

The better way to build™



Installation Manual ROOF SIPs



ROOF SIPs

Installation Manual

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ROOF SIPs

Installation Manual

1. General Requirements

1.1 Scope

The basic design and construction requirements for the Thermapan Structural Insulated Panel (SIP) roof system is set forth in this specification. Criteria for materials, environmental control, design loads, and structural design are included. Where requirements are based on internationally recognized standards and specifications, these standards and specifications are referenced without elaboration.

Installers shall reference engineering design package for fastening arrangements.

2. Materials

- 2.1** The Thermapan Roof SIP is composed of an expanded polystyrene (EPS) foam core laminated between two layers of oriented strand board (OSB) with a structural adhesive.
- 2.2** Framing Lumber shall be DOC PS 20 or NLGA No.2 or better.
- 2.3** Wire nails, ring nails, spikes and staples shall conform to CSA B111 or ANSI/ASME B11.1.
- 2.4** Wood screws shall conform to ANSI/ASME B18.6.1..
- 2.5** SIP screws shall conform to ICC-AC233.
- 2.6** Caulking Compounds shall conform to CAN/CGSB 19.13 or ASTM C 920.
- 2.7** Polyethylene Sheeting shall conform to CAN/CGSB-37.2, CAN/CGSB-37.16, or ASTM D 4397.
- 2.8** Low expansion foam seal shall conform to AAMA 812-04.
- 2.9** Structural adhesive shall conform to CAN/CGSB 71GP26, APA AFG-01 or ASTM D3498.

3. Interior Finish

- 3.1** The interior of the roof SIP can be finished with any of the common required building code materials. It is recommended that the SIP joints and connections be sealed as per Details AB-1, AB-2 and VB-1.

4. Exterior Roofing

- 4.1** Consult your local building code and refer to details R-11 and R-12 for roofing applied to SIPs.

MATERIALS ESTIMATING

Roof (Vaulted Ceiling) Estimation Only

Lumber Requirements:

- Perimeter of roof or fascia length

Caulking and Sealant Requirements:

- Every 1200 sqft (111 m²) of SIP equals 1 case of Expandable Foam
- Every 2000 sqft (185 m²) of SIP requires 1 case of Sealant

Fasteners:

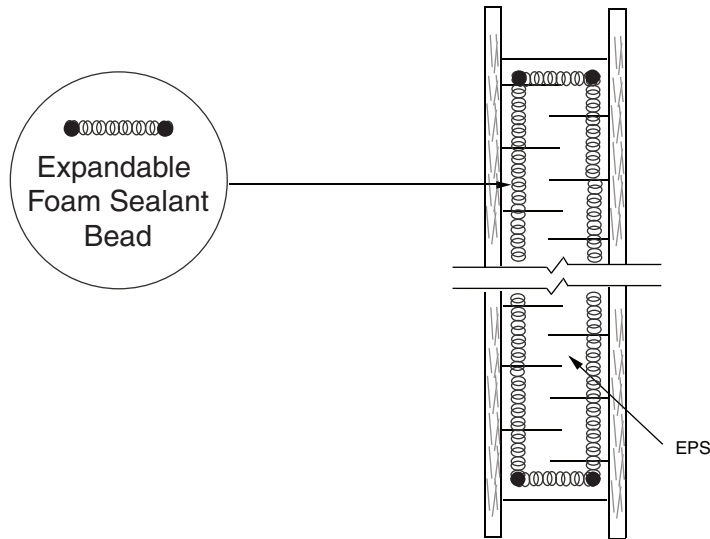
- Recommend 2" (50mm) Ring nail or 2" (50mm) screws for connection to panel
- ~ 1.25 times the square footage of SIPs... nailing of spline
- SIP screws use 40% of Roof square footage

AIR BARRIER

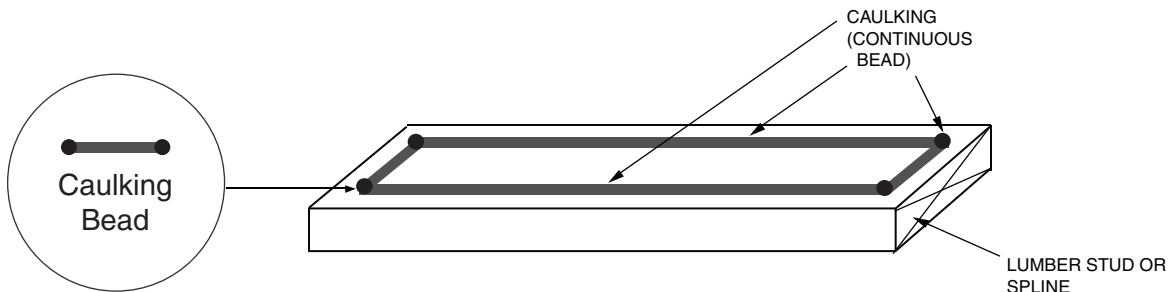
RECOMMENDED DETAILS FOR AIR BARRIER SEALANTS

All sealants, FOAM (A) or CAULKING (B), should be applied onto the SIP in a continuous rectangular pattern along the outer most edge of the area to be sealed.

- (A) A low expansion EXPANDABLE FOAM SEALANT should conform to the AAMA 812-04 standard. Apply a 1/2 inch or a 12.5 mm diameter of a *continuous* bead of expandable foam sealant onto the SIP:



- (B) A CAULKING SEALANT should conform to ASTM C920-02 and/or CAN/CGSB 19.13-M. Apply a 3/8 inch or a 10 mm diameter *continuous* bead of caulking onto the lumber spline:



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1-877-443-WALL (9255)

TITLE

AIR BARRIER DETAILS FOR AIR BARRIER SEALANTS

PROJECT

REFERENCE

SCALE

N.T.S.

DATE

NOVEMBER 2010

REVISION

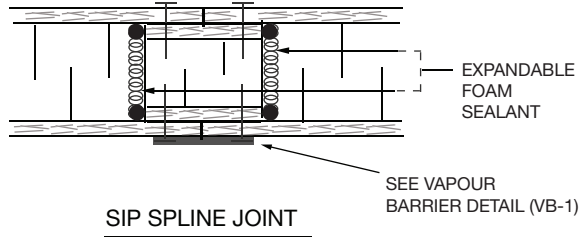
DWG. No.

1 AB-1

AIR BARRIER

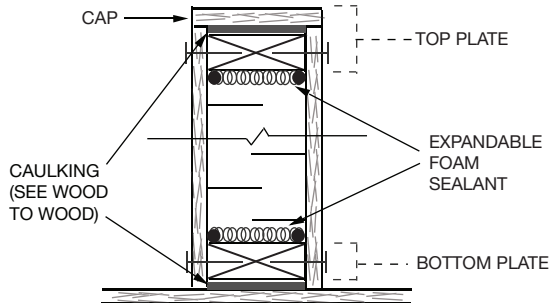
RECOMMENDED DETAILS FOR SEALING SIP CONNECTIONS

(1) Foam to Foam: Use a low expansion foam sealant.

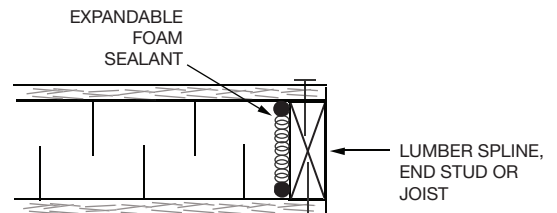


(2) Foam to Wood: Use a low expansion foam sealant.

PLATES SECTION

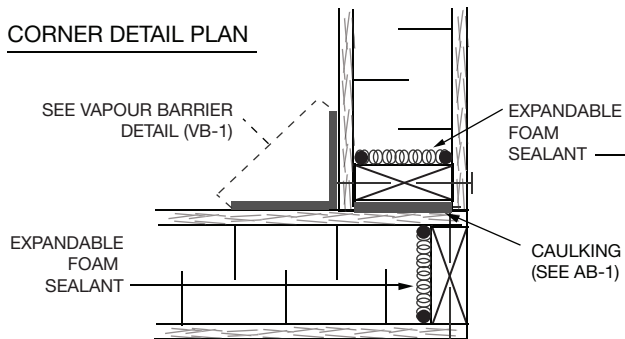


LUMBER SPLINES

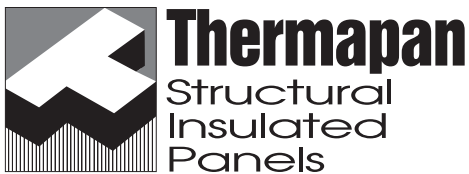
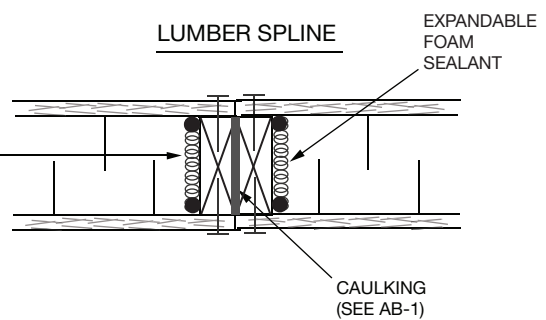


(3) Wood to Wood: Use caulking and a low expansion foam sealant.

CORNER DETAIL PLAN



LUMBER SPLINE



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TITLE

AIR BARRIER DETAILS
FOR SEALING
SIP CONNECTIONS

PROJECT

REFERENCE

SCALE

N.T.S.

DATE

MAY 2020

REVISION

DWG. No.

1

AB-2

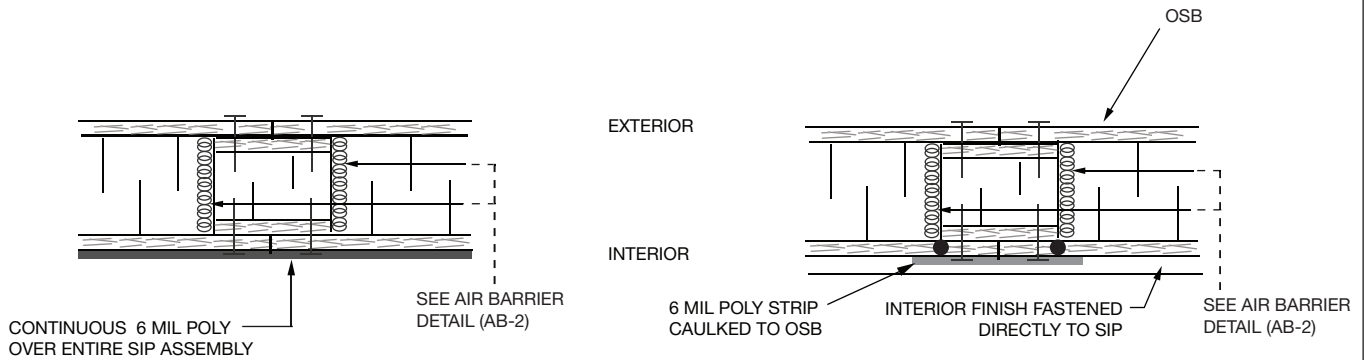
VAPOUR BARRIER

RECOMMENDED DETAILS FOR VAPOUR SEALING SIP CONNECTIONS

The function of a vapour barrier is to control the entry of water vapour into the building assembly. Vapour barriers should not be confused with an air barrier.

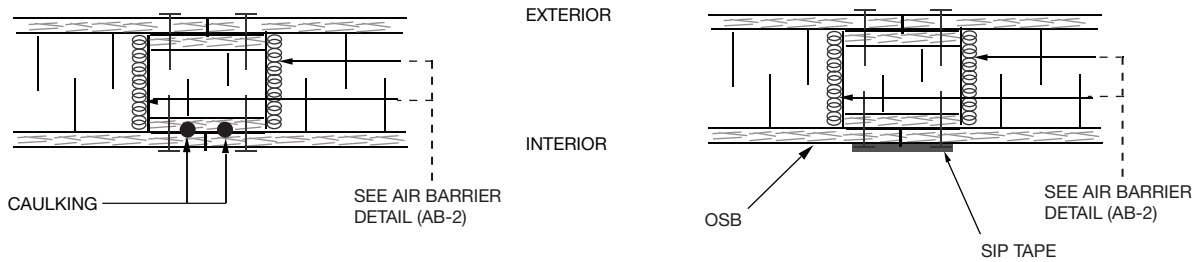
All SIP seams and connections must be VAPOUR SEALED from the INTERIOR.

These are recommended vapour barrier methods:



CONTINUOUS 6 MIL POLY RECOMMENDED

6 MIL POLY STRIPS & CAULKING



CAULKING

SIP TAPE



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TITLE

VAPOUR BARRIER DETAILS
FOR VAPOUR SEALING
SIP CONNECTIONS

PROJECT

REFERENCE

SCALE

N.T.S.

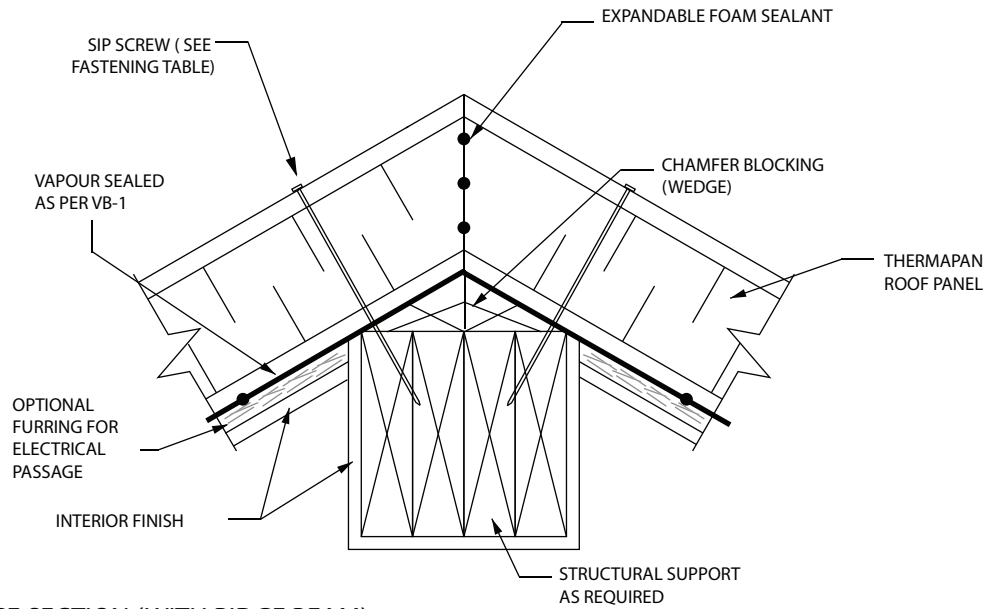
DATE

MAY 2020

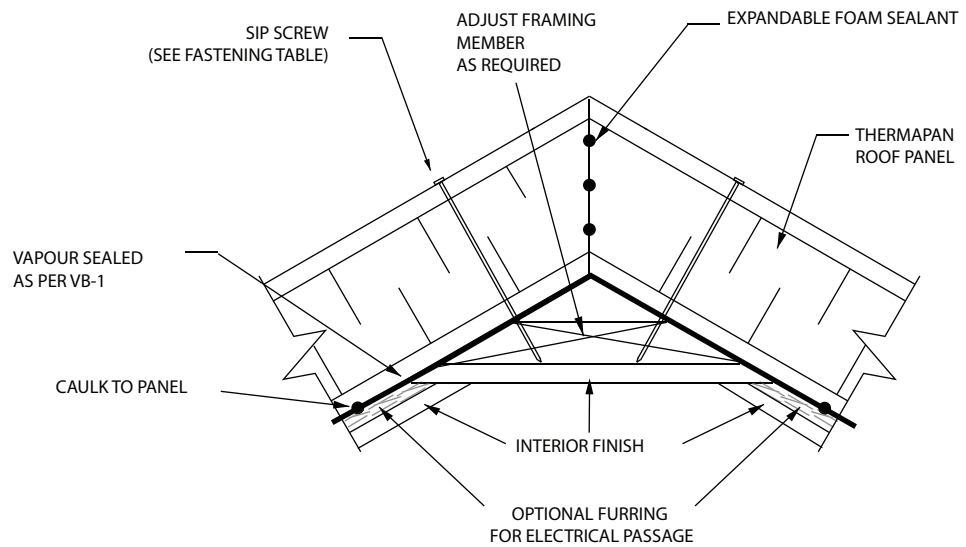
REVISION

DWG. No.

VB-1



RIDGE SECTION (WITH RIDGE BEAM)



"RIDGE" SECTION (NO RIDGE BEAM)

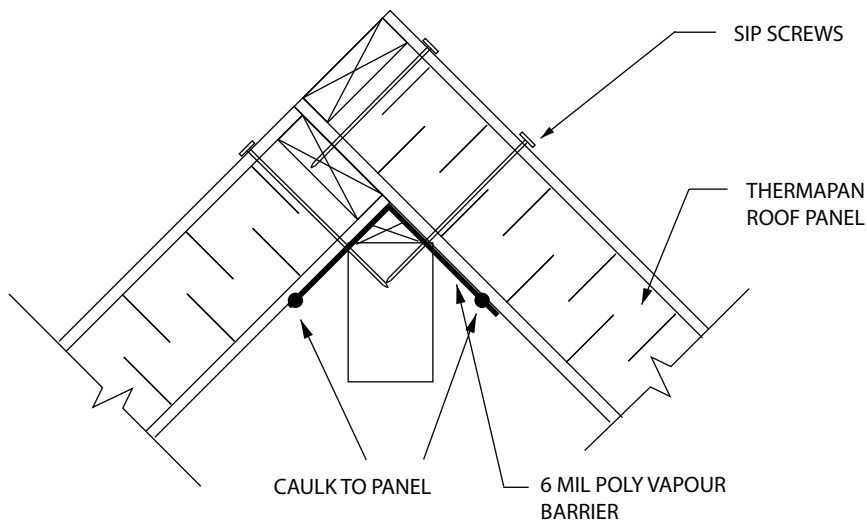
NOTE: REFERENCE ROOF PANEL FASTENING TABLE ON CONNECTION DESIGN (CD) SHEET OF ENGINEERED SHOP DRAWINGS



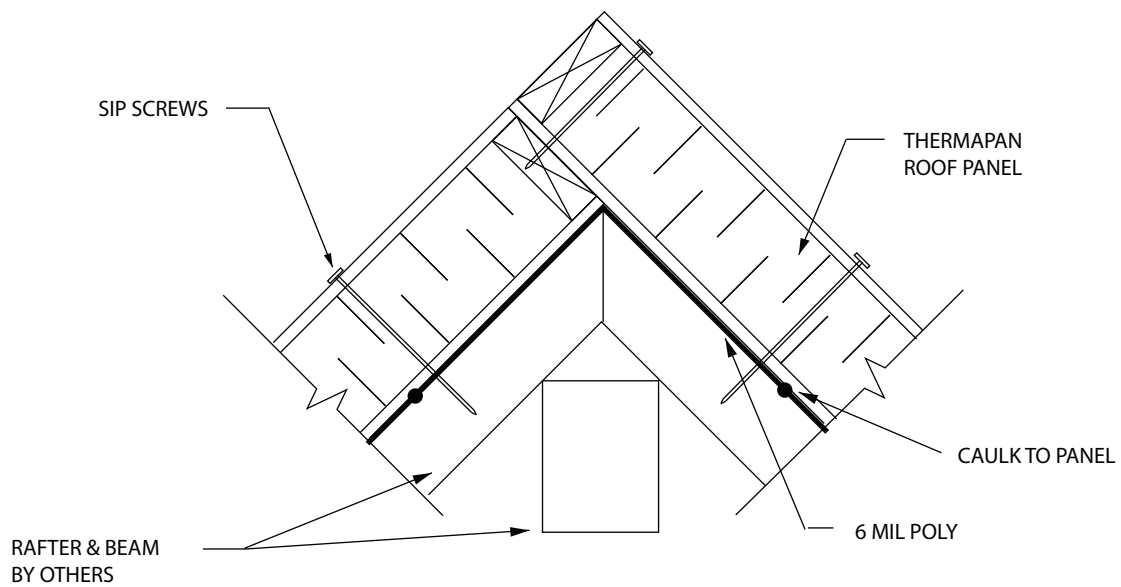
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TITLE		PROJECT	
ROOF RIDGE DETAILS			
REFERENCE	SCALE		
	N.T.S.		
DATE	REVISION	DWG. No.	
FEBRUARY 2012	5	R-1	



RIDGE SECTION (TYPICAL RIDGE BEAM)



FOR RAFTER & BEAMS (DESIGNED BY OTHERS)

NOTE: REFER TO AIR BARRIER (AB-2) AND VAPOUR BARRIER (VB-1) DETAILS FOR SEALING SIP CONNECTIONS

NOTE: REFERENCE ROOF PANEL FASTENING TABLE ON CONNECTION DESIGN (CD) SHEET OF ENGINEERED SHOP DRAWINGS



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TITLE

**SECTIONS -
ROOF RIDGE DETAILS
FOR 12/12 PITCH ROOF**

PROJECT

REFERENCE

SCALE

N.T.S.

DATE

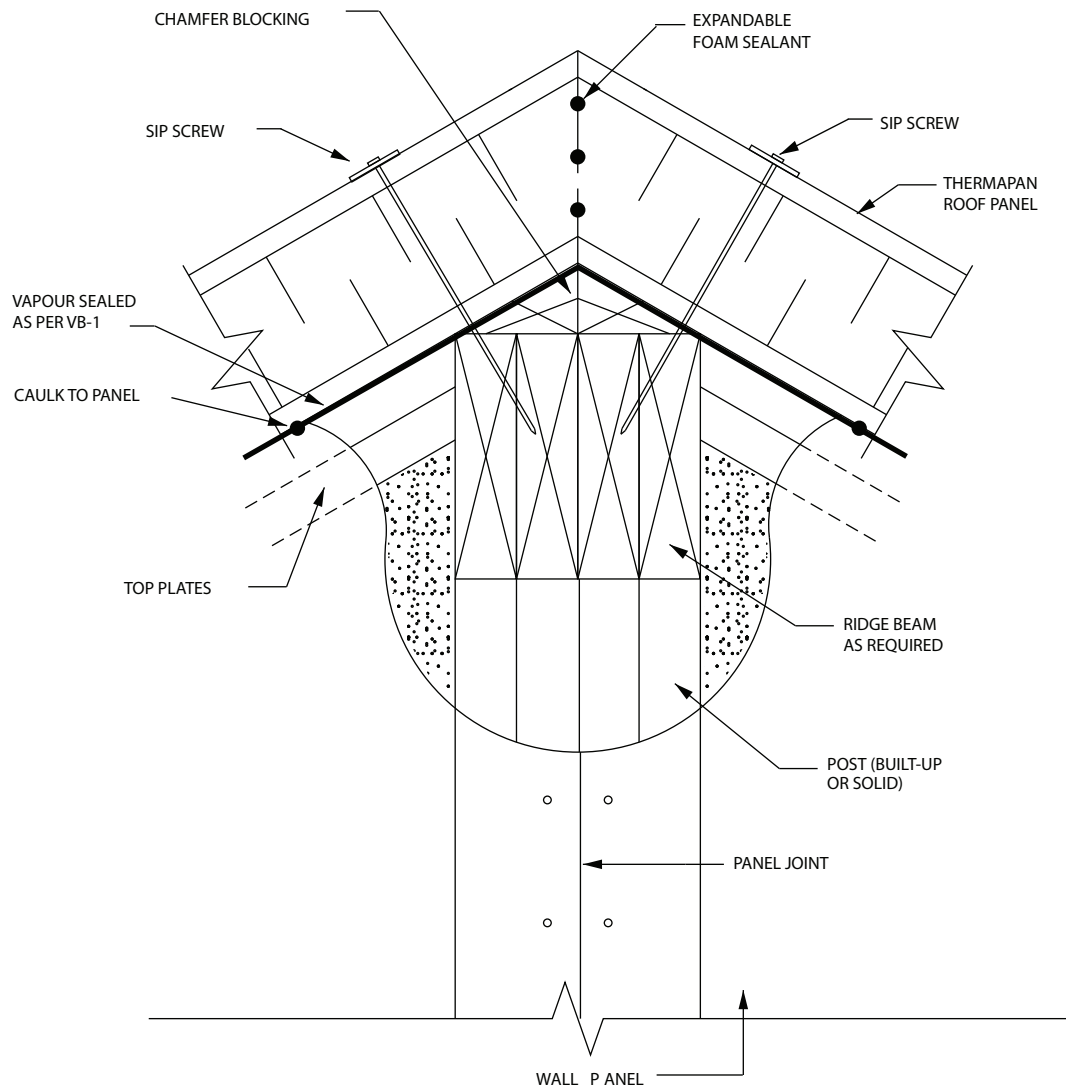
FEBRUARY 2012

REVISION

R-2

DWG. No.

R-2



RIDGE BEAM & POST POCKET

NOTE: REFERENCE ROOF PANEL FASTENING TABLE ON CONNECTION DESIGN (CD) SHEET OF ENGINEERED SHOP DRAWINGS



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TITLE

BEAM POCKET DETAIL

PROJECT

REFERENCE

SCALE

N.T.S.

DATE

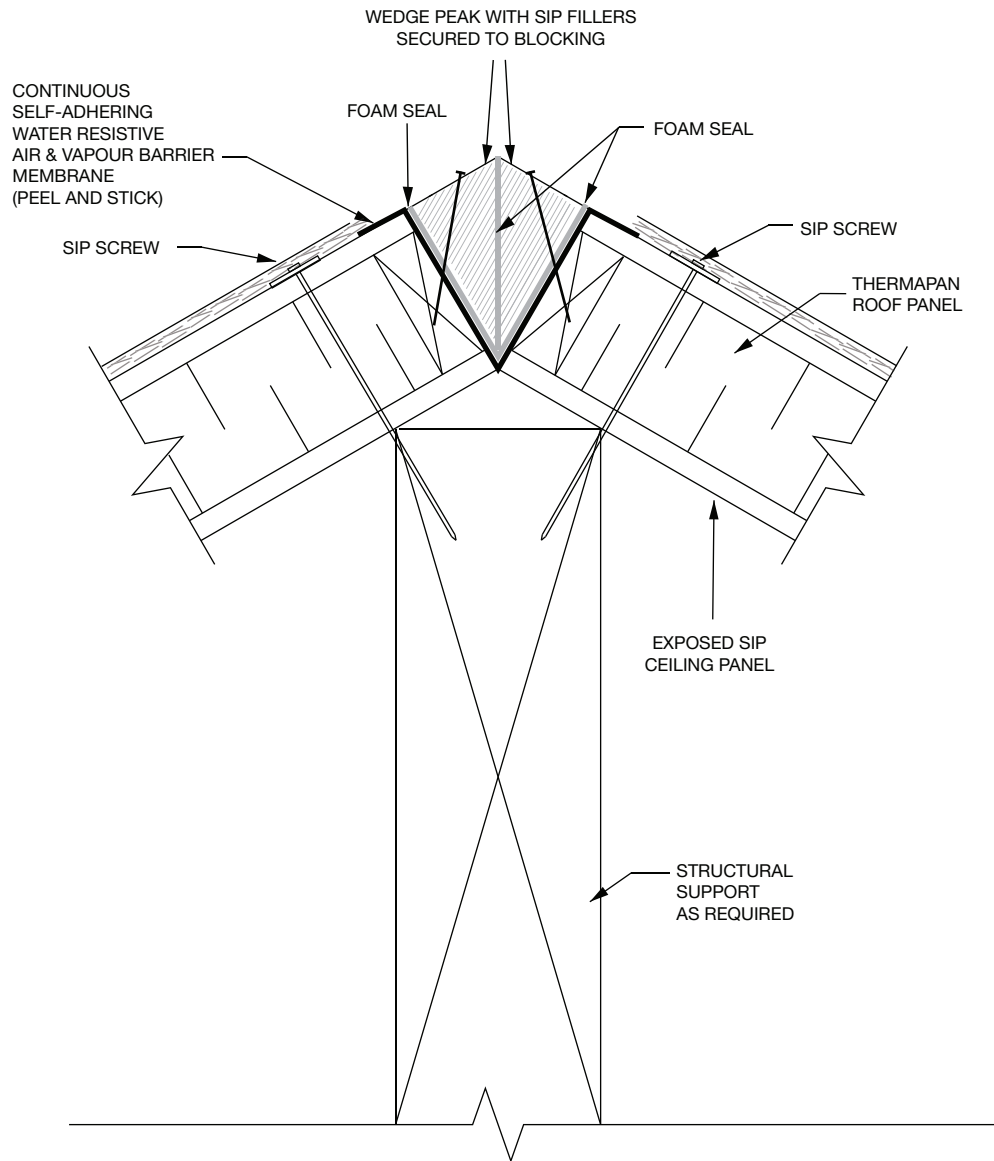
DECEMBER 2010

REVISION

DWG. No.

2

R-3



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TITLE

SIP PEAK CONNECTION (ALTERNATIVE)

PROJECT

REFERENCE

SCALE

N.T.S.

DATE

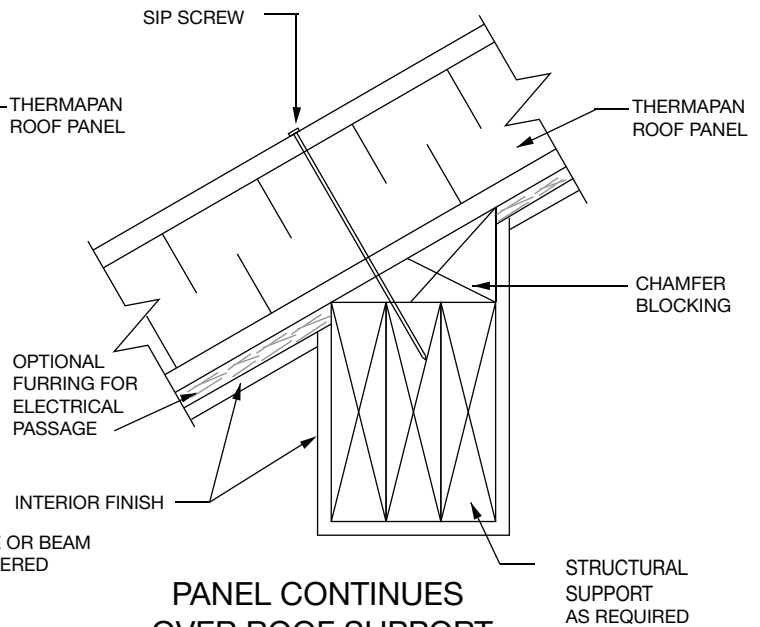
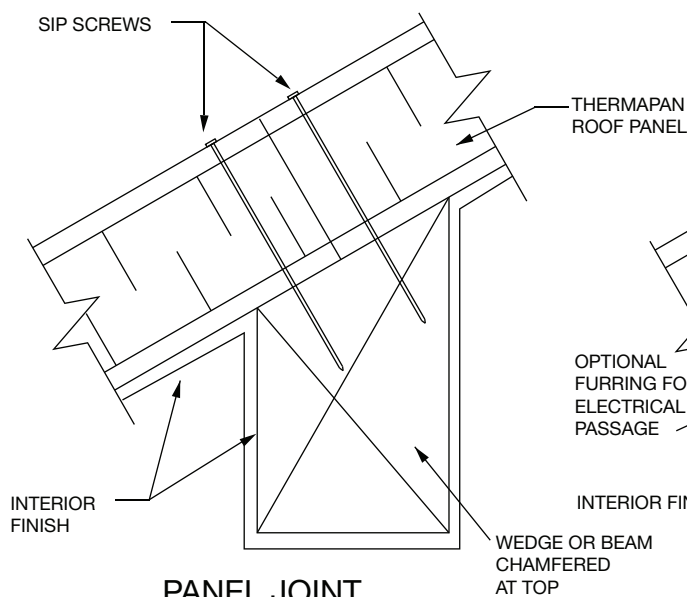
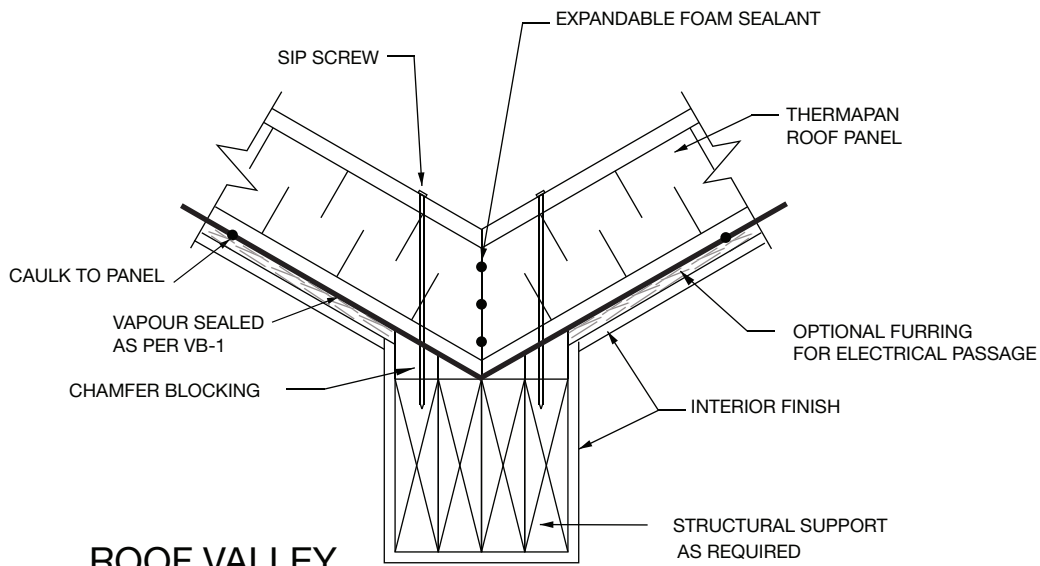
JUNE 2023

REVISION

DWG. No.

1

R-4



NOTE: REFERENCE ROOF PANEL FASTENING TABLE ON CONNECTION DESIGN (CD) SHEET OF ENGINEERED SHOP DRAWINGS



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TITLE

ROOF VALLEY & INTERMEDIATE ROOF SUPPORT

PROJECT

REFERENCE

SCALE

N.T.S.

DATE

JULY 2018

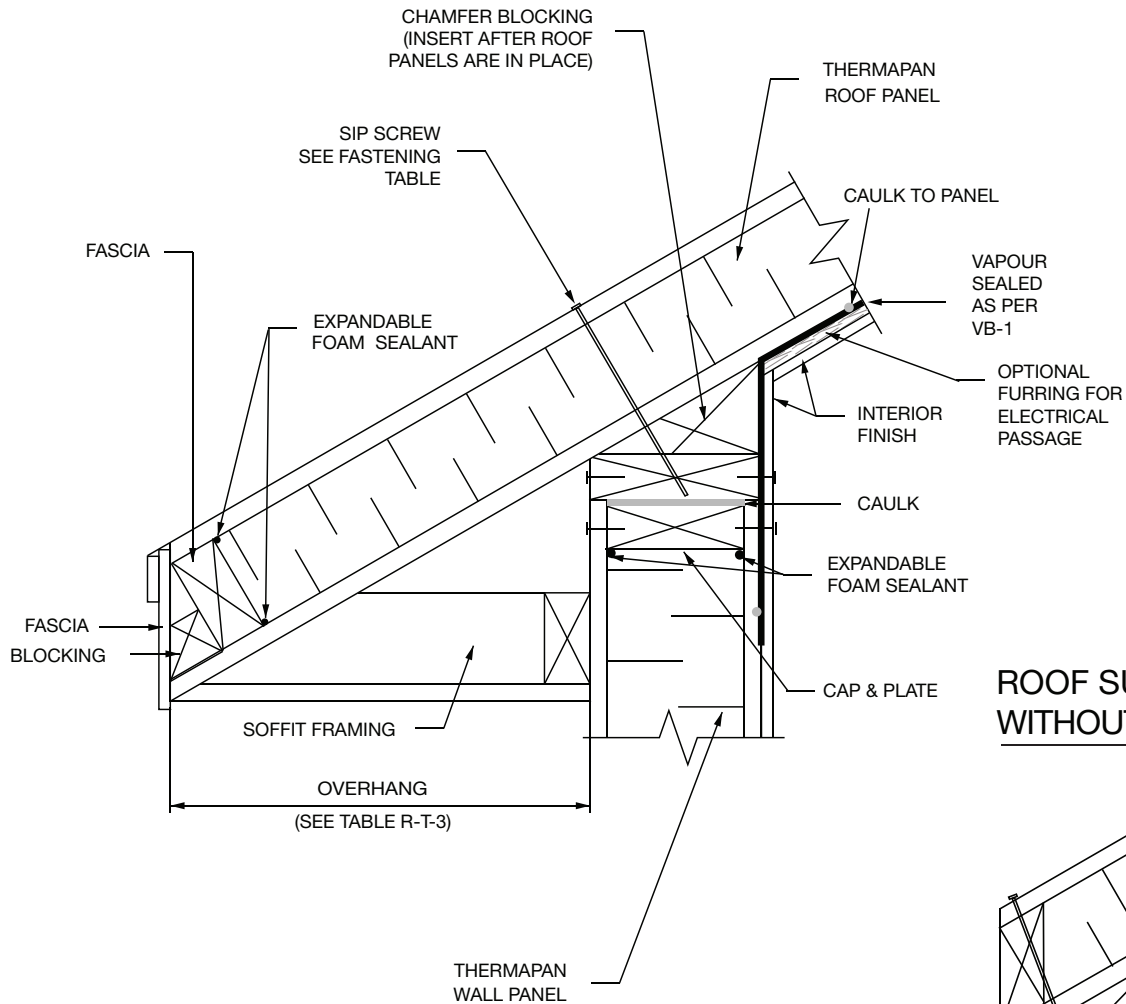
REVISION

DWG. No.

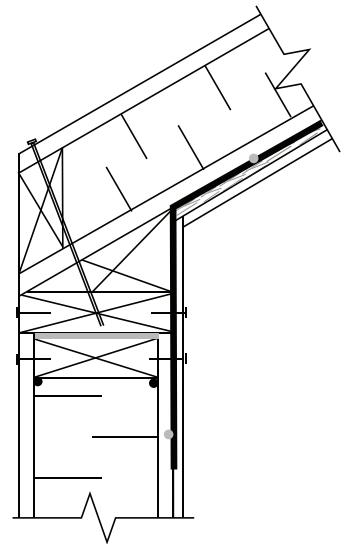
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R-5

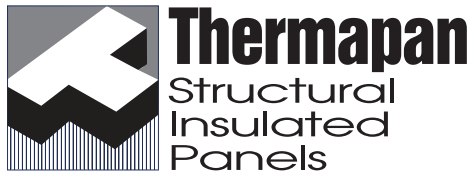
ROOF SUPPORT WITH OVERHANG



ROOF SUPPORT WITHOUT OVERHANG



NOTE: REFERENCE ROOF PANEL FASTENING TABLE
ON CONNECTION DESIGN (CD) SHEET OF ENGINEERED SHOP DRAWINGS



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TITLE

EAVE DETAIL & ROOF SUPPORT AT EXTERIOR WALL

PROJECT

REFERENCE

SCALE

N.T.S.

DATE

NOVEMBER 2025

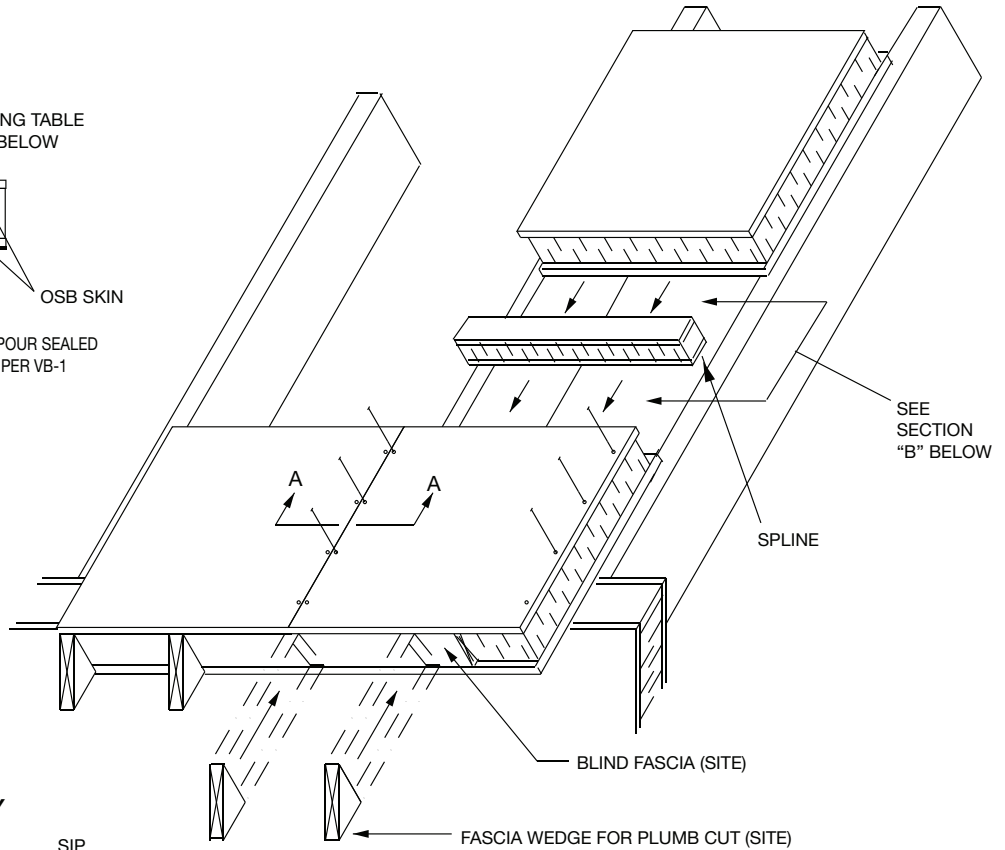
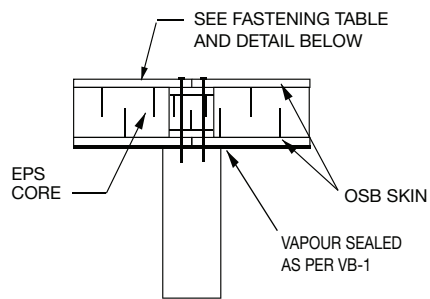
REVISION

DWG. No.

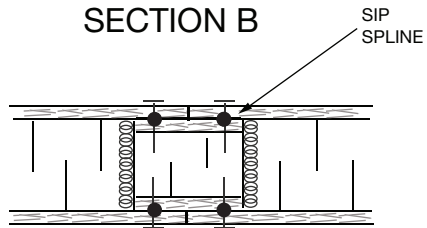
8

R-6

SECTION A-A



ROOF ASSEMBLY SECTION B



NOTE: REFER TO AIR BARRIER (AB-2) AND VAPOUR BARRIER (VB-1) DETAILS FOR SEALING SIP CONNECTIONS.

NOTE: REFERENCE ROOF PANEL FASTENING TABLE ON CONNECTION DESIGN (CD) SHEET OF ENGINEERED SHOP DRAWINGS



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TITLE

**TYPICAL SLOPED
ROOF ASSEMBLY**

PROJECT

REFERENCE

SCALE

N.T.S.

DATE

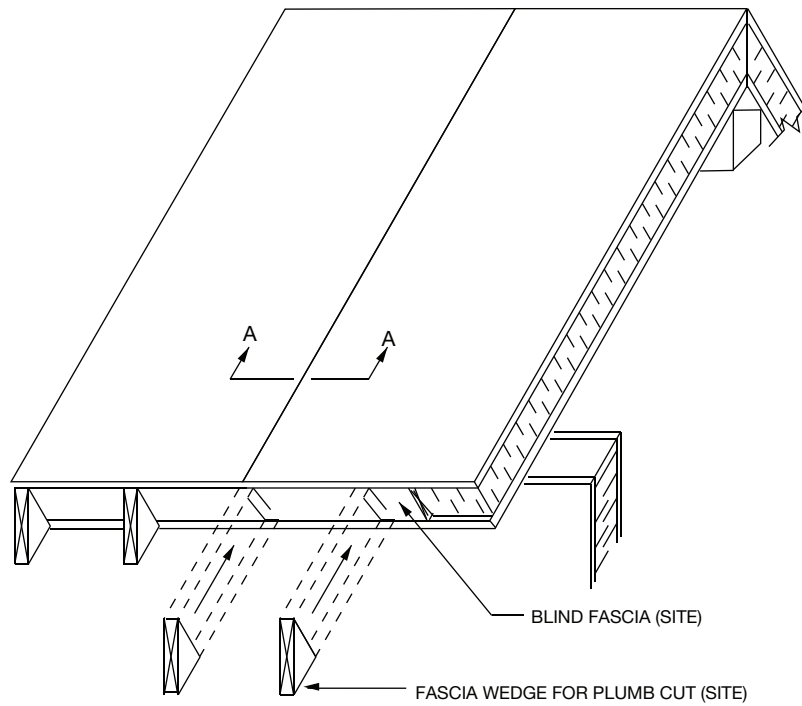
FEBRUARY 2012

REVISION

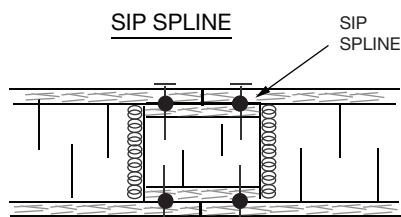
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DWG. No.

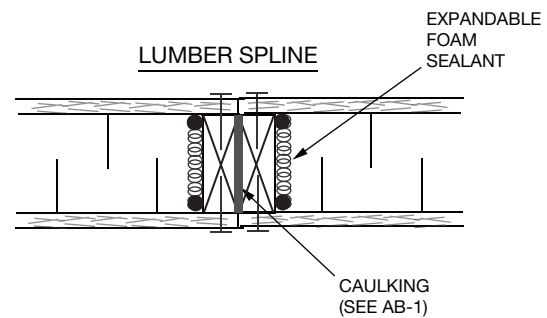
R-7



ROOF ASSEMBLY SECTION A-A

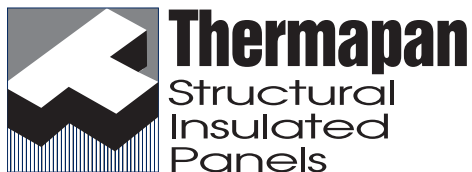


OR



NOTE: REFER TO AIR BARRIER (AB-2) AND VAPOUR BARRIER (VB-1) DETAILS FOR SEALING SIP CONNECTIONS.

NOTE: REFERENCE ROOF PANEL FASTENING TABLE ON CONNECTION DESIGN (CD) SHEET OF ENGINEERED SHOP DRAWINGS



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TITLE

SLOPED ROOF ASSEMBLY WITH RIDGE BEAM

PROJECT

REFERENCE

SCALE

N.T.S.

DATE

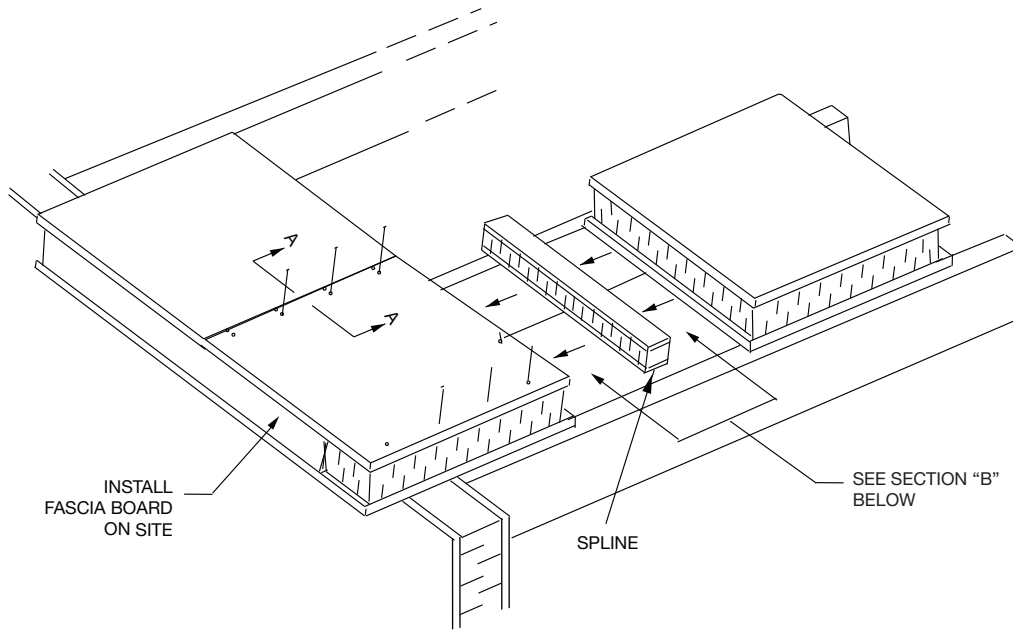
FEBRUARY 2012

REVISION

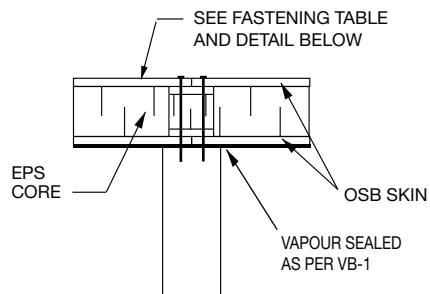
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DWG. No.

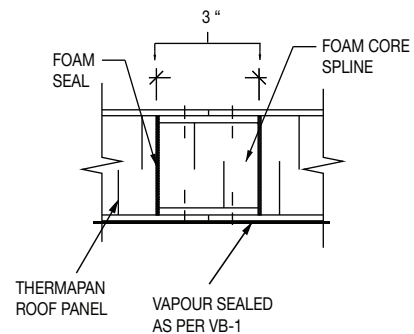
R-8



SECTION A-A

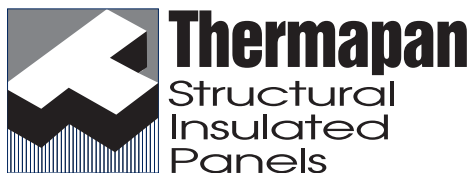


SECTION B ISOMETRIC ROOF ASSEMBLY GENERIC DETAIL FOR FLAT ROOF



NOTE: REFER TO AIR BARRIER (AB-2) AND VAPOUR BARRIER (VB-1) DETAILS FOR SEALING SIP CONNECTIONS.

NOTE: REFERENCE ROOF PANEL FASTENING TABLE ON CONNECTION DESIGN (CD) SHEET OF ENGINEERED SHOP DRAWINGS



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TITLE

FLAT ROOF ASSEMBLY

PROJECT

REFERENCE

SCALE

N.T.S.

DATE

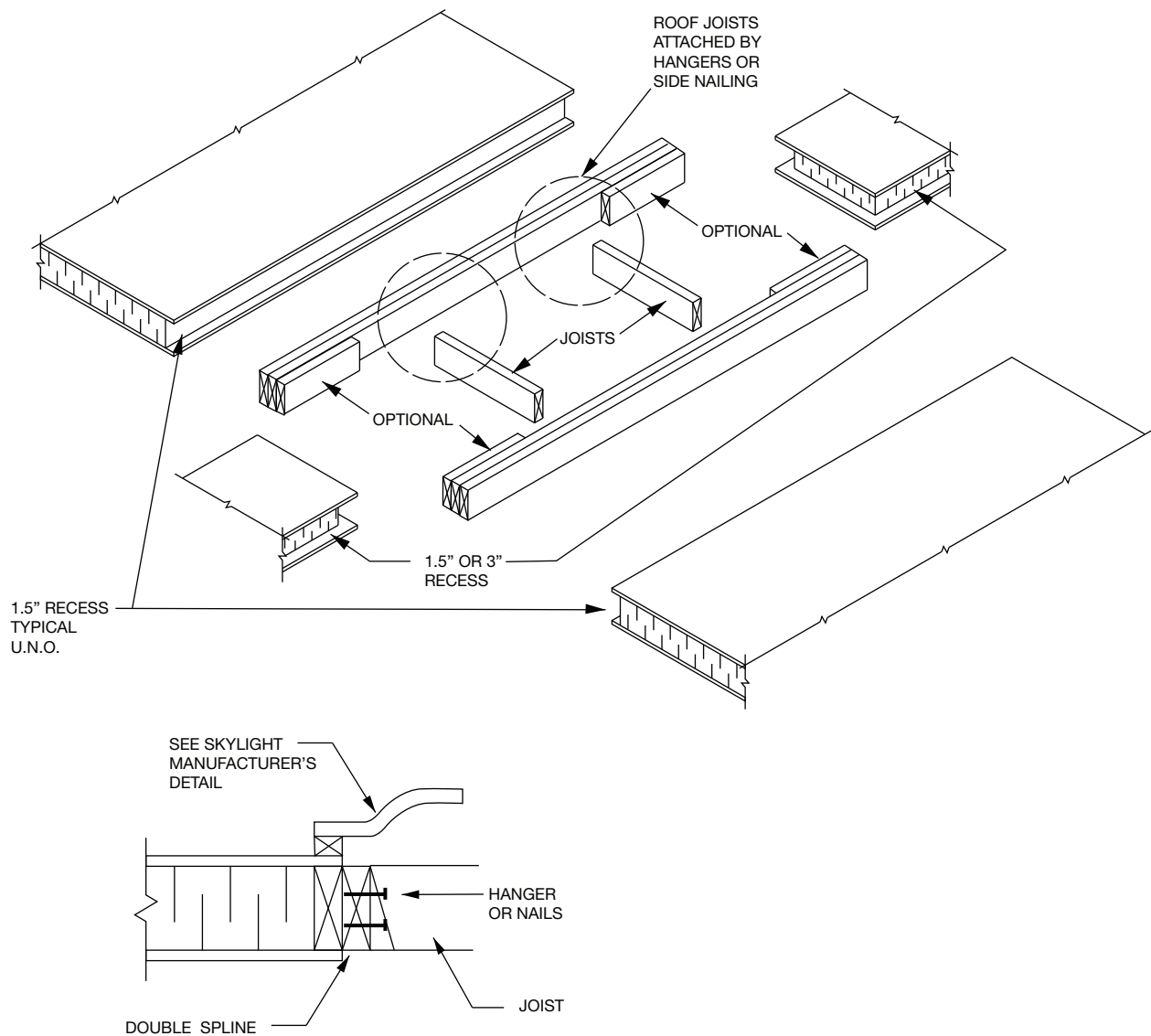
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DWG. No.

3

R-9



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TITLE

SKYLIGHT OPENING & ASSEMBLY

PROJECT

REFERENCE

SCALE

N.T.S.

DATE

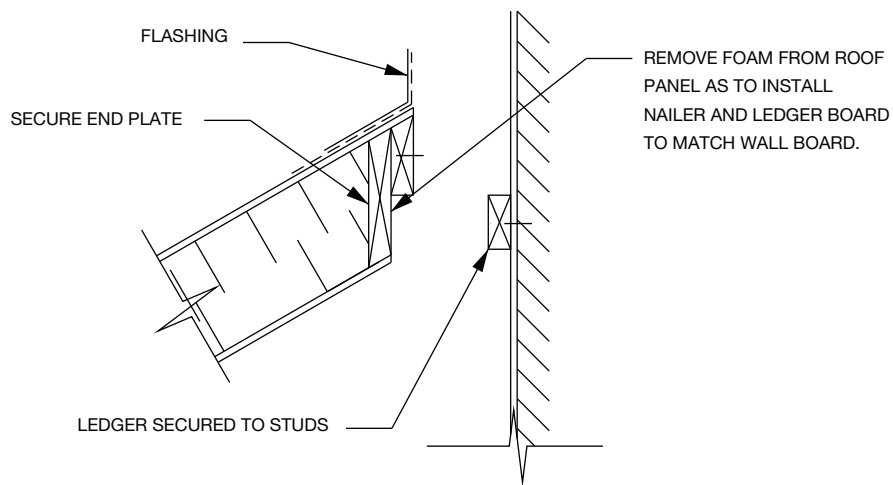
FEBRUARY 2012

REVISION

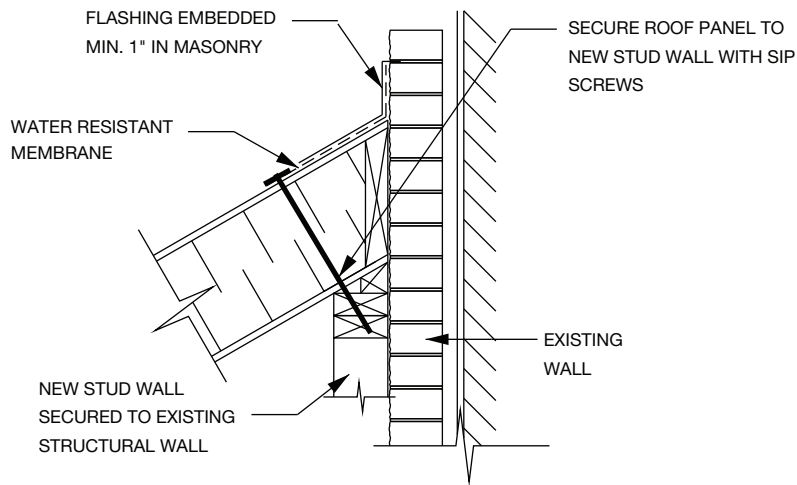
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3

R-10



OPTION 1



OPTION 2

NEW ROOF TO EXISTING WALL



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TITLE

**TYPICAL ROOF CONNECTION
SECTIONS (ROOF TO WALL)**

PROJECT

REFERENCE

SCALE

N.T.S.

DATE

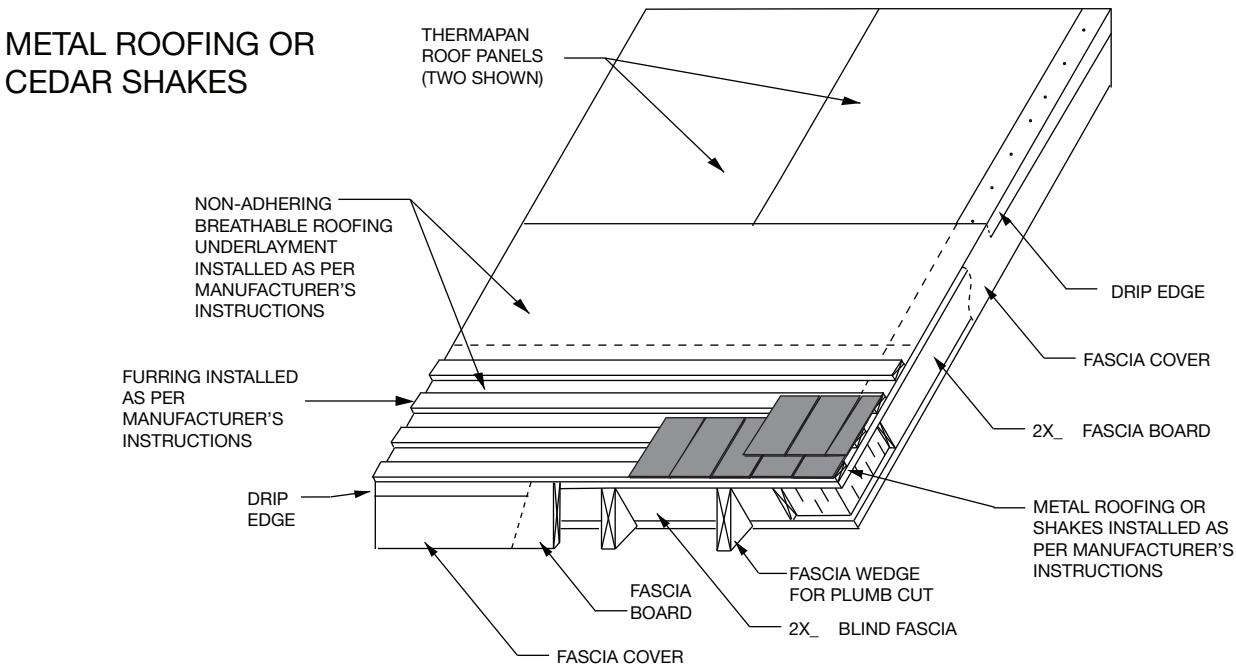
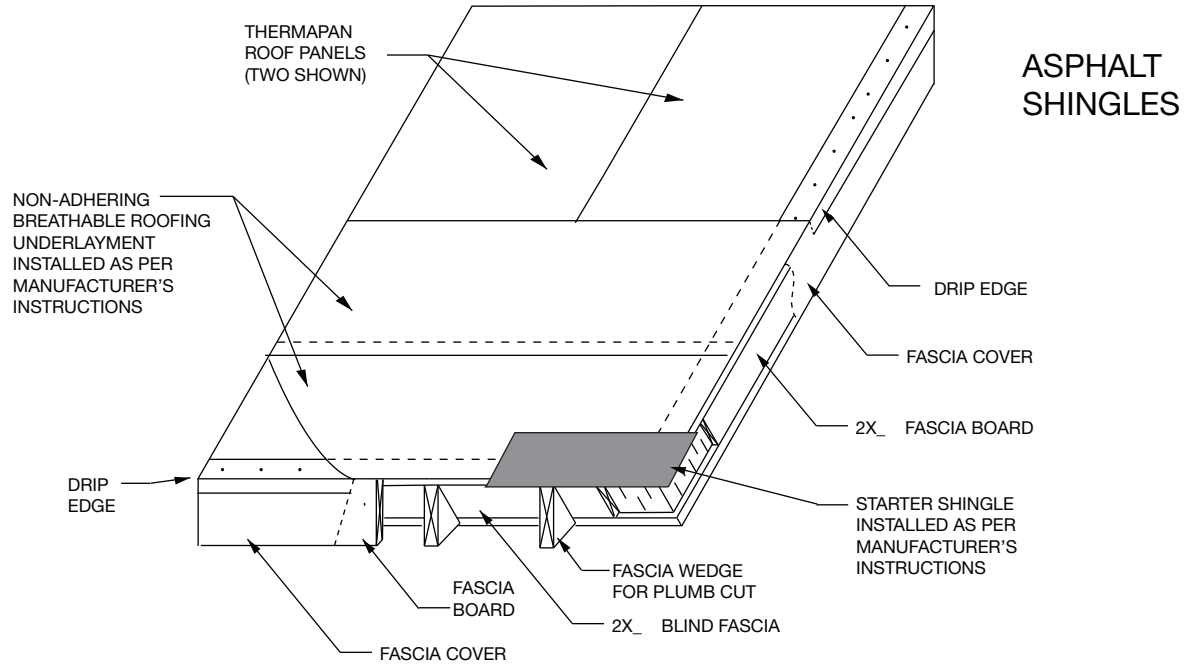
FEBRUARY 2012

REVISION

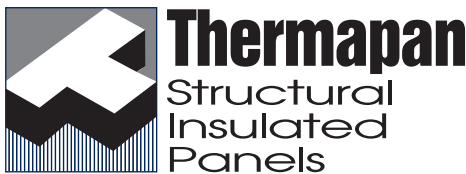
3

DWG. No.

R-11



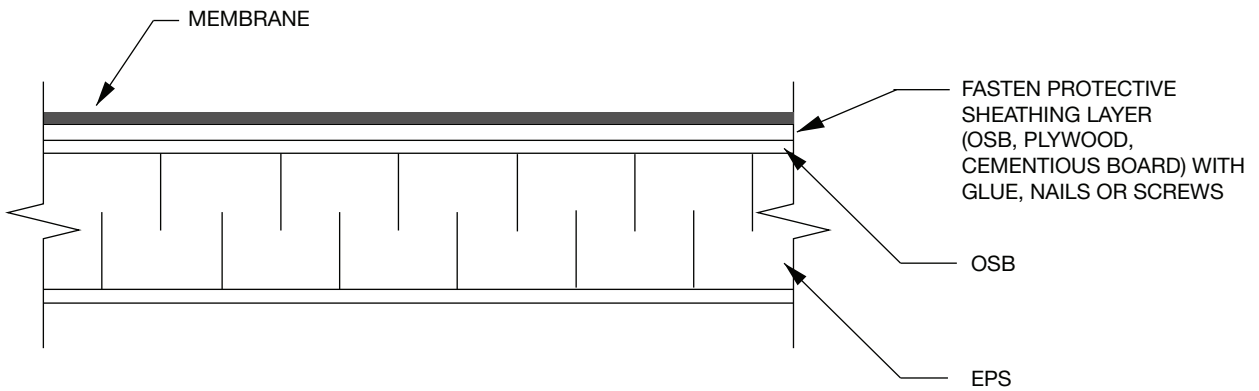
NOTE: VENTILATION OF SIP ROOF NOT REQUIRED.



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TITLE		PROJECT	
REFERENCE		SCALE	
DATE		DWG. No.	
AUGUST 2017		R-12	
ROOFING APPLIED TO SLOPED SIPS		N.T.S.	
2		R-12	

MEMBRANE (EPDM, PVC, TPO, ETC.)



NOTES:

- SIP SURFACE TO BE DRY AND FREE OF MOISTURE
- PROTECTIVE SHEATHING LAYER TO BE DRY AND FREE OF MOISTURE
- SOLVENT BASED ADHESIVES ARE NOT PERMITTED
- INSTALL MEMBRANE ACCORDING TO MEMBRANE MANUFACTURER'S DETAILS AND IN CONFORMANCE TO REQUIREMENTS OF LOCAL BUILDING CODE



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TITLE

FLAT ROOFING
APPLIED TO SIPs

PROJECT

REFERENCE

SCALE

N.T.S.

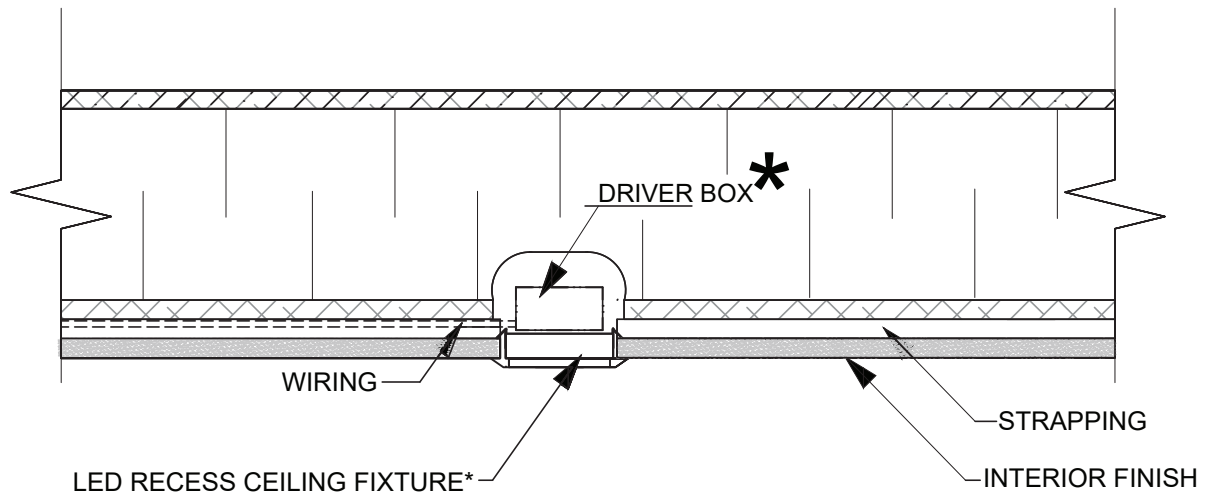
DATE

NOVEMBER 2022

REVISION

DWG. No.

R-13



*FIXTURE SPECIFICATIONS

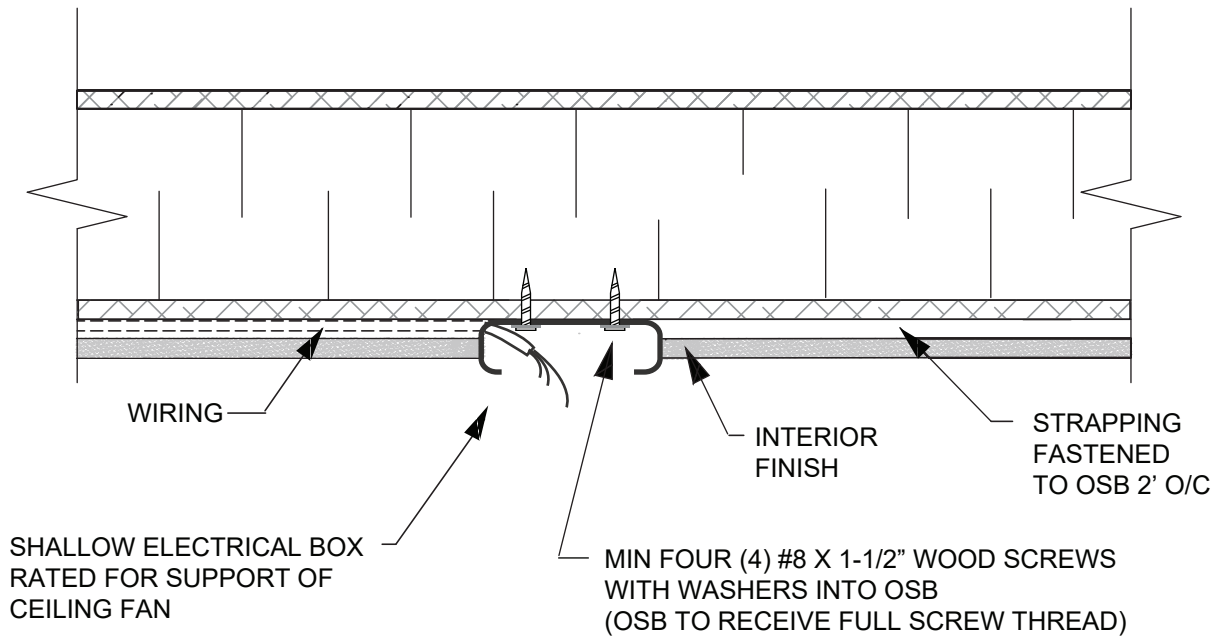
FIXTURE TO HAVE AMBIENT OPERATING TEMPERATURE +140F(+40C) MAXIMUM
 INSTALL AS PER MANUFACTURERS SPECIFICATIONS



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TITLE		LED POT LIGHT INSTALLATION IN CEILING SIPS		PROJECT
REFERENCE		SCALE		
DATE		REVISION	DWG. No.	
JANUARY 2017			R-14	

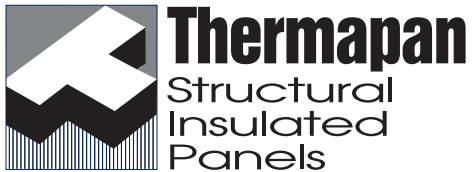
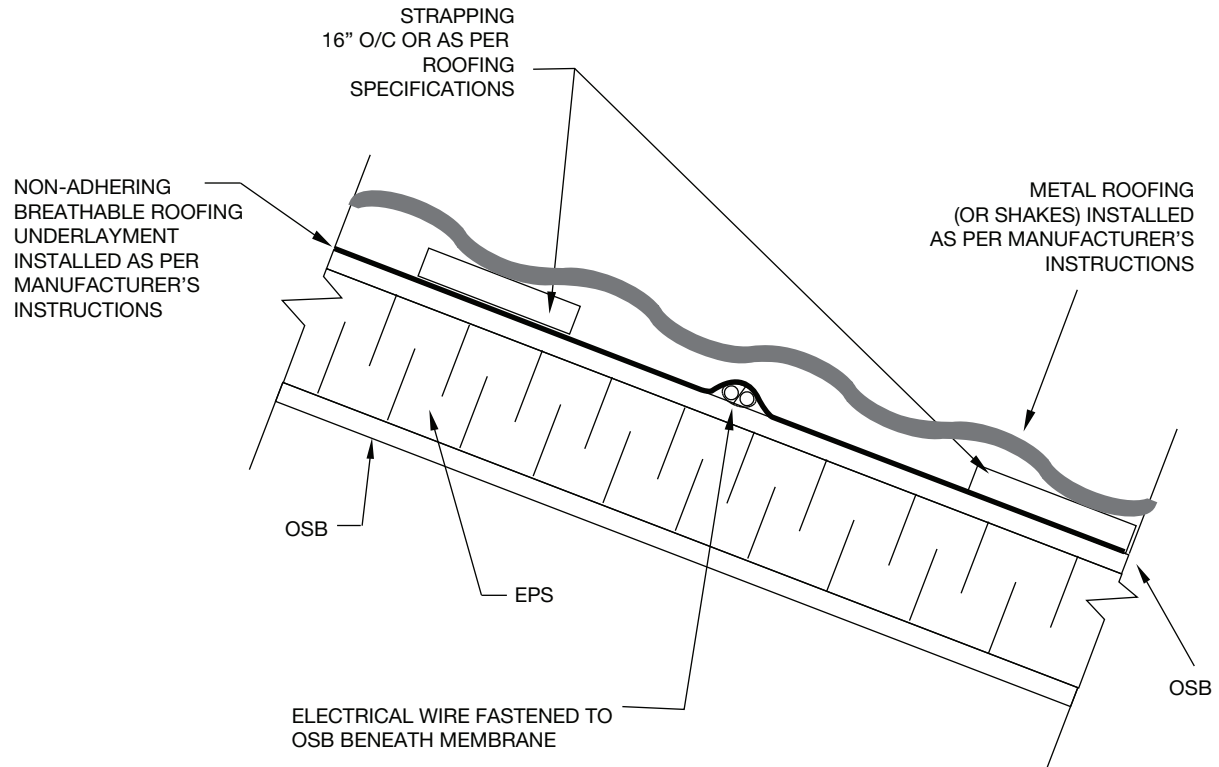


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TITLE		PROJECT	
CEILING FAN ATTACHMENT			
REFERENCE	SCALE		
	N.T.S.		
DATE	REVISION	DWG. No.	
FEBRUARY 2018		R-15	

METAL ROOFING OR CEDAR SHAKES



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1-877-443-WALL (9255)

TITLE

**ELECTRICAL WIRE
FASTENED TO ROOF SIP**

PROJECT

REFERENCE

SCALE

N.T.S.

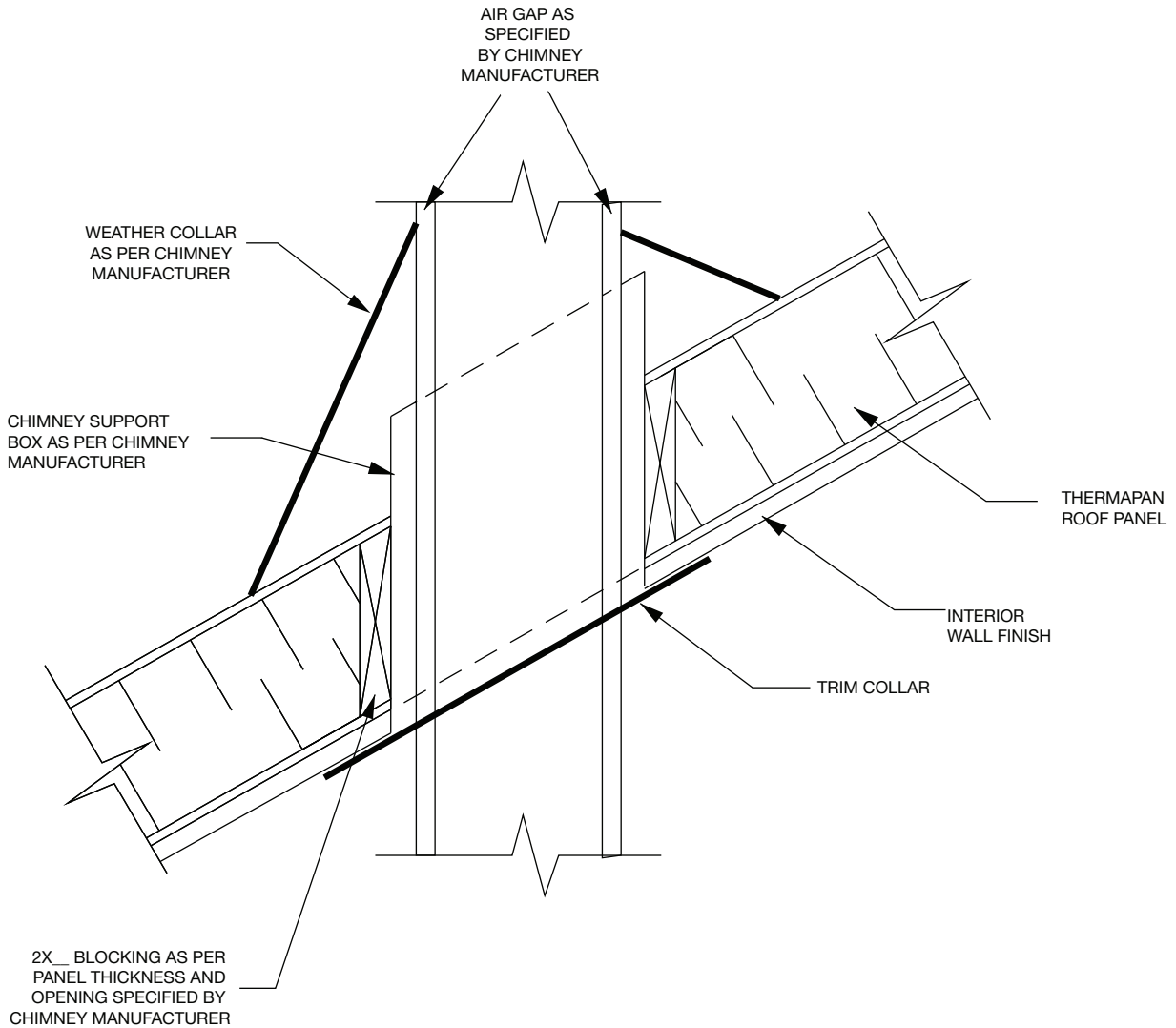
DATE

MARCH 2021

REVISION

DWG. No.

R-16



NOTE: ABOVE DETAILS ARE TYPICAL REQUIREMENTS TO INSTALL A PREFABRICATED METAL CHIMNEY IN A THERMAPAN STRUCTURAL INSULATED PANEL. THE CHIMNEY INSTALLATION MUST COMPLY WITH THE CHIMNEY MANUFACTURERS'S SPECIFICATION AND THE APPLICABLE BUILDING CODE.



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TITLE

PRE-FABRICATED METAL
CHIMNEY – ROOF INSTALLATION

PROJECT

REFERENCE

SCALE

N.T.S.

DATE

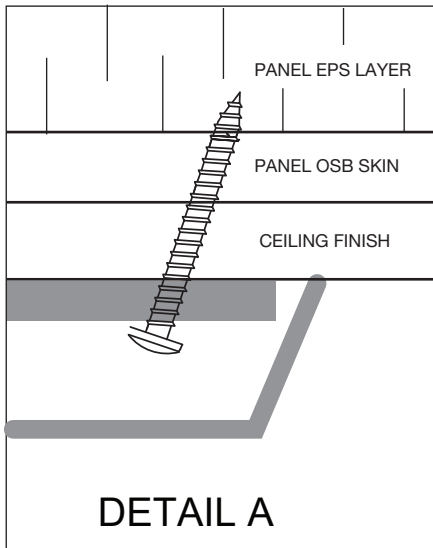
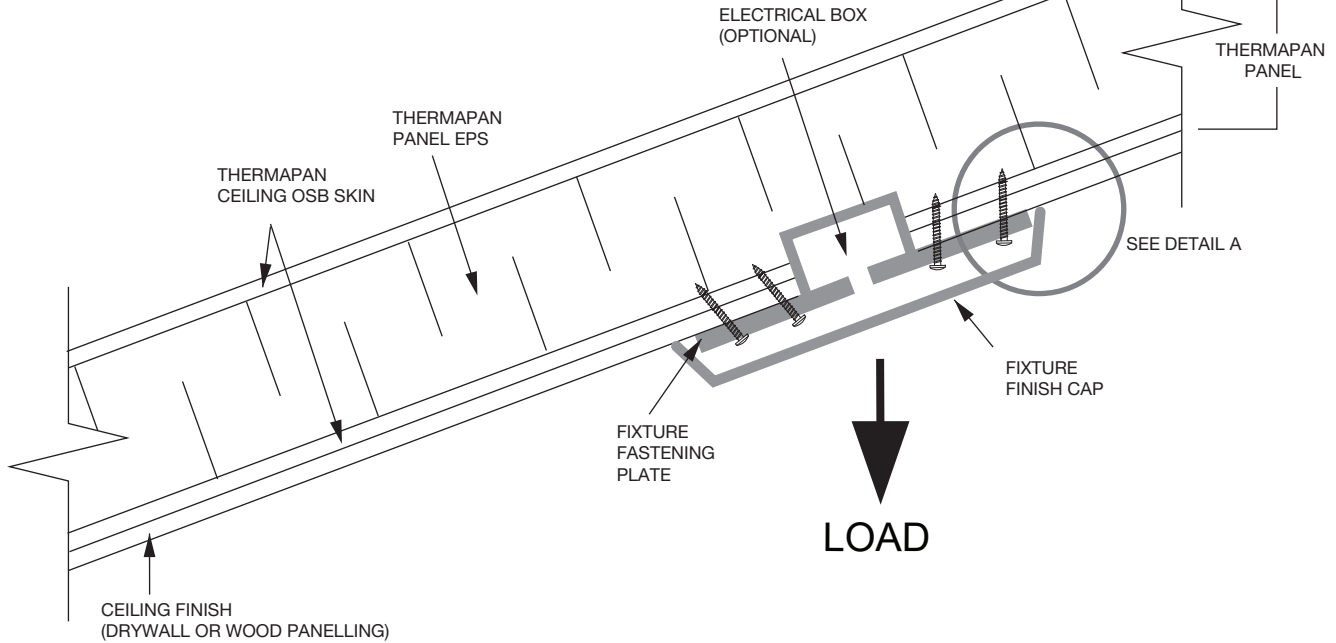
FEBRUARY 2019

REVISION

DWG. No.

R-17

TYPICAL SIP ROOF SECTION



CEILING LOAD RESISTANCE CAN BE ACHIEVED WITH NUMBER 10 SHEET METAL SCREWS INSTALLED TO A SIP CEILING FINISH AS DETAILED OR TO THE SIP SKIN DIRECTLY.

EACH SCREW CAN RESIST A PULL OUT OF 90 POUNDS IN 7/16" OSB. CONTRACTOR TO CONFIRM LOAD TO BE SECURED AND NUMBER OF FASTENERS REQUIRED. MINIMUM 4 SCREWS PER FIXTURES. FULL THICKNESS OF OSB TO RECEIVE SCREW THREAD ON ANGLE AS DETAILED



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TITLE

**SCREW FASTENER DETAIL
FOR SECURING LOAD TO
THERMAPAN CEILING PANEL**

PROJECT

REFERENCE

SCALE

N.T.S.

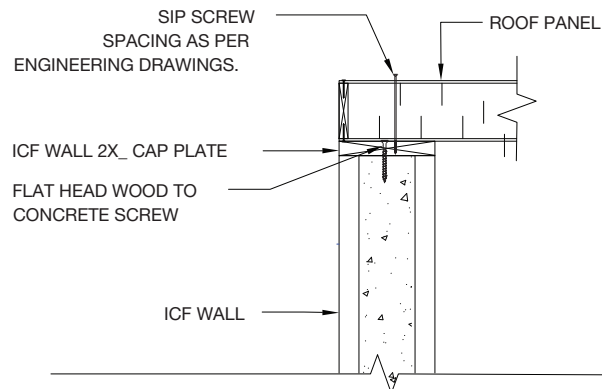
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FEBRUARY 2020

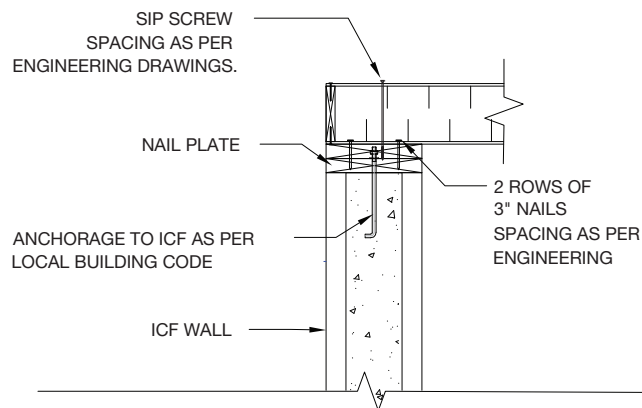
REVISION

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R-18



**ROOF SIP PANEL TO ICF CONNECTION
(CONCRETE SCREW OPTION)**



**ROOF SIP PANEL TO ICF CONNECTION
(ANCHORAGE OPTION)**



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TITLE

**ROOF SIP TO ICF
CONNECTION DETAIL**

PROJECT

REFERENCE

SCALE

N.T.S.

DATE

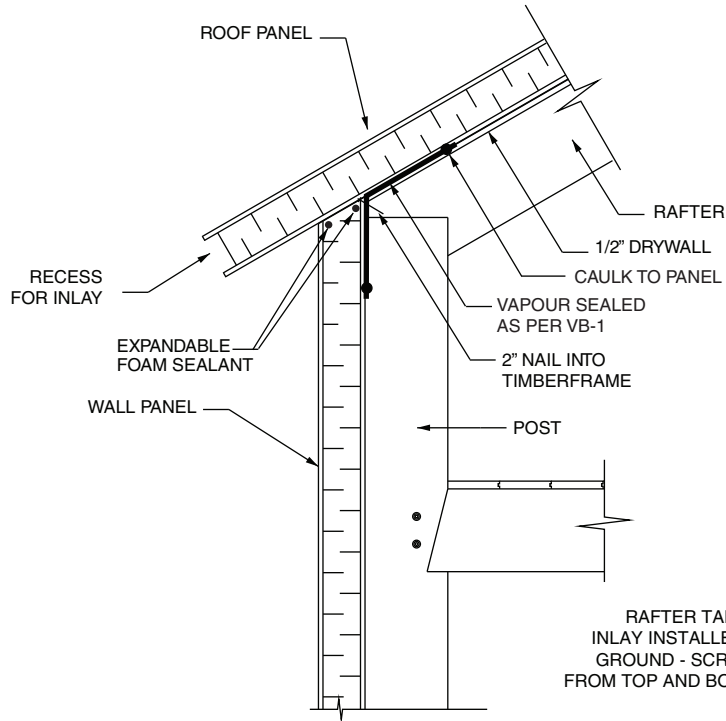
MARCH 2024

REVISION

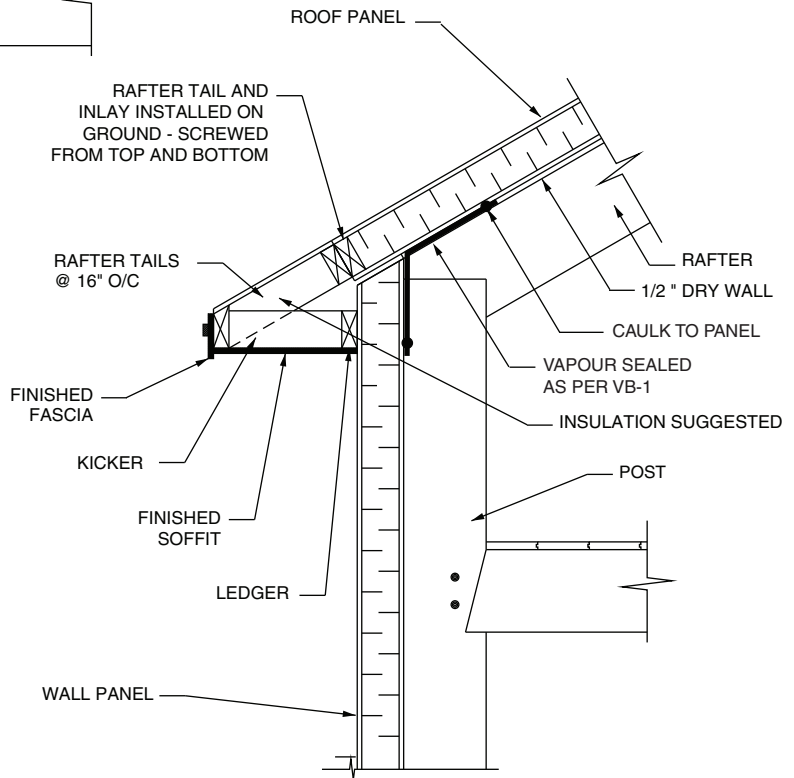
DWG. No.

R-19

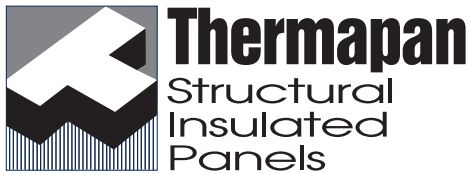
UNFINISHED EAVE DETAIL FOR LEVEL SOFFIT



FINISHED EAVE DETAIL WITH LEVEL SOFFIT



NOTE: REFER TO AIR BARRIER (AB-2) AND VAPOUR BARRIER (VB-1) DETAILS FOR SEALING SIP CONNECTIONS.



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TITLE

ROOF OVERHANG EAVE DETAILS (TIMBERFRAME)

PROJECT

REFERENCE

8020

SCALE

N.T.S.

DATE

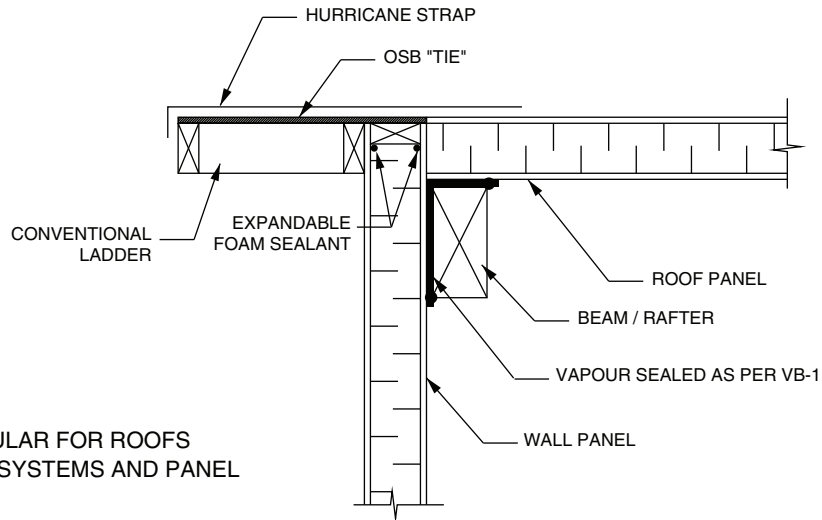
FEBRUARY 2012

REVISION

DWG. No.

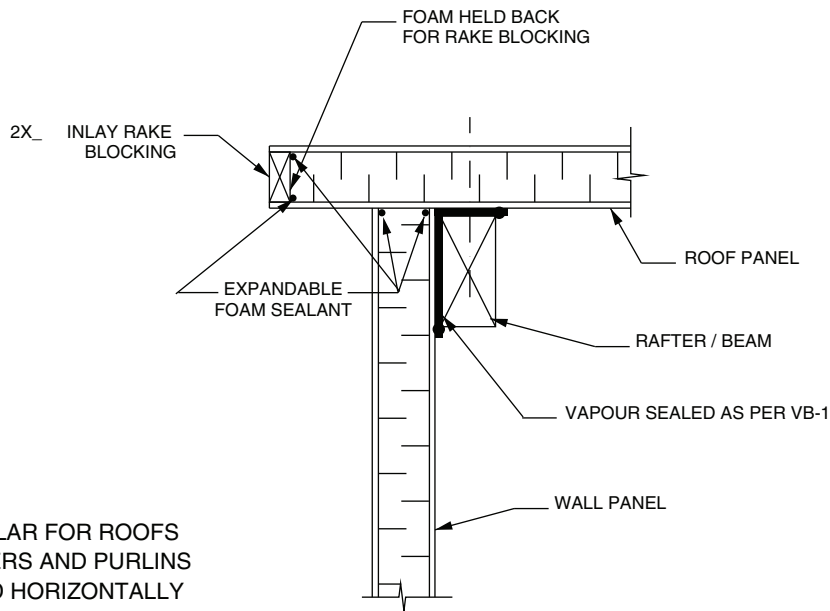
3

R-TF-1



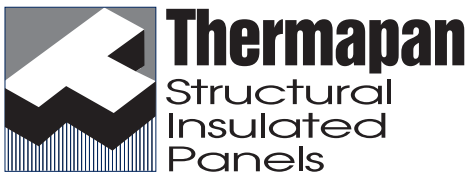
BUILT OUT OPTION POPULAR FOR ROOFS
WITH COMMON RAFTER SYSTEMS AND PANEL
ORIENTED VERTICALLY

NOTE: SCREW AND GLUE LADDER TO WALL PANEL



RUN-BY OPTION, POPULAR FOR ROOFS
WITH PRINCIPAL RAFTERS AND PURLINS
AND PANELS ORIENTED HORIZONTALLY

NOTE: REFER TO AIR BARRIER (AB-2) AND VAPOUR BARRIER (VB-1) DETAILS FOR SEALING SIP CONNECTIONS.



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TITLE

ROOF OVERHANG & RAKE (TIMBERFRAME)

PROJECT

REFERENCE

8020

SCALE

N.T.S.

DATE

MAY 2009

REVISION

DWG. No.

2

R-TF-2