R-SHIELD®
NAILBASE Ci

R-Shield®

NAILBASE Ci

R-Shield®

MAX NAILBASE Ci

WALL APPLICATIONS CONSTRUCTION MANUAL

Note: Information deemed reliable at time of printing.
Please visit www.rshieldinsulation.com for the latest information.

R-SHIELD®
NAILBASE

WALL 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.

R-Shield products are manufactured by Premier Building Systems. Premier Building Systems adhere to strict, consistent standards to ensure high-quality.

This network allows us to offer architects, designers and builders the best of both worlds: the resources of the country's largest provider of R-Shield Nailbase products and systems, and the superior attention and customer service of a local supplier.

Note: Information deemed reliable at time of printing.
Please visit: www.rshieldinsulation.com for the latest information.
May 2024.

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R-Shield Nailbase Sizes

R-Shield Nailbase is made in a variety of sizes, most commonly 4' x 8'. Consult Premier Building Systems for sizes, thicknesses, and fabrication services available in your area.

Environmentally Safe

The core material for R-Shield Nailbase, R-Shield insulation, contains no CFCs, HCFCs, HFCs or formaldehyde and is recyclable. R-Shield insulation is inert, non-nutritive and highly stable. Premier Building Systems encourages you to support recycling and energy conservation.

Warranty

Premier Building Systems provide a 50-year warranty covering thermal performance. Contact Premier Building Systems for details regarding the warranty program.

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 file 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 have inherent properties that may cause R-Shield Nailbase roofs covered with these materials to become hotter than other roof systems. When installing metal roof systems on R-Shield Nailbase, additional design considerations may be necessary to protect the roofing underlayment and the R-Shield Nailbase from excessive temperatures. These design precautions may include the use of a ventilated air space above the R-Shield Nailbase to minimize temperature exposure. Consult Premier Building Systems for local recommendations.

Expanded polystyrene contains a flame retardant additive. However, the expanded polystyrene should be considered combustible and used with code approved thermal barriers and should not be stored near any open flame or source of ignition. Do not install or use expanded polystyrene with coal-tar pitch or highly solvent extended mastics, adhesives or sealants. Consult Premier Building Systems for suggested adhesives, sealants, and assembly specifications not otherwise detailed in this manual.

General Recommendations - cont'd

Low VOC Sealant and Splines

R-Shield Nailbase may be joined as needed using splines. These attachments are made with nails, staples, or screws and Low VOC Sealant.

Spline Connection and Low VOC Sealant use shall be as specified by the design professional based upon structure design, climate zone, and moisture vapor analysis.

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.

Special Treatments

One of the most destructive forces anywhere is termites. R-Shield can be manufactured with a proven and safe additive, that effectively resists termites.

R-Shield is treated to meet ICC ES AC239, "Acceptance Criteria for Termite-Resistant Foam Plastics."

Disclaimer

Details, illustrations, pictures and guidelines provided herein give basic information and illustrate examples of R-Shield Nailbase installation. The basic information provide 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 his 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 his 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 himself, his workers and any others on the job site while in the execution of all phases of R-Shield Nailbase installation.

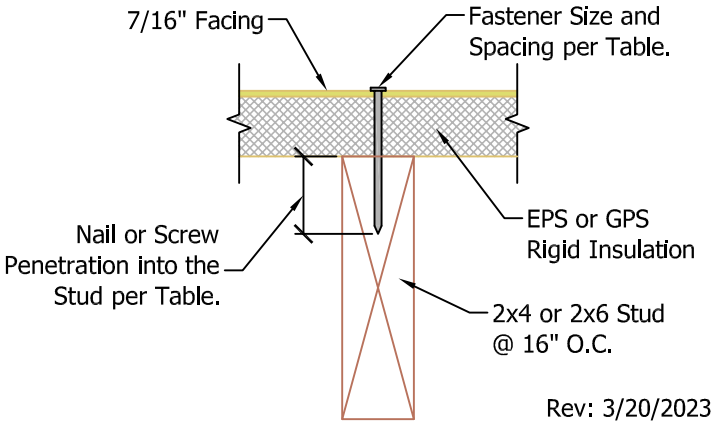
R-Shield NAILBASE Ci Panels - Allowable In-Plane Shear Capacity (ASD) for NAILBASE Ci panels with 7/16-inch thick facings (Plywood or OSB)				
EPS/GPS thickness and total Panel Thickness (in.)	Fasteners -At panel edges	Fasteners -In the field	Allowable Shear - SEISMIC	Allowable Shear - WIND
3/4-inch GPS (1 3/16-in total panel thickness)	0.131"ϕ x 3" Nails @ 3" O.C.	0.131"ϕ x 3" Nails @ 12" O.C.	440 plf (ASD)	615 plf (ASD)
7/8-inch EPS (1 5/16-in total panel thickness)	0.131"ϕ x 3" Nails @ 3" O.C.	0.131"ϕ x 3" Nails @ 12" O.C.	375 plf (ASD)	525 plf (ASD)
1-inch GPS (1 7/16-in total panel thickness)	0.131"ϕ x 3" Nails @ 3" O.C.	0.131"ϕ x 3" Nails @ 12" O.C.	330 plf (ASD)	460 plf (ASD)
1 1/4-inch EPS (1 11/16-in total panel thickness)	0.131"ϕ x 3" Nails @ 3" O.C.	0.131"ϕ x 3" Nails @ 12" O.C.	265 plf (ASD)	370 plf (ASD)
1 9/16-inch GPS (2-in total panel thickness)	0.162"ϕ x 4" Nails @ 3" O.C.	0.162"ϕ x 4" Nails @ 12" O.C.	400 plf (ASD)	560 plf (ASD)
1 15/16-inch EPS (2 3/8-in total panel thickness)	0.162"ϕ x 4" Nails @ 3" O.C.	0.162"ϕ x 4" Nails @ 12" O.C.	320 plf (ASD)	445 plf (ASD)
2-inch GPS (2 7/16-in total panel thickness)	0.162"ϕ x 4" Nails @ 3" O.C.	0.162"ϕ x 4" Nails @ 12" O.C.	310 plf (ASD)	430 plf (ASD)
2 9/16-inch EPS (3-in total panel thickness)	0.255"ϕ x 5" TruFast SIP TP Screws @ 4" O.C.	0.255"ϕ x 5" TruFast SIP TP Screws @ 12" O.C.	575 plf (ASD)	805 plf (ASD)

Notes:

1. Wood facing (OSB or Plywood) thickness shall be 7/16". Wall studs shall be 2x nominal studs at 16" O.C.
2. Rigid insulation thickness shall have a minimum density of 1.0 pcf and a minimum compressive strength of 10 psi.
3. 0.131" nails must penetrate at least 1 1/8" into the studs.
4. 0.162" nails must penetrate at lease 1 3/8" into the studs.
5. 0.255" screws must penetrate at least 2" into the studs.
6. Values are valid for studs and sheathing with G = 0.50 (Doug-Fir). For facings with a density other than G = 0.50, multiply the values in this table by [1-(0.5-G)].
7. All panel edges between studs shall be blocked and nailed/screwed.
8. Design loads must be determined in accordance with the applicable code and must not exceed the tabulated values.
9. All other construction requirements denoted within the NDS shall apply.
10. All other restrictions denoted within the above listed specifications shall apply.
11. All other elements of the MLFRS shall be specified and designed by the Engineer of Record.
12. R-Shield NAILBASE Ci is acceptable in all A,B,C,D,E,F Seismic Design Categories. When used as components within a seismic-force resisting system the following values shall be assigned:
    - 12.1. Response Modification Coefficient: R=6.5
    - 12.2. System Overstrength Factor: Ω_0=3
    - 12.3. Deflection Amplification Factor: C_d=4

    Collectors and their connections, bearing and anchorage of the shear wall assemblies and the lateral load path to the wall assemblies shall be designed in accordance with the special load combinations of Section 12.4.3 of ASCE 7, using E_m.

N.T.S.



Rev: 3/20/2023

SC-01

7/16" NAILBASE Ci PANEL SHEAR CAPACITY

R-SHIELD® RIGID INSULATION

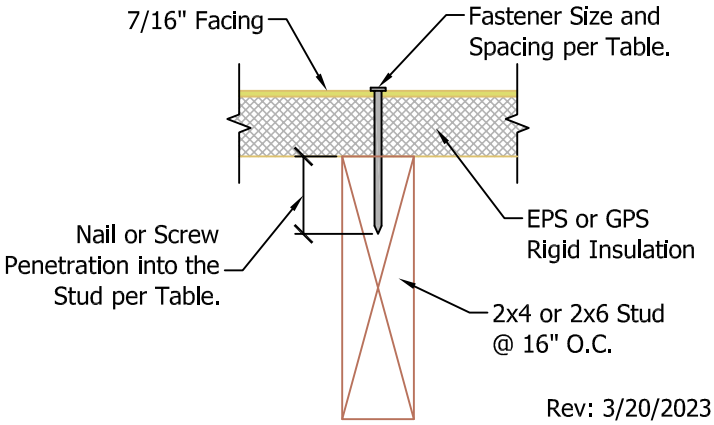
R-Shield NAILBASE Ci Panels - Allowable In-Plane Shear Capacity (ASD) for NAILBASE Ci panels with 1/2-inch thick facings (Plywood or OSB)				
EPS/GPS thickness and total Panel Thickness (in.)	Fasteners -At panel edges	Fasteners -In the field	Allowable Shear - SEISMIC	Allowable Shear - WIND
3/4-inch GPS (1 1/4-in total panel thickness)	0.131"ϕ x 3" Nails @ 3" O.C.	0.131"ϕ x 3" Nails @ 12" O.C.	440 plf (ASD)	615 plf (ASD)
7/8-inch EPS (1 3/8-in total panel thickness)	0.131"ϕ x 3" Nails @ 3" O.C.	0.131"ϕ x 3" Nails @ 12" O.C.	375 plf (ASD)	525 plf (ASD)
1-inch GPS (1 1/2-in total panel thickness)	0.131"ϕ x 3" Nails @ 3" O.C.	0.131"ϕ x 3" Nails @ 12" O.C.	330 plf (ASD)	460 plf (ASD)
1 1/4-inch EPS (1 3/4-in total panel thickness)	0.131"ϕ x 3" Nails @ 3" O.C.	0.131"ϕ x 3" Nails @ 12" O.C.	265 plf (ASD)	370 plf (ASD)
1 9/16-inch GPS (2 1/16-in total panel thickness)	0.162"ϕ x 4" Nails @ 3" O.C.	0.162"ϕ x 4" Nails @ 12" O.C.	400 plf (ASD)	560 plf (ASD)
1 15/16-inch EPS (2 7/16-in total panel thickness)	0.162"ϕ x 4" Nails @ 3" O.C.	0.162"ϕ x 4" Nails @ 12" O.C.	320 plf (ASD)	445 plf (ASD)
2-inch GPS (2 1/2-in total panel thickness)	0.162"ϕ x 4" Nails @ 3" O.C.	0.162"ϕ x 4" Nails @ 12" O.C.	310 plf (ASD)	430 plf (ASD)
2 9/16-inch EPS (3 1/16-in total panel thickness)	0.255"ϕ x 5" TruFast SIP TP Screws @ 4" O.C.	0.255"ϕ x 5" TruFast SIP TP Screws @ 12" O.C.	575 plf (ASD)	805 plf (ASD)

Notes:

1. Wood facing (OSB or Plywood) thickness shall be 7/16". Wall studs shall be 2x nominal studs at 16" O.C.
2. Rigid insulation thickness shall have a minimum density of 1.0 pcf and a minimum compressive strength of 10 psi.
3. 0.131" nails must penetrate at least 1 1/8" into the studs.
4. 0.162" nails must penetrate at lease 1 3/8" into the studs.
5. 0.255" screws must penetrate at least 2" into the studs.
6. Values are valid for studs and sheathing with G = 0.50 (Doug-Fir). For facings with a density other than G = 0.50, multiply the values in this table by [1-(0.5-G)].
7. All panel edges between studs shall be blocked and nailed/screwed.
8. Design loads must be determined in accordance with the applicable code and must not exceed the tabulated values.
9. All other construction requirements denoted within the NDS shall apply.
10. All other restrictions denoted within the above listed specifications shall apply.
11. All other elements of the MLFRS shall be specified and designed by the Engineer of Record.
12. R-Shield NAILBASE Ci is acceptable in all A,B,C,D,E,F Seismic Design Categories. When used as components within a seismic-force resisting system the following values shall be assigned:
    - 12.1. Response Modification Coefficient: R=6.5
    - 12.2. System Overstrength Factor: Ω_0=3
    - 12.3. Deflection Amplification Factor: C_d=4

    Collectors and their connections, bearing and anchorage of the shear wall assemblies and the lateral load path to the wall assemblies shall be designed in accordance with the special load combinations of Section 12.4.3 of ASCE 7, using E_m.

N.T.S.



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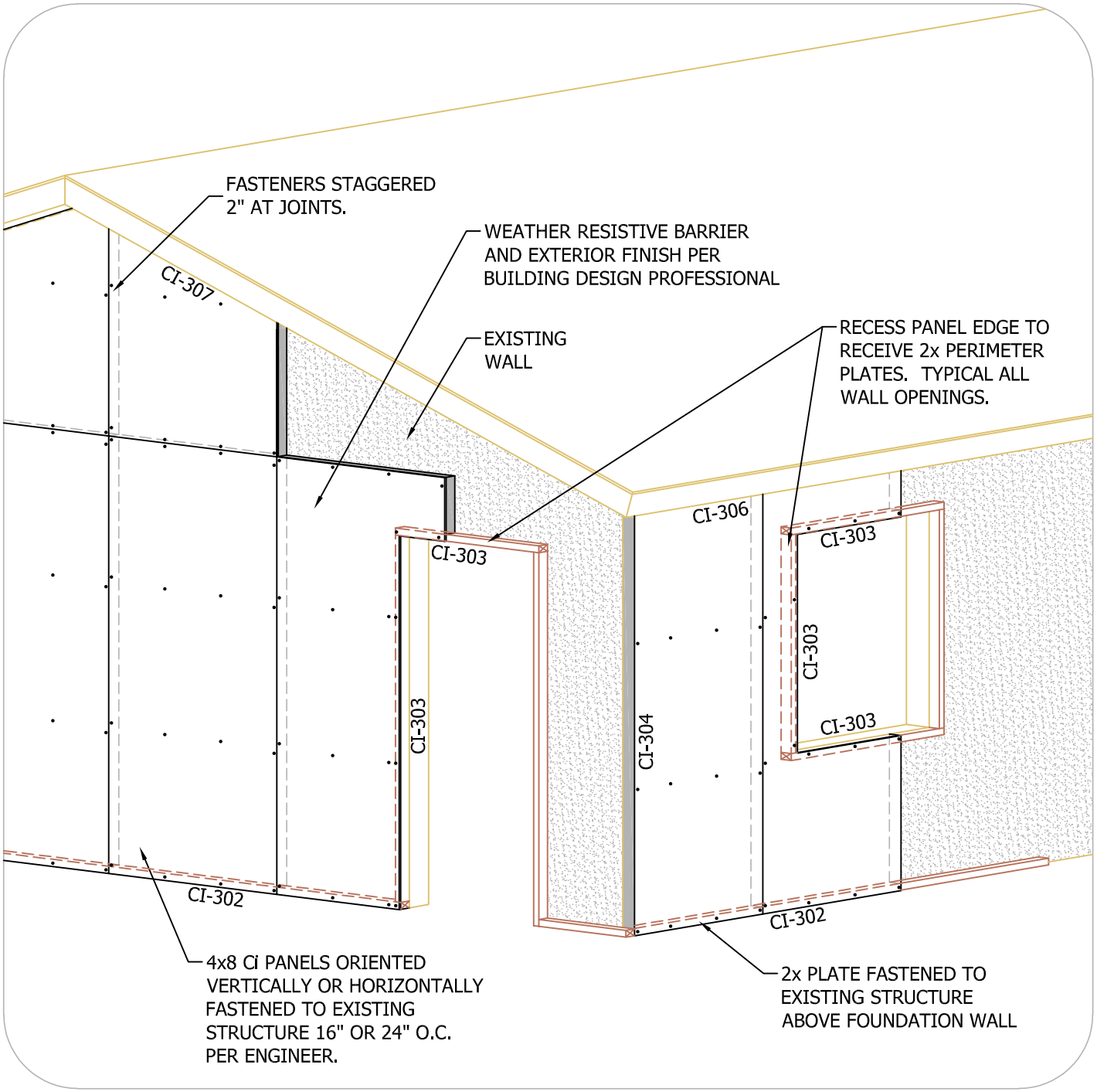
SC-02

1/2" NAILBASE Ci PANEL SHEAR CAPACITY

R-SHIELD® RIGID INSULATION

NOTES:

1. SCREW PATTERN ILLUSTRATED IS REPRESENTATIVE. EACH PROJECT SHALL BE ENGINEERED AS REQUIRED.
2. INSTALL WEATHER RESISTIVE BARRIER TO FACE OF PANEL PER CODE.



N.T.S.

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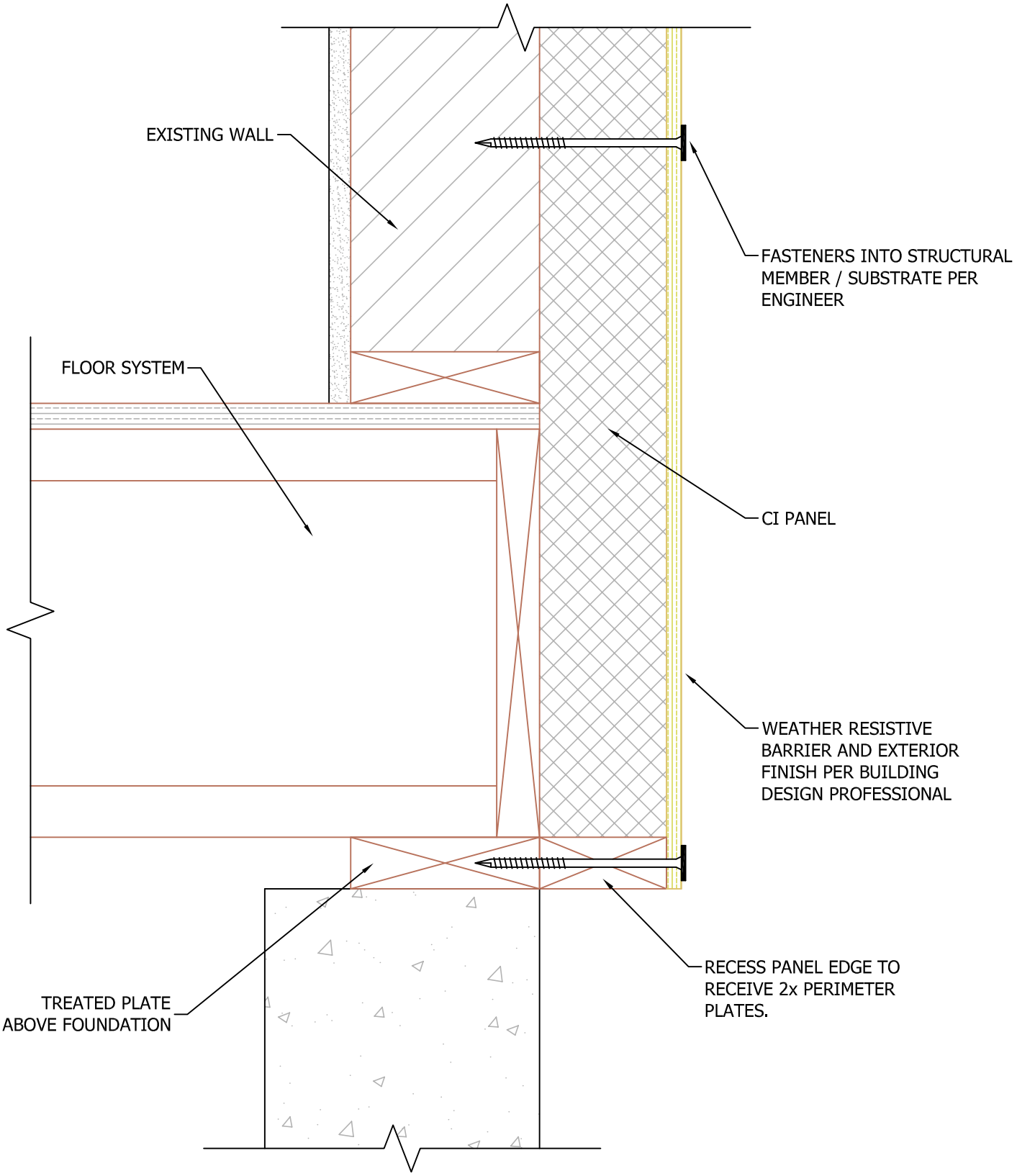
CI-301

CI PANEL INSTALLATION OVERVIEW

R-SHIELD® RIGID INSULATION



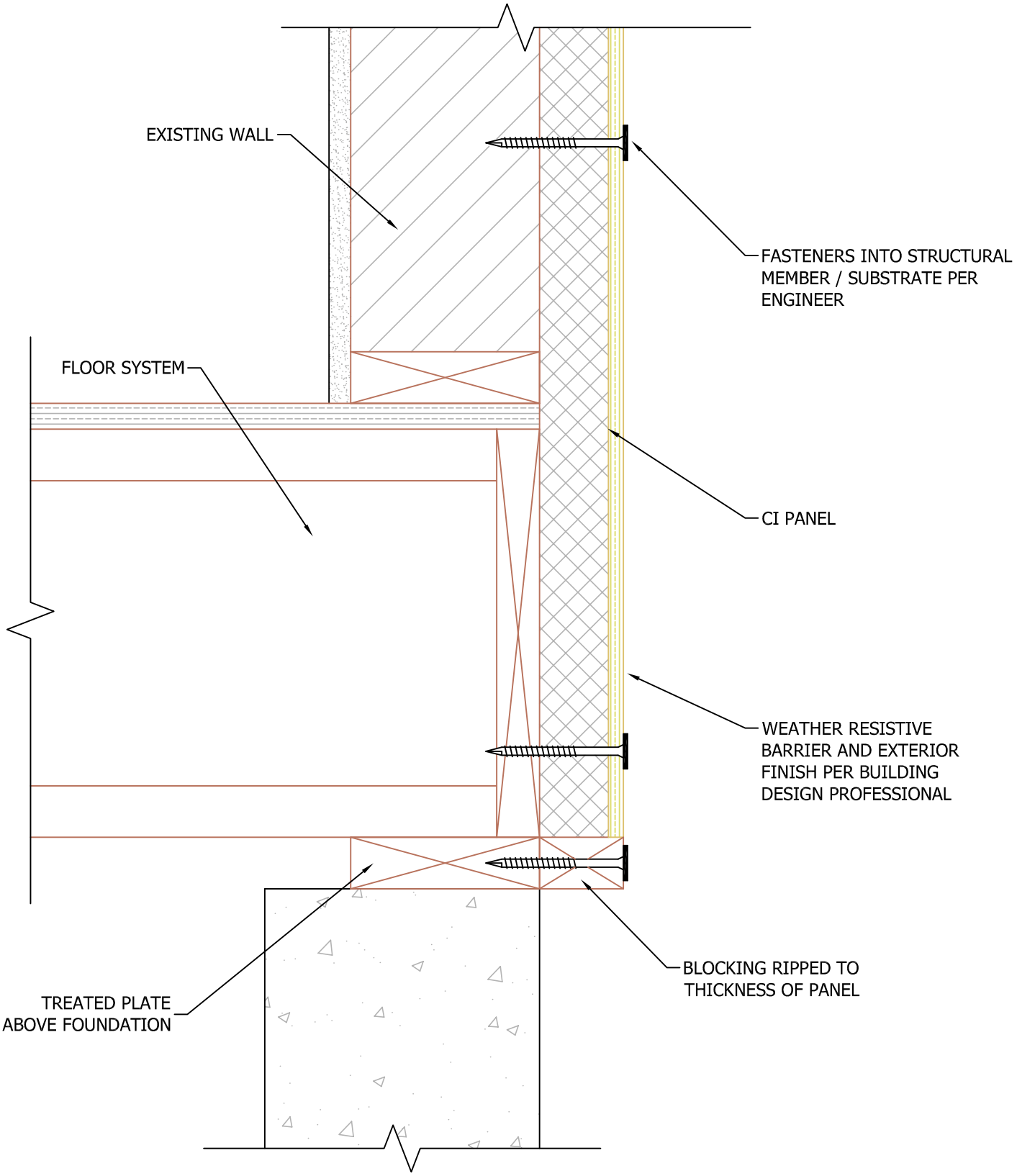
N.T.S.

Rev: 1/26/2024

CI-302A

CI PANEL
BOTTOM OF WALL

R-SHIELD® RIGID INSULATION



N.T.S.

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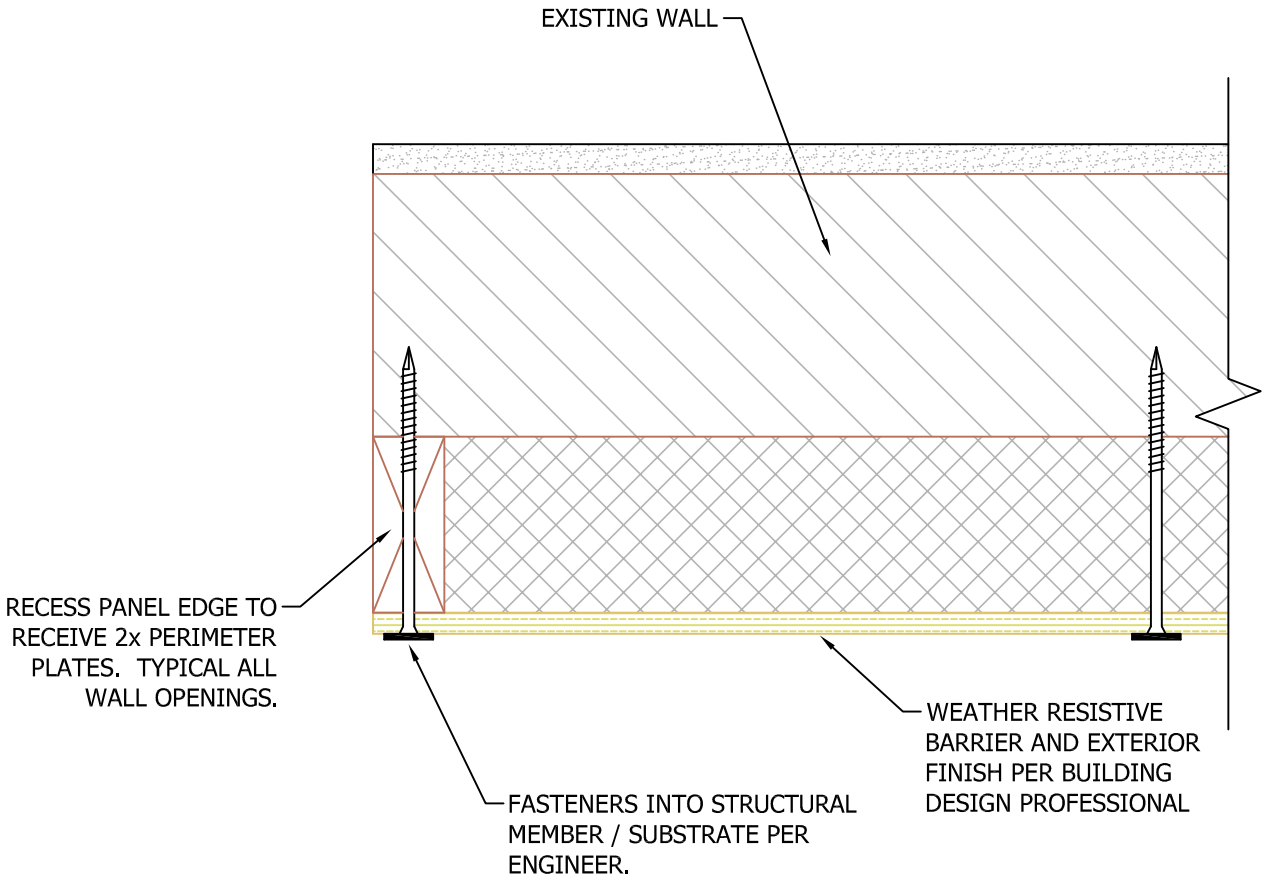
CI-302B

CI PANEL
BOTTOM OF WALL

R-SHIELD® RIGID INSULATION



N.T.S.

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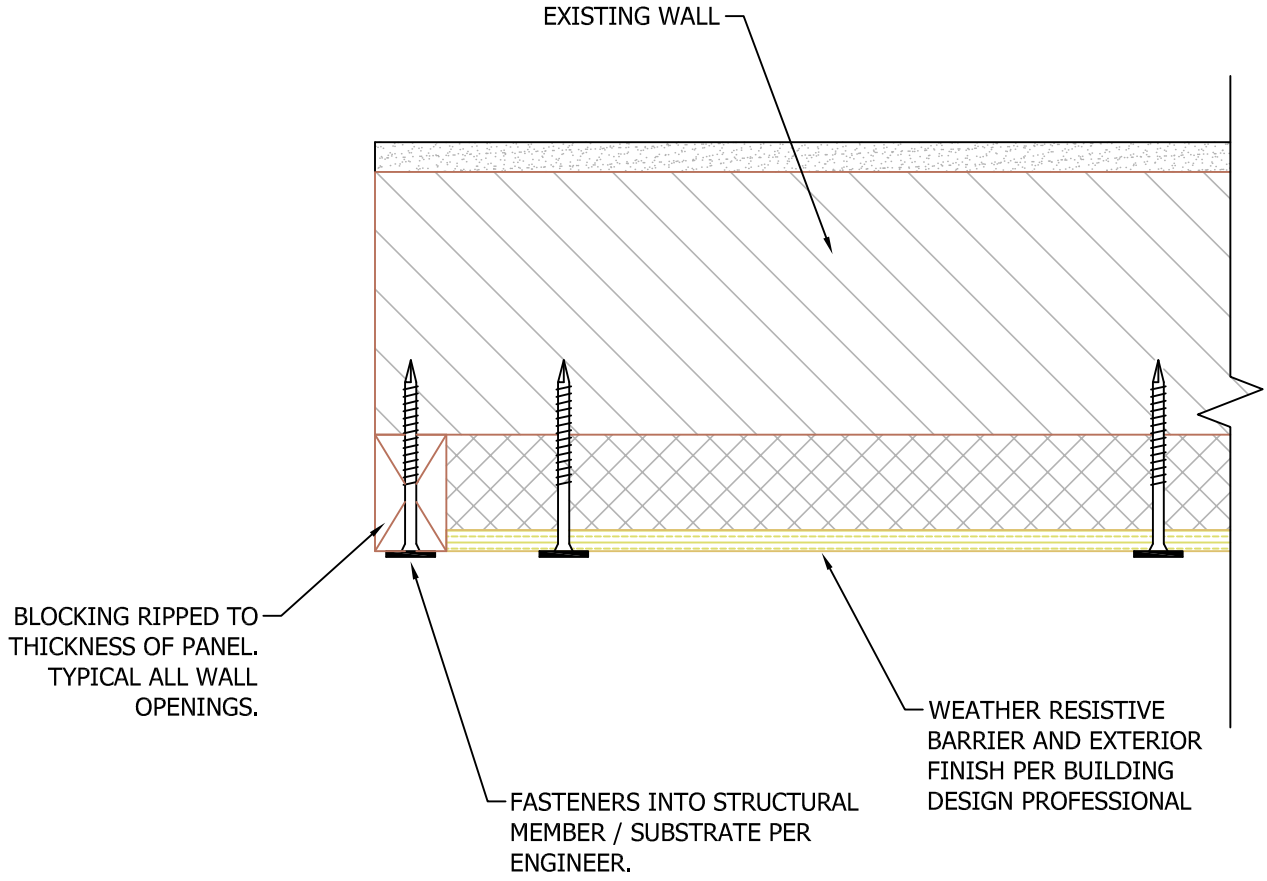
CI-303A

CI PANEL EDGE PLATING

R-SHIELD® RIGID INSULATION



N.T.S.

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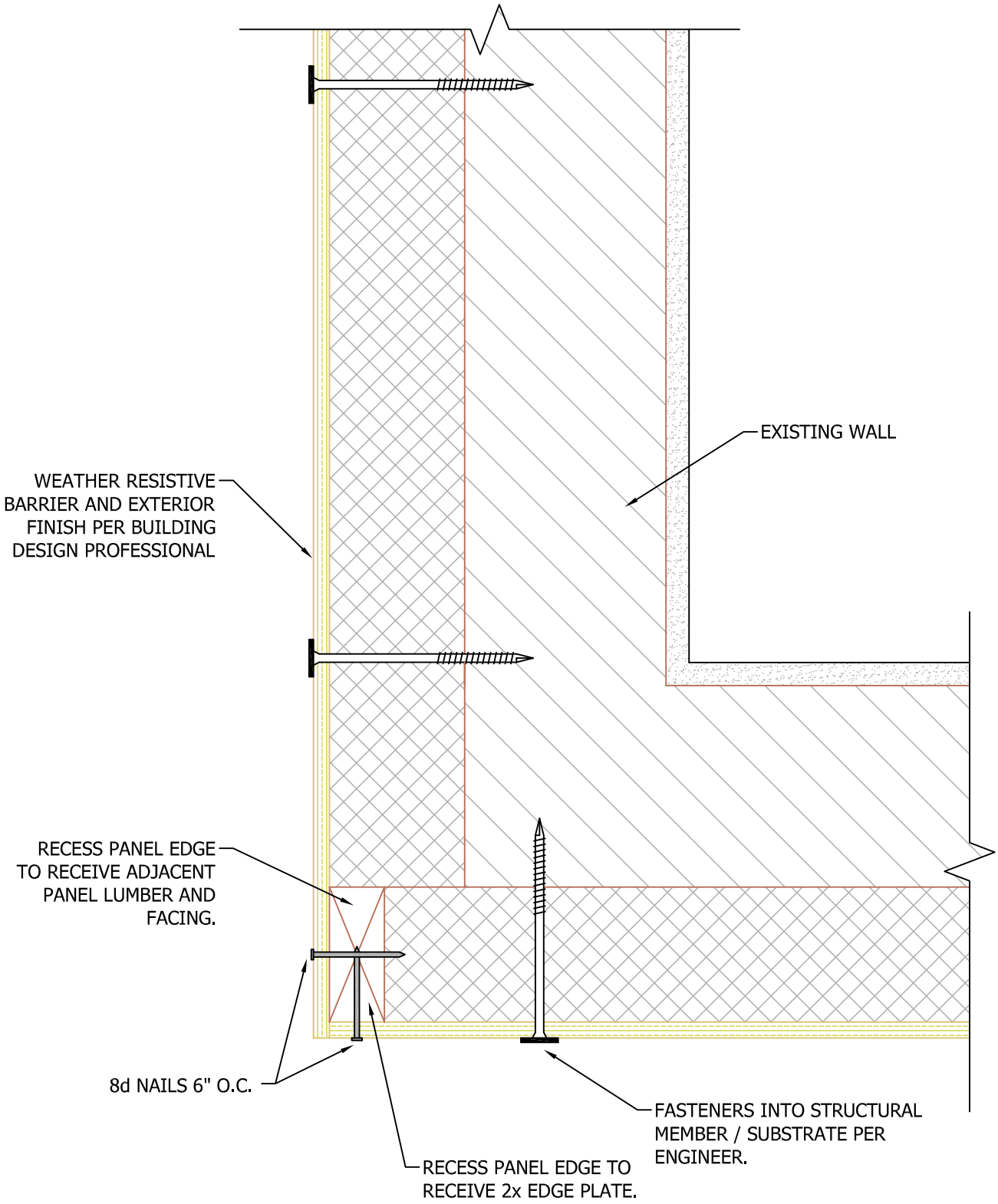
CI-303B

CI PANEL EDGE PLATING

R-SHIELD® RIGID INSULATION



N.T.S.

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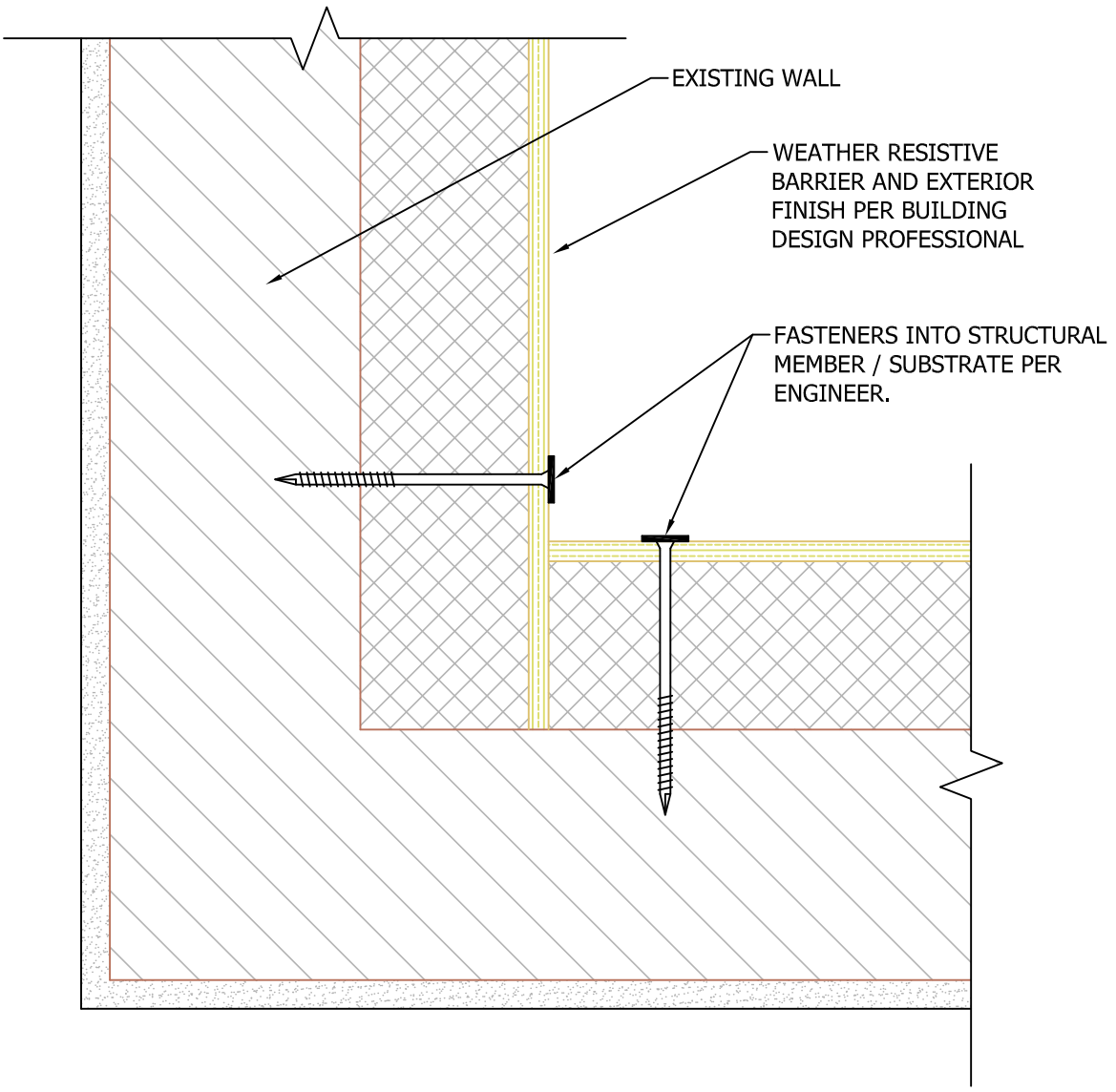
CI-304

CI PANEL OUTSIDE CORNER

R-SHIELD® RIGID INSULATION



N.T.S.

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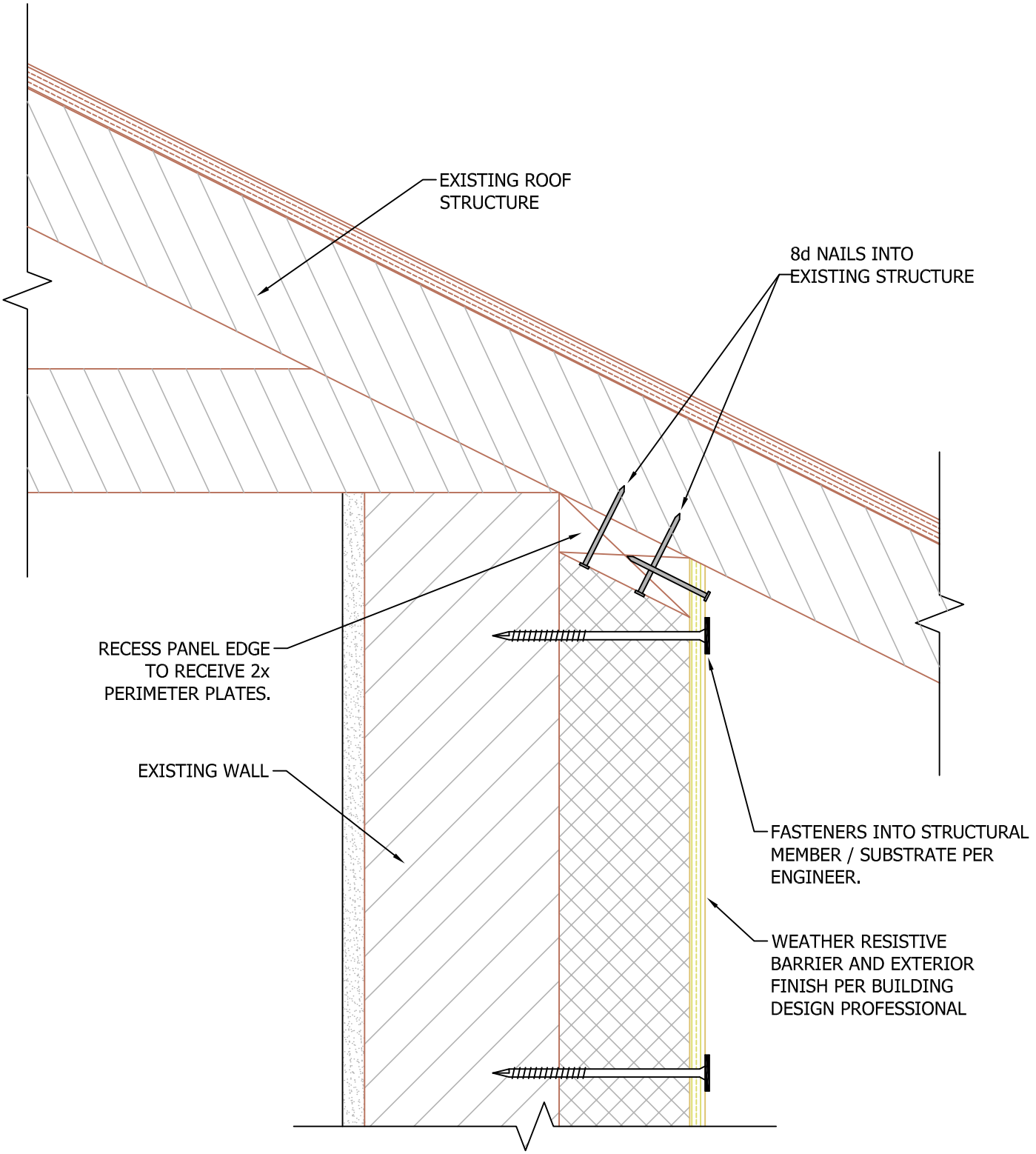
CI-305

CI PANEL INSIDE CORNER

R-SHIELD® RIGID INSULATION



N.T.S.

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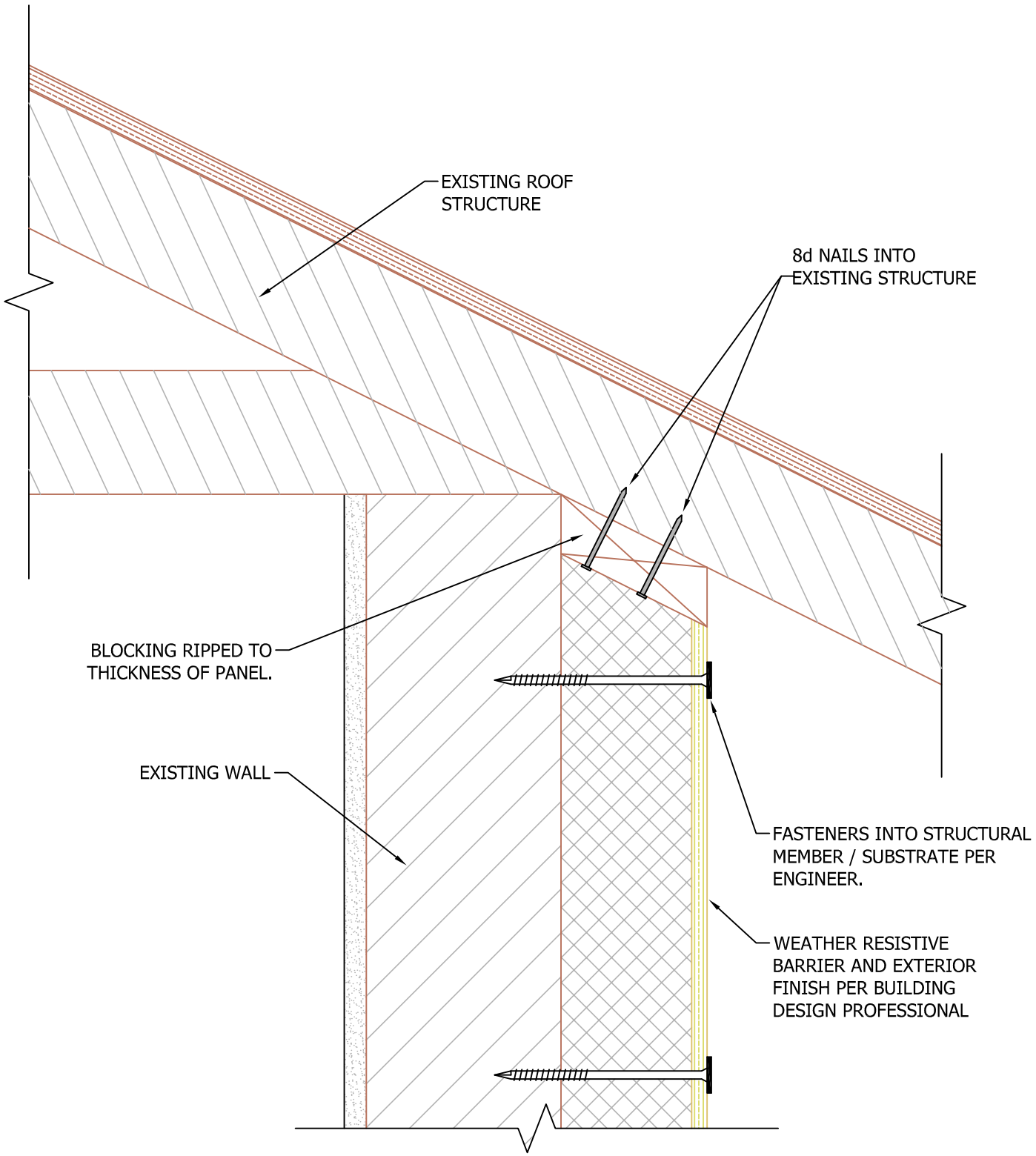
CI-306A

CI PANEL
BEVELED TOP OF WALL

R-SHIELD® RIGID INSULATION



N.T.S.

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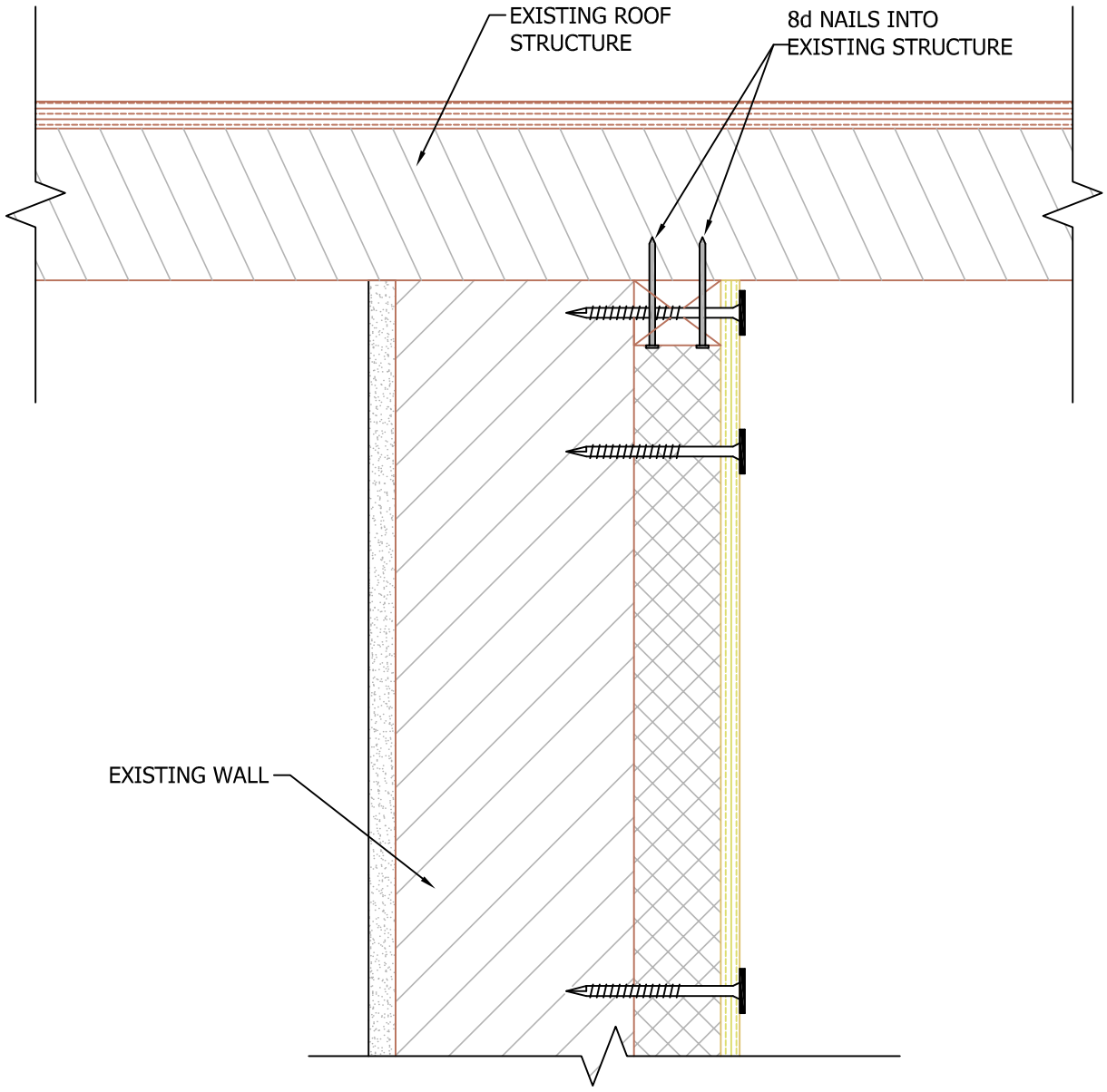
CI-306B

CI PANEL
BEVELED TOP OF WALL

R-SHIELD® RIGID INSULATION



N.T.S.

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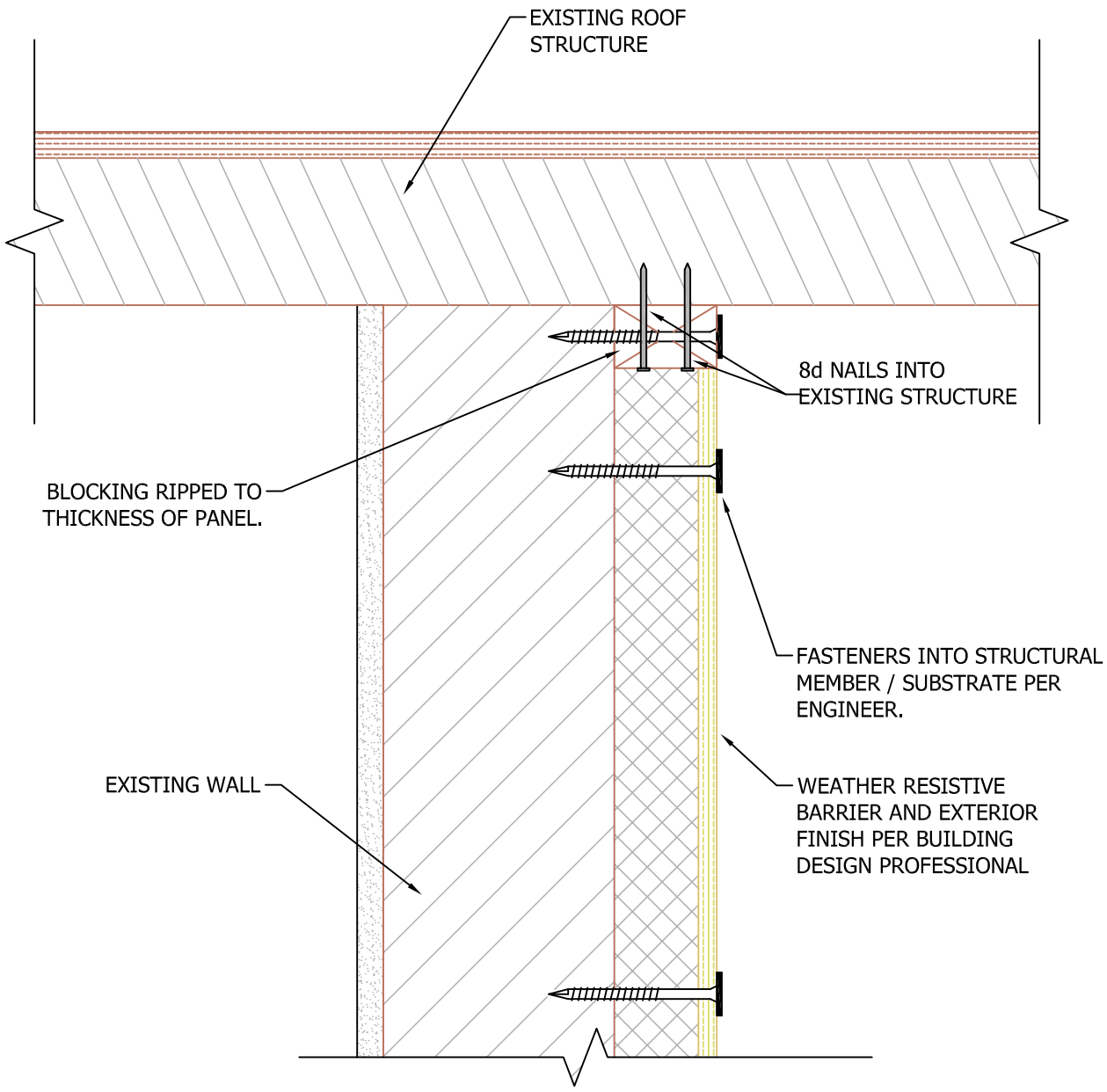
CI-307A

CI PANEL
SQUARE TOP OF WALL

R-SHIELD®
RIGID INSULATION



N.T.S.

Rev: 3/20/2023

CI-307B

CI PANEL
SQUARE TOP OF WALL

R-SHIELD® RIGID INSULATION

NAILBASE NO. 4004

SUBJECT: FASTENING TO CONCRETE OR FULLY-GROUTED CONCRETE MASONRY WALLS

DATE: APRIL 2010 (REVISED JANUARY 2019)

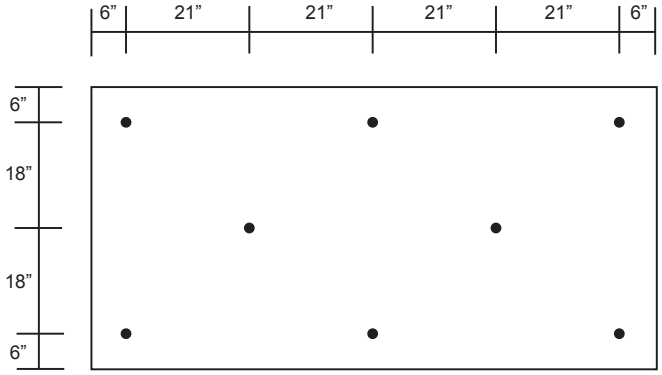
Minimum fastening requirements for R-Shield® Nailbase attached to concrete or fully-grouted concrete masonry walls with 1/2" (12.7mm) diameter Titen HD® screws have been developed in cooperation with Simpson Strong-Tie Anchor Systems. Various numbers of fasteners per 4' x 8' R-Shield Nailbase panel provide for a range of allowable loads that R-Shield Nailbase could support when installed flush over a concrete or fully-grouted concrete masonry wall. Examples of uniformly distributed loads that R-Shield Nailbase could support include gypsum board or other interior finish materials. Non uniform loads from cabinets, interior fixtures, or plant equipment are not covered in the table and shall be supported using additional fasteners attached to the concrete or fully-grouted concrete masonry wall.

R-Shield Nailbase Walls - Uniformly Distributed Loading attached with 1/2" (12.7mm) diameter Titen HD® Screws into Concrete or Fully-Grouted Concrete Masonry[1-7]	
Number of Fasteners[6]	**Allowable Load, psf (kPa)**
8	**13 (0.62)**
12	**34 (1.63)**
16	**52 (2.49)**
24	**52 (2.49)**

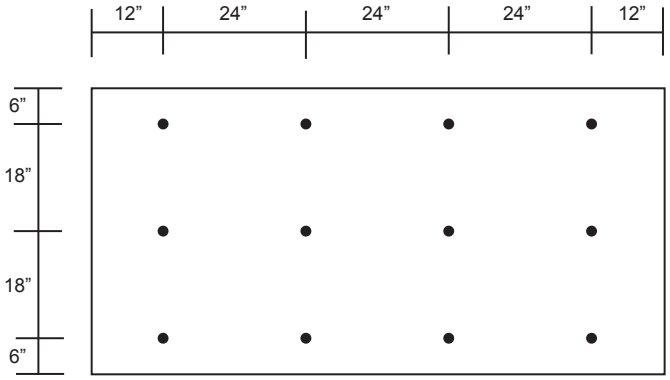
1. Applicable to 4' x 8' R-Shield Nailbase up to 5" thick.
2. The minimum anchor embedment is 2-3/4".
3. The minimum wall thickness is 8" for fully-grouted concrete masonry and 5" for concrete.
4. For installations in fully-grouted concrete masonry, the minimum distance from the anchor to any vertical mortar joint is 1.5" and the minimum distance to any edge on the face of the wall is 6". For installations in concrete, the minimum distance to any edge of the face of the wall is 6".
5. Values do not consider the application of positive or negative pressures (such as wind).
6. Please refer to page 2 of this bulletin for fastening patterns.
7. Building Codes may require special inspection of anchors installed in concrete or masonry. For compliance with these requirements, it is necessary to contact the local and/or regional authority having jurisdiction.

Titen HD® is a registered trademark of Simpson Strong-Tie Anchor Systems.

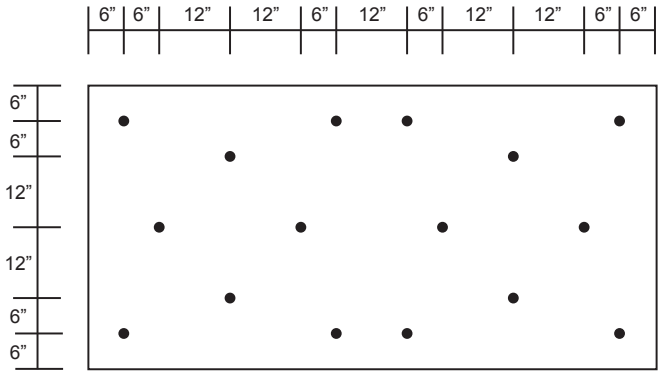
FASTENING PATTERNS FOR 4′ X 8′ NAILBASE



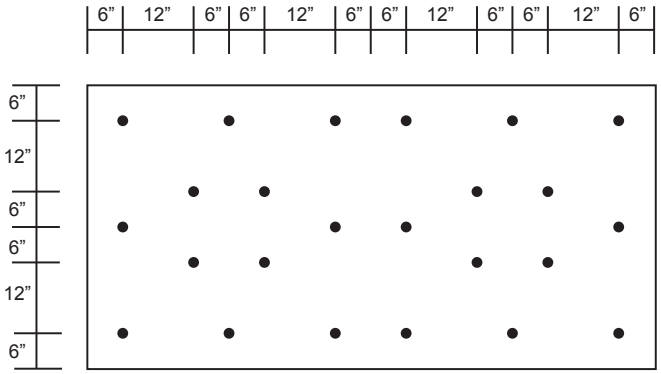
8 FASTENERS/BD.



12 FASTENERS/BD.



16 FASTENERS/BD.



24 FASTENERS/BD.

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NAILBASE NO. 4005

SUBJECT: FASTENING TO CONCRETE OR MASONRY WALLS

DATE: APRIL 2010 (REVISED JANUARY 2019)

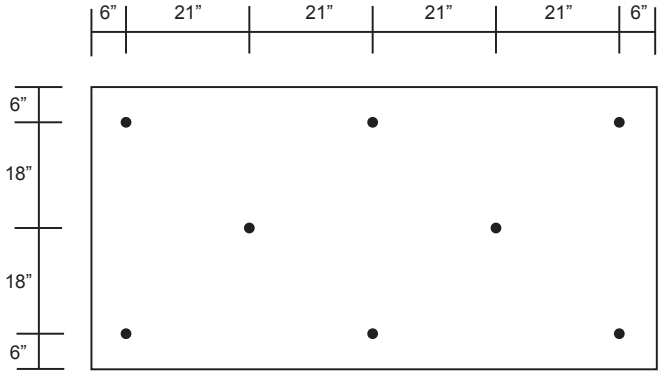
Minimum fastening requirements for R-Shield® Nailbase attached to concrete or masonry walls with 1/4" (4.8mm) diameter Titen® screws have been developed. Various numbers of fasteners per 4' x 8' R-Shield Nailbase panel provide for a range of allowable loads that R-Shield Nailbase could support when installed flush over a concrete or masonry wall. Examples of uniformly distributed loads that R-Shield Nailbase could support include gypsum board or other interior finish materials. Non uniform loads from cabinets, interior fixtures, or plant equipment are not covered in the table and shall be supported using additional fasteners attached to the concrete or CMU wall.

R-Shield Nailbase Walls - Uniformly Distributed Loading (attached with 1/4" (4.8mm) diameter Titen Screws[1-6])	
Number of Fasteners[6]	Allowable Load, psf (kPa)
	Concrete or Masonry
8	3 (0.14)
12	14 (0.67)
16	30 (1.44)
24	85 (4.07)
32	160 (7.66)

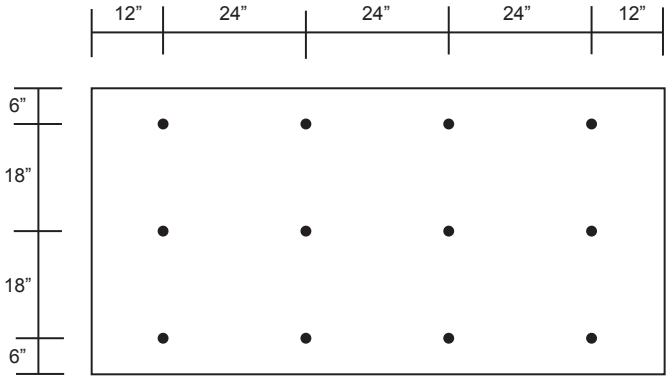
1. Applicable to 4' x 8' R-Shield Nailbase up to 5" thick.
2. Minimum anchor embedment is 1" (25.4 mm) and maximum anchor embedment is 1-1/2" (38.1 mm).
3. Concrete must be minimum depth of 1.5 x embedment.
4. Critical edge distance is 1-1 /2" (38.1 mm) to edge of concrete or masonry block.
5. Table does not consider positive or negative pressures (such as wind). In cases where this is a design consideration, the use of washers is recommended.
6. Please refer to page 2 of this bulletin for fastening patterns.

Titen® is a registered trademark of Simpson Strong-Tie Anchor Systems.

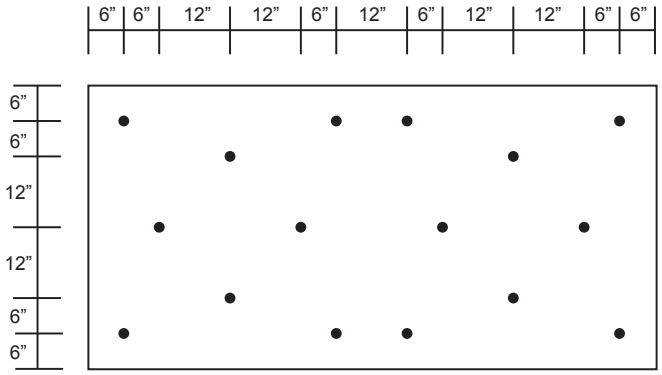
FASTENING PATTERNS FOR 4′ X 8′ NAILBASE



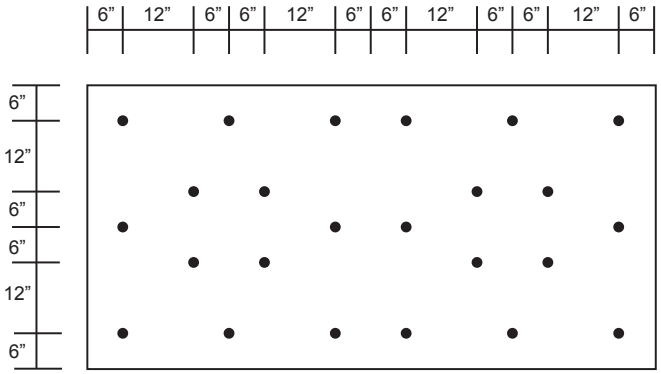
8 FASTENERS/BD.



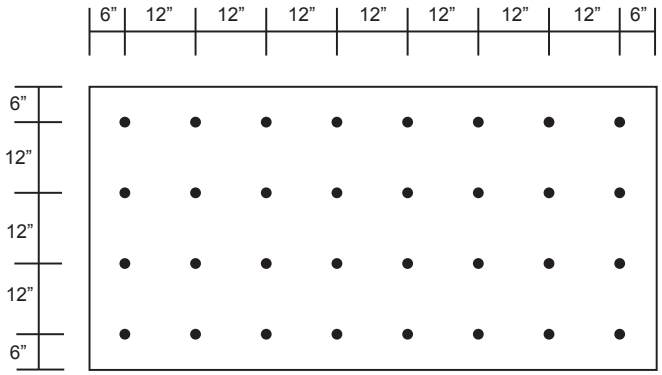
12 FASTENERS/BD.



16 FASTENERS/BD.



24 FASTENERS/BD.



32 FASTENERS/BD.

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NAILBASE NO. 4007

SUBJECT: FASTENING TO CONCRETE

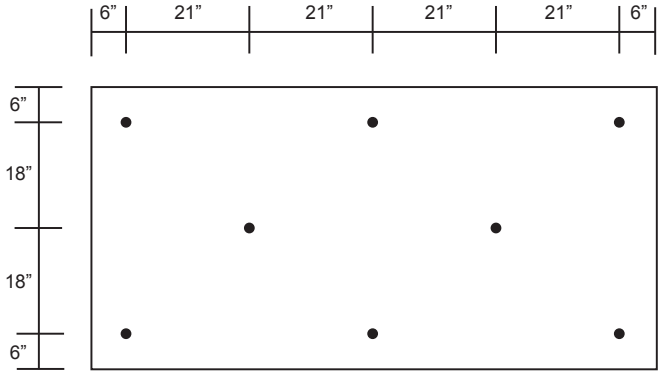
DATE: MAY 2012 (REVISED JANUARY 2019)

Minimum fastening requirements for R-Shield® Nailbase attached to concrete with Hilti X-U power actuated fasteners have been developed in cooperation with Hilti. Various numbers of fasteners per 4' x 8' R-Shield Nailbase panel provide for a range of allowable loads that R-Shield Nailbase could support when installed flush over a concrete. Examples of uniformly distributed loads that R-Shield Nailbase could support include gypsum board or other interior finish materials. Non uniform loads from cabinets, interior fixtures, or plant equipment are not covered in the table and shall be supported using additional fasteners attached to the concrete.

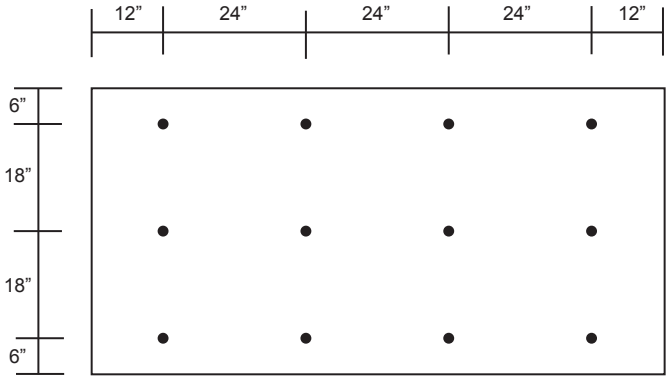
R-Shield Nailbase Walls - Uniformly Distributed Loading attached with Hilti X-U72 S36 fasteners into Concrete[1-5]	
Number of Fasteners	**Allowable Load, psf (kPa)**
8	**15 (0.71)**
12	**23 (1.08)**
16	**30 (1.41)**
24	**45 (2.12)**

1. Applicable to 4' x 8' R-Shield Nailbase up to 2" thick.
2. The minimum distance from the fastener to any edge of the face of the wall is 6".
3. Values do not consider the application of positive or negative pressures (such as wind).
4. Please refer to page 2 of this bulletin for fastening patterns.
5. Building Codes may require special inspection of anchors installed in concrete. For compliance with these requirements, it is necessary to contact the local and/or regional authority having jurisdiction.

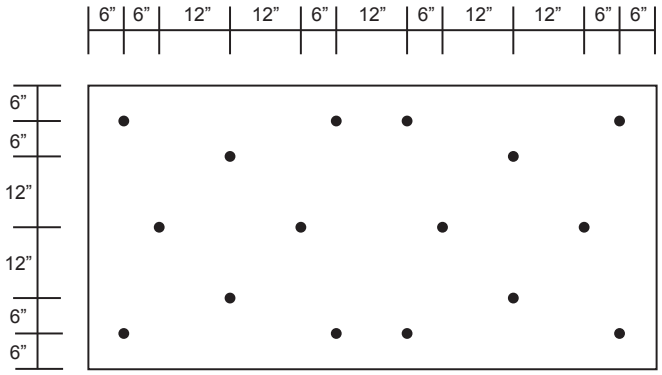
FASTENING PATTERNS FOR 4′ X 8′ NAILBASE



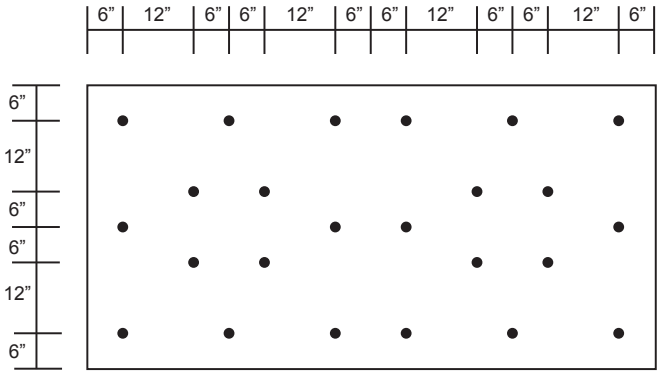
8 FASTENERS/BD.



12 FASTENERS/BD.



16 FASTENERS/BD.



24 FASTENERS/BD.

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NAILBASE NO. 4008

SUBJECT: SCREWS

DATE: APRIL 2024

R-Shield® Wood and Metal screws are available from Premier Building Systems for the attachment of R-Shield Nailbase to wood or metal substrates. These screws were developed to provide an engineered fastener that meets the requirements of R-Shield Nailbase building code recognized assemblies. Please find attached engineering properties (pages 2-4) for the R-Shield Wood Screws, Light-Duty Metal Screws and Heavy Duty-Metal Screws. The properties include withdrawal, shear, pull through and tensile strength. The values provided for the Screws are maximum values. Appropriate safety factors should be applied for the design as determined by the project architect and/or engineer.

WOOD SCREWS:

R-Shield Wood Screws are used to attach R-Shield Nailbase to wood structural members and substrates.

LIGHT-DUTY METAL SCREWS:

R-Shield Light-Duty Fasteners are used to attach R-Shield Nailbase to light gauge steel members up to 16-gauge thickness metal.

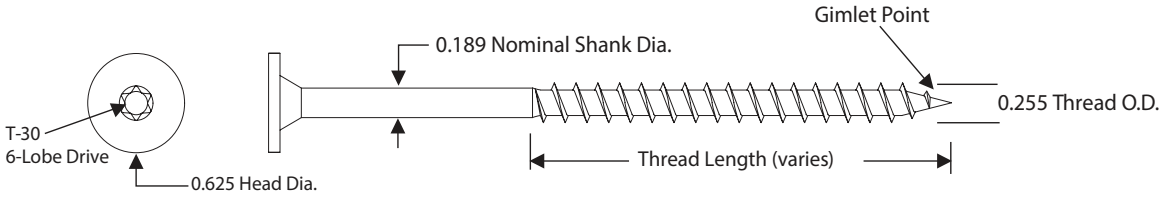
HEAVY-DUTY METAL SCREWS:

R-Shield Heavy-Duty Metal Screws are used to attach R-Shield Nailbase to metal structural members and substrates. R-Shield Heavy-Duty Metal Screws can self-drill into 3/16” steel without pilot hole predrilling. Installation is direct and fast; no wood nailers are required.

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.

R-SHIELD WOOD SCREW PROPERTIES

The R-Shield® 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 Masonary unit (CMU) conforming to ASTM C90.

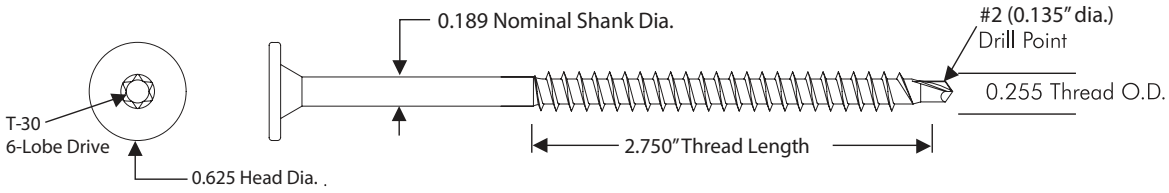
HEAD PULL-THRU - LBS.	
7/16" OSB	NAILBASE
490	630

LATERAL LOAD RESISTANCE - LBS.		
Main Member	Side Member	Load
SPF[1,2]	4-1/2" to 12-1/4" NAILBASE	943

[1] 1-3/4" fastener embedment into edge grain, including tip.
[2] 1" fastener embedment into face grain, including tip.

R-SHIELD LIGHT DUTY METAL SCREW PROPERTIES

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.

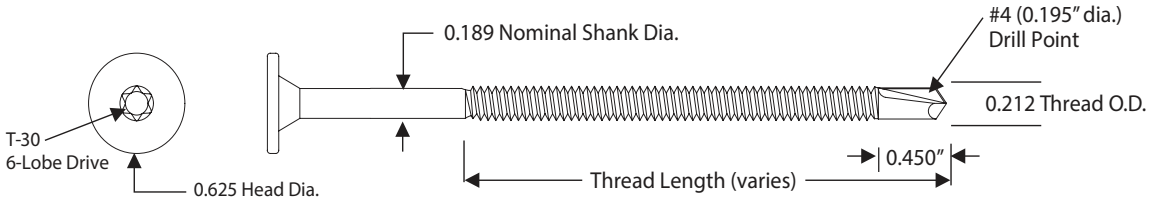
WITHDRAWAL: LUMBER & ENGINEERED WOOD - LBS./IN.[1]							
SPF/HF (0.42)		DF/SP (0.50)		LVL (0.50)		LSL (0.50)	OSB (7/16")
Face Grain	Edge Grain	Face Grain	Edge Grain	Face Grain	Edge Grain	Face Grain	Face
662	497	732	720	540	469	646	284

[1] Load values include fastener tip.

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

R-SHIELD HEAVY DUTY METAL SCREW PROPERTIES

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" (36 ksi)	3/16" (60 ksi)	1/4" (60 ksi)
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" OSB	NAILBASE
490	630

LATERAL LOAD RESISTANCE - LBS.		
Main Member	Side Member	Load
1/8" Structural Steel[1]	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.

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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	797

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

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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 appliction of these materials is typically accomplished with conventional nail products. An independent code recognized testing agency conduced 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

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NAILBASE NO. 4011

SUBJECT: EXTERIOR CLADDING TO R-SHIELD NAILBASE WALLS

DATE: APRIL 2024

R-Shield® Nailbase are used in both commercial and residential applications. Throughout the years, R-Shield has had nearly every type of exterior cladding applied to the face of its Nailbase This bulletin is a review of common claddings that are available and their attachment to R-Shield Nailbase. R-Shield Nailbase do not incorporate framing members and therefore, require cladding materials that are approved to be installed over 7/16" Structural OSB Sheathing. A review of the requirements for attachment of the siding material typically calls out for the cladding to be attached with 8d nails 16" or 24" on center depending on the framing spacing. Using these values, one can compare the pullout values for 8d nails into standard framing with the fastener pullout values listed in R-Shield's Technical Bulletins regarding Screw & Nail Withdrawal Capabilities of OSB. This comparison shows that all claddings, with the requirements of fastening to framing members, can be matched by applying 8d ring shank nails 12" o.c. into R-Shield Nailbase. This would include the attachment of standard sidings such as vinyl, Hardie® Board, cedar, redwood, board metal. composites and fiber cement sidings. This type of comparison is also valid for the application of lath for stucco as well as brick tie placement. Typically, these products are attached to Nailbase by simply increasing the number of fasteners by 25%. When a manufacturer calls out for fasteners 16" o.c. the fasteners would be placed in a Nailbase panel at a spacing of 12" o.c. This will allow the panel application to meet or exceed the pull-out values required by the siding manufacturer. It should be noted that the fastener placement can be maintained at the siding manufacturer's recommendations provided a nail/staple is replaced with a screw. In all cases the fastener should be corrosion resistant

FIBER CEMENT BOARD SIDING MANUFACTURERS & NAILBASE

James Hardie, Allura and Nichiha are the leading manufactures of fiber cement board siding supplied throughout the US and Canada. Each of these companies has examined the use of their products when applied over R-Shield Nailbase. All three of these companies have provided notice that their products, when applied directly over the 7/16" OSB facing of Nailbase are acceptable by following their recommended attachment patterns and approved fasteners.

James Hardie, Allura and Nichiha sidings are recommended as premium fiber cement board siding products compatible with R-Shield Nailbase. Information on the attachment requirement for each of these companies can be found at:

James Hardie
www.jameshardie.com
ICC-ES Evaluation Reports
ESR-2290 and ESR-1844

Allura
www.allurausa.com
ICC-ES Evaluation Report ESR-1668

Nichiha
www.nichiha.com
Intertek CCRR-0258

NAILBASE & ENGINEERED WOOD LAP SIDING FROM LOUISIANA PACIFIC

Louisiana-Pacific, a leader in the manufacture of Engineered Wood lap siding, has examined the use of their Smartside Precision Treated Engineered Wood lap siding with Nailbase. Louisiana-Pacific worked with APA who authored the APA Product Report (PR-N124 Available Here). Louisiana-Pacific has served notice that their products applied directly over R-Shield Nailbase are acceptable when following their recommended fastening patterns. Louisiana-Pacific siding is recommended as a premium Engineered-Wood lap siding product compatible with R-Shield Nailbase. Information regarding the attachment requirements for Louisiana-Pacific's Engineered Wood lap siding can be found in the PR-N124 APA Product Report linked above. Tables 4a and 4b list specific SIP attachment recommendations, and these tables are attached to this bulletin. For further information on Louisiana-Pacific siding products, please visit www.lpsmartside.com, Engineered Wood Lap Siding from Louisiana-Pacific.

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Product Availability and Support.

R-Shield Nailbase is supported by a team of experts who work with you to answer your questions, offer solutions, and do everything they can to make sure your project goes smoothly and ends successfully.

Ready to take control? Start here.

If you're ready to have R-Shield Nailbase contribute to your next project, just contact your Premier Building Systems Technical Sales Representative. We will be happy to give you design consultation, information about R-Shield Nailbase products, pricing, and answers to all of your questions.

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