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EVALUATION REPORT

East Coast Metals, Inc.

2301 West 8 Lane

Hialeah, FL 33010

Evaluation Report E10240.08.08-R4

FL5374-R4

Date of Issuance: 09/03/2008

Revision 4: 03/17/2015

SCOPE:

This Evaluation Report is issued under Rule 61G20-3 and the applicable rules and regulations governing the use of construction materials in the State of Florida. The documentation submitted has been reviewed by Robert Nieminen, P.E. for use of the product under the Florida Building Code and Florida Building Code, Residential Volume. The products described herein have been evaluated for compliance with the 5th Edition (2014) Florida Building Code sections noted herein.

DESCRIPTION: East Coast Metals Channel Metals

LABELING: Labeling shall be in accordance with the requirements the Accredited Quality Assurance Agency noted herein.

CONTINUED COMPLIANCE: This Evaluation Report is valid until such time as the named product(s) changes, the referenced Quality Assurance documentation changes, or provisions of the Code that relate to the product change. Acceptance of this Evaluation Report by the named client constitutes agreement to notify Robert Nieminen, P.E. if the product changes or the referenced Quality Assurance documentation changes. Trinity|ERD requires a complete review of this Evaluation Report relative to updated Code requirements with each Code Cycle.

ADVERTISEMENT: The Evaluation Report number preceded by the words "Trinity|ERD Evaluated" may be displayed in advertising literature. If any portion of the Evaluation Report is displayed, then it shall be done in its entirety.

INSPECTION: Upon request, a copy of this entire Evaluation Report 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 Evaluation Report consists of pages 1 through 7.

Prepared by:

Robert J.M. Nieminen, P.E.

Florida Registration No. 59166, Florida DCA ANE1983



The facsimile seal appearing was authorized by Robert Nieminen, P.E. on 03/17/2015. This does not serve as an electronically signed document. Signed, sealed hardcopies have been transmitted to the Product Approval Administrator and to the named client

CERTIFICATION OF INDEPENDENCE:

1. Trinity|ERD does not have, nor does it intend to acquire or will it acquire, a financial interest in any company manufacturing or distributing products it evaluates.
2. Trinity|ERD is not owned, operated or controlled by any company manufacturing or distributing products it evaluates.
3. Robert Nieminen, P.E. does not have nor will acquire, a financial interest in any company manufacturing or distributing products for which the evaluation reports are being issued.
4. Robert Nieminen, P.E. does not have, nor will acquire, a financial interest in any other entity involved in the approval process of the product.
5. This is a building code evaluation. Neither Trinity|ERD nor Robert Nieminen, P.E. are, in any way, the Designer of Record for any project on which this Evaluation Report, or previous versions thereof, is/was used for permitting or design guidance unless retained specifically for that purpose.

ROOFING COMPONENT EVALUATION:
1. SCOPE:
Product Category: Roofing

Sub-Category: Roofing Accessories that are an Integral Part of the Roofing System

Compliance Statement: East Coast Metals Channel Metals, as produced by East Coast Metals, have demonstrated compliance with the following sections of the Florida Building Code through testing in accordance with the following Standards. Compliance is subject to the Installation Requirements and Limitations / Conditions of Use set forth herein.

2. STANDARDS:

<u>Section</u>	<u>Property</u>	<u>Standard</u>	<u>Year</u>
1507.3.7	Installation, non-HVHZ	FRSA/TRI April 2012 (04-12)	2012
1518.8.1	Installation, HVHZ	RAS 118, 119 & 120	1995
1523.6.5.2.2	Static Uplift Resistance	TAS 101	1995
1711.2.1	Static Uplift Resistance	SBCCI SSTD 11	1997

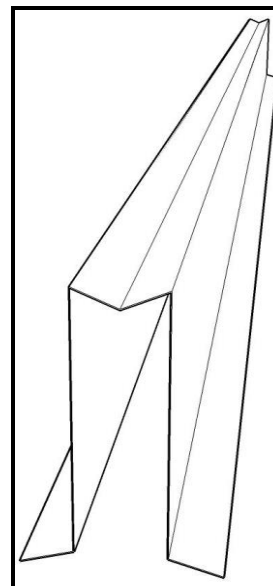
3. REFERENCES:

<u>Entity</u>	<u>Examination</u>	<u>Reference</u>	<u>Date</u>
ERD (TST6049)	Static Uplift Resistance	E42730.08.13	08/23/2013
ERD (TST6049)	Static Uplift Resistance	ECM-SC6795.12.14-1	02/27/2015
ERD (TST6049)	Static Uplift Resistance	ECM-SC6795.12.14-2	02/27/2015
Florida TEC (TST7393)	TAS 101	S10-628R	10/27/2010
PRI (TST5878)	TAS 101	ECM-001-02-01	09/21/2001
PRI (TST5878)	TAS 101	ECM-003-02-01	06/13/2008
PRI (TST5878)	TAS 101	ECM-004-02-01	06/13/2008
PRI (TST5878)	TAS 101	ECM-005-02-01	06/13/2008
PRI (TST5878)	TAS 101	ECM-006-02-01	06/13/2008
PRI (TST5878)	TAS 101	ECM-007-02-01	06/13/2008
PRI (TST5878)	TAS 101	ECM-008-02-01	06/13/2008
Florida Building Code	Attachment Requirements	FRSA/TRI April 2012 (04-12)	04/2012
Florida Building Code - HVHZ	Attachment Requirements	RAS 118, 119 and 120	1995
East Coast Metals	Metal Quality	Mill Certifications	Various
Architectural Testing (QUA1844)	Quality Control	Participation Letter	Exp. 12/31/2018

4. PRODUCT DESCRIPTION:

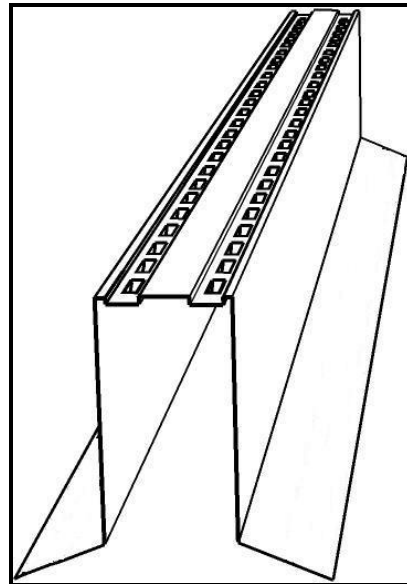
4.1 **Hip & Ridge Channel Metal:** Pre-formed metal channel designed for use as a hip and ridge base to which roof tiles are bonded in FBC Approved roof tile adhesive.

Hip & Ridge Channel Metal is available in 119-3/8-inch (\pm 3/8-inch) length by 2.5, 3, 3.5, 4, 5, 6 or 7-inch (\pm 3/8-inch) heights with 1.5-inch (\pm 1/16-inch) deck-flanges.



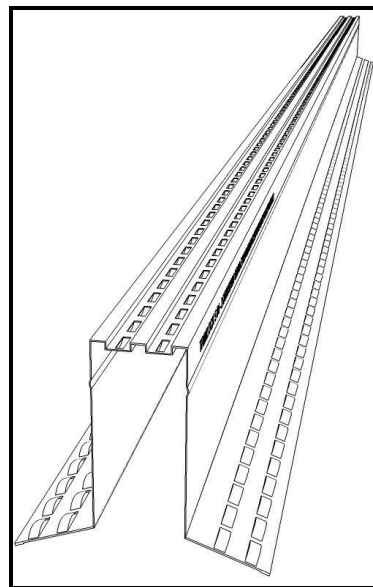
- 4.2 **Trim Lock Channel Metal:** Pre-formed metal channel designed for use as a hip and ridge base to which roof tiles are bonded in FBC Approved roof tile adhesive. Trim Lock Channel Metal is characterized by its profiled and perforated upper horizontal flange designed to receive and allow for interlock with the overlying tile adhesive.

Trim Lock Channel Metal is available in 119-3/8-inch ($\pm 3/8$ ") length by 3, 3.5, 4, 5 or 6-inch ($\pm 3/8$ -inch) heights with 1.5-inch ($\pm 1/16$ -inch) deck-flanges.



- 4.2 **Trim Lock Plus Channel Metal:** Pre-formed metal channel designed for use as a hip and ridge base to which roof tiles are bonded in FBC Approved roof tile adhesive. Trim Lock Plus Channel Metal is characterized by its profiled and perforated upper horizontal flange designed to receive and allow for interlock with the overlying tile adhesive and its perforated deck flanges, designed for installation atop the roof underlayment via placement in FBC Approved roof tile adhesive, which flows-through and interlocks with the underlying adhesive.

Trim Lock Plus Channel Metal is available in 119-3/8-inch ($\pm 3/8$ ") length by 3, 3.5, 4, 5 or 6-inch ($\pm 3/8$ -inch) heights with 1.5-inch ($\pm 1/16$ -inch) deck-flanges.



- 4.4 East Coast Metals Channel Metals are fabricated of the following metals:
- Galvanized Steel: Min. 0.019 \pm 0.002-inch, ASTM A653 (G-90), min. 33 KSI.
 - Galvalume Steel: Min. 0.019 \pm 0.002-inch, ASTM A792, AZ55, min. 35 KSI.
 - Aluminum: Min. 0.032 \pm 0.002-inch, ASTM B209, 3003-H14, min. 21 KSI.
 - Stainless Steel: Min. 0.019 \pm 0.002-inch, ASTM A240/A480, T304, min. 35 KSI.

5. LIMITATIONS:

- 5.1 This is a building code evaluation. Neither Trinity|ERD nor Robert Nieminen, P.E. are, in any way, the Designer of Record for any project on which this Evaluation Report, or previous versions thereof, is/was used for permitting or design guidance unless retained specifically for that purpose.

5.2 FOR HVHZ JURISDICTIONS:

5.2.1 For Hip & Ridge Channel Metal or Trim Lock Channel Metal, refer to FBC RAS 118, Drawing 13, Detail 3; RAS 119, Drawing 12, Detail 3; or RAS 120, Drawing 15, Detail 3. For Trim Lock Plus Channel Metal, refer to the installation instructions herein.

5.2.2 For HVHZ jurisdictions, installations of Hip & Ridge Channel Metal and Trim Lock are prescriptive by RAS 118, 119 and 120, and the data in Tables 1A and 1B is supplemental to these prescriptive allowances.

Installations of Trim Lock Plus are limited to projects having a required moment resistance (M_r) or uplift resistance (F_r), as determined in accordance with RAS 127, not greater than the following values.

Refer to the tile adhesive manufacturer’s published installation instructions for adhesive paddy placement details.

- “INDEPENDENT” paddy placement means each individual tile is bonded to the Channel Metal in its own, single foam paddy; tile head laps are not bonded. This method is limited to 2-part tile adhesives. Allowable performance data below for “INDEPENDENT” paddy placement already has a 2 to 1 margin of safety applied to ultimate performance.
- “INTERDEPENDENT” paddy placement means each individual tile is bonded to the Channel Metal in a foam paddy, and a second foam paddy bonds the tile head lap, or two tiles are bonded to the Channel Metal using a single foam paddy. Allowable performance data below for “INTERDEPENDENT” paddy placement already has a 4 to 1 margin of safety applied to ultimate performance.

TABLE 1A: PERFORMANCE LIMITATIONS - HVHZ, INDEPENDENT PADDY PLACEMENT						
<i>(2 TO 1 MARGIN OF SAFETY ALREADY APPLIED)</i>						
Hip/Ridge Metal		Tile	Adhesive		Allowable Performance	
Design	Metal Type		Type	Placement	Moment Based M_r (ft-lbf)	Uplift Based F_r (lbf)
Hip & Ridge Channel Metal	galvanized	clay or concrete	3M™ 2-Component Foam Roof Tile Adhesive AH-160	Independent	127	169
Trim Lock	galvanized, Galvalume®, aluminum or stainless steel	clay or concrete	3M™ 2-Component Foam Roof Tile Adhesive AH-160	Independent	171	159
Trim Lock Plus	galvanized, Galvalume®, aluminum or stainless steel	clay or concrete	3M™ 2-Component Foam Roof Tile Adhesive AH-160	Independent	177	165

TABLE 1B: PERFORMANCE LIMITATIONS - HVHZ, INTERDEPENDENT PADDY PLACEMENT						
<i>(4 TO 1 MARGIN OF SAFETY ALREADY APPLIED)</i>						
Hip/Ridge Metal		Tile	Adhesive		Allowable Performance	
Design	Metal Type		Type	Placement	Moment Based M_r (ft-lbf)	Uplift Based F_r (lbf)
Trim Lock or Trim Lock Plus	galvanized, Galvalume®, aluminum or stainless steel	clay or concrete	3M™ 2-Component Foam Roof Tile Adhesive AH-160	Interdependent	95	88
Trim Lock	galvanized, Galvalume®, stainless steel	clay or concrete	3M™ Roof Tile Adhesive RTA-1	Interdependent	99	94
Trim Lock	aluminum	clay or concrete	3M™ Foam Roof Tile Adhesive RTA-1	Interdependent	90	84
Trim Lock Plus	galvanized, Galvalume®, aluminum or stainless steel	clay or concrete	3M™ Foam Roof Tile Adhesive RTA-1	Interdependent	90	84
Trim Lock	galvanized, Galvalume® or stainless steel	clay or concrete	TILE BOND™ Roof Tile Adhesive	Interdependent	123	117
Trim Lock	aluminum	clay or concrete	TILE BOND™ Roof Tile Adhesive	Interdependent	79	73
Trim Lock Plus	galvanized, Galvalume®, aluminum or stainless steel	clay or concrete	TILE BOND™ Roof Tile Adhesive	Interdependent	79	73
Trim Lock	galvanized, Galvalume® or stainless steel	clay or concrete	Touch ‘n Seal StormBond Roof Tile Adhesive	Interdependent	146	139
Trim Lock	Aluminum	clay or concrete	Touch ‘n Seal StormBond Roof Tile Adhesive	Interdependent	58	54
Trim Lock Plus	galvanized, Galvalume®, aluminum or stainless steel	clay or concrete	Touch ‘n Seal StormBond Roof Tile Adhesive	Interdependent	58	54

5.3 FOR NON-HVHZ JURISDICTIONS:

5.3.1 For Hip & Ridge Channel Metal or Trim Lock Channel Metal, refer to FRSA/TRI April 2012 (04-12). For Trim Lock Plus Channel Metal, refer to the installation instructions herein

5.3.2 For non-HVHZ, installations are limited to projects having hip and ridge design pressure requirements, determined in accordance with Table 1A of FRSA/TRI April 2012 (04-12), not greater than the following values. Refer to the tile adhesive manufacturer’s published installation instructions for adhesive paddy placement details.

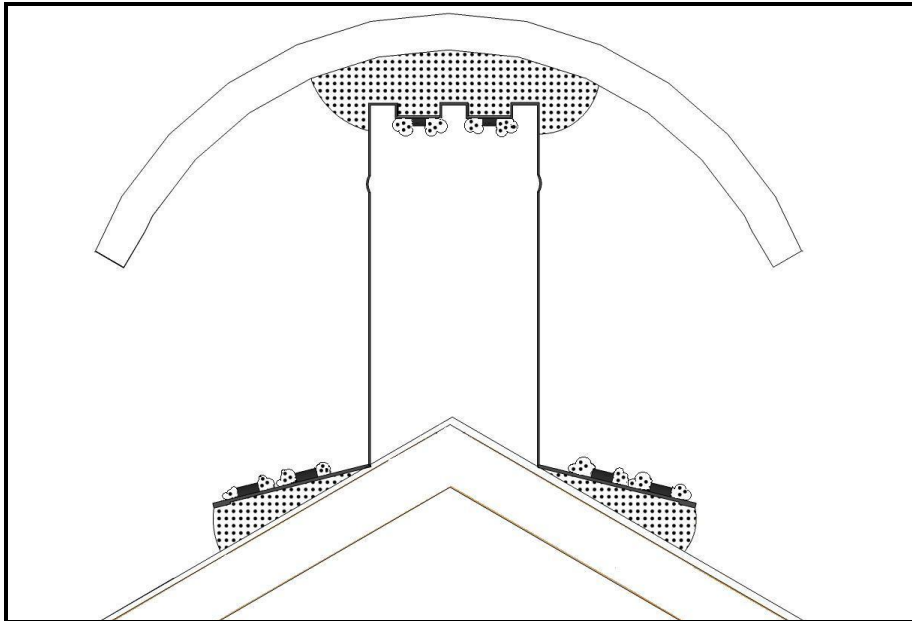
- “INDEPENDENT” paddy placement means each individual tile is bonded to the Channel Metal in its own, single foam paddy; tile head laps are not bonded. This method is limited to 2-part tile adhesives. This method is limited to 2-part tile adhesives. Allowable performance data below for “INDEPENDENT” paddy placement already has a 2 to 1 margin of safety applied to ultimate performance.
- “INTERDEPENDENT” paddy placement means each individual tile is bonded to the Channel Metal in a foam paddy, and a second foam paddy bonds the tile head lap, or two tiles are bonded to the Channel Metal using a single foam paddy. Allowable performance data below for “INTERDEPENDENT” paddy placement already has a 4 to 1 margin of safety applied to ultimate performance.

TABLE 2A: PERFORMANCE LIMITATIONS – NON-HVHZ, INDEPENDENT PADDY PLACEMENT (2 TO 1 MARGIN OF SAFETY ALREADY APPLIED)					
Hip/Ridge Metal		Tile	Adhesive		Allowable Uplift (psf)
Design	Metal Type		Type	Placement	
Hip & Ridge Channel Metal	galvanized	clay or concrete	3M™ 2-Component Foam Roof Tile Adhesive AH-160	Independent	169
Trim Lock	galvanized, Galvalume®, aluminum or stainless steel	clay or concrete	3M™ 2-Component Foam Roof Tile Adhesive AH-160	Independent	173
Trim Lock Plus	galvanized, Galvalume®, aluminum or stainless steel	clay or concrete	3M™ 2-Component Foam Roof Tile Adhesive AH-160	Independent	178

TABLE 2B: PERFORMANCE LIMITATIONS – NON-HVHZ, INTERDEPENDENT PADDY PLACEMENT (4 TO 1 MARGIN OF SAFETY ALREADY APPLIED)					
Hip/Ridge Metal		Tile	Adhesive		Allowable Uplift (psf)
Design	Metal Type		Type	Placement	
Trim Lock or Trim Lock Plus	galvanized, Galvalume®, aluminum or stainless steel	clay or concrete	3M™ 2-Component Foam Roof Tile Adhesive AH-160	Interdependent	98
Trim Lock	galvanized, Galvalume® or stainless steel	clay or concrete	3M™ Foam Roof Tile Adhesive RTA-1	Interdependent	110
Trim Lock	aluminum	clay or concrete	3M™ Foam Roof Tile Adhesive RTA-1	Interdependent	93
Trim Lock Plus	galvanized, Galvalume®, aluminum or stainless steel	clay or concrete	3M™ Foam Roof Tile Adhesive RTA-1	Interdependent	93
Trim Lock	galvanized, Galvalume® or stainless steel	clay or concrete	TILE BOND™ Roof Tile Adhesive	Interdependent	152
Trim Lock	aluminum	clay or concrete	TILE BOND™ Roof Tile Adhesive	Interdependent	82
Trim Lock Plus	galvanized, Galvalume®, aluminum or stainless steel	clay or concrete	TILE BOND™ Roof Tile Adhesive	Interdependent	82
Trim Lock	galvanized, Galvalume® or stainless steel	clay or concrete	Touch ‘n Seal StormBond Roof Tile Adhesive	Interdependent	148
Trim Lock	Aluminum	clay or concrete	Touch ‘n Seal StormBond Roof Tile Adhesive	Interdependent	61
Trim Lock Plus	galvanized, Galvalume®, aluminum or stainless steel	clay or concrete	Touch ‘n Seal StormBond Roof Tile Adhesive	Interdependent	61

6. INSTALLATION:

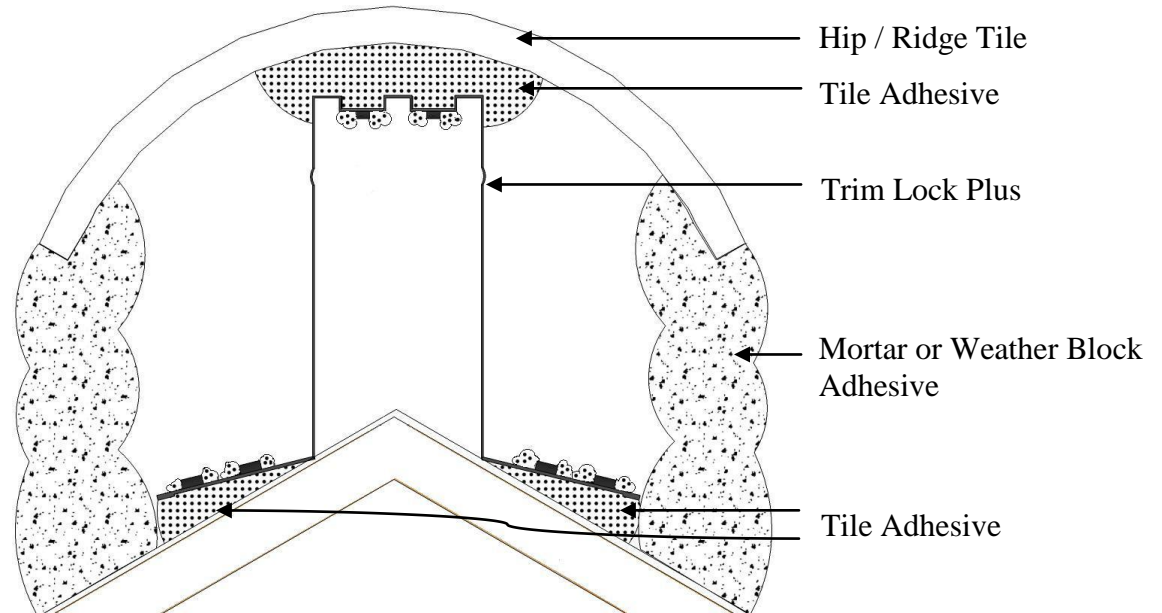
- 6.1 The roof deck shall be minimum 15/32-inch plywood (non-HVHZ) or minimum 19/32-inch plywood (HVHZ) attached in accordance with FBC Chapter 23 to the satisfaction of the AHJ.
- 6.2 Hip & Ridge Channel Metal and Trim Lock Channel Metal shall be installed using min. 11 ga. x 1¼-inch long x 3/8-inch head diameter galvanized annular ring shank nails spaced 6-inch o.c. along both deck-flanges. Fasteners shall be positioned ¼-inch from the outside edge of each deck-flange, set in a bed plastic roof cement. For FBC HVHZ, refer to FBC RAS 118, Drawing 13, Detail 3; RAS 119, Drawing 12, Detail 3; or RAS 120, Drawing 15, Detail 3.
- 6.3 Trim Lock Plus Channel Metal shall be installed atop the Approved roof underlayment in continuous 2-inch wide ribbons of tile adhesive centered beneath each 1.5-inch wide deck flange. Place the Trim Lock Plus Channel Metal into the wet adhesive and allow it to set-up prior to installation of roof tiles.



View of Polyset AH160 Placement for Trim Lock Plus Channel Metal Installation

- 6.3.1 It is critical that the bond between the Trim Lock Plus Channel Metal, the tile adhesive and the underlayment is not disturbed prior to or during placement of the ridge tiles.
- 6.3.2 Approved underlayments are the codified '30/90' system or other FBC Approved roof underlayments listing approved use of the subject tile adhesive.

- 6.4 Tile shall be installed atop the Channel Metal in accordance with the tile adhesive manufacturer’s Approved, published installation instructions, subject to the limitations outlined in Section 5 herein. The exposed edges shall be packed and pointed with Approved mortar or weather blocking adhesive in accordance with FRSA/TRI April 2012 (04-12) or RAS 118, RAS 119, RAS 120 requirements.



View of Trim Lock Plus Channel Metal Installation after Weather Blocked

- 6.4.1 Channel Metal shall be free of dust, debris, oils or other bond-breaking substance prior to placement of adhesive.

7. BUILDING PERMIT REQUIREMENTS:

As required by the Building Official or Authority Having Jurisdiction in order to properly evaluate the installation of this product.

8. MANUFACTURING PLANTS:

Contact the named QA entity for manufacturing facilities covered by F.A.C. Rule 61G20-3 QA requirements.

9. QUALITY ASSURANCE ENTITY:

Architectural Testing, Inc. – QUA1844; (717) 764-7700

- END OF EVALUATION REPORT -