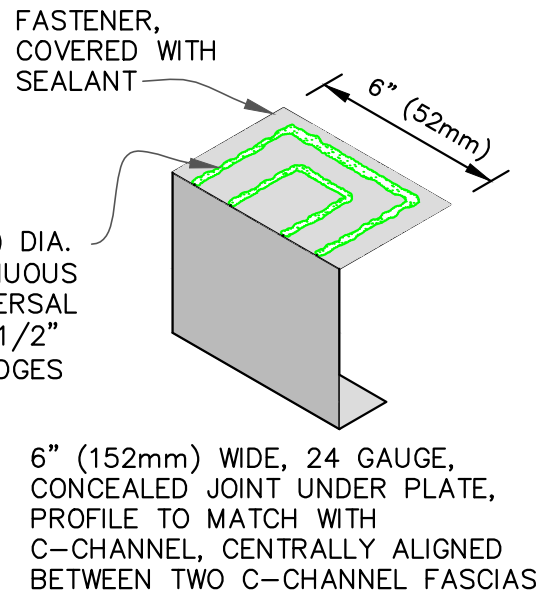
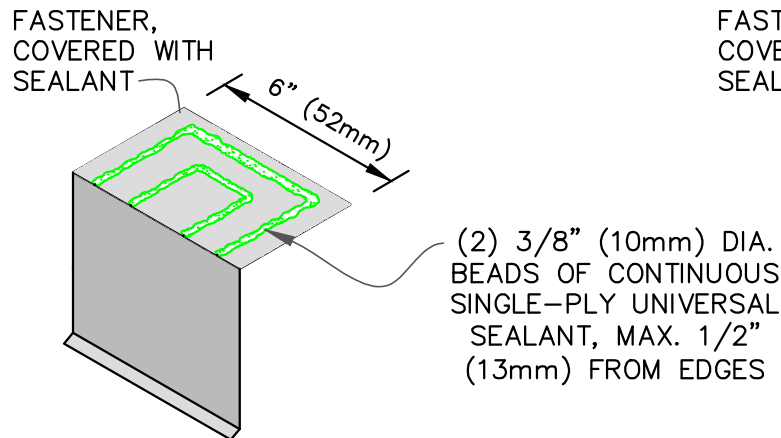
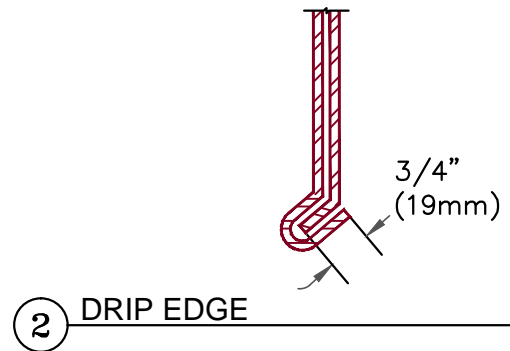
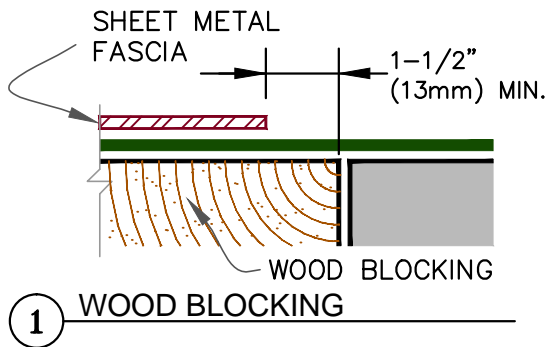
**METAL RETROFIT**

MR | T2.4







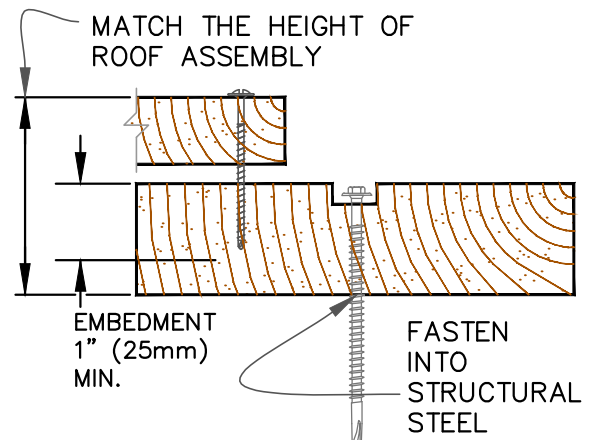
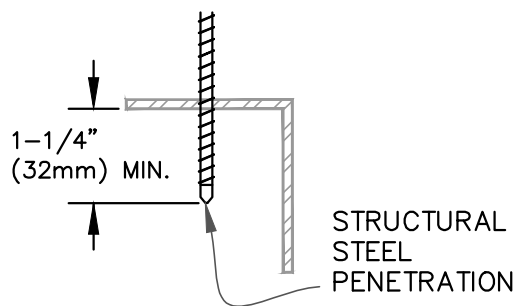


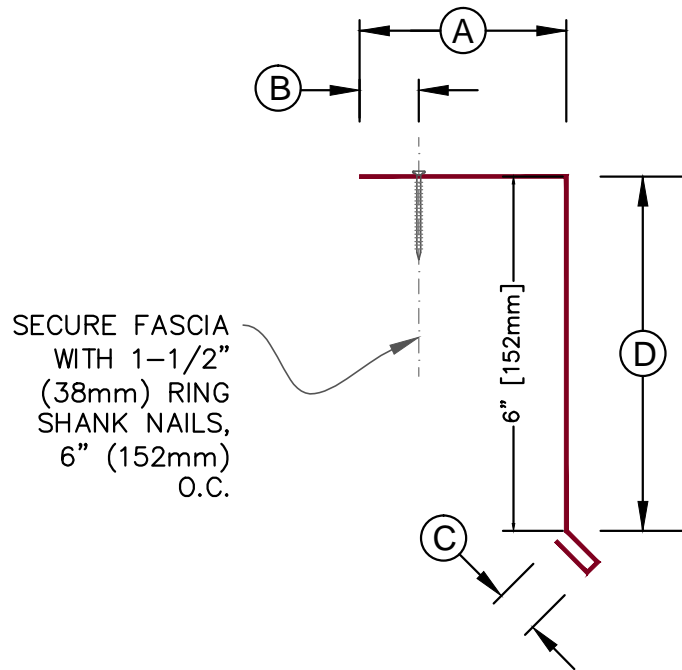
6" (152mm) WIDE CONCEALED JOINT UNDER PLATE, CENTRALLY ALIGNED BETWEEN TWO FASCIA PIECES

6" (152mm) WIDE, 24 GAUGE, CONCEALED JOINT UNDER PLATE, PROFILE TO MATCH WITH C-CHANNEL, CENTRALLY ALIGNED BETWEEN TWO C-CHANNEL FASCIAS

③ UNDER PLATE - TYP. FASCIA

④ UNDER PLATE: C-CHANNEL

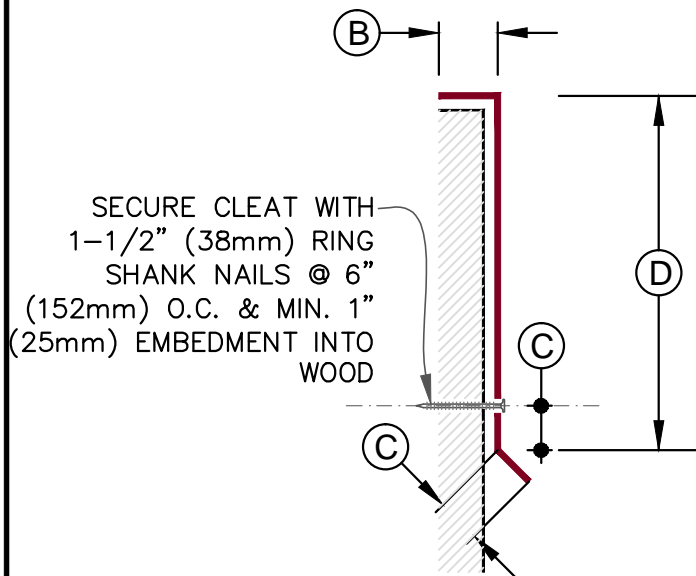




DIMENSIONS		mm
(A)	3-1/2"	28
(B)	1"	25
(C)	3/4	19
(D)	4" OR 6"	102 OR 152

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



**(B) GALVANIZED METAL CLEAT**  
22 GAUGE (0.75 mm) THICK

TABLE 1: (TEST DATA)

ES-1	COMPLIANT	
RE-1	424	PSF (POUNDS/SQUARE FOOT)
	62.62	(kilogram/sq.meter)
	614	pascals (Pa)
RE-2	435	PSF (POUNDS/SQUARE FOOT)
	64.24	(kilogram/sq.meter)
	629.95	pascals (Pa)