



**CERTIFICATION**



#1131  
ISO/IEC 17065  
Product Certification Body



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## **Technical Evaluation Report**

**TER 1509-03**

Shear-X™ Bracket and RidgeVent™

**Garwood Manufacturing Co. Inc.**

### **Product:**

**Shear-X™ and RidgeVent™**

Issue Date:

January 14, 2016

Revision Date:

September 4, 2019

Subject to Renewal:

April 1, 2020



## Technical Evaluation Report (TER)

Shear-X™ Bracket and RidgeVent™

TER No. 1509-03

Garwood Manufacturing Co. Inc.

115 Lismore Ave.  
Glenside, PA 19038  
215-887-6600

Issue Date: January 14, 2016  
Updated: September 4, 2019  
Subject to Renewal: April 1, 2020

### **DIVISION: 05 00 00 – METALS**

Section: 05 50 00 – Metal Fabrications

### **DIVISION: 06 00 00 – WOOD, PLASTICS AND COMPOSITES**

Section: 06 02 00 – Design Information

#### **1. Product(s) Evaluated:**

1.1. Shear-X™

1.2. RidgeVent™

1.2.1. Unless otherwise noted, “RidgeVent” is used throughout this Technical Evaluation Report (TER) to mean any of the profiles listed herein. For a complete list of covered products, refer to [Appendix A](#).

1.3. For the most recent version of this Technical Evaluation Report (TER), visit [drjengineering.org](http://drjengineering.org). For more detailed state professional engineering and code compliance legal requirements and references, visit [drjengineering.org/statelaw](http://drjengineering.org/statelaw). DrJ is fully compliant with all state professional engineering and code compliance laws.

1.4. This TER can be used to obtain product approval in any country that is an IAF MLA Signatory (all countries found [here](#)) and covered by an [IAF MLA Evaluation](#) per the [Purpose of the MLA](#) (as an example, see [letter to ANSI](#) from the Standards Council of Canada). Manufacturers can go to jurisdictions in the U.S., Canada and other [IAF MLA Signatory Countries](#) and have their products readily approved by authorities having jurisdiction using [DrJ's ANSI accreditation](#).

1.5. Building code regulations require that evaluation reports are provided by an approved agency meeting specific requirements, such as those found in [IBC Section 1703](#). Any agency accredited in accordance with ANSI ISO/IEC 17065 meets this requirement within ANSI's scope of accreditation. For a list of accredited agencies, visit ANSI's [website](#). For more information, see [drjcertification.org](http://drjcertification.org).

1.6. Requiring an evaluation report from a specific private company (i.e. ICC-ES, IAPMO, CCMC, DrJ, etc.) can be viewed as discriminatory and is a violation of international, federal, state, provincial and local anti-trust and free trade regulations.

1.7. DrJ's code compliance work:

1.7.1. Conforms to code language adopted into law by individual states and any relevant consensus based standard such as an ANSI or ASTM standard.

1.7.2. Complies with accepted engineering practice, all professional engineering laws and by providing an engineer's seal DrJ takes professional responsibility for its specified scope of work.

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### 2. Applicable Codes and Standards:<sup>1</sup>

- 2.1. 2012, 2015 and 2018 International Building Code (IBC)
- 2.2. 2012, 2015 and 2018 International Residential Code (IRC)
- 2.3. 2014 and 2017 Florida Building Code (FBC)
- 2.4. AISI S100 – North American Specification for the Design of Cold-Formed Steel Structural Members
- 2.5. ANSI/AWC NDS – National Design Specification® for Wood Construction
- 2.6. ASCE 7 – Minimum Design Loads for Buildings and Other Structures
- 2.7. ASTM A653 – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
- 2.8. ASTM D1929 – Standard Test Method for Determining Ignition Temperature of Plastics
- 2.9. ASTM D2843 – Standard Test Method for Density of Smoke from the Burning or Decomposition of Plastics
- 2.10. ASTM D635 – Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position
- 2.11. ASTM D7147 – Standard Specification for Testing and Establishing Allowable Loads of Joist Hangers
- 2.12. ASTM E2126 – Standard Test Methods for Cyclic (Reversed) Load Test for Shear Resistance of Vertical Elements of the Lateral Force Resisting Systems for Buildings
- 2.13. ASTM F1667 – Standard Specification for Driven Fasteners: Nails, Spikes, and Staples
- 2.14. TAS 100(A)-95 – Test Procedure for Wind and Wind Driven Rain Resistance and/or Increased Windspeed Resistance of Soffit Ventilation Strip and Continuous or Intermittent Ventilation System Installed at the Ridge Area

### 3. Performance Evaluation:

- 3.1. Shear-X was evaluated to determine the ability to resist shear forces for the following conditions:
  - 3.1.1. Performance of Shear-X used on light-frame wood construction roof assemblies using rafter or truss framing and wall assemblies to resist wind and seismic loads in accordance with [IBC Section 1609](#) and [IBC Section 1613](#) and ASCE 7-10 Chapters 11 and 26.
- 3.2. RidgeVent was evaluated to determine:
  - 3.2.1. Self-ignition temperature and flash ignition temperature performance in accordance with ASTM D1929.
  - 3.2.2. Average smoke density rating performance in accordance with ASTM D2843.
  - 3.2.3. Linear rate of burn performance in accordance with ASTM D635.
  - 3.2.4. Wind-driven rain performance in accordance with Florida Building Code Test Protocol for High Velocity Hurricane Zone, TAS 100(A) and FBC 1523.6.5.2.13.
- 3.3. Any code compliance issues not specifically addressed in this section are outside the scope of this TER.

### 4. Product Description and Materials:

- 4.1. Description
  - 4.1.1. Shear-X

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<sup>1</sup> Unless otherwise noted, all references in this code compliant technical evaluation report (TER) are from the 2018 version of the codes and the standards referenced therein, including, but not limited to, ASCE 7, SDPWS and WFCM. This product also complies with the 2000-2015 versions of the IBC and IRC and the standards referenced therein. As required by law, where this TER is not approved, the building official shall respond in writing, stating the reasons this TER was not approved. For variations in state and local codes, if any see [Section 8](#).

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4.1.1.1. Shear-X is a galvanized steel bracket designed to transfer shear forces in roof diaphragms across the vented ridge accommodating framing members spaced 16" and 24" on center (o.c.), see [Figure 1](#).

Figure 1: Shear-X

4.1.1.2. A continuous ridge vent requires the removal of 1" to 1½" of sheathing on both sides of the ridge, leaving 6" to 12" at each end of the ridge uncut. This prevents the sheathing from transferring forces from one side of the ridge to the other side. Shear-X is designed to connect the sheathing across the ridge of a vented roof.

4.1.1.3. The bracket can be bent to accommodate any roof pitch from 0:12 to 12:12. Shear-X is connected to the roof framing members with 10d (0.131" x 3") nails installed in holes pre-punched in the metal bracket (see [Figure 2a](#) and [Figure 2b](#)).

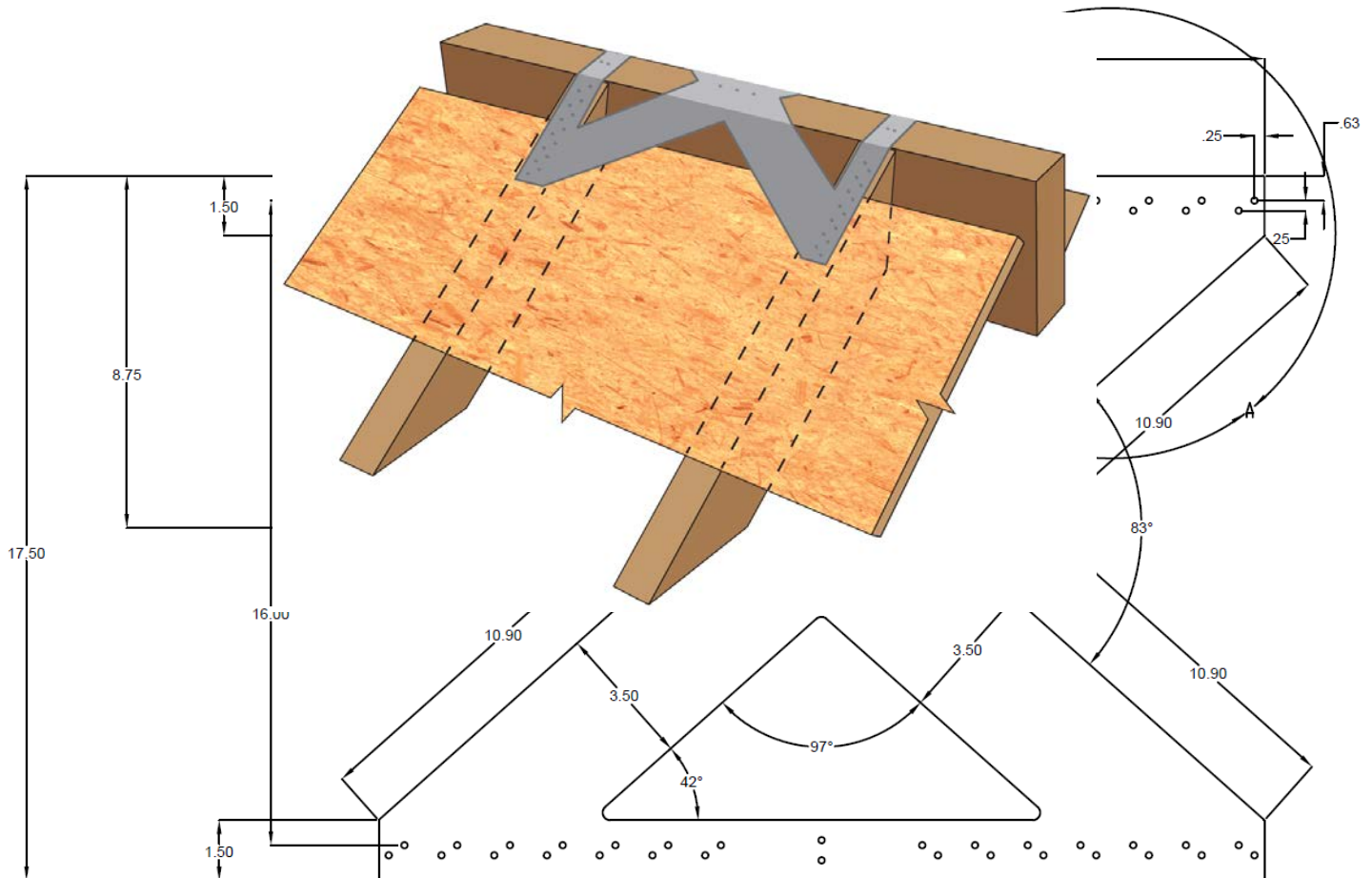


Figure 2a: Shear-X 16" Bracket Dimension Details

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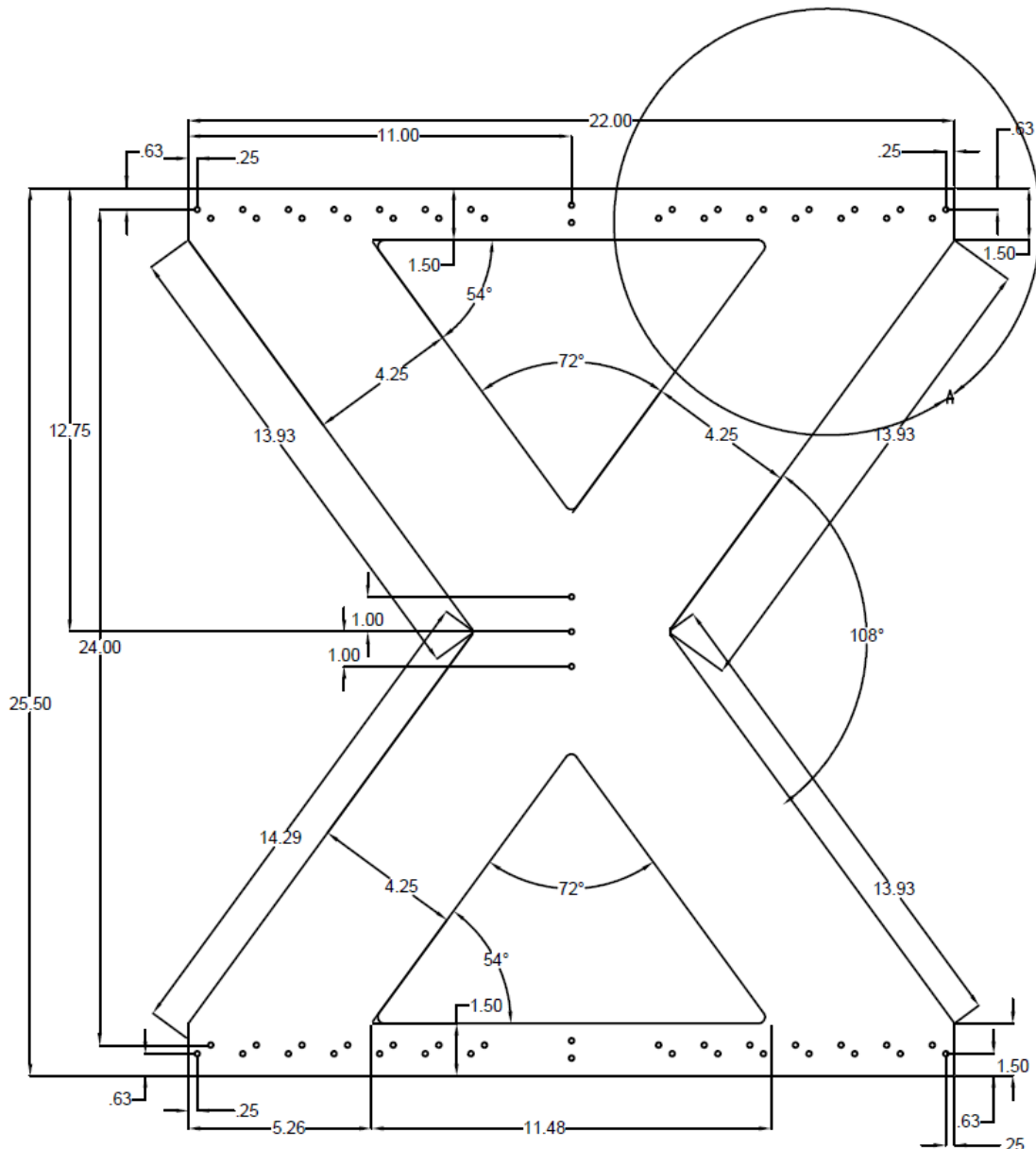


Figure 2b: Shear-X 24" Bracket Dimension Details

4.1.1.4. Use in other applications where shear resistance is required such as braced wall design is permissible provided the building designer provides appropriate detailing.

### 4.1.2. RidgeVent

4.1.2.1. RidgeVent is a low profile attic vent that is installed on vented-ridge roof systems.

## 4.2. Materials

### 4.2.1. Shear-X

4.2.1.1. Shear-X brackets are made from 29 mil ASTM A653 SS Grade 33 steel with a G90 zinc coating for corrosion resistance.

### 4.2.1.2. Available sizes

4.2.1.2.1. 16" Bracket Thickness – 29 mil

4.2.1.2.2. 24" Bracket Thickness – 29 mil

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### 4.2.2. RidgeVent

4.2.2.1. RidgeVent is made of Class A fire-rated, non-woven polymer mat that is available in various profiles and product names.

4.2.2.1.1. RidgeVent is produced in a number of profiles to fit most roofing types (e.g. slate, fiberglass shingle, cedar, metal and tile). These profiles are sold under the following category names: Shear-X RidgeVent, Mongoose® RidgeVent, ProfileVent®, TileVent®, RidgeVent for Shingle Roofs, and Hip & RidgeVent.

4.2.2.2. Additionally, various profiles are available within each of these categories to address specific profile shapes. See [Appendix A](#) for complete product listing of all available profiles and sizes.

## 5. Applications:

### 5.1. Shear-X

#### 5.1.1. General

5.1.1.1. Shear-X can be used to resist shear forces from both wind and seismic loading when used in vented ridge roofing applications with pitches from 0:12 to 12:12.

5.1.1.2. Shear-X brackets have a minimum yield stress of 33 ksi and ultimate stress of 45 ksi.

5.1.1.3. Where the application exceeds the limitations set forth herein, design shall be permitted in accordance with accepted engineering procedures, experience and technical judgment.

#### 5.1.2. Load Capacity

5.1.2.1. Shear-X provides the resistance capacities as listed in [Table 1](#) when installed in accordance with the requirements of this TER.

Table 1: Average Ultimate Load and Allowable Load of Shear-X Bracket<sup>1,2</sup>

Connector	Framing Spacing (in.)	Framing Method	Pitch	Average Ultimate Load (lbs.)	Allowable Load (lbs.) <sup>3</sup>
Shear-X 16029	16"	Rafter <sup>4,5</sup>	0/12	5445	1945
			12/12	5100	1820
		Truss <sup>4,6</sup>	0/12	5445	1945
			12/12	5100	1820
		Truss (No Ridge Blocking)	0/12	5030	1795
			12/12	3180	1135
Shear-X 24029	24"	Rafter <sup>4,5</sup>	0/12	5740	2050
			12/12	5655	2020
		Truss <sup>4,6</sup>	0/12	5740	2050
			12/12	5655	2020
		Truss (No Ridge Blocking)	0/12	5535	1975
			12/12	2960	1055

1. Interpolation between pitches is permitted.
2. Joists, rafters and trusses must be minimum No. 2 Spruce-Pine-Fir (SPF) 2x4 or better.
3. For Wind design, allowable loads may be increased 40%.
4. The connection of the joist/rafter to the ridge beam/board and the truss to the blocking must be with a minimum of three (3) 12d (0.131" x 3¼") Smooth Shank Nails.
5. The size of the ridge beam/board used with joist/rafter construction shall be determined by the building designer but must be minimum No. 2 SPF 2x6.
6. The blocking installed between the trusses at the ridgeline shall be minimum No. 2 SPF 2x4.

5.1.3. When using Shear-X brackets in flat applications, use the resistance values shown for 0/12 pitch.

### 5.2. RidgeVent

#### 5.2.1. General

5.2.1.1. RidgeVent is designed to be compatible with Shear-X roof brackets.

5.2.1.2. RidgeVent can be used on roof designs with a minimum slope of 3:12.

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### 5.2.2. Fire Resistance Properties

#### 5.2.2.1. Self-Ignition and Flash Ignition

5.2.2.1.1. RidgeVent has the self-ignition and flash ignition characteristics shown in [Table 2](#).

Table 2: Ignition Indexes of RidgeVent

RidgeVent <sup>1</sup>	Self-Ignition Temperature	Required Temperature
	968°F (520°C)	>650°F (343°C)
	Flash Ignition Temperature	Required Temperature
	950°F (510°C)	--
1. Tested in accordance with <i>ASTM D1929</i> .		

#### 5.2.2.2. Smoke Density

5.2.2.2.1. RidgeVent has the smoke density characteristics shown in [Table 3](#).

Table 3: Smoke Density of RidgeVent

RidgeVent <sup>1</sup>	Average Smoke Density Rating	Required Average Density
	40.9	<75
1. Tested in accordance with <i>ASTM D2843</i> .		

#### 5.2.2.3. Rate of Burning

5.2.2.3.1. RidgeVent exhibited no sustained burn and is therefore considered a Class CC1 product in accordance with *ASTM D635*.

### 5.2.3. Wind and Rain Resistance

5.2.3.1. RidgeVent was tested using wind speeds up to 110 mph for wind and wind driven rain resistance and meets all requirements for product resistance in accordance with *TAS 100(A)-95*.

## 6. Installation:

6.1. Installation shall comply with the manufacturer's installation instructions and this TER. In the event of a conflict between the manufacturer's installation instructions and this TER, the more restrictive shall govern.

### 6.2. Shear X

6.2.1. Selection of the 16" or 24" Shear-X bracket will be determined by the distance between the roof framing members.

6.2.2. The size of the ridge beam/board used with joist/rafter construction shall be specified by the building designer but must be minimum No. 2 SPF 2x6. When metal plate connected wood trusses are used as the roof framing members, ridge blocking shall be minimum No. 2 SPF 2x4 members cut to fit tight between the trusses. The minimum attachment of the joists/rafters to the ridge beam/board and the blocking to the trusses shall be three (3) 12d (0.131" x 3 1/4") nails.

6.2.3. Use the pre-punched nail holes as guides for nailing to the roof framing. Shear-X brackets must be positioned such that all nails are driven into the joists/rafters, ridge beam/board, trusses and blocking.

6.2.4. The number and spacing of Shear-X brackets is determined by the loads to be resisted in accordance with *ASCE 7* and is dependent on the building configuration and its location. The building designer shall identify the loads to be resisted and the spacing of the Shear-X brackets. In no case shall the brackets be spaced greater than 25' o.c.



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### 6.2.5. Step-by-Step Instructions

6.2.5.1. The following instructions are shown with a ridge board and rafter construction. Installation with truss construction and ridge blocking is similar.

6.2.5.1.1. Prior to installing the Shear-X brackets, the installer must remove 1" to 1½" of sheathing on both sides of the ridge leaving 6" to 12" at each end of the ridge uncut ([Figure 3](#)).

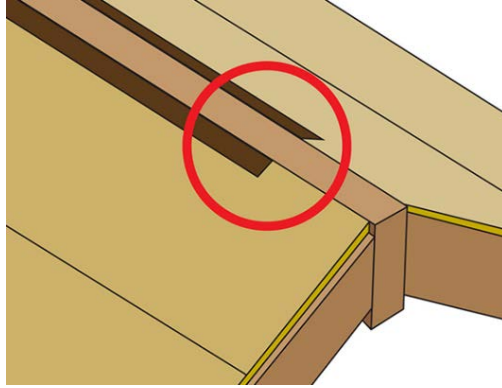


Figure 3: Preparing Ridge for Shear-X Installation

6.2.5.1.2. Center the Shear-X bracket on the ridge line. Each end of the bracket must line up over the rafters/trusses below. Attach the bracket with 10d (0.131"x 3") nails in each pre-punched hole along the ridge line ([Figure 4](#)).

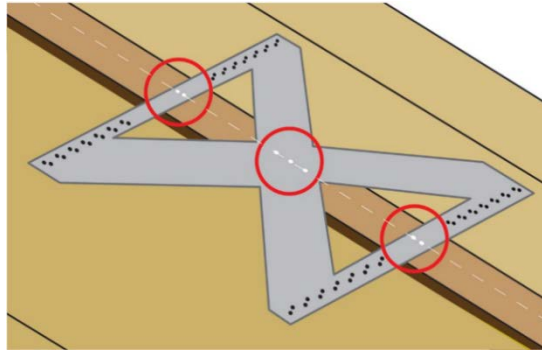


Figure 4: Shear-X Pre-punched Holes at Ridge Line

6.2.5.1.3. Bend the bracket tightly to the top of the roof sheathing to conform to the pitch of the roof. Secure each end of the bracket through the sheathing to the rafters/trusses with a minimum of four (4) 10d (0.131" x3") nails. Install the nails in the pre-punched holes closest to the ridge. Make sure the bracket remains flat against the sheathing ([Figure 5](#)).

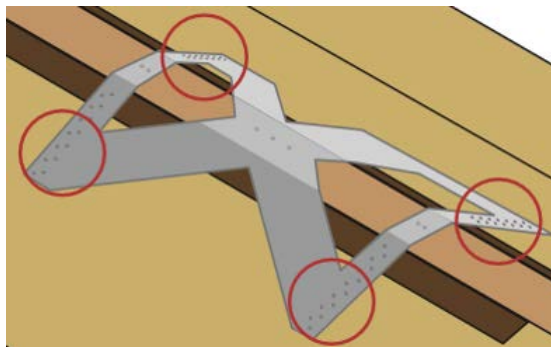


Figure 5: Shear-X Pre-punched Holes



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**6.2.5.1.4.** Complete the attachment of the bracket by installing the remaining nails ([Figure 6](#)). Be sure to nail directly into the rafters/trusses and NOT just into the sheathing.

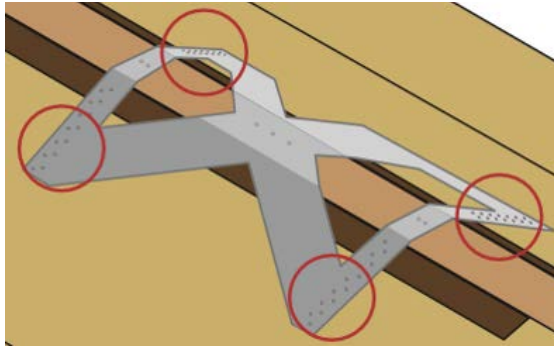


Figure 6: Shear-X Final Attachment

**6.2.5.1.5.** Roll out and install ridge vent along ridge line of roof according to manufacturer's installation instructions ([Figure 7](#)). Note, the ridge vent profile will vary from that shown based on the roof type and profile.

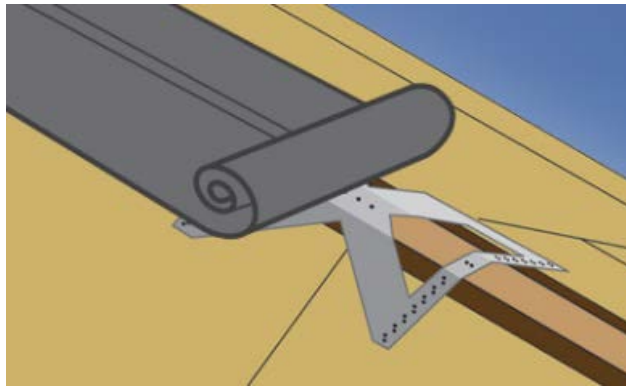


Figure 7: RidgeVent Installed Over Shear-X

**6.2.5.1.6.** Install the ridge cap shingles according to shingle manufacturer's instructions ([Figure 8](#)).

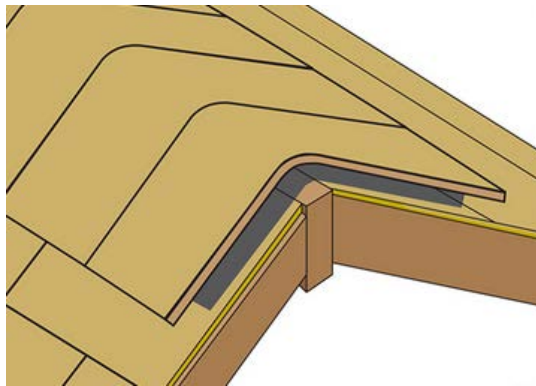


Figure 8: Ridge Cap Shingles Installed Post Shear-X Installation

### 6.3. RidgeVent

**6.3.1.** RidgeVent shall not be installed on roofs with a mean roof height greater than 33 ft.

**6.3.2.** RidgeVent shall be installed over approved roofing materials only.

**6.3.3.** Refer to manufacturer's installation instructions for the specific profile selected.

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### 7. Test and Engineering Substantiating Data:

- 7.1. *Cyclic Testing of Shear-X™ Brackets*, in accordance with *ASTM D7147* and *ASTM E2126*, performed by SBCRI.
- 7.2. *Ignition Temperature of Plastics* testing, in accordance with *ASTM D1929*, performed by Intertek.
- 7.3. *Density of Smoke from the Burning or Decomposition of Plastics*, in accordance with *ASTM D2843*, performed by Intertek.
- 7.4. *Rate of Burning and/or Extent of Time of Burning of Plastics in a Horizontal Position*, in accordance with *ASTM D635*, performed by Intertek.
- 7.5. *Wind and Wind Driven Rain Resistance and/or Increased Windspeed Resistance of Soffit Ventilation Strip and Continuous or Intermittent Ventilation System Installed at the Ridge Area* testing, in accordance with *TAS 100(A)-95*, performed by Architectural Testing, Inc.
- 7.6. The product(s) evaluated by this TER fall within the scope of one or more of the model, state or local building codes for building construction. The testing and/or substantiating data used in this TER is limited to buildings, structures, building elements, construction materials and civil engineering related specifically to buildings.
- 7.7. The provisions of model, state or local building codes for building construction do not intend to prevent the installation of any material or to prohibit any design or method of construction. Alternatives shall use consensus standards, performance-based design methods or other engineering mechanics based means of compliance. This TER assesses compliance with defined standards, accepted engineering analysis, performance-based design methods, etc. in the context of the pertinent building code requirements.
- 7.8. Some information contained herein is the result of testing and/or data analysis by other sources, which DrJ relies on to be accurate, as it undertakes its engineering analysis.
- 7.9. DrJ has reviewed and found the data provided by other professional sources are credible. The information in this TER conforms with DrJ's procedure for acceptance of data from approved sources.
- 7.10. DrJ's responsibility for data provided by approved sources conforms with [IBC Section 1703](#) and any relevant professional engineering law.
- 7.11. Where appropriate, DrJ's analysis is based on design values that have been codified into law through codes and standards (e.g., *IRC*, *WFCM*, *IBC*, *SDPWS*, *NDS*, *ACI*, *AISI*, *PS-20*, *PS-2*, etc.). This includes review of code provisions and any related test data that aids in comparative analysis or provides support for equivalency to an intended end-use application. Where the accuracy of design values provided herein is reliant upon the published properties of commodity materials (e.g. lumber, steel, concrete, etc), DrJ relies upon grade/properties provided by the raw material supplier to be accurate and conforming to the mechanical properties defined in the relevant material standard.

### 8. Findings:

- 8.1. When installed in accordance with the manufacturer's installation instructions and this TER, Shear-X complies with the applicable sections of the codes listed in [Section 2](#) for the following applications:
  - 8.1.1. Capacity to resist shear forces in light-frame wood construction roof assemblies using rafter or truss framing and wall assemblies in accordance with [IBC Section 1609](#), [IBC Section 1613](#) and *ASCE 7* Chapters 11 and 26.
- 8.2. When installed in accordance with the manufacturer's installation instructions and this TER, RidgeVent complies with the applicable sections of the codes listed in [Section 2](#) for the following applications:
  - 8.2.1. Self-ignition temperature and flash ignition temperature performance in accordance with *ASTM D1929*.
  - 8.2.2. Average smoke density rating performance in accordance with *ASTM D2843*.
  - 8.2.3. Linear rate of burn performance in accordance with *ASTM D635*.
  - 8.2.4. Wind-driven rain performance in accordance with Florida Building Code Test Protocol for High Velocity Hurricane Zone, *TAS 100(A)-95*.

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- 8.3. [IBC Section 104.11](#) ([IRC Section R104.11](#) and [IFC Section 104.9](#) are similar) states:

104.11 **Alternative materials, design and methods of construction and equipment.** The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been *approved*. An alternative material, design or method of construction shall be *approved* where the *building official* finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, not less than the equivalent of that prescribed in this code. . . . Where the alternative material, design or method of construction is not *approved*, the *building official* shall respond in writing, stating the reasons the alternative was not *approved*.

- 8.4. This product has been evaluated in the context of the codes listed in [Section 2](#), and is compliant with all known state and local building codes. Where there are known variations in state or local codes that are applicable to this evaluation, they are listed here:

8.4.1. No known variations

- 8.5. This TER uses professional engineering law, the building code, ANSI/ASTM consensus standards and generally accepted engineering practice as its criteria for all testing and engineering analysis. Dr.J's professional engineering work falls under the jurisdiction of each state Board of Professional Engineers, when signed and sealed.

### 9. Conditions of Use:

- 9.1. Where required by the authority having jurisdiction (AHJ) in which the project is to be constructed, this TER and the installation instructions shall be submitted at the time of permit application.
- 9.2. Any generally accepted engineering calculations needed to show compliance with this TER shall be submitted to the code official for review and approval.
- 9.3. Design loads shall be determined in accordance with the building code adopted by the jurisdiction in which the project is to be constructed and/or by the Building Designer (e.g., Owner, Registered Design Professional, etc.).
- 9.4. Do not make cuts, notches or holes in any way to alter Shear-X brackets. Shear-X brackets may be bent in accordance with [Section 6](#) to conform to the roof pitch or other applications as applicable.
- 9.5. Shear-X brackets are intended to be bent only one time. Never bend the brackets in opposite directions as this will cause fatigue in the steel.
- 9.6. The number of brackets needed will vary and depend on the design of the building, applicable shear loads, and wind or seismic conditions. The Building Designer and Professional Engineer are responsible for calculating all necessary loads when designating the number of brackets needed based on those variables stated above.
- 9.7. Never space the brackets at greater than 25' o.c.
- 9.8. Design
- 9.8.1. Building Designer Responsibility
- 9.8.1.1. Unless the AHJ allows otherwise, the Construction Documents shall be prepared by a Building Designer for the Building and shall be in accordance with [IRC Section R106](#) and [IBC Section 107](#).
- 9.8.1.2. The Construction Documents shall be accurate and reliable and shall provide the location, direction and magnitude of all applied loads and shall be in accordance with [IRC Section R301](#) and [IBC Section 1603](#).
- 9.8.2. Construction Documents
- 9.8.2.1. Construction Documents shall be submitted to the Building Official for approval and shall contain the plans, specifications and details needed for the Building Official to approve such documents.
- 9.9. Responsibilities
- 9.9.1. The information contained herein is a product, material, detail, design and/or application TER evaluated in accordance with the referenced building codes, testing and/or analysis through the use of accepted engineering practice, experience and technical judgment.

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- 9.9.2. DrJ TERs provide an assessment of only those attributes specifically addressed in the Products Evaluated or Code Compliance Process Evaluated sections.
- 9.9.3. The engineering evaluation was performed on the dates provided in this TER, within DrJ's professional scope of work.
- 9.9.4. This product is manufactured under a third-party quality control program in accordance with [/IRC Section R104.4](#) and [R109.2](#) and [/BC Section 104.4](#) and [110.4](#).
- 9.9.5. The actual design, suitability and use of this TER, for any particular building, is the responsibility of the Owner or the Owner's authorized agent, and the TER shall be reviewed for code compliance by the Building Official.
- 9.9.6. The use of this TER is dependent on the manufacturer's in-plant QC, the ISO/IEC 17020 third-party quality assurance program and procedures, proper installation per the manufacturer's instructions, the Building Official's inspection and any other code requirements that may apply to demonstrate and verify compliance with the applicable building code.

### 10. Identification:

- 10.1. Shear-X and RidgeVent described in this TER are identified by a label on the bracket or packaging material bearing the manufacturer's name, product name, TER number, and other information to confirm code compliance.
- 10.2. For additional technical information, contact Garwood Manufacturing Co. Inc. directly at 215-887-6600.

### 11. Review Schedule:

- 11.1. This TER is subject to periodic review and revision. For the most recent version of this TER, visit [drjengineering.org](http://drjengineering.org).
- 11.2. For information on the current status of this TER, contact [DrJ Engineering](#).



- [Mission and Professional Responsibilities](#)
- [Product Evaluation Policies](#)
- [Product Approval – Building Code, Administrative Law and P.E. Law](#)

**Technical Evaluation Report (TER)**

**Appendix A**  
**Complete Listing of Garwood Products**

Shear-X RidgeVent				
Roll Size	Item #	Size	Net Free Area	Air Permeability
20 ft	00034	3/4" x 10-1/2" x 20'	17.2 sq in/l <sub>n</sub> ft	870 CFM

Mongoose RidgeVent				
Roll Size	Item #	Size	Net Free Area	Air Permeability
20 ft	00030	1" x 11" x 20'	14.3 sq in/l <sub>n</sub> ft	845 CFM

ProfileVent (Stick)					
Stick Size	Item #	Size	Name	Net Free Area	Air Permeability
3 ft.	16105	1" x 3"	3/4" Hi Rib Stick	23.3 sq in/l <sub>n</sub> ft	845 CFM
	16019	1-1/2" x 3"	R Panel Stick	31.7 sq in/l <sub>n</sub> ft	732 CFM

ProfileVent					
Roll Size	Item #	Size	Name	Net Free Area	Air Permeability
20 ft.	12001	1" x 12-1/4"	Ameridrain	23.3 sq in/l <sub>n</sub> ft	845 CFM
	12002		5-V Panel		
	12003		ProPanel II		
	12004		Strong Panel II		
	12005		3/4" Hi Rib		
	12006		M/U Panel		
	12007		Agri Panel		
	12008	1-1/4" x 12-1/4"	Delta Rib	30.9 sq in/l <sub>n</sub> ft	818 CFM
	12009		2.67 Corrugated		
	12010		Uni-Rib		
	12011		Royal Lock 12"		
	12012		Royal Lock 16"		
	12013		SL-12		
	12014		SL-16		
	12015	1-1/2" x 12-1/4"	Morton Hi Rib	31.7 sq in/l <sub>n</sub> ft	732 CFM
	12016		1" x 5/16" x 12"		
	12017		1" x 5/16" x 16"		
	12018		Spanline		
	12019		R Panel		

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12020		Multi Rib		
12021	1" x 12-1/4"	Regal Rib	23.3 sq in/lm ft	845 CFM
12022		Rugged Rib		
12023	1-1/2" x 12-1/4"	Alu-Loc	31.7 sq in/lm ft	732 CFM
12024	1-1/4" x 12-1/4"	7/8" Wide Rib	30.9 sq in/lm ft	818 CFM
12027	1" x 12-1/4"	DuraClad	23.3 sq in/lm ft	845 CFM
12028	1-1/2" x 12-1/4"	Tile Sheet 25/1100	31.7 sq in/lm ft	732 CFM
12029	2" x 12-1/4"	LS-28 Large Tab	48.3 sq in/lm ft	702 CFM
12030	1-1/4" x 12-1/4"	Ultra Lock	30.9 sq in/lm ft	818 CFM
12031	1-1/2" x 12-1/4"	AP Panel	31.7 sq in/lm ft	732 CFM
12032	2" x 12-1/4"	Medallion Loc 16"	48.3 sq in/lm ft	702 CFM
12034	1-1/2" x 12-1/4"	Metalogic 3000 12"	31.7 sq in/lm ft	732 CFM
12036	2-5/8" x 12-1/4"	SSR Panel 16"	-	760 CFM
12037		SSR Panel 18"	-	
12038	2" x 12-1/4"	Metalogic 2000 12"	48.3 sq in/lm ft	702 CFM
12039	1-1/2" x 12-1/4"	Metalogic 3000 16"	31.7 sq in/lm ft	732 CFM
12040	1-1/4" x 12-1/4"	Pro-S 12 Panel	30.9 sq in/lm ft	818 CFM
12041	2" x 12-1/4"	Medallion Loc 18"	48.3 sq in/lm ft	702 CFM
12042		Medallion Loc 14"		
12043	1-1/4" x 12-1/4"	Omega Estructural	31.7 sq in/lm ft	818 CFM
12044	2" x 12-1/4"	Omega Plus	48.3 sq in/lm ft	702 CFM
12045	1-3/4" x 12-1/4"	1-1/2" SSR 12"	38.8 sq in/lm ft	
12046		1-1/2" SSR 16"		
12048	2" x 12-1/4"	RoofDeck A&B	48.3 sq in/lm ft	
-	1" x 3"	Unprofiled	23.3 sq in/lm ft	845 CFM
-	2" x 12-1/4"	Commercial Roofing	48.3 sq in/lm ft	702 CFM

ProfileVent					
Roll Size	Item #	Size	Name	Net Free Area	Air Permeability
50 ft.	15001	1" x 12-1/4"	Ameridrain	23.3 sq in/lm ft	845 CFM
	15002		5-V Panel		
	15003		ProPanel II		
	15004		Strong Panel II		
	15005		3/4" Hi Rib		
	15006		M/U Panel		
	15007		Agri Panel		
	15008	1-1/4" x 12-1/4"	Delta Rib	30.9 sq in/lm ft	818 CFM
	15009		2.67 Corrugated		
	15010		Uni-Rib		
	15011		Royal Lock 12"		
	15012		Royal Lock 16"		

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15013		SL-12		
15014		SL-16		
15015	1-1/2" x 12-1/4"	Morton Hi Rib	31.7 sq in/lm ft	732 CFM
15016		1" x 5/16" x 12"		
15017		1" x 5/16" x 16"		
15018		Spanline		
15019		R Panel		
15020		Multi Rib		
15021	1" x 12-1/4"	Regal Rib	23.3 sq in/lm ft	845 CFM
15022		Rugged Rib		
15023	1-1/2" x 12-1/4"	Alu-Loc	31.7 sq in/lm ft	732 CFM
15024	1-1/4" x 12-1/4"	7/8" Wide Rib	30.9 sq in/lm ft	818 CFM
15027	1" x 12-1/4"	DuraClad	23.3 sq in/lm ft	845 CFM
15028	1-1/2" x 12-1/4"	Tile Sheet 25/1100	31.7 sq in/lm ft	732 CFM
15029	2" x 12-1/4"	LS-28 Large Tab	48.3 sq in/lm ft	702 CFM
15030	1-1/4" x 12-1/4"	Ultra Lock	30.9 sq in/lm ft	818 CFM
15031	1-1/2" x 12-1/4"	AP Panel	31.7 sq in/lm ft	732 CFM
15032	2" x 12-1/4"	Medallion Loc 16"	48.3 sq in/lm ft	702 CFM
15034	1-1/2" x 12-1/4"	Metalogic 3000 12"	31.7 sq in/lm ft	732 CFM
15036	2-5/8" x 12-1/4"	SSR Panel 16"	-	760 CFM
15037	2-5/8" x 12-1/4"	SSR Panel 18"	-	760 CFM
15038	2" x 12-1/4"	Metalogic 2000 12"	48.3 sq in/lm ft	702 CFM
15039	1-1/2" x 12-1/4"	Metalogic 3000 16"	31.7 sq in/lm ft	732 CFM
15040	1-1/4" x 12-1/4"	Pro-S 12 Panel	30.9 sq in/lm ft	818 CFM
15041	2" x 12-1/4"	Medallion Loc 18"	48.3 sq in/lm ft	702 CFM
15042		Medallion Loc 14"		
15043	1-1/4" x 12-1/4"	Omega Estructural	31.7 sq in/lm ft	818 CFM
15044	2" x 12-1/4"	Omega Plus	48.3 sq in/lm ft	702 CFM
15045	1-3/4" x 12-1/4"	1-1/2" SSR 12"	38.8 sq in/lm ft	
15046		1-1/2" SSR 16"		
15048	2" x 12-1/4"	RoofDeck A&B	48.3 sq in/lm ft	
-	1" x 3"	Unprofiled	23.3 sq in/lm ft	845 CFM
-	2" x 12-1/4"	Commercial Roofing	48.3 sq in/lm ft	702 CFM

ProfileVent					
Roll Size	Item #	Size	Name	Net Free Area	Air Permeability
100 ft.	10001	1" x 12-1/4"	Ameridrain	23.3 sq in/lm ft	845 CFM
	10002		5-V Panel		
	10003		ProPanel II		
	10004		Strong Panel II		
	10005		3/4" Hi Rib		



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10006		M/U Panel		
10007		Agri Panel		
10008	1-1/4" x 12-1/4"	Delta Rib	30.9 sq in/lm ft	818 CFM
10009		2.67 Corrugated		
10010		Uni-Rib		
10011		Royal Lock 12"		
10012		Royal Lock 16"		
10013		SL-12		
10014		SL-16		
10015	1-1/2" x 12-1/4"	Morton Hi Rib	31.7 sq in/lm ft	732 CFM
10016		1" x 5/16" x 12"		
10017		1" x 5/16" x 16"		
10018		Spanline		
10019		R Panel		
10020		Multi Rib		
10021	1" x 12-1/4"	Regal Rib	23.3 sq in/lm ft	845 CFM
10022		Rugged Rib		
10023	1-1/2" x 12-1/4"	Alu-Loc	31.7 sq in/lm ft	732 CFM
10024	1-1/4" x 12-1/4"	7/8" Wide Rib	30.9 sq in/lm ft	818 CFM
10027	1" x 12-1/4"	DuraClad	23.3 sq in/lm ft	845 CFM
10028	1-1/2" x 12-1/4"	Tile Sheet 25/1100	31.7 sq in/lm ft	732 CFM
10029	2" x 12-1/4"	LS-28 Large Tab	48.3 sq in/lm ft	702 CFM
10030	1-1/4" x 12-1/4"	Ultra Lock	30.9 sq in/lm ft	818 CFM
10031	1-1/2" x 12-1/4"	AP Panel	31.7 sq in/lm ft	732 CFM
10032	2" x 12-1/4"	Medallion Loc 16"	48.3 sq in/lm ft	702 CFM
10034	1-1/2" x 12-1/4"	Metalogic 3000 12"	31.7 sq in/lm ft	732 CFM
10036	2-5/8" x 12-1/4"	SSR Panel 16"	-	760 CFM
10037		SSR Panel 18"	-	
10038	2" x 12-1/4"	Metalogic 2000 12"	48.3 sq in/lm ft	702 CFM
10039	1-1/2" x 12-1/4"	Metalogic 3000 16"	31.7 sq in/lm ft	732 CFM
10040	1-1/4" x 12-1/4"	Pro-S 12 Panel	30.9 sq in/lm ft	818 CFM
10041	2" x 12-1/4"	Medallion Loc 18"	48.3 sq in/lm ft	702 CFM
10042		Medallion Loc 14"		
10043	1-1/4" x 12-1/4"	Omega Estructural	31.7 sq in/lm ft	818 CFM
10044	2" x 12-1/4"	Omega Plus	48.3 sq in/lm ft	702 CFM
10045	1-3/4" x 12-1/4"	1-1/2" SSR 12"	38.8 sq in/lm ft	
10046		1-1/2" SSR 16"		
10048	2" x 12-1/4"	RoofDeck A&B	48.3 sq in/lm ft	
-	1" x 3"	Unprofiled	23.3 sq in/lm ft	845 CFM
-	2" x 12-1/4"	Commercial Roofing	48.3 sq in/lm ft	702 CFM

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TileVent					
Roll Size	Item #	Size	Name	Net Free Area	Air Permeability
20 ft	00280	1-1/2" x 15-1/4" x 20'	TileVent - Flat	31.7 sq in/l <sub>n</sub> ft	762 CFM
	00282	1-1/4" x 14" x 20'	Universal WaterDam	23.3 sq in/l <sub>n</sub> ft	872 CFM

The RidgeVent					
Roll Size	Item #	Size	Name	Net Free Area	Air Permeability
20 ft	00034	3/4" x 10-1/2" x 20'	The RidgeVent	17.2 sq in/l <sub>n</sub> ft	870 CFM
	00035	3/4" x 8" x 20'			
10 ft	00036	3/4" x 10-1/2" x 10'			
20 ft	00037	3/4" x 9" x 20'			
4 ft	00038	3/4" x 10-1/2" x 4'	TRV4 (12/cs)		

Hip & RidgeVent					
Roll Size	Item #	Size	Name	Net Free Area	Air Permeability
20 ft.	12049	1" x 3"	Hip & Ridge w/ Glue	23.4 sq in/l <sub>n</sub> ft	922 CFM
	12052	1" x 2"			
	12051	1-1/2" x 3"		35.2 sq in/l <sub>n</sub> ft	702 CFM