

DESIGN AND INSTALLATION MANUAL

ROOF APPLICATION CONSTRUCTION DETAILS AND TECHNICAL FIELD REFERENCE



FIELD REFERENCE

Project drawings, engineering, applicable Canadian codes and current manufacturer guidance govern project-specific installation.



R-Shield®

NAILBASE Ci

R-Shield®

MAX NAILBASE Ci

**ROOF APPLICATIONS
DESIGN AND INSTALLATION
MANUAL**



ROOF APPLICATIONS CONSTRUCTION MANUAL

When you choose R-Shield Nailbase, you're collaborating with a team of experts who work with you every step of the way. We're here to answer your questions, solve your problems, and do everything we can to make sure your project proceeds smoothly—and ends successfully.

WEST-ECO supplies R-Shield Nailbase and provides project coordination, product information and field support. Manufacturer production follows strict, consistent quality standards.

Through WEST-ECO, architects, designers and builders receive technical resources and responsive local support for project planning, installation and product coordination.

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General Recommendations

R-Shield Nailbase Sizes

R-Shield Nailbase is made in a variety of sizes, most commonly 4' x 8'. Contact WEST-ECO for available sizes, thicknesses and fabrication services.

Environmentally Safe

The core material for R-Shield Nailbase contains no CFCs, HCFCs, HFCs or formaldehyde and is recyclable. R-Shield insulation is inert, non-nutritive and highly stable. WEST-ECO supports recycling and energy conservation.

Warranty

Manufacturer provides a 50-year warranty covering thermal performance. Contact WEST-ECO for current warranty details and project-specific documentation.

Handling - Storage - Protection

R-Shield Nailbase should be stored in a fully supported manner and protected from weather. Cover stored R-Shield Nailbase with tarps or similar protective wraps. Important! Do not use clear plastic covering film on Nailbase with Max cores (Gray foam) and avoid using very dark colored coverings. Opaque, white, and light-colored coverings are recommended. Exposure 1 OSB facings are used in R-Shield Nailbase manufacture; however, panels used for roof systems must have temporary roofing applied at the time of installation. Apply finished roofing when immediately practical.

Metal roof systems can expose Nailbase assemblies to higher temperatures than other roof systems. Additional design considerations may be required to protect the underlayment and Nailbase from excessive heat, including a ventilated air space above the Nailbase. Contact WEST-ECO for current manufacturer recommendations and project coordination.

Expanded polystyrene contains a flame-retardant additive; however, it should be considered combustible and used with code-approved thermal barriers. Keep away from open flame or ignition sources. Do not install with coal-tar pitch or highly solvent-extended mastics, adhesives or sealants. Contact WEST-ECO for current manufacturer recommendations on compatible adhesives, sealants and assemblies.

General Recommendations - cont'd

Vapor Retarders

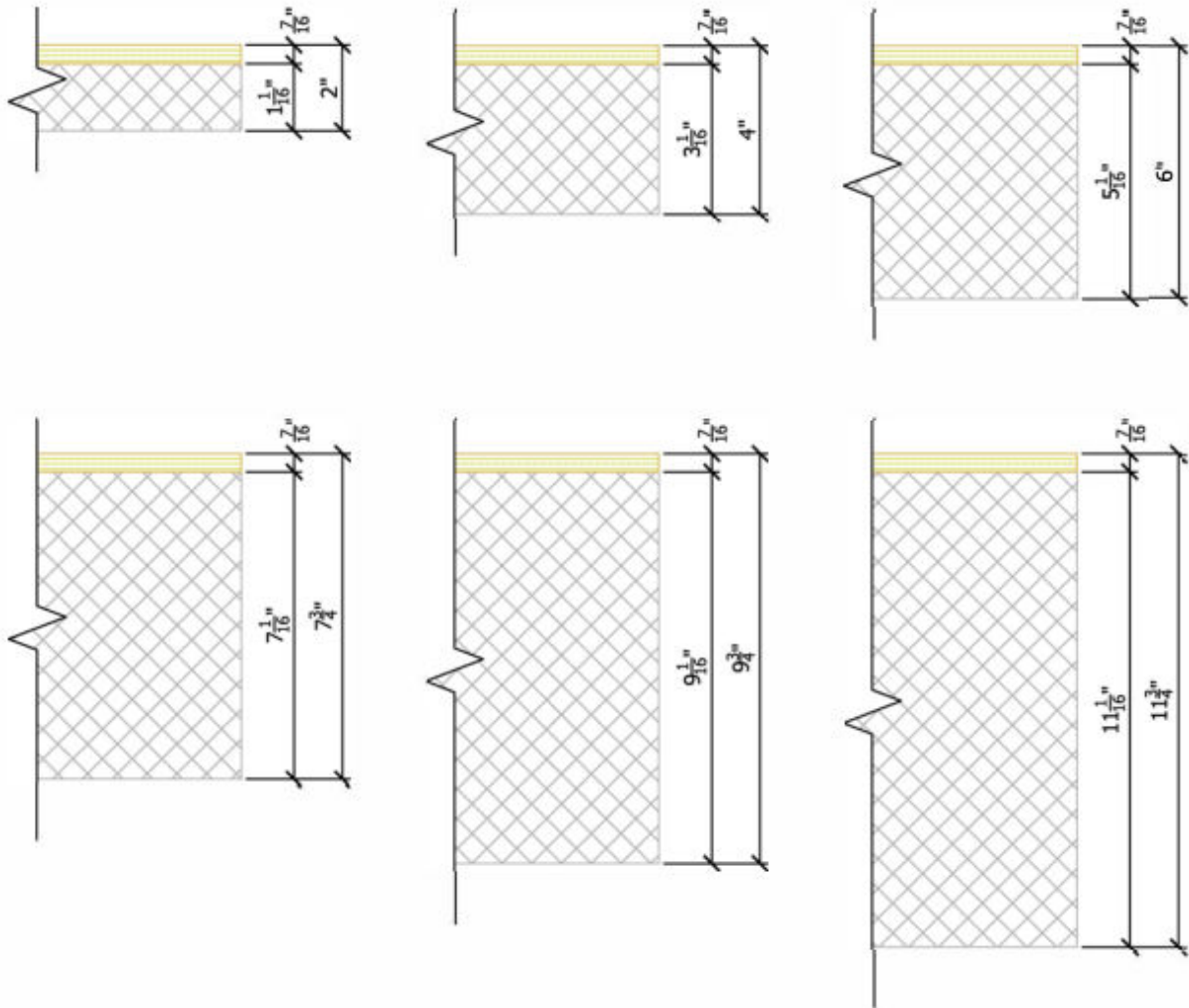
R-Shield Nailbase may require the use of a vapor retarder to ensure long-term durable roof structures. Consult with a local design professional for a recommendation.

Disclaimer

Details, illustrations, pictures and guidelines provided herein give basic information and illustrate examples of R-Shield Nailbase installation. The basic information provided herein is not intended to cover every potential use and application of R-Shield Nailbase. It is the responsibility of the installer to become familiar with the specific application and determine if R-Shield Nailbase is suitable. By commencing work, the installer accepts full responsibility for the proper and safe installation of R-Shield Nailbase at the job site. Adding an insulation component may change the behavior of a roof assembly with regard to air movement, water vapor transmittance, bulk water management and heating, cooling and ventilation systems. It is the responsibility of the owner or the owner's representative to design the insulated roof assembly to perform in a manner ensuring function and durability. Furthermore, it is the sole responsibility of the installer to meet all federal and local regulatory requirements for job-site safety for the installer, workers and others on the job site while executing all phases of R-Shield Nailbase installation.

NOTES:

1. STANDARD NAILBASE CI WIDTH AND LENGTH IS 4' X 8'.
2. STANDARD THICKNESSES OF NAILBASE CI ARE SIZED TO ACCOMMODATE STANDARD 2X LUMBER DIMENSION VARIANCES.
3. NAILBASE CI FOAM IS TYPE 1 EPS OR TYPE 1 GPS.
4. STANDARD FACING IS 7/16" OSB.
5. CUSTOM WIDTH, LENGTH, THICKNESS, AND FACINGS AVAILABLE.



N.T.S.

Rev: 1/26/2024

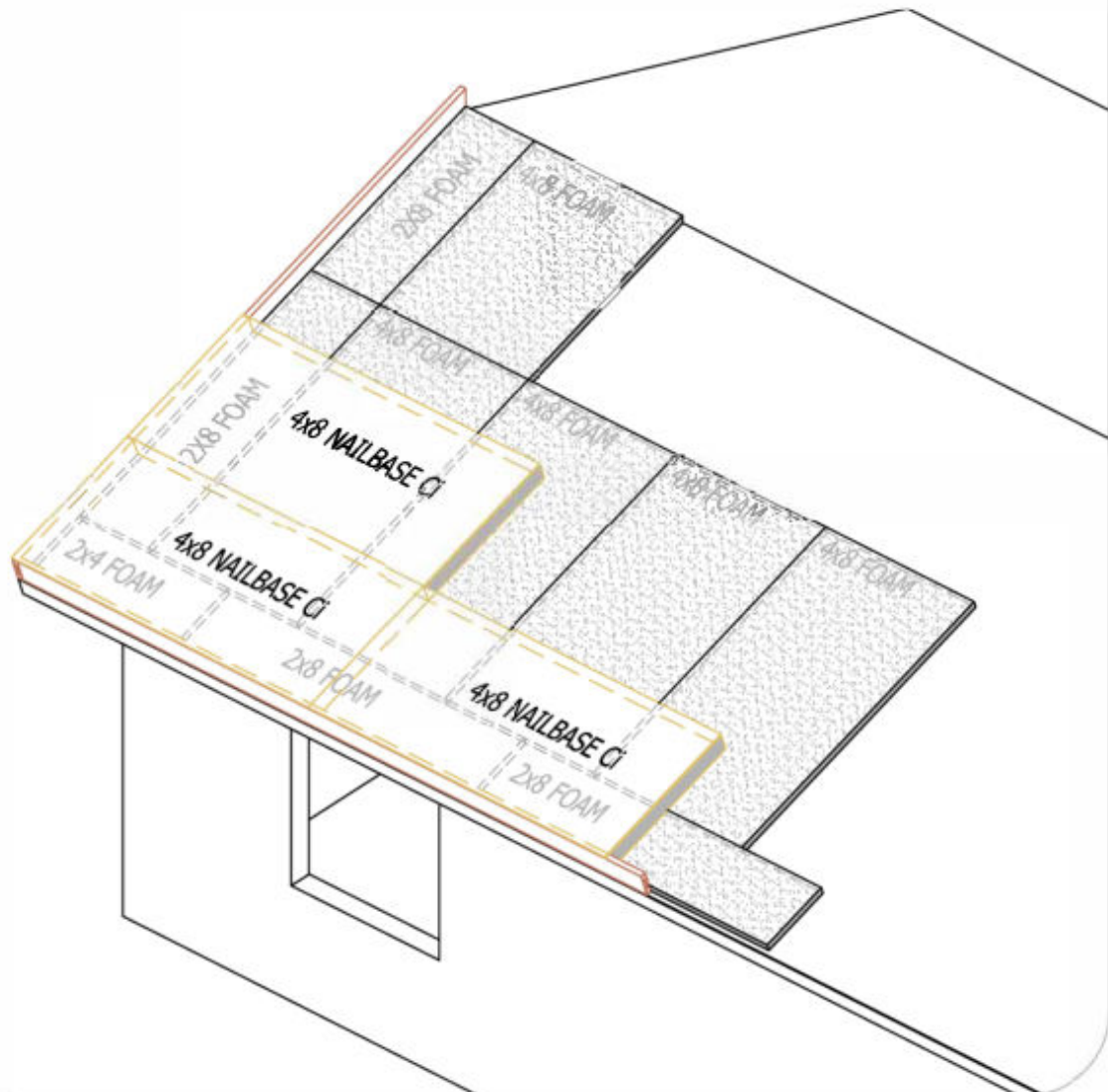
NB - 100

**STANDARD NAILBASE CI
SIZES AND DIMENSIONS**

R-SHIELD®
RIGID INSULATION

NOTES:

1. STAGGER EDGES OF TOP AND BOTTOM LAYERS TO ELIMINATE COLD JOINTS AND THE NEED TO APPLY SEALANT WITHIN THE FIELD OF THE ASSEMBLY.
2. FASTENERS TO PENETRATE BOTH LAYERS INTO STRUCTURE BELOW.
3. STANDARD TOTAL NAILBASE C_i ASSEMBLY THICKNESSES ARE IDENTICAL TO 1-PART NAILBASE C_i PER #400100.
4. REFERENCE TECHNICAL BULLETIN #4001 FOR FASTENING REQUIREMENTS.



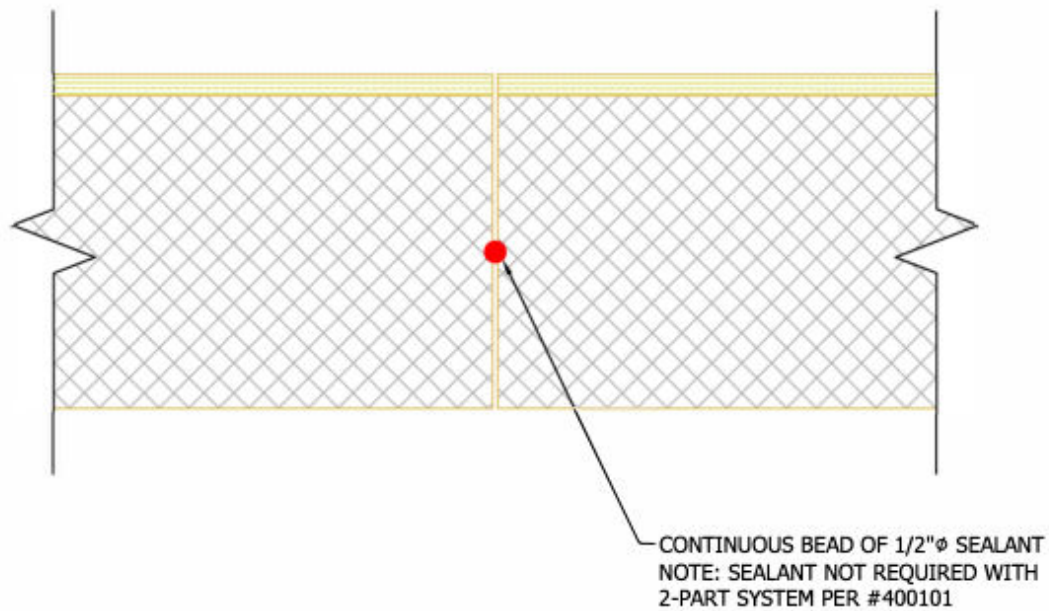
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Rev: 3/20/2023

NB-101

2-PART NAILBASE C_i
STAGGERED LAYERS





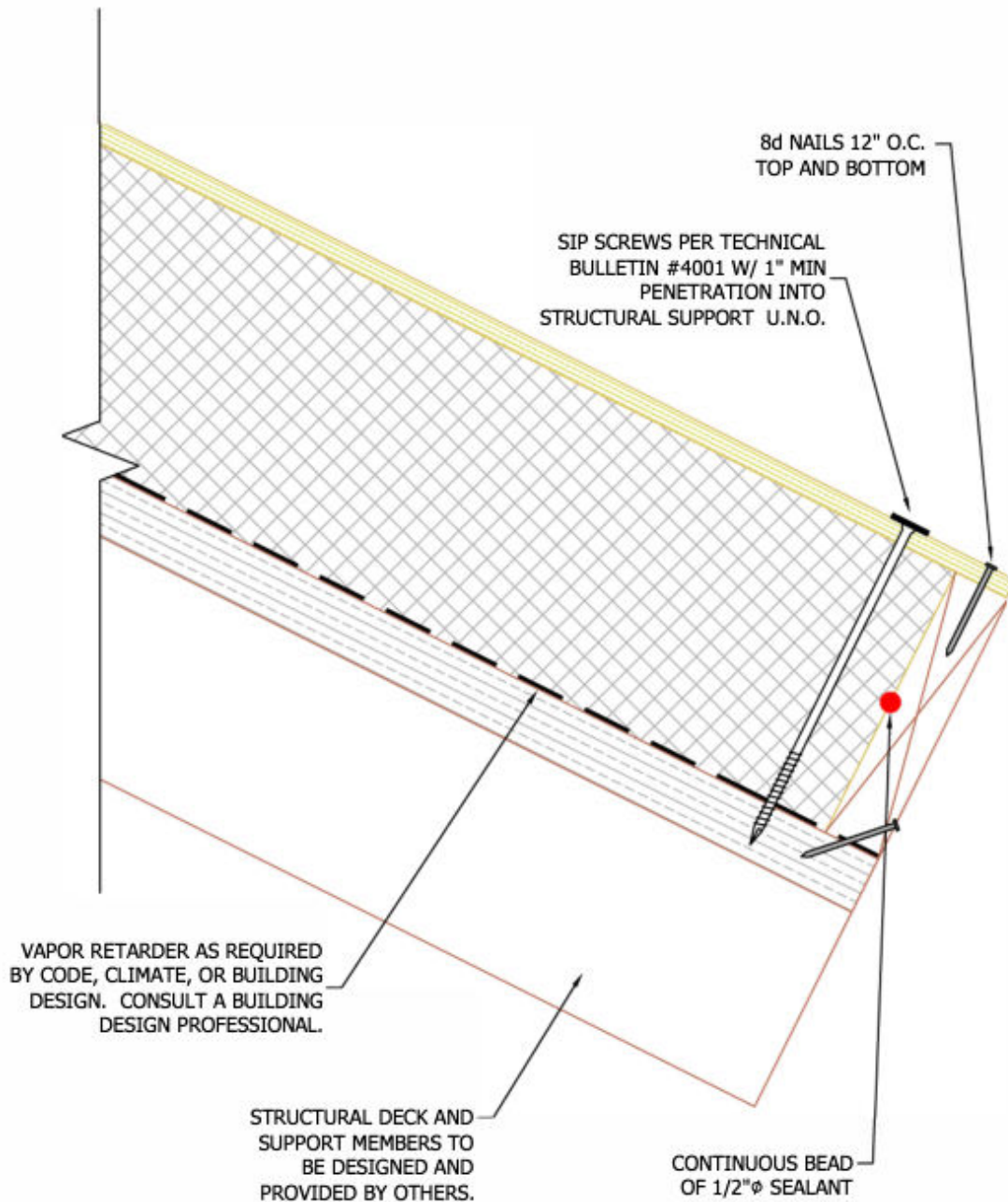
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Rev: 3/20/2023

NB-102

**NAILBASE Ci
BUTT CONNECTION**





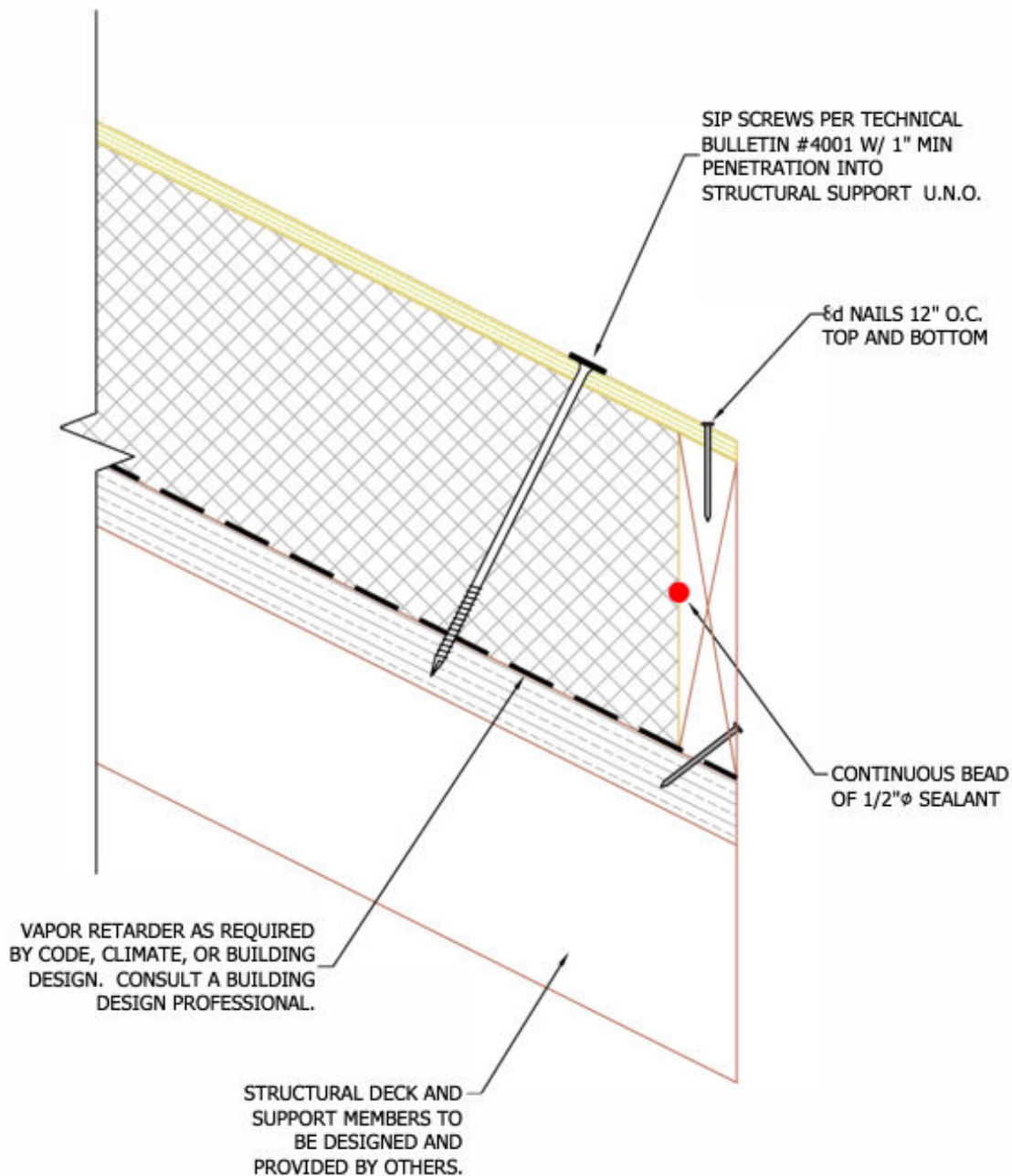
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Rev: 3/20/2023

NB-104

**NAILBASE Ci
SQUARE CUT EAVE**





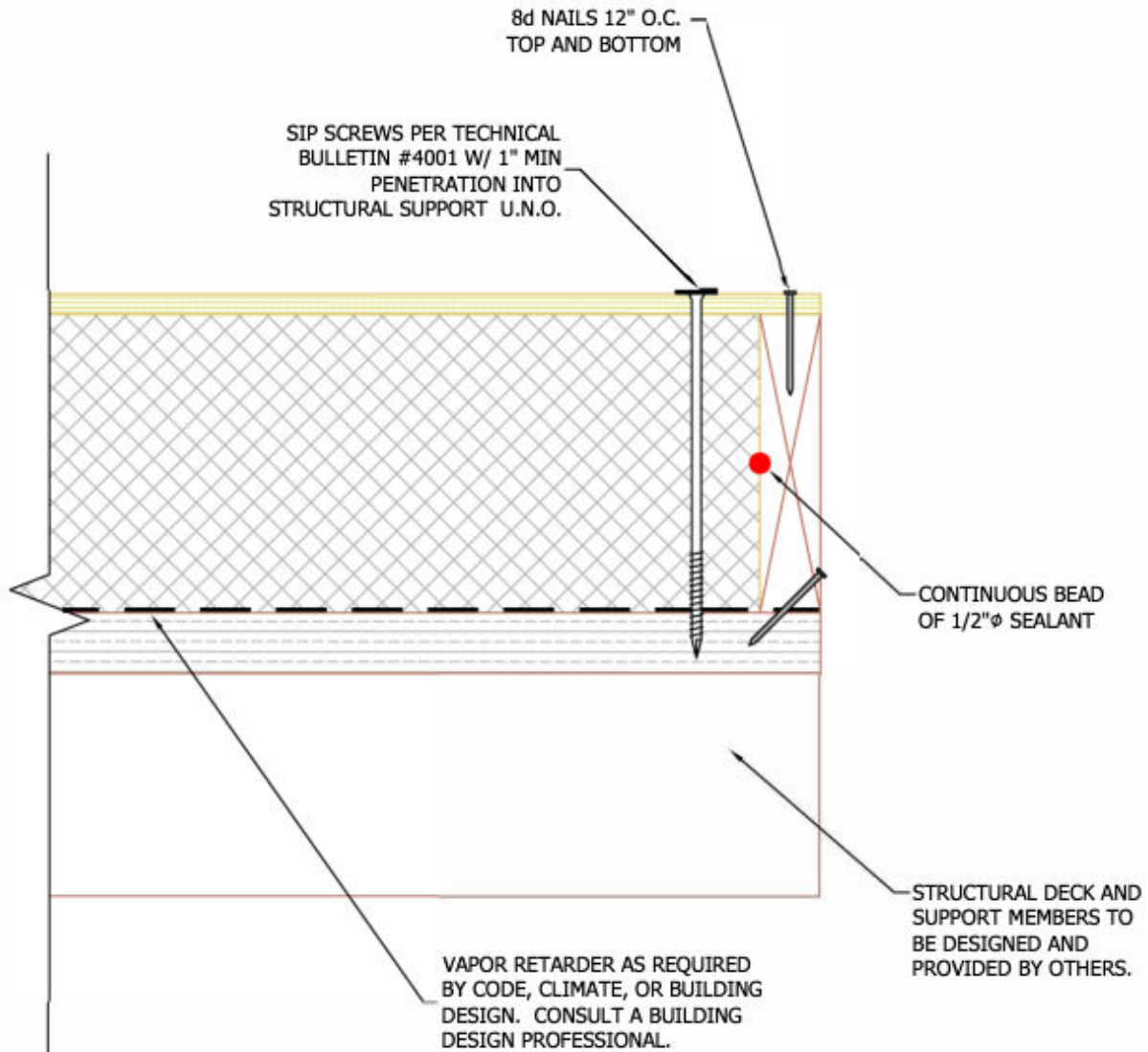
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Rev: 3/20/2023

NB-105

**NAILBASE Ci
PLUMB CUT EAVE**





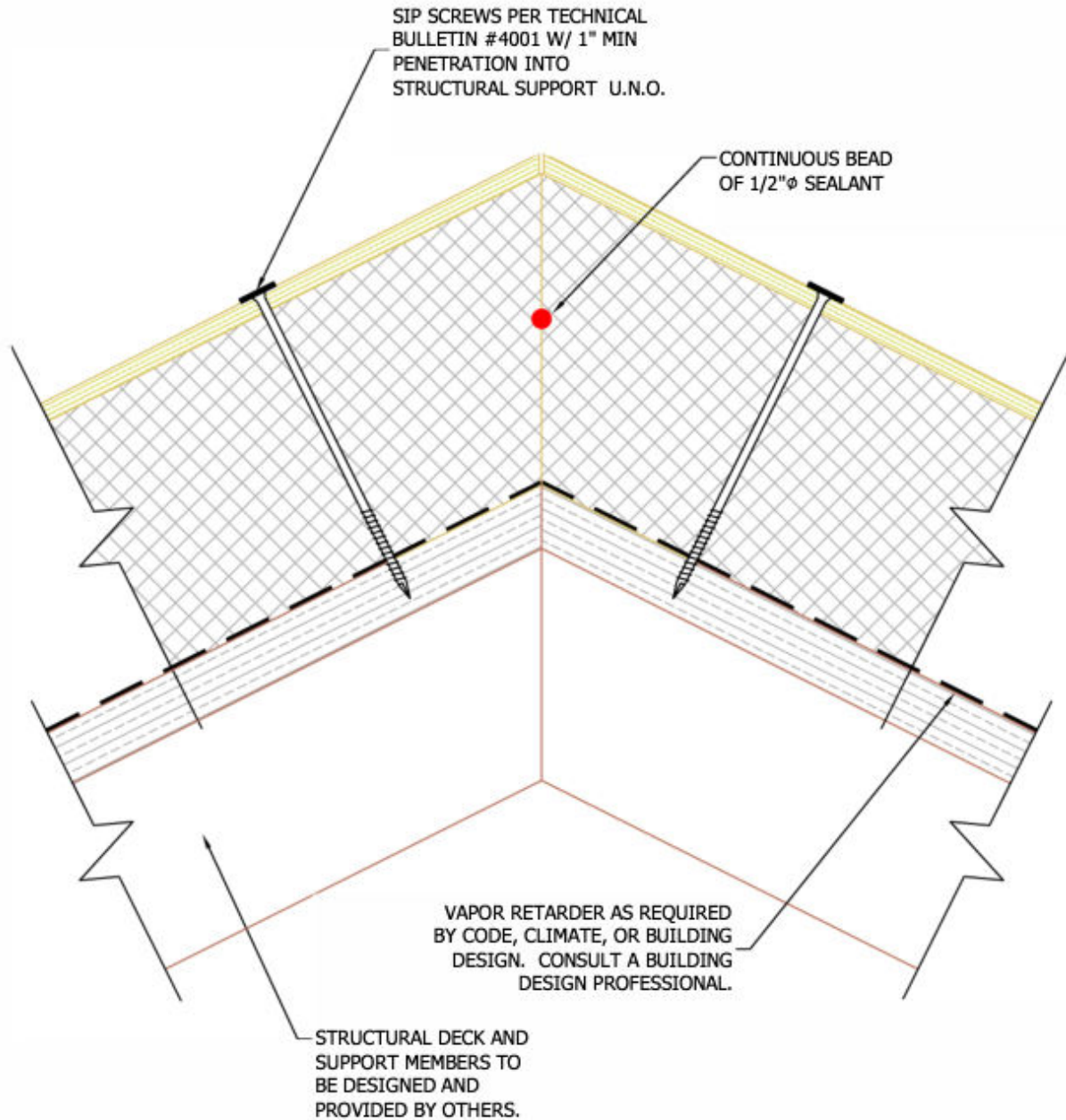
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Rev: 3/20/2023

NB-106

**NAILBASE Ci
GABLE END**





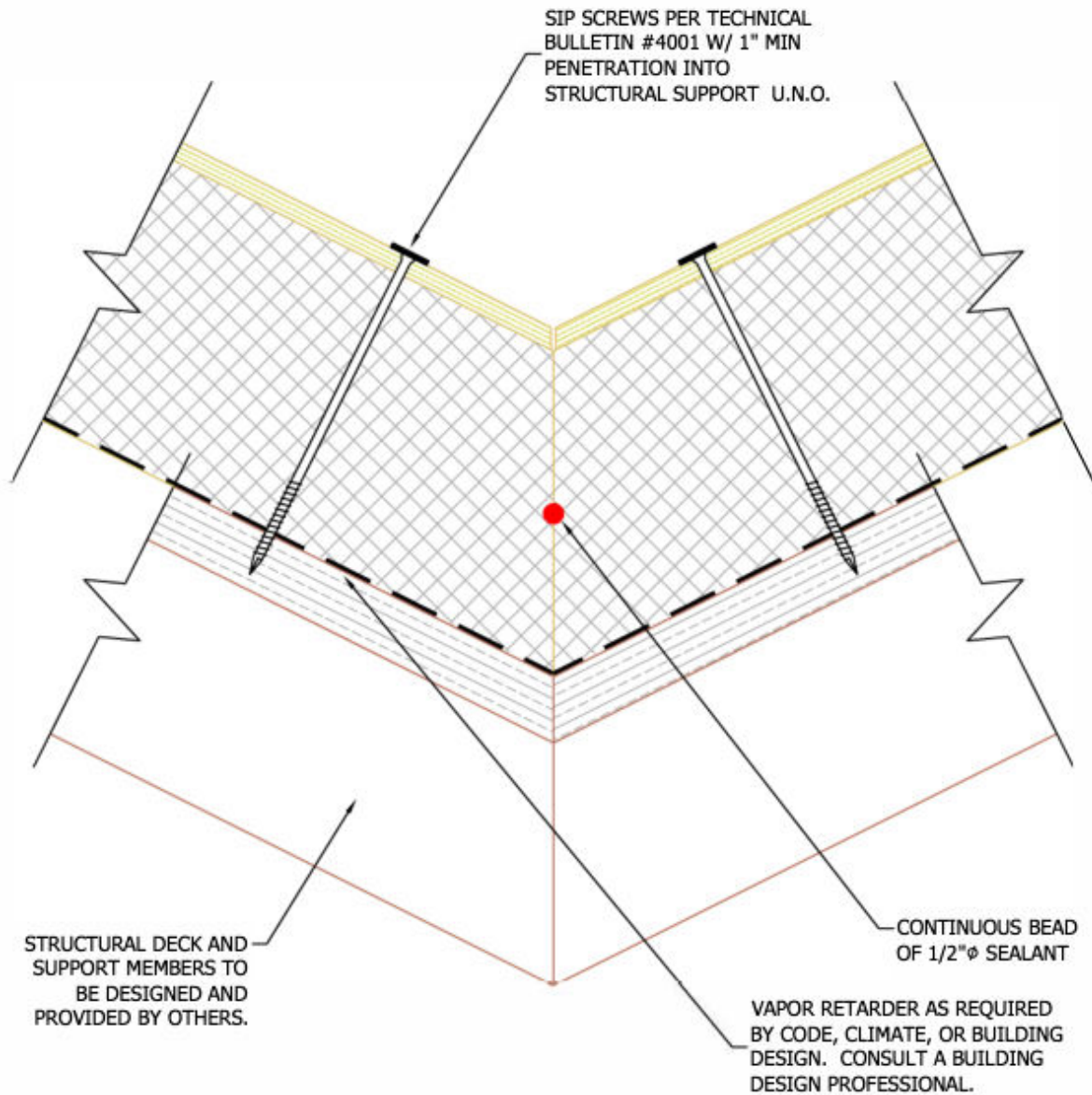
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Rev: 3/20/2023

NB-107

**NAILBASE Ci
ROOF RIDGE / HIP**





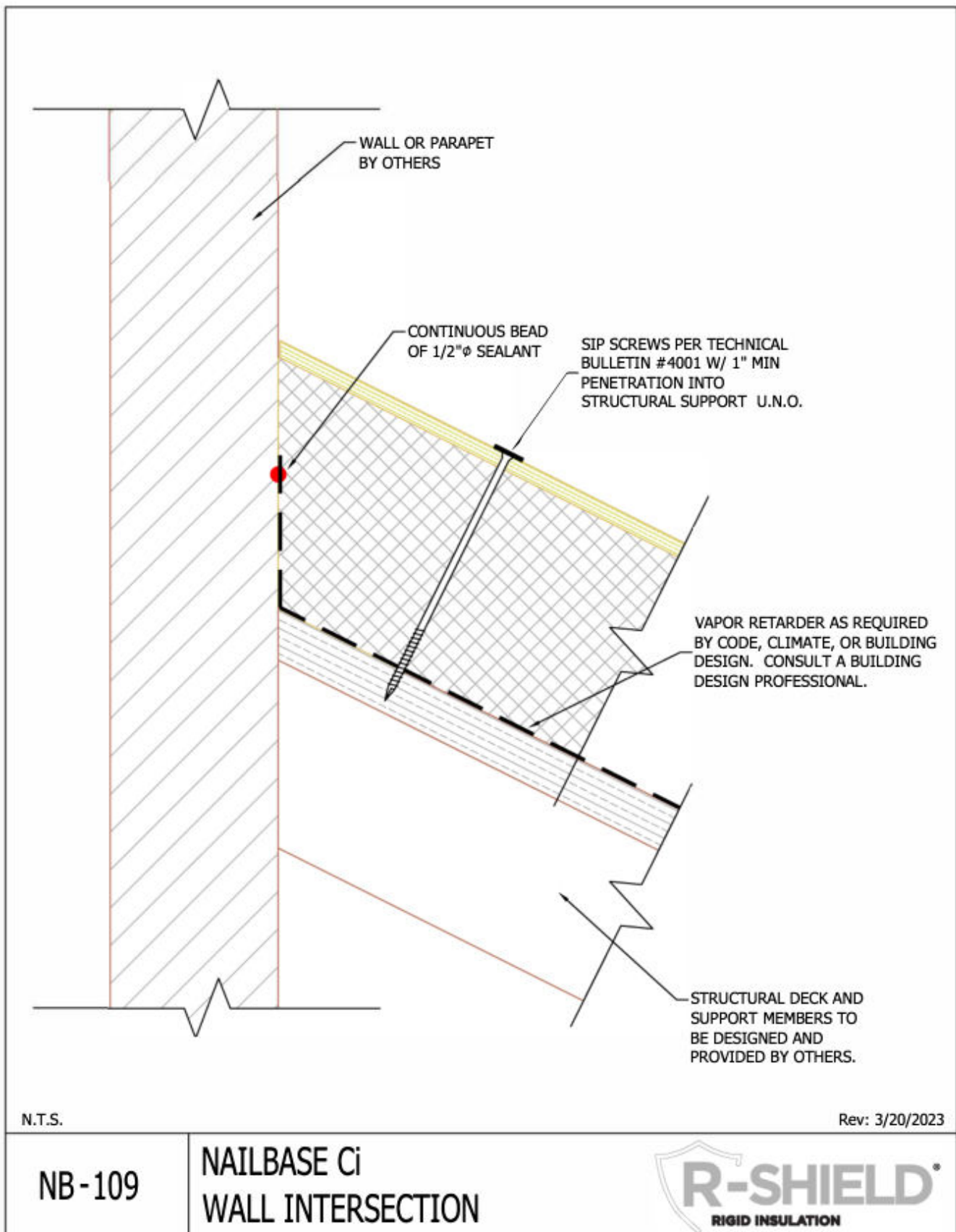
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Rev: 3/20/2023

NB-108

**NAILBASE Ci
ROOF VALLEY**







TECH BULLETIN

NAILBASE NO. 4001

SUBJECT: FASTENING REQUIREMENTS FOR SLOPED ROOFS

DATE: MARCH 2008 (REVISED JANUARY 2019)

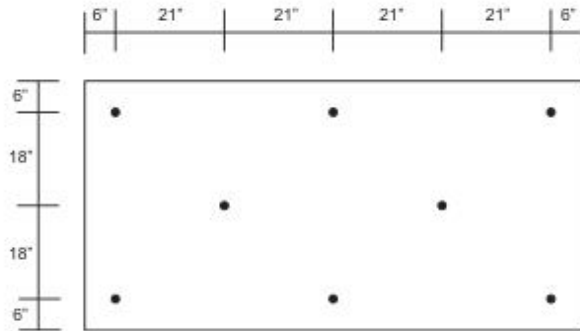
Minimum fastening requirements for R-Shield® Nailbase have been calculated in accordance with ASCE 7-05 Method 2, Exposure C, Importance factor of 1.0, a maximum roof height of 60 ft. For projects with snow loads and wind speeds in excess of 110 mph, consult a professional engineer for fastening requirements.

FIELD OF ROOF										
Number of Fasteners for 4' x 8' (1.2m x 2.4m) Nailbase										
Total Load (Snow Load + Dead Load)	Roof Slope									
	3/12	4/12	5/12	6/12	7/12	8/12	9/12	10/12	11/12	12/12
30 psf	8	8	8	8	8	8	8	8	8	8
40 psf	8	8	8	8	8	8	8	8	12	12
50 psf	8	8	8	8	12	12	12	12	12	12
60 psf	8	8	8	12	12	12	12	12	12	12
70 psf	8	8	12	12	12	12	16	16	16	16
80 psf	8	12	12	12	16	16	16	16	16	16
90 psf	8	16	16	16	16	16	16	16	16	16

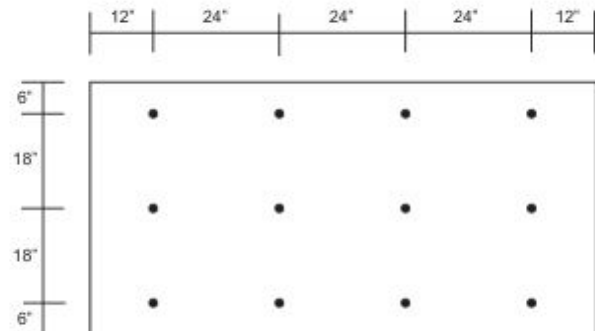
PERIMETER OF ROOF										
Number of Fasteners for 4' x 8' (1.2m x 2.4m) Nailbase										
Total Load (Snow Load + Dead Load)	Roof Slope									
	3/12	4/12	5/12	6/12	7/12	8/12	9/12	10/12	11/12	12/12
30 psf	16	16	16	16	8	8	8	8	8	8
40 psf	16	16	16	16	8	8	8	8	12	12
50 psf	16	16	16	16	12	12	12	12	12	12
60 psf	16	16	16	16	12	12	12	12	12	12
70 psf	16	16	16	16	12	12	16	16	16	16
80 psf	16	16	16	16	16	16	16	16	16	16
90 psf	16	16	16	16	16	16	16	16	16	16

The values in the tables are applicable to WEST-ECO Wood Screws installed into SPF or equal wood deck with minimum 1 in. penetration, and to WEST-ECO Metal Deck Screws installed into steel deck (22 ga. minimum), subject to project-specific engineering and current manufacturer guidance.

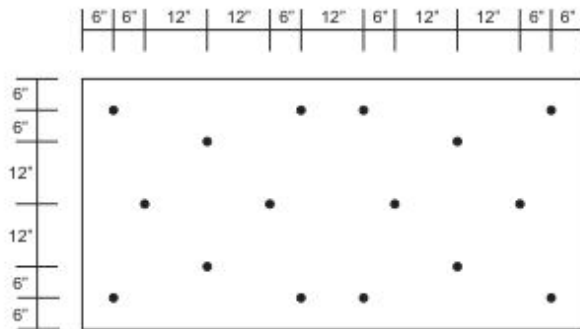
FASTENING PATTERNS FOR 4' X 8' NAILBASE



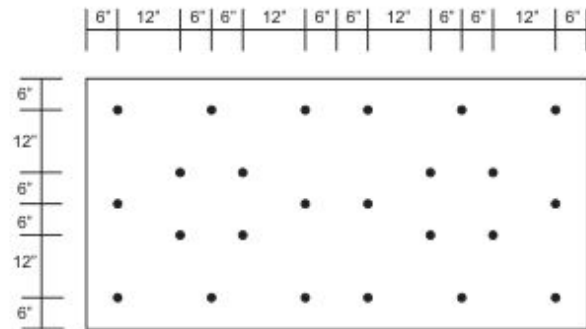
8 FASTENERS/BD.



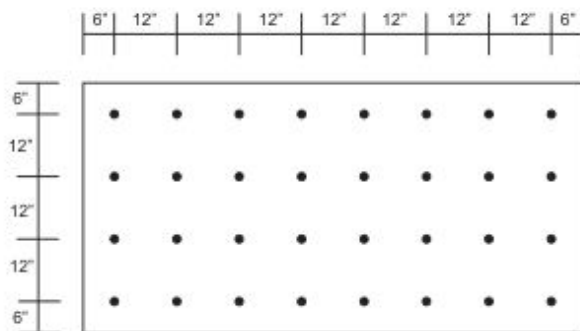
12 FASTENERS/BD.



16 FASTENERS/BD.



24 FASTENERS/BD.



32 FASTENERS/BD.



TECH BULLETIN

NAILBASE NO. 4002

SUBJECT: ASPHALT SHINGLES

DATE: FEBRUARY 2009 (REVISED JANUARY 2019)

GAF, a leader in the manufacture of shingles, has examined the use of their asphalt shingles with R-Shield® Nailbase substrates and have authored the attached Technical Advisory Bulletin. GAF has served notice that their products applied directly over R-Shield Nailbase substrates are acceptable and that no restrictions will be placed on their warranty.

GAF's shingles are recommended as the preferred asphalt shingle product for use with R-Shield Nailbase substrates.

When using shingles other than GAF, please contact your asphalt shingle manufacturer to clarify their warranty coverage when applied over R-Shield Nailbase.

TECHNICAL ADVISORY BULLETIN

To: GAF Residential Sales, GAF Contractors, GAF Field Services

From: Technical Services Department

Subject: *Acceptable Substrate For GAF Asphalt Shingle Applications*



Quality You Can Trust...
From North America's
Largest Roofing Manufacturer!™

Date: 07/31/2014

No: TAB-R 2011-101-R1

Why Is The Substrate So Important?

A shingle roof substrate is the "foundation" for your roofing system. The substrate provides the smooth structural base on which asphalt shingles are installed. If the substrate is inferior, the integrity of the roofing system may be compromised.

What's Considered A "Standard Deck" For Shingles?

Standard decks include:

- **Plywood or OSB...** 3/8" minimum thickness, exterior grade as recommended by APA – The Engineered Wood Association
- **Wood planking...** Nominal 1" thick (min.) x 6" wide (max.) wood planking, with a maximum 1/8" spacing at the ends and sides

Note: For existing older installations, if spacing is $> 1/8" \leq 1/4"$, install a double layer of underlayment. If the spacing is greater than $1/4"$ install a layer of 3/8" minimum thickness APA labeled exterior grade plywood or OSB over the wood planking.

Can The Other Substrates Be Used Without Prior Approval?

When properly installed using the fasteners and construction design recommended by the deck manufacturer, the following substrates may be used:

- GAF Cornell ThermaCal® 1 Ventilating Roof Insulation Panels
- GAF Cornell ThermaCal® 2 Ventilating Roof Insulation Panels
- Loadmaster Shingle Deck
- Tech Shield or equivalent Radiant Barrier Decking systems with vapor permeable, perforated foil backing
- Ainsworth's Thermastrand Radiant Barrier
- 2" Minimum Homasote or ThermaSote (Homasote Co.)
- 2" Minimum Span Rock Gypsum Plank (USG) – fasteners must have a minimum 40 lbs. of pullout
- Vented-R (Atlas)
- Vented Nail-Line (Apache)
- Hunter Vented Nail Base
- R-Shield Nail Base (Big Sky Insulations, Inc.)
- Tectum III, Tectum E and Tectum NS (Tectum, Inc.)
- Huber Zip Deck System – A waterproof underlayment such as StormGuard® leak barrier must be used at eaves as required by code or for certain warranty considerations and additional underlayment may be needed on slopes less than 4:12 or on re-roofing projects.

Note: GAF shingles are **not** approved for applications directly over any insulation or fiberboard.

What About Structural Insulated Panels (SIP)?

SIP may be use when:

- Approved/rated by UL for use as a shingle roof deck
- With the minimum thickness of plywood or OSB as recommended above installed in accordance with the SIP panel manufacturers recommendations for use as a shingle roof deck

What About Codes?

Roof decks must meet local codes... and approval from the local building department should be obtained to confirm the deck construction and ventilation meets local code requirements.

Is The Substrate Or Workmanship Covered Under GAF Warranties?

Only GAF Cornell ThermaCal® 1 & 2 Ventilating Roof Insulation Panels are covered by GAF under the GAF Cornell ThermaCal® Nail Base Roof Insulation Limited Warranty. See this limited warranty for complete coverage and restrictions.

All substrates must be installed in accordance with the deck manufacturer's specifications. Roof deck installation instructions, including the need for a vapor retarder, for specific deck types must be obtained from the respective manufacturer. GAF does not warrant the installation method, the performance of the decking or problems with the shingles caused by the deck or substrate, including but not limited to: physical movement, thermal bridging and/or moisture migration at the joints.

WEST-ECO TECHNICAL SUPPORT



TECH BULLETIN

NAILBASE NO. 4003

SUBJECT: METAL ROOF VENTILATION WITH ENKAMAT

DATE: APRIL 2024

The ventilation of metal roofing when installed over R-Shield Nailbase provides many building science benefits. The primary benefit of venting above a R-Shield Nailbase roof is the removal of interior moisture from the building from the misapplication of R-Shield Nailbase between the metal roof covering and the top of the Nailbase roof deck. It also be noted that vapor permeable underlayments should also be used in metal roof assemblies when applied over Nailbase roof decks (contact WEST-ECO for current manufacturer technical guidance). In addition to the venting of interior moisture, any rainwater or melting snow that circumvents the metal roofing materials is also removed by virtue of the ventilation space.

Additional benefits of a ventilation cavity are: The reduction in the temperature of the R-Shield Nailbase upper skin from high heat generated by direct sunlight exposure in hot climate zones and the potential of concentrated heat from reflective surfaces, such as windows and reflective ponds. Metal roofing systems, particularly Zinc and Copper, can expose R-Shield Nailbase roof decks to high temperatures and potential damage to its rigid insulation core. Underlayments can also be damaged by excessive heat exposure. The vented cavity keeps temperatures at the R-Shield Nailbase roof surface within safe operating temperatures for both the Nailbase and underlayment. In winter, the ventilated space results in a cold roof, thereby reducing the potential for ice dams when the depth of snow on the roof is significant. Impact noise of rain and hail are mitigated as well.

R-Shield has investigated a unique product that is compatible with R-Shield Nailbase for achieving a cost effective above the roof deck ventilation cavity - Colbond's Enkamat 7020. Enkamat 7020 is commonly used in roofing applications to provide the ventilation, drainage, and thermal separation needed for the long service life of roof structures.



Enkamat 7020 from Colbond

Enkamat 7020 is a three-dimensional mat made of continuous nylon filaments fused at their intersections. The 95% open structure of the entangled filaments facilitates drying of condensed water vapor from the building interior, while giving full support to the metal roof. The nylon filaments do not fail under the load of the roof and the rigors of the construction environment, including construction foot traffic. The space created between the R-Shield Nailbase roof deck and the roof covering will allow moisture to flow away or evaporate.

Testing has been conducted on the temperature difference that a R-Shield Nailbase surface experiences when ventilated with Enkamat 7020 when compared to no ventilation. A standing seam metal roof was applied over a R-Shield Nailbase small scale roof structure for testing evaluation. Dark colored standing seam metal roof panels were fixed to the Nailbase roof over the Enkamat 7020/roofing underlayment. An assembly of metal roof panels over roofing underlayment alone was also tested for comparison. The top surface of both metal roofing assemblies was brought to a temperature of 194°F (90°C) using infrared heat lamps. This temperature was held for 6 hours to ensure that temperatures moving through the assembly would stabilize.

The temperature recorded on the top surface of the R-Shield Nailbase was reduced by 18% with the use of the Enkamat 7020. These results clearly demonstrate the effect of an air space lowering the temperature of a R-Shield Nailbase roof deck, when metal roofing experiences solar exposure, resulting in high surface temperatures.

R-Shield Nailbase Ventilation	Temp Reduction From Metal Roof to Top Surface of R-Shield Nailbase
None	10°F
Enkamat 7020	43°F

R-Shield recommends Colbond's Enkamat 7020 as a product that provides the important benefit of easy, cost-effective installation over R-Shield Nailbase, thereby achieving the additional building science benefits of ventilation: Cooling top of roof deck air temperature, allowing above roof deck evaporation of moisture and mitigating the sounds of rain and/or hail striking the metal roof.

Similar performing ventilating mats may be available in the marketplace. It is the responsibility of the designer and installer to determine if the manufacturer of these ventilating mats recommends the use of their products and provide installation instructions and details for application when applied over SIP roof deck assemblies.



TECH BULLETIN

NAILBASE NO. 4006

SUBJECT: VENTILATION ACCESSORY PRODUCTS

DATE: JULY 2011 (REVISED JANUARY 2019)

Metal-Era, a leader in roof ventilation systems, provides a wide range of ventilation products for roof systems. Hi-Perf ridge vents and Hi-Perf vented fascia are two key products offered by Metal-Era that are suitable for use with R-Shield® Nailbase Vent-1. Metal-Era offers a wide range of technical service for designing a properly balanced system with appropriate net free area (NFA) to ensure optimum service life.

Metal-Era Hi-Perf ventilation products are recommended as the preferred product for use with R-Shield Nailbase Vent-1.

Metal-Era provides roof ventilation products suitable for Nailbase applications. Contact WEST-ECO for current manufacturer product information, compatibility guidance and project coordination.

When using ventilation products other than those shown in this manual, confirm compatibility and installation requirements with the product manufacturer and contact WEST-ECO for project coordination.

WEST-ECO PROJECT SUPPORT

info@westecopanel.com | westecopanel.com

Sales: 778-836-3103 | Office: 250-320-5680



TECH BULLETIN

NAILBASE NO. 4008

SUBJECT: SCREWS

DATE: APRIL 2024

WEST-ECO Wood and Metal screws are available for attachment of R-Shield Nailbase to wood or metal substrates. The engineering properties on the following pages include withdrawal, shear, pull-through and tensile strength. Values shown are maximum values; appropriate safety factors must be applied by the project architect and/or engineer.

WOOD SCREWS:

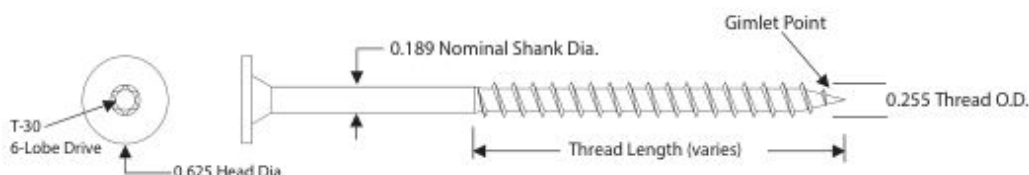
LIGHT-DUTY METAL SCREWS:

HEAVY-DUTY METAL SCREWS:

WEST-ECO Heavy-Duty Metal Screws are used to attach R-Shield Nailbase to metal structural members and substrates. Heavy-duty metal screws can self-drill into 3/16 in. steel without pilot-hole predrilling. Install using a low-rpm, high-torque drill and follow current WEST-ECO/manufacture guidance.

The Heavy-Duty Metal Screw should be driven with a low rpm (<1500 rpm) high torque drill. Firm, but not excessive, pressure should be applied. This allows the drill point to engage the surface of the metal to cut and clear away metal kerf, letting the threads of the screw pull through the metal substrate. Excessive pressure and/or rpm will dull the drill point and render the screw ineffective.

The WEST-ECO Wood and Metal screw property values provided are average ultimate values. As determined by the project architect/engineer, appropriate safety factors must be used in design.



WOOD SCREW PROPERTIES

Tensile (lbs) AISI S904	Shear (lbs) AISI S904	Bending Yield Strength - Fyb (psi) ASTM F1575	Corrosive Resistance ASTM D6294, ETAG 006
3555	2580	185,000	<15% Red Rust after 30 cycles

WITHDRAWAL: LUMBER & ENGINEERED WOOD - LBS./IN.^{1,2}

SPF/HF (0.42)		DF/SP (0.50)		LVL (0.50)		LSL (0.50)	OSB (7/16")
Face Grain	Edge Grain	Face Grain	Edge Grain	Face Grain	Edge Grain	Face Grain	Face
799	615	899	702	556	495	711	265

¹ Load values include fastener tip.

² 1" fastener embedment into face / edge grain.

WITHDRAWAL: CONCRETE & CMU - LBS.¹

2500 psi Concrete	5000 psi Concrete	CMU ²
682	869	713

¹ Fastener penetrates 1" into concrete or CMU clock, including the tip.

² Concrete Masonry unit (CMU) conforming to ASTM C90.

HEAD PULL-THRU - LBS.

7/16" OSB	NAILBASE
490	630

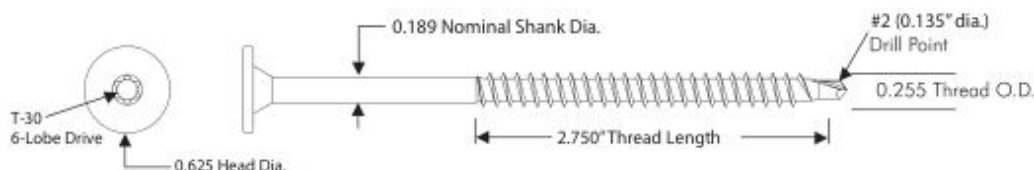
¹ 1-3/4" fastener embedment into edge grain, including tip.

² 1" fastener embedment into face grain, including tip.

LATERAL LOAD RESISTANCE - LBS.

Main Member	Side Member	Load
SPF ^{1,2}	4-1/2" to 12-1/4" NAILBASE	943

The R-Shield® Light Duty Metal screw property values provided are average ultimate values. As determined by the project architect/engineer, appropriate safety factors must be used in design.



LIGHT DUTY METAL SCREW PROPERTIES

Tensile (lbs) AISI S904	Shear (lbs) AISI S904	Bending Yield Strength - Fyb (psi) ASTM F1575	Corrosive Resistance ASTM D6294, ETAG 006
3390	2490	185,000	<15% Red Rust after 30 cycles

WITHDRAWAL: CORRUGATED STEEL DECK - LBS.

24 ga. (36 ksi)	22 ga. (36 ksi)	22 ga. (85 ksi)	20 ga. (36 ksi)	18 ga. (36 ksi)	16 ga. (36 ksi)	16 ga. (100 ksi)
250	381	435	449	694	896	1186

* Minimum 3/4" penetration of fastener through deck from underside of deck.

WITHDRAWAL: LUMBER & ENGINEERED WOOD - LBS./IN.¹

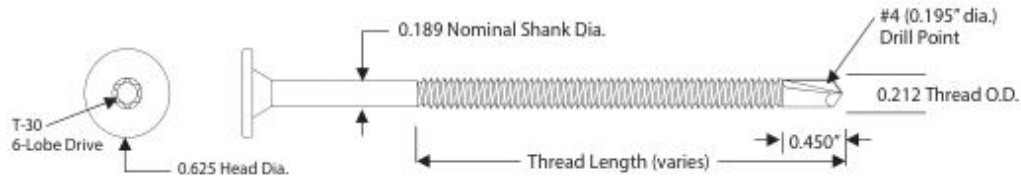
SPF/HF (0.42)		DF/SP (0.50)		LVL (0.50)		LSL (0.50)	OSB (7/16")
Face Grain	Edge Grain	Face Grain	Edge Grain	Face Grain	Edge Grain	Face Grain	Face
662	497	732	720	540	469	646	284

¹ Load values include fastener tip.

HEAD PULL-THRU - LBS.

7/16" OSB	NAILBASE
490	630

The R-Shield® Heavy Duty Metal screw property values provided are average ultimate values. As determined by the project architect/engineer, appropriate safety factors must be used in design.



HEAVY DUTY METAL SCREW PROPERTIES			
Tensile (lbs) AISI S904	Shear (lbs) AISI S904	Bending Yield Strength - Fyb (psi) ASTM F1575	Corrosive Resistance ASTM D6294, ETAG 006
3855	2625	185,000	<15% Red Rust after 30 cycles

WITHDRAWAL: CORRUGATED STEEL DECK - LBS. ¹					
16 ga. (36 ksi)	16 ga. (100 ksi)	12 ga. (50 ksi)	1/8\"	3/16\"	1/4\"
491	794	1255	1454	3098	3814

¹ Minimum (3) threads of penetration of fastener through deck as measured from underside of steel.

HEAD PULL-THRU - LBS.	
7/16\"	NAILBASE
490	630

LATERAL LOAD RESISTANCE - LBS.		
Main Member	Side Member	Load
1/8\"	4-1/2\" to 12-1/4\" SIP	929

¹ Minimum (3) threads of penetration of fastener through steel as measured from underside of steel.



TECH BULLETIN

NAILBASE NO. 4009

SUBJECT: SCREW WITHDRAWAL CAPACITIES OF OSB

DATE: APRIL 2024

To finish a project that utilizes R-Shield® Nailbase for the walls and roof of a structure, many types of materials need to be fastened to Nailbase. These materials can include siding, roofing materials, other structural elements, cabinets and a host of others. In many of these applications screws are the preferred method of fastening. To help quantify the performance of screw withdrawal from OSB, a major manufacturer of OSB generated test data on various screw types and sizes withdrawn from various thicknesses of OSB. Prior to the withdrawal testing, the OSB was exposed to three different environmental conditions – dry, wet, wet/dry. Fifteen repetitions of both direct and lateral withdrawal from the environmentally conditioned OSB were conducted on the screw types and sizes shown in the charts below. The following tables summarize the lowest ultimate average value achieved for each screw type and size when withdrawn from three different thicknesses of environmentally conditioned OSB.

Average Direct Withdrawal (Pullout) - lbs.

Screw Size	7/16" OSB	5/8" OSB	3/4" OSB
#6 Deck Screw	177	272	324
#8 Deck Screw	182	309	359
#10 Deck Screw	198	355	363
#12 Deck Screw	190	312	360
#14 Deck Screw	177	340	393

These Values are ultimate values. Appropriate safety factors should be applied to obtain design values.

Average Lateral Withdrawal (Shear) - lbs.

Screw Size	7/16" OSB	5/8" OSB	3/4" OSB
#6 Deck Screw	198	273	295
#8 Deck Screw	118	197	224
#10 Deck Screw	143	260	301
#12 Deck Screw	436	581	561
#14 Deck Screw	466	630	

These Values are ultimate values. Appropriate safety factors should be applied to obtain design values.



TECH BULLETIN

NAILBASE NO. 4010

SUBJECT: NAIL WITHDRAWAL CAPACITIES OF OSB

DATE: APRIL 2024

With the use of R-Shield® Nailbase, the attachment of finishing materials such as roof shingles, siding, drywall, etc., is required. The application of these materials is typically accomplished with conventional nail products. An independent code recognized testing agency conducted withdrawal tests following ASTM D1037 procedures to provide data on the direct withdrawal resistance of nail fasteners when driven into the 7/16" OSB face of Nailbase. The following is a summary of the average ultimate values achieved for various nail fasteners.

Average Direct Withdrawal (Pullout) - lbs.

Nail Size & Description	Avg. Ultimate Pullout	Nominal Shank Diameter
4d ring shank-drywall nail	133	0.109
6d smooth galvanized	59	0.120
Roofing Nail-smooth galvanized	51	0.110
8d smooth coated sinker	150	0.131
8d smooth galvanized spiral shank	112	0.120
8d galvanized ring shank	77	0.113
8d smooth galvanized	65	0.134
8d bright box	107	0.113
10d galvanized ring shank	164	0.148
16d smooth galvanized	63	0.165
16d bright box	90	0.135

These Values are ultimate values. Appropriate safety factors should be applied to obtain design values.

This data has been compiled to provide manufacturers, designers and engineers with values for the assessment of fastener requirement



TECH BULLETIN

ROOFING NO. 3019

SUBJECT: METAL ROOFING ATTACHMENT

DATE: APRIL 2024

R-Shield® roofs can be finished with a wide range of roof covering systems. Metal roofing is one type of roof covering that has been used successfully over R-Shield Roofing Nailbase for many years. Metal roofing provides a water-tight roof system and has a long-life expectancy when compared to many other roof claddings. One major advantage of metal roofing is that minimal maintenance is required over the life of the roof. As with all roof covering systems, the installation must comply with the metal roofing manufacturer's recommended installation details.

The primary consideration when installing metal roofing over R-Shield Roofing Nailbase is to ensure the metal roofing manufacturer provides installation recommendations for proper attachment into the 7/16" OSB facing of the R-Shield Roofing Nailbase. Berridge Manufacturing Company, a leader in the metal roofing industry, provides installation recommendations for the attachment of their metal roof system directly into the 7/16" OSB facing of R-Shield Roofing Nailbase. Following their installation recommendations provides assurance that the metal roof system will provide the long-term durability that is expected.

Manufacturer testing confirmed the strength of the Berridge attachment recommendations by testing the uplift resistance of Berridge 24-gauge Zee-Lock panel in accordance with UL 580, "Tests for Uplift Resistance of Roof Assemblies". The tested assembly consisted of the Zee-Lock panel installed with a double lock, continuous Zee Rib, and #14 x 1-1/2 in. hex washer head Type A w/sealing washer from SFS Intec directly into the 7/16 in. OSB facing of the R-Shield Roofing Nailbase. Two different fastening frequencies were evaluated, below:

Ultimate Pressure	Fastener Spacing
160 psf	14 in. o.c.
265 psf	8 in. o.c.

The test results demonstrate that metal roofing can meet high wind uplift pressures when fastened directly into the 7/16 in. OSB facing of R-Shield Roofing Nailbase. Contact WEST-ECO for current manufacturer attachment documentation and project-specific coordination.

Other metal roofing systems may provide installation recommendations for attachment directly into the 7/16 in. OSB facing of R-Shield Roofing Nailbase. Confirm the selected roof system manufacturer's requirements and contact WEST-ECO for current technical documentation and project coordination.

Similar performing metal roofing systems may be available in the marketplace. It is the responsibility of the designer and installer to determine if the manufacturer of these metal roofing systems recommends the use of their products and provide installation instructions and details for application when applied over SIP roof deck assemblies.



TECH BULLETIN

ROOFING NO. 3020

SUBJECT: ROOFING UNDERLAYMENTS OVER R-SHIELD NAILBASE

DATE: APRIL 2024

One of the many benefits of building with R-Shield Roofing Nailbase is speed of construction. Speed of roof installation is especially beneficial in climates where precipitation is prevalent. However, precipitation during installation and its effects on a Nailbase roof assembly and roofing materials should be fully understood and mitigated. Proper construction methodology and sequencing for the installation of roofing materials over Nailbase, is to allow the OSB and the interior of the Nailbase joints to dry adequately, prior to the installation of the roofing underlayment. When these conditions present themselves on your project, R-Shield Roofing Nailbase perform best with the use of a synthetic, breathable roofing underlayment below the final roof covering material as an alternative to traditional 15# or 30# asphalt saturated or coated roofing felts. Breathable roofing underlayment's having perm ratings of 15 or higher are recommended. Breathable underlayment allows water vapor to pass through the membrane yet restricts the bulk water movement back through the membrane toward the OSB facer of the Nailbase roof deck. The science behind a breathable underlayment is to allow water vapor, that gets trapped at the OSB interface to pass through the synthetic roofing underlayment and once on the exterior side of the membrane it can condensate on the underside of the roofing material and run off the roof. Adhered underlayment can be used on sloped roofs as code recognized ice barriers for roof eaves, valleys and gables. When adhered underlayment is used over a R-Shield Roofing Nailbase roof deck, they should be vapor permeable and applied over a first layer of vapor permeable underlayment, nail applied to the Nailbase roof deck. There are many manufactures of breathable underlayment's in North America. A quick internet search will turn up manufactures and suppliers available to supply your project. Be sure you: verify with the manufacture that the perm rating of their breathable underlayment is 15 or greater and that their breathable underlayment is compatible with the roofing materials you intend to install on your Nailbase project. Following is a partial list of Vapor Permeable Underlayment* manufacturers you may contact to learn about their products:

CURRENT UNDERLAYMENT INFORMATION

For current compatible breathable-underlayment options, manufacturer documentation and project-specific recommendations, contact WEST-ECO.

info@westecopanel.com | westecopanel.com | Sales: 778-836-3103 | Office: 250-320-5680

*R-Shield has no business relationship, financial interest or involvement in the performance or warranty claims made by the companies listed above. It is the responsibility of our customer to research the information obtained from these c

PRODUCT AVAILABILITY & SUPPORT

R-SHIELD NAILBASE

R-Shield Nailbase is available through WEST-ECO Panelized Building Systems. WEST-ECO provides product information, ordering assistance, installation guidance, and project support for R-Shield Nailbase applications. For product availability, technical information, or project-specific questions, contact WEST-ECO directly.

CONTACT WEST-ECO

Sales: 778-836-3103

Office: 250-320-5680

Email: info@westecopanel.com

Website: westecopanel.com

WEST-ECO PANELIZED BUILDING SYSTEMS

R-Shield Nailbase product information, technical guidance and project support.