



LOWE ROOFING INC.
SINGLE PLY & METAL ROOFING SYSTEMS

Letter of Transmittal

To: Ainsworth-Benning
Construction, Inc.
345 Industrial Drive
Spearfish, SD 57783

Date: 1/19/15
Project: Sanford Lab | Homestake Visitor Center
Attn:
Re:

PO Box 432 • I-90 Exit 23
Whitewood, South Dakota 57793

Whitewood, SD 1-800-658-4543
605-269-2211
605-269-2212 fax

Rapid City, SD 605-343-7840
Gillette, WY 307-687-0303

www.lowerroofinginc.com
lri@lowerroofinginc.com

Shop Drawings _____ Copy Of Letter _____

Specifications _____ Change Order _____

Other: _____

Copies	Date	Description
		Section 07 41 13 Submittals

Notes:

Please call with any questions.

John Ashley

- No exceptions taken
- Make corrections as noted
- Rejected
- Revise and resubmit

Corrections or comments made on the shop drawings during this review do not relieve subcontractor or supplier from compliance with requirements of the drawings and specifications. This check is only for review of general conformance with the design concept of the project and general compliance with the information given in the contract documents. The contractor is responsible for confirming and processes and all techniques of construction; coordinating his work with that of all other trades; and performing his work in a safe and workmanlike manner.

DKa	Dangermond Keane Architecture, LLC Submittal Review
<i>This submittal was reviewed for conformance with the Contract Documents per the General Conditions and Section 013300 of the Specifications.</i>	
<input type="checkbox"/>	NO EXCEPTION TAKEN
<input checked="" type="checkbox"/>	MAKE CORRECTIONS NOTED
<input type="checkbox"/>	REVISE and RESUBMIT
<input type="checkbox"/>	REJECTED
<input type="checkbox"/>	RECORD DOCUMENT

ELECTRONIC SIGNATURE:

Date: 01/22/2015 By: David Haught

AINSWORTH-BENNING CONSTRUCTION, INC.

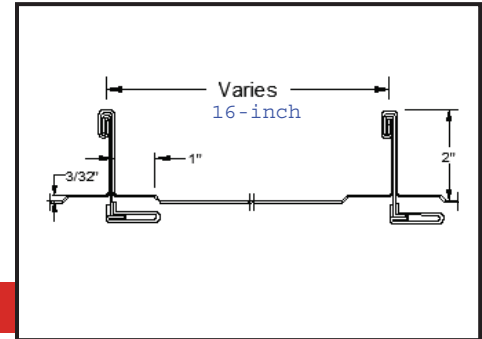
Digitally signed by
com.apple.idms.appleid.prd.36347a56
326743362b77576b4a4654425334395
26c773d3d
DN:
cn=com.apple.idms.appleid.prd.36347
a56326743362b77576b4a4654425334
39526c773d3d
Date: 2015.02.08 11:35:13 -08'00'

TECHNICAL INFORMATION SHEET

UNA-CLAD™ UC-6

Item Description

Standing Seam Panel For Architectural Metal Roofing



Product Information

Description:

Firestone UNA-CLAD UC-6 Double-Lock Standing Seam roofing panel utilizes the proven seaming process of Pittsburgh Locking in conjunction with the floating action of a concealed clip assembly. This design allows for expansion & contraction caused by natural elements, providing a virtually leak proof roof with exceptional wind uplift ratings. An optional thermally-applied pre-assembly in-seam sealant is available. The minimum slope requirement for a Firestone Red Shield™ Warranty is 3:12. For warranty requirements for slopes between 3:12 and 1:12,* please contact your Roof System Advisor. *Two layers of Clad-Gard SA required.

Method of Application:

1. Firestone UC-6 panels must be installed in a sequential order.
2. Application of a Firestone underlayment prior to panel installation is recommended when installed over a solid substrate.
3. Panels must be locked in the field by a mechanical seamer.
Note: Install assembly according to Firestone Metal Design and Application Guides found on the Firestone website. Follow approved installation details.

Storage:

- Firestone metal panels should be stored in a well ventilated, dry place where no moisture can contact them. Moisture (From rain, snow, condensation, etc.) trapped between layers of material may cause water stains or white rust, which can affect the service life of the material and will detract for the appearance.
- If outdoor storage cannot be avoided, protect the panels with a ventilated canvas or waterproof paper cover. Do not use plastic, which can cause condensation. Keep the material off the ground in an inclined position with an insulator such as wood. Protective film may degrade or become brittle with long term exposure to direct sunlight.

Precautions:

- Oil canning is not a cause for rejection. Heavier gauges, narrower widths, striations, and embossing minimize oil canning.
- Ensure the mechanical seamer is properly adjusted prior to field seaming to reduce the risk of seam damage.
- Firestone recommends a minimum bend radius of 2T. Anything less than a 2T bend radius can cause crazing to the material.
- Sealant for end laps and lap joints shall be non-drying, non-toxic, and non-shrinking with a serviceable temperature of -60 to 212 °F (-51 to 100 °C).
- Quality, long-life butyl sealants work best as a gasket sandwiched between two pieces of metal. Non-acetic cured silicone color matching sealants are recommended when voids must be filled. Sealants are not a substitute for proper assembly and workmanship.
- Exercise caution when lifting, moving, transporting, storing or handling Firestone metal to avoid possible physical damage.

TECHNICAL INFORMATION SHEET

UNA-CLAD™ UC-6

- Refer to Safety Data Sheets (SDS) for safety information.
- Immediately remove protective film after installation.

LEED® Information:

Post Consumer Recycled Content: 0%
 Post Industrial Recycled Content: 0%
 Manufacturing Location: Anoka, MN Warren, MI College Park, GA Las Vegas, NV



Product Data

Tapered Panels:	No	
Radius Panels:	Yes*	Pencil Rib Stiffening Ribs - yes Striations - No
Stiffening Ribs:	Optional* Architect to choose: Yes or No	
Striations:	Optional* Architect to choose: Yes or No	
Sealant:	Optional In-Seam, Thermally Applied Yes	
Standard Panel Surface:	Smooth	
Optional Panel Surface:	Stucco-Embossed	
Clip:	UC-6 Low-Float Clip, UC-6 Super Clip & UC-6 Fixed Clip	

Product Size

Panel Width:	8" (203.2 mm) – 24" (609.6 mm) 16-inch
Optimal Panel Width:	18" (457.2 mm)
Seam Height:	2" (50.8 mm) & 2.0" (50.8 mm)
Minimum Panel Length:	36" (914.4 mm)
Maximum Panel Length:	600" (15,240 mm)

Technical Information

Up lift Resistance:	UL 580 Class 90
Air Infiltration:	ASTM E 1680
Uniform Static Air Pressure :	ASTM E 1592
Water Penetration:	ASTM E 1646
Fire Rating:	UL Class A Rated Assemblies, UL 263 and UL 790
Hail Impact Rating:	Class 4, UL 2218
Miami-Dade County & Florida Building Code:	Approved

Note: * Not Manufactured at all Facilities.

Testing is not applicable for all combinations of substrates, materials, and dimensions. All construction assemblies must be installed in accordance with the tested assembly. Please refer to the Metal Code Approval Guide on the Firestone website for tested assemblies and code listings.

Please contact your Roof System Advisor for warranty requirements and additional information.

TECHNICAL INFORMATION SHEET

UNA-CLAD™ UC-6

Typical Properties

<u>Material and Thickness</u>	<u>Metal Specification:</u>	<u>Available Finishes:</u>
<i>Aluminum</i>	Base Metal: Aluminum	Anodized Kynar 500®/Hylar 5000® Unpainted/Mill Finish
0.032" (0.81 mm)	Minimum Yield: 21 KSI (145 MPa) Thermal Expansion: 12.6×10^{-6} in/in/ °F ($22.2 \text{ m/m.K} \times 10^{-6}$) Mod. Of Elasticity: 10.0×10^3 x KSI (68.9 MPa)	
Galvanized Steel	Base Metal: AISA-G90 Galvanized steel	Kynar 500®/Hylar 5000® Unpainted G90
26 ga. (0.48 mm) 24 ga. (0.64 mm) 22 ga. (0.79 mm)	Minimum Yield: 33 to 45 KSI (227 to 310 MPa) Thermal Expansion: 06.7×10^{-6} in/in/ °F ($13.9 \text{ m/m.K} \times 10^{-6}$) Mod. Of Elasticity: 29.0×10^6 x KSI (200 GPa)	
<i>Galvalume® Steel</i>	Base Metal: AZ-55 Hot Dipped Galvalume	Acrylume® – Clear Acrylic Coated Kynar 500®/Hylar 5000®
26 ga. (0.48 mm) 24 ga. (0.64 mm) 22 ga. (0.79 mm)	Minimum Yield: 50 KSI (345 MPa) Thermal Expansion: 06.7×10^{-6} in/in/ °F ($13.9 \text{ m/m.K} \times 10^{-6}$) Mod. Of Elasticity: 29.0×10^6 x KSI (200 GPa)	
<i>Copper</i>	AGSC minimum copper content of 99.9% copper, silver counting as copper, cold rolled from ingots of 122 alloy.	Natural
16 ga. (0.56 mm) 20 ga. (0.69 mm)	Thermal Expansion: 9.3×10^{-6} in/in/ °F ($16.5 \text{ m/m.K} \times 10^{-6}$) AGSC copper meets and/ or exceeds ASTM B370 specification.	
<i>Zinc</i>	RHEINZINK®: Electrolytic high-grade, 99.9% pure, fine zinc (DIN EN 1179) titanium copper alloy. Certified according to DIN ISO 9001: 1994	Shiny Pre-weathered Blue-Gray Pre-weathered Graphite Gray
0.028" (0.7 mm) 0.032" (0.8 mm)	Thermal Expansion: 2.2 mm/m x 100K ($16.5" \times 10^{-6}$ in/in/ °F)	

Note: For standard color selection, consult the current UNA-CLAD Color Selection Guide. Custom color services are available upon request. Consult the current base metal Sheet & Coil T.I.S. for additional information on the base metal and coating. Not all materials and thicknesses are available from all locations.

Please contact your Firestone Roof Systems Advisor at 1-800-428-4511 for further information.

This sheet is meant to highlight Firestone products and specifications and is subject to change without notice. Firestone takes responsibility for furnishing quality materials which meet published Firestone product specifications. Neither Firestone nor its representatives practice architecture. Firestone offers no opinion on and expressly disclaims any responsibility for the soundness of any structure. Firestone accepts no liability for structural failure or resultant damages. Consult a competent structural engineer prior to installation if the structural soundness or structural ability to properly support a planned installation is in question. No Firestone representative is authorized to vary this disclaimer.

Firestone

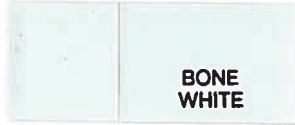
BUILDING PRODUCTS

NOBODY COVERS YOU BETTER™

COLOR SELECTION GUIDE



STONE
WHITE



BONE
WHITE



ALMOND



SANDSTONE



SLATE
GRAY



CITYSCAPE



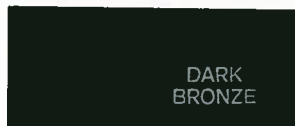
CHARCOAL
GRAY



SIERRA
TAN



MEDIUM
BRONZE



DARK
BRONZE



EXTRA
DARK
BRONZE



MATTE
BLACK



BRANDYWINE



COLONIAL
RED



TERRA
COTTA



MANSARD
BROWN



REGAL
RED



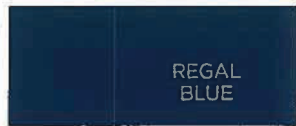
AWARD
BLUE



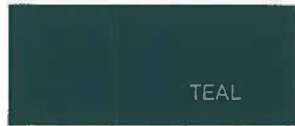
SKY
BLUE



ELECTRIC
BLUE



REGAL
BLUE



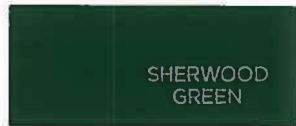
TEAL



PATINA
GREEN



DARK
IVY



SHERWOOD
GREEN



HARTFORD
GREEN



HEMLOCK
GREEN



TROPICAL
PATINA



SILVER
METALLIC



CLASSIC
COPPER



CHAMPAGNE
METALLIC



Colors shown are as close to actual colors as allowed by the printing process. Contact your local sales rep for actual metal samples.



METAL ROOFING SYSTEMS COLOR AVAILABILITY

PVDF FINISH	R	E	SRI	STEEL ¹			STEEL ²	ALUMINUM			
				26	24	22		24	.032	.040	.050
Almond ◊	0.57	0.86	67	◆	◆	◆		◆	◆	◆	
Bone White ◊	0.72	0.84	87	◆	◆	◆	◆	◆	◆	◆	◆
Brandywine ◊	0.25	0.85	23	◆	◆	◆		◆			
Charcoal Gray ◊	0.29	0.84	28	◆	◆	◆	◆	◆			
Cityscape ◊	0.35	0.85	37	◆	◆	◆		◆	◆	◆	
Colonial Red ◊	0.31	0.84	31	◆	◆	◆	◆	◆	◆		
Dark Bronze ◊	0.26	0.84	24	◆	◆	◆	◆	◆	◆	◆	◆
Dark Ivy ◊	0.25	0.83	22	◆	◆	◆					
Extra Dark Bronze	0.06	0.87	0	◆	◆	◆		◆	◆	◆	
Hartford Green	0.10	0.82	2	◆	◆	◆	◆	◆	◆		
Hemlock Green ◊	0.32	0.86	33	◆	◆	◆			◆	◆	
Mansard Brown ◊	0.30	0.85	30	◆	◆	◆	◆	◆	◆	◆	
Matte Black ◊	0.25	0.86	24	◆	◆	◆		◆	◆	◆	
Medium Bronze ◊	0.30	0.87	31	◆	◆	◆	◆	◆	◆	◆	◆
Patina Green ◊	0.26	0.86	25	◆	◆	◆			◆		
Regal Blue	0.16	0.86	12	◆	◆	◆			◆		
Regal Red ◊	0.42	0.84	46	◆	◆	◆		◆	◆	◆	
Sandstone ◊	0.51	0.85	58	◆	◆	◆	◆	◆	◆	◆	◆
Sherwood Green ◊	0.27	0.85	26	◆	◆	◆	◆	◆			
Sierra Tan ◊	0.35	0.86	37	◆	◆	◆	◆	◆	◆	◆	
Sky Blue ◊	0.29	0.85	29	◆	◆	◆			◆		
Slate Gray ◊	0.36	0.86	38	◆	◆	◆	◆	◆	◆	◆	
Stone White ◊	0.57	0.86	67	◆	◆	◆	◆	◆	◆	◆	
Teal	0.13	0.85	7	◆	◆	◆					
Terra Cotta ◊	0.34	0.87	36	◆	◆	◆		◆	◆		
Tropical Patina ◊	0.28	0.85	27	◆	◆	◆					
Award Blue ★	0.15	0.84	9	◆	◆	◆					
Electric Blue ★	0.20	0.84	16	◆	◆	◆			◆		
Champagne Metallic ◊★	0.37	0.83	38	◆	◆	◆			◆		
Classic Copper ◊★	0.42	0.86	46	◆	◆	◆			◆		
Silver Metallic ◊★	0.59	0.77	67	◆	◆	◆		◆	◆	◆	

New 35-Year Warranty available for all finishes

LEGEND

Steel Types:

- ¹G-90 Galvanized Steel
- ²AZ-50 Galvalume® Steel

Cool Roofing Information:

- R** - Initial Solar Reflectance
- E** - Initial Emissivity
- SRI** - Solar Reflective Index

- ◊ - Energy Star® qualified products
- ◇ - CRRC -listed finish
- ★ - Premium Color

NOTES

- All paint finishes are high quality PVDF (Kynar 500® / Hylar 5000®) colors.
- Custom colors are available.
- Copper, zinc, stainless steel, anodized and mill finish aluminum are also available.
- Protective film must be removed immediately after installation.

PLANT LOCATIONS

- Minnesota
- Georgia
- Mississippi
- Pennsylvania
- Nevada
- Michigan

Galvalume® is a registered trademark of BIEC International, Inc.

Kynar 500® is a registered trademark of Arkema, Inc.

Hylar 5000® is a registered trademark of Solvay Solexis, Inc.

Contact your local sales representative for specific stocking information. Not all colors and gauges are stocked in all locations. Due to product improvements, changes and other factors, we reserve the right to change or delete information herein without prior notice.



Firestone Building Products Company, LLC
 250 W. 96th Street • Indianapolis, IN 46260
 800-428-4442
 www.firestonebpc.com



NOBODY COVERS YOU BETTER™

TECHNICAL INFORMATION SHEET

UNA-CLAD UC-6 Low-Float Clip

TIS #2058

ITEM NUMBER: **W6810C06LF (Galvanized Steel)**
W6810C06LFS (Stainless Steel)

Description:

Firestone UNA-CLAD UC-6 Low-Float clips are specially designed to be used in the attachment of the Firestone UNA-CLAD UC-6 Standing Seam Roof Panel. The design of the clip allows the upper tab to be mechanically integrated into the double lock seam. The two-piece construction allows for thermal movement of the panel while providing positive securement to the deck or purlin.

Method of Application:

1. Position the clips flush against the vertical seam.
2. Ensure proper location of tab relative to base location.
3. Attach clips to roof deck or purlin using the appropriate Firestone fastener for the desired performance or warranty.
4. Position adjacent panel flush against installed clip.
5. Secure panel by folding outer vertical female leg 90° under head of male leg at clip location.

Note: Install assembly according to Firestone Metal Design and Application Guides found on the Firestone website. Follow approved installation details

Storage:

- Store in unopened original containers protected from the weather.

Precautions:

- Do not overdrive or underdrive fastener.
- Clips are designed to anchor UC-6 standing seam roof panels only.
- Can not be used with Firestone HD, HD Plus or fasteners larger than No. 14.
- Eye protection must be worn during the installation of fasteners.

Distribution Location:

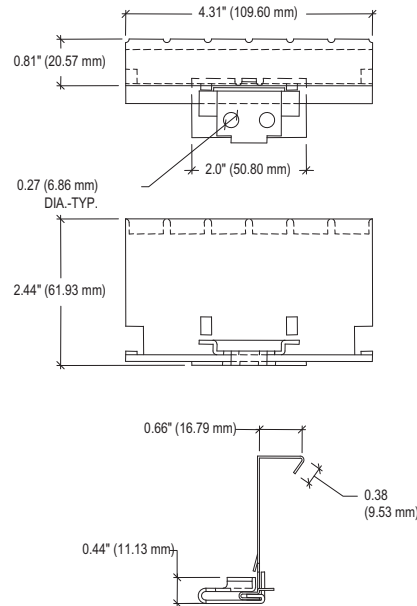
- Anoka, MN
- Las Vegas, NV
- Warren, MI

Packaging:

- 130 Clips per carton

Physical Properties:

Material:	G90 Galvanized Steel or 300 Series Stainless Steel
Material Thickness:	
Galvanized Base:	16 ga.; 0.058" (1.47 mm)
Galvanized Tab:	22 ga.; 0.031" (0.79 mm)
Stainless Tab:	22 ga.; 0.031" (0.79 mm)
Base:	2.0" (50.80 mm) x 1.0" (25.40 mm)
Tab:	4.31" (109.47 mm) x 2.37" (60.20 mm)
Hole Diameter:	0.27" (6.86 mm)



Please Contact your Firestone Roof System Advisor at 1-800-428-4511 for further information.

This sheet is meant to highlight Firestone products and specifications and is subject to change without notice. Firestone takes responsibility for furnishing quality materials which meet published Firestone product specifications. Neither Firestone nor its representatives practice architecture. Firestone offers no opinion on and expressly disclaims any responsibility for the soundness of any structure. Firestone accepts no liability for structural failure or resultant damages. Consult a competent structural engineer prior to installation if the structural soundness or structural ability to properly support a planned installation is in question. No Firestone representative is authorized to vary this disclaimer.

TECHNICAL INFORMATION SHEET

CLAD-GARD™ SA Metal Underlayment



Item Description

CLAD-GARD SA - N
 CLAD-GARD SA - S

Item Number

W6810RCGNR
 W6810RCGST

Two layers per Firestone in order to provide a Weathertight Warranty.

Product Information

Description:

Firestone CLAD-GARD SA Metal Underlayment consists of a Styrene-Butadiene-Styrene (SBS) rubber modified, self adhesive asphalt blend with a woven slip resistant traction film on the top surface and an opaque release film on the bottom surface. Firestone CLAD-GARD SA Metal Underlayment is designed for use as an underlayment with Firestone UNA-CLAD™ metal roofing assemblies. CLAD-GARD SA underlayment is also suitable for use under mechanically attached tile and shingles. This underlayment reseals around nails in accordance with ASTM D 1970.

- Product installation temperature range for the north (N): 40 °F (4 °C) to 230 °F (110 °C)
- Product installation temperature range for the south (S): 50 °F (10 °C) to 250 °F (121 °C).
- Both can remain exposed up to 90 days.

Method of Application:

CLAD-GARD SA Metal Underlayment can be installed over Firestone ISO 95+™ GL insulation, HailGard™ Composite insulation, ISOGARD™ HD Cover Board, Resista™ insulation, plywood or OSB. CLAD-GARD SA underlayment must be fully supported. Contact your Firestone Roof System Advisor for details.

Start at the lowest part of the roof deck, and install valley conditions first. Lay the underlayment flat in place with the print side up.

1. Cut the CLAD-GARD SA underlayment to a length that can be easily managed. Allow for 3" (76 mm) side laps and 6" (152 mm) end laps.
2. Peel half of the release liner off the roll diagonally. Install by applying heavy, even hand pressure or brooming from the center of the sheet towards the outer edges. Remove the remaining release liner from the other half of the roll, and apply pressure in the same manner. Hand roll the laps to ensure adhesion.
3. In very steep slope applications, back nailing may be recommended. When back nailing, be sure that all nails are covered by the next overlapping sheet.

Storage:

- All material should be stored out of the weather in a clean, dry area in its original unopened packaging at a minimum of 50 °F (10 °C) and a maximum of 140 °F (60 °C).
- If material must be stored temporarily on the roof prior to application, it must be elevated from the roof surface on a pallet, stored on end, and protected from the weather with a light colored, opaque tarp in a neat, safe manner that does not exceed the allowable load limit of the storage area.

Shelf Life:

2 Years

TECHNICAL INFORMATION SHEET

CLAD-GARD™ SA Metal Underlayment

Coverage:

182 ft² (16.0 m²) Note: deduct applicable laps

Precautions:

- Review Safety Data Sheet (SDS).
- Take care when transporting and handling Firestone CLAD-GARD SA rolls to avoid punctures and other types of physical damage.
- Isolate waste products, petroleum products, grease, oil (mineral and vegetable) and animal fats from all Firestone CLAD-GARD SA membranes.

LEED® Information:

Post Consumer Recycled Content: 0%
 Post Industrial Recycled Content: 0%
 Manufacturing Location: Quebec, Canada



Packaging:

Roll Size: 3' (914 mm) roll width x 67' (20.4 m) roll length
 Roll Weight: 46.7 lb (21.2 kg)
 Rolls per Pallet: 25, Rolls per Truckload: 26

Typical Properties

Property	ASTM Standard	Nominal Values
Thickness:		40 mil (1.0 mm)
Dimension:		67 ft x 3 ft (20.4 m x 914 mm)
Roll Weight:		45.5 lb (20.6 kg)
Top Face:		Woven Polyethylene
Under Face:		Silicone Release Film
Maximum Load:	ASTM D 1970	64 / 88 lb/in (11.3 MD / 15.4 XD kN/m)
Elongation at Break:	ASTM D 1970	52 MD / 24 XD (%)
Static Puncture (N):	ASTM D 5602	90lb (400 N)
Peel Strength:	ASTM D 903	17.5 lb/in (3050 N/m)
Tear Resistance:	ASTM D 5601	84 / 90 lb (375 MD / 400 XD)
Cold Bending	ASTM D 1970	-22 °F (-30 °C)
Water Vapor Permeance:	ASTM D 1970	< 0.09 ng/Pa.s.m ² (< 0.016 perm)
Water Transmission:	ASTM E 96	No Wetness

Please contact Quality Building Services Technical Department at 1-800-428-4511 for further information.

This sheet is meant to highlight Firestone products and specifications and is subject to change without notice. Firestone takes responsibility for furnishing quality materials which meet published Firestone product specifications or other technical documents, subject to normal roof manufacturing tolerances. Neither Firestone nor its representatives practice architecture. Firestone offers no opinion on and expressly disclaims any responsibility for the soundness of any structure. Firestone accepts no liability for structural failure or resultant damages. Consult a competent structural engineer prior to installation if the structural soundness or structural ability to properly support a planned installation is in question. No Firestone representative is authorized to vary this disclaimer.

TECHNICAL INFORMATION SHEET

SA-LVOC Primer

Item Description

5-Gallon (18.9 L) metal pail

Item Number

W563587092



Product Information

Description:

Firestone SA LVOC Primer contains synthetic polymers and adhesion-enhancing resins. Use to prime and prepare exterior concrete, metal, wood, plywood, and gypsum surfaces to enhance the adhesion of Firestone V-Force™ Vapor Barrier Membranes, Enverge™ Air & Vapor Barrier SA Membranes, and CLAD-GARD™ Metal Roof Underlayments.

Method of Application:

- **DO NOT THIN!**
- The minimum application temperature for the SA-LVOC Primer is 14 °F (-10 °C). Apply when expecting rising temperatures.
- Stir thoroughly before and during use. Drying time varies from 30 to 90 minutes depending on ambient temperatures and amount applied. It is dry when sticky to the touch, but not messy.
- Membranes must be installed on the same day as the application of the SA-LVOC Primer.
- Surfaces must be clean, dry and free of dust and foreign materials prior to application of the primer. Clean with broom or rags to remove contaminants.
- Apply SA-LVOC Primer using a brush, roller or an airless sprayer.
- For best results, install the membrane as soon as the primer is dry.

Storage:

- Minimum storage temperature: 32 °F to 104 °F (0 °C to 40 °C).
- Take care when transporting and handling Firestone SA-LVOC Primer to avoid damage to containers.
- Stack Firestone SA-LVOC Primer in original unopened packaging no more than two pallets high.
- If material must be stored temporarily on the roof, it must be elevated from the roof surface on a pallet, and protected from the weather with a light colored opaque tarp in a neat, safe manner that does not exceed the allowable load limit of the storage area.

Shelf Life:

5 years in well-sealed original container when stored in a cool, well-ventilated area.

Coverage Rate:

- Approximate values vary depending on amount applied and permeability of the surface to be coated.
- Porous substrates: From 0.5 to 1.0 US gal/100 ft² (500 to 1000 ft²) (0.2 to 0.4 L/m²).
- Non-porous substrates: From 0.25 to 0.6 US gal/100 ft² (833 to 2,000 ft²) (0.1 to 0.25 L/m²).

TECHNICAL INFORMATION SHEET

SA-LVOC Primer

Clean-Up:

Clean tools with petroleum solvents (petroleum spirits, Xylene, etc.).

Precautions:

- **DANGER! HIGHLY FLAMMABLE!**
- Keep away from direct sunlight and away from open flames.
- Keep away from ignition sources during its use.
- Do not eat, drink, or smoke while working with SA-LVOC Primer.
- Harmful if inhaled, swallowed or when in direct contact with skin.
- Do not pour in drains.
- Do not apply onto polystyrene surfaces.
- For further information, consult the Safety Data Sheet (SDS).

LEED® Information:

Post Consumer Recycled Content: 0%
 Post Industrial Recycled Content: 0%
 Manufacturing Location: Drummondville, Quebec



Typical Properties

Property	Typical Performance
Color:	Red
Specified Gravity: 77 °F (25 °C):	7.8 lb/gal (0.94 kg/L)
Solids Content:	45%
Brookfield Viscosity: 77 °F (25 °C):	300-600 cP
Volatile Organic Compound (V.O.C) Content:	240 g/L

South Coast Air Quality Management District (SCAQMD) Rule 1168 Compliant

Actual VOC content less water and less exempt solvents: ≤ 240 grams/liter as supplied and as applied (thinning, reducing or mixing is not recommended).

Packaging

Unit	Weight	Approximate Coverage
5 Gallon (18.9 L) metal pails	35 lb (16 kg)	Porous substrates: 0.5 to 1.0 US gal/100 ft ² (500 to 1000 sq ft) (0.2 to 0.4 L/m ²) Non-porous substrates: 0.25 to 0.6 US gal/100 ft ² (833 to 2000 sq ft) (0.1 to 0.25 L/m ²)

Pallet: 36 pails per pallet, 26 pallets per truck, 1260 lb (576 kg) per pallet

Please contact your Firestone Building System Advisor at 1-800-428-4511 for further information.

This sheet is meant to highlight Firestone products and specifications and is subject to change without notice. Firestone takes responsibility for furnishing quality materials which meet published Firestone product specifications. Neither Firestone nor its representatives practice architecture. Firestone offers no opinion on and expressly disclaims any responsibility for the soundness of any structure. Firestone accepts no liability for structural failure or resultant damages. Consult a competent structural engineer prior to installation if the structural soundness or structural ability to properly support a planned installation is in question. No Firestone representative is authorized to vary this disclaimer.



DensDeck®

Prime Roof Board

1/4-inch Cover Board

Technical Service Hotline 1.800.225.6119 or
www.densdeck.com

Manufacturer

Georgia-Pacific Gypsum LLC Georgia-Pacific Canada LP
 133 Peachtree Street 2180 Meadowvale Boulevard, Suite 200
 Atlanta, GA 30303 Mississauga, ON L5N 5S3
 Technical Service Hotline: 1-800-225-6119

Description

DensDeck® Prime Roof Board is an exceptional fire barrier, thermal barrier and recovery board used in various commercial roofing systems. The product features a pre-primed surface to make the bond even stronger. The DensDeck design employs fiberglass mats front and back that are embedded into a gypsum core, providing excellent fire resistance and wind uplift properties. The unique construction of DensDeck Prime Roof Board provides superior flute spanning and will help stiffen and stabilize the roof deck. Additionally, DensDeck Prime Roof Board has been shown to withstand delamination, deterioration and jobsite damage more effectively than roofing membrane substrates such as paper-faced gypsum board, fiberboard and perlite insulation. DensDeck Prime Roof Board is resistant to the growth of mold when tested as manufactured, per ASTM D 3273.

Primary Uses

Roof system manufacturers and designers have found DensDeck Prime Roof Board to be compatible with many types of roofing systems, including: modified asphalt, single-ply, metal systems, recover board, as well as an overlayment for polyisocyanurate and polystyrene insulation. DensDeck Prime Roof Board can also be used as a form board for poured gypsum concrete deck in roof applications as well as a substrate for spray foam roofing systems. 1/2" (12.7 mm) and 5/8" (15.9 mm) DensDeck Prime Roof Board may also be used in vertical applications as a backer board or liner for the roof side of parapet walls.

DensDeck Prime Roof Board may allow the bonding of cold mastic modified bitumen and torching directly to the surface. *Consult with the system manufacturer for recommendations on this application.*

DensDeck Prime Roof Board is the preferred substrate for vapor retarders.

Standards and Code Approvals

DensDeck Prime Roof Boards are manufactured to meet ASTM C 1177 and have the following approvals:

- Florida Product Approval Code FL 1250
- Miami-Dade County, Florida NOA 08-0908.10

Recommendations and Limitations

DensDeck Prime Roof Boards are manufactured to act with a properly designed roof system following good roofing practices. The actual use of DensDeck Prime Roof Board as a roofing component in any system or assembly is the responsibility of the roofing system's design authority. Consult with the appropriate system manufacturer and/or design authority for system and assembly specifications and instructions on applying other products to DensDeck Prime Roof Board. Georgia-Pacific does not warrant and is not responsible for any systems or assemblies utilizing DensDeck Prime Roof Board or any component in such systems or assemblies other than DensDeck Prime Roof Board.

The need for a separator sheet between the DensDeck Prime Roof Board and the roofing membrane must be determined by the roof membrane manufacturer or roofing system designer.

Confirm any priming requirements with the membrane manufacturer. When applying solvent-based adhesives or primers, allow sufficient time for the solvent to flash off to avoid damage to roofing components.

DensDeck Prime Roof Boards should not be subjected to abnormal or excessive loads

or foot traffic, such as, but not limited to, use on plaza decks or under steel-wheeled equipment that may fracture or damage the panels. Provide suitable roofing system protection when required.

When using DensDeck Prime Roof Boards for hot-mopped applications, Georgia-Pacific recommends maximum asphalt application temperatures for Type III asphalt of 425°F (218°C) to 450°F (232°C). Application temperatures above these recommended temperatures may adversely affect roof system performance. For application temperatures in excess of 450°F (232°C) and for mopping of type IV asphalt, ribbon or spot mopping or the installation of a perforated base sheet are recommended methods of bonding asphalt in lieu of full mopping. Consult and follow the roofing system manufacturer's specifications for full mopping applications and temperature requirements.

When using DensDeck Prime Roof Board as a substrate for torch applications, ensure that the product is dry and that the proper torching technique is used. Limit the heat to the DensDeck Prime Roof Board. Maintain a majority of the torch flame directly on the roll.

Conditions beyond the control of Georgia-Pacific, such as weather conditions, dew, leaks, application temperatures and techniques may cause adverse effects with roofing systems.

Moisture Management

DensDeck Prime Roof Boards, like other components used in roofing systems, must be protected from exposure to moisture before, during and after installation.

Remove the plastic packaging from all DensDeck Prime Roof Board immediately upon receipt of delivery. Failure to remove the plastic packaging may result in entrapment of condensation or moisture. DensDeck Prime Roof Board stored outside must be stored level and off the ground and protected by a breathable waterproof covering. Provide means for air circulation around and under stored bundles of DensDeck Prime Roof Board. DensDeck Prime Roof Board must be covered the same day as installed.

Avoid application of DensDeck Prime Roof Boards during rain, heavy fog and any other conditions that may deposit moisture on the surface, and avoid the overuse of non-vented, direct-fired heaters during winter months. When roofing systems are installed on new poured concrete or light weight concrete decks or when re-roofing over a wet existing concrete deck, a venting base sheet or vapor retarder should be installed above the concrete to retard the migration of water from the concrete into the roof assembly. Always consult the roofing system manufacturer or design authority for specific instructions for applying other products to DensDeck Prime Roof Boards.

Moisture vapor movement by convection must be eliminated, and the flow of water by gravity through imperfections in the roof system must be controlled. After a leak has occurred, no condensation on the upper surface of the system should be tolerated, and the water introduced by the leak must be dissipated to the building interior in a minimum amount of time.

Although DensDeck Prime Roof Boards are engineered with fiberglass facings and high density gypsum cores, the presence of free moisture can have a detrimental effect on the performance of the product and the installation of roofing membranes. For example, hot asphalt applications can blister; torched modified bitumen may not properly bond; and adhesives for single ply membranes may not dry properly. Moisture accumulation may also significantly decrease wind uplift and vertical pull resistance in the system or assembly. DensDeck Prime Roof Boards containing excessive free moisture content may need to be evaluated for structural stability to assure wind uplift performance.

Fire Resistance Classifications

DensDeck Prime Roof Boards are excellent fire barriers over combustible and noncombustible roof decks, including steel decks.

Submittal Approvals

Job Name _____

continued →

Contractor _____

Date _____

Stamps / Signatures



UL 790 Classification. DensDeck Prime Roof Boards have been classified by Underwriters Laboratories (UL) for use as a fire barrier over combustible and noncombustible decks in accordance with the ANSI/UL 790 test standard. The UL classification includes a comprehensive Class A, B or C rating. For additional information concerning the UL 790 classification, consult the UL Certification Directory.

UL 1256 Classification. DensDeck® Prime Roof Boards have also been classified by UL in roof deck constructions for internal (under deck) fire exposure in accordance with the ANSI/UL 1256 Steiner Tunnel test. For additional information concerning the UL 1256 classification, consult the UL Certification Directory.

FM Class 1 Approvals. DensDeck Prime Roof Boards are included in numerous roofing assemblies with a Factory Mutual (FM) Class 1 fire rating. 1/4" (6.4 mm) DensDeck Prime Roof Boards have passed testing under the FM Calorimeter Standard 4450 and have been approved by FM as such for insulated steel deck roofs when installed according to the conditions identified by FM. For more information concerning FM Approvals and FM Class 1 assemblies with DensDeck Prime Roof Boards, consult FM or RoofNav®.

Type X. 5/8" (15.9 mm) DensDeck® Prime Fireguard® Roof Boards are manufactured to meet the "Type X" requirements of ASTM C 1177 for increased fire resistance beyond regular gypsum board.

UL Fire Resistance Ratings. 5/8" (15.9 mm) DensDeck Prime Fireguard Roof Boards are designated as **Type DD** by UL and included in assembly designs investigated by UL for hourly fire resistance ratings. 5/8" (15.9 mm) DensDeck Prime Fireguard Roof Boards may also replace any unclassified 5/8" (15.9 mm) gypsum board in an assembly in the UL Fire Resistance Directory under the prefix "P".

Flame Spread and Smoke Developed. When tested in accordance with ASTM E 84, DensDeck Prime Roof Boards had Flame Spread 0, Smoke Developed 0.

Wind Uplift

DensDeck Prime Roof Boards are included in numerous assemblies evaluated by FM or other independent laboratories for wind uplift performance. For information concerning such assemblies, please visit www.roofnav.com.

Physical Properties

Properties	1/4" (6.4 mm)	1/2" (12.7mm)	5/8" (15.9 mm)
Thickness, nominal	1/4" (6.4 mm) + 1/16" (1.6 mm)	1/2" (12.7 mm) ± 1/32" (.8 mm)	5/8" (15.9 mm) ± 1/32" (.8 mm)
Width, standard	4' (1219 mm) ± 1/8" (3 mm)	4' (1219 mm) ± 1/8" (3 mm)	4' (1219 mm) ± 1/8" (3 mm)
Length, standard	4' (1219 mm) and 8' (2438 mm) ± 1/4" (6.4 mm)	4' (1219 mm) and 8' (2438 mm) ± 1/4" (6.4 mm)	4' (1219 mm) and 8' (2438 mm) ± 1/4" (6.4 mm)
Weight, nominal, lbs./sq. ft. (Kg/m ²)	1.2 (5.9)	2.0 (9.8)	2.6 (12.7)
Surfacing	Fiberglass mat with non-asphaltic coating	Fiberglass mat with non-asphaltic coating	Fiberglass mat with non-asphaltic coating
Flexural Strength ¹ , parallel, lbf. min. (N)	40 (178)	80 (356)	100 (444)
Flute Spanability ²	2-5/8" (66.7 mm)	5" (127 mm)	8" (203 mm)
Permeance ³ , Perms (ng/Pa•S•m ²)	>50 (>2850)	>35 (>1995)	>32 (>1824)
R Value ⁴ , ft ² •°F•hr/BTU (m ² •K/W)	.28	.56	.67
Linear Variation with Change in Temp., in/in °F (mm/mm/C°)	8.5 x 10 ⁻⁶ (15.3 x 10 ⁻⁶)	8.5 x 10 ⁻⁶ (15.3 x 10 ⁻⁶)	8.5 x 10 ⁻⁶ (15.3 x 10 ⁻⁶)
Linear Variation with Change in Moisture	6.25 x 10 ⁻⁶	6.25 x 10 ⁻⁶	6.25 x 10 ⁻⁶
Water Absorption ⁵ , % max	10.0	10.0	10.0
Compressive Strength ⁶ , psi nominal	900	900	900
Surface Water Absorption, grams, nominal	≤2.0	≤2.0	≤2.0
Flame Spread, Smoke Developed (ASTM E 84)	0/0	0/0	0/0
Bending Radius	5' (1524 mm)	8' (2438 mm)	12' (3658 mm)

1. Tested in accordance with ASTM C 473 method B.

2. Tested in accordance with ASTM E 661.

3. Tested in accordance with ASTM E 96 (dry cup method).

4. Tested in accordance with ASTM C 518 (heat flow meter).

5. Tested in accordance with ASTM C 1177.

6. Tested in accordance with ASTM C 473.



U.S.A. – Georgia-Pacific Gypsum LLC
Canada – Georgia-Pacific Canada LP

SALES INFORMATION AND ORDER PLACEMENT

U.S.A. Midwest: **1-800-876-4746** West: **1-800-824-7503**
South: **1-800-327-2344** Northeast: **1-800-947-4497**

CANADA Canada Toll Free: **1-800-387-6823**
Quebec Toll Free: **1-800-361-0486**

TECHNICAL INFORMATION

U.S.A. and Canada: **1-800-225-6119**
www.gpgypsum.com

TRADEMARKS DENSDECK, FIREGUARD and the GEORGIA-PACIFIC logo are trademarks owned by or licensed to Georgia-Pacific Gypsum LLC. ROOFNAV is a registered mark of FM Global.

WARRANTIES, REMEDIES AND TERMS OF SALE For current warranty information for this product, please go to www.gpgypsum.com and select the product for warranty information. All sales of this product by Georgia-Pacific are subject to our Terms of Sale available at www.gpgypsum.com.

UPDATES AND CURRENT INFORMATION The information in this document may change without notice. Visit our website at www.gpgypsum.com for updates and current information.

CAUTION For product fire, safety and use information, go to www.gp.com/safetyinfo or call 1-800-225-6119.

HANDLING AND USE—CAUTION This product contains fiberglass facings which may cause skin irritation. Dust and fibers produced during the handling and installation of the

product may cause skin, eye and respiratory tract irritation. Avoid breathing dust and minimize contact with skin and eyes. Wear long sleeve shirts, long pants and eye protection. Always maintain adequate ventilation. Use a dust mask or NIOSH/MSHA approved respirator as appropriate in dusty or poorly ventilated areas.

FIRE SAFETY CAUTION Passing a fire test in a controlled laboratory setting and/or certifying or labeling a product as having a one-hour, two-hour, or any other fire resistance or protection rating and, therefore, as acceptable for use in certain fire rated assemblies/systems, does not mean that either a particular assembly/system incorporating the product, or any given piece of the product itself, will necessarily provide one-hour fire resistance, two-hour fire resistance, or any other specified fire resistance or protection in an actual fire. In the event of an actual fire, you should immediately take any and all actions necessary for your safety and the safety of others without regard for any fire rating of any product or assembly/system.

TECHNICAL INFORMATION SHEET

ISO 95+™ GL Insulation

Item Description

Flat and Tapered

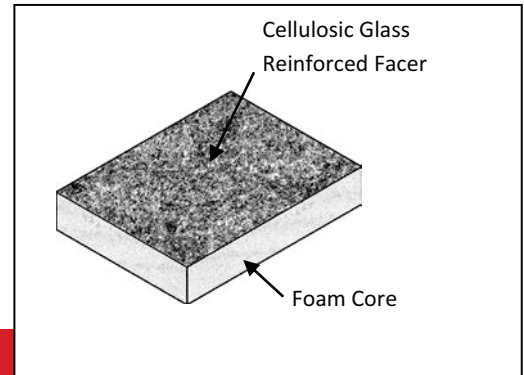
Provide 5" Total

Flat Boards: 4' x 4' (1.22 m x 1.22 m) Two layers of 2-inch.
 4' x 8' (1.22 m x 2.44 m)

Tapered Boards: 4' x 4' (1.22 m x 1.22 m)

Slopes ranging: 1/16" per foot (.5%) to 1/2" per foot (4%)

Thickness ranging: 0.5" (12.7 mm) to 4.0" (101.6 mm)



Product Information

Description:

Firestone ISO 95+ GL flat and tapered roof insulation consists of a closed-cell polyiso foam core laminated to a black glass reinforced mat facer on both major surfaces. Flat and tapered ISO 95+ GL insulation provides outstanding thermal performance on commercial roofing applications, while providing positive rooftop drainage to help eliminate ponding water when tapered ISO 95+ GL insulation is used.

Method of Application:

- Insulation shall be neatly fitted to all roof penetrations, projections and nailers.
- No more insulation shall be installed than can be covered with membrane and completed before the end of each day's work or before the onset of inclement weather.
- Firestone ISO 95+ GL board may be installed using:
 - Firestone fasteners and plates
 - Hot asphalt (requires a cover board)
 - Firestone approved insulation adhesives
 - I.S.O. Twin Pack™
 - I.S.O. Stick™
 - I.S.O. Spray™S
 - I.S.O. FIX™II

For ballasted systems, the top layer of Firestone insulation may not be mechanically attached.

ISO 95+ GL Flute Span Over Metal Decks				
Thickness	1.0"	1.25"	1.5"-3.8"	4.0"
Span	2.625"	3.675"	4.375"	4.5"

Storage:

- Keep insulation dry at all times.
- Elevate insulation above the deck or ground.
- Cover insulation with waterproof tarps.

TECHNICAL INFORMATION SHEET

ISO 95+™ GL Insulation

Precautions:

1. Polyiso foam will burn if exposed to a flame of sufficient heat and intensity. Keep away from heat, sparks, and open flames.
2. Protect against dust that may be generated during installation.
3. Refer to Safety Data Sheet (SDS) for additional information.
4. Use in accordance with Firestone ISO 95+ Specifications.

Note: Miami Dade Classified POLYISO is only produced in the Jacksonville, FL and Youngwood, PA facilities.

Specification Compliance:

ASTM C1289, Type II, Class 1
 UL Classified
 FM Class 1 Approved
 Manufactured in an ISO 9001 Registered Facility
 CAN/ULC-S704, Type 1, Class 3



LEED® Information:

Manufacturing Locations:

Florence, KY	Corsicana, TX	Bristol, Ct
De Forest, WI	Salt Lake City, UT	Youngwood, PA
Jacksonville, FL		

Typical Properties

<u>Property</u>	<u>ASTM Standard</u>	<u>Units</u>	<u>Value</u>	<u>Units</u>	<u>Value</u>
Compressive Strength:	D1621	psi	*20	kPa	138
Density:	D1622	pcf	2	kg/m ³	32
Dimensional Stability:	D2126	%	<2	%	<2
Moisture Vapor Transmission:	E96	perm	<1	ng/(Pa•s•m ²)	<57.5
Water Absorption:	C209	% by volume	<1	% by volume	<1
Service Temperature:	----	°F	-100 to 250 °F	°C	-73 to 121 °C

*25 psi (172 kPa) available upon request.

TECHNICAL INFORMATION SHEET

ISO 95+™ GL Insulation

Product Data

Thickness*		LTTR** (R-Value)	Max Flute Span		Total Recycled Content %	% Post Industrial	% Post Consumer
inches	mm		inches	mm			
1.00	25.40	5.7	2.625	66.675	52	15%	37%
1.25	31.75	7.1	3.675	93.345	48	15%	33%
1.50	38.10	8.6	4.375	111.12	44	15%	29%
1.75	44.45	10.0	4.375	111.12	41	15%	26%
2.00	50.80	11.4	4.375	111.12	39	15%	24%
2.30	58.42	13.2	4.375	111.12	36	15%	21%
2.50	63.50	14.4	4.375	111.12	35	15%	20%
2.80	71.12	16.2	4.375	111.12	33	15%	18%
3.00	76.20	17.4	4.375	111.12	32	15%	17%
3.25	82.55	18.9	4.375	111.12	31	15%	16%
3.50	88.90	20.5	4.375	111.12	30	15%	15%
3.75	95.25	22.0	4.375	111.12	29	15%	14%
4.00	101.60	23.6	4.500	114.30	29	15%	14%

*Other thicknesses available upon request.

**Long Term Thermal Resistance (LTTR) values provide a 15-year time-weighted average in accordance with CAN/ULC-S770.

Acceptable Substrates:

Structural Concrete, 3000 psi (New and Existing)

Steel, min. 22 gage

Lightweight Concrete

Plywood and OSB, min. ½"

Gypsum Deck, min. 2"

Please consult the SBS Design Guide and Quick Specs on line at www.firestonebpco.com to review specific information regarding fastener types appropriate for the type of deck and insulation in use.

Please contact The Quality Building Services Technical Department at 1-800-428-4511 for further information.

This sheet is meant to highlight Firestone products and specifications and is subject to change without notice. Firestone takes responsibility for furnishing quality materials which meet published Firestone product specifications. Neither Firestone nor its representatives practice architecture. Firestone offers no opinion on and expressly disclaims any responsibility for the soundness of any structure. Firestone accepts no liability for structural failure or resultant damages. Consult a competent structural engineer prior to installation if the structural soundness or structural ability to properly support a planned installation is in question. No Firestone representative is authorized to vary this disclaimer.

TECHNICAL INFORMATION SHEET

Insulation Fastening Plate

Item Description

Pail: 1,000 Pieces

Item Number

W56RAC4190



Product Information

Description:

Firestone Insulation Fastening Plates are specially designed to be used with Firestone All-Purpose, Heavy-Duty, Concrete Drive and Stainless Steel Fasteners in roofing applications for attaching insulation as required by Firestone Specifications.

Product Packaging

Plate Diameter	Weight	Pieces per Plastic Pail	Pails per Pallet
3" (76 mm)	42 lb (19 kg) per pail	1,000	60

Method of Application:

Position insulation plates over insulation as specified by Firestone Specifications. Attach plates to roof deck using the appropriate Firestone fastener. Install plates ribbed side up with the "Firestone" identification visible.

Storage:

Store in unopened original containers protected from the weather.

Precautions:

1. Do not overdrive or underdrive fastener.
2. Plates are designed to anchor roof insulation only.
3. Avoid field seams directly over insulation plates.
4. **Cannot be used with Firestone Heavy Duty (HD) Plus Fasteners.**

LEED® Information:

Postconsumer Recycled Content: 8%
 Preconsumer Recycled Content: 17%
 Manufacturing Location: Cleveland, OH



Physical Properties

Property	Typical Performance
Material:	AZ50 Galvalume®
Material Thickness:	0.017" (0.43 mm) - 0.023" (0.58mm)
Diameter:	3" (76 mm)
Corrosion Resistant Coating:	Meets FM No. 4470 Criteria
Pull Through Resistance:	400 lbf (181.4 kgf) from center hole

Galvalume® is a registered trademark of BIEC International, Inc.

Please contact your Firestone Roof Systems Advisor at 1-800-428-4511 for further information.

This sheet is meant to highlight Firestone products and specifications and is subject to change without notice. Firestone takes responsibility for furnishing quality materials which meet published Firestone product specifications. Neither Firestone nor its representatives practice architecture. Firestone offers no opinion on and expressly disclaims any responsibility for the soundness of any structure. Firestone accepts no liability for structural failure or resultant damages. Consult a competent structural engineer prior to installation if the structural soundness or structural ability to properly support a planned installation is in question. No Firestone representative is authorized to vary this disclaimer.

TECHNICAL INFORMATION SHEET

Heavy Duty Fastener

Red Fasteners

1 1/4"	W56RAC4230
2"	W56RAC4232
3"	W56RAC4234
4"	W56RAC4236
5"	W56RAC4237
6"	W56RAC4249
7"	W56RAC4239
8"	W56RAC4240
10"	W56RAC4241
12"	W56RAC4242
14"	W56RAC4243

White Fasteners*

1 1/4"	W56RAC4390
2"	W56RAC4391
3"	W56RAC4392
4"	W56RAC4393
5"	W56RAC4394
6"	W56RAC4395



Product Information

Description:

The Firestone Heavy Duty Fastener is specifically designed to be used in roofing applications which require additional corrosion protection and additional pullout resistance. The Heavy Duty Fastener may be used for attachment of roofing insulation and base sheets in combination with Firestone Insulation Plates, or for attachment of Firestone Batten Strips, Seam Plates, Termination Bars, and other accessories to steel, wood, concrete and other decks where approved by Firestone Technical Specifications.

*NOTE: Firestone is not responsible for, nor guarantees that the white coating will remain on the fastener during or after installation. Because the coating on Firestone white fasteners is removed to some degree during the installation process, Firestone suggests that 1) the building owner be made aware of the expectations of the white fasteners and that repainting of the deck may be required after roofing is complete or 2) any deck painting take place after the roof is installed. In this case, any color of screw will work.

Product Packaging

<u>Screw Length</u>	<u>Thread Length</u>	<u>Pieces per Plastic Pail</u>	<u>Pails per Pallet</u>
1 1/4" (31.8 mm)	Full	1,000	40
2" (50.8 mm)	Full	1,000	40
3" (76.2 mm)	Full	1,000	60
4" (101.6 mm)	3" (76.2 mm)	1,000	60
5" (127.0 mm)	4" (101.6 mm)	1,000	40
6" (152.4 mm)	4" (101.6 mm)	500	60
7" (177.8 mm)	4" (101.6 mm)	500	60
8" (203.2 mm)	4" (101.6 mm)	500	60
10" (254.0 mm)	4" (101.6 mm)	500*	24
12" (304.8 mm)	4" (101.6 mm)	500*	24
14" (355.6 mm)	4" (101.6 mm)	500*	24

* Packaged in cardboard boxes due to fastener length. May require lead time of thirty (30) days

TECHNICAL INFORMATION SHEET

Heavy Duty Fastener

Method of Application:

- Using the #3 Phillips tip provided, and a variable speed drill, engage the fastener into the deck as noted below. Take care not to over or under drive the fastener. Threads must engage the decking material per Firestone Technical Specifications.
- Determine screw length as follows:
 - Steel Decks: Select fastener length to penetrate through the deck a minimum of 3/4" (19.1 mm).
 - Wood Decks: Select fastener length to penetrate into or through the deck a minimum of 1" (25.4 mm).
 - Concrete Decks: Select fastener length to penetrate into deck a minimum of 1" (25.4 mm).
- If pre-drilling of the deck substrate is necessary, use a hammer drill in impact mode with a 7/32" (5.6 mm) carbide drill bit. Install fasteners by using a variable speed drill at a maximum of 1,500 rpm.

Storage:

Store in original, unopened packaging protected from the weather.

Precautions:

Eye protection must be worn during the installation of the fasteners and any drilling operation.

LEED® Information:

Postconsumer Recycled Content: 25%
 Preconsumer Recycled Content: 0%
 Manufacturing Location: West Chicago, IL



Physical Properties

<u>Property</u>	<u>Typical Performance</u>
Material:	SAE 1022, Heat Treated Steel
Thread Size:	0.275" (6.98 mm) Nominal Diameter
Threads/Inch:	13 min.
Thread Design:	Buttress thread
Fastener Tip:	Drill point design
Fastener Head:	#3 Phillips drive
Pullout in New 22 gauge (0.76 mm) Steel Deck:	
Grade C (Grade 33):	595 lb (270 kg) min.
Grade E (Grade 80):	650 lb (295 kg) min.
Pullout in New Structural Concrete:	700 lb (317.5 kg) min.
Pullout in New 3/4" (19.0 mm) Plywood Deck:	360 lb (163 kg) min.
Corrosion Resistant Coating:	Electrocoating of Firestone's Red and White fasteners both exhibit 15% or less red rust after 30 cycles of Kesternich and exceed requirements of FM 4470.

Please contact your Firestone Roof Systems Advisor at 1-800-428-4511 for further information.

This sheet is meant to highlight Firestone products and specifications and is subject to change without notice. Firestone takes responsibility for furnishing quality materials which meet published Firestone product specifications. Neither Firestone nor its representatives practice architecture. Firestone offers no opinion on and expressly disclaims any responsibility for the soundness of any structure. Firestone accepts no liability for structural failure or resultant damages. Consult a competent structural engineer prior to installation if the structural soundness or structural ability to properly support a planned installation is in question. No Firestone representative is authorized to vary this disclaimer.

METAL PAINT FINISH LIMITED WARRANTY

Warranty No. **SAMPLE**FBPCO#: **SAMPLE**Sq Ft: **SAMPLE**Purchaser: **SAMPLE**Building Identification: **SAMPLE**Building Address: **SAMPLE**Warranty Period Of: **THIRTY-FIVE (35) Years Beginning on: SAMPLE**Roofing Contractor: **SAMPLE**

For the warranty period indicated above, Firestone Building Products Company ("Firestone"), a division of BFS Diversified Products, LLC, an Indiana limited liability company, warrants to the Purchaser that, subject to the Terms, Conditions and Limitations set forth below, the exterior paint finish ("Finish") on the UNA-CLAD brand coil-coated metal ("UNA-CLAD Metal") supplied by Firestone as part of the Firestone Project (FBPCO) Number listed above, will not exhibit the following exterior surface conditions, measured at the values listed below by Group: 1) Peeling, checking or cracking, except for crazing or cracking that may occur on formed edges or bends of the metal roofing panels and trim, 2) Chalking in excess of a numerical rating, Vertical and Non-Vertical, listed below, when measured in accordance with ASTM D 4214 "Standard Methods of Evaluating Degree of Chalking of Exterior Paints," for a term not to exceed thirty (30) years, or 3) Fade or change in color in excess of the Vertical rating listed below in color difference units, as measured on exposed surfaces which have been cleaned of external deposits and chalk and the corresponding values measured on the original or unexposed painted surfaces when tested in accordance with ASTM D 2244 3.7.1 and 3.8.4, "Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates," for a term not to exceed thirty (30) years.

TERMS, CONDITIONS AND LIMITATIONS

Group 1: Adhesion – 35 years, Chalk – 30 years at 8, Fade – 30 years at 5: Almond, Bone White, Cityscape, Colonial Red, Hartford Green, Hemlock Green, Mansard Brown, Medium Bronze, Patina Green, Regal Blue, Sandstone, Sherwood Green, Sierra Tan, Sky Blue, Slate Gray, Stone White, Terra Cotta, Tropical Patina, Champagne Metallic, Classic Copper, Silver Metallic

Group 2: Adhesion 35 years, Chalk – 30 years at 8, Fade – 30 years at 7: Charcoal Gray, Dark Bronze, Dark Ivy, Extra Dark Bronze, Teal

Group 3: Adhesion – 35 years, Chalk – 20 years at 8, Fade – 20 years at 9: Brandywine, Matte Black, Regal Red, Electric Blue, Award Blue

- Product Usage.** This Metal Paint Finish Limited Warranty (the "Limited Warranty") is limited exclusively to metal roofing panels and trim fabricated from UNA-CLAD Metal and installed in accordance with Firestone technical specifications.
- Notice.** In the event any peeling, checking, cracking, chalking, fading or excessive color change are observed by the Purchaser, the Purchaser must give notice in writing or by telephone to Firestone within thirty (30) days of any such observation. Written notice may be sent to Firestone at the street address or fax number shown on the reverse side of this Limited Warranty. By so notifying Firestone, the Purchaser authorizes Firestone or its designee to investigate the surface condition of the UNA-CLAD Metal.
- Investigation and Remedy.** If upon investigation, Firestone determines that the surface condition of the UNA-CLAD Metal is not excluded under the Terms, Conditions and Limitations set forth in this Limited Warranty, the Purchaser's sole and exclusive remedy and Firestone's total liability shall be limited to the refinishing of the UNA-CLAD Metal as determined by Firestone to require refinishing. Any and all refinishing work so performed by Firestone in compliance with this warranty shall be performed by using any standard finishing practices and materials. If the investigation reveals that the surface condition of the UNA-CLAD Metal trim is excluded under the Terms, Conditions and Limitations, the Owner shall be responsible for payment of the investigation costs. Failure by Purchaser to pay for these costs shall render this Limited Warranty null and void.
- Disputes.** Any dispute, controversy or claim between the Purchaser and Firestone concerning this Limited Warranty shall be settled by mediation. In the event that the Purchaser and Firestone do not resolve the dispute, controversy or claim in mediation, the Purchaser and Firestone agree that neither party will commence or prosecute any suit, proceeding, or claim other than in the courts of Hamilton County in the state of Indiana or the U.S. District Circuit, Southern District of Indiana, Indianapolis Division. Each party irrevocably consents to the jurisdiction and venue of the above-identified courts.
- Paint Finish Colors.** This warranty shall extend only to standard colors identified as such in Firestone published literature at the date of issuance of this Limited Warranty or as approved in writing by Firestone. Colors identified as "metallic" by Firestone are not warranted against fade or change in color.
- Payment Required.** Firestone shall have no obligation under this Limited Warranty unless and until Firestone has been paid in full for all materials, supplies, services, approved written change orders, warranty costs and other costs which are included in, or incidental to, the fabrication and installation of the UNA-CLAD Metal.
- Exclusions.** Firestone shall have no obligation under this Limited Warranty, or any other liability, now or in the future if peeling, checking, cracking, chalking, fading or excessive color change of the UNA-CLAD Metal is caused by: (a) Natural forces, disasters, or acts of God including, but not limited to wind, hurricanes, tornadoes, hail, wind-blown debris, lightning, earthquakes, volcanic activity, atomic radiation, insects or animals; (b) Any act(s), conduct or omission(s) by any person, or act(s) of war, terrorism or vandalism, which damage the UNA-CLAD Metal (c) Failure by the Purchaser to use reasonable care in maintaining the UNA-CLAD Metal, said maintenance to include, but not limited to those items listed in the "Firestone / UNA-CLAD Paint Finish Cleaning and Maintenance Guide" on the reverse side of this Limited Warranty; (d) Deterioration or failure of building components, including, but not limited to, the roof substrate, walls, mortar, HVAC units, etc.; (e) Condensation or moisture infiltration in, through, or around the walls, copings, rooftop, hardware or equipment, building structure or underlying or surrounding materials; (f) Any acid, oil, harmful chemical, chemical or physical reaction and the like which comes in contact with the UNA-CLAD Metal, including but not limited to chemical fumes, salt water spray or any installation within 1500 feet of a saltwater environment, surface temperatures that exceed 200 degrees Fahrenheit, airborne sand abrasion, metal shavings, standing water or the continuous spray of water (h) Alterations or repairs to the metal roofing panels and trim not approved in writing by Firestone; (i) Any failure caused by the attachment or mounting of any item or device to or near the metal roofing panels and trim, or by improper handling during fabrication and installation, including but not limited to, improper equipment fabrication, storage, transportation, erection, placement or failure to immediately remove strippable protective film coatings; (j) Failure to give proper notice as set forth in paragraph 1(a) above; (k) any punched or vented steel.
- Transfer.** This Limited Warranty shall be transferable subject to Firestone's inspection and written approval, and to Purchaser's payment of the current transfer fee set by Firestone.
- Term.** The term of this Limited Warranty shall be for the period set forth above and such term shall not be extended under any circumstances.
- Access.** During the term of this Limited Warranty, Firestone's designated representative or employees shall have free access to the UNA-CLAD Metal during regular business hours. In the event that access is limited due to security or other restrictions, Purchaser shall reimburse Firestone for all reasonable cost incurred during inspection and/or refinishing of the UNA-CLAD Metal that are due to delays associated with said restrictions. Owner shall be responsible for the removal and replacement of any overburdens, superstrata or overlays, either permanent or temporary, as necessary to expose the UNA-CLAD Metal for inspection and/or refinishing.
- Waiver.** Firestone's failure to enforce any of the terms or conditions stated herein shall not be construed as a waiver of such provision or of any other terms and conditions of this Limited Warranty.
- Governing Law.** This Limited Warranty shall be governed by and construed in accordance with the laws of the State of Indiana without regard to that State's rules on conflict of laws.
- Severability.** If any portion of this Limited Warranty is held by a court of competent jurisdiction to be invalid, void or unenforceable, the remaining provisions shall nevertheless continue in full force.

FIRESTONE DOES NOT WARRANT PRODUCTS INCORPORATED OR UTILIZED IN THIS INSTALLATION THAT WERE NOT FURNISHED BY FIRESTONE. FIRESTONE SPECIFICALLY DISCLAIMS LIABILITY UNDER ANY THEORY OF LAW ARISING OUT OF THE INSTALLATION OF, PERFORMANCE OF, OR DAMAGES SUSTAINED BY OR CAUSED BY, PRODUCTS NOT FURNISHED BY FIRESTONE.

THIS LIMITED WARRANTY SUPERSEDES AND IS IN LIEU OF ALL OTHER WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, AND FIRESTONE HEREBY DISCLAIMS ALL SUCH WARRANTIES. THIS LIMITED WARRANTY SHALL BE THE OWNER'S SOLE AND EXCLUSIVE REMEDY AGAINST FIRESTONE, AND FIRESTONE SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL, SPECIAL, INCIDENTAL OR OTHER DAMAGES INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS OR DAMAGES TO THE BUILDING OR ITS CONTENTS OR THE ROOF DECK. THIS LIMITED WARRANTY CANNOT BE AMENDED, ALTERED OR MODIFIED IN ANY WAY EXCEPT IN WRITING SIGNED BY AN AUTHORIZED OFFICER OF FIRESTONE. NO OTHER PERSON HAS ANY AUTHORITY TO BIND FIRESTONE WITH ANY REPRESENTATION OR WARRANTY WHETHER ORAL OR WRITTEN.

SAMPLE – NOT A VALID
WARRANTY

Firestone Building Products Company, LLC
By: **Phil LaDuke**

Authorized Signature::


Title: **Director, Quality Assurance**

FIRESTONE / UNA-CLAD PAINT FINISH CLEANING AND MAINTENANCE GUIDE

Although UNA-CLAD factory-applied finishes are extremely durable, a periodic cleaning to remove build-ups of resins and other residue is a good idea to extend coating life. A variety of methods for removal of surface deposits are available. Simple washing with plain water using hoses or pressure spray equipment is usually adequate. When heavy deposits of dirt or other contaminants dull surfaces, stronger methods may be needed.

Two precautions should be observed: (1) do not use wire brushes, abrasives, or similar cleaning tools which will mechanically abrade the coatings surface, and (2) certain cleaning agents listed below should be tested in an inconspicuous area before use on a large scale.

GROUP A: HOT OR COLD DETERGENT SOLUTIONS

A 5% solution in water of commonly used commercial and industrial detergents will not have any deleterious effect on a fluoropolymer surface. These solutions should be followed by an adequate rinse of water. Use a cloth or sponge for application.

GROUP B: SOLVENTS

Most organic solvents are flammable and/or toxic, and must be handled accordingly. Read the manufacturer's Material Safety Data Sheets (MSDS). Keep away from open flames, sparks and electrical motors. Use adequate ventilation, protective clothing, and goggles. Solvent that may be used to remove non-water soluble deposits such as tar, grease, oil, paint, and graffiti from fluoropolymer surfaces include:

- Ethanol(denatured alcohol)
- Isopropyl alcohol (rubbing alcohol)
- Methanol (wood alcohol) Note: methanol is toxic

The above alcohols have no permanent effect on fluoropolymer surfaces.

GROUP C: PETROLEUM SOLVENTS AND TURPENTINE

- VM&P naphtha
- Mineral spirits
- Kerosene
- Turpentine (wood or gum spirits)

The above solvents have no permanent effect on fluoropolymer surfaces.

GROUP D: AROMATIC AND CHLORINATED SOLVENTS

- Xylol (Xylene) Toluol (Toluene)
- Perchloroethylene (Perclene)
- Trichloroethylene (Triclene)

Note: Perchloroethylene and Trichloroethylene are toxic.

The above solvents should be used with caution on a fluoropolymer surface. Limit contact with solvent to five minutes maximum and test before using.

GROUP E: KETONES, ESTERS, LACQUER THINNER AND PAINT REMOVER

- Methyl isobutyl ketone (MIBK)
- Ethyl acetate (nail polish remover)
- Butyl acetate
- Lacquer thinner
- Paint remover (non-flammable)

The above solvents should be used cautiously on a fluoropolymer surface. Limit contact to fluoropolymer surface and test before using. Note: There are many formulations of paint remover on the market. It is possible that some will remove the fluoropolymer surface. Proceed very cautiously in use of paint remover. Metal supplier and coating manufacturer are not responsible for damage from unrestricted use.

GRAFFITI

Graffiti presents a special problem because of the many possible agents used, especially aerosol paint. It is best to try soap and water first. If needed, try the less active solvents from Groups B, C, and D. Next, try the stronger solvents in Group E. If none of these are satisfactory, it may be necessary to resort to touchup, repaint or replacement.

MILDEW

In areas subject to high humidity levels, dirt and spore deposits can permit mildew growth to occur. The following solution is recommended to remove mildew when necessary:

- 1/3 cup dry powdered laundry detergent (such as Tide®)
- 1 quart sodium hypochlorite 5% solution (such as Clorox®)
- 3 quarts water

RUST STAINS

Hydrochloric, citric acid, or muriatic acid, diluted with ten volumes of water, may assist in removing rust stains from fluoropolymer surfaces. Limit contact to five minutes. Oxalic acid solutions or acetic acid (vinegar) may be used for the same purpose. Flush with water. Caution: Acid solutions are corrosive and toxic. Flush all surfaces with copious amounts of water after use.

NOTE: Misuse or abuse of any of the cleaning agents listed above may result in the voiding of the Firestone Metal Paint Finish Limited Warranty. For more information contact Firestone Roofing Solutions at 1-800-428-4511.

Firestone

BUILDING PRODUCTS

NOBODY COVERS YOU BETTER.®

250 West 96th Street – Indianapolis, IN 46260
 1-800-428-4442 * 1-317-575-7000 * FAX 1-317-575-7100
 www.firestonebp.com



RED SHIELD WARRANTY

RED SHIELD ROOFING SYSTEM LIMITED WARRANTY

Warranty No: _____ **FBPCO #** _____ **Square Footage:** _____ **s.f.** _____
Building Owner: _____
Building Identification: _____
Building Address: _____
Warranty Period Of: 10-years
Roofing Contractor: _____

SAMPLE

For the warranty period indicated above, Firestone Building Products Company, LLC ("Firestone"), an Indiana limited liability company, warrants to the Building Owner ("Owner") named above that Firestone will, subject to the Terms, Conditions and Limitations set forth below, repair any leak in the Firestone Roofing System ("System").

TERMS, CONDITIONS AND LIMITATIONS

- Products Covered.** The System shall mean only the Firestone brand roofing membranes, Firestone brand roofing insulations, Firestone brand roofing metal, and other Firestone brand roofing accessories when installed in accordance with Firestone technical specifications by a Firestone-licensed applicator.
- Notice.** In the event any leak should occur in the System, the Owner must give notice in writing or by telephone to Firestone within thirty (30) days of any occurrence of a leak. Written notice may be sent to Firestone at the street address or fax number shown on the reverse side of this Limited Warranty. Evidence of this notice shall be the receipt by Owner of a Firestone Leak Notification Acknowledgement. By so notifying Firestone, the Owner authorizes Firestone or its designee to investigate the cause of the leak.
- Investigation.** If upon investigation, Firestone determines that the leak is not excluded under the Terms, Conditions and Limitations set forth in this Red Shield Roofing System Limited Warranty (the "Limited Warranty"), the Owner's sole and exclusive remedy and Firestone's total liability shall be limited to the repair of the leak. Should the investigation reveal that the leak is excluded under the Terms, Conditions and Limitations, the Owner shall be responsible for payment of the investigation costs. Failure by Owner to pay for these costs shall render this Limited Warranty null and void. Firestone will advise the Owner of the type and/or extent of repairs required to be made at the Owner's expense that will permit this Limited Warranty to remain in effect for the unexpired portion of its term. Failure by the Owner to properly make these repairs in a reasonable manner using a Firestone-licensed applicator and within 60 days shall render this Limited Warranty null and void.
- Disputes.** Any dispute, controversy or claim between the Owner and Firestone concerning this Limited Warranty shall be settled by mediation. In the event that the Owner and Firestone do not resolve the dispute, controversy or claim in mediation, the Owner and Firestone agree that neither party will commence or prosecute any suit, proceeding, or claim other than in the courts of Hamilton County in the state of Indiana or the United States District Court, Southern District of Indiana, Indianapolis Division. Each party irrevocably consents to the jurisdiction and venue of the above-identified courts.
- Payment Required.** Firestone shall have no obligation under this Limited Warranty unless and until Firestone and the licensed applicator have been paid in full for all materials, supplies, services, approved written change orders, warranty costs and other costs which are included in, or incidental to, the System. In the event that repairs not covered by this Limited Warranty are necessary in the future, Firestone reserves the right to suspend this Limited Warranty until such repairs have been completed and the licensed applicator and/or Firestone has been paid in full for such repairs.
Exclusions. Firestone shall have no obligation under this Limited Warranty, or any other liability, now or in the future if a leak or damage is caused by: (a) Natural forces, disasters, or acts of God including, but not limited to, fires, hurricanes, tornadoes, hail, wind-blown debris, lightning, earthquakes, volcanic activity, atomic radiation, insects or animals; (b) Winds of peak gust speed at or in excess of 55 MPH calculated at ten (10) meters above ground using available meteorological data; (c) Act(s), conduct or omission(s) by any person, or act(s) of war, terrorism or vandalism, which damage the System or which impair the System's ability to resist leaks; (d) Failure by the Owner to use reasonable care in maintaining the System, said maintenance to include, but not be limited to, those items listed on the reverse side of this Limited Warranty entitled "Building Envelope Care and Maintenance Guide"; (e) Deterioration or failure of building components, including, but not limited to, the roof substrate, walls, mortar, HVAC units, skylights etc.; (f) Construction generated moisture, condensation or infiltration of moisture in, from, through, or around the walls, copings, rooftop hardware or equipment, skylights, building structure or underlying or surrounding materials; (g) Acid, oil, harmful chemicals, or the reaction between them; (h) Alterations or repairs to the System that are not completed in accordance with Firestone's published specifications, not completed by an approved contractor, and/or not completed with proper notice to Firestone; (i) The design of the roofing system; Firestone does not undertake any analysis of the architecture or engineering required to evaluate what type of System is appropriate for a building and makes no warranty express or implied as to the suitability of its Products for any particular structure; such a determination is the responsibility of the architect, engineer or design professional; (j) Improper selection of materials for the roof assembly or the failure to accurately calculate wind uplift and/or roof loads; (k) Deterioration to metal roofing materials and accessories caused by marine salt water, atmosphere, or by regular spray of either salt or fresh water; or, (l) Change in building use or purpose.
- Transfer.** This Limited Warranty shall be transferable subject to Owner's payment of the current transfer fee set by Firestone.
- Term.** The term of this Limited Warranty shall be for the period set forth above and such term shall not be extended under any circumstances.
- Roof Access.** During the term of this Limited Warranty, Firestone's designated representative or employees shall have free access to the roof during regular business hours. In the event that roof access is limited due to security or other restrictions, Owner shall reimburse Firestone for all reasonable cost incurred during inspection and/or repair of the System that are due to delays associated with said restrictions. Owner shall be responsible for the damage caused by, removal and replacement of any overburdens, superstrata or overlays, either permanent or temporary, excluding accepted stone ballast or pavers, as necessary to expose the system for inspection and/or repair.
- Waiver.** Firestone's failure to enforce any of the terms or conditions stated herein shall not be construed as a waiver of such provision or of any other terms and conditions of this Limited Warranty.
- Governing Law.** This Limited Warranty shall be governed by and construed in accordance with the laws of the State of Indiana without regard to that State's rules on conflict of laws.
- Severability.** If any portion of this Limited Warranty is held by a court of competent jurisdiction to be invalid, void or unenforceable, the remaining provisions shall nevertheless continue in full force.

FIRESTONE DOES NOT WARRANT PRODUCTS INCORPORATED OR UTILIZED IN THIS INSTALLATION THAT WERE NOT FURNISHED BY FIRESTONE. FIRESTONE SPECIFICALLY DISCLAIMS LIABILITY UNDER ANY THEORY OF LAW ARISING OUT OF THE INSTALLATION OF, PERFORMANCE OF, OR DAMAGES SUSTAINED BY OR CAUSED BY, PRODUCTS NOT FURNISHED BY FIRESTONE.

THIS LIMITED WARRANTY SUPERSEDES AND IS IN LIEU OF ALL OTHER WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, AND FIRESTONE HEREBY DISCLAIMS ALL SUCH WARRANTIES. THIS LIMITED WARRANTY SHALL BE THE OWNER'S SOLE AND EXCLUSIVE REMEDY AGAINST FIRESTONE, AND FIRESTONE SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL, SPECIAL, INCIDENTAL OR OTHER DAMAGES INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS OR DAMAGES TO THE BUILDING OR ITS CONTENTS OR THE ROOF DECK. THIS LIMITED WARRANTY CANNOT BE AMENDED, ALTERED OR MODIFIED IN ANY WAY EXCEPT IN WRITING SIGNED BY AN AUTHORIZED OFFICER OF FIRESTONE. NO OTHER PERSON HAS ANY AUTHORITY TO BIND FIRESTONE WITH ANY REPRESENTATION OR WARRANTY WHETHER ORAL OR WRITTEN.

FIRESTONE BUILDING PRODUCTS COMPANY, LLC
By:

SAMPLE

Authorized
Signature:
Title:

**BUILDING ENVELOPE CARE AND MAINTENANCE GUIDE
(For Red Shield Warranted Roofing Systems)**

Congratulations on your purchase of a Firestone Roofing System! Your roof is a valuable asset that should be properly maintained. **All roofs and roofing systems require periodic inspection and maintenance to perform as designed and to keep your Limited Warranty in full force and effect.**

1. The roof should be inspected at least twice yearly and after any severe storms. A record of all inspection and maintenance activities should be maintained, including a listing of the date and time of each activity as well as the identification of the parties performing the activity.
2. Proper maintenance and good roofing practice require that ponded water (defined as water standing on the roof forty-eight hours after it stops raining) not be allowed on the roof. Roofs should have slope to drain, and all drain areas must remain clean. Bag and remove all debris from the roof since such debris can be quickly swept into drains by rain. This will allow for proper water run-off and avoid overloading the roof.
3. The Firestone Roofing System should not be exposed to acids, solvents, greases, oil, fats, chemicals and the like. If the Firestone Roofing System is in contact with any such materials, these contaminants should be removed immediately and any damaged areas should be inspected by a Firestone Licensed Applicator and repaired if necessary.
4. The Firestone Roofing System is designed to be a waterproofing membrane and not a traffic surface. Roof traffic other than periodic traffic to maintain rooftop equipment and conduct periodic inspections should be prohibited. In any areas where periodic roof traffic may be required to service rooftop equipment or to facilitate inspection of the roof, protective walkways should be installed by a Firestone Licensed Applicator as needed to protect the roof surface from damage.
5. Some Firestone roofing membranes require maintenance of the surface of the membrane:
 - a. **Smooth-surfaced Firestone APP membranes** should be coated with an approved liquid coating, such as Firestone Aluminum Roof Coating or Firestone AcryliTop applied in accordance with Firestone specifications, in order to maximize the service life of the membrane. If this coating is not applied as part of the initial roofing installation, it should be applied within the first five years after the roof is installed to help protect the membrane from surface crazing and cracking. In addition, this coating should be maintained as needed to re-coat any areas that have blistered, peeled or worn through.
 - b. **Granule-surfaced Firestone APP and SBS membranes** do not normally require surface maintenance other than periodic inspection for contaminants, cuts or punctures. If areas of granular loss are discovered during inspection, these areas should be coated with Firestone AcryliTop or other Firestone-approved coating applied in accordance with Firestone specifications.
 - c. **Gravel-surfaced Firestone BUR membranes** do not normally require surface maintenance other than periodic inspection for contaminants or damage. If areas of gravel loss are discovered during inspection, gravel must be reinstalled into hot asphalt to protect the surface of the membrane. Coatings on smooth surface BUR membranes must be maintained as needed to re-coat any areas that have blistered, peeled or worn through.
 - d. **Firestone EPDM and TPO roofing membranes** do not normally require surface maintenance other than periodic inspection for contaminants, cuts or punctures. Occasionally, approved liquid roof coatings, such as Firestone AcryliTop, are applied to the surface of EPDM membranes in order to provide a lighter surface color. Such coatings do not need to be maintained to assure the performance of the underlying EPDM roof membrane, but some maintenance and re-coating may be necessary in order to maintain a uniform surface appearance.
 - e. **Firestone Una-Clad metal roofing panels and trim** do not normally require surface maintenance other than periodic inspection for contaminants or damage. In addition, periodic cleaning of the surface may be required to remove dirt and maintain the aesthetic appearance of the coated metal. Simple washing with plain water using hoses or pressure spray equipment is usually adequate. If cleaning with agents other than water is contemplated, several precautions should be observed: (1) do not use wire brushes, abrasives, or similar cleaning tools which will mechanically abrade the coating surface, and (2) cleaning agents should be tested in an inconspicuous area before use on a large scale.
6. All metal work, including counter-flashings, drains, skylights, equipment curbs and supports, and other Firestone brand rooftop accessories must be properly maintained at all times. Particular attention should be paid to sealants at joints in metal work and flashings. If cracking or shrinkage is observed, the joint sealant should be removed and replaced with new sealant.
7. Any alterations to the roof, including but not limited to roof curbs, pipe penetrations, roof-mounted accessories, and tie-ins to building additions must be performed by a licensed Firestone Licensed Applicator and reported to Firestone. Additional information and reporting forms for roof alterations are available at www.firestonebpco.com.
8. Should you experience a leak:
 - (a) Check for the obvious: clogged roof drains, loose counterflashings, broken skylights, open grills or vents, broken water pipes.
 - (b) Note conditions resulting in leakage. Heavy or light rain, wind direction, temperature and time of day that the leak occurs are all-important clues to tracing roof leaks. Note whether the leak stops shortly after each rain or continues to drip until the roof is dry. If you are prepared with the facts, the diagnosis and repair of the leak can proceed more rapidly.
 - (c) Contact Firestone Warranty Claims at 1-800-830-5612 as soon as possible...but please don't call until you are reasonably sure that the Firestone Roofing System is the cause of the leak.

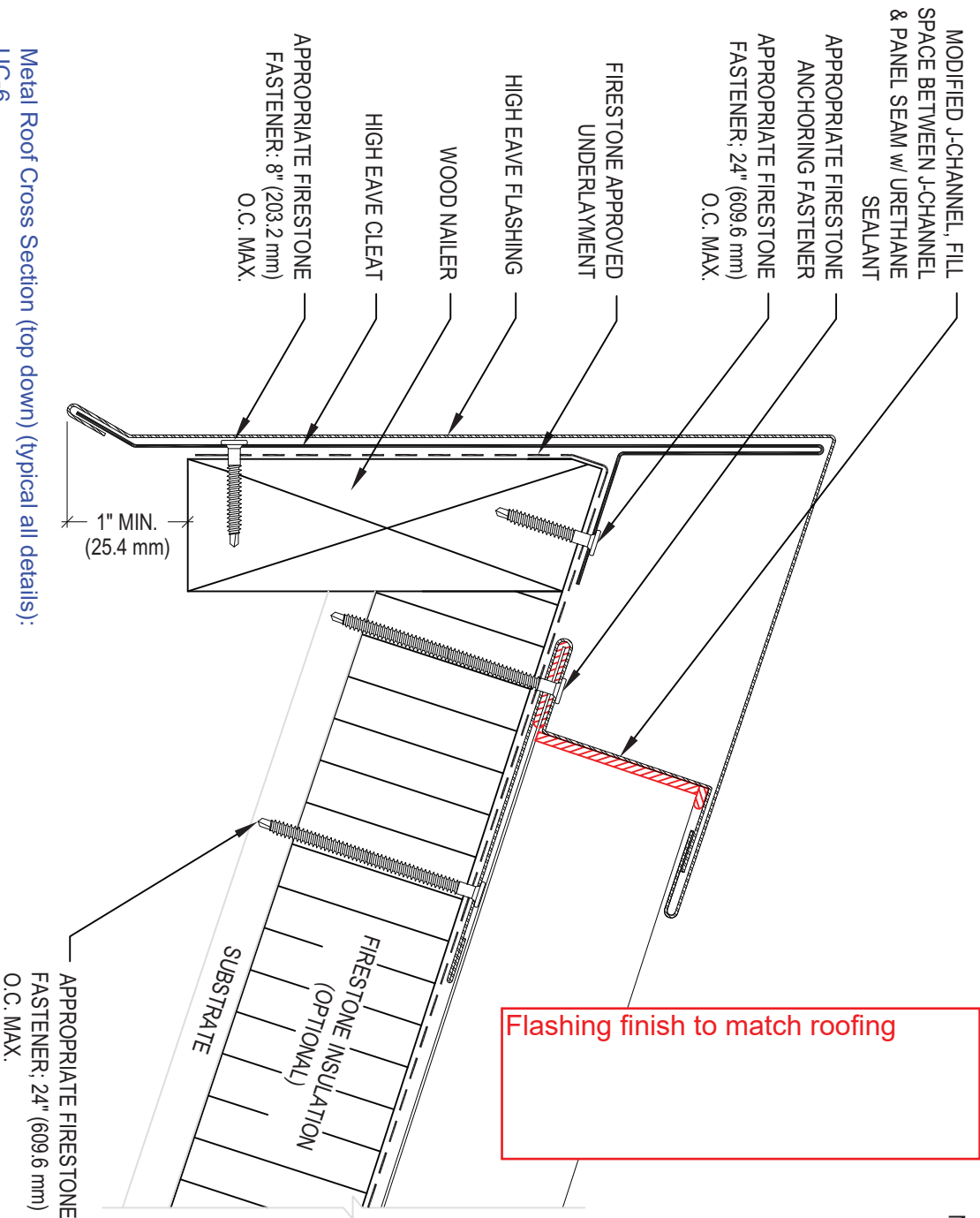
Firestone feels that the preceding requirements will assist you, the building owner, in maintaining a watertight roof for many years. Your roof is an investment, and maintenance is essential to maximize your return on this important investment.

Firestone
BUILDING PRODUCTS
NOBODY COVERS YOU BETTER™

250 West 96th St., Indianapolis, IN 46260
1-800-428-4442 • 1-317-575-7000 • www.firestonebpco.com

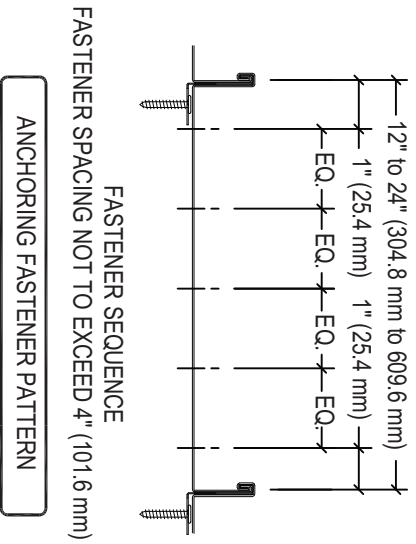
International Offices:

Canada: 2835 Argenta Road, Unit #2 • Mississauga, ON L5N 8G6 • 800-428-4442 • www.firestonebpco.ca
Europe: Hermesstraat 2C - 1930 • Zaventem, Brussels, Belgium • +32 2 7114450 • www.firestonebpco.com
Latin America: 8300 NW 53rd Street, Suite #106 • Miami, FL 33166 • 305-471-0117 • www.firestonebpco.com



Flashing finish to match roofing

- NOTES:
1. REFER TO FIRESTONE WEBSITE FOR MOST CURRENT INFORMATION.
 2. REFER TO TECHNICAL INFORMATION SHEETS FOR FASCIA SIZES, ACCESSORIES, AND FINISHES AVAILABLE.
 3. WOOD NAILER MUST BE INSTALLED TO MEET APPLICABLE BUILDING CODES OR 200 LBS PER LINEAR FOOT MINIMUM IN ANY GIVEN DIRECTION.
 4. REFER TO THE FIRESTONE TECHNICAL DATABASE FOR FASTENER COMPATIBILITY WITH METAL.
 5. APPLICATION DETAILS ARE FOR ILLUSTRATION PURPOSES ONLY AND MAY NOT BE APPROPRIATE FOR ALL BUILDING DESIGNS AND CONDITIONS.



Metal Roof Cross Section (top down) (typical all details):
 UC-6
 Clad-Gard SA (two layers)
 1/4-inch DensDeck Prime - Mechanically fastened
 2-inch ISO 95+ - Commonly fastened
 2-inch ISO 95+ - Commonly fastened
 Structurally Sloped Steel Deck (by others)

FOR WARRANTY PERIODS GREATER THAN 20 YEARS REFER TO METAL QUICK SPECS FOR MINIMUM REQUIREMENTS.

MAXIMUM WARRANTY: **20 YEARS**

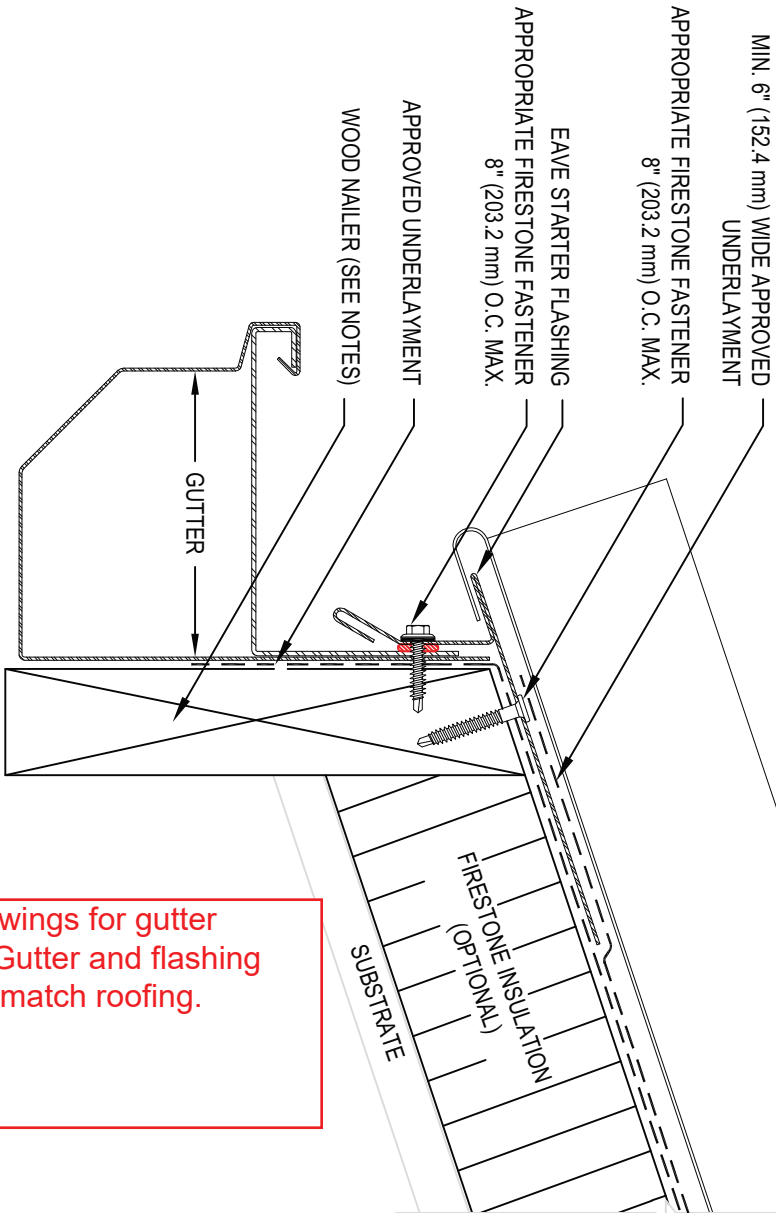


FIXED HIGH EAVE WITH MODIFIED J-CHANNEL
 UNA-CLAD®

ACCEPTABLE SYSTEMS: UC-6 RS

ISSUE / REVISION
 DATE: 09/04/2013
 NOT TO SCALE

DETAIL NO.
6-HE-2



See drawings for gutter profile. Gutter and flashing color to match roofing.

- NOTES:
1. REFER TO FIRESTONE WEBSITE FOR MOST CURRENT INFORMATION.
 2. REFER TO TECHNICAL INFORMATION SHEETS FOR FASCIA SIZES, ACCESSORIES, AND FINISHES AVAILABLE.
 3. WOOD NAILER MUST BE INSTALLED TO MEET APPLICABLE BUILDING CODES OR 200 LBS PER LINEAR FOOT MINIMUM IN ANY GIVEN DIRECTION.
 4. REFER TO THE FIRESTONE TECHNICAL DATABASE FOR FASTENER COMPATIBILITY WITH METAL.
 5. REFER TO THE FIRESTONE TECHNICAL DATABASE FOR HEM LENGTH AND REQUIRED DISTANCE BETWEEN THE PANEL AND CLEAT.
 6. APPLICATION DETAILS ARE FOR ILLUSTRATION PURPOSES ONLY AND MAY NOT BE APPROPRIATE FOR ALL BUILDING DESIGNS AND CONDITIONS.

MAXIMUM WARRANTY: **20 YEARS**

SLIDING EAVE AT GUTTER

UNA-CLAD®

ACCEPTABLE SYSTEMS: UC6-RS

ISSUE / REVISION

DATE:

8/15/2008

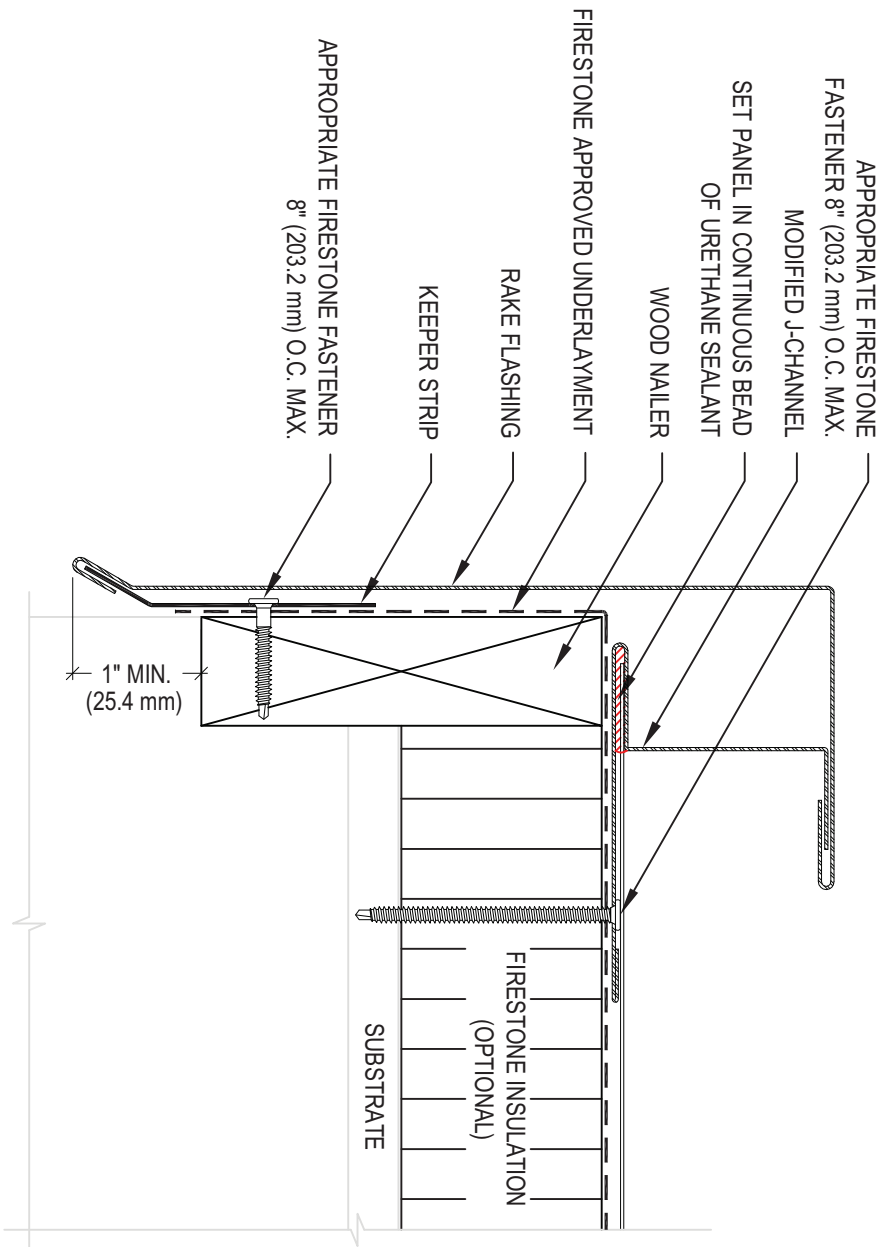
NOT TO SCALE

DETAIL NO.

6-E-2

Firestone
BUILDING PRODUCTS
NOBODY COVERS YOU BETTER.™
www.firestonebpc.com

- NOTES:
1. REFER TO FIRESTONE WEBSITE FOR MOST CURRENT INFORMATION.
 2. REFER TO TECHNICAL INFORMATION SHEETS FOR FASCIA SIZES, ACCESSORIES, AND FINISHES AVAILABLE.
 3. WOOD NAILER MUST BE INSTALLED TO MEET APPLICABLE BUILDING CODES OR 200 LBS PER LINEAR FOOT MINIMUM IN ANY GIVEN DIRECTION.
 4. REFER TO THE FIRESTONE TECHNICAL DATABASE FOR FASTENER/METAL COMPATIBILITY.
 5. APPLICATION DETAILS ARE FOR ILLUSTRATION PURPOSES ONLY AND MAY NOT BE APPROPRIATE FOR ALL BUILDING DESIGNS AND CONDITIONS.



FOR WARRANTY PERIODS GREATER THAN 20 YEARS REFER TO METAL QUICK SPECS FOR MINIMUM REQUIREMENTS.

MAXIMUM WARRANTY: **20 YEARS**

RAKE WITH MODIFIED J-CHANNEL

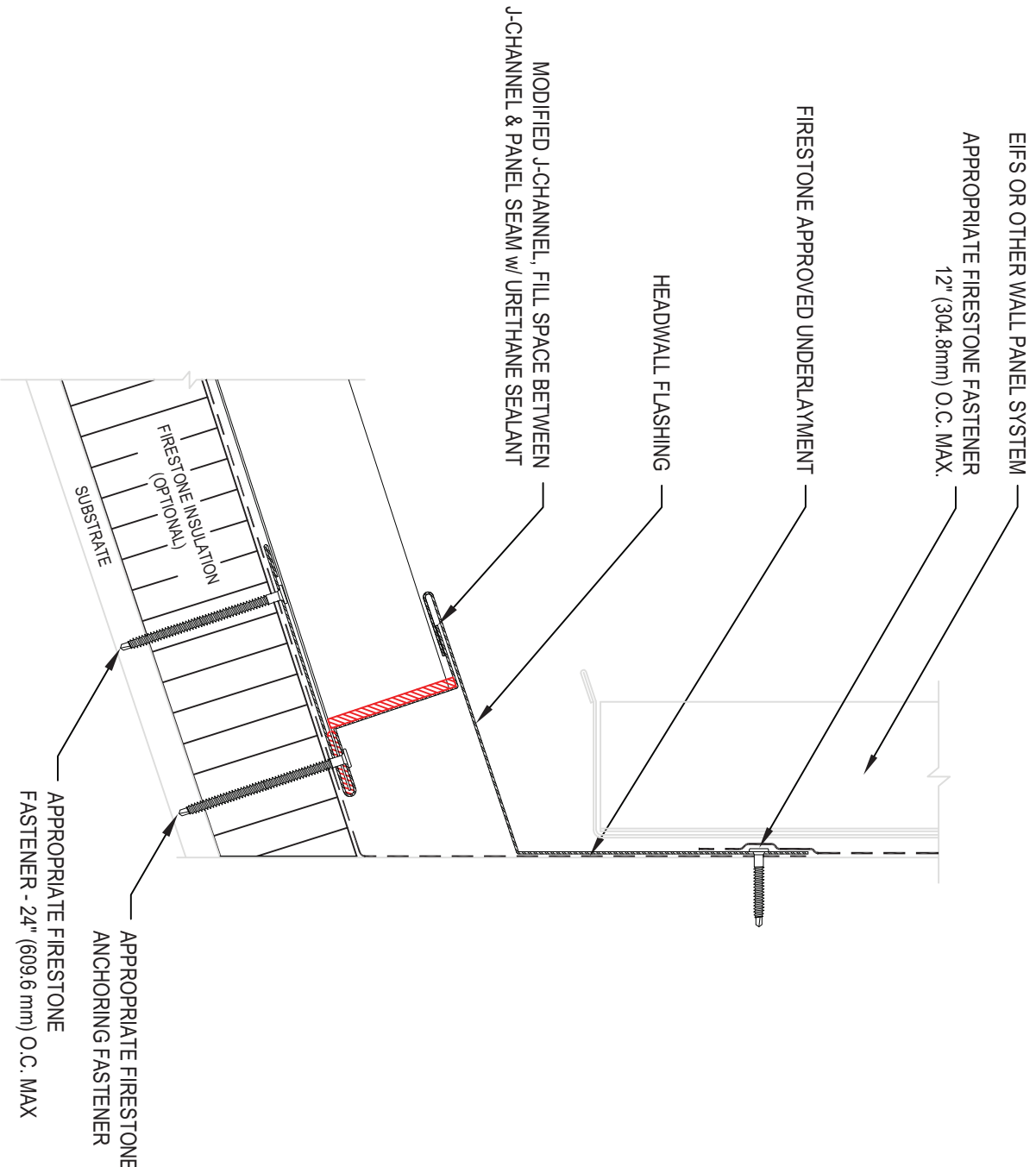
UNA-CLAD®

ACCEPTABLE SYSTEMS: UC-6 RS

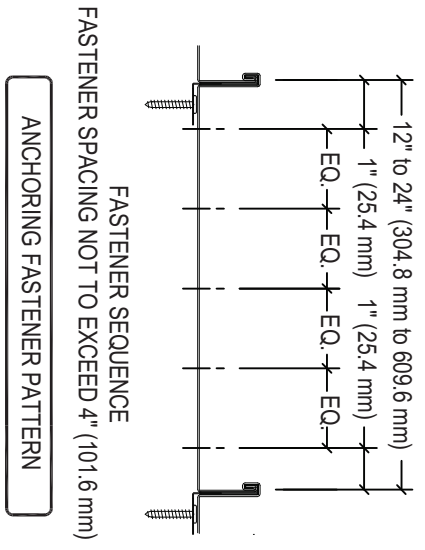
ISSUE / REVISION
DATE:
09/06/2013

DETAIL NO.
6-RK-2

Firestone
BUILDING PRODUCTS
NOBODY COVERS YOU BETTER.™
www.firestonebpc.com



- NOTES:
1. REFER TO FIRESTONE WEBSITE FOR MOST CURRENT INFORMATION.
 2. REFER TO TECHNICAL INFORMATION SHEETS FOR FASCIA SIZES, ACCESSORIES, AND FINISHES AVAILABLE.
 3. REFER TO THE FIRESTONE TECHNICAL DATABASE FOR FASTENER/METAL COMPATIBILITY.
 4. APPLICATION DETAILS ARE FOR ILLUSTRATION PURPOSES ONLY AND MAY NOT BE APPROPRIATE FOR ALL BUILDING DESIGNS AND CONDITIONS.



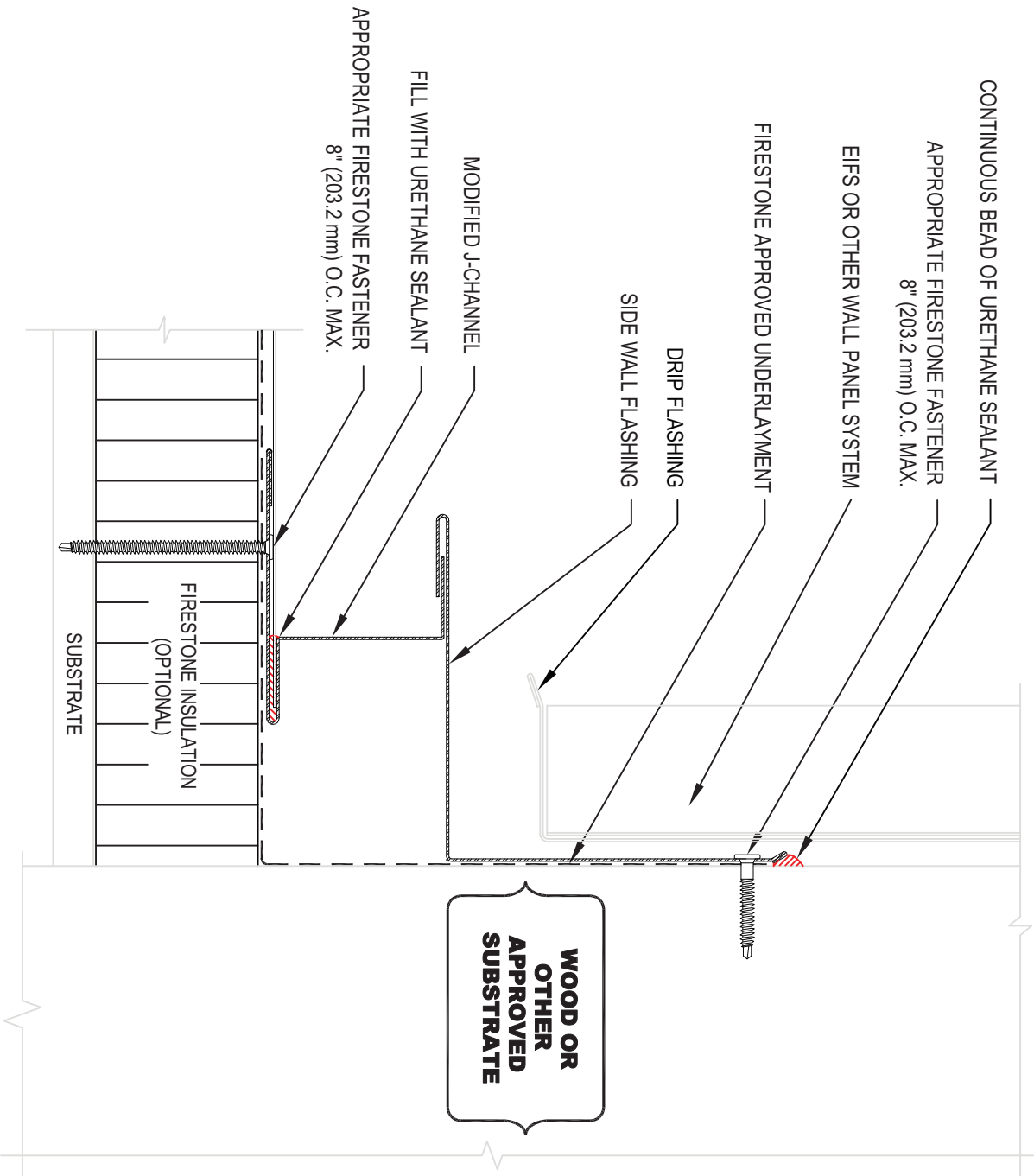
FOR WARRANTY PERIODS GREATER THAN 20 YEARS REFER TO METAL QUICK SPECS FOR MINIMUM REQUIREMENTS.

MAXIMUM WARRANTY: 20 YEARS

Firestone
BUILDING PRODUCTS
NOBODY COVERS YOU BETTER.™
 www.firestonebpc.com

FIXED HEADWALL W/ MOD. J-CHANNEL AT EIFSWALL PANEL
UNA-CLAD®
 ACCEPTABLE SYSTEMS: UC-6 RS

ISSUE / REVISION
 DATE: 09/05/2013
 NOT TO SCALE
DETAIL NO. 6-HW-4



- NOTES:
1. REFER TO FIRESTONE WEBSITE FOR MOST CURRENT INFORMATION.
 2. REFER TO TECHNICAL INFORMATION SHEETS FOR FASCIA SIZES, ACCESSORIES, AND FINISHES AVAILABLE.
 3. REFER TO THE FIRESTONE TECHNICAL DATABASE FOR FASTENER/METAL COMPATIBILITY.
 4. APPLICATION DETAILS ARE FOR ILLUSTRATION PURPOSES ONLY AND MAY NOT BE APPROPRIATE FOR ALL BUILDING DESIGNS AND CONDITIONS.

FOR WARRANTY PERIODS GREATER THAN 20 YEARS REFER TO METAL QUICK SPECS FOR MINIMUM REQUIREMENTS.

MAXIMUM WARRANTY: **20 YEARS**

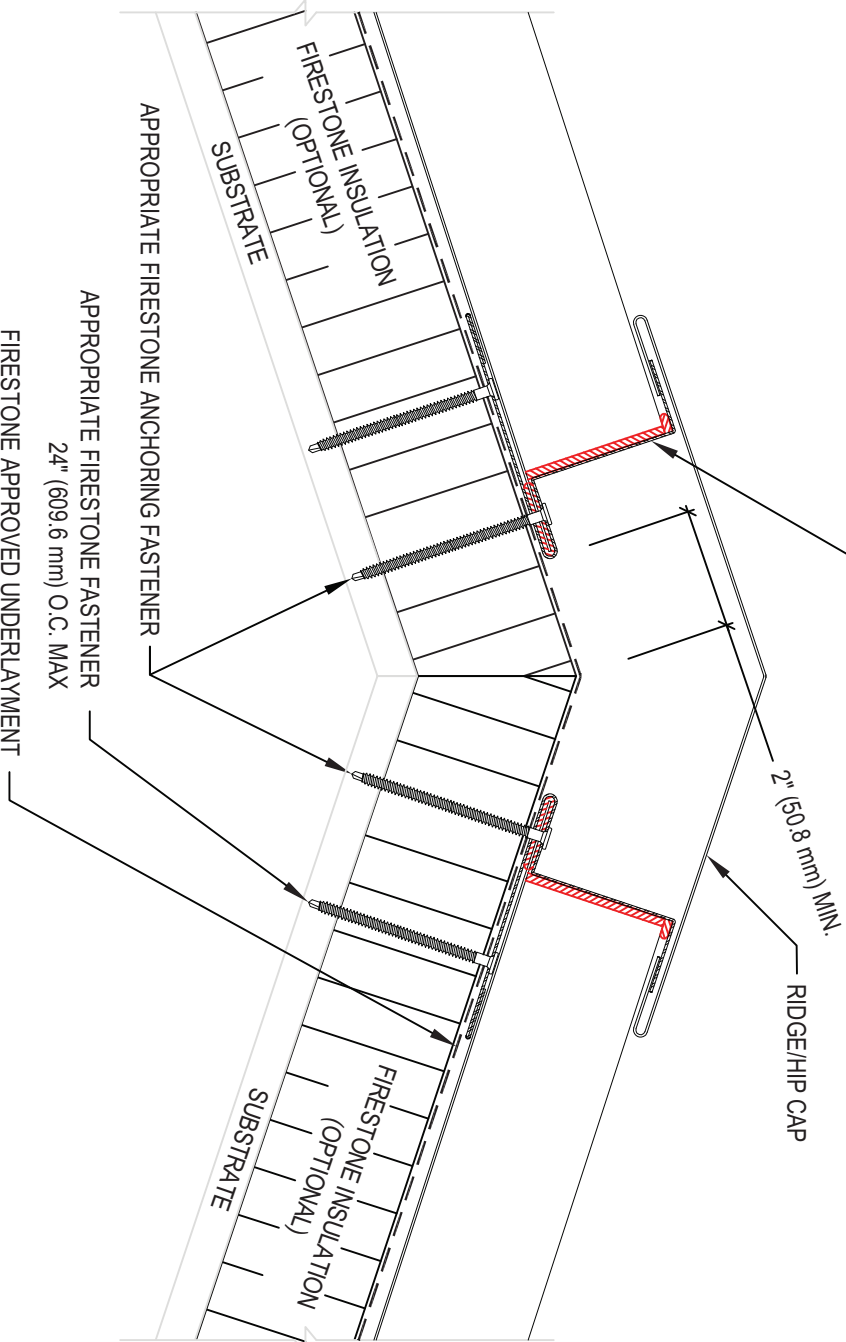
Firestone
BUILDING PRODUCTS
NOBODY COVERS YOU BETTER.™
 www.firestonebpc.com

SIDEWALL FLASHING W/ MODIFIED-J AT EIFS OR WALL PANEL
 UNACLAD®
 ACCEPTABLE SYSTEMS: UC-6 RS

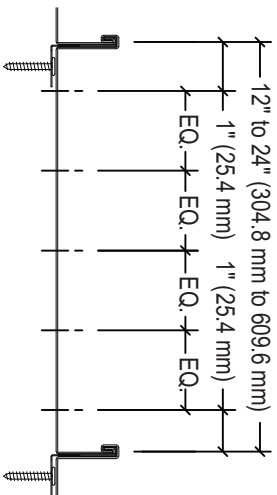
ISSUE / REVISION
 DATE: 09/06/2013
 NOT TO SCALE

DETAIL NO.
6-SW-2

MODIFIED J-CHANNEL, FILL SPACE BETWEEN J-CHANNEL & PANEL SEAM WITH URETHANE SEALANT



- NOTES:
1. REFER TO FIRESTONE WEBSITE FOR MOST CURRENT INFORMATION.
 2. REFER TO TECHNICAL INFORMATION SHEETS FOR FASCIA SIZES, ACCESSORIES, AND FINISHES AVAILABLE.
 3. REFER TO THE FIRESTONE TECHNICAL DATABASE FOR FASTENER/METAL COMPATIBILITY.
 4. APPLICATION DETAILS ARE FOR ILLUSTRATION PURPOSES ONLY AND MAY NOT BE APPROPRIATE FOR ALL BUILDING DESIGNS AND CONDITIONS.



FASTENER SEQUENCE
FASTENER SPACING NOT TO EXCEED 4" (101.6 mm)

ANCHORING FASTENER PATTERN

FOR WARRANTY PERIODS GREATER THAN 20 YEARS REFER TO METAL QUICK SPECS FOR MINIMUM REQUIREMENTS.

MAXIMUM WARRANTY: **20 YEARS**

Firestone
BUILDING PRODUCTS
NOBODY COVERS YOU BETTER.™
www.firestonebpcoc.com

FIXED HIP OR RIDGE WITH MODIFIED J-CHANNEL

UNA-CLAD®

ACCEPTABLE SYSTEMS: UC-6 RS

ISSUE / REVISION

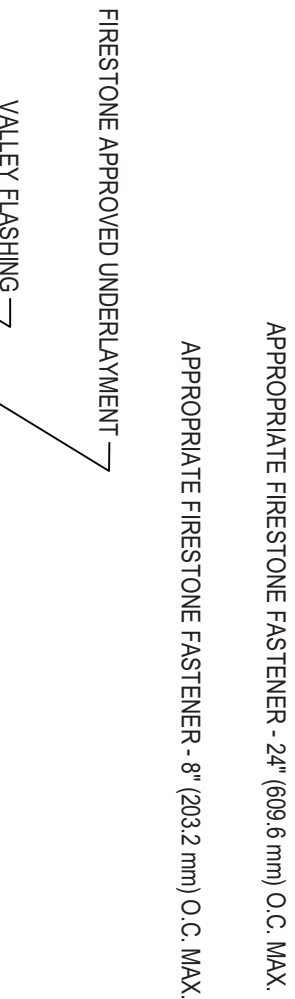
DATE:

09/05/2013

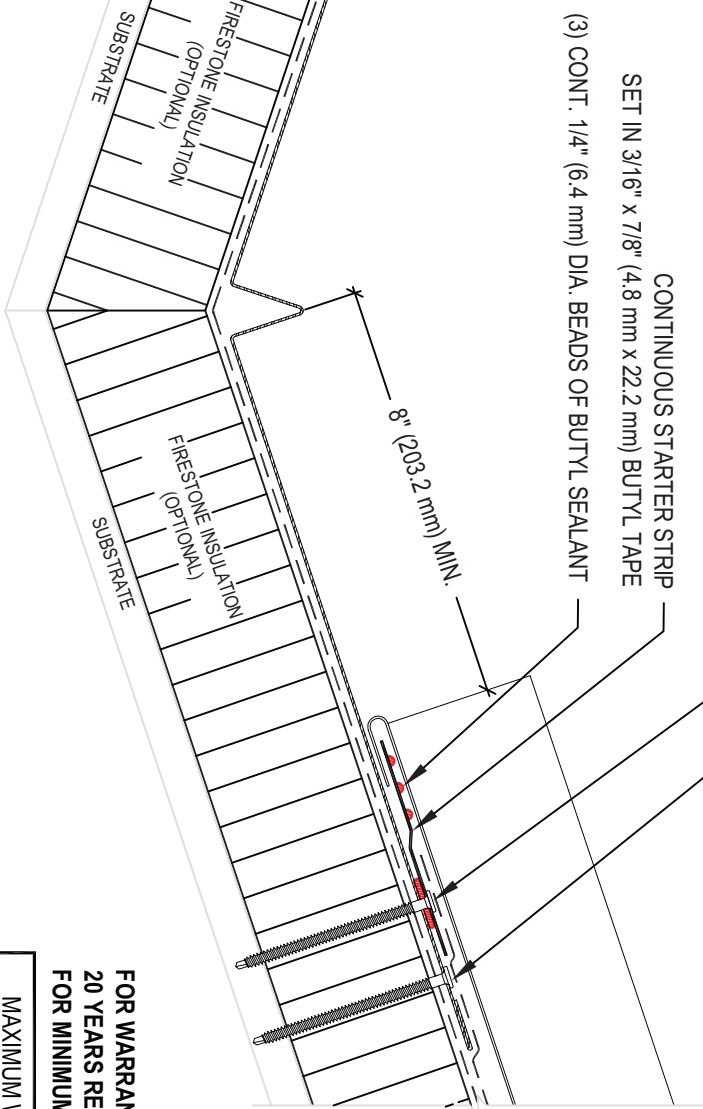
DETAIL NO.

6-R-2

NOT TO SCALE



- NOTES:
1. REFER TO FIRESTONE WEBSITE FOR MOST CURRENT INFORMATION.
 2. REFER TO TECHNICAL INFORMATION SHEETS FOR FASCIA SIZES, ACCESSORIES, AND FINISHES AVAILABLE.
 3. WOOD NAILER MUST BE INSTALLED TO MEET APPLICABLE BUILDING CODES OR 200 LBS PER LINEAR FOOT MINIMUM IN ANY GIVEN DIRECTION.
 4. REFER TO THE FIRESTONE TECHNICAL DATABASE FOR FASTENER COMPATIBILITY WITH METAL.
 5. REFER TO THE FIRESTONE TECHNICAL DATABASE FOR HEM LENGTH AND REQUIRED DISTANCE BETWEEN THE PANEL AND CLEAT.
 6. APPLICATION DETAILS ARE FOR ILLUSTRATION PURPOSES ONLY AND MAY NOT BE APPROPRIATE FOR ALL BUILDING DESIGNS AND CONDITIONS.



FOR WARRANTY PERIODS GREATER THAN 20 YEARS REFER TO METAL QUICK SPECS FOR MINIMUM REQUIREMENTS.

MAXIMUM WARRANTY: **20 YEARS**

Firestone
BUILDING PRODUCTS
NOBODY COVERS YOU BETTER.™
 www.firestonebpc.com

VALLEY WITH CONTINUOUS CLEAT

UNA-CLAD®

ACCEPTABLE SYSTEMS: UC-6 RS

ISSUE / REVISION
 DATE: 09/06/2013

DETAIL NO. **6-V-1**

NOT TO SCALE

APPROVED FIRESTONE UNDERLAYMENT

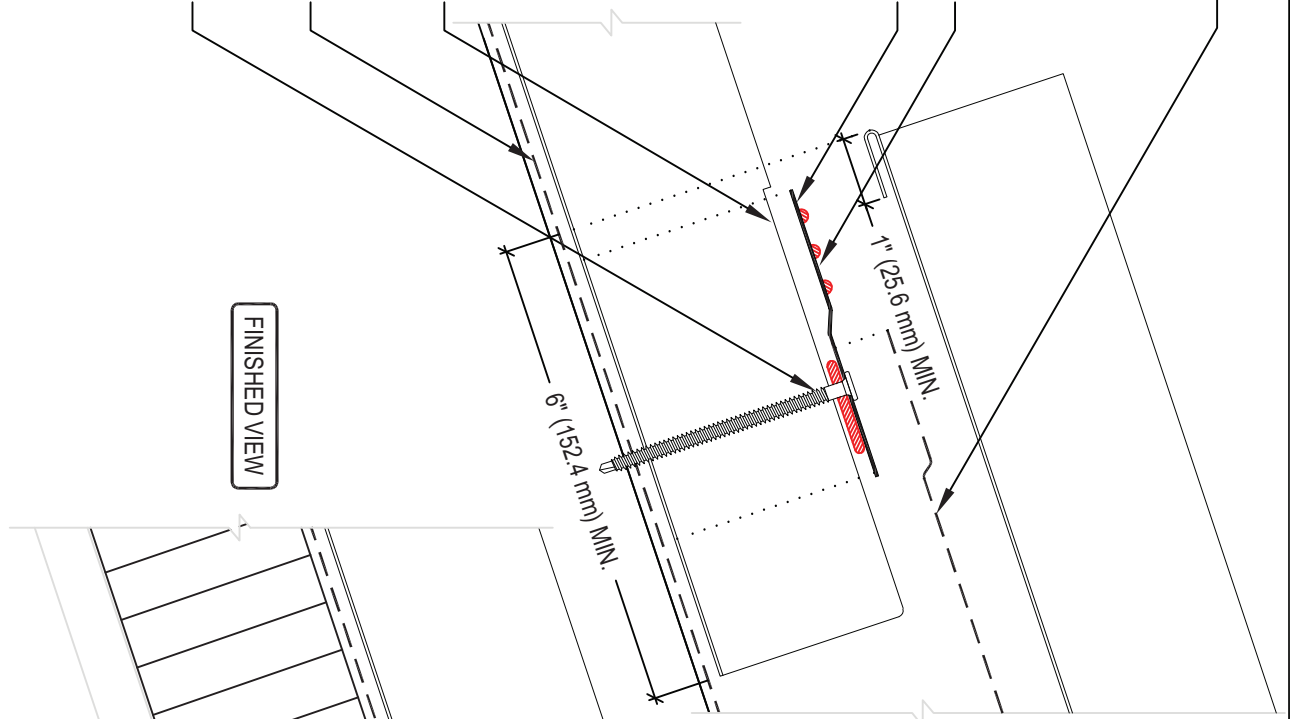
3/16" x 2 1/2 TRIPLE BEADED BUTYL TAPE

CONTINUOUS STARTER STRIP
SET IN 3/16" x 7/8" BUTYL TAPE

FIELD TRIM TOP OF SEAM
TO ALLOW FOR NESTING

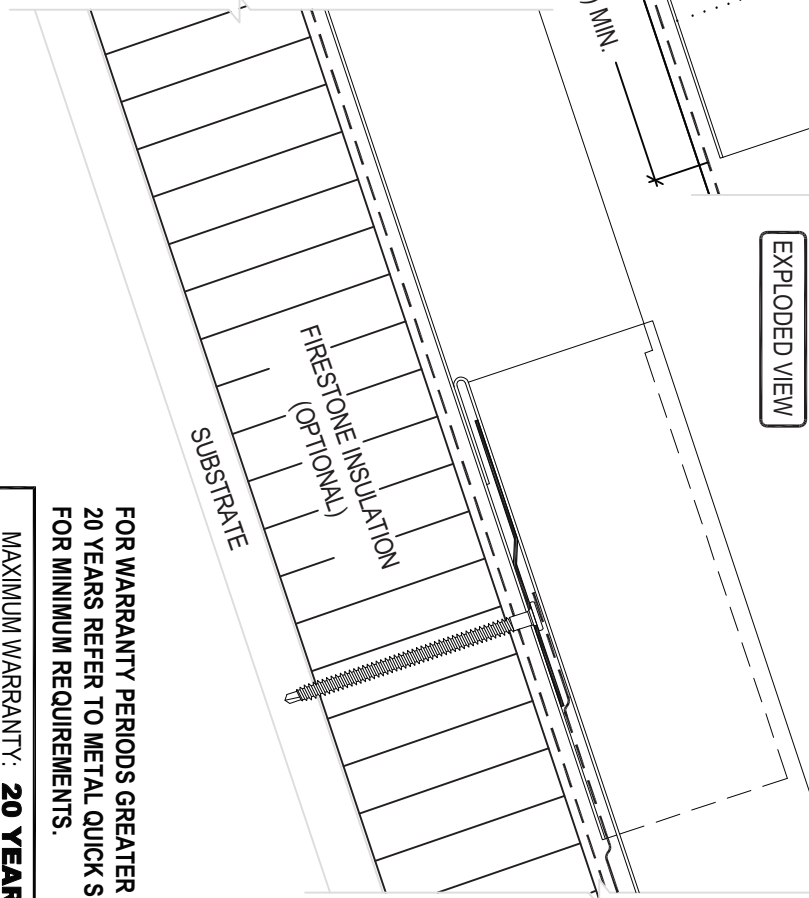
APPROVED FIRESTONE UNDERLAYMENT

APPROPRIATE FIRESTONE FASTENER
SEE DETAIL R-1 FOR FASTENER SEQUENCE



- NOTES:
1. REFER TO FIRESTONE WEBSITE FOR MOST CURRENT INFORMATION.
 2. REFER TO TECHNICAL INFORMATION SHEETS FOR FASCIA SIZES, ACCESSORIES, AND FINISHES AVAILABLE.
 3. REFER TO THE FIRESTONE TECHNICAL DATABASE FOR HEM LENGTH AND REQUIRED DISTANCE BETWEEN THE PANEL & CLEAT.
 4. REFER TO THE FIRESTONE TECHNICAL DATABASE FOR FASTENER/METAL COMPATIBILITY.
 5. STAGGER ADJACENT END LAPS MINIMUM 12" (307.2 mm) O.C..

FINISHED VIEW



FOR WARRANTY PERIODS GREATER THAN
20 YEARS REFER TO METAL QUICK SPECS
FOR MINIMUM REQUIREMENTS.

MAXIMUM WARRANTY: **20 YEARS**

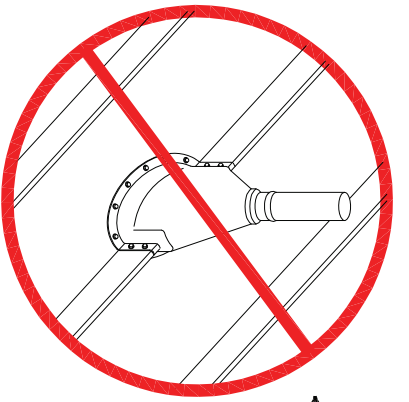
Firestone
BUILDING PRODUCTS
NOBODY COVERS YOU BETTER.™
www.firestonebpc.com

UNA-CLAD®

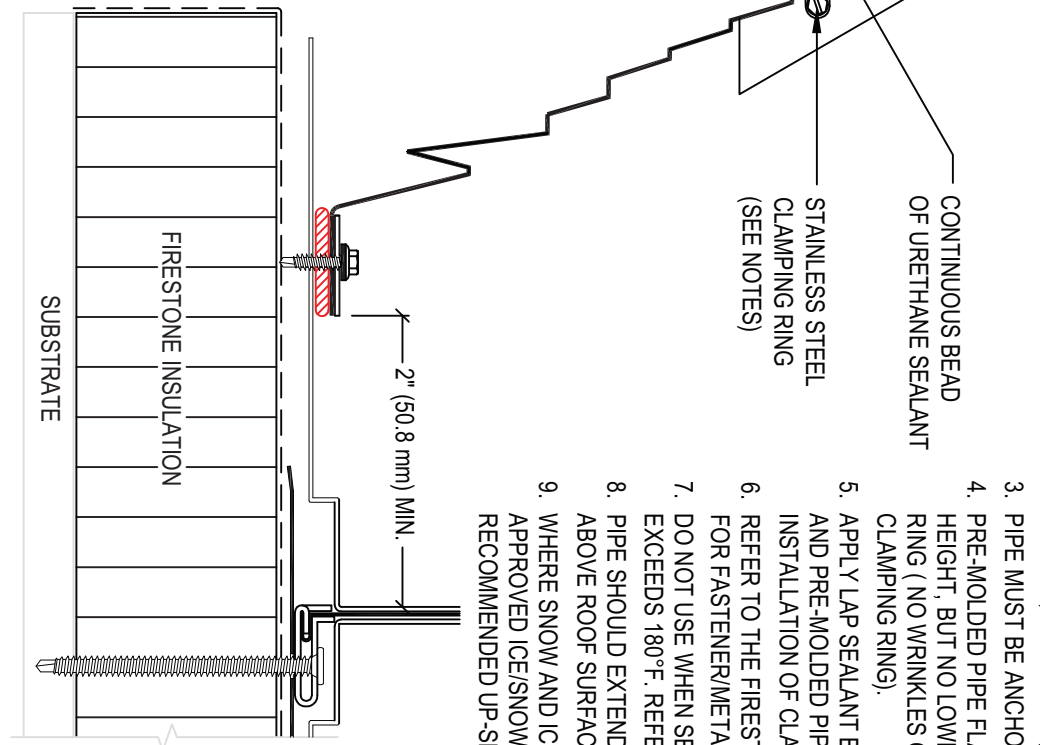
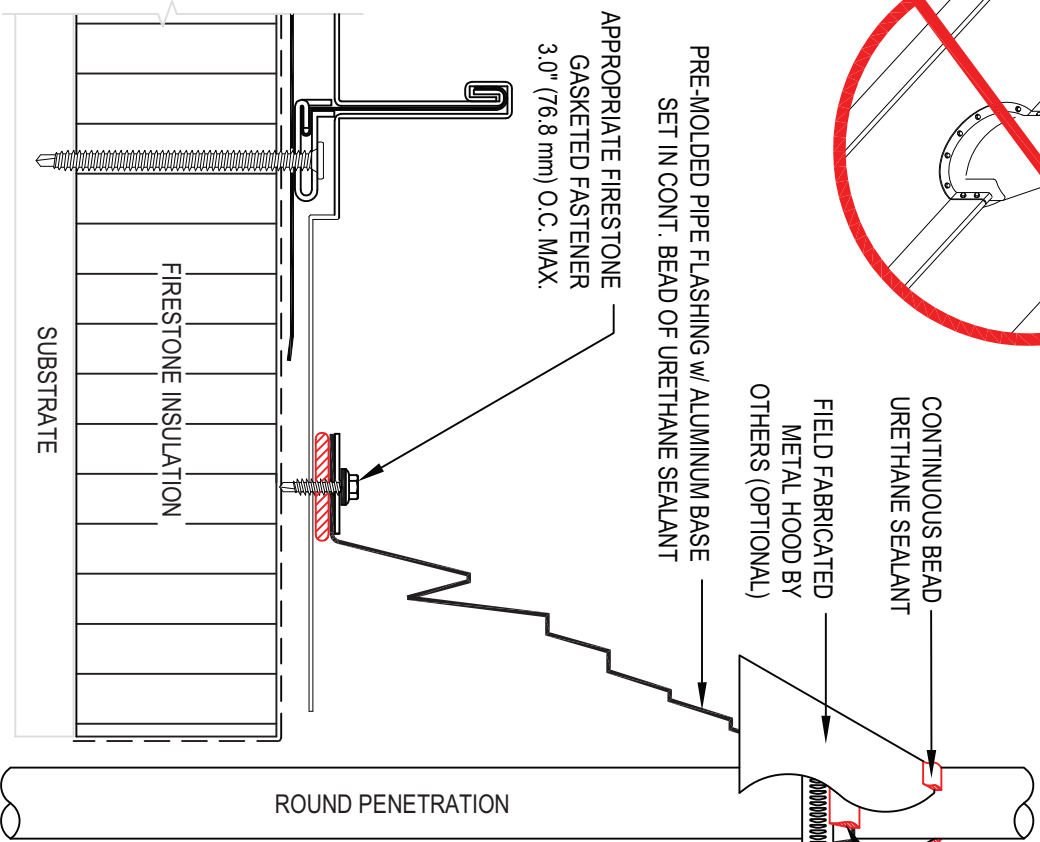
END LAP
ACCEPTABLE SYSTEMS: UC-6 RS

ISSUE / REVISION
DATE: 09/04/2013
NOT TO SCALE

DETAIL NO.
6-EL-1



UNDER NO CIRCUMSTANCES CAN THE PIPE PENETRATE OR COME WITHIN 4" OF THE PANEL SEAM.



- NOTES:
1. REFER TO FIRESTONE WEBSITE FOR MOST CURRENT INFORMATION.
 2. REMOVE ALL EXISTING FLASHINGS, LEADS, ETC. PIPE SURFACE MUST BE FREE OF ALL RUST, GREASE, INSULATION, ETC.
 3. PIPE MUST BE ANCHORED TO ENSURE STABILITY.
 4. PRE-MOLDED PIPE FLASHING MAY BE CUT TO HEIGHT, BUT NO LOWER THAN REINFORCING RING (NO WRINKLES OR FOLDS UNDER CLAMPING RING).
 5. APPLY LAP SEALANT BETWEEN PENETRATION AND PRE-MOLDED PIPE FLASHING PRIOR TO INSTALLATION OF CLAMPING RING.
 6. REFER TO THE FIRESTONE TECHNICAL DATABASE FOR FASTENER/METAL COMPATIBILITY.
 7. DO NOT USE WHEN SERVICE LINE TEMP. EXCEEDS 180°F. REFER TO 3-P-4.
 8. PIPE SHOULD EXTEND A MINIMUM OF 8" (203.2 mm) ABOVE ROOF SURFACE.
 9. WHERE SNOW AND ICE ARE COMMON, FIRESTONE APPROVED ICE/SNOW-DAM PROTECTION IS RECOMMENDED UP-SLOPE OF PENETRATIONS

Firestone
BUILDING PRODUCTS
NOBODY COVERS YOU BETTER.™
 www.firestonebpc.com

PENETRATION WITH PIPE FLASHING
 UNA-CLAD®
 ACCEPTABLE SYSTEMS: UC-6 RS

ISSUE / REVISION
 DATE: 09/05/2013
 NOT TO SCALE
 MAXIMUM WARRANTY: **20 YEARS**
 DETAIL NO. **6-P-1**

TECHNICAL INFORMATION SHEET

Insulation Attachment Patterns

Item Description

Fastening Patterns

Product Information

Description:

The diagrams below show the required patterns for proper placement of approved fasteners and plates for insulation on Standard Firestone 55 mph Roofing Systems.

The most common fastener density and pattern requirements are shown on this technical information sheet. Certain specifications may call for increased densities of fasteners in the perimeters and corners of roofs. For non-standard fastener densities, contact The Quality Building Services Technical Department at 800-428-4511 or visit the Firestone Website at www.firestonebpc.com.

Minimum Number of Fasteners and Plates

<u>Property</u>	<u>Insulation</u>	<u>Thickness</u>	<u>4'x4' Boards</u>	<u>4'x8' Boards</u>
Mechanically Fastened Systems*:	Any approved insulation	Any approved thickness	4	5
Non-Mechanically Fastened Systems:	ISO 95+™ GL Insulation, RESISTA™ Insulation, HailGard™ Composite Board, ISO 95+™ GL Woodfiber Composite, or ISOGARD™ HD Composite	0.5"-1.4"	8	16
		1.5"-1.9"	6	12
		2"-4"	4	8
	FiberTop™ Insulation	0.5"-1"	8	16
	ISOGARD™ HD Cover Board	0.5"-1"	6	12
	DensDeck® or SECUROCK Glass-Mat® (in a single-ply system)	0.25"	8	16
		0.50"	6	12
		0.625"	4	8
	DensDeck Prime® (in a single-ply system)	0.25"	6	12
		0.50"	5	10
DensDeck Prime® (in a single-ply system)	0.625"	4	8	
	DensDeck® or SECUROCK Glass-Mat® (in an asphalt system)	Any approved thickness	6	12
DensDeck Prime® (in an asphalt system)	Any approved thickness	4	8	

(All the above insulations require the minimum fastener densities listed)

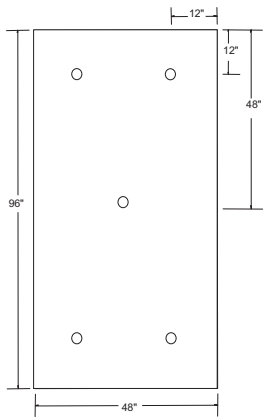
*Contact The Quality Building Services Technical Department for fastening rates with and air or vapor barrier/retarder.

TECHNICAL INFORMATION SHEET

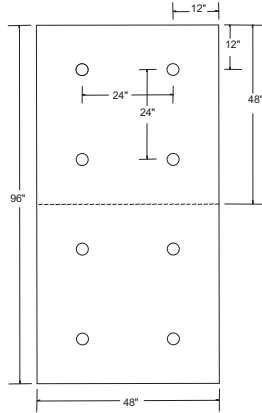
Insulation Attachment Patterns

Fastening Patterns: Representing 4'x8' insulation boards

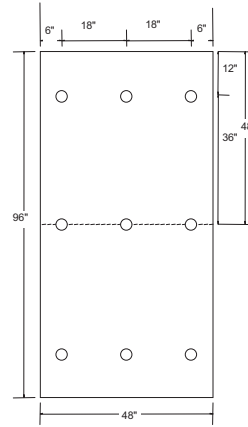
Please refer to the above mentioned attachment patterns for a specific board attachment rate. For further information relating to attachment patterns or system specifications please refer to the Firestone Technical Database at www.firestonebpc.com.



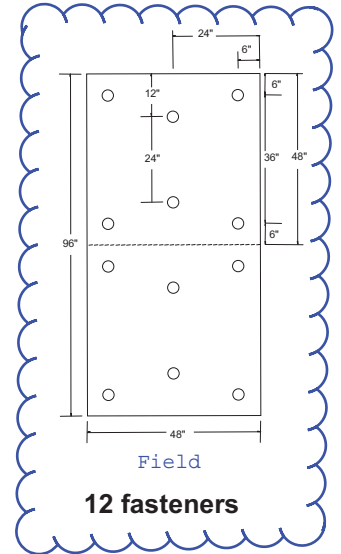
5 fasteners



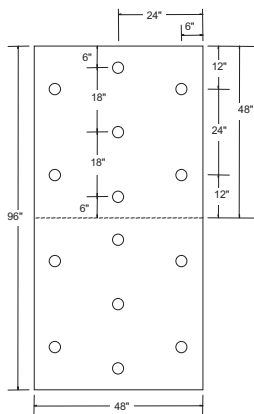
8 fasteners



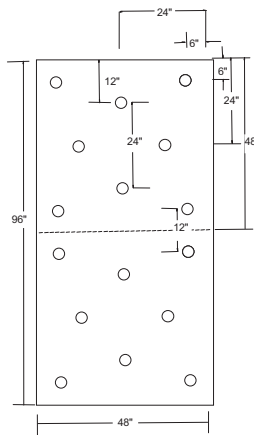
9 fasteners



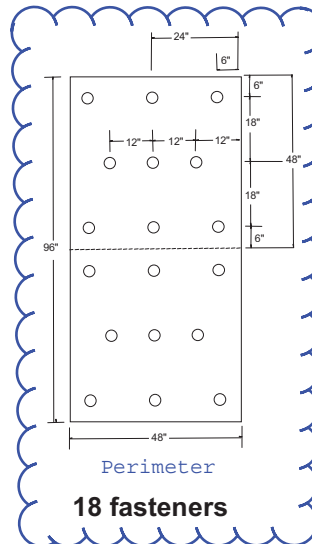
12 fasteners



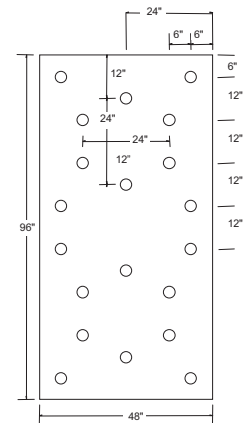
14 fasteners



16 fasteners



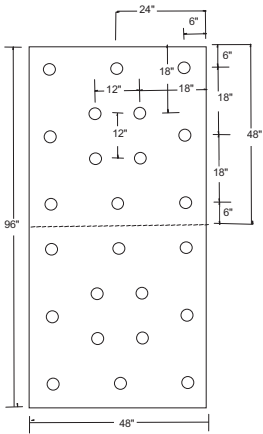
18 fasteners



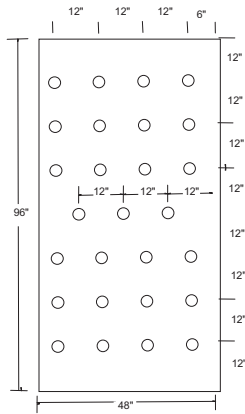
20 fasteners

TECHNICAL INFORMATION SHEET

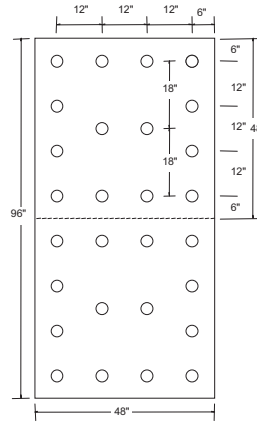
Insulation Attachment Patterns



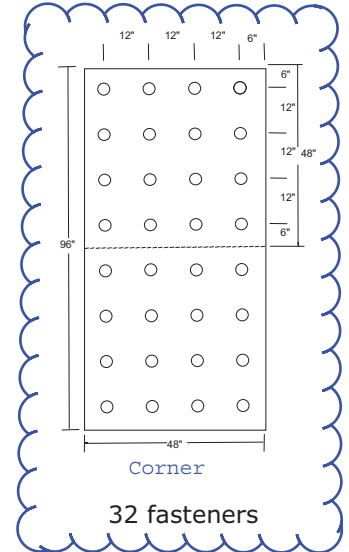
24 fasteners



27 fasteners

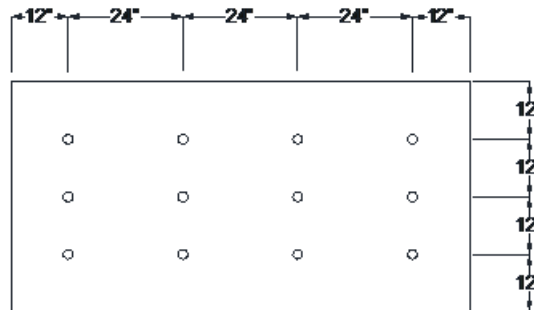


28 fasteners



32 fasteners

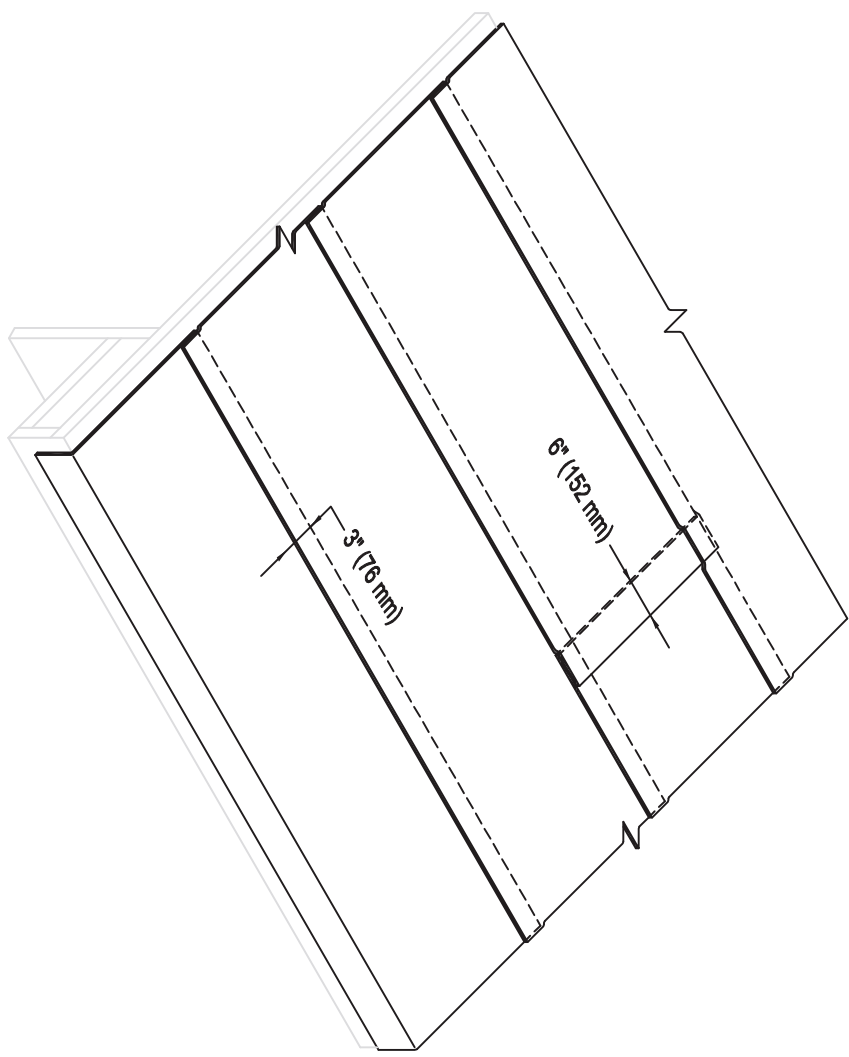
FM Global fastening pattern for 1-90 attachment of ISOGARD™ HD Cover Board



Please contact The Quality Building Services Technical Department at 1-800-428-4511 for further information.

This sheet is meant to highlight Firestone products and specifications and is subject to change without notice. Firestone takes responsibility for furnishing quality materials which meet published Firestone product specifications. Neither Firestone nor its representatives practice architecture. Firestone offers no opinion on and expressly disclaims any responsibility for the soundness of any structure. Firestone accepts no liability for structural failure or resultant damages. Consult a competent structural engineer prior to installation if the structural soundness or structural ability to properly support a planned installation is in question. No Firestone representative is authorized to vary this disclaimer.

- NOTES:
1. REFER TO FIRESTONE WEBSITE FOR MOST CURRENT INFORMATION.
 2. REFER TO CLAD-GARD TECHNICAL INFORMATION SHEETS FOR APPROPRIATE ATTACHMENT METHODS.
 3. APPLICATION DETAILS ARE FOR ILLUSTRATION PURPOSES ONLY AND MAY NOT BE APPROPRIATE FOR ALL BUILDING DESIGNS AND CONDITIONS.

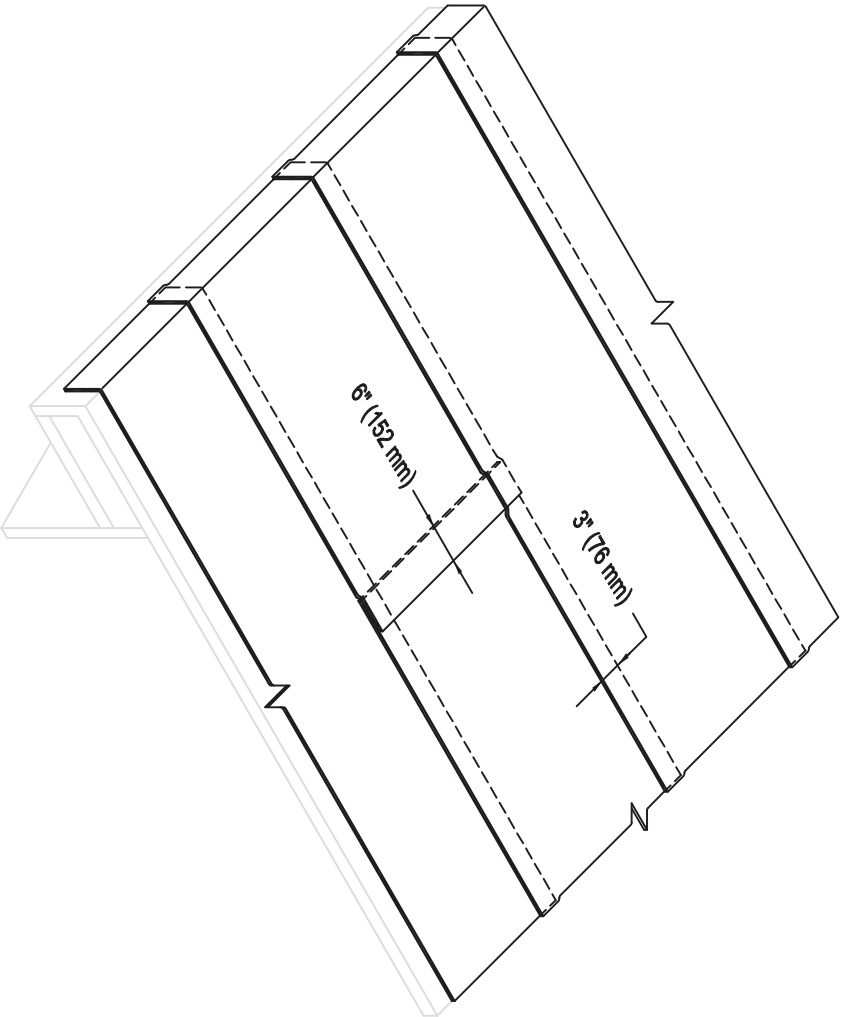


Two layers required by Firestone in order to provide a Weathertight Warranty

<p>Firestone BUILDING PRODUCTS NOBODY COVERS YOU BETTER.[™] www.firestonebpco.com</p>	EAVE		MAXIMUM WARRANTY: 25 YEARS
	UNA-CLAD®	ACCEPTABLE SYSTEMS: CLAD-GARD	
			DETAIL NO. SA-E-1

NOT TO SCALE

- NOTES:
1. REFER TO FIRESTONE WEBSITE FOR MOST CURRENT INFORMATION.
 2. REFER TO CLAD-GARD TECHNICAL INFORMATION SHEETS FOR APPROPRIATE ATTACHMENT METHODS.
 3. APPLICATION DETAILS ARE FOR ILLUSTRATION PURPOSES ONLY AND MAY NOT BE APPROPRIATE FOR ALL BUILDING DESIGNS AND CONDITIONS.

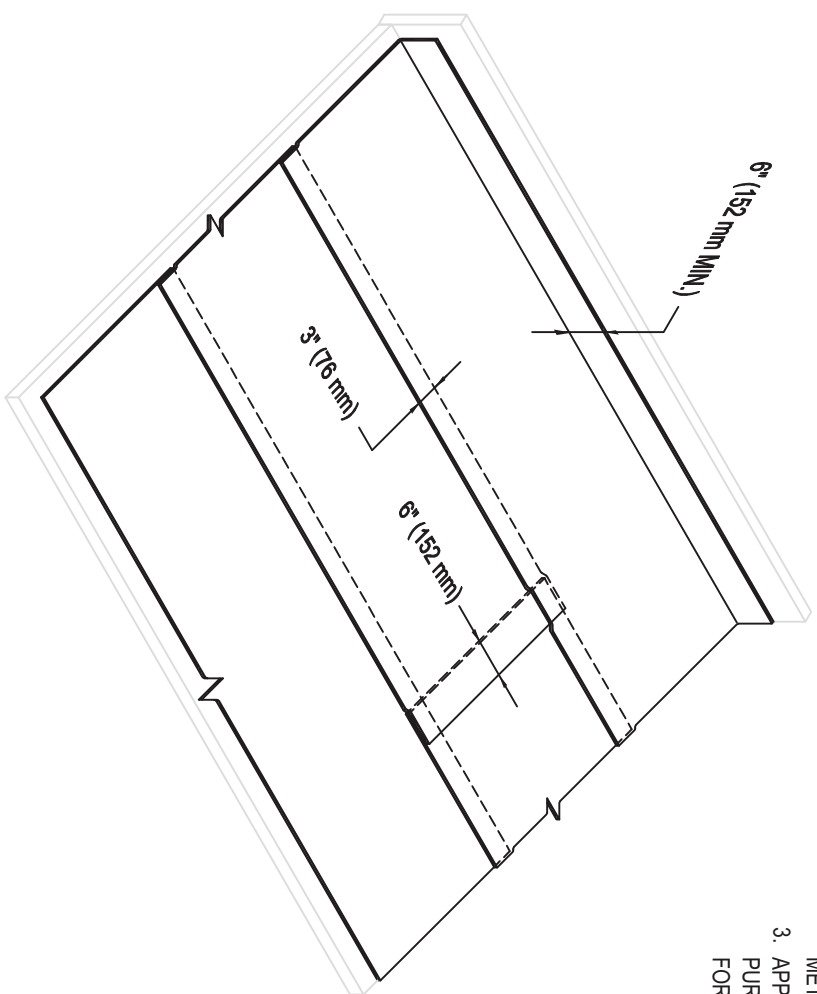


Two layers required by Firestone in order to provide a Weathertight Warranty

MAXIMUM WARRANTY: **20 YEARS**

 <p>Firestone BUILDING PRODUCTS NOBODY COVERS YOU BETTER.™ www.firestoneppco.com</p>	RAKE EDGE		ISSUE / REVISION DATE: 01-01-2010 NOT TO SCALE	DETAIL NO. SA-RK-1
	UNA-CLAD®	ACCEPTABLE SYSTEMS: CLAD-GARD		

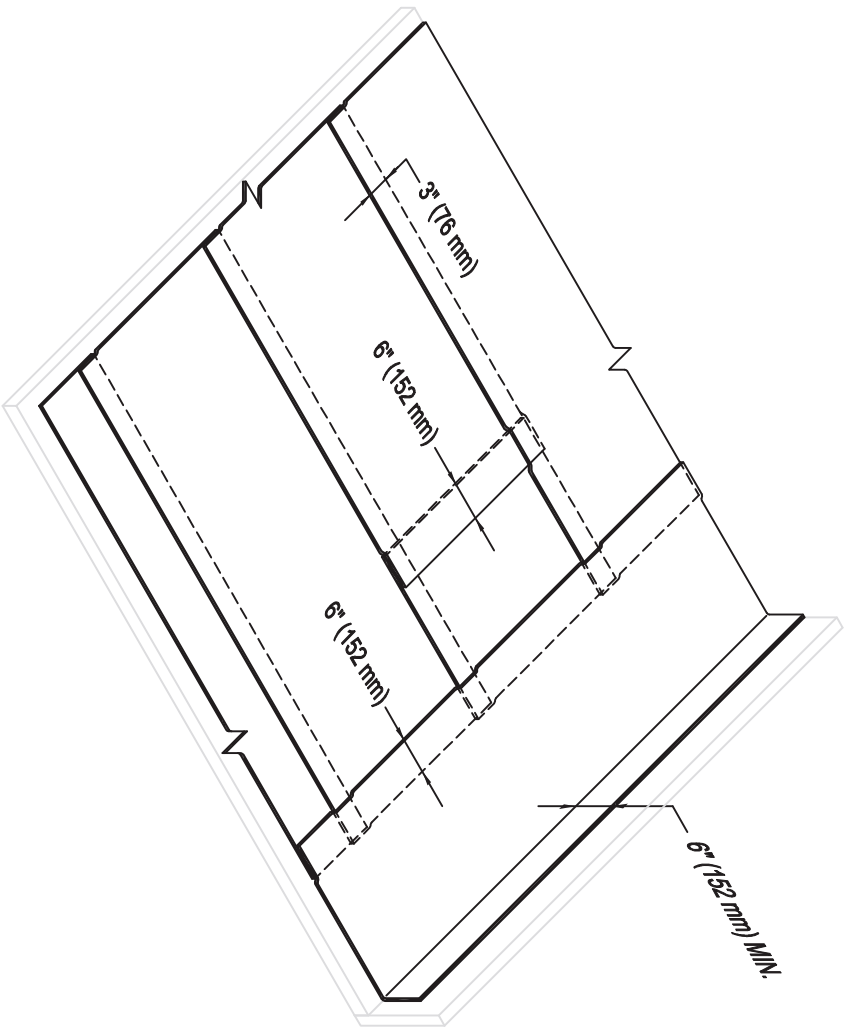
- NOTES:
1. REFER TO FIRESTONE WEBSITE FOR MOST CURRENT INFORMATION.
 2. REFER TO CLAD-GARD TECHNICAL INFORMATION SHEETS FOR APPROPRIATE ATTACHMENT METHODS.
 3. APPLICATION DETAILS ARE FOR ILLUSTRATION PURPOSES ONLY AND MAY NOT BE APPROPRIATE FOR ALL BUILDING DESIGNS AND CONDITIONS.



Two layers required by Firestone in order to provide a Weathertight Warranty

MAXIMUM WARRANTY: **25 YEARS**

 <p>Firestone BUILDING PRODUCTS NOBODY COVERS YOU BETTER.™ www.firestonebbpco.com</p>	HEADWALL		ISSUE / REVISION DATE: 1-1-2010 NOT TO SCALE	DETAIL NO. SA-HW-1
	UNA-CLAD®	ACCEPTABLE SYSTEMS: CLAD-GARD		



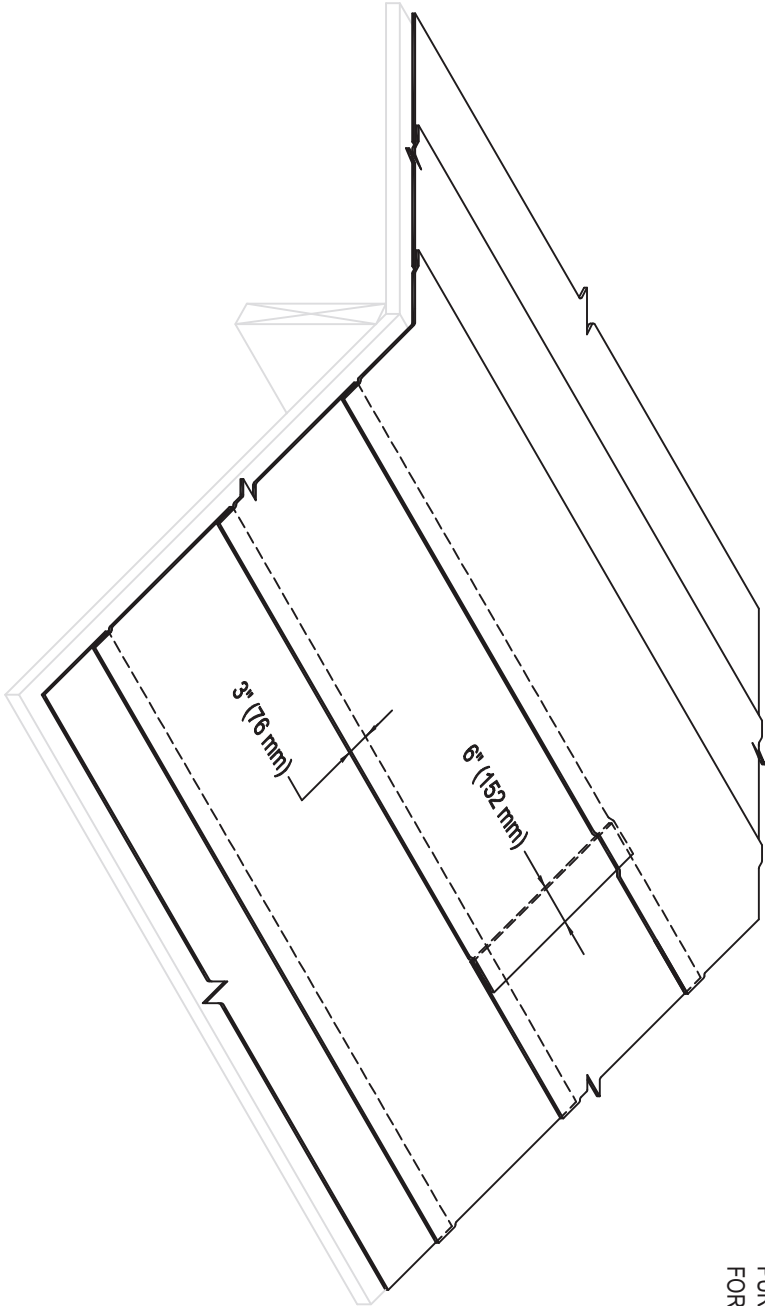
- NOTES:
1. REFER TO FIRESTONE WEBSITE FOR MOST CURRENT INFORMATION.
 2. REFER TO CLAD-GARD TECHNICAL INFORMATION SHEETS FOR APPROPRIATE ATTACHMENT METHODS.
 3. APPLICATION DETAILS ARE FOR ILLUSTRATION PURPOSES ONLY AND MAY NOT BE APPROPRIATE FOR ALL BUILDING DESIGNS AND CONDITIONS.

Two layers required by Firestone in order to provide a Weathertight Warranty

MAXIMUM WARRANTY: **20 YEARS**


<p>Firestone BUILDING PRODUCTS NOBODY COVERS YOU BETTER.™ www.firestonebpc.com</p>	SIDEWALL		ISSUE / REVISION DATE: 1-1-2010	DETAIL NO. SA-SW-1
	UNA-CLAD®	ACCEPTABLE SYSTEMS: CLAD-GARD		

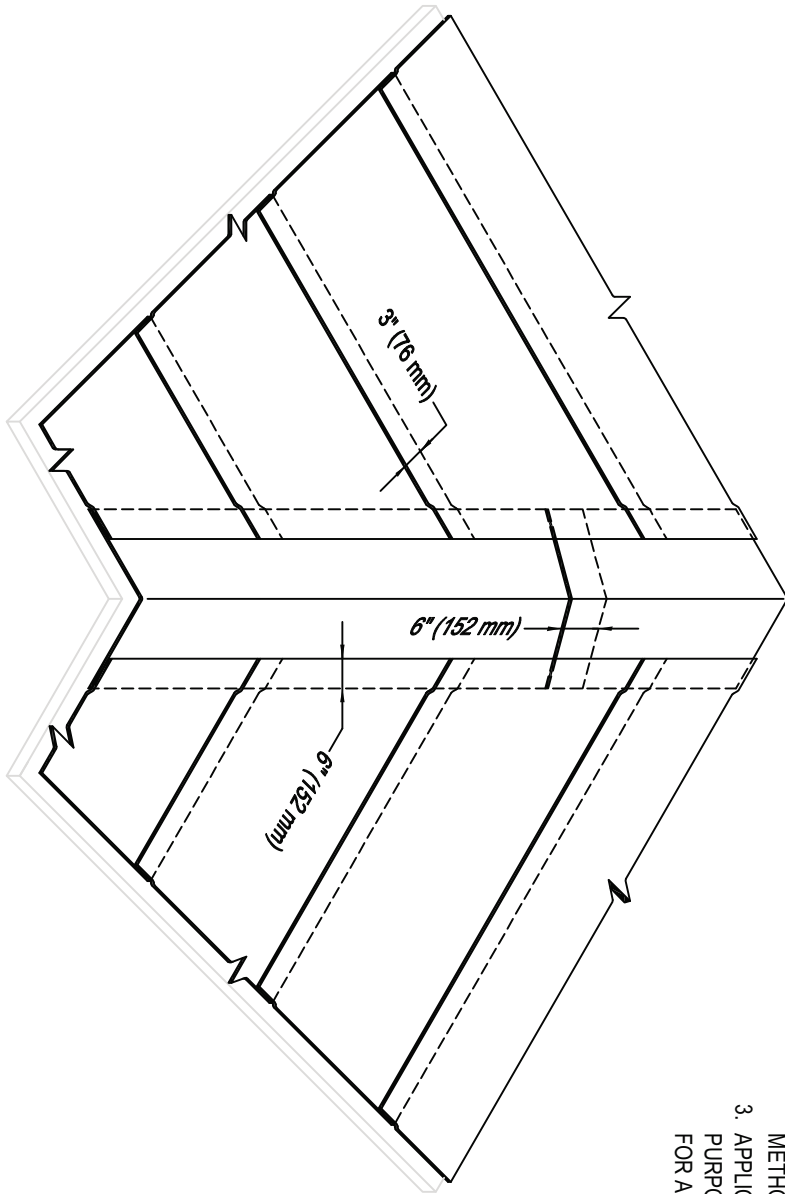
- NOTES:
1. REFER TO FIRESTONE WEBSITE FOR MOST CURRENT INFORMATION.
 2. REFER TO CLAD-GARD TECHNICAL INFORMATION SHEETS FOR APPROPRIATE ATTACHMENT METHODS.
 3. APPLICATION DETAILS ARE FOR ILLUSTRATION PURPOSES ONLY AND MAY NOT BE APPROPRIATE FOR ALL BUILDING DESIGNS AND CONDITIONS.



Two layers required by Firestone in order to provide a Weathertight Warranty

MAXIMUM WARRANTY: **25 YEARS**


 <p>Firestone BUILDING PRODUCTS NOBODY COVERS YOU BETTER.™ www.firestonebppco.com</p>		<p>RIDGE/HIP</p>		<p>ISSUE /REVISION DATE: 1-1-2010</p>		<p>DETAIL NO. SA-R-1</p>	
<p>UNA-CLAD®</p>		<p>ACCEPTABLE SYSTEMS: CLAD-GARD</p>		<p>NOT TO SCALE</p>			



- NOTES:
1. REFER TO FIRESTONE WEBSITE FOR MOST CURRENT INFORMATION.
 2. REFER TO CLAD-GARD TECHNICAL INFORMATION SHEETS FOR APPROPRIATE ATTACHMENT METHODS.
 3. APPLICATION DETAILS ARE FOR ILLUSTRATION PURPOSES ONLY AND MAY NOT BE APPROPRIATE FOR ALL BUILDING DESIGNS AND CONDITIONS.

Two layers required by Firestone in order to provide a Weathertight Warranty

MAXIMUM WARRANTY: **20 YEARS**

 <p>Firestone BUILDING PRODUCTS NOBODY COVERS YOU BETTER.™ www.firestonebpc.com</p>	VALLEY		ISSUE / REVISION DATE: 1/1/2010 NOT TO SCALE	DETAIL NO. SA-V-1
	UNA-CLAD®	ACCEPTABLE SYSTEMS: CLAD-GARD		



RhinoBond Roof System

- Quick and easy to install
- No membrane fastener penetrations
- Increased productivity
- Even load distribution
- Enhanced wind uplift resistance
- Reduced membrane “flutter”
- Elimination of half sheets
- Covered by system warranty
- FM approval up to 210 psf

Increase productivity while enhancing wind uplift resistance with Sika Sarnafil's RhinoBond system.

Sika Sarnafil RhinoBond is an alternative attachment system for Sika Sarnafil roof membranes. The RhinoBond system eliminates fastener penetration by welding the membrane directly to the insulation or hardboard securement plates. This ingenious system utilizes vinyl coated securement plates that are inductively welded to the underside of the vinyl membrane sheet. The result is a roofing system that increases productivity and enhances wind uplift resistance.

The RhinoBond system uses a patented stand-up tool to generate a completely safe, electromagnetic pulse that causes the securement plate to heat up and fuse to the membrane directly above it. Simply place the tool above the plate, activate the machine and then temporarily place a RhinoBond weighted magnet on top of the plate to assure a strong bond. As quick as that, you are off to the next securement plate. You save time and increase productivity with 30% fewer fasteners per square in the field to achieve an FM I-90 rating.

RhinoBond is ideal for projects that require enhanced wind uplift protection and for metal retrofit applications. With adequate steel deck strength, you can even eliminate the need to

drill and fasten into the steel roof purlins. Not only do you improve productivity by eliminating this time consuming step, but you can also use wider roof membranes with fewer seams to weld.

Experience the difference that RhinoBond can make in roof performance and your bottom line. **To learn more about RhinoBond, please call 800-451-2504 ... in Canada, call 800-268-0479.**



Product Data SheetEdition: 02/2013
Version no.: 0004

Sarnafil® S327 EnergySmart Roof® Membrane

 48 **x** **60** **72** **80** **Feltback**

Overview:	<p>The S327 EnergySmart Roof membrane is a heat-weldable membrane produced with an integral polyester reinforcement for high strength, for use in a Sika Sarnafil Mechanically-Attached System.</p> <p>Sika Sarnafil's Energy Star qualified EnergySmart Roof color family consists of White, Tan, Light Gray, and Patina Green.</p>
Composition:	<p>The S327 EnergySmart Roof membrane is a high-quality, thermoplastic PVC membrane with a polyester scrim reinforcement. The S327 Roof membrane has a unique lacquer coating applied to the top of the membrane to reduce dirt pick up.</p>
Features and Benefits:	<ul style="list-style-type: none"> • High Strength • Meets EnergyStar/Title 24 Requirements for Cool Roofing (see chart) • Meets LEED/Green Globe Requirements for Cool Roofing (see chart) • Recycled content (see chart) • Lacquer coated to reduce dirt pick up • Hot-air welded seams for long-term performance • Proven membrane performance
Codes and Approvals:	<p>Sika Sarnafil's Mechanically-Attached Systems using S327 PVC membranes are classified by Underwriters Laboratories, Inc., Underwriters Laboratories of Canada, FM Global, Miami-Dade and Florida Building Code. Sika Sarnafil membranes also meet the material requirements of the International building code. For more information, please visit the "technical downloads" section of our website.</p>
Packaging:	<p>The S327 roof membrane rolls are wrapped in a protective film and strapped to a wood pallet. EnergySmart white, tan and light gray are available as 10 ft. (3 meters) wide. EnergySmart patina green is available as 6.5 ft. (2 meters) wide. 6.5 ft. rolls weigh between 161 - 195 lbs and the 10 ft. rolls weigh between 265-375lbs. Weight is dependent on thickness of membrane and/or feltbacking.</p>
Installation:	<p>S327 Roof membrane is installed by a Sika Sarnafil Authorized Applicator. S327 is rolled out onto the insulation board or acceptable substrate, fastened to the roof deck and heat-welded together by trained operators using Sika Sarnafil's hot-air welding equipment.</p>
Availability:	<p>The S327 Roof membrane is available directly from Sika Sarnafil Authorized Applicators. Contact your Sika Sarnafil Regional Office or visit our website for further information.</p>
Warranty:	<p>Upon successful completion of the installed roof by the Sika Sarnafil Authorized Applicator, Sika Sarnafil can provide a Warranty to the Building Owner via the Authorized Applicator.</p>
Maintenance:	<p>The S327 Roof membrane requires no maintenance. As a prudent preventative measure, Sika Sarnafil recommends that the Owner or that the Owner's designated representative inspect the installed roof system for damage, plugged drains, weathered sealants, etc. at least twice a year and after each storm.</p>



Sarnafil®

Technical Support: Sika Sarnafil provides technical support. Please contact your local technical representative or technical manager if you need assistance.
Technical Data (as manufactured):

Parameters

Reinforcing Material
 Overall Thickness, mil
 Thickness Above Scrim, mil
 Felt Weight oz/yd² (feltback membrane only)
 Breaking Strength (M.D.), min., lbf/in. (KN/m)
 Elongation at Break, min.
 Machine Direction %
 Cross Direction %

Seam Strength, min., (% of original)*
 Retention of Properties After Heat Aging
 Tensile Strength, min., (% of original)
 Elongation, min., (% of original)
 Tearing Strength (C.D.), min., lbf (N)
 Low Temperature Bend, -40 °F (-40 °C)
 Accelerated Weathering Test (Flourescent Light, UV exposure)
 Cracking (7x magnification)
 Discoloration (by observation)
 Crazeing (7x magnification)
 Linear Dimensional Change (C.D.), %
 Weight Change After Immersion in Water, %
 Static Puncture Resistance, 33 lbf (15 kg)
 Dynamic Puncture Resistance, 14.7 ft-lbf (20 J)
 Recycled Content (10' & 5' sheet only)

* Failure occurs through membrane rupture not seam failure.

EnergySmart Colors

EnergySmart Color	Initial Solar Reflectance	3 Year Reflectance
EnergySmart White *1	0.83	0.63
EnergySmart Tan *1	0.73	0.65
EnergySmart Light Grey *2	0.50	0.44
EnergySmart Patina Green *2	0.55	0.46

*1 Sika Sarnafil EnergySmart White and Tan membranes meet ENERGY STAR®, LEED, Green Globes and California's Title 24 criteria for Low and Steep Slope applications. *2 Sarnafil EnergySmart Light Grey and Patina Green membranes meet ENERGY STAR®, LEED and Green Globes criteria for Steep Slope applications. EnergySmart Light Grey meets California's Title 24 criteria for Steep Slope applications. EnergySmart Patina Green meets Title 24 criteria for steep slope applications with a 3 year calculated value of 0.445 when using Title 24's aged reflectance equation.

ASTM Test Method
ASTM Type III D-4434 Spec. Requirement

ASTM Test Method	ASTM Type III D-4434 Spec. Requirement	48	60	72	80
D751	45	Polyester 48	Polyester 60	Polyester 72	Polyester 80
--	16	24	30	36	40
D751	200 (35)	9	9	9	9
D751	15	27.5	28.5	29	29.5
D751	15	28.5	29.5	30	30.5
D751	75	Pass	Pass	Pass	Pass
D3045	90	Pass	Pass	Pass	Pass
D751	90	Pass	Pass	Pass	Pass
D1004	45 (200)	47	48	48.5	49
D2136	Pass	Pass	Pass	Pass	Pass
G154	5,000 Hours	10,000 Hours	10,000 Hours	10,000 Hours	10,000 Hours
	None	None	None	None	None
	Negligible	Negligible	Negligible	Negligible	Negligible
	None	None	None	None	None
D1204	0.5% max.	-0.10	-0.12	-0.13	-0.14
D570	± 3.0% max.	2.2	2	1.8	1.8
D5602	Pass	Pass	Pass	Pass	Pass
D5635	Pass	Pass	Pass	Pass	Pass
9% Pre-Consumer / 1% Post-Consumer					

Typical Physical Properties

Initial Thermal Emittance	3 Year Thermal Emittance	Initial Solar Reflectance Index	3 Year Solar Reflectance Index
0.90	0.86	104	75
0.85	0.86	89	78
0.84	0.85	56	49
0.86	0.85	64	51



Corporate Office

Sika Sarnafil
 A Division of Sika Corporation
 100 Dan Road
 Canton, MA 02021

Tel.: (781) 828-5400
 1-800-451-2504
Fax: (781) 828-5365
Web: usa.sarnafil.sika.com
Email: webmaster.sarnafil@us.sika.com



Canada Office

Sika Sarnafil
 A Business Unit of Sika Canada
 6915 Davand Drive
 Mississauga, ON L5T 1L5

Tel.: (905) 670-2222
 1-800-268-0479
Fax: (905) 670-5278
Web: can.sika.com



Disclaimer: The information, and, in particular, the recommendation relating to the application and end-use of Sika Sarnafil products, are given in good faith based on Sika Sarnafil's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika Sarnafil recommendations. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, may be inferred from this information. The user of the product must determine the product's suitability for the intended application and purpose. Sika Sarnafil reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.



DensDeck®

Roof Board

1/4-inch Cover Board

Technical Service Hotline 1.800.225.6119 or
www.densdeck.com

Manufacturer

Georgia-Pacific Gypsum LLC Georgia-Pacific Canada LP
 133 Peachtree Street 2180 Meadowvale Boulevard, Suite 200
 Atlanta, GA 30303 Mississauga, ON L5N 5S3
 Technical Service Hotline: 1-800-225-6119

Description

DensDeck® Roof Board is an exceptional fire barrier, thermal barrier, coverboard and recovery board used in various commercial roofing systems. The DensDeck Roof Board design employs fiberglass mats front and back that are mechanically bonded to a high density gypsum core, providing excellent fire resistance and wind uplift properties. The unique construction of DensDeck Roof Board provides superior flute spanning that stiffens and provides increased foot traffic resistance to the roof deck. Additionally, DensDeck Roof Board has been shown to withstand delamination, deterioration and job-site damage far more effectively than roofing membrane substrates such as paperfaced gypsum board, fiberboard and perlite insulation. DensDeck Roof Board has scored a 10, the highest level of performance for mold resistance per the ASTM D3273 test method.

Primary Uses

Roof system manufacturers and designers have found DensDeck Roof Board to be compatible with many types of roofing systems, including: built-up, modified bitumen, single ply, metal systems, wood shingle and shake, tile, slate, as well as a recovery board and overlayment protection board for polyisocyanurate and polystyrene insulation. DensDeck Roof Board can also be used as a form board for poured gypsum concrete deck in roof applications as well as a substrate for spray foam roofing systems. 1/2" (12.7 mm) and 5/8" (15.9 mm) DensDeck Roof Board may also be used in vertical applications as a backer board or liner for the roof side of parapet walls.

Some membrane manufacturers have hot mop asphalt or torch applications directly to DensDeck Roof Board without using a primer or base sheet. Consult with the system manufacturer for their recommendations with this application. DensDeck Roof Board is the preferred substrate for vapor retarders.

Standards and Code Approvals

DensDeck Roof Boards are manufactured to meet ASTM C1177 and have the following approvals:

- Florida Product Approved
- Miami-Dade County, Product Control Approved

Recommendations and Limitations

DensDeck Roof Boards are manufactured to act with a properly designed roof system following good roofing practices. The actual use of DensDeck Roof Board as a roofing component in any system or assembly is the responsibility of the roofing system's design authority. Consult with the appropriate system manufacturer and/or design authority for system and assembly specifications and instructions on applying other products to DensDeck Roof Board. Georgia-Pacific does not warrant and is not responsible for any systems or assemblies utilizing DensDeck Roof Board or any component in such systems or assemblies other than DensDeck Roof Board.

The need for a separator sheet between the DensDeck Roof Board and the roofing membrane must be determined by the roof membrane manufacturer or roofing system designer.

Confirm any priming requirements with the membrane manufacturer. When applying solvent-based adhesives or primers, allow sufficient time for the solvent to flash off to avoid damage to roofing components.

DensDeck Roof Boards should not be subjected to abnormal or excessive loads or foot traffic, such as, but not limited to, use on plaza decks or under steel-wheeled equipment that may fracture or damage the panels. Provide suitable roofing system protection when required.

When using DensDeck Roof Boards for hot-mopped applications, Georgia-Pacific recommends maximum asphalt application temperatures for Type III asphalt of 425°F (218°C) to 450°F (232°C). Application temperatures above these recommended temperatures may adversely affect roof system performance. For application temperatures in excess of 450°F (232°C) and for mopping of type IV asphalt, ribbon or spot mopping or the installation of a perforated base sheet are recommended methods of bonding asphalt in lieu of full mopping. Consult and follow the roofing system manufacturer's specifications for full mopping applications and temperature requirements.

Conditions beyond the control of Georgia-Pacific, such as weather conditions, dew, leaks, application temperatures and techniques may cause adverse effects with roofing systems.

Moisture Management

DensDeck Roof Boards, like other components used in roofing systems, must be protected from exposure to moisture before, during and after installation.

Remove the plastic packaging from all DensDeck Roof Board immediately upon receipt of delivery. Failure to remove the plastic packaging may result in entrapment of condensation or moisture. DensDeck Roof Board stored outside must be stored level and off the ground and protected by a breathable waterproof covering. Provide means for air circulation around and under stored bundles of DensDeck Roof Board. DensDeck Roof Board must be covered the same day as installed.

Avoid application of DensDeck Roof Boards during rain, heavy fog and any other conditions that may deposit moisture on the surface, and avoid the overuse of non-vented, direct-fired heaters during winter months. When roofing systems are installed on new poured concrete or light weight concrete decks or when re-roofing over an existing concrete deck, a vapor barrier should be installed above the concrete to limit the migration of water from the concrete into the roof assembly. Always consult the roofing system manufacturer or design authority for specific instructions for applying other products to DensDeck Roof Boards.

Moisture vapor movement by convection must be eliminated, and the flow of water by gravity through imperfections in the roof system must be controlled. After a leak has occurred, no condensation on the upper surface of the system should be tolerated, and the water introduced by the leak must be dissipated to the building interior in a minimum amount of time.

Although DensDeck Roof Boards are engineered with fiberglass facings and high density gypsum cores, the presence of free moisture can have a detrimental effect on the performance of the product and the installation of roofing membranes. For example, hot asphalt applications can blister; torched modified bitumen may not properly bond; and adhesives for single ply membranes may not dry properly. Moisture accumulation may also significantly decrease wind uplift and vertical pull resistance in the system or assembly. DensDeck Roof Boards containing excessive free moisture content may need to be evaluated for structural stability to assure wind uplift performance.

Submittal Approvals

Job Name _____

continued →

Contractor _____

Date _____

Fire Resistance Classifications

DensDeck[®] Roof Boards are excellent fire barriers over combustible and noncombustible roof decks, including steel decks.

UL 790 Classification. DensDeck Roof Boards have been classified by Underwriters Laboratories (UL) for use as a fire barrier over combustible and noncombustible decks in accordance with the ANSI/UL 790 test standard. The UL classification includes a comprehensive Class A, B or C rating. For additional information concerning the UL 790 classification, consult the UL Certification Directory.

UL 1256 Classification. DensDeck Roof Boards have also been classified by UL in roof deck constructions for internal (under deck) fire exposure in accordance with the ANSI/UL 1256 Steiner Tunnel test. For additional information concerning the UL 1256 classification, consult the UL Certification Directory.

FM Class 1 Approvals. DensDeck Roof Boards are included in numerous roofing assemblies with a Factory Mutual (FM) Class 1 fire rating. 1/4" (6.4 mm) DensDeck Roof Boards have passed testing under the FM Calorimeter Standard 4450 and have been approved by FM as such for insulated steel deck roofs when installed according to the conditions identified by FM. For more information concerning FM Approvals and FM Class 1 assemblies with DensDeck Roof Boards, consult FM or RoofNav[®].

Type X. 5/8" (15.9 mm) DensDeck[®] Fireguard[®] Roof Boards are manufactured to meet the "Type X" requirements of ASTM C1177 for increased fire resistance beyond regular gypsum board.

UL Fire Resistance Ratings. 5/8" (15.9 mm) DensDeck Fireguard Roof Boards are designated as **Type DD** by UL and included in assembly designs investigated by UL for hourly fire resistance ratings. 5/8" (15.9 mm) DensDeck Fireguard Roof Boards may also replace any unclassified 5/8" (15.9 mm) gypsum board in an assembly in the UL Fire Resistance Directory under the prefix "P".

Flame Spread and Smoke Developed. When tested in accordance with ASTM E84, DensDeck Roof Boards had Flame Spread 0, Smoke Developed 0.

Wind Uplift

DensDeck Roof Boards are included in numerous assemblies evaluated by FM or other independent laboratories for wind uplift performance. For information concerning such assemblies, please visit www.roofnav.com.

Handling and Use—CAUTION

This product contains fiberglass facings which may cause skin irritation. Dust and fibers produced during the handling and installation of the product may cause skin, eye and respiratory tract irritation. Avoid breathing dust and minimize contact with skin and eyes. Wear long sleeve shirts, long pants and eye protection. Always maintain adequate ventilation. Use a dust mask or NIOSH/MSHA approved respirator as appropriate in dusty or poorly ventilated areas.

Physical Properties

Properties	1/4" (6.4 mm)	1/2" (12.7 mm)	5/8" (15.9 mm)
Thickness, nominal	1/4" (6.4 mm) ± 1/16" (1.6 mm)	1/2" (12.7 mm) ± 1/32" (.8 mm)	5/8" (15.9 mm) ± 1/32" (.8 mm)
Width, standard	4' (1219 mm) ± 1/8" (3 mm)	4' (1219 mm) ± 1/8" (3 mm)	4' (1219 mm) ± 1/8" (3 mm)
Length, standard	8' (2438 mm) ± 1/4" (6.4 mm)	8' (2438 mm) ± 1/4" (6.4 mm)	8' (2438 mm) ± 1/4" (6.4 mm)
Weight, nominal, lbs./sq. ft. (Kg/m ²)	1.2 (5.9)	2.0 (9.8)	2.5 (12.2)
Surfacing	Fiberglass mat	Fiberglass mat	Fiberglass mat
Flexural Strength ¹ , parallel, lbf. min. (N)	≥40 (178)	≥80 (356)	≥100 (444)
Flute Spanability ²	2-5/8" (67 mm)	5" (127 mm)	8" (203 mm)
Permeance ³ , Perms (ng/Pa•S•m ²)	>50 (2850)	>35 (1995)	>32 (1824)
R Value ⁴ , ft ² •°F•hr/BTU (m ² •K/W)	.28	.56	.67
Linear Variation with Change in Temp., in/in °F (mm/mm/°C)	8.5 x 10 ⁻⁶ (15.3 x 10 ⁻⁶)	8.5 x 10 ⁻⁶ (15.3 x 10 ⁻⁶)	8.5 x 10 ⁻⁶ (15.3 x 10 ⁻⁶)
Linear Variation with Change in Moisture	6.25 x 10 ⁻⁶	6.25 x 10 ⁻⁶	6.25 x 10 ⁻⁶
Water Absorption ⁵ , % max	<10	<10	<10
Compressive Strength ⁶ , psi nominal	900	900	900
Surface Water Absorption, grams, nominal	<2.5	<2.5	<2.5
Flame Spread, Smoke Developed (ASTM E84)	0/0	0/0	0/0
Bending Radius	5' (1524 mm)	8' (2438 mm)	12' (3658 mm)

1. Tested in accordance with ASTM C473 method B.

2. Tested in accordance with ASTM E661.

3. Tested in accordance with ASTM E96 (dry cup method).

4. Tested in accordance with ASTM C518 (heat flow meter).

5. Tested in accordance with ASTM C1177.

6. Tested in accordance with ASTM C473.



U.S.A. – Georgia-Pacific Gypsum LLC

Canada – Georgia-Pacific Canada LP

SALES INFORMATION AND ORDER PLACEMENT

U.S.A. Midwest: **1-800-876-4746** West: **1-800-824-7503**
South: **1-800-327-2344** Northeast: **1-800-947-4497**

CANADA Canada Toll Free: **1-800-387-6823**

Quebec Toll Free: **1-800-361-0486**

TECHNICAL INFORMATION

U.S.A. and Canada: **1-800-225-6119**

www.gpgypsum.com

TRADEMARKS DENSDECK, FIREGUARD and the GEORGIA-PACIFIC logo are trademarks owned by or licensed to Georgia-Pacific Gypsum LLC. ROOFNAV is a registered mark of FM Global.

WARRANTIES, REMEDIES AND TERMS OF SALE For current warranty information for this product, please go to www.gpgypsum.com and select the product for warranty information. All sales of this product by Georgia-Pacific are subject to our Terms of Sale available at www.gpgypsum.com.

UPDATES AND CURRENT INFORMATION

The information in this document may change without notice. Visit our website at www.gpgypsum.com for updates and current information.

CAUTION For product fire, safety and use information, go to www.gp.com/safetyinfo or call 1-800-225-6119.

FIRE SAFETY CAUTION Passing a fire test in a controlled laboratory setting and/or certifying or labeling a product as having a one-hour, two-hour, or any other fire resistance or protection rating and, therefore, as acceptable for use in certain fire rated assemblies/systems, does not mean that either a particular assembly/system incorporating the product, or any given piece of the product itself, will necessarily provide one-hour fire resistance, two-hour fire resistance, or any other specified fire resistance or protection in an actual fire. In the event of an actual fire, you should immediately take any and all actions necessary for your safety and the safety of others without regard for any fire rating of any product or assembly/system.



PRODUCT DATA SHEET

SARNATHERM[®]

~~Two layers of 2-inch.~~

GC: 5-inch total per discussion with Steve

 20 _x 25

Sarnatherm is a rigid closed cell polyisocyanurate insulation board with fiber reinforced felt facers. Sarnatherm is suitable for use in new construction and re-roofing with Sarnafil[®] or Sikaplan[®] membranes.

PRODUCT INFORMATION

USES

Wherever insulation is required within a conventional roof assembly to achieve specified thermal resistance.

AREAS OF APPLICATION

- New Roofs
- Recover Roofs
- Mechanically Fastened Systems
- Adhered Systems

FEATURES / BENEFITS

- Manufactured with no CFCs or HCFCs
- Virtually no GWP (global warming potential)
- Zero ODP (ozone depletion potential)
- Compatible with Sarnafil and Sikaplan membranes

CODES / APPROVALS

- ASTM C 1289 Type II, Class 1, Grade 2 (20 psi) or Grade 3 (25 psi)
- UL 1256, 790, 263
- FM 4450, 4470
- Miami-Dade County
- State of Florida

PRODUCT DATA

COMPOSITION

- Polyisocyanurate Foam Core
- Fiber Reinforced Felt Facers

COLOR

Off-White Core with Dark Brown Facer

PACKAGING

- 4' x 4' (1.2 m x 1.2 m)
- 4' x 8' (1.2 m x 2.4 m)
- Various Thicknesses

5" total insulation

STORAGE

STORAGE CONDITIONS

Factory-applied packaging is intended only for protection during transit. When stored outdoors or on the job site, the insulation should be stacked on pallets at least 4 in (102 mm) above ground level and completely covered with a weatherproof covering such as a tarpaulin. The temporary factory-applied packaging should be slit or removed to prevent accumulation of condensation. Refer to PIMA Technical Bulletin 109: *Storage and Handling Recommendations for Polyiso Roof Insulation*.

TECHNICAL DATA

Property*	ASTM Test Method	Results
Compressive Strength	D 1621	20 psi (138 kPa) or 25 psi (172 kPa)
Dimensional Stability	D 2126	< 2 %
Water Absorption	C 209	< 1.5 %
Water Vapor Transmission	E 96	< 1.5 perm < (85.5 ng / (Pa•s•m ²))
Flame Spread	E 84 (10 min.)	40-60**
Smoke Development	E 84 (10 min.)	50-170**
Service Temperature	-	-100° to 250° F (-73° to 121° C)

*Physical properties listed above are presented as typical average values as determined by accepted ASTM test methods and are subject to normal manufacturing variation.

**Numerical ratings are not intended to reflect performance under actual fire conditions. Flame spread index of ≤ 75 and smoke development ≤ 450 meet code requirements for foam plastic roof insulation. Codes exempt foam plastic insulation when used in FM 4450 or UL 1256.

THERMAL DATA

LTTR Value*	Thickness		Flute Spanability	
	in	mm	in	mm
5.7	1.0	25	2 - 5/8	66.68
8.6	1.5	38	4 - 3/8	111.13
10.3	1.8	46	4 - 3/8	111.13
11.4	2.0	51	4 - 3/8	111.13
14.4	2.5	64	4 - 3/8	111.13
15.0	2.6	66	4 - 3/8	111.13
17.4	3.0**	76	4 - 3/8	111.13
20.5	3.5**	89	4 - 3/8	111.13
23.6	4.0**	102	4 - 3/8	111.13

*LTTR (long term thermal resistance) values are based on ASTM C 1289. Test samples were third-party selected and tested by an accredited material testing laboratory. The LTTR results were reviewed by FM Global and certified by the PIMA Quality Mark Program.

**Use multiple layers when the total desired or specified R-value requires an insulation thickness greater than 2.7 in (68.58 mm).



SYSTEM INFORMATION

INSTALLATION

Sarnatherm is installed by a Sika Authorized Applicator. Sarnatherm may be installed by mechanical-attachment to the roof deck with Sarnafasteners and Sarnaplates, by attachment with Sarnacol Board Adhesive, or by hot asphalt depending on project requirements and specifications. Roof insulation which has become wet or damaged should be removed and replaced with solid, dry insulation. Contact Sika Corporation – Roofing Technical Department regarding alternative methods of attachment.

MAINTENANCE

Standard maintenance of roofs should include regular inspection of flashings, drains and termination sealants at least twice a year and after each storm.

WARRANTY

As a Sika supplied product, Sarnatherm is covered under Sika Corporation warranties.

LEGAL NOTES

All information provided by Sika Corporation ("Sika") concerning Sika products, including but not limited to, any recommendations and advice relating to the application and use of Sika products, is given in good faith based on Sika's current experience and knowledge of its products when properly stored, handled and applied under normal conditions in accordance with Sika's instructions. In practice, the differences in materials, substrates, storage and handling conditions, actual site conditions and other factors outside of Sika's control are such that Sika assumes no liability for the provision of such information, advice, recommendations or instructions related to its products, nor shall any legal relationship be created by or arise from the provision of such information, advice, recommendations or instructions related to its products. The user of the Sika product(s) must test the product(s) for suitability for the intended application and purpose before proceeding with the full application of the product(s). Sika reserves the right to change the properties of its products without notice. All sales of Sika product(s) are subject to its current terms and conditions of sale which are available at usa.sarnafil.sika.com or by calling 800-451-2504.

Prior to each use of any Sika product, the user must always read and follow the warnings and instructions on the product's most current Product Data Sheet, product label and Safety Data Sheet which are available online at usa.sarnafil.sika.com or by calling Sika's Technical Service Department at 800-451-2504. Nothing contained in any Sika materials relieves the user of the obligation to read and follow the warnings and instruction for each Sika product as set forth in the current Product Data Sheet, product label and Safety Data Sheet prior to product use.

Sika warrants this product for one year from date of installation to be free from manufacturing defects and to meet the technical properties on the current Product Data Sheet if used as directed within shelf life. User determines suitability of product for intended use and assumes all risks. Buyer's sole remedy shall be limited to the purchase price or replacement of product exclusive of labor or cost of labor.

NO OTHER WARRANTIES EXPRESS OR IMPLIED SHALL APPLY INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SIKA SHALL NOT BE LIABLE UNDER ANY LEGAL THEORY FOR SPECIAL OR CONSEQUENTIAL DAMAGES. SIKA SHALL NOT BE RESPONSIBLE FOR THE USE OF THIS PRODUCT IN A MANNER TO INFRINGE ON ANY PATENT OR ANY OTHER INTELLECTUAL PROPERTY RIGHTS HELD BY OTHERS.

SIKA CORPORATION – ROOFING

UNITED STATES

100 Dan Road
Canton, MA 02021
800-451-2504 (p)
781-828-5365 (f)
usa.sarnafil.sika.com
webmaster.sarnafil@us.sika.com

SIKA CANADA INC.

6915 Davand Drive
Mississauga, ON L5T 1L5
905-795-3177 (p)
905-795-3192 (f)
can.sika.com
marketing.construction@ca.sika.com

Product Data Sheet

Edition: 3/2008
Version no.: 0001

Sarnadisc RhinoBond

Overview:	Sarnadisc RhinoBond is a specially designed, polymer coated plate used with Sarnafasteners to attach insulation or cover boards directly to the roof deck or structural purlins prior to the installation of the Sika Sarnafil membrane. The membrane will be welded to the Sarnadisc RhinoBond by induction welding.
Composition:	Sarnadisc RhinoBond is a 3 inch (75 mm) diameter, 0.028 inch (0.7 mm) thick metal plate with a polymer coating, meeting the Factory Mutual 4470 criteria for corrosion resistance.
Features:	Sarnadisc RhinoBond has a recessed center to provide protection to the membrane underside from abrasion by the fastener head.
Packaging:	Sarnadisc RhinoBond is packaged in Pails of 500. Each pail weighs approximately 54 lbs (24 kg).
Installation:	Sarnadisc RhinoBond is positioned on the surface of the insulation board. A Sarnafastener is set through the center of the disc and set into the roof deck or purlin. The Sarnadisc RhinoBond holds the insulation in place.
Availability:	Sarnadisc RhinoBond is available directly from Sika Sarnafil Authorized Applicators when used within a Sika Sarnafil roof system. Contact your Sika Sarnafil Regional Office or visit our website for further information.
Warranty:	As a Sika Sarnafil supplied accessory, Sarnadisc RhinoBond is included in Sika Sarnafil's Standard or System Warranty to the Building Owner.



Maintenance: Sarnadisc RhinoBond requires no maintenance.

Technical: Sika Sarnafil provides technical support. Technical staff is available to advise Applicators as to the correct installation method.

Corporate Office
Sika Sarnafil
A Division of Sika Corporation
100 Dan Road
Canton, MA 02021

Tel.: (781) 828-5400
1-800-451-2504

Fax: (781) 828-5365

Web: www.sikacorp.com

Email: webmaster.sarnafil@us.sika.com

Canada Office
Sika Sarnafil
A Business Unit of Sika Canada
6820 Davand Drive
Mississauga, ON L5T 1J5

Tel.: (905) 670-2222
1-800-268-0479

Fax: (905) 670-5278

Web: www.sika.ca

Disclaimer: *The information, and, in particular, the recommendation relating to the application and end-use of Sika Sarnafil products, are given in good faith based on Sika Sarnafil's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika Sarnafil recommendations. In practice, the differences in materials, substrates and actual site conditions are such that **no warranty in respect of merchantability of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, may be inferred from this information.** The user of the product must determine the product's suitability for the intended application and purpose. Sika Sarnafil reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.*

Product Data Sheet

Edition: 5/2007
Version no.: 0004

Sarnafastener - XP

Overview:	Sarnafastener-XP is a specially-designed fastener used with Sarnadisc, Sarnadisc-XPN, Sarnarail or Sarnabar to attach the Sarnafil S327 roof membrane directly to (16 - 24 gauge) steel roof decks, approved structural concrete or wood roof decks greater than 15/32 inch and structural concrete decks.
Composition:	Sarnafastener-XP is made from carbon steel, treated with a corrosion resistant coating to meet the Factory Mutual 4470 criteria for corrosion resistance.
Features:	Sarnafastener-XP has an enhanced buttress thread to increase both surface area and friction against the deck for improved backout resistance and exceptionally high pullout values. The shank diameter is approximately 0.21 inch (5.3 mm) and the thread diameter is approximately 0.26 inch (6.6 mm). The driving head has a diameter of approximately 0.435 inch (11 mm) and is #3 Phillips design for positive engagement and simplicity of application. The thread density is 13 turns/inch (approximately 5 turns/cm).
Packaging:	Sarnafastener-XP is packaged in boxes or plastic buckets in quantities of 250, 500 or 1000. See Technical Data section for lengths and weights.
Installation:	For S327 roof membrane attachment, the Sarnafastener-XP is placed through the Sarnadisc, Sarnadisc-XPN, Sarnarail or Sarnabar, through the membrane, insulation and set into the roof deck with a heavy-duty (4 amp min.), variable speed (0-2500 rpm), reversible screwgun with clutch release and a #3 Phillips drive bit. Sarnafastener-XP must penetrate steel, wooden plank and concrete roof decks 1 inch (25mm) and the underside of plywood roof decks ½ inch (13mm). Pre-drill a 7/32" ANSI pilot hole when installing in structural concrete decks using a hammer or rotary hammer drill. Hole shall be 1/2" deeper than required embedment for concrete decks. Care must be taken to not damage the roof deck. Choose the correct fastener length and do not overdrive or underdrive the Sarnafastener-XP. Pullout tests may be required prior to job start. Contact Sika Sarnafil's Technical Department for determination.
Availability:	Sarnafastener-XP is available directly from Sika Sarnafil Authorized Applicators when used within a Sika Sarnafil roof system. Contact your Sika Sarnafil Regional Office or visit our website for further information.



Warranty:	As a Sika Sarnafil-supplied accessory, Sarnafastener-XP is included in Sika Sarnafil's Standard or System Warranty to the Building Owner.
Maintenance:	Sarnafastener-XP requires no maintenance.
Technical:	Sika Sarnafil provides technical support. Technical staff is available to advise Applicators as to the correct installation method of Sarnafastener-XP.

Technical Data:	Length	Thread	Packaging	Weight
	1-¼ inch (32 mm)	1 inch	1000/Bucket	12 lb (5.4 kg)
	2 inch (51 mm)	1-¾ inch	1000/Bucket	19 lb (8.6 kg)
	3 inch (76 mm)	2-¾ inch	1000/Bucket	29 lb (13.2 kg)
	4 inch (101 mm)	2-¾ inch	1000/Bucket	38 lb (17.2 kg)
	5 inch (127 mm)	3-¾ inch	1000/Bucket	47 lb (21.3 kg)
	6 inch (152 mm)	3-¾ inch	500/Bucket	29 lb (13.1 kg)
	7 inch (178 mm)	3-¾ inch	500/Bucket	33 lb (15.0 kg)
	8 inch (203 mm)	3-¾ inch	500/Bucket	37 lb (16.8 kg)
	*10 inch (254 mm)	3-¾ inch	500/Box	46 lb (20.9 kg)
	*12 inch (304 mm)	3-¾ inch	500/Box	55 lb (24.9 kg)
	*14 inch (356 mm)	3-¾ inch	500/Box	65 lb (29.4 kg)
	*16 inch (406 mm)	3-¾ inch	250/Box	38 lb (17.2 kg)

* May be coated with a grey corrosion resistant coating.

Corporate Office

Sika Sarnafil Inc.
100 Dan Road
Canton, MA 02021

Tel.: (781) 828-5400
1-800-451-2504

Fax: (781) 828-5365

Web: www.sikacorp.com

Email: webmaster.sarnafil@us.sika.com

Canada Office

Sika Sarnafil
A Business Unit of Sika Canada
6820 Davand Drive
Mississauga, ON L5T 1J5

Tel.: (905) 670-2222
1-800-268-0479

Fax: (905) 670-5278

Web: www.sika.ca

Disclaimer: The information, and, in particular, the recommendation relating to the application and end-use of Sika Sarnafil products, are given in good faith based on Sika Sarnafil's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika Sarnafil recommendations. In practice, the differences in materials, substrates and actual site conditions are such that **no warranty in respect of merchantability of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, may be inferred from this information.** The user of the product must determine the product's suitability for the intended application and purpose. Sika Sarnafil reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.

Product Data Sheet

Edition: 12/2013
Version no: 0016

Sarnacol® 2170 Adhesive

Overview:	Sarnacol® 2170 is a solvent-based reactivating adhesive used with a Sika Sarnafil Adhered system and/or flashing detail. It is also used to adhere flashings in Sarnafil waterproofing systems. It is formulated for adhering Sarnafil PVC membranes to properly prepared substrates such as wood, sheet steel, masonry, concrete and approved coverboards.
Composition:	See Material Safety Data Sheet for information. VOC Content: 694.2 g/L
Features:	Sarnacol 2170 is uniquely formulated to be compatible with Sarnafil membranes.
Packaging:	Sarnacol 2170 is supplied in 5 gal (18.9 L) steel containers weighing 45 lbs (20.4 kg). The shelf life is 12 months in a tightly closed container in temperatures between -4°F (-20°C) and 86°F (30°C).
Installation:	<p><u>Bareback:</u> Sarnacol 2170 is roller-applied to both the membrane and substrate in the following manner: Apply Sarnacol 2170 to the substrate and allow to dry. After the substrate adhesive has dried completely, apply Sarnacol 2170 to the back side of the membrane, and allow to become tacky (producing strings) when touched with a dry finger. The Sarnacol 2170 on the membrane shall not be permitted to dry completely. The membrane is then placed on the substrate (mating adhesive surfaces). The bonded sheet shall be pressed firmly in place with a minimum 100 lb (45 kg) steel, membrane roller, by rolling in two directions (vertical flashings are hand-rolled).</p> <p><u>Feltback:</u> Sarnacol 2170 is roller-applied to the substrate and allowed to dry completely. A second coat of adhesive is then applied to the substrate. The second coat of adhesive shall not be permitted to dry completely. The membrane is then placed on the substrate while the adhesive is still wet. The bonded sheet shall be pressed firmly in place with a minimum 100 lb (45 kg) steel, membrane roller, by rolling in two directions.</p>
Availability:	Sarnacol 2170 is available directly from Sika Sarnafil Authorized Applicators when used within a Sika Sarnafil Roofing or Waterproofing System. Contact Sika Sarnafil or visit our website www.sikacorp.com for further information.
Warranty:	As a Sika Sarnafil-supplied accessory, Sarnacol 2170 is included in Sika Sarnafil's Standard or System Warranty.
Maintenance:	Sarnacol 2170 requires no maintenance.
Technical:	Sika Sarnafil provides technical support. Technical staff is available to advise applicators as to the proper installation method.



Sarnafil®

Technical Data:	<u>Substrate</u>	<u>Total Rate for Bareback Membrane</u>
	Isocyanurate Organic Facer	1- $\frac{3}{4}$ gallons per square (0.71 liters/meter ²)
	Isocyanurate Glass Facer	1- $\frac{1}{2}$ gallons per square (0.61 liters/meter ²)
	Smooth Plywood	1- $\frac{1}{2}$ gallons per square (0.61 liters/meter ²)
	Metal	1- $\frac{1}{4}$ gallons per square (0.51 liters/meter ²)
	Concrete Wall	1- $\frac{3}{4}$ gallons per square (0.71 liters/meter ²)
	DensDeck®	1- $\frac{3}{4}$ gallons per square (0.71 liters/meter ²)
	DensDeck Prime®	1- $\frac{1}{2}$ gallons per square (0.61 liters/meter ²)
	DensDeck® Duraguard	1- $\frac{1}{2}$ gallons per square (0.61 liters/meter ²)

<u>Substrate</u>	<u>Total Rate for Feltback Membrane</u>
Isocyanurate Organic Facer	2- $\frac{1}{4}$ gallons per square (0.92 liters/meter ²)
Isocyanurate Glass Facer	2 gallons per square (0.81 liters/meter ²)
Smooth Plywood	2 gallons per square (0.81 liters/meter ²)
Metal	1- $\frac{3}{4}$ gallons per square (0.71 liters/meter ²)
Concrete Deck	2- $\frac{1}{4}$ gallons per square (0.92 liters/meter ²)
Concrete Wall	2- $\frac{1}{4}$ gallons per square (0.92 liters/meter ²)
Masonry Wall	2- $\frac{1}{4}$ gallons per square (0.92 liters/meter ²)
Cellular Concrete (feltback membrane only)	2- $\frac{1}{4}$ gallons per square (0.0.92 liters/meter ²)
DensDeck®	2- $\frac{1}{4}$ gallons per square (0.92 liters/meter ²)
DensDeck Prime®	2 gallons per square (0.81 liters/meter ²)
DensDeck Duraguard®	2 gallons per square (0.81 liters/meter ²)
Securock® Gypsum Fiber	1- $\frac{3}{4}$ gallons per square (0.71 liters/meter ²)

Corporate Office

Sika Sarnafil
A Division of Sika Corporation
100 Dan Road
Canton, MA 02021

Tel.: (781) 828-5400
1-800-451-2504

Fax: (781) 828-5365

Web: usa.sarnafil.sika.com **Email:** webmaster.sarnafil@us.sika.com

Canada Office

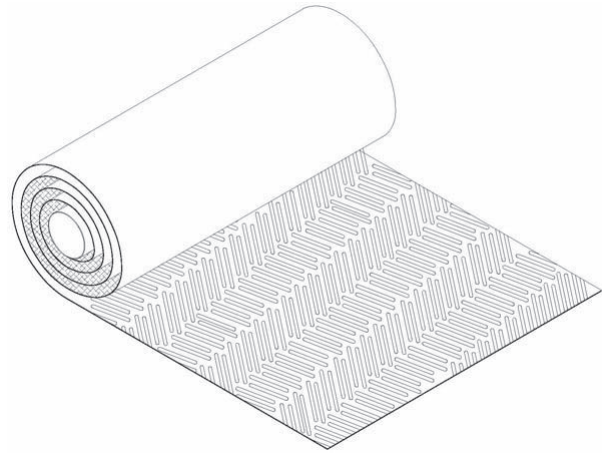
Sika Sarnafil
A Business Unit of Sika Canada
6915 Davand Drive
Mississauga, ON L5T 1L5

Tel.: (905) 670-2222
1-800-268-0479

Fax: (905) 670-5278

Web: can.sika.com

Disclaimer: The information, and, in particular, the recommendation relating to the application and end-use of Sika Sarnafil products, are given in good faith based on Sika Sarnafil's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika Sarnafil recommendations. In practice, the differences in materials, substrates and actual site conditions are such that **no warranty in respect of merchantability of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, may be inferred from this information.** The user of the product must determine the product's suitability for the intended application and purpose. Sika Sarnafil reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.

Product Data SheetEdition: 05/2013
Version no.: 0001**Sarnatred - V**

Overview:	Sarnatred-V is a rolled-out, heat welded walkway that has an improved "chevron" design. Sarnatred-V is used to protect the Sika Sarnafil membrane from foot traffic.
Composition:	Sarnatred-V is a 96mil (2.4mm) thick, polyester reinforced, membrane made from the same proven formulation as our Sarnafil membrane. Dimensions are approximately 39 inches (1.0 m) wide by 50 feet (15 m) long.
Features:	Sarnatred-V is dimensionally stable and durable. Sarnatred-V is light gray and has a textured surface similar to a chevron pattern.
Packaging:	Sarnatred-V is provided in rolls on wood pallets.
Installation (adhered):	<p>Roofing membrane to receive Sarnatred-V shall be clean and dry. Chalk lines on deck sheet to indicate location of walkway. Apply a continuous coat of Sarnacol 2170 adhesive to the deck sheet and the back of Sarnatred-V in accordance with Sika Sarnafil's installation requirements for this adhesive. Make sure to leave the area on the deck sheet and on the back of the Sarnatred-V that will be hot-air welded free of adhesive. The entire perimeter of Sarnatred-V will be welded.</p> <p>Roll Sarnatred-V into Sarnacol 2170 adhesive then press into place with a minimum 100lb linoleum roller. Clean the deck membrane and the back of Sarnatred-V in areas to be welded if need be. Hot-air weld the entire perimeter of Sarnatred-V to the Sika Sarnafil deck sheet. Check all welds with a rounded screwdriver. Reweld any inconsistencies.</p> <p>For complete instructions on how to install Sika Sarnafil walkways, refer to Sika Sarnafil's Applicator Handbook.</p> <p>Important: Check all existing deck membrane seams that are to be covered by Sarnatred-V with rounded screwdriver and reweld any inconsistencies before walkway installation. Do not use solvent-based adhesive when polystyrene is used as an insulation board in the roof assembly or in geographic areas where voc compliance is not met.</p>


Sarnafil®

Availability:	Sarnatred-V is available directly from Sika Sarnafil Authorized Applicators. Contact your Sika Sarnafil Regional Office or visit our website for further information.
Maintenance:	Sarnatred-V may require periodic cleaning or removal of leaves and similar debris.
Technical:	Sika Sarnafil provides technical support. Technical staff is available to advise Applicators as to the correct installation method of SarnaTred.

Technical Data (as manufactured):

<u>Parameters</u>	<u>ASTM Test Method</u>	<u>Typical Physical Properties</u>
Reinforcing Material	--	Polyester
Overall Thickness, nominal, inches (mm)	D751	0.096 (2.4mm)
Tensile Strength, min., psi	D751	275
Elongation at Break, min.	D751	15%
Tearing Resistance, min., lbf	D751	50
Low Temperature Bend, -30° F (-40° C)	D2136	Pass
Fire Resistance	E108	25 Ft.
UV Resistance	D2565	5,000 hrs.
Puncture Resistance (Federal Test)	2065	54 lbs.
Recycled Content		1% Post Consumer / 9% Pre Consumer
UL 410 "Slip Resistance of Floor Surface Material"		Pass

Corporate Office

Sika Sarnafil
A Division of Sika Corporation
100 Dan Road
Canton, MA 02021

Tel.: (781) 828-5400
1-800-451-2504

Fax: (781) 828-5365

Web: usa.sarnafil.sika.com **Email:** webmaster.sarnafil@us.sika.com

Canada Office

Sika Sarnafil
A Business Unit of Sika Canada
6915 Davand Drive
Mississauga, ON L5T 1L5

Tel.: (905) 670-2222
1-800-268-0479

Fax: (905) 670-5278

Web: can.sika.com

Disclaimer: All information provided by Sika Corporation ("Sika") concerning Sika products, including but not limited to, any recommendations and advice relating to the application and use of Sika products, is given in good faith based on Sika's current experience and knowledge of its products when properly stored, handled and applied under normal conditions in accordance with Sika's instructions. In practice, the differences in materials, substrates, storage and handling conditions, actual site conditions and other factors outside of Sika's control are such that Sika assumes no liability for the provision of such information, advice, recommendations or instructions related to its products, nor shall any legal relationship be created by or arise from the provision of such information, advice, recommendations or instructions related to its products. The user of the Sika product(s) must test the product(s) for suitability for the intended application and purpose before proceeding with the full application of the product(s).

Sika reserves the right to change the properties of its products without notice. All sales of Sika product(s) are subject to its current terms and conditions of sale which are available at usa.sarnafil.sika.com or by calling 800-451-2504.

Prior to each use of any Sika product, the user must always read and follow the warnings and instructions on the product's most current Technical Data Sheet, product label and Material Safety Data Sheet which are available at usa.sarnafil.sika.com or by contacting 800-451-2504. Nothing contained in any Sika materials relieves the user of the obligation to read and follow the warnings and instruction for each Sika product as set forth in the current Technical Data Sheet, product label and Material Safety Data Sheet prior to product use.

Product Data Sheet

Edition: 08/2013
Version no.: 0005

Sarnastop

Overview:	Sarnastop is a 1 inch wide aluminum alloy bar used with Sarnafasteners to clamp the Sarnafil membrane to the roof deck, walls, curbs and at certain details.
Composition:	Sarnastop is produced from 1/8 inch (3 mm) thick 6063 T6 extruded aluminum alloy with a mill finish. Sarnastop is provided with predrilled holes at 6 inches o.c. for attachment at base of walls, curbs and transition points.
Features:	Sarnastop distributes the loads uniformly across a series of fastening points maximizing fastener pullout and backout resistance.
Packaging:	Sarnastop is packaged in bundles of 25 pieces. Each Sarnastop is 10 ft long (3 m) and weighs 1.5 lbs (680 g).
Installation:	Sarnastop is installed by Sika Sarnafil a Authorized Applicators. Sarnastop is positioned over the top of the membrane and fastened to the roof deck with Sarnafasteners. Fastener spacing is determined by Sika Sarnafil. The Sarnafasteners are set to a depth to clamp the membrane in place without damaging the substrate. Depending on the specific detail, a membrane coverstrip is welded over the Sarnastop for watertightness.
Availability:	Sarnastop is available directly from Sika Sarnafil Authorized Applicators when used within a Sika Sarnafil roof system. Contact your Sika Sarnafil Regional Office or visit our website for further information.
Warranty:	As a Sika Sarnafil-supplied accessory, Sarnastop is included in Sika Sarnafil's Standard or System Warranty to the Building Owner.

**Sarnafil®**

Maintenance: Sarnastop requires no maintenance.

Technical: Sika Sarnafil provides technical support. Technical staff is available to advise Applicators as to the correct installation method of Sarnastop.

Corporate Office
Sika Sarnafil
A Division of Sika Corporation
100 Dan Road
Canton, MA 02021

Tel.: (781) 828-5400
1-800-451-2504

Fax: (781) 828-5365

Web: usa.sarnafil.sika.com **Email:** webmaster.sarnafil@us.sika.com

Canada Office
Sika Sarnafil
A Business Unit of Sika Canada
6915 Davand Drive
Mississauga, ON L5T 1L5

Tel.: (905) 670-2222
1-800-268-0479

Fax: (905) 670-5278

Web: can.sika.com

Disclaimer: *All information provided by Sika Corporation ("Sika") concerning Sika products, including but not limited to, any recommendations and advice relating to the application and use of Sika products, is given in good faith based on Sika's current experience and knowledge of its products when properly stored, handled and applied under normal conditions in accordance with Sika's instructions. In practice, the differences in materials, substrates, storage and handling conditions, actual site conditions and other factors outside of Sika's control are such that Sika assumes no liability for the provision of such information, advice, recommendations or instructions related to its products, nor shall any legal relationship be created by or arise from the provision of such information, advice, recommendations or instructions related to its products. The user of the Sika product(s) must test the product(s) for suitability for the intended application and purpose before proceeding with the full application of the product(s).*

Sika reserves the right to change the properties of its products without notice. All sales of Sika product(s) are subject to its current terms and conditions of sale which are available at usa.sarnafil.sika.com or by calling 800-451-2504.

Prior to each use of any Sika product, the user must always read and follow the warnings and instructions on the product's most current Technical Data Sheet, product label and Material Safety Data Sheet which are available at usa.sarnafil.sika.com or by contacting 800-451-2504. Nothing contained in any Sika materials relieves the user of the obligation to read and follow the warnings and instruction for each Sika product as set forth in the current Technical Data Sheet, product label and Material Safety Data Sheet prior to product use.



PRODUCT DATA SHEET

SIKAFLEX®-1a

Sikaflex®-1a is a premium-grade, high-performance, moisture-cured, one-component polyurethane-based, non-sag elastomeric sealant used in certain Sarnafil® and Sikaplan® roofing or waterproofing system details. Typical applications include wall, curb and drain terminations. It is also used as a sealant at pipe penetrations and under certain metal flashings. Sikaflex-1a can be used as a pourable sealer pocket filler.

PRODUCT INFORMATION

USES

For Sarnafil and Sikaplan roofing and waterproofing system details.

AREAS OF APPLICATION

- Wall, curb and drain terminations
- Pipe penetrations
- Certain metal flashings
- Pourable sealer pocket filler

FEATURES / BENEFITS

- Bonds well to primed Sika PVC membranes and to common building materials
- High elasticity, cures to a tough, durable, flexible consistency with exceptional cut and tear resistance
- Easy to apply from the cartridge and has excellent workability characteristics
- Excellent resistance to aging and weathering
- Odorless, non-staining

TESTS

APPROVAL / STANDARDS

- Meets Federal Specification TT-S-0023C, Type II, Class A
- Meets ASTM C-920, Type S, Grade NS, Class 35
- Certified to the NSF/ANSI Standard 61 for potable water

PRODUCT DATA

FORM

COMPOSITION

Sealant

COLOR

White or Limestone

VOC CONTENT

40 g/l

PRIOR TO EACH USE OF ANY SIKA PRODUCT, THE USER MUST ALWAYS READ AND FOLLOW THE WARNINGS AND INSTRUCTIONS ON THE PRODUCT'S MOST CURRENT PRODUCT DATA SHEET, PRODUCT LABEL AND SAFETY DATA SHEET WHICH ARE AVAILABLE ONLINE AT USA.SARNAFIL.SIKA.COM OR BY CALLING SIKA SARNAFIL'S TECHNICAL SERVICE DEPARTMENT AT 800-451-2504. NOTHING CONTAINED IN ANY SIKA MATERIALS RELIEVES THE USER OF THE OBLIGATION TO READ AND FOLLOW THE WARNINGS AND INSTRUCTIONS FOR EACH SIKA PRODUCT AS SET FORTH IN THE CURRENT PRODUCT DATA SHEET, PRODUCT LABEL AND SAFETY DATA SHEET PRIOR TO PRODUCT USE.

	<p>PACKAGING</p> <p>10.1 fluid ounce (300 ml) disposable cartridge (24 cartridges per case), 25 lbs (11.3 kg) per case</p>
STORAGE	<p>STORAGE CONDITIONS</p> <p>Store at 40°F-90°F (4°C-35°C) in a dry, well-ventilated area. Condition material to 65°F-75°F (18°C-24°C) before using.</p> <p>SHELF LIFE</p> <p>12 months in an unopened cartridge</p>
TECHNICAL DATA	<p>TYPICAL PHYSICAL PROPERTIES*</p> <p>Shelf Life: 12 months</p> <p>Service Range: -40°F (-40°C) to 170°F (77°C)</p> <p>Curing Rate:</p> <ul style="list-style-type: none"> Tack-free Time: 4 hours Tack-free to Touch: 3 hours Final Cure: 4 to 7 days <p>Tear Strength, ASTM D624: 55 lb./in. (9.63 N/mm)</p> <p>Shore A Hardness, ASTM D2240: 40±5 @ 21 days</p> <p>Tensile Properties, ASTM D412:</p> <ul style="list-style-type: none"> Tensile Stress @ 21 days: 175 psi (1.21 MPa) Elongation at Break: 550% <p>Chemical Resistance: Good resistance to water, diluted acids, and diluted alkalines</p> <p>*Results may differ based upon statistical variations depending upon mixing methods and equipment, temperature, application methods, test methods, actual site conditions and curing conditions.</p>
SYSTEM INFORMATION	
APPLICATION INSTRUCTIONS	<p>SURFACE PREPARATION</p> <p>Clean all surfaces. Surfaces must be sound, clean, dry, frost-free, and free of oil and grease. Residues and any other foreign matter must be thoroughly removed. If rust is present on the penetration it must be wire brushed down to clean metal. A roughened surface will enhance the bond.</p> <p>APPLICATION METHOD / TOOLS</p> <p>The recommended application temperature for Sikaflex-1a is between 40°F (4°C) and 100°F (38°C). For cold weather applications, condition cartridges at approximately 70°F (21°C) and maintain that temperature until just prior to use.</p> <p>Do not apply over damp surfaces as this will affect adhesion and may lead to bubbling within the sealant.</p> <p>Whenever the Sikaflex-1a will come in contact with PVC membrane, solvent wipe the membrane and prime with Sarnacol 2170. This includes the walls of the pourable sealer pocket and the PVC membrane around the penetration below the pocket.</p> <p>When used as a pourable sealer pocket filler, dispense the Sikaflex-1a into the pocket and tool it with a paint stirrer to work out entrapped air. Fill</p>

PRIOR TO EACH USE OF ANY SIKA PRODUCT, THE USER MUST ALWAYS READ AND FOLLOW THE WARNINGS AND INSTRUCTIONS ON THE PRODUCT'S MOST CURRENT PRODUCT DATA SHEET, PRODUCT LABEL AND SAFETY DATA SHEET WHICH ARE AVAILABLE ONLINE AT USA.SARNAFIL.SIKA.COM OR BY CALLING SIKA SARNAFIL'S TECHNICAL SERVICE DEPARTMENT AT 800-451-2504. NOTHING CONTAINED IN ANY SIKA MATERIALS RELIEVES THE USER OF THE OBLIGATION TO READ AND FOLLOW THE WARNINGS AND INSTRUCTIONS FOR EACH SIKA PRODUCT AS SET FORTH IN THE CURRENT PRODUCT DATA SHEET, PRODUCT LABEL AND SAFETY DATA SHEET PRIOR TO PRODUCT USE.

the pocket completely without using any filler material. Mound the Sikaflex-1a sufficiently to prevent water from collecting and ponding in the pocket. There must be a minimum of 1 inch (25 mm) between the walls of the pocket and the penetration to allow the sealant to be worked into any gaps or voids.

Use with adequate ventilation. Sikaflex-1a is easy to apply with conventional caulking equipment. Avoid air entrapment when applying sealant. Do not tool with detergent or soap solutions. Avoid contact with alcohol and other solvent cleaners during cure.

Use open cartridges the same day.

COVERAGE

15 linear feet (4.6 m) of 3/8 in. (9.5 mm) bead per cartridge.

PRODUCT LIMITATIONS

LIMITATIONS

- Since system is moisture-cured, permit sufficient exposure to air.
- White color tends to yellow slightly when exposed to ultraviolet rays.
- Light colors can yellow if exposed to direct gas fired heating element.
- Do not use in contact with bituminous/asphaltic materials.
- Do not apply when a moisture vapor transmission condition exists from the substrate as this can cause bubbling within the sealant.
- Do not tool with detergent or soap solutions.
- Avoid contact with alcohol and other solvent cleaners during cure.
- Avoid exposure to high levels of chlorine.

AVAILABILITY

From Authorized Applicators when used within Sarnafil or Sikaplan roofing and waterproofing systems.

MAINTENANCE

Standard maintenance of roofs should include regular inspection of flashings, drains and termination sealants as well as pourable sealer pockets at least twice a year and after each storm.

WARRANTY

Sika will replace defective Sikaflex-1a material provided the defect is identified by the Sika Authorized Applicator and acknowledged by Sika during the time of original installation and application. Maintenance of this sealant or of any other sealant after the original installation and application is not covered by the Sika Corporation Warrantees.

LEGAL NOTES

All information provided by Sika Corporation ("Sika") concerning Sika products, including but not limited to, any recommendations and advice relating to the application and use of Sika products, is given in good faith based on Sika's current experience and knowledge of its products when properly stored, handled and applied under normal conditions in accordance with Sika's instructions. In practice, the differences in materials, substrates, storage and handling conditions, actual site conditions and other factors outside of Sika's control are such that Sika assumes no liability for the provision of such information, advice, recommendations or instructions related to its products, nor shall any legal relationship be created by or arise from the provision of such information, advice, recommendations or instructions related to its products. The user of the Sika product(s) must test the product(s) for suitability for the intended application and purpose before proceeding with the full application of the product(s). Sika reserves the right to change the properties of its products without notice. All sales of Sika product(s) are subject to its current terms and conditions of sale which are available at usa.sarnafil.sika.com or by calling 800-451-2504.

Prior to each use of any Sika product, the user must always read and follow the warnings and instructions on the product's most current Product Data Sheet, product label and Safety Data Sheet which are available online at usa.sarnafil.sika.com or by calling Sika's Technical Service Department at 800-451-2504. Nothing contained in any Sika materials relieves the user of the obligation to read and follow the warnings and instruction for each Sika product as set forth in the current Product Data Sheet, product label and Safety Data Sheet prior to product use.

Sika warrants this product for one year from date of installation to be free from manufacturing defects and to meet the technical properties on the current Product Data Sheet if used as directed within shelf life. User determines suitability of product for intended use and assumes all risks. Buyer's sole remedy shall be limited to the purchase price or replacement of product exclusive of labor or cost of labor.

NO OTHER WARRANTIES EXPRESS OR IMPLIED SHALL APPLY INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SIKA SHALL NOT BE LIABLE UNDER ANY LEGAL THEORY FOR SPECIAL OR CONSEQUENTIAL DAMAGES. SIKA SHALL NOT BE RESPONSIBLE FOR THE USE OF THIS PRODUCT IN A MANNER TO INFRINGE ON ANY PATENT OR ANY OTHER INTELLECTUAL PROPERTY RIGHTS HELD BY OTHERS.

PRIOR TO EACH USE OF ANY SIKA PRODUCT, THE USER MUST ALWAYS READ AND FOLLOW THE WARNINGS AND INSTRUCTIONS ON THE PRODUCT'S MOST CURRENT PRODUCT DATA SHEET, PRODUCT LABEL AND SAFETY DATA SHEET WHICH ARE AVAILABLE ONLINE AT USA.SARNAFIL.SIKA.COM OR BY CALLING SIKA SARNAFIL'S TECHNICAL SERVICE DEPARTMENT AT 800-451-2504. NOTHING CONTAINED IN ANY SIKA MATERIALS RELIEVES THE USER OF THE OBLIGATION TO READ AND FOLLOW THE WARNINGS AND INSTRUCTIONS FOR EACH SIKA PRODUCT AS SET FORTH IN THE CURRENT PRODUCT DATA SHEET, PRODUCT LABEL AND SAFETY DATA SHEET PRIOR TO PRODUCT USE.



SIKA CORPORATION – ROOFING

UNITED STATES

100 Dan Road
Canton, MA 02021
800-451-2504 (p)
781-828-5365 (f)
usa.sarnafil.sika.com
webmaster.sarnafil@us.sika.com

SIKA CANADA INC.

6915 Davand Drive
Mississauga, ON L5T 1L5
905-795-3177 (p)
905-795-3192 (f)
can.sika.com
marketing.construction@ca.sika.com

PRIOR TO EACH USE OF ANY SIKA PRODUCT, THE USER MUST ALWAYS READ AND FOLLOW THE WARNINGS AND INSTRUCTIONS ON THE PRODUCT'S MOST CURRENT PRODUCT DATA SHEET, PRODUCT LABEL AND SAFETY DATA SHEET WHICH ARE AVAILABLE ONLINE AT USA.SARNAFIL.SIKA.COM OR BY CALLING SIKA SARNAFIL'S TECHNICAL SERVICE DEPARTMENT AT 800-451-2504. NOTHING CONTAINED IN ANY SIKA MATERIALS RELIEVES THE USER OF THE OBLIGATION TO READ AND FOLLOW THE WARNINGS AND INSTRUCTIONS FOR EACH SIKA PRODUCT AS SET FORTH IN THE CURRENT PRODUCT DATA SHEET, PRODUCT LABEL AND SAFETY DATA SHEET PRIOR TO PRODUCT USE.



Sika Sarnafil

World Class Roofing and Waterproofing

20 Year System Warranty

Warranty Serial No.: SAMPLE

SIKA SARNAFIL ROOFING WARRANTY FOR COMMERCIAL BUILDING

Building Owner: SAMPLE
Building Name: SAMPLE
Building Address: SAMPLE
Applicator: SAMPLE
Date of Substantial Completion: SAMPLE
Building/Area Name: SAMPLE
Used As: SAMPLE

Date of Inspection: SAMPLE

Telephone: SAMPLE
By: SAMPLE

Area Warranted: SAMPLE sq. ft.

Sika Sarnafil ("Sika Sarnafil"), warrants to the owner of the building described above ("Owner"), that subject to the terms, conditions, and limitations stated herein, Sika Sarnafil will repair leaks originating from the Sarnafil Roofing Membrane, Sarnatherm Insulation or Sika Sarnafil Roofing Accessories installed according to Sika Sarnafil's Technical Instructions by a Sika Sarnafil Authorized Roofing Applicator for a period of 20 (twenty) years commencing with the date of substantial completion of the installation of the Roofing Membrane.

TERMS, CONDITIONS, LIMITATIONS

- Owner shall notify Sika Sarnafil on the first business day immediately following the discovery of each leak in the Roofing System and confirm in writing within one week.
- If on Sika Sarnafil's inspection, Sika Sarnafil determines that the leak is caused by a defect in Sarnafil's Roofing Membrane, Sarnatherm Insulation or Accessory provided by Sika Sarnafil to the Applicator for this building or from a defect in the Sika Sarnafil Authorized Applicator's workmanship applied to that Sarnafil Membrane, except as provided in the following paragraph three (3) Owner's remedies and Sika Sarnafil's liability shall be limited to Sika Sarnafil's repair of the Roofing Membrane, Sarnatherm Insulation or Accessory.
- This warranty does not apply and may be null and void if any of the following occur:
 - The Roofing Membrane, Sarnatherm Insulation or Accessory is damaged by a natural disaster including, but not limited to, earthquake, lightning, hail, windstorm in excess of sixty mph, hurricane, or tornado, or:
 - The Roofing Membrane, Sarnatherm Insulation or Accessory is damaged by any act of negligence, accident, or misuse including, but not limited to, vandalism, falling objects, civil disobedience, or act of war, or:
 - A deficient pre-existing condition or equipment is causing water entry, or
 - Metal work or other accessories or equipment is used in the Roofing and causes leaks, or:
 - There are any alterations or repairs made on or through the completed roof, or objects such as but not limited to fixtures, equipment, or structures are placed on or attached to the completed roof without first obtaining written authorization from Sika Sarnafil, or:
 - Failure by the Owner or his lessee to use reasonable care in maintaining the roof as described in the Owner's Guide provided with this warranty, including that of sealants and caulking, or:
 - Loss of integrity of the building envelope and, or structure including, but not limited to partial or complete loss of roof decking, wall siding, windows, doors or other envelope components or from roof damage by wind blown objects, or:
 - Condensation accumulates in the roof assembly due to incorrect design or due to a reduction in the vapor barrier effectiveness, or:
 - A significant change in the use of the building by the Owner or his lessee expected by Sika Sarnafil to affect the Roofing Membrane as originally installed, or:
 - The Roofing Membrane is damaged by contaminates and/or spills, or:
 - Deficient design applied to the Roofing Membrane such as membrane contact with incompatible materials and/or substrates, or:
 - The Owner fails to comply with every term and condition stated herein.
- During the period of this warranty, Sika Sarnafil, its agents and employees, shall have free access to the roof during regular business hours.
- Should the Roofing Membrane be concealed, the cost of exposure of the Roofing Membrane for purposes of Sika Sarnafil's investigation and/or repair, such as removal and replacement of any paving or overburden, shall be the Owner's responsibility.
- Sika Sarnafil shall have no obligation under this warranty until all invoices for materials, installation, and services have been paid for in full
- Sika Sarnafil's failure at any time to enforce any of the terms or conditions stated herein shall not be construed to be a waiver of such provision.
- This warranty is extended solely and exclusively to the owner of the Building at the time the Sarnafil Roofing System is installed. It does not extend nor is it otherwise assignable or transferable to any other party unless approved in advance and in writing by Sika Sarnafil and the costs to process the transfer and to inspect and repair the Sika Sarnafil Roofing System, if necessary, are paid for by the original owner.
- The Owner and Sika Sarnafil hereby agree that any and all claims (contractual, statutory, common law or otherwise), disputes, or suits that in any way, directly or indirectly, arise out of or relate to this Warranty, or the alleged breach hereof, or to any contracts between the owner and Sika Sarnafil, or the alleged breach thereof, or to the design, manufacture, sale, distribution, installation, and/or inspection of the Sika Sarnafil Roofing System, shall first be submitted to non-binding mediation before a neutral mediator jointly selected by the parties or, in the absence of agreement, as designated by the American Arbitration Association. In the absence of resolution by mediation, all such claims shall be settled by arbitration by the American Arbitration Association in accordance with the Construction Industry Arbitration Rules. Any such mediation and/or arbitration shall take place in Boston, Massachusetts. This Warranty, and any claims, disputes or suits between the parties hereto shall be governed by, and construed and enforced in accordance with, the laws of the Commonwealth of Massachusetts.
- THIS WARRANTY IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. THE REMEDIES STATED HEREIN ARE EXCLUSIVE REMEDIES AND SIKA SARNAFIL SHALL NOT BE RESPONSIBLE OR LIABLE FOR ANY INDIRECT, CONSEQUENTIAL OR INCIDENTAL DAMAGES INCLUDING THE PRESENCE OF MOLDS, FUNGI, BACTERIA, SPORES, MYCOTOXINS OR THE LIKE OR FURTHER LOSS OF ANY KIND WHATSOEVER, INCLUDING BUT NOT LIMITED TO, DAMAGE TO THE BUILDING ON WHICH THE COMPONENTS OF THE ROOF ARE SITUATED, DAMAGE TO THE CONTENTS THEREOF, LOSS OF USE OF THE BUILDING OR ANY COMPONENT PART THEREOF, OR DAMAGE TO ANY OTHER PROPERTY OR PERSONS.**

NO REPRESENTATIVE OF SIKA SARNAFIL HAS AUTHORITY TO MAKE ANY REPRESENTATIONS OR PROMISES EXCEPT AS STATED HEREIN.

This Warranty Is Effective From: SAMPLE through: SAMPLE

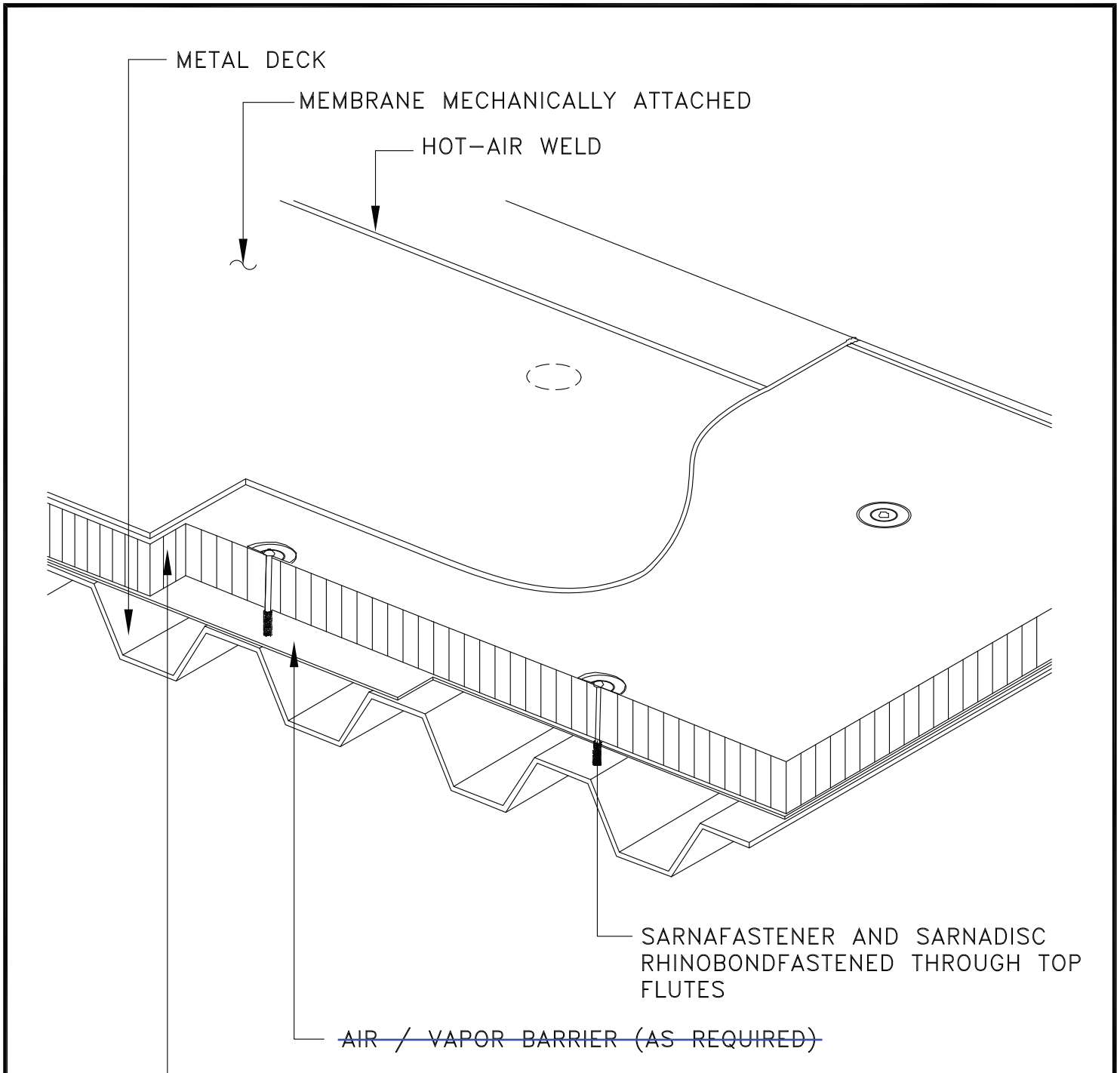
 SAMPLE
Authorized Signature(1):

 SAMPLE
Date:

 SAMPLE
Authorized Signature(2):

 SAMPLE
Date:





1/4-inch DensDeck Roof Board, 2-inch Sarnatherm Insulation, 2-inch Sarnatherm Insulation

~~NOTE: VAPOR BARRIER SHALL BE SEALED AT OVERLAPS AND PENETRATIONS.~~



Sarnafil
781-828-5400 sikacorp.com

JOB NAME:

SCALE: N.T.S.

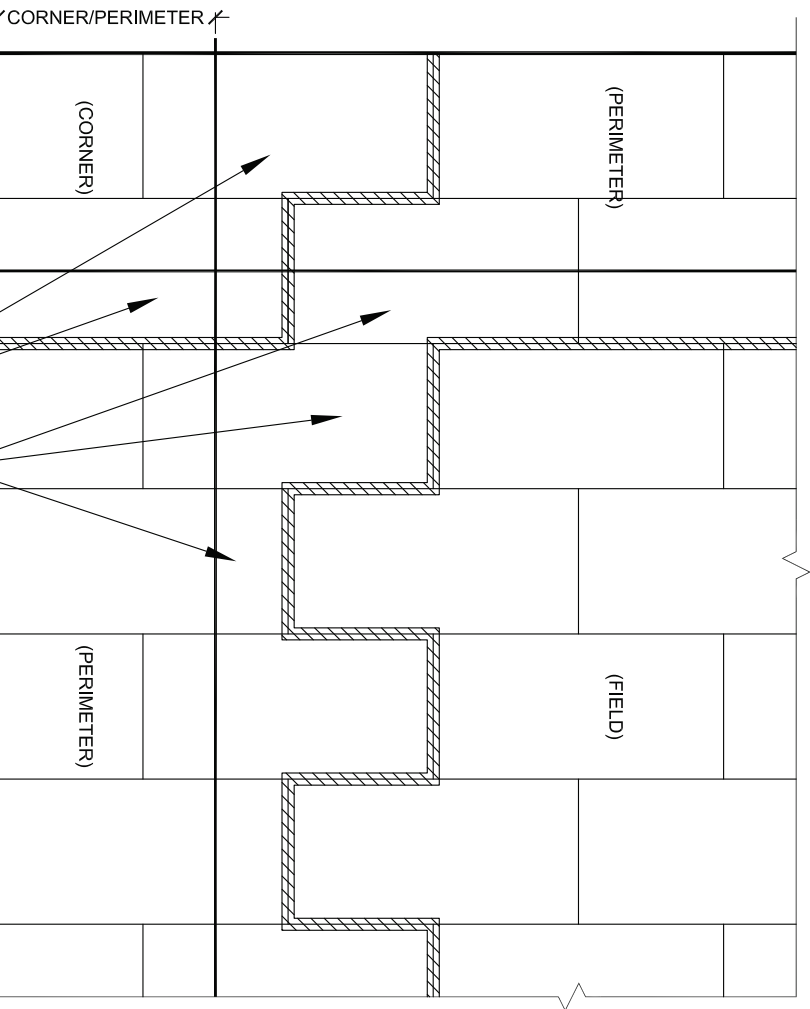
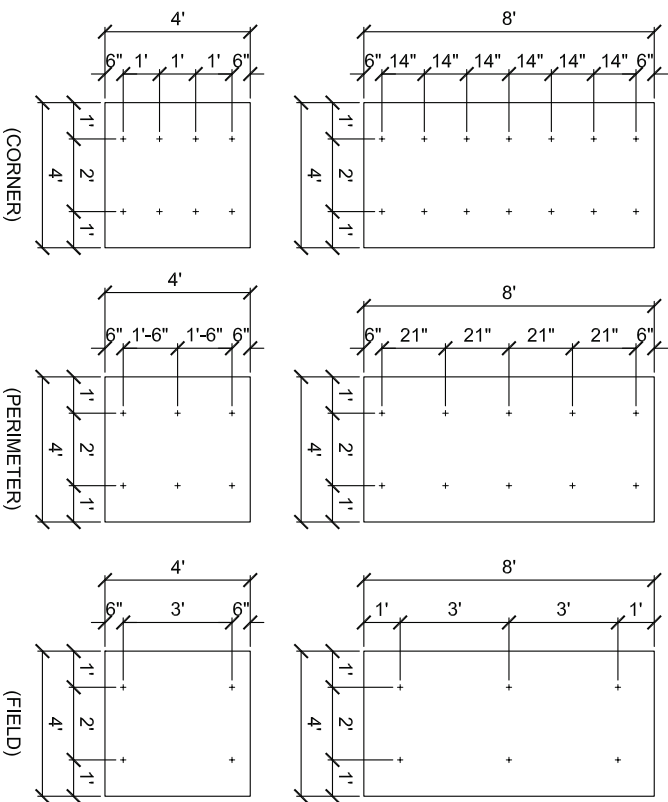
DATE: 4/10

FILE NO.: RB-ISO

DRW. NO.:

AS A MEMBRANE MANUFACTURER, SIKA SARNAFIL, A DIVISION OF SIKA CORPORATION REVIEWS DETAILS PREPARED BY THE CONSULTANT, ARCHITECT AND/OR ENGINEER FOR A PROJECT SOLELY FOR THE PURPOSE OF DETERMINING IF A SIKA SARNAFIL WARRANTY MAY ISSUE FOR THE PROJECT. THIS REVIEW IS NOT TO BE CONSTRUED AS APPROVAL OF DETAILS BY SIKA SARNAFIL AND IS NOT BEING CONDUCTED IN LIEU OF SOUND ENGINEERING AND ARCHITECTURAL PRACTICES AND JUDGMENT AND SHOULD NOT BE RELIED UPON FOR THAT PURPOSE. SIKA CORPORATION ASSUMES NO LIABILITY WITH RESPECT TO THE DESIGN OF THE ROOFING OR WATERPROOFING SYSTEM, THE ARCHITECT, CONSULTANT AND/OR ENGINEER OR DESIGN PROFESSIONAL FOR A PARTICULAR PROJECT BEARS THE SOLE RESPONSIBILITY FOR THE DESIGN OF THE ROOFING OR WATERPROOFING SYSTEM, FOR THE PREPARATION AND APPROVAL OF THE DETAILS AND SHOP DRAWINGS, AND FOR DETERMINING THEIR SUITABILITY FOR A PARTICULAR PROJECT OR APPLICATION. WHILE SIKA SARNAFIL PROVIDES GENERAL INSTRUCTIONS FOR THE INSTALLATION OF ITS MEMBRANE AS WELL AS TRAINING FOR SIKA SARNAFIL AUTHORIZED APPLICATORS, THE MEANS AND METHODS USED BY THE CONTRACTOR FOR SURFACE PREPARATION AS WELL AS THE MEANS AND METHODS EMPLOYED BY THE CONTRACTOR IN THE INSTALLATION OF THE SIKA SARNAFIL MEMBRANE ARE THE RESPONSIBILITY OF THE CONTRACTOR.

2' X 3' INSULATION FASTENING GRID



CORNER/PERIMETER

CORNER/PERIMETER

(CORNER)

(PERIMETER)

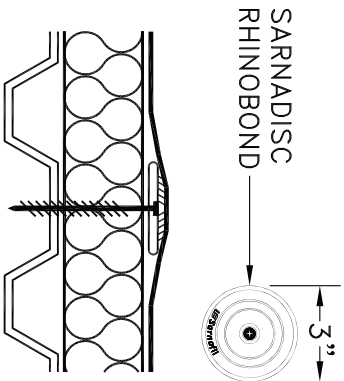
(FIELD)

(PERIMETER)

- NOTES:**
- 1) PERIMETER AND CORNER AREAS ARE DETERMINED IN ACCORDANCE WITH ASCE-7:
 - 1/2 LEAST PLAN WIDTH OR
 - 1/6 ROOF HEIGHT BUT NOT LESS THAN 4 FT. - 2) BOARDS CROSSING PERIMETER/CORNER AREA INTO FIELD AREA SHALL BE ATTCHED ACCORDING TO RESPECTIVE PERIMETER/CORNER RATES.
 - 3) FOR HEIGHT > 60 FT, CORNER IS "L" SHAPED WITH DIMENSIONS (2 X "PERIMETER").

FASTEN ENTIRE BOARD AT PERIMETER RATE (TYP.)

FASTEN ENTIRE BOARD AT CORNER RATE (TYP.)



Sarnafil
781-828-5400
sikacorp.com

AS A SUPPLIER OF MATERIALS ONLY SIKA SARNAFIL DOES NOT ASSUME RESPONSIBILITY FOR ERRORS IN DESIGN, ENGINEERING, QUANTITIES, OR DIMENSIONS. THE ARCHITECT, CONTRACTORS, OR OWNERS REPRESENTATIVE MUST VERIFY ALL DIMENSIONS, SIZES, AND SUITABILITY OF DETAILS.

JOB NAME:

RHINO BOND
PERIMETER & CORNER ATTACHMENT
TO MEET FM GUIDELINES

SCALE:

N.T.S.

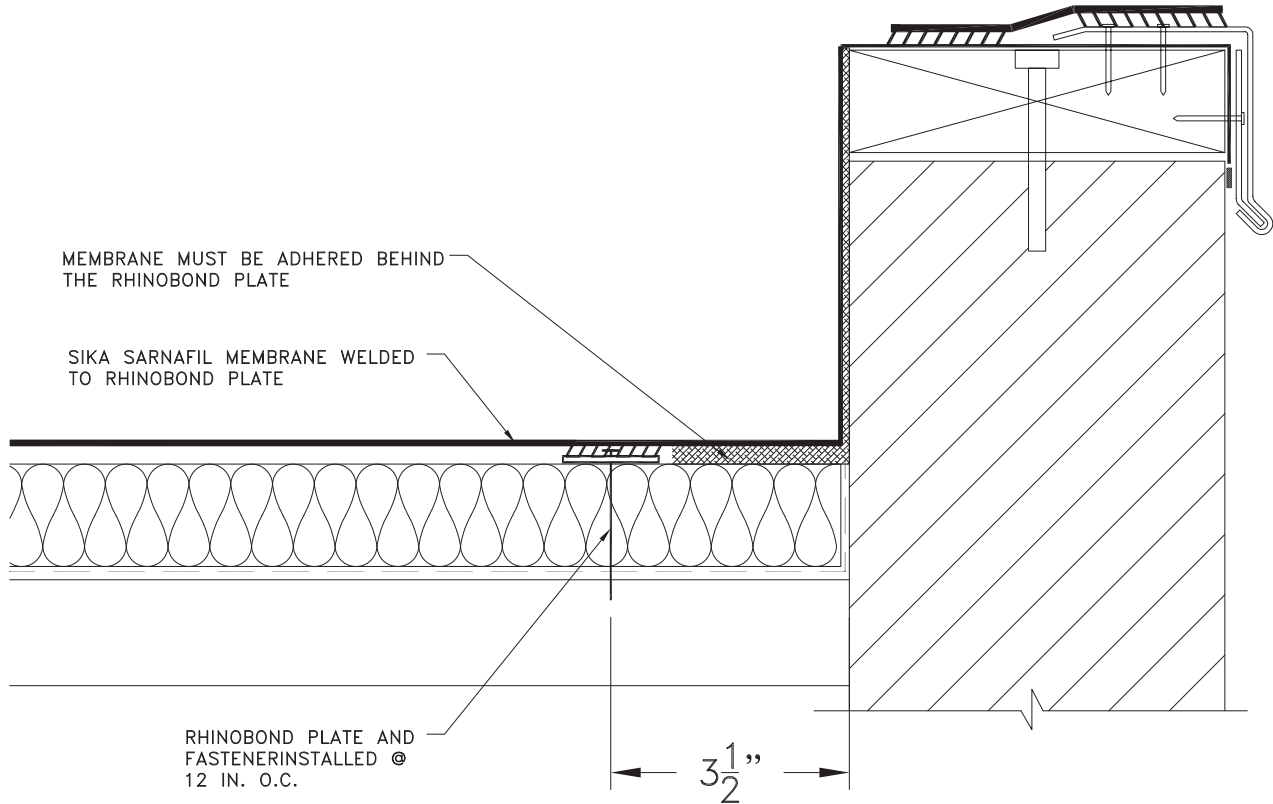
DATE:

8/08

FILE NO.:

RB-1B

DRW. NO.:



NOTE: DO NOT INSTALL RHINO BOND PLATES TIGHT AGAINST WALL. THE RHINO BOND WELDER IS 7 IN. WIDE AND MUST BE CENTERED OVER THE RHINO BOND PLATE FOR PROPER WELDING.

RHINO BOND ANGLE CHANGE SECUREMENT



Sarnafil
781-828-5400 sikacorp.com

JOB NAME:

RHINO BOND

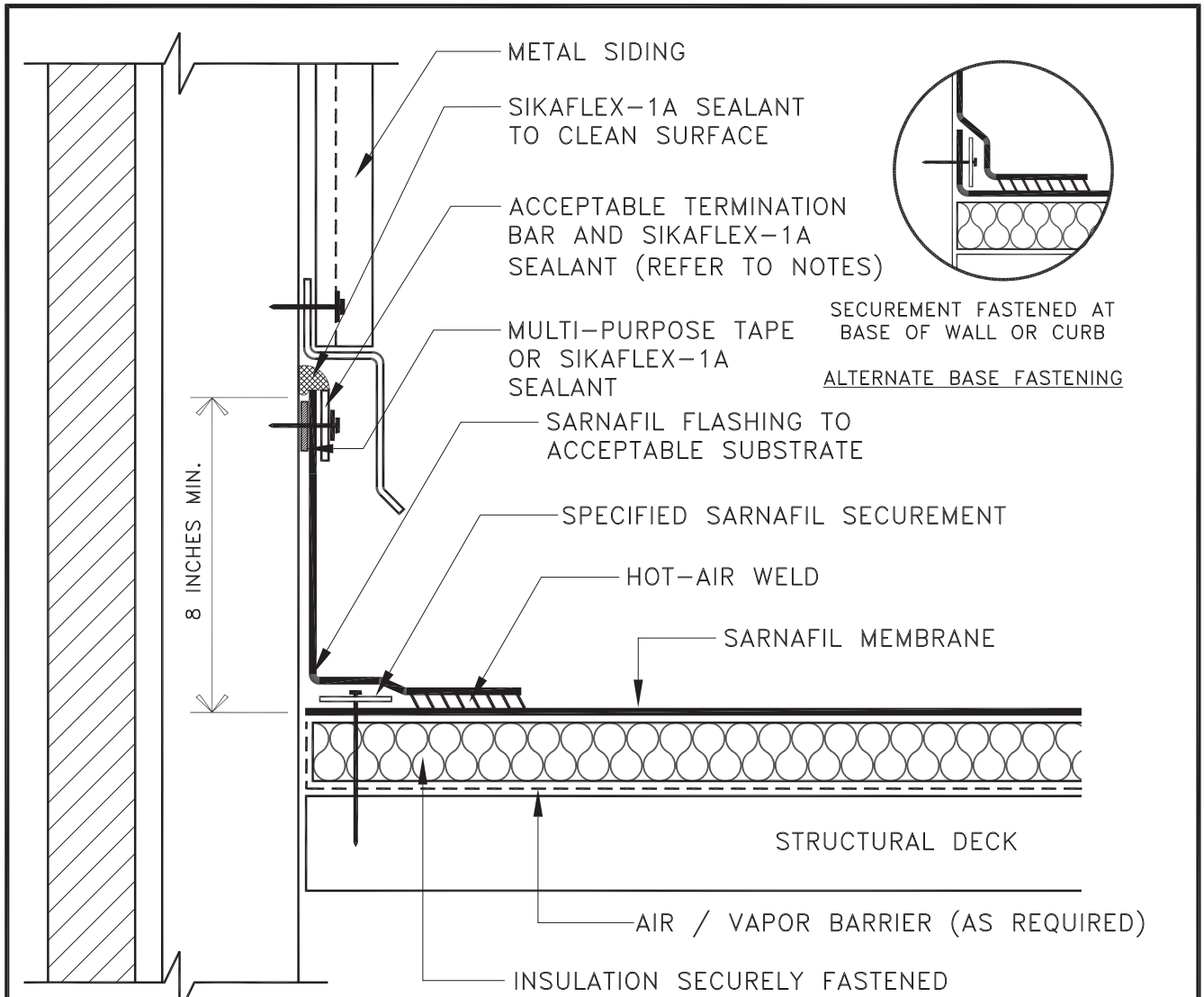
SCALE: N.T.S.

DATE: 6/12

FILE NO.: RB-2-1

DRW. NO.:

AS A MEMBRANE MANUFACTURER, SIKA SARNAFIL, A DIVISION OF SIKA CORPORATION REVIEWS DETAILS PREPARED BY THE CONSULTANT, ARCHITECT AND/OR ENGINEER FOR A PROJECT SOLELY FOR THE PURPOSE OF DETERMINING IF A SIKA SARNAFIL WARRANTY MAY ISSUE FOR THE PROJECT. THIS REVIEW IS NOT TO BE CONSTRUED AS APPROVAL OF DETAILS BY SIKA SARNAFIL AND IS NOT BEING CONDUCTED IN LIEU OF SOUND ENGINEERING AND ARCHITECTURAL PRACTICES AND JUDGMENT AND SHOULD NOT BE RELIED UPON FOR THAT PURPOSE. SIKA CORPORATION ASSUMES NO LIABILITY WITH RESPECT TO THE DESIGN OF THE ROOFING OR WATERPROOFING SYSTEM. THE ARCHITECT, CONSULTANT AND/OR ENGINEER OR DESIGN PROFESSIONAL FOR A PARTICULAR PROJECT BEARS THE SOLE RESPONSIBILITY FOR THE DESIGN OF THE ROOFING OR WATERPROOFING SYSTEM, FOR THE PREPARATION AND APPROVAL OF THE DETAILS AND SHOP DRAWINGS, AND FOR DETERMINING THEIR SUITABILITY FOR A PARTICULAR PROJECT OR APPLICATION. WHILE SIKA SARNAFIL PROVIDES GENERAL INSTRUCTIONS FOR THE INSTALLATION OF ITS MEMBRANE AS WELL AS TRAINING FOR SIKA SARNAFIL AUTHORIZED APPLICATORS, THE MEANS AND METHODS USED BY THE CONTRACTOR FOR SURFACE PREPARATION AS WELL AS THE MEANS AND METHODS EMPLOYED BY THE CONTRACTOR IN THE INSTALLATION OF THE SIKA SARNAFIL MEMBRANE ARE THE RESPONSIBILITY OF THE CONTRACTOR.



NOTES:

- 1) SEALANT IS A TWO STEP APPLICATION:
 - A) BEHIND TOP OF SARNAFIL FLASHING.
 - B) TOP OF TERMINATION BAR.
- 2) SEALANT SHALL BE APPLIED TO CLEAN ACCEPTABLE SURFACES.
- 3) SEALANT IS A MAINTENANCE ITEM. MAINTENANCE IS NOT COVERED UNDER SIKA SARNAFIL WARRANTY.
- 4) TERMINATION BAR SHALL BE SECURELY ANCHORED WITH GROMMETTED FASTENERS AND PROVIDE ADEQUATE COMPRESSION OF MEMBRANE FLASHING AND SEALANT.
- 5) VAPOR BARRIER SHALL BE SEALED AT EDGES.
- 6) APPROVED FOR SIKAPLAN AND SIKAPLAN NDL WARRANTIES.

FLASHING AT SIDING



Sarnafil
781-828-5400 sikacorp.com

JOB NAME:

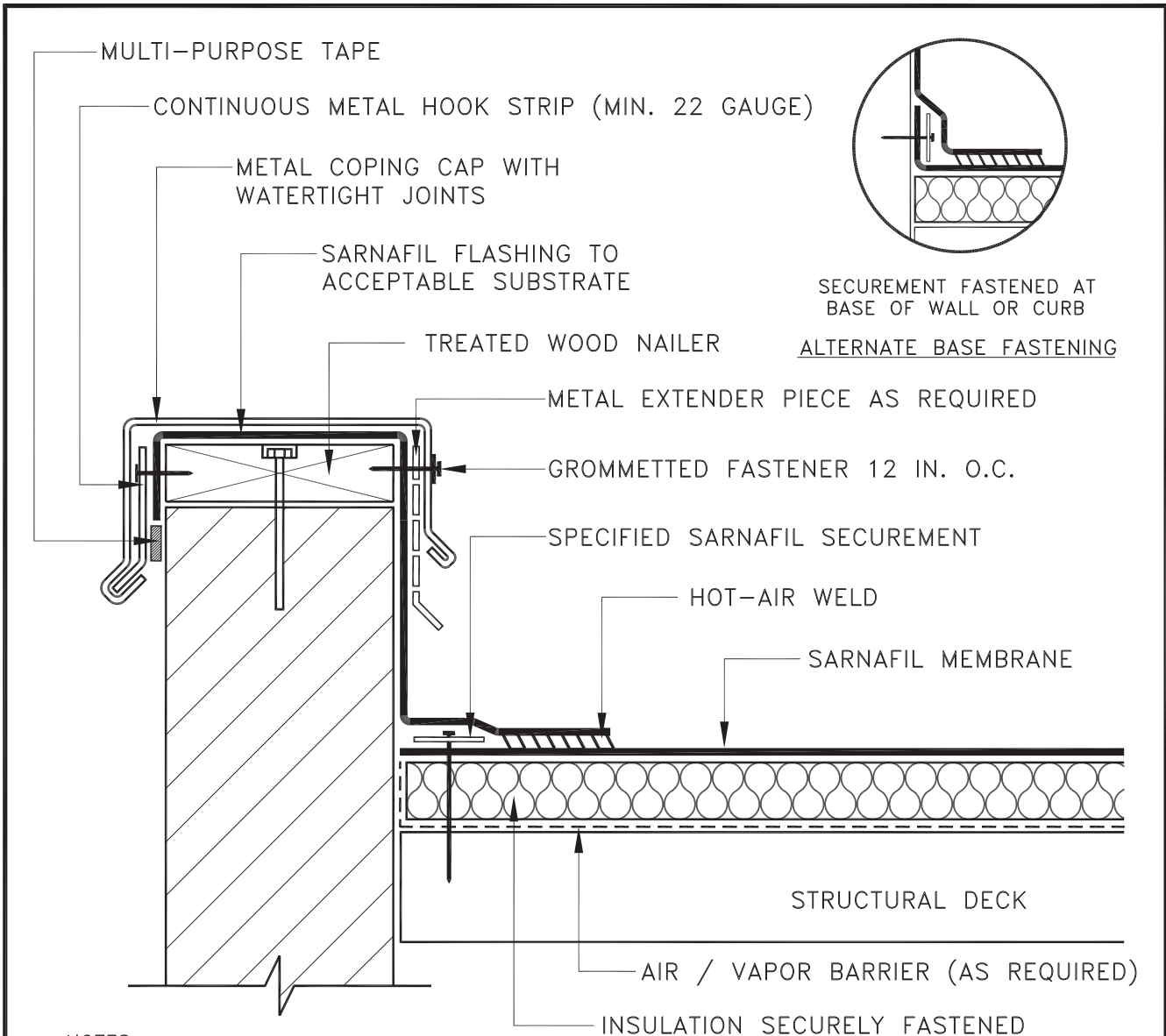
SCALE: N.T.S.

DATE: 1/11

FILE NO.: 3-4

DRW. NO.:

AS A MEMBRANE MANUFACTURER, SIKA SARNAFIL, A DIVISION OF SIKA CORPORATION REVIEWS DETAILS PREPARED BY THE CONSULTANT, ARCHITECT AND/OR ENGINEER FOR A PROJECT SOLELY FOR THE PURPOSE OF DETERMINING IF A SIKA SARNAFIL WARRANTY MAY ISSUE FOR THE PROJECT. THIS REVIEW IS NOT TO BE CONSTRUED AS APPROVAL OF DETAILS BY SIKA SARNAFIL AND IS NOT BEING CONDUCTED IN LIEU OF SOUND ENGINEERING AND ARCHITECTURAL PRACTICES AND JUDGMENT AND SHOULD NOT BE RELIED UPON FOR THAT PURPOSE. SIKA CORPORATION ASSUMES NO LIABILITY WITH RESPECT TO THE DESIGN OF THE ROOFING OR WATERPROOFING SYSTEM. THE ARCHITECT, CONSULTANT AND/OR ENGINEER OR DESIGN PROFESSIONAL FOR A PARTICULAR PROJECT BEARS THE SOLE RESPONSIBILITY FOR THE DESIGN OF THE ROOFING OR WATERPROOFING SYSTEM, FOR THE PREPARATION AND APPROVAL OF THE DETAILS AND SHOP DRAWINGS, AND FOR DETERMINING THEIR SUITABILITY FOR A PARTICULAR PROJECT OR APPLICATION. WHILE SIKA SARNAFIL PROVIDES GENERAL INSTRUCTIONS FOR THE INSTALLATION OF ITS MEMBRANE AS WELL AS TRAINING FOR SIKA SARNAFIL AUTHORIZED APPLICATORS, THE MEANS AND METHODS USED BY THE CONTRACTOR FOR SURFACE PREPARATION AS WELL AS THE MEANS AND METHODS EMPLOYED BY THE CONTRACTOR IN THE INSTALLATION OF THE SIKA SARNAFIL MEMBRANE ARE THE RESPONSIBILITY OF THE CONTRACTOR.



NOTES:

- 1) NAILERS SHALL BE SECURELY ANCHORED TO THE DECK TO RESIST A MINIMUM FORCE OF 300 POUNDS PER LINEAR FOOT. REFER TO FACTORY MUTUAL DATA SHEET 1-49.
- 2) METAL EXTENDER PIECE IS REQUIRED IF EXISTING COUNTERFLASHING IS CONTAMINATED AND OR COUNTERFLASHING FASCIA IS LESS THAN 4-INCHES WIDE.
- 3) VAPOR BARRIER SHALL BE SEALED AT EDGES.
- 4) APPROVED FOR SIKAPLAN AND SIKAPLAN NDL WARRANTIES.

PARAPET WALL WITH METAL COPING CAP



Sarnafil
781-828-5400 sikacorp.com

JOB NAME:

SCALE: N.T.S.

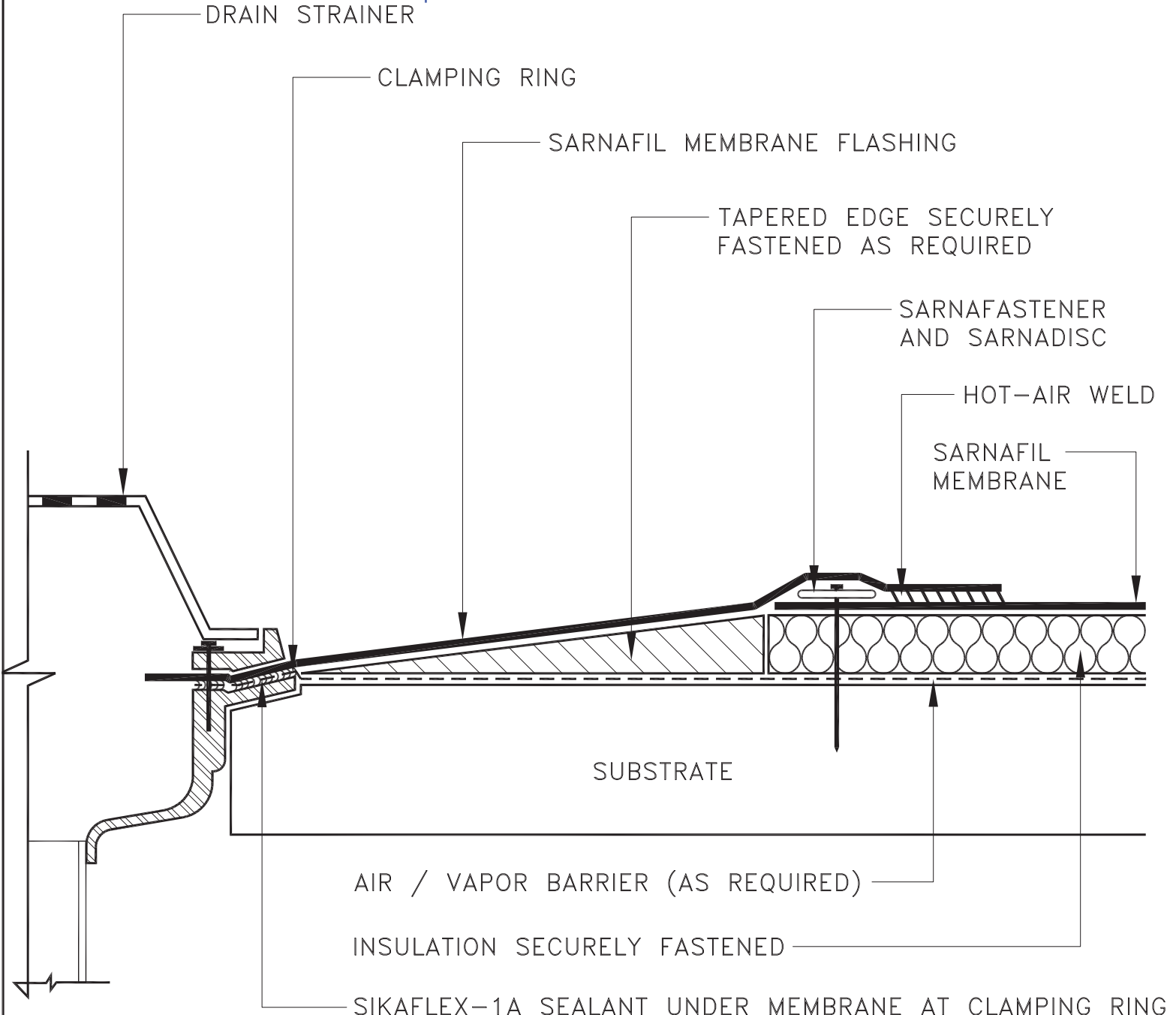
DATE: 1/11

FILE NO.: 2-3

DRW. NO.:

AS A MEMBRANE MANUFACTURER, SIKA SARNAFIL, A DIVISION OF SIKA CORPORATION REVIEWS DETAILS PREPARED BY THE CONSULTANT, ARCHITECT AND/OR ENGINEER FOR A PROJECT SOLELY FOR THE PURPOSE OF DETERMINING IF A SIKA SARNAFIL WARRANTY MAY ISSUE FOR THE PROJECT. THIS REVIEW IS NOT TO BE CONSTRUED AS APPROVAL OF DETAILS BY SIKA SARNAFIL AND IS NOT BEING CONDUCTED IN LIEU OF SOUND ENGINEERING AND ARCHITECTURAL PRACTICES AND JUDGMENT AND SHOULD NOT BE RELIED UPON FOR THAT PURPOSE. SIKA CORPORATION ASSUMES NO LIABILITY WITH RESPECT TO THE DESIGN OF THE ROOFING OR WATERPROOFING SYSTEM. THE ARCHITECT, CONSULTANT AND/OR ENGINEER OR DESIGN PROFESSIONAL FOR A PARTICULAR PROJECT BEARS THE SOLE RESPONSIBILITY FOR THE DESIGN OF THE ROOFING OR WATERPROOFING SYSTEM, FOR THE PREPARATION AND APPROVAL OF THE DETAILS AND SHOP DRAWINGS, AND FOR DETERMINING THEIR SUITABILITY FOR A PARTICULAR PROJECT OR APPLICATION. WHILE SIKA SARNAFIL PROVIDES GENERAL INSTRUCTIONS FOR THE INSTALLATION OF ITS MEMBRANE AS WELL AS TRAINING FOR SIKA SARNAFIL AUTHORIZED APPLICATORS, THE MEANS AND METHODS USED BY THE CONTRACTOR FOR THE INSTALLATION OF THE SARNAFIL MEMBRANE ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

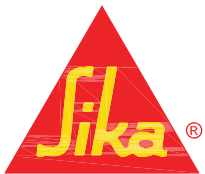
Note - metal coping cap by metal siding mfc; finish matches metal siding MP-1



NOTES:

- 1) EXISTING DRAIN BOWL, CLAMPING RING AND DRAIN ACCESSORIES ARE TO BE CLEANED FREE OF ALL CONTAMINATES.
- 2) SARNAFIL G459 MEMBRANE MUST BE USED IN AREAS OF ASPHALT CONTAMINATION.
- 3) VAPOR BARRIER SHALL BE SEALED AT EDGES.

CLAMPING RING DRAIN



Sarnafil
781-828-5400 sikacorp.com

JOB NAME:

XXX
XXX

SCALE: N.T.S.

DATE: 6/13

FILE NO.: 6-1

DRW. NO.: XXX

AS A MEMBRANE MANUFACTURER, SIKKA SARNAFIL, A DIVISION OF SIKKA CORPORATION, REVIEWS DETAILS PREPARED BY THE CONSULTANT, ARCHITECT AND/OR ENGINEER FOR A PROJECT SOLELY FOR THE PURPOSE OF DETERMINING IF A SIKKA SARNAFIL WARRANTY MAY ISSUE FOR THE PROJECT. THIS REVIEW IS NOT TO BE CONSTRUED AS APPROVAL OF DETAILS BY SIKKA SARNAFIL AND IS NOT BEING CONDUCTED IN LIEU OF SOUND ENGINEERING AND ARCHITECTURAL PRACTICES AND JUDGMENT AND SHOULD NOT BE RELIED UPON FOR THAT PURPOSE. SIKKA CORPORATION ASSUMES NO LIABILITY WITH RESPECT TO THE DESIGN OF THE ROOFING OR WATERPROOFING SYSTEM. THE ARCHITECT, CONSULTANT AND/OR ENGINEER OR DESIGN PROFESSIONAL FOR A PARTICULAR PROJECT BEARS THE SOLE RESPONSIBILITY FOR THE DESIGN OF THE ROOFING OR WATERPROOFING SYSTEM, FOR THE PREPARATION AND APPROVAL OF THE DETAILS AND SHOP DRAWINGS, AND FOR DETERMINING THEIR SUITABILITY FOR A PARTICULAR PROJECT OR APPLICATION. WHILE SIKKA SARNAFIL PROVIDES GENERAL INSTRUCTIONS FOR THE INSTALLATION OF ITS MEMBRANE AS WELL AS TRAINING FOR SIKKA SARNAFIL AUTHORIZED APPLICATORS, THE MEANS AND METHODS USED BY THE CONTRACTOR FOR SURFACE PREPARATION AS WELL AS THE MEANS AND METHODS EMPLOYED BY THE CONTRACTOR IN THE INSTALLATION OF THE SIKKA SARNAFIL MEMBRANE ARE THE RESPONSIBILITY OF THE CONTRACTOR.



LOWE ROOFING INC.
SINGLE PLY & METAL ROOFING SYSTEMS

Letter of Transmittal

To: Ainsworth-Benning
Construction, Inc.
345 Industrial Drive
Spearfish, SD 57783

Date: 1/19/15
Project: Sanford Lab | Homestake Visitor Center
Attn:
Re:

PO Box 432 • I-90 Exit 23
Whitewood, South Dakota 57793

Whitewood, SD 1-800-658-4543
605-269-2211
605-269-2212 fax

Rapid City, SD 605-343-7840
Gillette, WY 307-687-0303

www.lowerroofinginc.com
lri@lowerroofinginc.com

Shop Drawings _____ Copy Of Letter _____

Specifications _____ Change Order _____

Other: _____

Copies	Date	Description
		Section 07 60 00 Submittals

Notes:

Please call with any questions.

- No exceptions taken
- Make corrections as noted
- Rejected
- Revise and resubmit

Corrections or comments made on the shop drawings during this review do not relieve subcontractor or supplier from compliance with requirements of the drawings and specifications. This check is only for review of general conformance with the design concept of the project and general compliance with the information given in the contract documents. The contractor is responsible for confirming and processes and all techniques of construction; coordinating his work with that of all other trades; and performing his work in a safe and workmanlike manner.

DKa	Dangermond Keane Architecture, LLC Submittal Review
<i>This submittal was reviewed for conformance with the Contract Documents per the General Conditions and Section 013300 of the Specifications.</i>	
<input type="checkbox"/> NO EXCEPTION TAKEN <input checked="" type="checkbox"/> MAKE CORRECTIONS NOTED <input type="checkbox"/> REVISE and RESUBMIT <input type="checkbox"/> REJECTED <input type="checkbox"/> RECORD DOCUMENT	

Date: 01/22/2015 By: David Haught

AINSWORTH-BENNING CONSTRUCTION, INC.

ELECTRONIC SIGNATURE

Digitally signed by
com.apple.idms.appleid.prd.36347a56326743
362b77576b4a465442533439526c773d3d
DN:
cn=com.apple.idms.appleid.prd.36347a5632
6743362b77576b4a465442533439526c773d
3d
Date: 2015.02.08 11:46:09 -08'00'

TECHNICAL INFORMATION SHEET

UNA-CLAD Kynar 500®/Hylar 5000™ Pre-Finished Galvanized Steel Architectural Sheet & Coil

TIS #2015

Description:

Firestone UNA-CLAD PVDF Coated Galvanized Steel Architectural Sheet & Coil is AISI-G90 extra smooth, minimum spangle, tension leveled, hot-dipped galvanized steel that is primed and coated on one side with UNA-CLAD full strength Hylar 5000™/Kynar 500® (contains a minimum of 70% Hylar/Kynar polyvinylidene fluoride (PVDF) resins) premium fluoropolymer coating system of 1.0 (±0.1) mil total dry film thickness. This coating is AAMA 621-02 compliant. For additional protection a wash coat of 0.3 – 0.4 mil dry film thickness is applied to the reverse side. An optional strippable protection film is applied for protection during fabrication and installation. Firestone UNA-CLAD PVDF Coated Galvanized Steel Architectural Sheet & Coil is for general sheet metal use in building applications and can be utilized for fascia panels, soffits, gravel stops, copings, and roofing such as flat seam, standing seam, batten seam, and mansards.



Method of Application:

1. Install in accordance with recognized sheet metal practices.
2. UNA-CLAD can be cut, formed, and fastened using conventional hand or power tools.
3. For best results cutting tool edges should be kept sharp, clean, properly dressed, and closely aligned.
4. Fabrication and erection can be accomplished with strippable plastic film in place. Film should be removed from areas of concealed or joined pieces.

Storage:

- Firestone metal sheet and coil should be stored in a well ventilated, dry place where no moisture can contact them. Moisture (from rain, snow, condensation, etc.) trapped between layers of material may cause water stains or white rust, which can affect the service life of the material and will detract from its appearance.
- If outdoor storage cannot be avoided, protect the sheet and coil with a ventilated canvas or waterproof paper cover. Do not use plastic, which can cause condensation. Keep the material off the ground in an inclined position with an insulator such as wood.
- Maximum 2,000 lb of sheets per pallet.

Precautions:

- Protective film may degrade or become brittle with exposure to direct sunlight. Therefore, it must be removed immediately.
- The performance of this material in the field depends substantially on the integrity of the paint film and on the underlying coating of zinc being intact. Therefore, this UNA-CLAD product should not be used in areas of high abrasion or where it is subject to mechanical damage.
- Product is pre-finished material; care must be exercised during fabrication and erection to avoid surface damage.
- Firestone recommends a minimum bend radius of 2T. Anything less than a 2T bend radius can cause crazing to the material.
- Attention should be paid to good house-keeping practices.
- Tools must be clean and properly dressed.
- Avoid dragging sheets over surfaces which may scratch or mar the finish.
- For general sheet metal use in building applications.
- Do not cut with power saws or abrasive blades.

Manufacturing Location:

- Anoka, MN
- College Park, GA
- Las Vegas, NV
- Warren, MI

Distribution Locations:

- Corsicana, TX
- Mt. Joy, PA
- Plainfield, IN
- Salt Lake City, UT



Compliance:

Post Industrial Recycled Content: 7.3%
 Post Consumer Recycled Content: 23%
 Kynar 500/Hylar 5000 Paint Finish: AAMA 621-02

TECHNICAL INFORMATION SHEET

Product Data:

Color:	31 Standard Colors; See Current UNA-CLAD color chart	
Finish:	Extra Smooth Matte, Low to Medium Gloss	
Optional Finish:	Extra Low Gloss*, High Gloss* and Stucco Embossed (Mechanical Finish)*	
Wash Coat:	Polyester	
Gauge:	Weight	
	lb/Ft ² :	kg/M ² :
26 ga	0.775	3.78
24 ga	1.000	4.89
22 ga	1.406	6.87
	Dimensions	
	Slit Coil:	Sheet:
26 ga	4.0" (0.1 m) – 48" (1.2 m)*	48" (1.2 m) x 96" (2.4 m), 120" (3.1 m) & 144" (3.7 m)*
24 ga	4.0" (0.1 m) – 48" (1.2 m)*	48" (1.2 m) x 96" (2.4 m), 120" (3.1 m) & 144" (3.7 m)*
22 ga	4.0" (0.1 m) – 48" (1.2 m)*	48" (1.2 m) x 96" (2.4 m), 120" (3.1 m) & 144" (3.7 m)*

Note: *May not be available in all colors, gauges, or widths. Additional lead times may apply. Contact your Firestone Roof System Advisor for additional information.

Physical Properties of Fluoropolymer Coating:

	ASTM Standard	Value
Abrasion Resistance:	ASTM D 968, Method A	Coefficient of sand abrasion 65±10 Liters
Accelerated Weathering:	ASTM D 4587 Condition B or ASTM G 23 Method 1 or 2, type EH apparatus Hours: 5000	Chalk: Rating of 8 or better per ASTM D 4214 Color: ≤2ΔE color change per ASTM D 2244
	ASTM D 4587 Condition B or ASTM G 53, Method 1 or 2, type EH apparatus or ASTM G154 Hours: 5000	Chalk: Rating of 8 or better per ASTM D 4214 Color: ≤2ΔE color change per ASTM D 2244
	ASTM D 4587 Condition B or ASTM G 23 Method 1 or 2, type EH apparatus or ASTM G151 Hours: 2000	Chalk: Rating of 8 or better per ASTM D 4214 Color: ≤2ΔE color change per ASTM D 2244
	ASTM D 3361 Hours: 1000	Acceptable – No cracking, peeling, blistering, loss of adhesion of the protective coating, or corrosion of the base metal Chalk: Rating of 8 or better per ASTM D 4214, Method A (ASTM D 659) Color: <5ΔE Hunter Units per ASTM D 2244
Adhesion:	ASTM D 3359, Method B	No loss of adhesion
Chalk Resistance:	ASTM D 659	No Chalk; Rating 9-10
Chemical/Acid Pollution Resistance: Cyclic Salt Fog:	ASTM D 1308, Procedure 7.2 ASTM D 5894 Hours: 3000	Pass; No color change Scribe: Rating of 8, 1/32" creepage from scribe per ASTM D 1654, procedure A Field: Rating of 10, no blistering per ASTM D 1654, Procedure B
Formability:	ASTM D 522	No cracking, no loss of adhesion to the point of metal Rupture
Specular Gloss:	ASTM D 523	25-35 at 60 degrees
Hardness:	ASTM D 3363	HB to 2H
Humidity Resistance:	ASTM D 2247 Hours: 2000 ASTM D 1735 Hours: 1000	Rating of 10; No blistering No blistering, no loss of adhesion
Impact Resistance:	ASTM D 2794	Reverse & Direct Impact: No cracking & no loss of adhesion
Salt Spray Resistance:	ASTM B 117 Hours: 2000	Scribe: Rating of 7, 1/16" creepage Field: Rating of 10
Tunnel Test:	ASTM E84	Class A Coating
UV Exposure:	ASTM G 154 Hours: 2016	Chalk: Rating of 8 or better per ASTM D 4214, Method A (ASTM D 659) Color: <5ΔE Hunter Units per ASTM D 2244
Wet Adhesion	Water Immersion Hours: 1500	No loss of adhesion

TECHNICAL INFORMATION SHEET

Physical Properties of Base Material:

<i>Base Metal:</i>	AISI G90 – Hot dipped galvanized steel sheet, commercial weight, meeting ASTM A653/A653M-10 CS Type B for Zinc coated (galvanized) steel sheets & coil
<i>Minimum Yield:</i>	33 to 45 KSI (227 to 310 MPa)
<i>Coefficient of Thermal Expansion:</i>	06.7×10^{-6} in/in/F° (13.9 m/m.K x 10^{-6})
<i>Modules of Elasticity:</i>	29.0×10^6 x KSI (200 GPa)
<i>Specification:</i>	ASTM E111-04

Please Contact your Firestone Roof System Advisor at 1-800-428-4511 for further information.

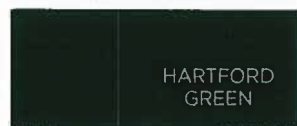
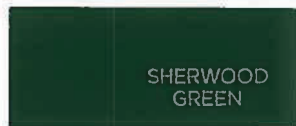
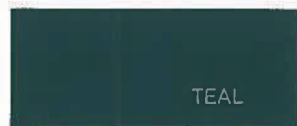
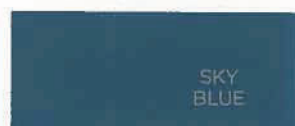
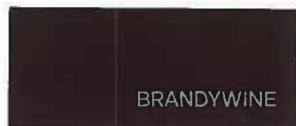
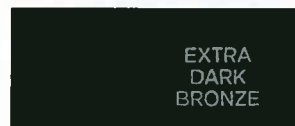
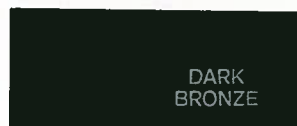
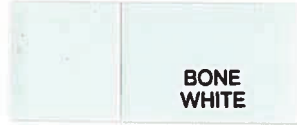
This sheet is meant to highlight Firestone products and specifications and is subject to change without notice. Firestone takes responsibility for furnishing quality materials which meet published Firestone product specifications. Neither Firestone nor its representatives practice architecture. Firestone offers no opinion on and expressly disclaims any responsibility for the soundness of any structure. Firestone accepts no liability for structural failure or resultant damages. Consult a competent structural engineer prior to installation if the structural soundness or structural ability to properly support a planned installation is in question. No Firestone representative is authorized to vary this disclaimer.

Firestone

BUILDING PRODUCTS

NOBODY COVERS YOU BETTER™

COLOR SELECTION GUIDE





METAL ROOFING SYSTEMS COLOR AVAILABILITY

PVDF FINISH	R	E	SRI	STEEL ¹			STEEL ²	ALUMINUM			
				26	24	22	24	.032	.040	.050	.063
Almond ◊	0.57	0.86	67	♦	♦	♦		♦	♦	♦	
Bone White ◊	0.72	0.84	87	♦	♦	♦	♦	♦	♦	♦	♦
Brandywine ◊	0.25	0.85	23	♦	♦	♦		♦			
Charcoal Gray ◊	0.29	0.84	28	♦	♦	♦	♦	♦			
Cityscape ◊	0.35	0.85	37	♦	♦	♦		♦	♦	♦	
Colonial Red ◊	0.31	0.84	31	♦	♦		♦	♦	♦		
Dark Bronze ◊	0.26	0.84	24	♦	♦	♦	♦	♦	♦	♦	♦
Dark Ivy ◊	0.25	0.83	22	♦	♦						
Extra Dark Bronze	0.06	0.87	0	♦	♦			♦	♦	♦	
Hartford Green	0.10	0.82	2	♦	♦		♦	♦	♦		
Hemlock Green ◊	0.32	0.86	33	♦	♦				♦	♦	
Mansard Brown ◊	0.30	0.85	30	♦	♦	♦	♦	♦	♦		
Matte Black ◊	0.25	0.86	24	♦	♦	♦		♦	♦	♦	
Medium Bronze ◊	0.30	0.87	31	♦	♦	♦	♦	♦	♦	♦	♦
Patina Green ◊	0.26	0.86	25	♦	♦				♦		
Regal Blue	0.16	0.86	12	♦	♦				♦		
Regal Red ◊	0.42	0.84	46	♦	♦			♦	♦	♦	
Sandstone ◊	0.51	0.85	58	♦	♦	♦	♦	♦	♦	♦	♦
Sherwood Green ◊	0.27	0.85	26	♦	♦		♦	♦			
Sierra Tan ◊	0.35	0.86	37	♦	♦	♦	♦	♦	♦	♦	
Sky Blue ◊	0.29	0.85	29	♦	♦				♦		
Slate Gray ◊	0.36	0.86	38	♦	♦		♦	♦	♦	♦	
Stone White ◊	0.57	0.86	67	♦	♦	♦	♦	♦	♦	♦	
Teal	0.13	0.85	7	♦	♦						
Terra Cotta ◊	0.34	0.87	36	♦	♦			♦	♦		
Tropical Patina ◊	0.28	0.85	27	♦	♦						
Award Blue ★	0.15	0.84	9	♦	♦						
Electric Blue ★	0.20	0.84	16	♦	♦				♦		
Champagne Metallic ◊★	0.37	0.83	38	♦	♦				♦		
Classic Copper ◊★	0.42	0.86	46	♦	♦				♦		
Silver Metallic ◊★	0.59	0.77	67	♦	♦			♦	♦	♦	

New 35-Year Warranty available for all finishes

LEGEND

Steel Types:

- ¹G-90 Galvanized Steel
- ²AZ-50 Galvalume® Steel

Cool Roofing Information:

- R** - Initial Solar Reflectance
- E** - Initial Emissivity
- SRI** - Solar Reflective Index

- ◊ - Energy Star® qualified products
- ◊ - CRRC -listed finish
- ★ - Premium Color

NOTES

- All paint finishes are high quality PVDF (Kynar 500® / Hylar 5000®) colors.
- Custom colors are available.
- Copper, zinc, stainless steel, anodized and mill finish aluminum are also available.
- Protective film must be removed immediately after installation.

PLANT LOCATIONS

- Minnesota
- Georgia
- Mississippi
- Pennsylvania
- Nevada
- Michigan

Galvalume® is a registered trademark of BIEC International, Inc.

Kynar 500® is a registered trademark of Arkema, Inc.

Hylar 5000® is a registered trademark of Solvay Solexis, Inc.

Contact your local sales representative for specific stocking information. Not all colors and gauges are stocked in all locations. Due to product improvements, changes and other factors, we reserve the right to change or delete information herein without prior notice.



Firestone Building Products Company, LLC
 250 W. 96th Street • Indianapolis, IN 46260
 800-428-4442
 www.firestonebpc.com



NOBODY COVERS YOU BETTER™

METAL PAINT FINISH LIMITED WARRANTY

Warranty No. **SAMPLE**FBPCO#: **SAMPLE**Sq Ft: **SAMPLE**Purchaser: **SAMPLE**Building Identification: **SAMPLE**Building Address: **SAMPLE**Warranty Period Of: **THIRTY-FIVE (35) Years Beginning on: SAMPLE**Roofing Contractor: **SAMPLE**

For the warranty period indicated above, Firestone Building Products Company ("Firestone"), a division of BFS Diversified Products, LLC, an Indiana limited liability company, warrants to the Purchaser that, subject to the Terms, Conditions and Limitations set forth below, the exterior paint finish ("Finish") on the UNA-CLAD brand coil-coated metal ("UNA-CLAD Metal") supplied by Firestone as part of the Firestone Project (FBPCO) Number listed above, will not exhibit the following exterior surface conditions, measured at the values listed below by Group: 1) Peeling, checking or cracking, except for crazing or cracking that may occur on formed edges or bends of the metal roofing panels and trim, 2) Chalking in excess of a numerical rating, Vertical and Non-Vertical, listed below, when measured in accordance with ASTM D 4214 "Standard Methods of Evaluating Degree of Chalking of Exterior Paints," for a term not to exceed thirty (30) years, or 3) Fade or change in color in excess of the Vertical rating listed below in color difference units, as measured on exposed surfaces which have been cleaned of external deposits and chalk and the corresponding values measured on the original or unexposed painted surfaces when tested in accordance with ASTM D 2244 3.7.1 and 3.8.4, "Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates," for a term not to exceed thirty (30) years.

TERMS, CONDITIONS AND LIMITATIONS

Group 1: Adhesion – 35 years, Chalk – 30 years at 8, Fade – 30 years at 5: Almond, Bone White, Cityscape, Colonial Red, Hartford Green, Hemlock Green, Mansard Brown, Medium Bronze, Patina Green, Regal Blue, Sandstone, Sherwood Green, Sierra Tan, Sky Blue, Slate Gray, Stone White, Terra Cotta, Tropical Patina, Champagne Metallic, Classic Copper, Silver Metallic

Group 2: Adhesion 35 years, Chalk – 30 years at 8, Fade – 30 years at 7: Charcoal Gray, Dark Bronze, Dark Ivy, Extra Dark Bronze, Teal

Group 3: Adhesion – 35 years, Chalk – 20 years at 8, Fade – 20 years at 9: Brandywine, Matte Black, Regal Red, Electric Blue, Award Blue

- Product Usage.** This Metal Paint Finish Limited Warranty (the "Limited Warranty") is limited exclusively to metal roofing panels and trim fabricated from UNA-CLAD Metal and installed in accordance with Firestone technical specifications.
- Notice.** In the event any peeling, checking, cracking, chalking, fading or excessive color change are observed by the Purchaser, the Purchaser must give notice in writing or by telephone to Firestone within thirty (30) days of any such observation. Written notice may be sent to Firestone at the street address or fax number shown on the reverse side of this Limited Warranty. By so notifying Firestone, the Purchaser authorizes Firestone or its designee to investigate the surface condition of the UNA-CLAD Metal.
- Investigation and Remedy.** If upon investigation, Firestone determines that the surface condition of the UNA-CLAD Metal is not excluded under the Terms, Conditions and Limitations set forth in this Limited Warranty, the Purchaser's sole and exclusive remedy and Firestone's total liability shall be limited to the refinishing of the UNA-CLAD Metal as determined by Firestone to require refinishing. Any and all refinishing work so performed by Firestone in compliance with this warranty shall be performed by using any standard finishing practices and materials. If the investigation reveals that the surface condition of the UNA-CLAD Metal trim is excluded under the Terms, Conditions and Limitations, the Owner shall be responsible for payment of the investigation costs. Failure by Purchaser to pay for these costs shall render this Limited Warranty null and void.
- Disputes.** Any dispute, controversy or claim between the Purchaser and Firestone concerning this Limited Warranty shall be settled by mediation. In the event that the Purchaser and Firestone do not resolve the dispute, controversy or claim in mediation, the Purchaser and Firestone agree that neither party will commence or prosecute any suit, proceeding, or claim other than in the courts of Hamilton County in the state of Indiana or the U.S. District Circuit, Southern District of Indiana, Indianapolis Division. Each party irrevocably consents to the jurisdiction and venue of the above-identified courts.
- Paint Finish Colors.** This warranty shall extend only to standard colors identified as such in Firestone published literature at the date of issuance of this Limited Warranty or as approved in writing by Firestone. Colors identified as "metallic" by Firestone are not warranted against fade or change in color.
- Payment Required.** Firestone shall have no obligation under this Limited Warranty unless and until Firestone has been paid in full for all materials, supplies, services, approved written change orders, warranty costs and other costs which are included in, or incidental to, the fabrication and installation of the UNA-CLAD Metal.
- Exclusions.** Firestone shall have no obligation under this Limited Warranty, or any other liability, now or in the future if peeling, checking, cracking, chalking, fading or excessive color change of the UNA-CLAD Metal is caused by: (a) Natural forces, disasters, or acts of God including, but not limited to wind, hurricanes, tornadoes, hail, wind-blown debris, lightning, earthquakes, volcanic activity, atomic radiation, insects or animals; (b) Any act(s), conduct or omission(s) by any person, or act(s) of war, terrorism or vandalism, which damage the UNA-CLAD Metal (c) Failure by the Purchaser to use reasonable care in maintaining the UNA-CLAD Metal, said maintenance to include, but not limited to those items listed in the "Firestone / UNA-CLAD Paint Finish Cleaning and Maintenance Guide" on the reverse side of this Limited Warranty; (d) Deterioration or failure of building components, including, but not limited to, the roof substrate, walls, mortar, HVAC units, etc.; (e) Condensation or moisture infiltration in, through, or around the walls, copings, rooftop, hardware or equipment, building structure or underlying or surrounding materials; (f) Any acid, oil, harmful chemical, chemical or physical reaction and the like which comes in contact with the UNA-CLAD Metal, including but not limited to chemical fumes, salt water spray or any installation within 1500 feet of a saltwater environment, surface temperatures that exceed 200 degrees Fahrenheit, airborne sand abrasion, metal shavings, standing water or the continuous spray of water (h) Alterations or repairs to the metal roofing panels and trim not approved in writing by Firestone; (i) Any failure caused by the attachment or mounting of any item or device to or near the metal roofing panels and trim, or by improper handling during fabrication and installation, including but not limited to, improper equipment fabrication, storage, transportation, erection, placement or failure to immediately remove strippable protective film coatings; (j) Failure to give proper notice as set forth in paragraph 1(a) above; (k) any punched or vented steel.
- Transfer.** This Limited Warranty shall be transferable subject to Firestone's inspection and written approval, and to Purchaser's payment of the current transfer fee set by Firestone.
- Term.** The term of this Limited Warranty shall be for the period set forth above and such term shall not be extended under any circumstances.
- Access.** During the term of this Limited Warranty, Firestone's designated representative or employees shall have free access to the UNA-CLAD Metal during regular business hours. In the event that access is limited due to security or other restrictions, Purchaser shall reimburse Firestone for all reasonable cost incurred during inspection and/or refinishing of the UNA-CLAD Metal that are due to delays associated with said restrictions. Owner shall be responsible for the removal and replacement of any overburdens, superstrata or overlays, either permanent or temporary, as necessary to expose the UNA-CLAD Metal for inspection and/or refinishing.
- Waiver.** Firestone's failure to enforce any of the terms or conditions stated herein shall not be construed as a waiver of such provision or of any other terms and conditions of this Limited Warranty.
- Governing Law.** This Limited Warranty shall be governed by and construed in accordance with the laws of the State of Indiana without regard to that State's rules on conflict of laws.
- Severability.** If any portion of this Limited Warranty is held by a court of competent jurisdiction to be invalid, void or unenforceable, the remaining provisions shall nevertheless continue in full force.

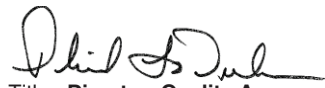
FIRESTONE DOES NOT WARRANT PRODUCTS INCORPORATED OR UTILIZED IN THIS INSTALLATION THAT WERE NOT FURNISHED BY FIRESTONE. FIRESTONE SPECIFICALLY DISCLAIMS LIABILITY UNDER ANY THEORY OF LAW ARISING OUT OF THE INSTALLATION OF, PERFORMANCE OF, OR DAMAGES SUSTAINED BY OR CAUSED BY, PRODUCTS NOT FURNISHED BY FIRESTONE.

THIS LIMITED WARRANTY SUPERSEDES AND IS IN LIEU OF ALL OTHER WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, AND FIRESTONE HEREBY DISCLAIMS ALL SUCH WARRANTIES. THIS LIMITED WARRANTY SHALL BE THE OWNER'S SOLE AND EXCLUSIVE REMEDY AGAINST FIRESTONE, AND FIRESTONE SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL, SPECIAL, INCIDENTAL OR OTHER DAMAGES INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS OR DAMAGES TO THE BUILDING OR ITS CONTENTS OR THE ROOF DECK. THIS LIMITED WARRANTY CANNOT BE AMENDED, ALTERED OR MODIFIED IN ANY WAY EXCEPT IN WRITING SIGNED BY AN AUTHORIZED OFFICER OF FIRESTONE. NO OTHER PERSON HAS ANY AUTHORITY TO BIND FIRESTONE WITH ANY REPRESENTATION OR WARRANTY WHETHER ORAL OR WRITTEN.

**SAMPLE – NOT A VALID
WARRANTY**

Firestone Building Products Company, LLC
By: **Phil LaDuke**

Authorized Signature::



Title: **Director, Quality Assurance**

FIRESTONE / UNA-CLAD PAINT FINISH CLEANING AND MAINTENANCE GUIDE

Although UNA-CLAD factory-applied finishes are extremely durable, a periodic cleaning to remove build-ups of resins and other residue is a good idea to extend coating life. A variety of methods for removal of surface deposits are available. Simple washing with plain water using hoses or pressure spray equipment is usually adequate. When heavy deposits of dirt or other contaminants dull surfaces, stronger methods may be needed.

Two precautions should be observed: (1) do not use wire brushes, abrasives, or similar cleaning tools which will mechanically abrade the coatings surface, and (2) certain cleaning agents listed below should be tested in an inconspicuous area before use on a large scale.

GROUP A: HOT OR COLD DETERGENT SOLUTIONS

A 5% solution in water of commonly used commercial and industrial detergents will not have any deleterious effect on a fluoropolymer surface. These solutions should be followed by an adequate rinse of water. Use a cloth or sponge for application.

GROUP B: SOLVENTS

Most organic solvents are flammable and/or toxic, and must be handled accordingly. Read the manufacturer's Material Safety Data Sheets (MSDS). Keep away from open flames, sparks and electrical motors. Use adequate ventilation, protective clothing, and goggles. Solvent that may be used to remove non-water soluble deposits such as tar, grease, oil, paint, and graffiti from fluoropolymer surfaces include:

- Ethanol(denatured alcohol)
- Isopropyl alcohol (rubbing alcohol)
- Methanol (wood alcohol) Note: methanol is toxic

The above alcohols have no permanent effect on fluoropolymer surfaces.

GROUP C: PETROLEUM SOLVENTS AND TURPENTINE

- VM&P naphtha
- Mineral spirits
- Kerosene
- Turpentine (wood or gum spirits)

The above solvents have no permanent effect on fluoropolymer surfaces.

GROUP D: AROMATIC AND CHLORINATED SOLVENTS

- Xylol (Xylene) Toluol (Toluene)
- Perchlorethylene (Perclene)
- Trichlorethylene (Triclene)

Note: Perchlorethylene and Trichlorethylene are toxic.

The above solvents should be used with caution on a fluoropolymer surface. Limit contact with solvent to five minutes maximum and test before using.

GROUP E: KETONES, ESTERS, LACQUER THINNER AND PAINT REMOVER

- Methyl isobutyl ketone (MIBK)
- Ethyl acetate (nail polish remover)
- Butyl acetate
- Lacquer thinner
- Paint remover (non-flammable)

The above solvents should be used cautiously on a fluoropolymer surface. Limit contact to fluoropolymer surface and test before using. Note: There are many formulations of paint remover on the market. It is possible that some will remove the fluoropolymer surface. Proceed very cautiously in use of paint remover. Metal supplier and coating manufacturer are not responsible for damage from unrestricted use.

GRAFFITI

Graffiti presents a special problem because of the many possible agents used, especially aerosol paint. It is best to try soap and water first. If needed, try the less active solvents from Groups B, C, and D. Next, try the stronger solvents in Group E. If none of these are satisfactory, it may be necessary to resort to touchup, repaint or replacement.

MILDEW

In areas subject to high humidity levels, dirt and spore deposits can permit mildew growth to occur. The following solution is recommended to remove mildew when necessary:

- 1/3 cup dry powdered laundry detergent (such as Tide®)
- 1 quart sodium hypochlorite 5% solution (such as Clorox®)
- 3 quarts water

RUST STAINS

Hydrochloric, citric acid, or muriatic acid, diluted with ten volumes of water, may assist in removing rust stains from fluoropolymer surfaces. Limit contact to five minutes. Oxalic acid solutions or acetic acid (vinegar) may be used for the same purpose. Flush with water. Caution: Acid solutions are corrosive and toxic. Flush all surfaces with copious amounts of water after use.

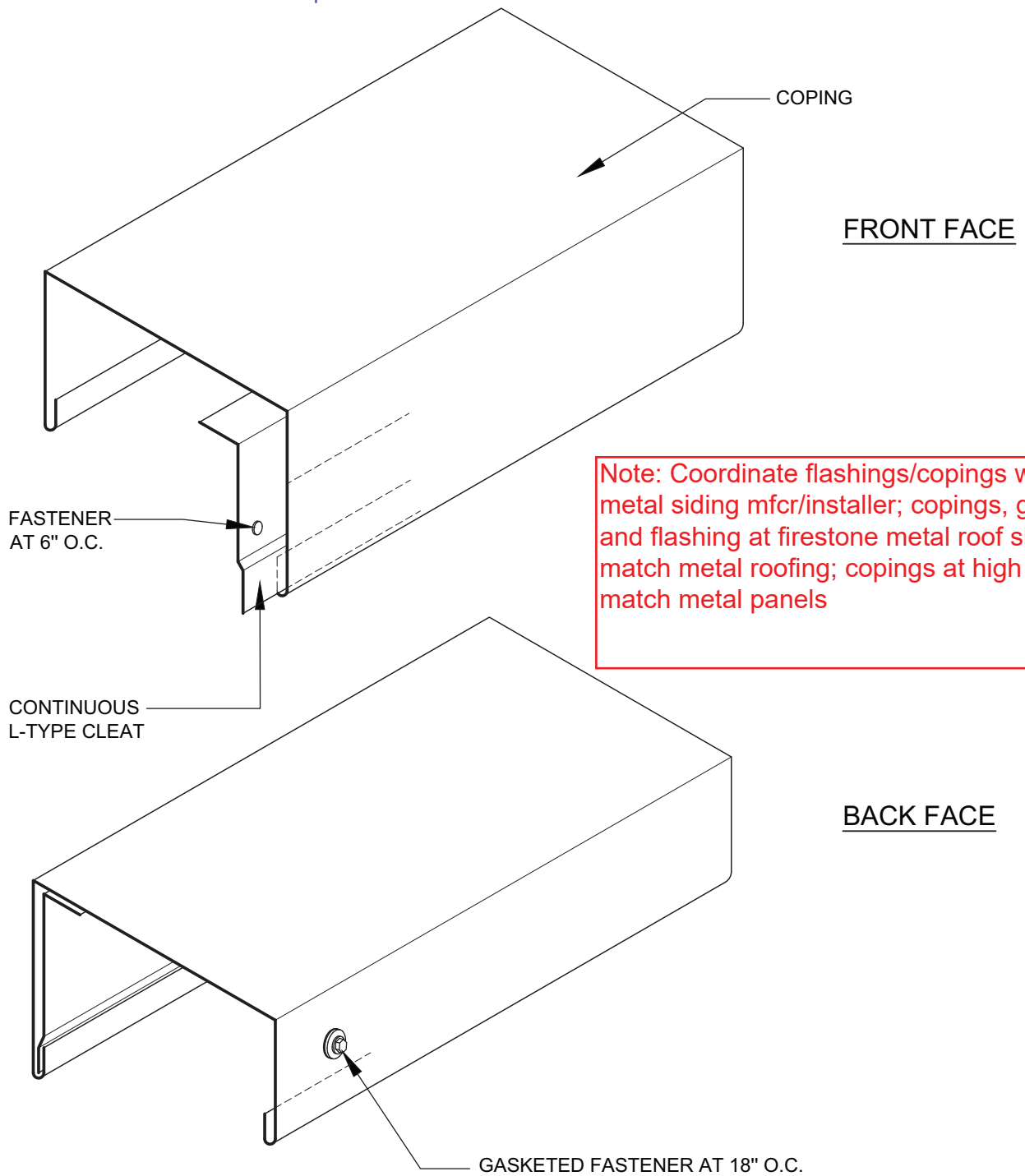
NOTE: Misuse or abuse of any of the cleaning agents listed above may result in the voiding of the Firestone Metal Paint Finish Limited Warranty. For more information contact Firestone Roofing Solutions at 1-800-428-4511.

Firestone

BUILDING PRODUCTS

NOBODY COVERS YOU BETTER.®

250 West 96th Street – Indianapolis, IN 46260
 1-800-428-4442 * 1-317-575-7000 * FAX 1-317-575-7100
 www.firestonebp.com



NOTES:

1. ROOF MEMBRANE AND ASSOCIATED FLASHINGS NOT SHOWN FOR CLARITY
2. NRCA HAS OBTAINED AN ANSI/SPRI ES-1 APPROVAL LISTING FOR THIS SPECIFIC SHOP-FABRICATED FLASHING COMPONENT. REFER TO THE INTRODUCTION OF THE CONSTRUCTION DETAILS CHAPTER FOR ADDITIONAL INFORMATION.
3. REFER TO THE INTRODUCTION OF THE CONSTRUCTION DETAILS CHAPTER FOR ADDITIONAL INFORMATION.

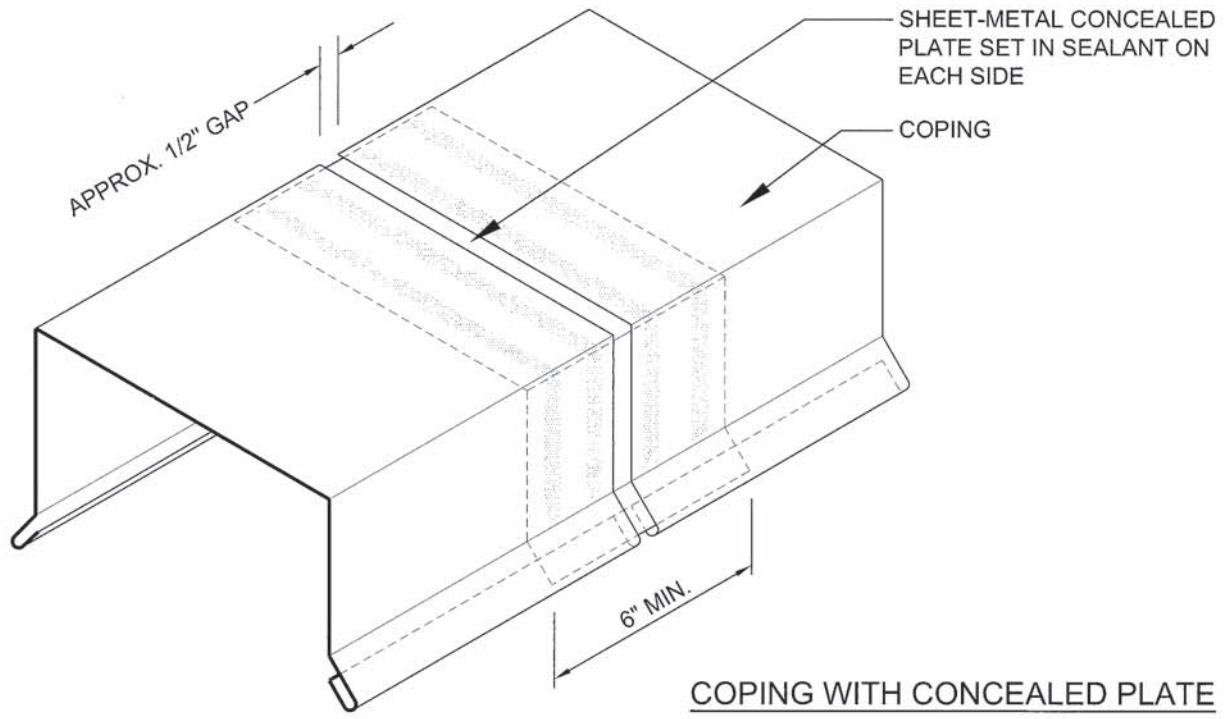


COPING WITH FLAT HEM AND FRONT FACE L-TYPE CLEAT

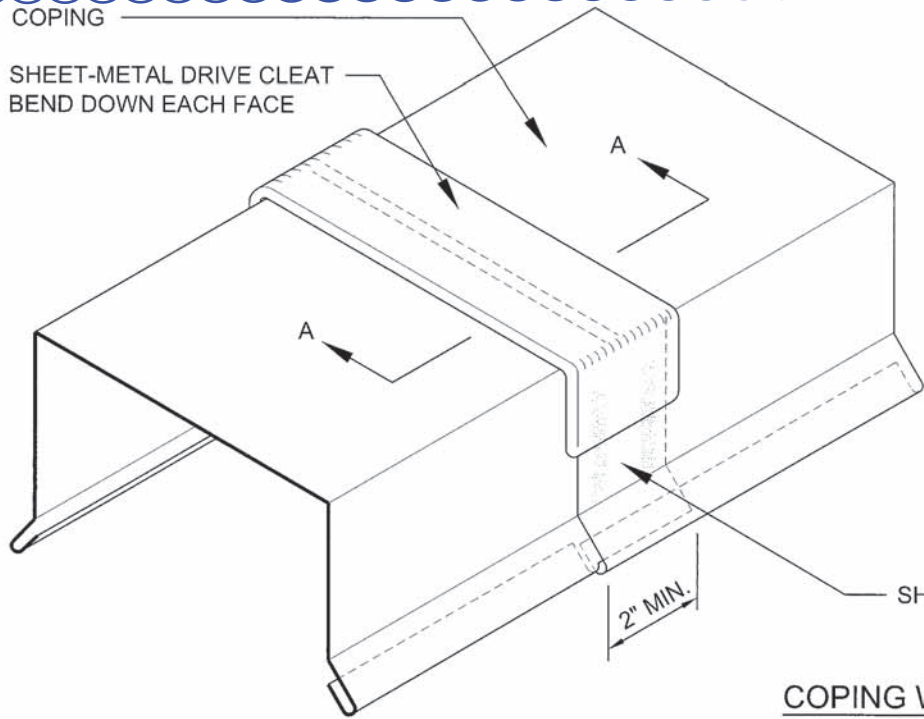
2014

NOT DRAWN TO SCALE

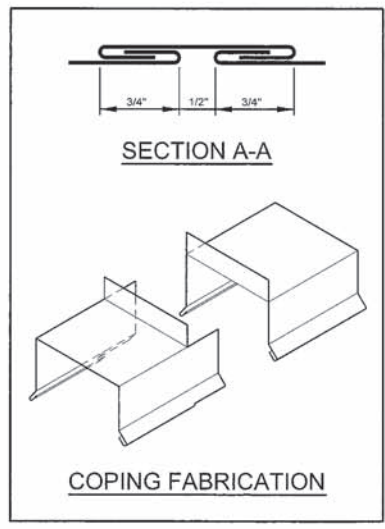
C-7



COPING WITH CONCEALED PLATE




COPING WITH DRIVE CLEAT



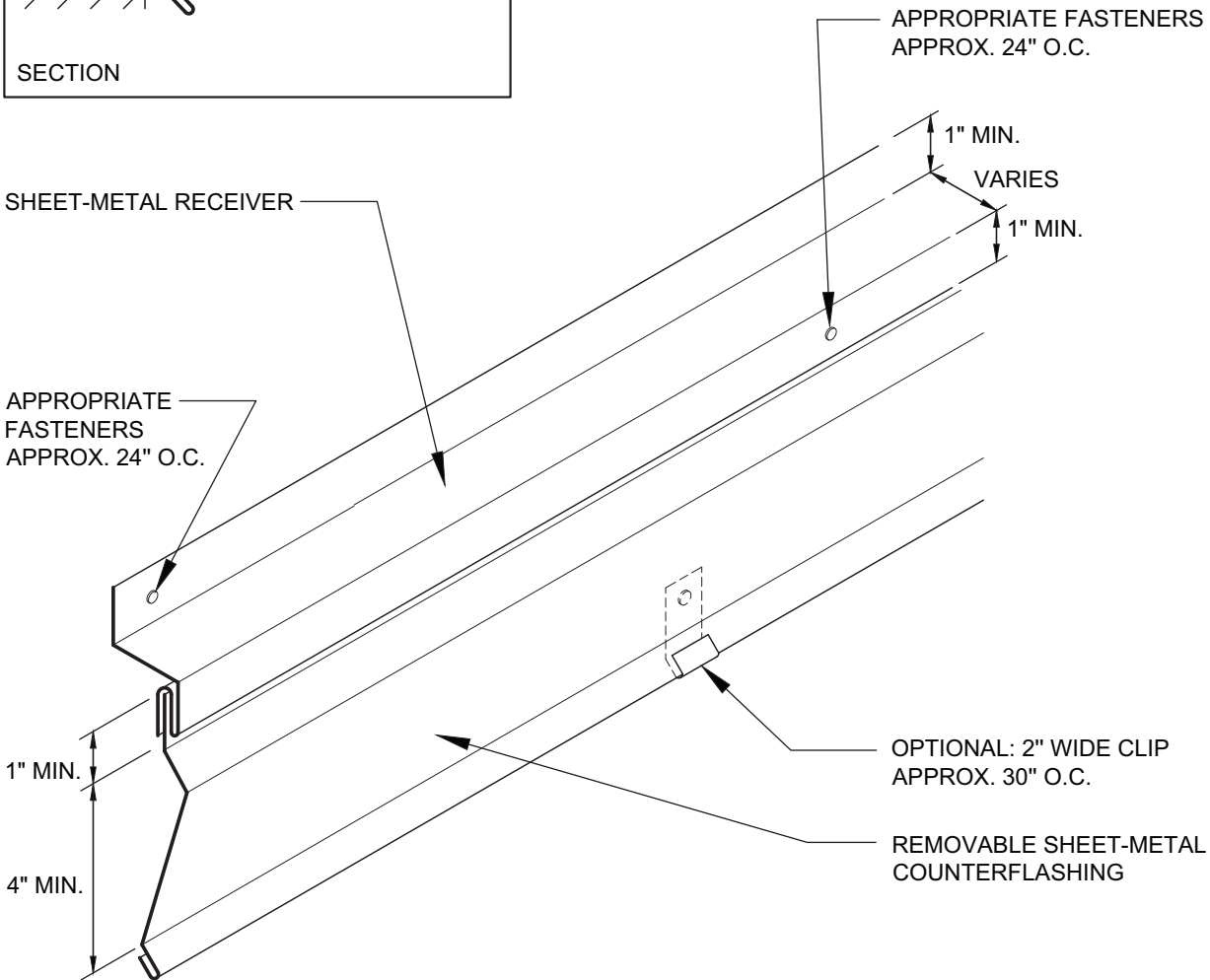
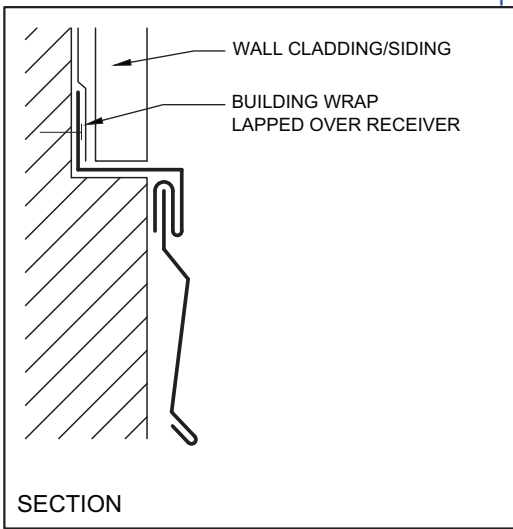
NOTES:

1. CONTINUOUS CLEAT NOT SHOWN FOR CLARITY.
2. COPING JOINERY IS SIMILAR ON BOTH SIDES.
3. REMOVAL OF UNDERLYING METAL HEM MAY HELP FACILITATE PROPER NESTING.
4. REFER TO SM-3 FOR SECUREMENT OPTIONS AND SM-4 FOR GUIDELINES ON MINIMUM GAUGES AND CLEAT/CLIP INFORMATION.
5. REFER TO SECTION 4.1--INFORMATION APPLICABLE TO ALL CONSTRUCTION DETAILS FOR ADDITIONAL INFORMATION.



COPING JOINERY OPTIONS

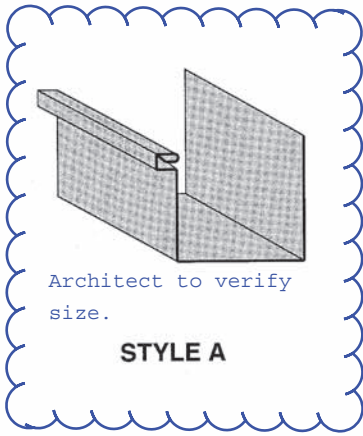
2010 NOT DRAWN TO SCALE **SM-6**



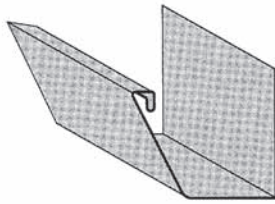
NOTES:

1. ROOF MEMBRANE, BASE FLASHINGS AND METAL JOINERY NOT SHOWN FOR CLARITY
2. REFER TO THE INTRODUCTION OF THE CONSTRUCTION DETAILS CHAPTER FOR ADDITIONAL INFORMATION.

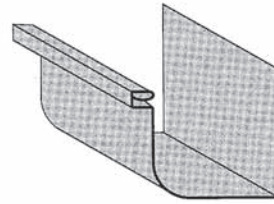
	<h2>BEHIND CLADDING RECEIVER AND COUNTERFLASHING</h2>
<p>2014</p>	<p>NOT DRAWN TO SCALE</p>
<p>CF-2</p>	



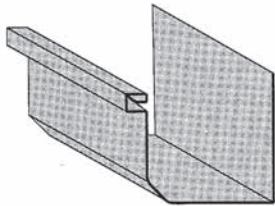
See Drawings



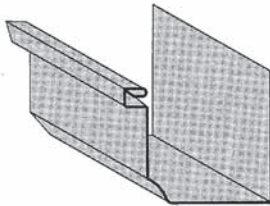
STYLE B



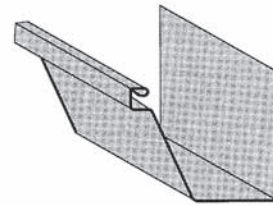
STYLE C



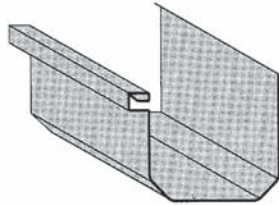
STYLE D



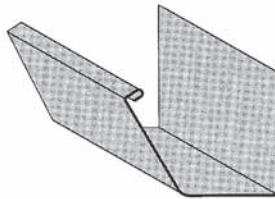
STYLE E



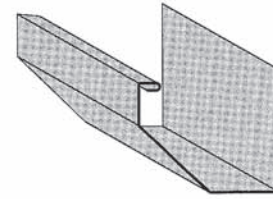
STYLE F



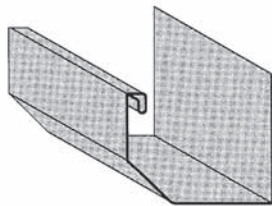
STYLE G



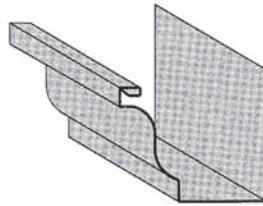
STYLE H



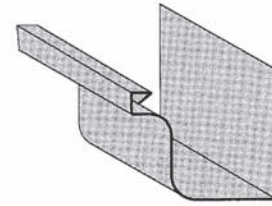
STYLE I



STYLE J



STYLE K



STYLE L

RECTANGULAR TYPE GUTTER STYLES

FIGURE 1-2

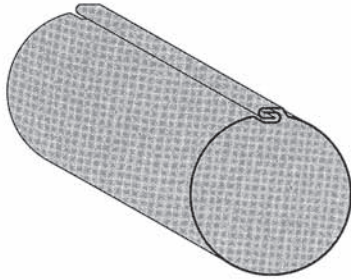


FIG 1-32A

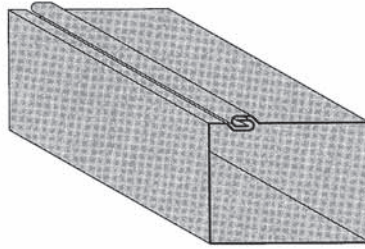


FIG 1-32B

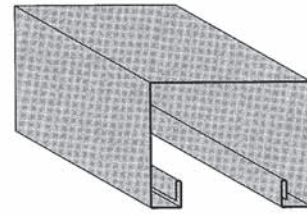


FIG 1-32C

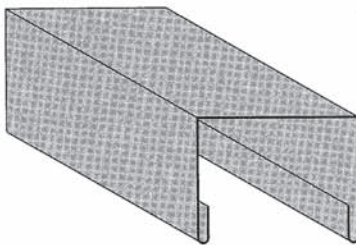


FIG 1-32D

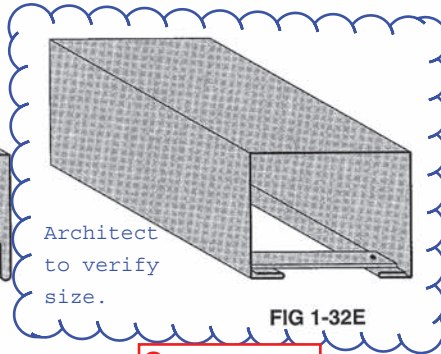


FIG 1-32E

See Drawings

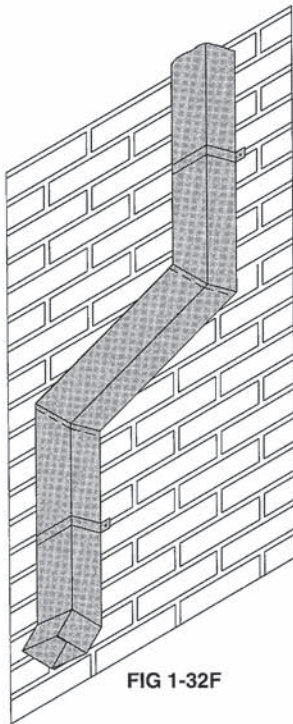


FIG 1-32F

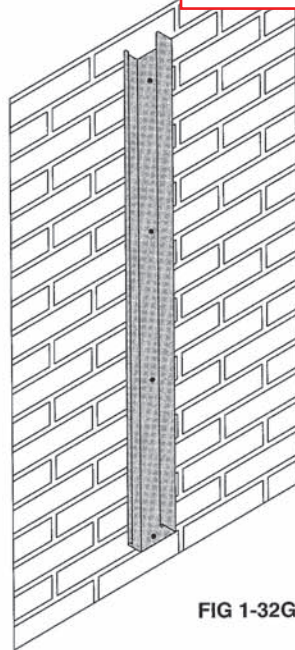


FIG 1-32G

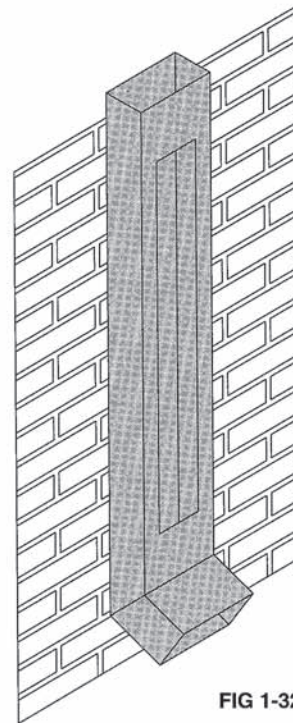


FIG 1-32H

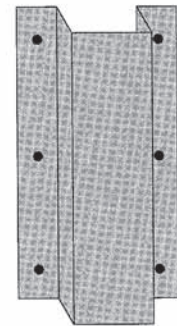


FIG 1-32I

DOWNSPOUTS - SHOP FABRICATED

FIGURE 1-32