



# Mid-Rise Wood Construction Builder's Guide

ROCKWOOL COMFORTBOARD™



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# Introduction – How to Use this Guide

This Mid-Rise Wood Construction Builder's Guide covers the use of ROCKWOOL COMFORTBOARD™ within a split-insulation or exterior insulation wall assembly.

The use of split-insulation (also referred to as continuous insulation) wall assemblies is becoming more common in the building industry due to more stringent building and energy code requirements for the thermal performance (effective R-value) of exterior walls. The advantages of the split-insulation wall assembly over other types make it an excellent choice for mid-rise wood construction. Recent developments in enclosure design have shown the advantages of the inclusion of a ventilated wall cavity (rainscreen) into the wall assembly and an exterior membrane air barrier approach. In some jurisdictions, a rainscreen wall cavity is required within the building code for exterior walls.

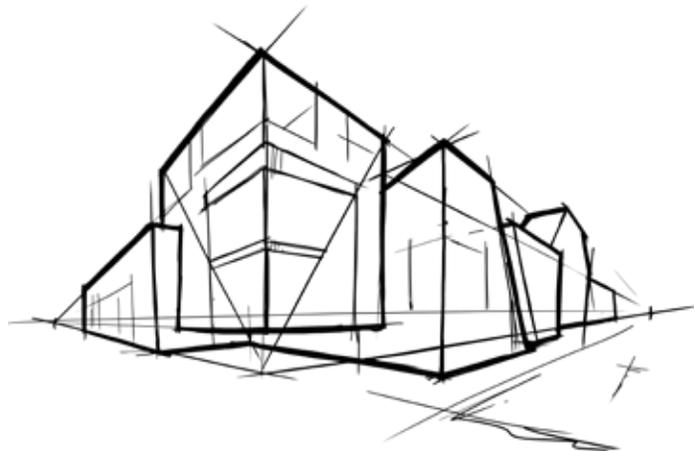
Special considerations must be taken in detailing this type of wall assembly to maintain:

- air barrier continuity,
- water resistant barrier (moisture barrier) continuity,
- thermal continuity and minimizing thermal bridges,
- cladding attachment and detailing, and
- adequate drainage and ventilation of the wall cavity.

The ROCKWOOL COMFORTBOARD™ – MID-RISE WOOD CONSTRUCTION BUILDER'S GUIDE is designed to provide builders and contractors with clear, detailed steps for the construction of a split-insulation wall assembly. The special considerations mentioned above are clearly addressed in each detail to ensure consistency and performance of the design.

Additionally, a short building science primer explaining the functions of the various components of the wall assembly is provided.

It is important to note the information provided in this guide provides one method of detailing a split-insulation, exterior air barrier wall assembly; however, subtle changes at interface locations could be made to achieve the same intent. Review the building code requirements for your jurisdiction to ensure that all wall assembly detailing is in general conformance.



# Split-Insulation Wall Assembly

The split-insulation wall assembly consists of rigid or semi-rigid insulation installed on the exterior of an above-grade, conventional 2x4 or 2x6 insulated wood-frame wall. In some areas, this wall may also be referred to as an exterior insulated wall assembly, or a wall with insulated sheathing. Rigid ROCKWOOL COMFORTBOARD™ insulation is installed on the exterior side of the sheathing membrane, attached with vertical strapping or other attachment strategy, which provides a cladding attachment surface and drained/ventilated cavity behind the cladding. A significant advantage of the split-insulation wall assembly is high effective R-values due to the continuous insulation outside of the structural framing, thereby minimizing thermal bridging. For this reason the continuous exterior insulation provides more effective R-value for the thickness installed than conventional stud cavity insulation. In addition, the interior wood elements of the assembly are kept warmer as a result of the exterior layer of insulation, thereby reducing the risk for condensation in these moisture-sensitive layers. The functions of the various components of exterior and split insulated wall assemblies is provided.

It is important to note that the information provided in this guide provides only one method of detailing: subtle changes at interface locations could be made to achieve the same intent. Alternative details are acceptable as long as the design and fabrication meet the intent to maintain critical barrier continuity in an effective and durable manner. Review the building code requirements for your jurisdiction to ensure that all wall assembly detailing is in general conformance. The details provided here are in general conformance with Canadian and American commercial building codes; however, they may exceed the minimum requirements as set out by the local authority.



## EXTERIOR TO INTERIOR

- Cladding
- Drained/vented cavity
- Wood strapping, screwed through insulation
- ROCKWOOL COMFORTBOARD™ rigid insulation (thickness to meet R-value requirement)
- Vapor-permeable sheathing membrane (air-barrier)
- Sheathing (plywood or OSB)
- 2x4 or 2x6 wood framing with ROCKWOOL COMFORTBATT® insulation
- Polyethylene sheet vapor barrier (cold climates only)
- Gypsum board and interior finish

## Insulation

There are many potential insulation combinations for a split-insulation wall assembly; however, the most common scenario is batt insulation installed within the stud cavity and rigid insulation installed on the exterior of the sheathing, or as the sheathing.

ROCKWOOL COMFORTBATT® makes an ideal choice for stud cavity insulation due to its ease of installation and compatibility with split insulation wall assemblies.

ROCKWOOL COMFORTBOARD™ is an ideal choice for the exterior rigid insulation due to its ease of use, dimensional stability, noncombustibility, retained R-value over a variety of temperatures, and high vapor permeability.

The WSS is the primary plane of protection against bulk water loads and also known as the first plane of protection within the building code. It is commonly made up of the most exterior materials or components of the enclosure (cladding, flashing, etc.). The WRB is the secondary plane of protection against bulk water movement and also known as the second plane of protection within the building code. It can also be considered the innermost plane that can safely accommodate water, and allow drainage without incurring damage. In commercial construction the WRB is usually performed primarily by a self-adhered or liquid-applied membrane on the exterior of the gypsum sheathing or concrete block. Both the WSS and the WRB must be essentially continuous to resist the movement of bulk water, though not in the same nature as the air barrier, with some allowance for overlap and joints. Careful attention should be paid to designing and detailing these critical barriers to ensure the successful performance of the building enclosure. The thermal insulation is the primary element to resist conductive heat flow through the building enclosure. This barrier should also be as continuous as possible to the extent that framing and other components allow.

Hygrothermal simulations and field experience have shown that the use of vapor permeable mineral wool

insulation provides improved durability for the wood frame wall in all climate zones. Alternate exterior insulation types such as vapor-impermeable foam insulation (XPS, EPS or Polyiso) can increase the risk of trapping moisture within the sheathing in the event of exterior moisture penetration or built-in construction moisture. The use of vapor-permeable ROCKWOOL COMFORTBOARD™ alleviates this concern.

The amount of exterior insulation required in the assembly will depend predominantly on three factors: the stud framing configuration (depth and spacing), the cladding attachment system, and the target R-value. For the purposes of this guide the above grade wall assembly is constructed of the following elements and provides an effective R-value of R-23.7, though is easily scalable using the same details to R-25 to R-40 or higher depending on the project needs.

- 2X6 wood studs installed at 16" O.C. (on-center),
- ROCKWOOL COMFORTBATT® insulation (R-22) installed within the stud cavity, and
- 1.5" ROCKWOOL COMFORTBOARD™ insulation (R-6) installed on the exterior of the sheathing



The following table shows the effective insulation values of different split-insulation wall assembly configurations utilizing ROCKWOOL™ products.

# Nominal and Effective R-Values for Split Insulation Wall Configurations

		ROCKWOOL COMFORTBATT®				ROCKWOOL COMFORTBATT®				
		16" On Center				24" On Center				
		3.5" (2X4)		5.5" (2X6)		3.5" (2X4)		5.5" (2X6)		
		R-14	R-15	R-22	R-23	R-14	R-15	R-22	R-23	
ROCKWOOL COMFORTBOARD™	1.25" R-5	R-19 RSI-3.35	R-20 RSI-3.52	R-27 RSI-4.76	R-28 RSI-4.93	R-19 RSI-3.35	R-20 RSI-3.52	R-27 RSI-4.76	R-28 RSI-4.93	Nominal R-Value
		R-18.2 RSI-3.2	R-18.5 RSI-3.26	R-23.4 RSI-4.13	R-23.8 RSI-4.19	R-18.6 RSI-3.28	R-19 RSI-3.34	R-24.1 RSI-4.25	R-24.5 RSI-4.32	Effective R-Value
ROCKWOOL COMFORTBOARD™	1.5" R-6	R-20 RSI-3.52	R-21 RSI-3.7	R-28 RSI-4.93	R-29 RSI-5.11	R-20 RSI-3.52	R-21 RSI-3.7	R-28 RSI-4.93	R-29 RSI-5.11	Nominal R-Value
		R-19.2 RSI-3.38	R-19.5 RSI-3.44	R-24.4 RSI-4.31	R-24.8 RSI-4.37	R-19.6 RSI-3.46	R-20 RSI-3.52	R-25.1 RSI-4.43	R-25.5 RSI-4.5	Effective R-Value
ROCKWOOL COMFORTBOARD™	2.0" R-8	R-22 RSI-3.87	R-23 RSI-4.05	R-30 RSI-5.28	R-31 RSI-5.46	R-22 RSI-3.87	R-23 RSI-4.05	R-30 RSI-5.28	R-31 RSI-5.46	Nominal R-Value
		R-21.2 RSI-3.73	R-21.5 RSI-3.79	R-26.4 RSI-4.66	R-26.8 RSI-4.72	R-21.6 RSI-3.81	R-22 RSI-3.87	R-27.1 RSI-4.78	R-27.5 RSI-4.85	Effective R-Value
ROCKWOOL COMFORTBOARD™	3.0" R-12	R-26 RSI-4.58	R-27 RSI-4.75	R-34 RSI-5.99	R-35 RSI-6.16	R-26 RSI-4.58	R-27 RSI-4.75	R-34 RSI-5.99	R-35 RSI-6.16	Nominal R-Value
		R-25.2 RSI-4.43	R-25.5 RSI-4.49	R-30.4 RSI-5.36	R-30.8 RSI-5.42	R-25.6 RSI-4.51	R-26 RSI-4.57	R-31.1 RSI-5.48	R-31.5 RSI-5.55	Effective R-Value

The above table takes into account the associated elements of the wall assembly. Wall assemblies will differ in their construction and it is imperative to understand the elements of the wall and how they contribute to its thermal resistance. For the values above, a basic wall assembly was selected, including:

- Exterior Air Film
- ¾" Lightweight Wood Cladding
- ¾" Ventilated Airspace Cavity
- ½" Plywood Sheathing
- ½" Gypsum Drywall
- Interior Air Film

The contributing R-value of the assembly (other than insulation) is R-4.0 (RSI-0.699). Screws through exterior insulation into a wood backup wall generally result in R-value degradation of 5-10% depending on fastener spacing and insulation thickness.

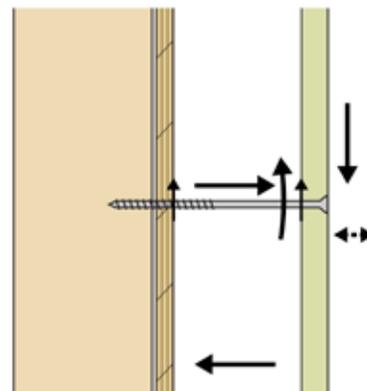
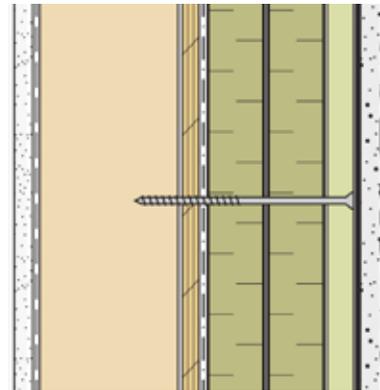
# Cladding Attachment and Support

All types of cladding can be used with ROCKWOOL COMFORTBOARD™ in the split-insulation wall assembly. The strategy to attach the cladding will depend on the weight and support requirements for the cladding. Most claddings can be attached directly to vertical strapping, which is in turn attached through the insulation to the primary structure.



specific to the cladding type and weight. Though cladding weight will generally govern the cladding attachment structural requirements, the potential forces generated by wind as well as seismic activity should also be considered in the structural design. These forces exerted on the cladding will cause increased load on the system components and in particular the screw fasteners.

In addition to cladding weight, stud spacing of the backup wall, sheathing type and thickness, and exterior insulation thickness and type will all affect the required fastener spacing, size, and minimum embedment into the backup wall, as well as the strapping thickness and width. Furthermore, the potential wind loads and seismic activity associated with the location will also impact design. Note that this structural system relies on the increased pullout strength of large screws. For this reason, nails are not recommended for use in this application unless designed for a specific project by an engineer.



Service Load State (Section View)

## Structural Considerations

This cladding attachment system uses vertical strapping (i.e. furring), on the front face of the exterior insulation, fastened with long screws through the exterior insulation and into a framed wall. The cladding is then attached and supported with separate fasteners through the strapping. The bending resistance from the screw (when installed into the sheathing and studs), coupled with a truss system, where the fasteners take tension loads and the compression loads are resisted by the bearing of the strapping on the insulation layer, provide the primary support for the cladding. Additionally, the friction between the insulation and the strapping and sheathed wall (created by the force applied by the fasteners) also provides some vertical load resistance.

This system can be used effectively for claddings with weights up to 15 lbs/ft<sup>2</sup> (73 kg/m<sup>2</sup>), excluding the weight of the insulation. Within this limit, the screw size and installation will vary depending on the cladding weight (see next page). Claddings that weigh over 15 lbs/ft<sup>2</sup> should be attached using an engineered approach

## Cladding Weight

Cladding weights for the purpose of the structural calculations are categorized as Light (less than 5 lbs/ft<sup>2</sup> (24.5 kg/m<sup>2</sup>)), Medium (5 to less than 10 lbs/ft<sup>2</sup> (24.5–49 kg/m<sup>2</sup>)), Heavy (10–15 lbs/ft<sup>2</sup> (49–73 kg/m<sup>2</sup>)), and Very Heavy (over 15 lbs/ft<sup>2</sup> (73 kg/m<sup>2</sup>)) weight cladding. The approximate weight and category for various common cladding types is shown below. Each cladding type will have different weights for different brands and cladding arrangements, so the specific cladding weight should be determined from product technical data to confirm which category it is in.



## Strapping

In general, the most appropriate strapping will be plywood strapping ripped to width, since the requirements for large screws at close spacings may risk splitting strapping made from dimensional lumber, particularly thinner strapping. Larger dimension lumber strapping such as nominal 1x3 or nominal 1x4 may also be adequate in this application. The required strapping thickness and width for structural purposes is a function of the cladding weight and insulation density. Thicker strapping is often recommended in order to reduce potential bowing or twisting of the strapping between fasteners as it is installed and as cladding is attached. Wider strapping generally reduces the potential compression of the insulation by spreading the force of the fastener tension over more area insulation behind the wider strapping. Confirm with the cladding manufacturer the correct size and configuration of the strapping for specific cladding products.

## Screws

Screws used to attach the strapping through the insulation should be either stainless steel or galvanized with a coating rated to 2000 hour salt spray per ASTM B117, as they will be exposed to the exterior environment and should be protected from corrosion to ensure long term durability. Always ensure the screw type is compatible with both the strapping material (i.e. wood pressure treatment) and the cladding material. This cladding attachment system may require specialty screws in order to accommodate large load torques when installed through thick insulation into the backup wall. One important constructability consideration is the use of screws with a countersunk head so that the screw head can be embedded into the front face of the strapping and out of the way of cladding materials and attachment accessories.



### Backup Wall and Minimum Fastener Embedment

The stud spacing of the exterior framed walls will govern the horizontal spacing of the strapping and fasteners, as all fasteners through exterior insulation should be installed through the exterior sheathing into the studs. Closer stud and strapping horizontal spacing (i.e. maximum 16" o.c.) provides additional support for the cladding and, therefore, may allow less frequent vertical screw placement. For wider spaced framing (i.e. 24" o.c. horizontal spacing) closer vertical spacing of screws may be required.

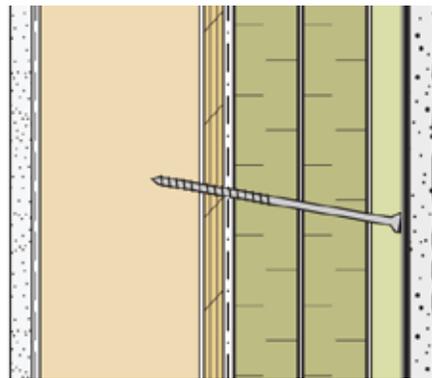
Generally, the screws used to fasten the strapping in place are installed through wood sheathing and into the wood framing in the backup wall with standard plywood or oriented strand board sheathing used as the sheathing material. For ease of construction, consider using markers or snap lines on the outside face of wall membrane in line with the stud framing in order to clearly indicate the correct location of screws into the backup wall. Note that screws that do not penetrate into the framing should not be removed for repositioning, as screw holes created in the sheathing membrane may increase the risk of water ingress and/or air leakage in the wall assembly. These screws should be left in place, with a secondary screw installed into the stud at the same location.

The minimum screw embedment length is measured from the outside face of the wood sheathing. Fasteners should at a minimum fully penetrate through the exterior sheathing (Fastener Tables include a minimum fastener embedment of 1", to account for up to 3/4" exterior sheathing). Additionally, the minimum embedment length only accounts for the non-tapered portion of the screw where the screw threads are at the full diameter, and does not include the front tip of the screw. As a rule of thumb, approximately the front 1/4" of the screw should be ignored in determining the appropriate screw length. Contact the screw manufacturer for further information.

### Deflection

Testing has shown that minor deflection of the strapping and cladding may be experienced for wall assemblies with heavy weight cladding. In most cases, the deflection is constrained to less than 1/32" for typical heavy weight cladding loads. Claddings that may be prone to cracking, such as stucco or adhered stone, should be installed so as to reduce inside corners and irregular shapes, and wherever possible should be segmented into smaller areas across the face of the wall assembly using crack control cuts or hidden joints.

Potential deflection may be reduced by installing screws at an upwards angle into the backup wall. This configuration allows the support system to rely more readily on the truss action of the screw tension and insulation compression, rather than screw bending resistance and friction. In this way, the cladding attachment system is installed with the potential screw deflection already in place—even before cladding loading. This greatly reduces the potential for downward movement that may occur when supporting heavy weight cladding on strapping. It should be noted that the fastener tables in this guide do not account for screws being installed at an upwards angle and, as a result, specific structural design should be engineered for wall assemblies where this configuration is desired (see also page 10).

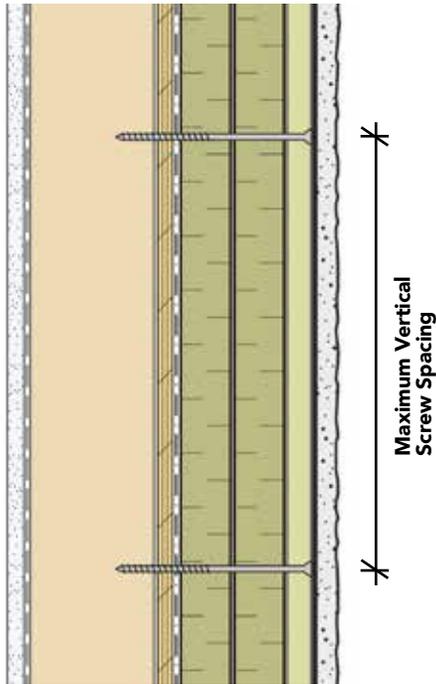


Screw at Upward Angle (Section View)

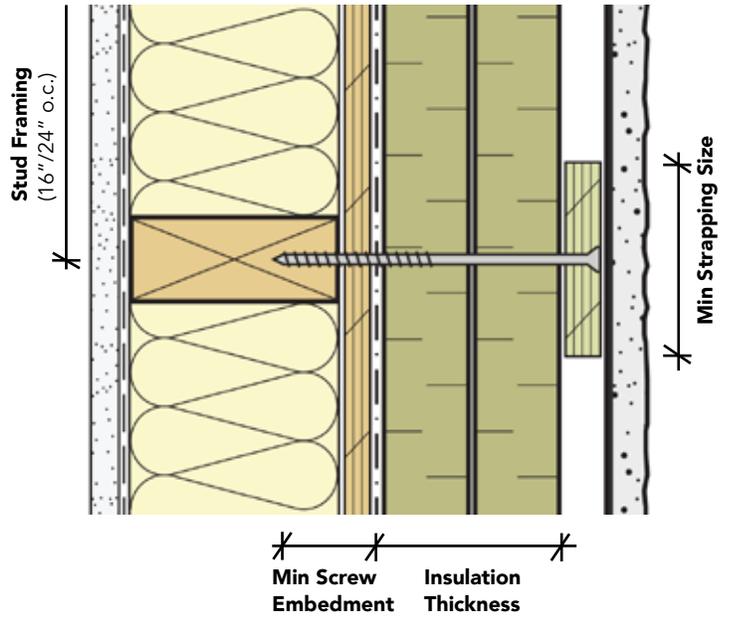
# Fastener Tables

The following pages include fastener requirements for attaching strapping over ROCKWOOL COMFORTBOARD™ using long screws. The tables are organized by cladding weight, with fastener requirements shown for insulation thicknesses up to 8". Note that the following tables are not applicable for insulation thicknesses over 8" - specific structural design is required for this condition. Illustrations of each aspect of the fastener and strapping installation requirements is shown below.

## Section View



## Plan View

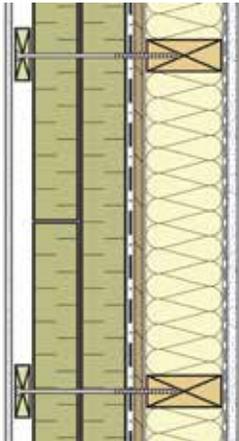


The table below outlines the assumed structural properties for the materials used in this cladding support system.

Assumed Structural Properties	
Rigid mineral wool minimum compressive strength	Stainless/galvanized steel screw allowable tensile strength
439psf (21kPa) @ 10% compression, ASTM C165 testing	60,000 psi (414 MPa)

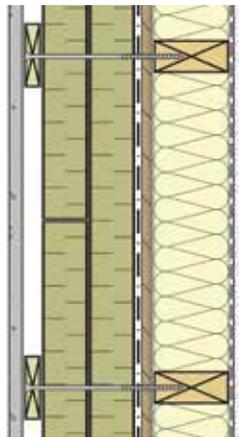
# Fastener Tables

## Light Weight Cladding



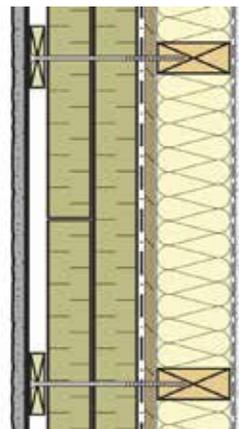
Fastener/Strapping Installation Requirements				
ROCKWOOL COMFORTBOARD™ Thickness	Maximum Vertical Screw Spacing	Minimum Screw Size	Minimum Screw Embedment	Minimum Strapping Size
<b>Light Weight Cladding Below 5 lbs/ft<sup>2</sup> - 16" o.c. Stud Framing</b>				
1" - 2"	24"	#10	1"	3/8" x 2-1/2"
>2" - 8"	16"			
<b>Light Weight Cladding Below 5 lbs/ft<sup>2</sup> - 24" o.c. Stud Framing</b>				
1" - 2"	24"	#10	1"	3/8" x 2-1/2"
>2" - 8"	16"			

## Medium Weight Cladding



Fastener/Strapping Installation Requirements				
ROCKWOOL COMFORTBOARD™ Thickness	Maximum Vertical Screw Spacing	Minimum Screw Size	Minimum Screw Embedment	Minimum Strapping Size
<b>Medium Weight Cladding Between 5 lbs/ft<sup>2</sup> and 10 lbs/ft<sup>2</sup> - 16" o.c. Stud Framing</b>				
1" - 4"	16"	#12	1"	1/2" x 3-1/2"
>4" - 8"	12"			
<b>Medium Weight Cladding Between 5 lbs/ft<sup>2</sup> and 10 lbs/ft<sup>2</sup> - 24" o.c. Stud Framing</b>				
1" - 4"	12"	#12	1"	1/2" x 3-1/2"
>4" - 8"	8"			

## Heavy Weight Cladding



Fastener/Strapping Installation Requirements				
ROCKWOOL COMFORTBOARD™ Thickness	Maximum Vertical Screw Spacing	Minimum Screw Size	Minimum Screw Embedment	Minimum Strapping Size
<b>Heavy Weight Cladding Between 10 lbs/ft<sup>2</sup> and 15 lbs/ft<sup>2</sup> - 16" o.c. Stud Framing</b>				
1" - 2"	16"	#14	1-1/2"	3/4" x 3-1/2"
>2" - 8"	12"			
<b>Heavy Weight Cladding Between 10 lbs/ft<sup>2</sup> and 15 lbs/ft<sup>2</sup> - 24" o.c. Stud Framing</b>				
1" - 2"	10"	#14	1-1/2"	3/4" x 3-1/2"
>2" - 4"	8"			
>6" - 8"	6"			

# Other Considerations

## Insulation Board Installation

Installation of one or multiple layers of ROCKWOOL COMFORTBOARD™ requires a stepped approach, as each insulation board should be attached using only the strapping as much as possible, so as to reduce the number of fastener penetrations through the insulation. This approach is most easily completed using following installation procedure (see illustration)

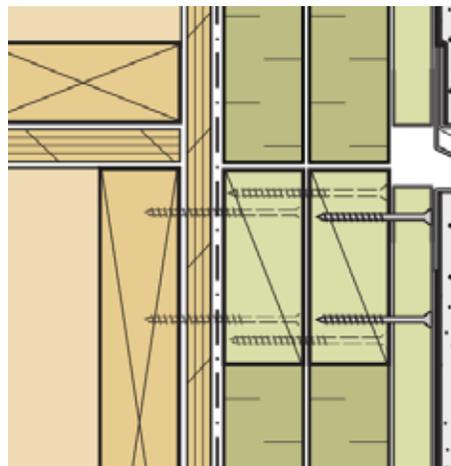
1. Install the starter course of insulation using the strapping fastened at the bottom edge and held upright in place as needed. Insulation boards should be installed with the vertical edges offset 8" from the strapping so that each board (48" wide) will be secured behind 3 separate straps.
2. Place the insulation behind the strapping and "stack" it on the starter course, with screws installed along the strapping through the insulation boards as they are installed up to the top edge.
3. Insulation boards in a single layer can be stacked directly above with the course below, and should be offset 16" horizontally between layers if multiple insulation layers are used.



An alternative installation approach is to use one or two fasteners with washers to pin the insulation boards in place before the strapping is installed.

## Shear Block Option

Potential deflection for heavy weight cladding may be reduced by using deflection blocks the top of the strapping pieces, or by installing screws at an upwards angle into the backup wall. The approach with deflection blocks uses pressure treated dimension lumber blocking, installed at the top of the strapping either at the rim joist or at the top of the wall, in order to "hang" the strapping (see illustration). This provides a solid wood support mechanism and minimizes the deflection movement of the cladding. Note that the blocking attachment should be designed to provide 100% of the vertical support for the cladding in order prevent loading on the screws at portions of the strapping without deflection blocks and the resulting potential vertical movement. The structural design in this section does not account for installation of deflection blocks at the top of the strapping, and therefore specific structural design should be completed for wall assemblies where this configuration is desired.



## Rainscreen Cavity

A ventilated wall cavity outboard of the rigid insulation is recommended in all climate zones. The ventilated cavity allows air flow behind the cladding on the exterior side of the insulation preventing inward vapor drive and meeting the requirements of a rainscreen assembly. Ventilated wall cavities are strongly recommended where vapor-open exterior insulations are used in conjunction with absorptive claddings like brick and in warmer climates where the predominant vapor flow is inwards. The benefits of ventilation also include reduced cladding temperatures in warm climates, which helps reduce heat gain.

## Sample Structural Calculation

Below is an example of a generic structural calculation. It is intended to show the design parameters and considerations included in the calculations used to produce the tables in this guide; however, it is not intended to provide a basis for calculation for specific cladding attachment design. Note that the calculations include various assumptions in order to begin the design work, and rely on engineering judgement based on industry research and common construction practices. For simplicity, consideration of the forces generated by wind and potential seismic activity are not shown, though they are considered in the calculations used to generate the Fastener Tables. Structural calculations for specific configurations that vary from the those provided in the Fastener Tables should be completed by a registered professional.

**Pa** must be less than or equal to **Pr-bend + Pr-truss**

Where:

**Pa** = applied vertical force per screw due to cladding dead load (lbs)

**Pr-bend** = screw bending maximum vertical force resistance (lbs)

**Pr-truss** = truss action maximum vertical force resistance (lbs)

and

**Mr-bend** = screw bending maximum moment resistance (lb-in)

**Mr-truss** = truss action maximum moment resistance (lb-in)

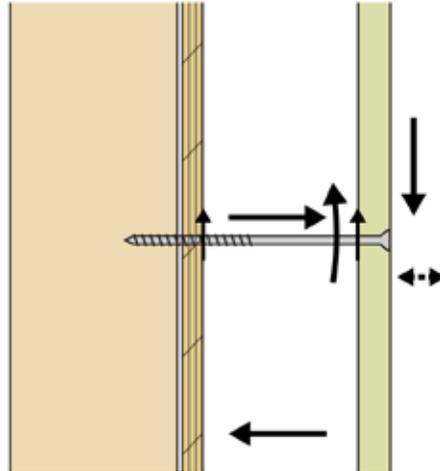
**L** = insulation thickness/screw moment arm length (in)

**Δx** = assumed initial insulation compression due to strapping (in)

**S** = insulation compressive strength at given insulation compression (psf)

**F** = insulation compressive force due to strapping compression

\*note vertical force resistance due to friction is assumed negligible



**Example: 15 psf cladding, 4in exterior insulation, 16in o.c. stud framing**

Assumed fastener spacing @ 16in horiz. x 12in vert.

**Pa** = 15psf x 1.33ft x 1ft = **20lbs**

**Pr-bend**

**Mr-bend** for 0.25in diameter steel screw (calculations not shown) = 50.8 lb-in

**Pr-bend** = **Mr-bend/L** = 50.8lb-in/4in = **12.7lbs**

**Pr-truss**

**Δx** = 0.125in assumed max (3% compression of 4in insulation)

**S** = 172.4psf (ROCKWOOL COMFORTBOARD™ at 10% compression = 584psf)

**F** = 172.4psf x (0.3ft x 1ft) (assumed 3.5in wide strapping x 6in vertical compression length) = **25lbs**

**Mr-truss** = **F x vertical compression length/2** = **75lb-in**

**Pr-truss** = **Mr-truss/L** = 75.4lb-in/4in = **18.9lbs**

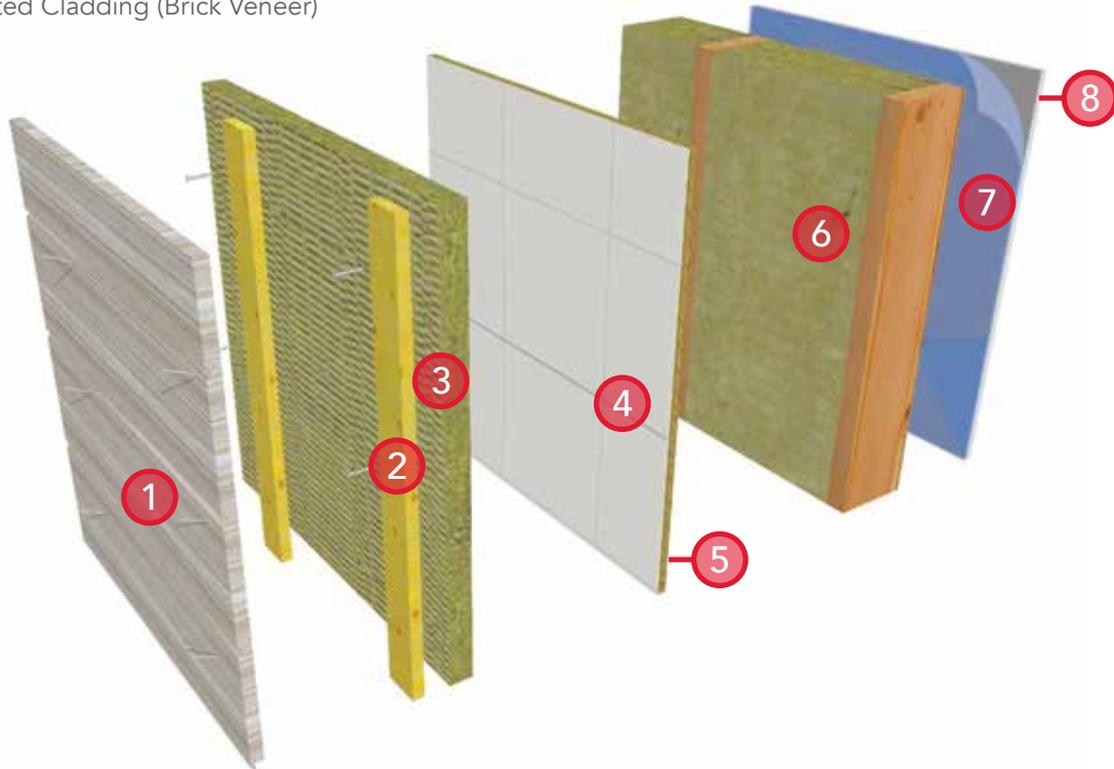
**Pr-bend + Pr-truss** = 12.7lbs + 18.9lbs = **31.6lbs > Pa**

**\*For more information please see engineering report Structural Testing of Screws through Thick Exterior Insulation available on ROCKWOOL.com.**

# Wall Assemblies

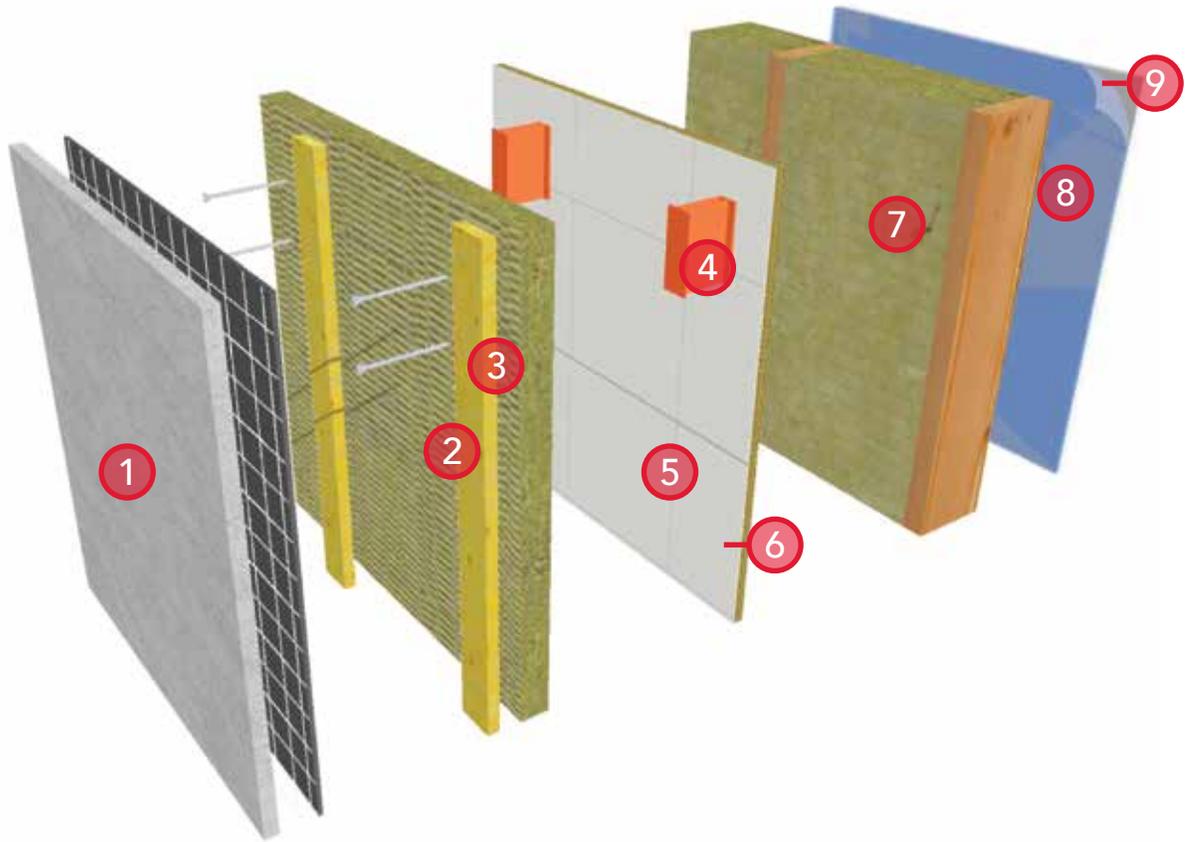
The following diagrams depict the layers of a typical wall assembly for three assembly types:

- Light-weight Cladding (Lap Siding)
- Heavy-weight Cladding (Stucco, shown with proprietary attachment system)
- Self-supported Cladding (Brick Veneer)



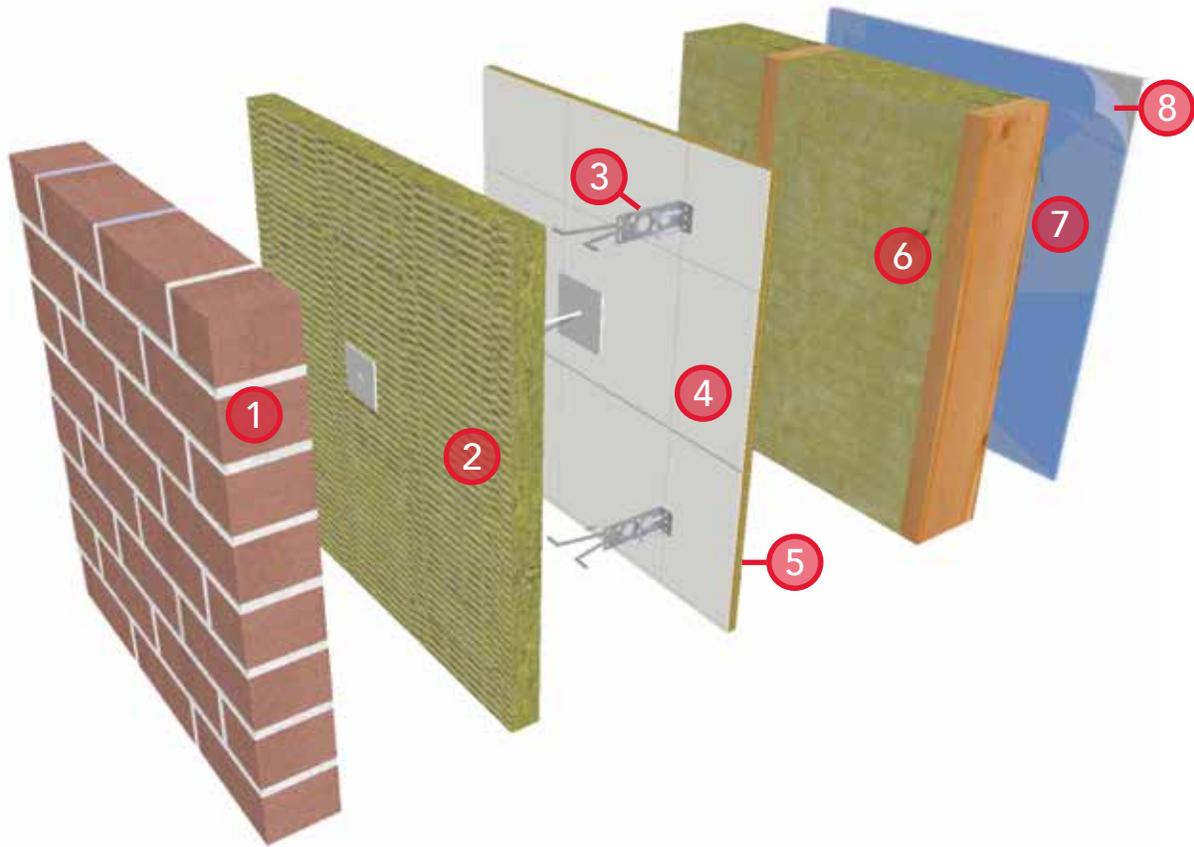
## Light-weight Cladding (Lap Siding) Wall Assembly Exterior to Interior:

1. Light-weight cladding (WSS)
2. Wood strapping (16" or 24" on center)
3. ROCKWOOL COMFORTBOARD™ rigid insulation
4. Sheathing membrane (AB/WRB)
5. Sheathing (OSB or Plywood)
6. 2x6 stud framing with ROCKWOOL COMFORTBATT® insulation
7. Polyethylene sheet (where required) (VR)
8. Gypsum wall board



**Heavy-weight Cladding (Stucco or Cultured Stone Veneer) Wall Assembly  
Exterior to Interior:**

1. Heavy-weight Cladding (WSS)
2. Wood strapping (16" or 24" on center)
3. ROCKWOOL CAVITYROCK® semi-rigid insulation
4. Thermally broken fastener support
5. Sheathing membrane (AB/WRB)
6. Sheathing (OSB or Plywood)
7. 2x6 stud framing with ROCKWOOL COMFORTBATT® insulation
8. Polyethylene sheet (where required) (VR)
9. Gypsum wall board



**Self-supported Cladding (Brick Veneer) Wall Assembly  
Exterior to Interior:**

1. Brick veneer (WSS)
2. ROCKWOOL CAVITYROCK® semi-rigid insulation with stick pin fastener
3. Brick tie
4. Sheathing membrane (AB/WRB)
5. Sheathing (OSB or plywood)
6. 2x6 stud framing with ROCKWOOL COMFORTBATT® insulation
7. Polyethylene sheet (where required) (VR)
8. Gypsum wall board

# Critical Barriers and Control Layers

A building enclosure assembly is designed to effectively manage environmental loads. Materials and components within the assembly form critical barriers that function to control water, air, heat, water vapor, sound, light and fire loads. A critical barrier is a layer within the assembly that must be essentially continuous in order to perform its control function.

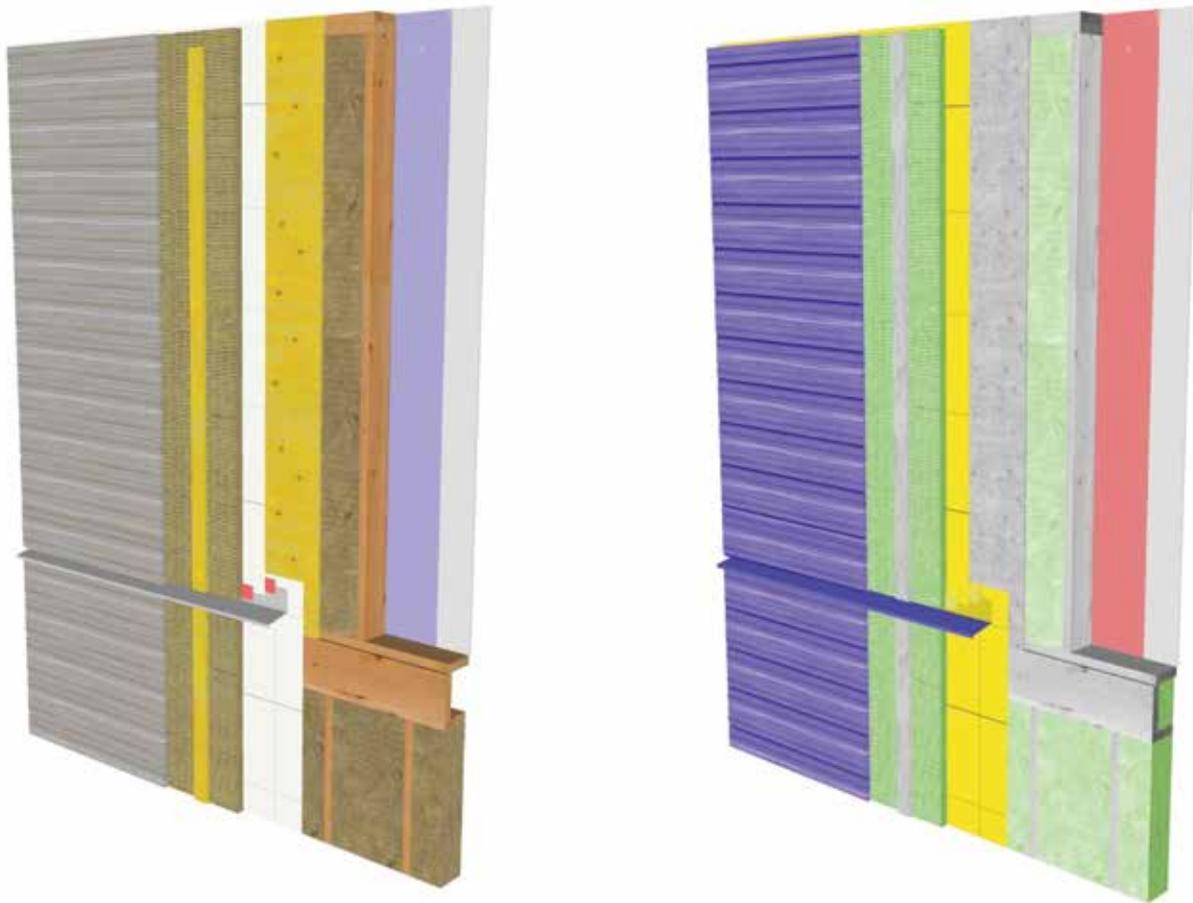
The air barrier is a system often comprised of a variety of components and materials; commonly including, but not limited to, the sheathing membrane, polyethylene sheet, sheathing tape, sealant, flashing, and windows and doors. The air barrier resists air movement (infiltration and exfiltration) through the assembly. The interface detailing between components is essential to the function of the air barrier and the control of air movement. If the barrier is discontinuous, uncontrolled air will be allowed to pass through the assembly reducing efficiency and assembly durability.

Building codes and inspection schedules commonly only refer to the air and vapor barrier within the enclosure assembly; however, other barriers are equally critical. Three critical barriers are of particular concern: the water shedding surface (WSS), the water-resistive barrier (WRB) and the thermal insulation.

The WSS is the primary plane of protection against bulk water loads and also known as the first plane of protection within the building code. It is commonly the most exterior materials or components of the enclosure (cladding, flashing, etc.). The WRB is the secondary plane of protection against bulk water movement and also known as the second plane of protection within the building code. It can also be considered the innermost plane that can safely accommodate water, and allow drainage without incurring damage. In residential construction the WRB is usually performed primarily by the sheathing membrane. Both the WSS and the WRB must be essentially continuous to resist the movement of bulk water, though not in the same nature as the air barrier, with some allowance for overlap and joints. Careful attention should be paid to designing and detailing these critical barriers to ensure the successful performance of the building enclosure. The thermal insulation is the primary element to resist conductive heat flow through the building enclosure. This barrier must also be continuous to the extent that the surrounding framing and other components allow and as required for your jurisdiction.



## Example of Critical Barriers within a Typical Wall Assembly



### Light-weight Cladding (Lap Siding) Wall Assembly Exterior to Interior:

- Light-weight cladding
- 1x3 treated wood strapping
- ROCKWOOL COMFORTBOARD™ rigid insulation
- Thermally broken fastener support
- Sheathing membrane
- Sheathing (OSB or Plywood)
- 2x6 stud framing with ROCKWOOL COMFORTBATT® insulation
- Polyethylene sheet (where needed for vapor control)
- Gypsum

	Water Shedding Surface
	Thermal Barrier
	Water Resistive Barrier and Air Barrier
	Vapor Retarder

## Water-Shedding Surface and Rainscreen Claddings



Generally, the water shedding surface (WSS) is the outer surface of the wall assembly and is designed to manage bulk water in the system. A rainscreen approach assumes that some incidental moisture will likely penetrate behind the WSS and must be allowed to drain through the rainscreen cavity and out of the assembly at cross-cavity flashing locations. Water removal in the ventilated wall cavity also occurs through evaporation and is facilitated by ventilation.

In the case of the split-insulation wall assembly in this guide, the WSS is the outermost layer of the wall assembly, such as lap siding, stucco or brick veneer. The exterior rigid insulation is intended to be a secondary drainage plain, not as the primary water resistive barrier. In a rainscreen system, ROCKWOOL COMFORTBOARD™ must be installed such that an open cavity for air movement and drainage behind the cladding is provided. The ventilated wall cavity is most commonly achieved by using vertically oriented strapping onto which the cladding is fastened. The ventilated wall cavity also aids in drying out water absorptive cladding by allowing a drying surface on the backside of the cladding and reduces the inward vapor drive from solar radiation.

### Water-Resistive Barrier

The water-resistive barrier (WRB) is the innermost plane that can safely accommodate water, and allow drainage without incurring damage.

In the case of the split-insulation wall assembly, the vapor-permeable sheathing membrane behind the exterior insulation functions as the WRB. The sheathing membrane must be vapor permeable to allow for some outward migration of vapor, thereby minimizing the risk of condensation within the wall assembly. There are a variety of loose and self-adhered sheet products that can be used, as well as some liquid-applied products. ROCKWOOL COMFORTBOARD™ placed outboard of the sheathing membrane will also create a supplemental drainage surface to reduce water penetration further into the assembly.

The WRB can also serve as the air barrier membrane in an exterior membrane air barrier approach. The sheathing membrane must be detailed to stop liquid moisture from the outside, as well as air infiltration and exfiltration, while still allowing outward vapour diffusion drying from the inside. The sheathing membrane is taped/sealed and sandwiched between the sheathing and the exterior insulation in this assembly.



### Vapor Retarder

In most split-insulation wall assemblies, the interior polyethylene sheet provides the primary vapor control layer. Increasingly, however, poly has been phased out in some states in favour of other methods. Review the requirements for vapor barriers in your jurisdiction. In cooling climates, the vapor retarder should be placed outboard of the insulation layers whereas in heating climates, the vapor retarder should be placed inboard of the insulation in order to limit the outward vapour drive into the wall assembly. Adding insulation to the exterior of the sheathing keeps the moisture-sensitive sheathing and framing warmer and reduces the risk of condensation from interior moisture and shifts the dew point outside of the stud cavity.



### Air Barrier

The split insulation wall assembly can accommodate several air-barrier strategies. The simplest and most robust approach is to use the vapor-permeable sheathing membrane (taped and sealed) as the primary air-barrier material, though other materials may also be used. The sheathing membrane is sandwiched between the sheathing and the exterior insulation and is therefore adequately supported and relatively safe from puncture from incidental damage. Continuity of the air barrier is important and is covered by the details contained in this guide.

### Thermal Insulation

The thermal insulation, while not usually considered a critical barrier, performs an important control function and is useful to identify. It consists of the thermal insulation and other low-conductivity elements of the wall assembly. Proper identification of the materials used in the thermal barrier helps to minimize thermal gapping and thermal bridging. In a split-insulation wall assembly the primary thermal barrier will be the ROCKWOOL COMFORTBOARD™ rigid insulation on the exterior and the ROCKWOOL COMFORTBATT® insulation in the stud cavities. Other important elements to consider are thermally broken cladding supports, window frames and doors and windows.



# Detailing and Other Considerations

Split-insulation wall assemblies using ROCKWOOL COMFORTBOARD™ require some simple modifications to standard wood-frame construction practices at key interfaces and penetrations.

- The water shedding details are important in order to limit the amount of water that reaches beyond the exterior cladding.
- Cross-cavity flashings, complete with end dams and adequate sloping, will provide the most effective water shedding component at joints and interfaces in the exterior cladding.
- Where more robust support is needed at the plane of insulation, use continuous framing, provided that it does not significantly affect the thermal performance of the wall assembly or significantly disturb drainage and ventilation of the ventilated wall cavity.
- If a heavier cladding is being used that cannot be supported by the strapping, shear blocks should be used at intermittent spacing, and its effect on the thermal performance of the wall should be included in overall thermal calculations.
- Insect control should be used at all cladding and insulation terminations to stop pests from entering behind the cladding into the ventilated wall cavity, and into the mineral wool insulation.

The split-insulation wall assembly details in this guide are designed to provide the building industry with simple, easy-to-follow instructions for detailing an external air barrier, split-insulation wall assembly that effectively controls vapor, moisture, and air flow. ROCKWOOL COMFORTBATT® and ROCKWOOL COMFORTBOARD™ insulation are ideal choices for the effective and efficient construction of such a wall assembly.

## Alternatives

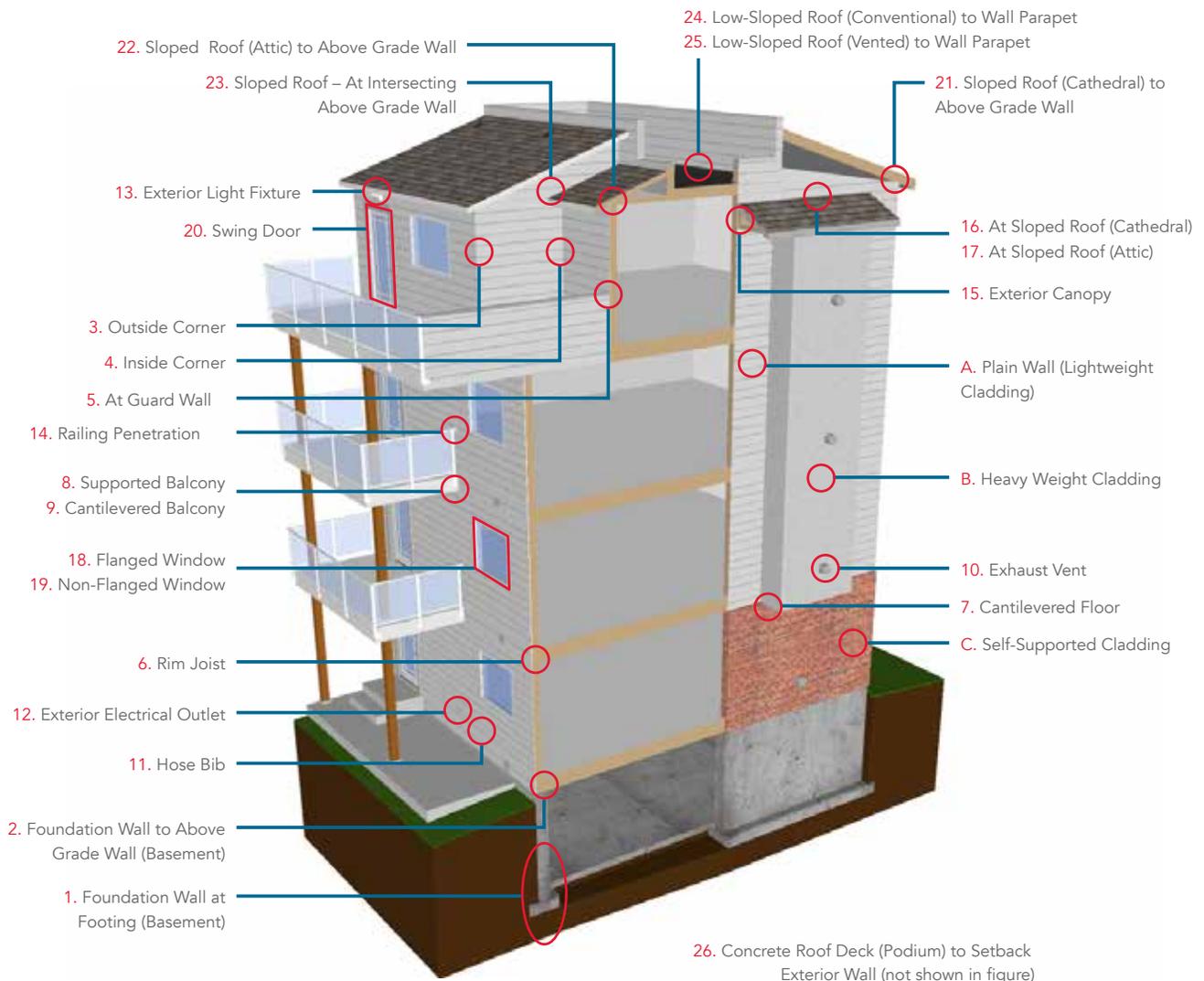
This guide is intended to provide industry best practice guidelines for the design and construction of split insulation wall assemblies for the mid-rise wood construction market in all climate zones. However, it is noted that there are equally robust alternatives to the details presented here. Alternative details are considered robust as long as the design and fabrication meet the intent to maintain air and moisture barrier continuity in an effective and durable way.

Many building codes across North America require rainscreen designs for wall assemblies. In areas that do not require a rainscreen cavity, strapping may be omitted for wall assemblies with 1.5" of exterior rigid insulation or less. Wall assemblies with exterior insulation greater than 1.5" in thickness should include strapping to ensure effective support of the cladding. Pressure treated strapping is only required in high rain areas, though it is recommended in all jurisdictions. Review the building code in your jurisdiction for more information.

# Mid-Rise Wood Construction Installation Details

The following section presents the list of important details typically found in a mid-rise wood-frame buildings. The details provide three dimensional build-sequence drawings for the construction and detailing of the enclosure assembly at various locations on the building. Special attention is paid to correct detailing of the exterior air barrier, water-resistive barrier and water shedding surface.

The detail locations are shown graphically on the figure below. The details are numbered and correlated with the numbering system presented on the mid-rise building figure below, thus allowing the figure to function as cross-reference. Some identified locations include more than one detail, to allow for variation in installation, cladding selection, and insulation thickness. ROCKWOOL COMFORTBOARD™ insulation thickness is between 1.5" - 3" unless otherwise noted.



# Sequential Details

The details selected for this guide are presented in the table below. Each detail provides a clear three dimensional build-sequence for the proper construction and detailing of various components and interfaces. Special attention is paid to the installation of ROCKWOOL COMFORTBOARD™, and the detailing of the air barrier, water-resistive barrier and water shedding surface.

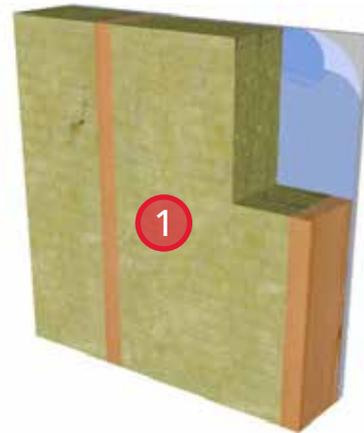
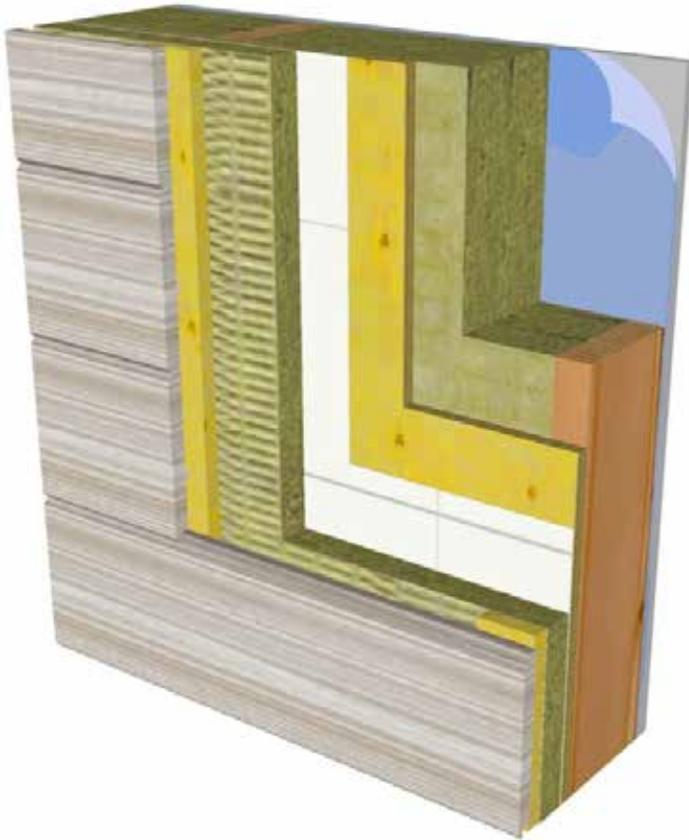
## Typical Wall Construction

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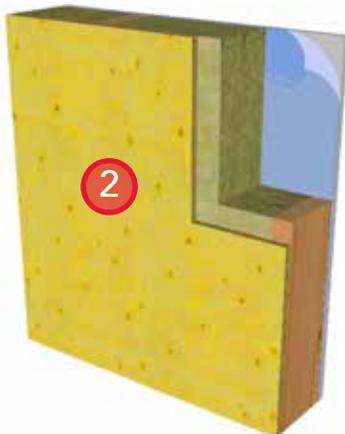
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# Light Weight Cladding (Lap Siding)



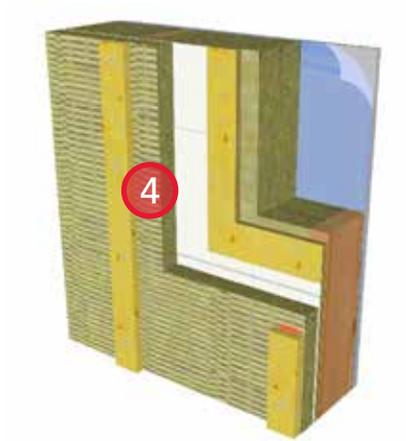
1. Typical 2x6 wood frame construction with ROCKWOOL COMFORTBATT® installed in the stud cavities.



2. Install sheathing.



3. Install sheathing membrane.

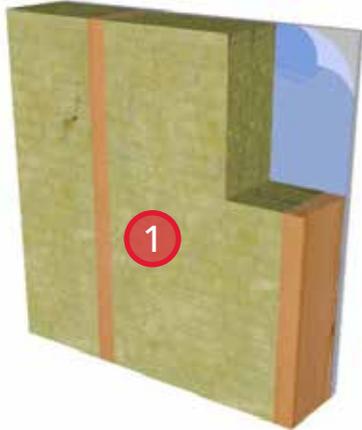
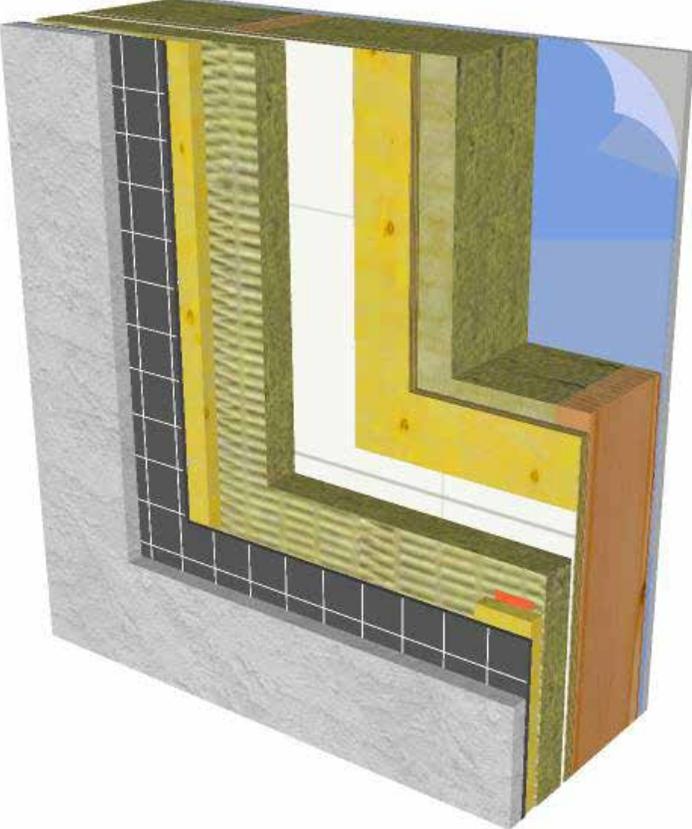


4. Install ROCKWOOL COMFORTBOARD™ and secure with strapping.

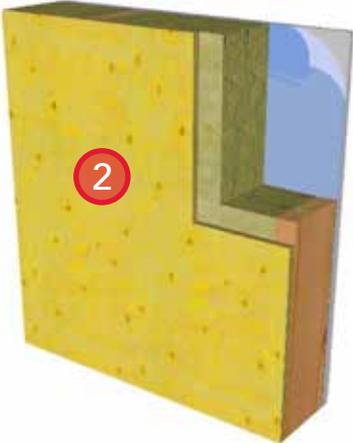


5. Install cladding (lap siding).

# Heavy Weight Cladding (Stucco)



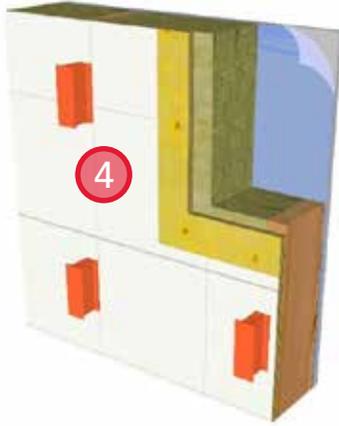
1. Typical 2x6 wood frame construction with ROCKWOOL COMFORTBATT® installed in the stud cavities.



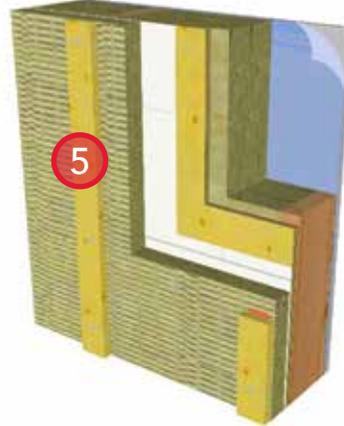
2. Install sheathing.



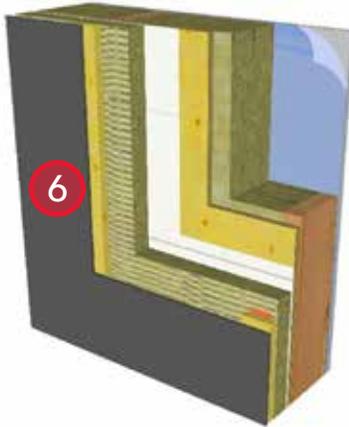
3. Install sheathing membrane.



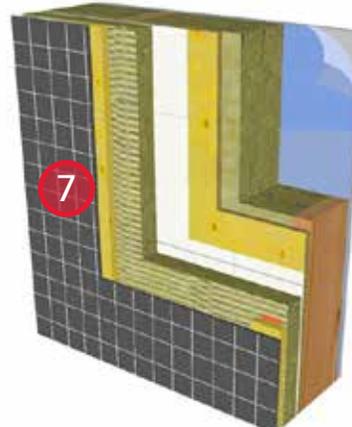
4. Install thermally broken strapping supports.



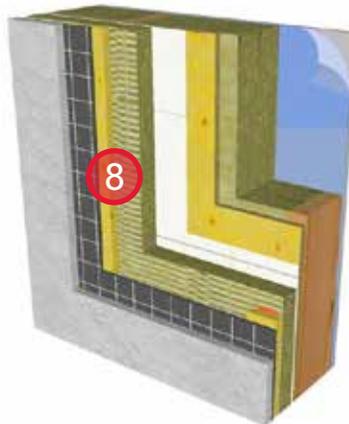
5. Install ROCKWOOL CAVITYROCK® and secure with strapping.



6. Install backer board.

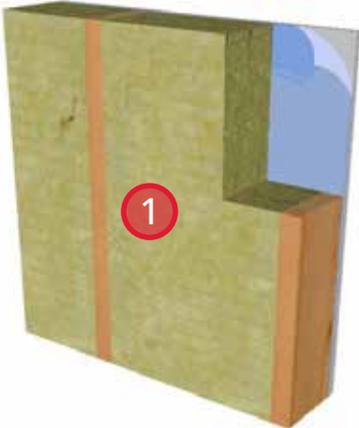
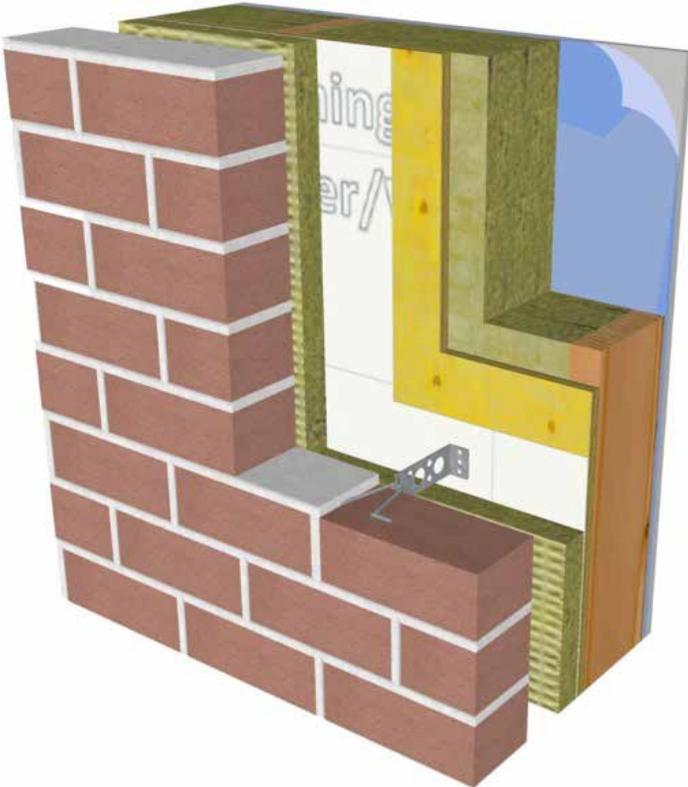


7. Install wire support mesh.

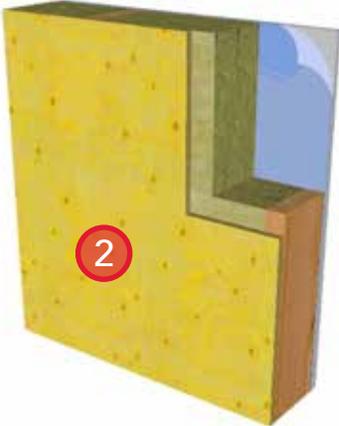


8. Install stucco finish.

# Self-Supported Cladding (Brick)



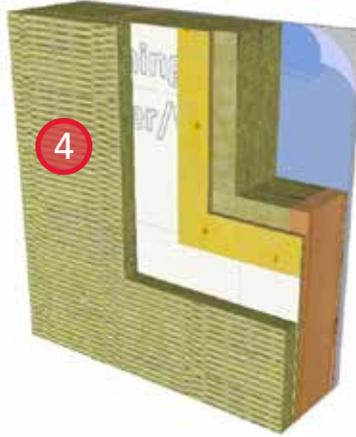
1. Typical 2x6 wood frame construction with ROCKWOOL COMFORTBATT® installed in the stud cavities.



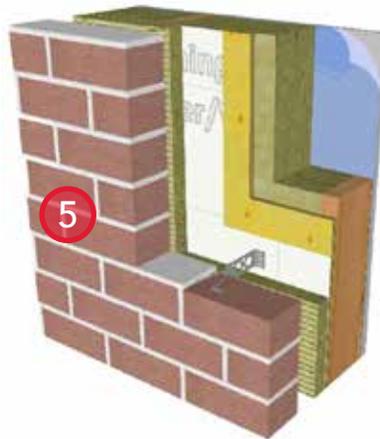
2. Install sheathing.



3. Install sheathing membrane.



4. Install ROCKWOOL COMFORTBOARD™ and secure with strapping. Provide brick ties as required to provide lateral resistance.



5. Install brick.

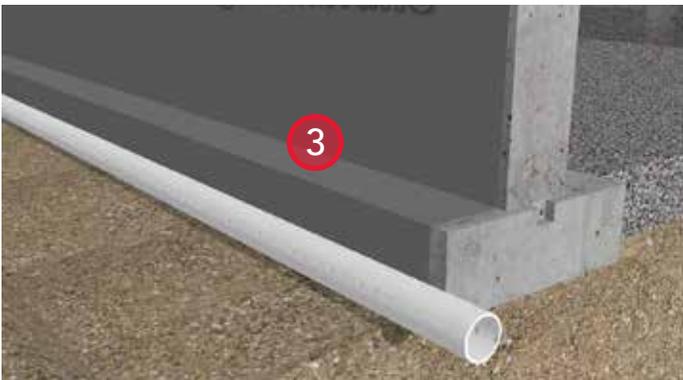
## Foundation Wall at Footing (Basement)



1. Intersection of the concrete foundation wall with the footing.



2. Install the below-grade waterproofing membrane. Ensure the membrane wraps over the footing and terminates on the vertical.



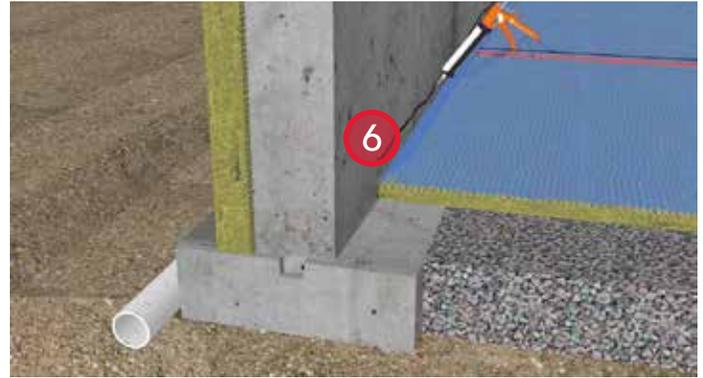
3. Install perforated pipe with filter fabric at the base of the footing and fill around with drain rock.



4. Install ROCKWOOL rigid board insulation against foundation wall. Spot adhere the insulation to prevent puncture of the waterproofing membrane.



5. Install ROCKWOOL rigid board insulation at grade. Ensure the insulation is installed tight to the foundation wall.



6. Install poly over the insulation and seal the leading edge to the foundation wall with acoustical sealant to maintain air barrier continuity. Seal laps in the poly with acoustical sealant and sheathing tape on the leading edge.



7. Install ROCKWOOL rigid board insulation in a strip the height of the slab along the base of the foundation wall. The insulation absorbs differential movement between the slab and foundation and provides a thermal break.

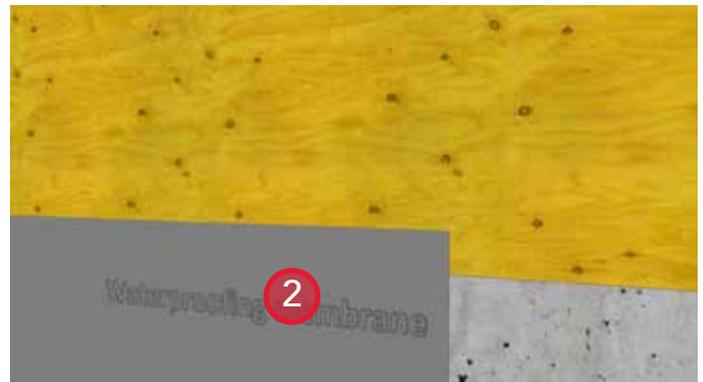


8. Place reinforcing and pour slab-on-grade concrete.

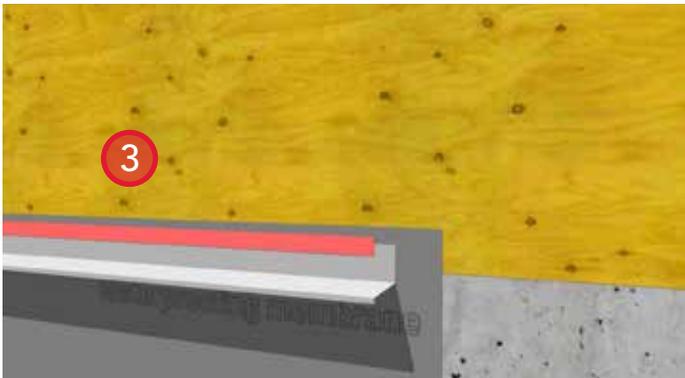
# Foundation Wall to Above Grade Wall



1. Typical wood frame construction at sheathing installation stage.



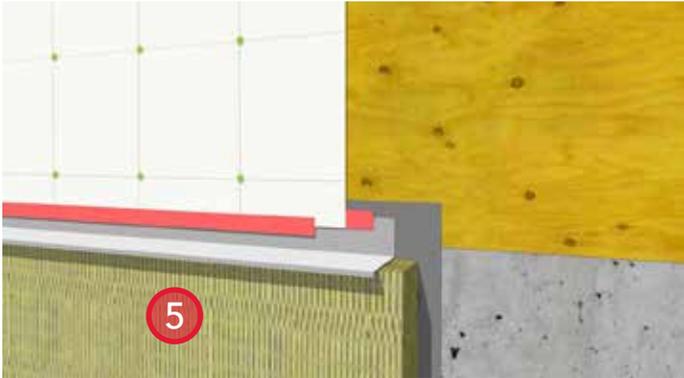
2. Install below-grade waterproofing membrane. Provide a 2" overlap of waterproofing membrane onto the sheathing.



3. Install prefinished metal flashing and seal leading edge to the underlying waterproofing membrane with sheathing tape to provide for air barrier continuity.



4. Install sheathing membrane and seal leading edge to the flashing with sheathing tape to complete air barrier continuity. Provide a  $\frac{3}{4}$ " vision line on the flashing backleg.



5. Install ROCKWOOL rigid board insulation over foundation waterproofing and up tight to the underside of flashing. Spot adhere the insulation to the foundation wall to avoid puncture of the waterproofing membrane.



6. Install concrete protection board over insulation. Back fill dirt around the foundation wall.

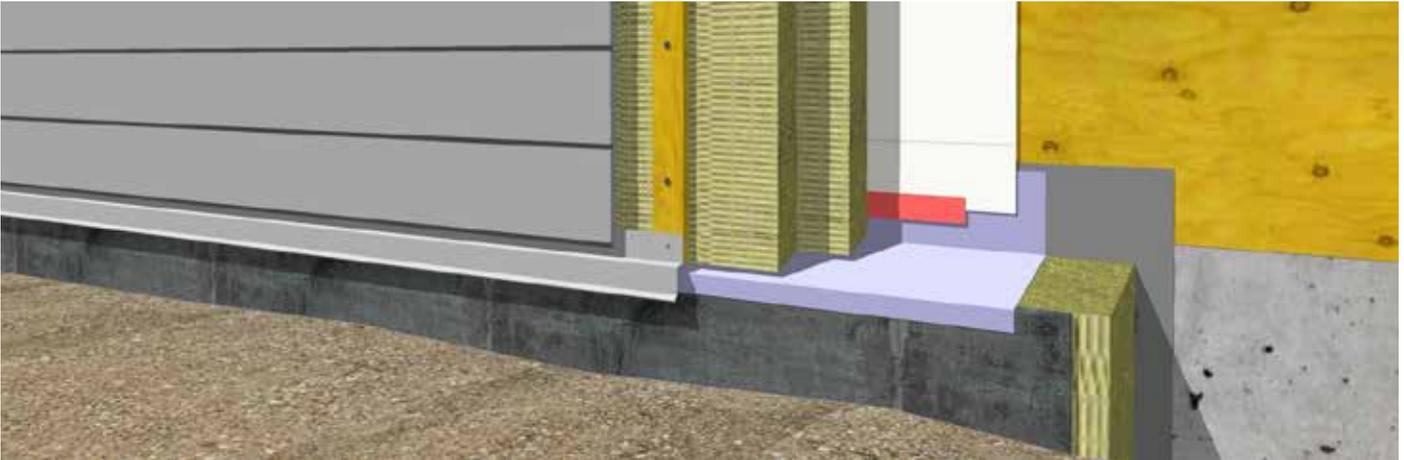


7. Install ROCKWOOL COMFORTBOARD™. Use strapping to hold the insulation; secure in place with recommended fasteners. Provide bugscreens at the top and bottom of the strapping.



8. Install cladding.

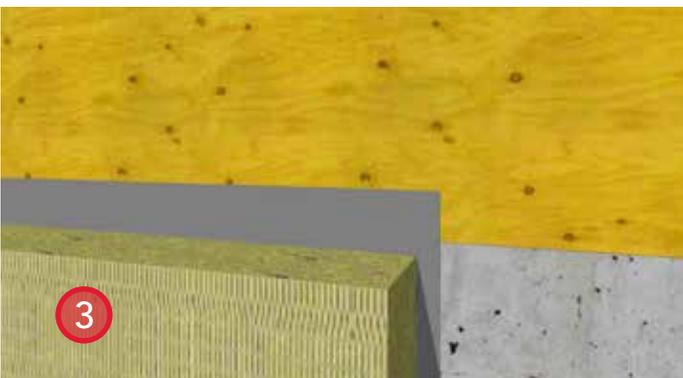
## Foundation Wall to Above Grade Wall (6" Insulation)



1. Typical wood frame construction at sheathing installation stage.



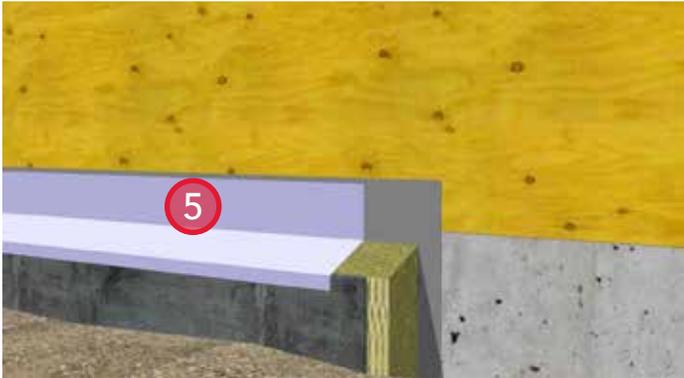
2. Install below-grade waterproofing membrane. Provide a 2" overlap of waterproofing membrane onto the sheathing.



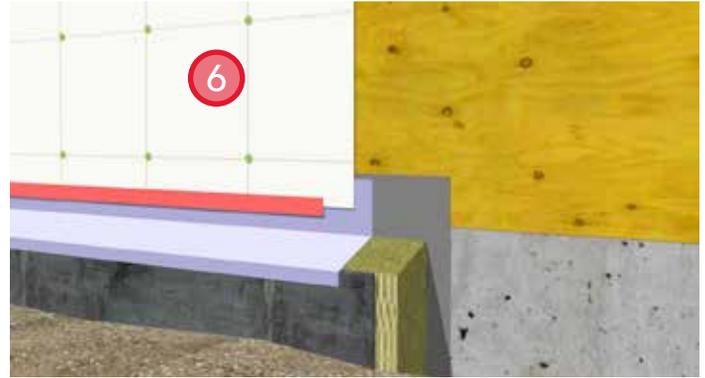
3. Install ROCKWOOL rigid board insulation over foundation waterproofing and taper top edge to drain. Spot adhere the insulation to the foundation wall to avoid puncture of the waterproofing membrane.



4. Install concrete protection board over insulation. Back fill dirt around the foundation wall.



5. Install self-adhered membrane skirt and glue to the top of the insulation. Ensure that the membrane has a minimum 4" return up the wall.



6. Install sheathing membrane and seal leading edge to the self-adhered membrane with sheathing tape to complete air barrier continuity.



7. Install two layers of ROCKWOOL COMFORTBOARD™. Use strapping to hold the insulation and secure in place with recommended fasteners. Provide ugscreens at the top and bottom of the strapping.

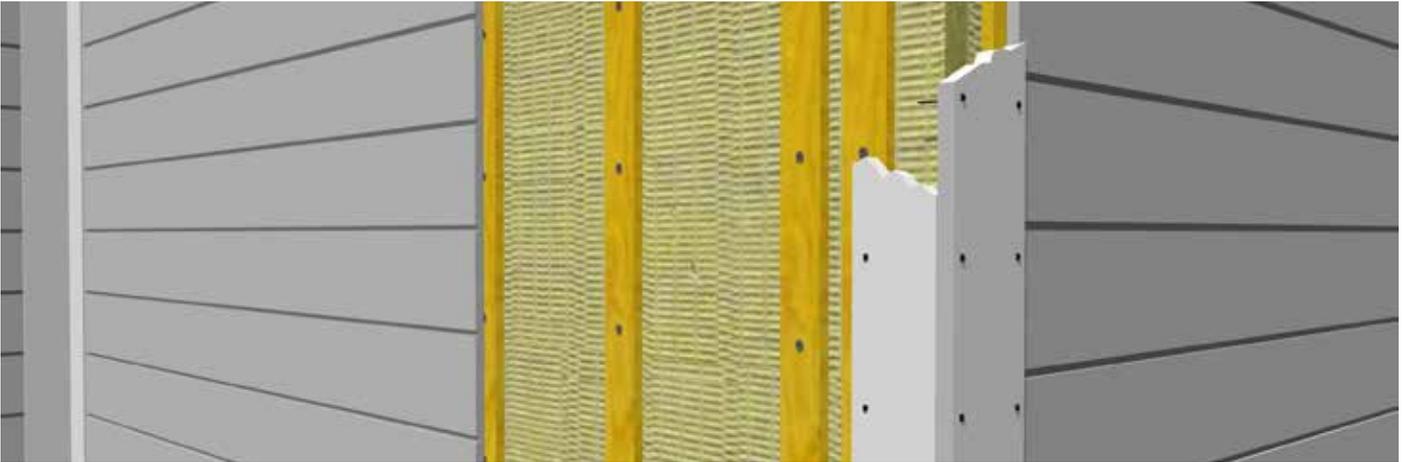


8. Install prefinished metal flashing to assist with water shedding.

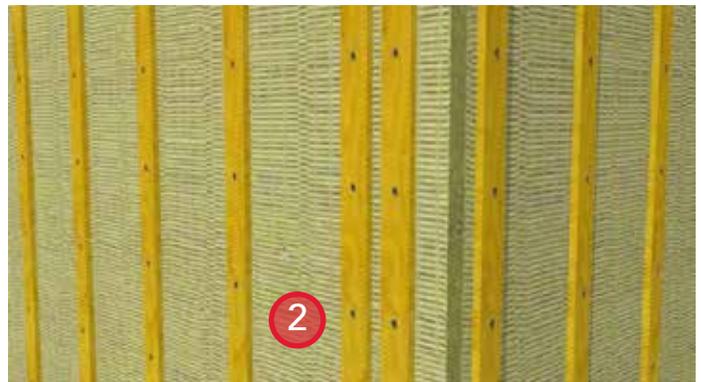


9. Install cladding

## Above Grade Wall at Outside Corner



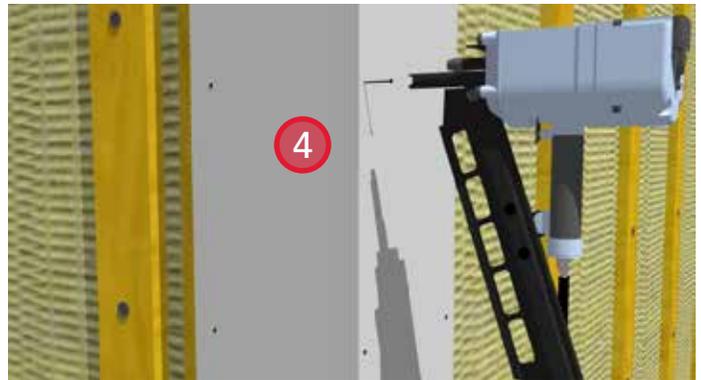
1. Typical wood frame construction at sheathing installation stage.



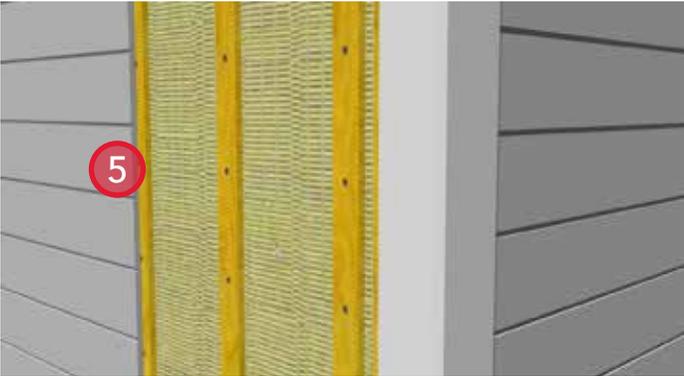
2. Install ROCKWOOL COMFORTBOARD™. Use the strapping to support the insulation and secure in place with recommended fasteners. Provide bugscreens at the top and bottom of the strapping.



3. Install strapping as required to support the corner trim boards and cladding. Install corner trim boards.

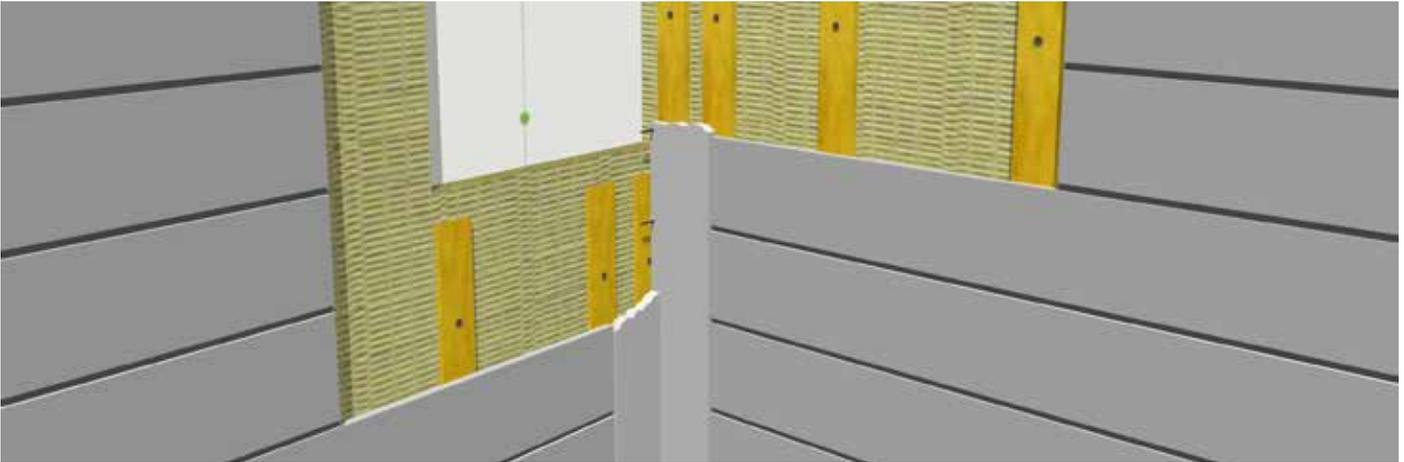


4. The corner trim boards must be nailed together as well as to the strapping to form the corner.



5. Install cladding.

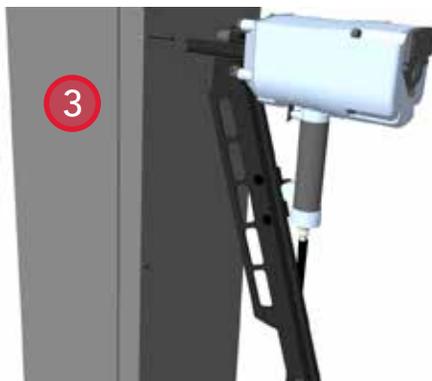
## Above Grade Wall at Inside Corner



1. Install sheathing membrane at inside corner. Seal all laps with sheathing tape to maintain air barrier continuity.



2. Install ROCKWOOL COMFORTBOARD™. Use strapping to secure the insulation in place with recommended fasteners. Provide bugscreens at the top and bottom of the strapping.



3. Prepare corner trim boards by nailing them together before installation.

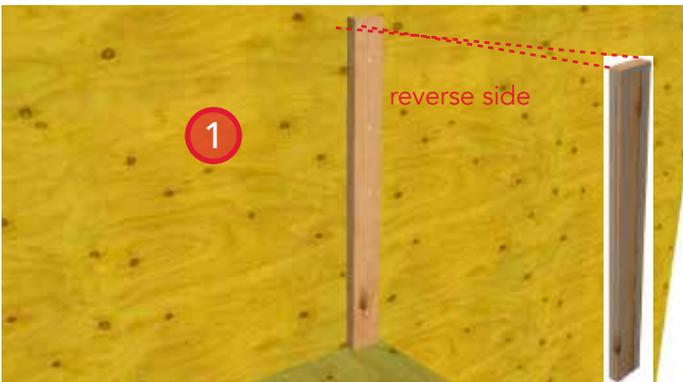
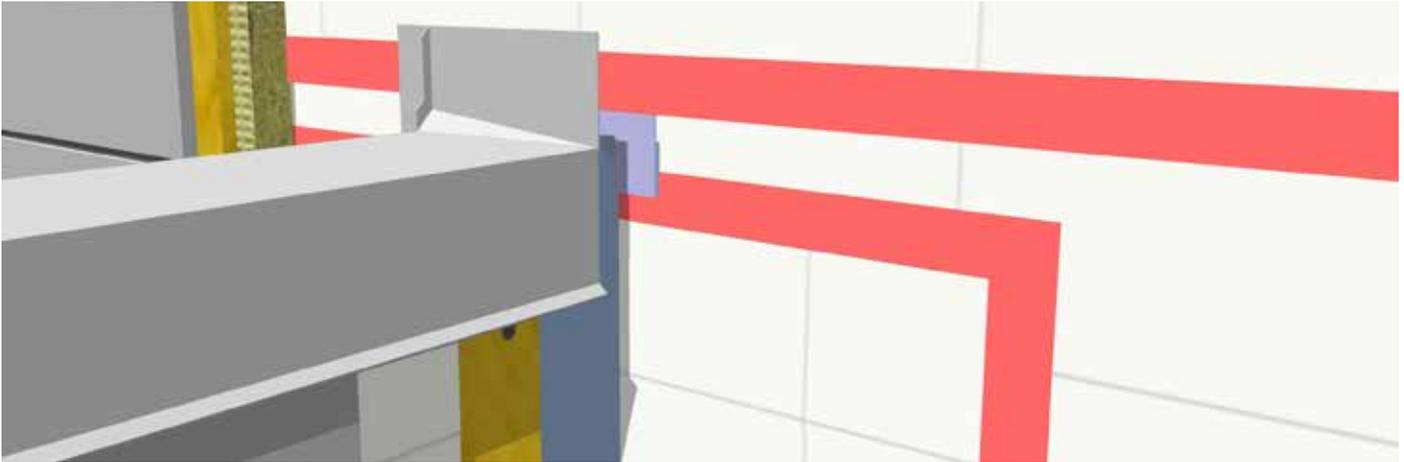


4. Install corner trim boards.



5. Install cladding.

## Above Grade Wall at Guard Wall



1. Install the first stud for the guard wall. Bed the stud in sealant and apply sealant to each short side to seal the plywood on the guard wall.



2. Frame the vented guard wall and slide into place over the first stud.



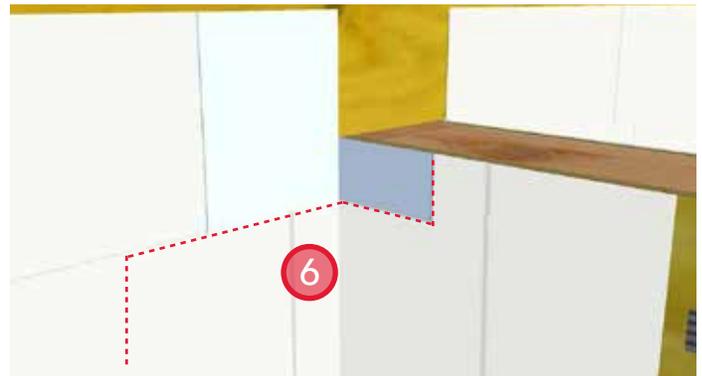
3. Install waterproof deck membrane. Return the deck membrane up the adjacent walls a minimum of 8".



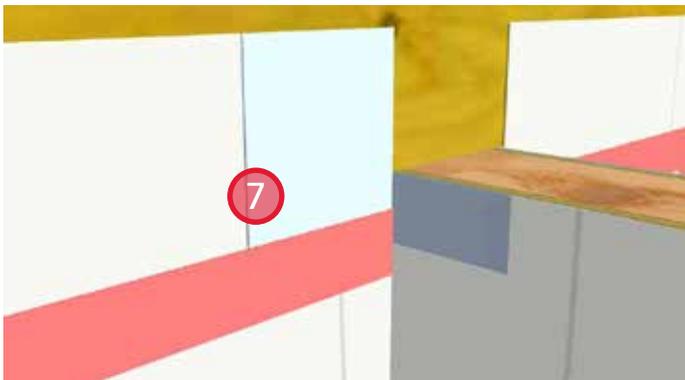
4. Install sheathing membrane to the above grade wall. Seal the leading edges to the deck membrane with sealant and sheathing tape to maintain air barrier continuity.



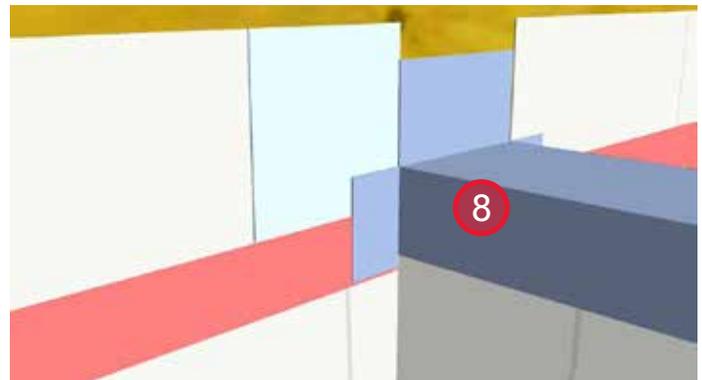
5. Install non-bitumious self-adhered membrane in the corner. Ensure the flashing adheres to the plywood on the guard wall and the adjacent sheathing membrane to provide for air barrier continuity.



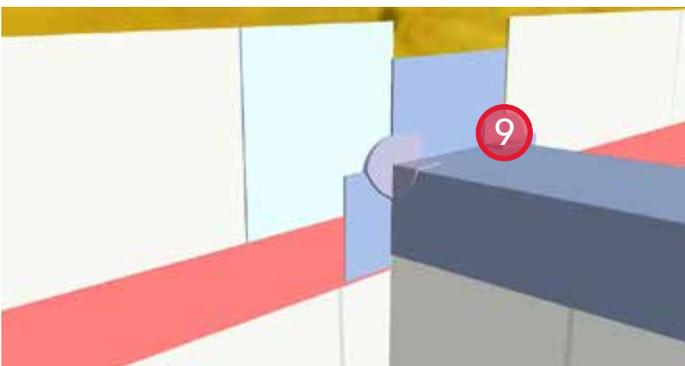
6. Install sheathing membrane on the guard wall. Notch out the corner of the sheathing membrane to expose a 2" portion of the self-adhered corner flashing. This is necessary to maintain air barrier continuity in subsequent steps.



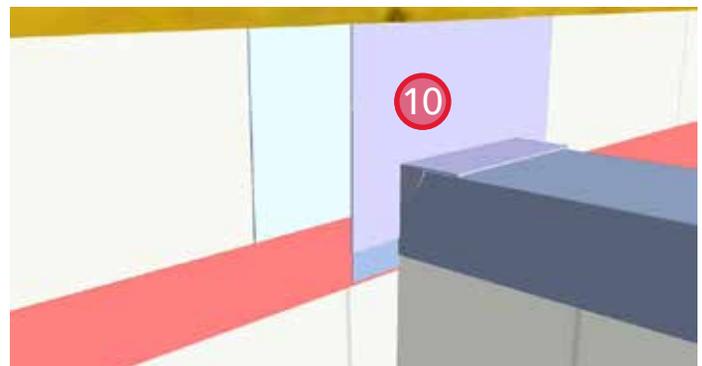
7. Seal the leading edge of the sheathing membrane with sheathing tape. Do not seal the bottom edge as the membrane is designed as a part of the moisture barrier, not the air barrier.



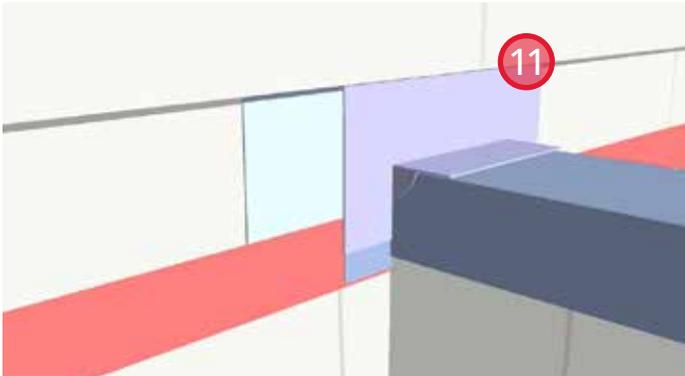
8. Install self-adhered membrane over the guard wall and extend to the adjacent above grade wall. Provide a minimum 4" return up the wall and a minimum of 2" return on the sides.



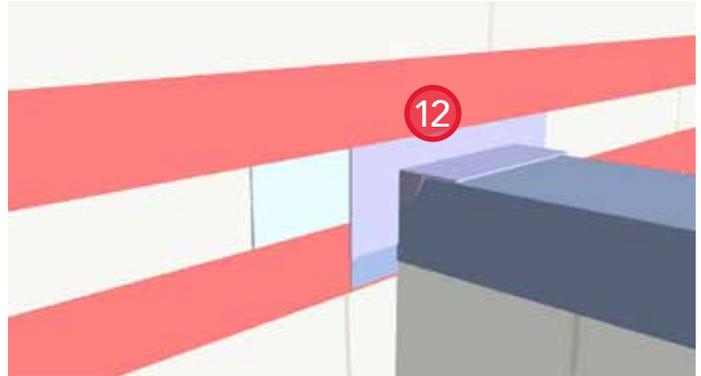
9. Install gussets constructed from self-adhered membrane at the corners of the guard wall to the above grade wall interface.



10. Install a shoulder flashing constructed from self-adhered membrane to provide for air barrier continuity. Extend the flashing 2" onto the guard wall and 2" down the face of the above grade wall.



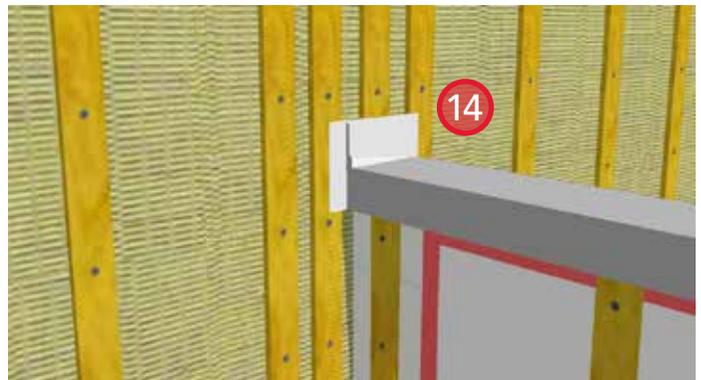
11. Install sheathing membrane on the above grade wall. Notch out around the guard wall. Ensure the membrane laps over all other membranes.



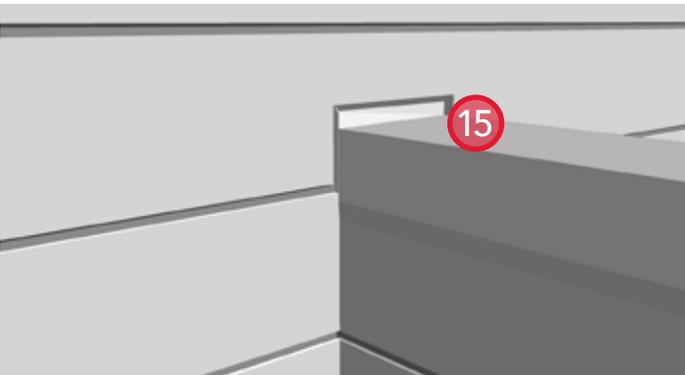
12. Seal the leading edge of the sheathing membrane with sheathing tape to maintain air barrier continuity.



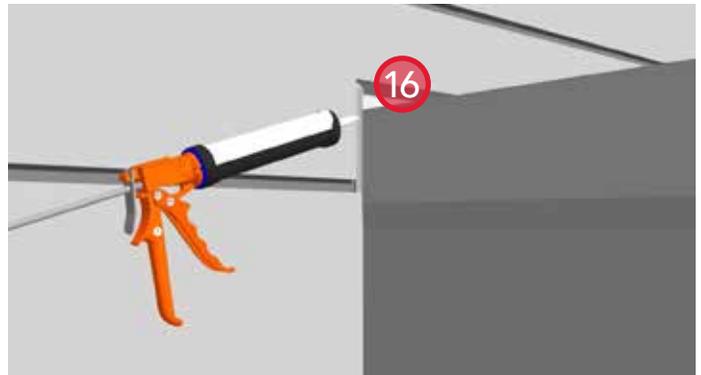
13. Install ROCKWOOL COMFORTBOARD™ and secure in place with strapping. Provide bugscreens at the top and bottom of the strapping.



14. Install prefinished metal flashing to the top of the guard wall. Fasten the flashing to the strapping.

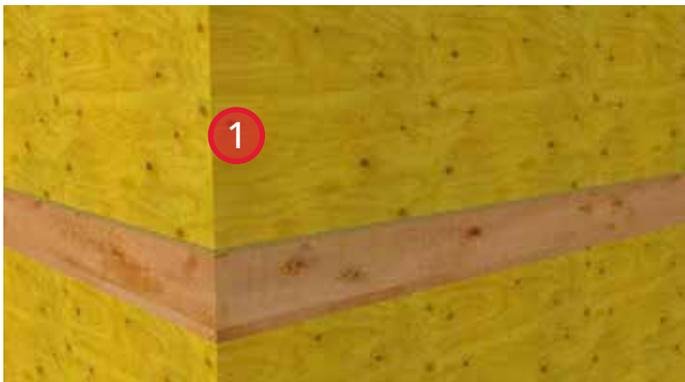
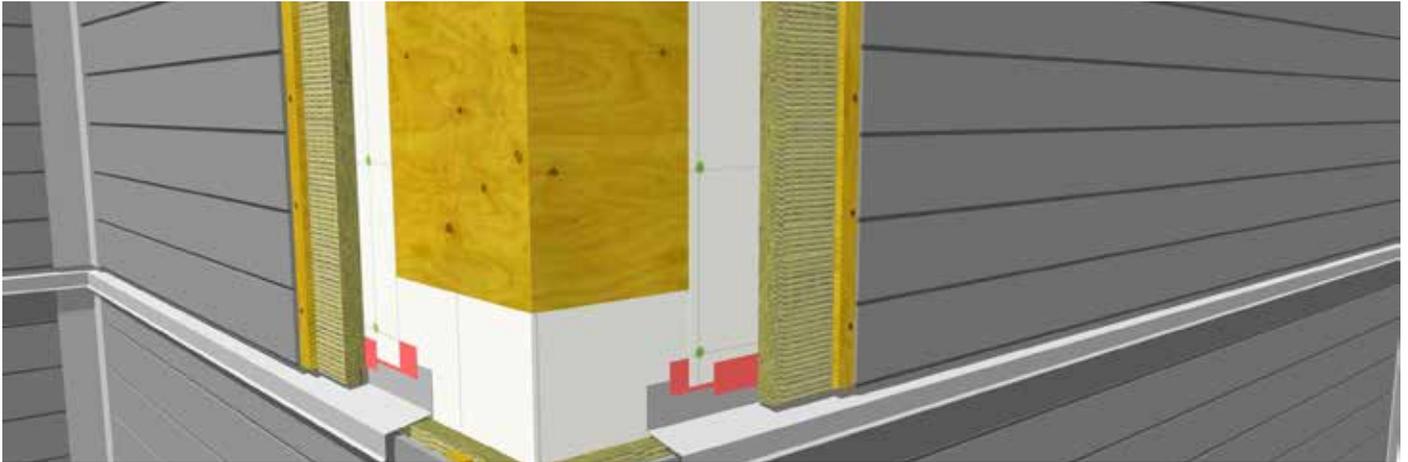


15. Install cladding. Leave a gap around the flashing to allow for sealant.



16. Install backer rod and sealant at the gap between the flashing and the cladding.

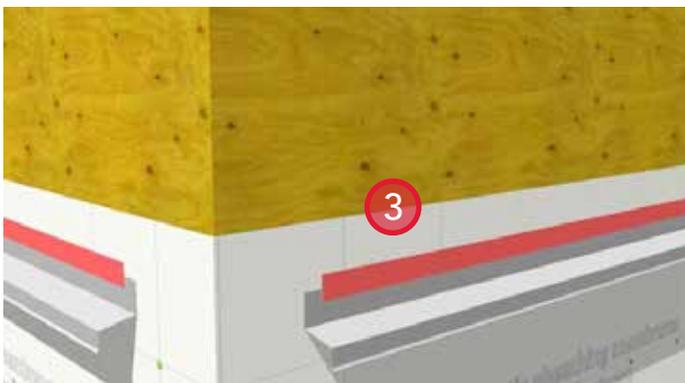
# Above Grade Wall At Rim Joist



1. Typical wood frame construction at sheathing installation stage.



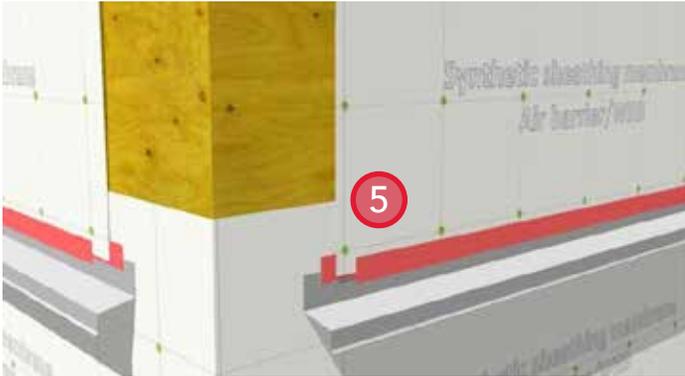
2. Install sheathing membrane and flashing.



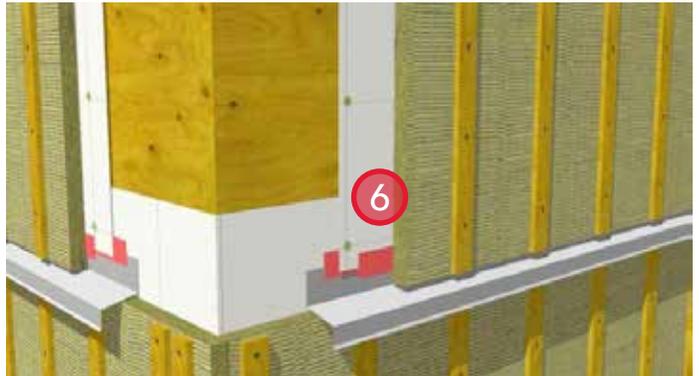
3. Seal the leading edge of the flashing with sheathing tape to provide for air barrier continuity.



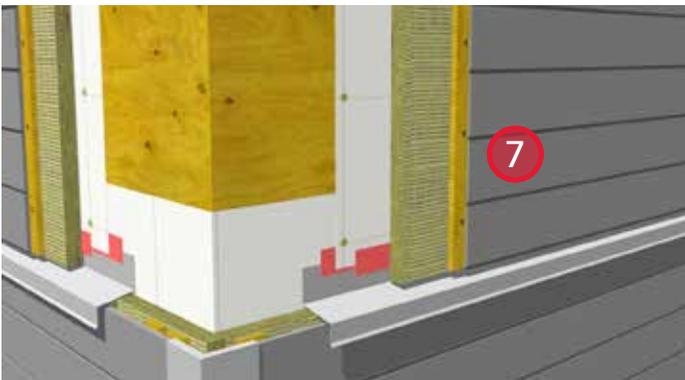
4. Install upper layer of sheathing membrane. Lap the membrane over the flashing.



5. Seal the leading edge of the sheathing membrane with sheathing tape to maintain air barrier continuity. Allow for a  $\frac{3}{4}$ " vision line of the flashing backleg.



6. Install ROCKWOOL COMFORTBOARD™. Use the strapping to support the insulation and secure in place with recommended fasteners. Provide bugscreens at the top and bottom of the strapping.



7. Install cladding.

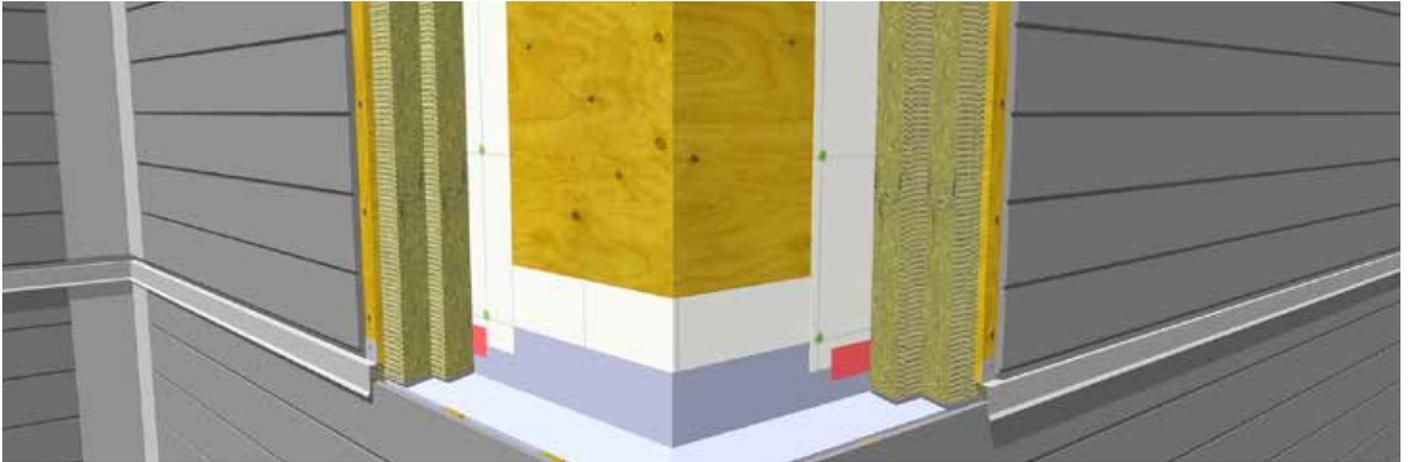


8. Install rigid insulation on the interior of the rim joist. ROCKWOOL COMFORTBOARD™ and ROCKWOOL COMFORTBATT® can be used to meet thermal barrier requirements for foamed plastics.

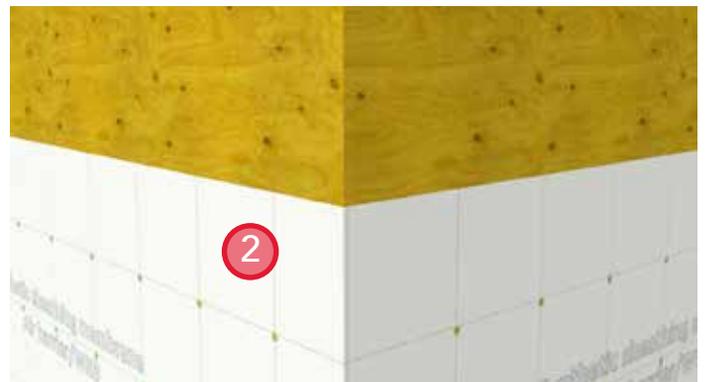


9. Install spray foam around the perimeter of the joist bay, sealing to the rigid insulation, top plate, joists and subfloor for air tightness and thermal barrier continuity.

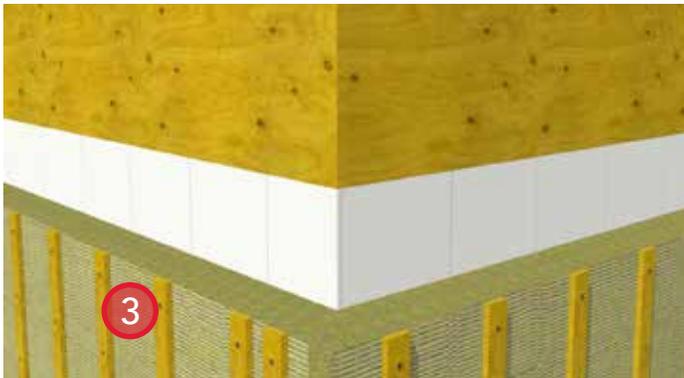
## Above Grade Wall at Rim Joist (6" Insulation)



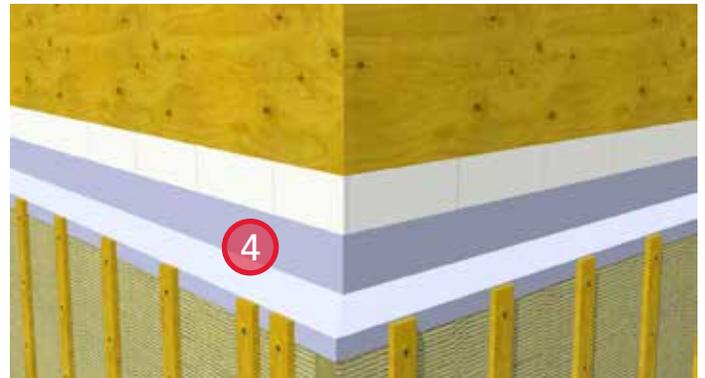
1. Typical wood frame construction at sheathing installation stage.



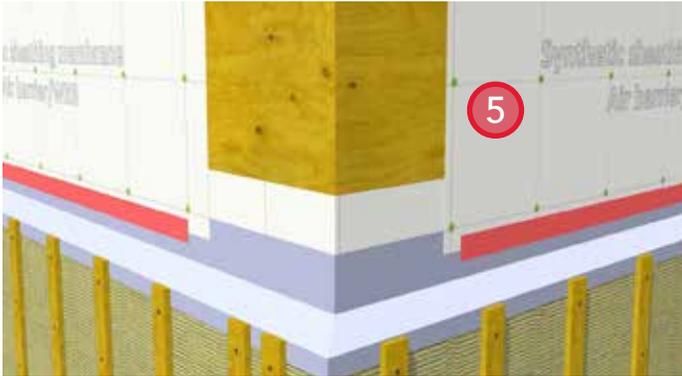
2. Install sheathing membrane.



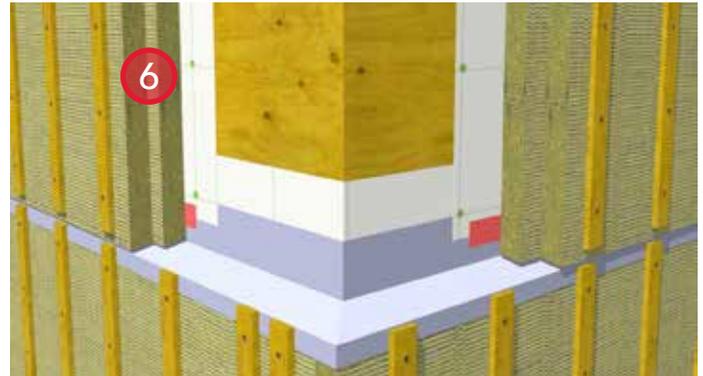
3. Install two layers of ROCKWOOL COMFORTBOARD™ below rim joist and taper top edge to drain. Use the strapping to support the insulation and secure in place with recommended fasteners. Provide bugscreens at the top and bottom of the strapping.



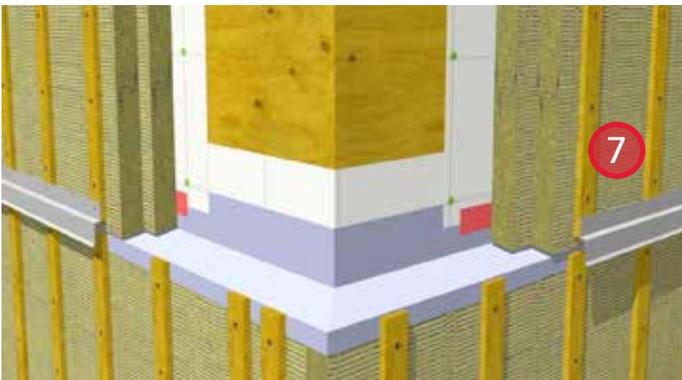
4. Install self-adhered membrane as cross cavity flashing and glue to the top of the insulation. Ensure the membrane has a minimum 4" return up the wall.



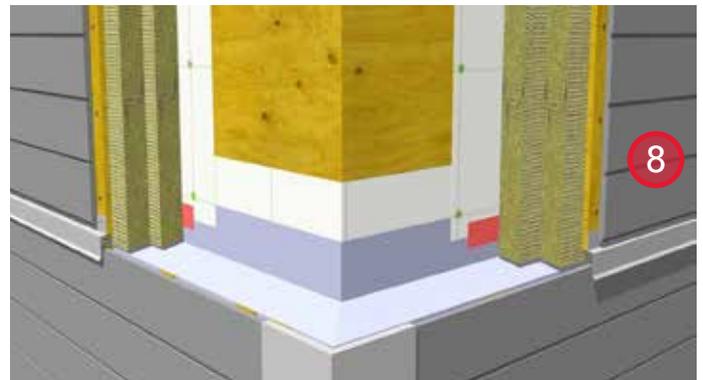
5. Install upper layer of sheathing membrane. Lap the membrane over the self-adhered membrane. Seal the leading edge of the sheathing membrane with sheathing tape to maintain air barrier continuity.



6. Install two layers of ROCKWOOL COMFORTBOARD™. Use the strapping to support the insulation and secure in place with recommended fasteners. Provide bugscreens at the top and bottom of the strapping.



7. Install prefinished metal flashing to assist with water shedding.



8. Install cladding.

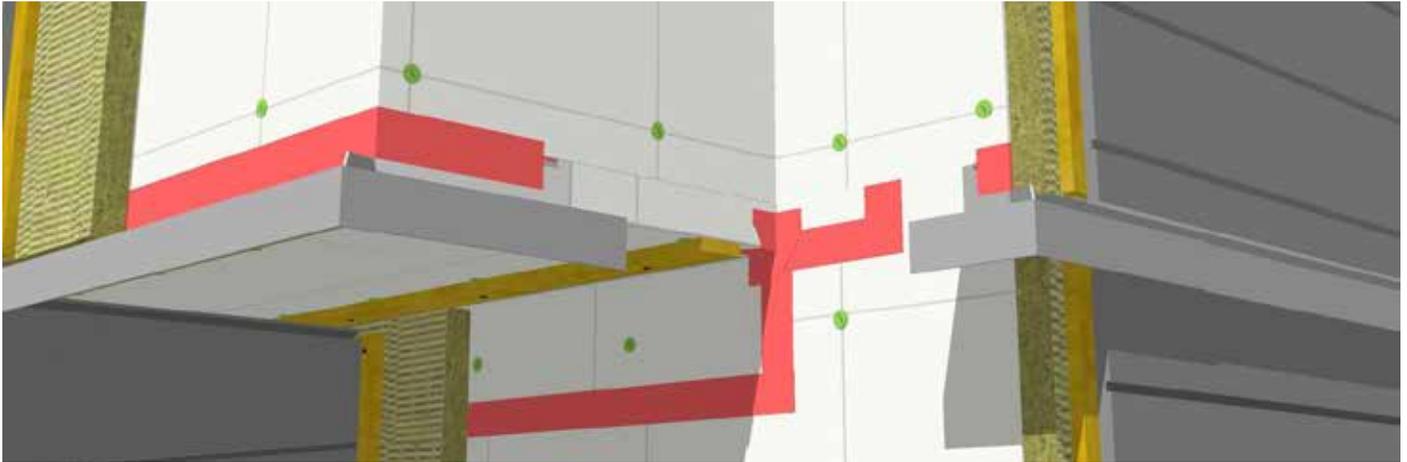


9. Install rigid insulation on the interior of the rim joist. ROCKWOOL COMFORTBOARD™ and ROCKWOOL COMFORTBATT® can be used to meet thermal barrier requirements for foamed plastics.



10. Install spray foam around the perimeter of the joist bay, sealing to the rigid insulation, top plate, joists and subfloor for air tightness and thermal barrier continuity.

# Above Grade Wall at Cantilevered Floor



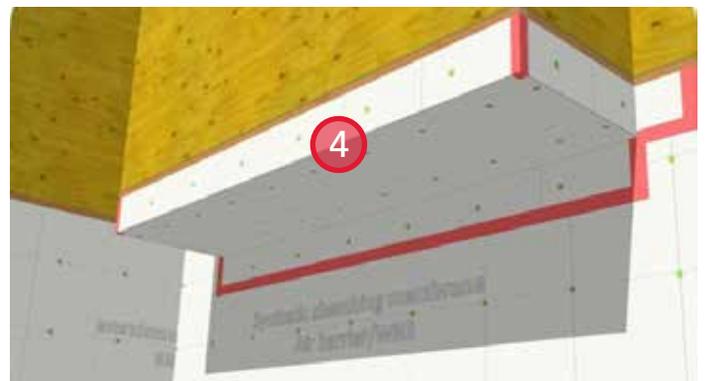
1. Typical wood frame construction at sheathing stage.



2. Install ROCKWOOL COMFORTBATT® in the cantilevered floor joist cavities. Ensure insulation extends through to the interior plane of the wall assembly to maintain thermal continuity.



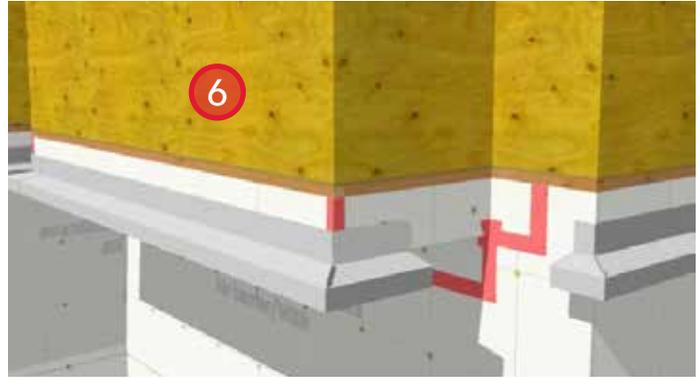
3. Install sheathing membrane. Cut to allow the membrane beside the cantilevered floor to extend up the wall 8".



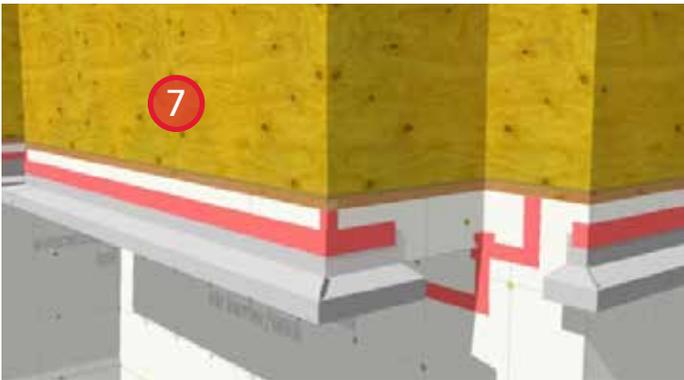
4. Install sheathing membrane along the cantilevered floor joists. Seal all leading edges with sheathing tape to maintain air barrier continuity. Fold corners on the upturn and seal the fold with sheathing tape.



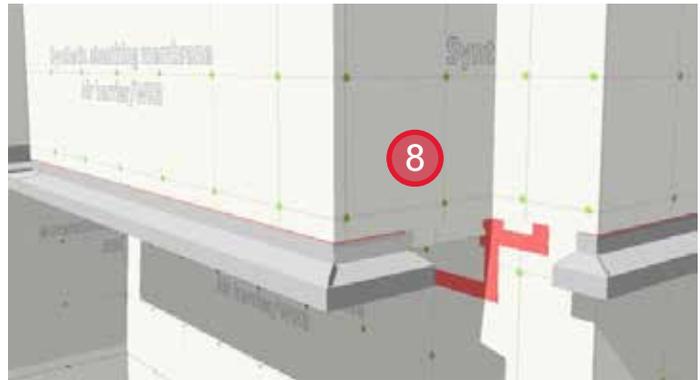
5. Install gussets constructed of sheathing tape to cover the pinholes at the inside corners.



6. Install prefinished metal flashing around the base of the cantilevered section.



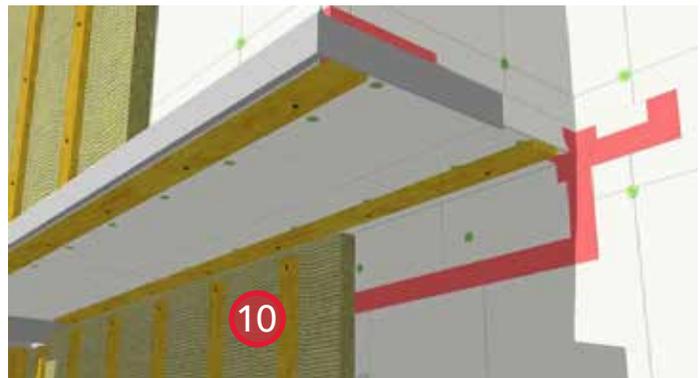
7. Seal the leading edge of the flashing backleg with sheathing tape to provide for air barrier continuity.



8. Lap sheathing membrane over the flashing.



9. Seal the leading edge of the sheathing membrane with sheathing tape to maintain air barrier continuity.



10. Install ROCKWOOL COMFORTBOARD™ and strapping. Provide bugscreens at the top and bottom of the strapping. **Optional:** Install ROCKWOOL COMFORTBOARD™ and strapping to the underside of the cantilevered floor.

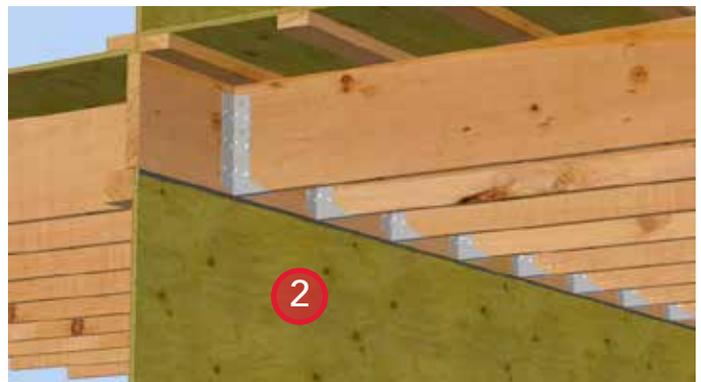


11. Install cladding and vented soffit material.

## Above Grade Wall At Supported Balcony



1. Typical wood frame construction at joist hanger supported balcony to above grade wall interface.



2. Install a bead of sealant along the sheathing directly below the balcony joists to provide for air barrier continuity.



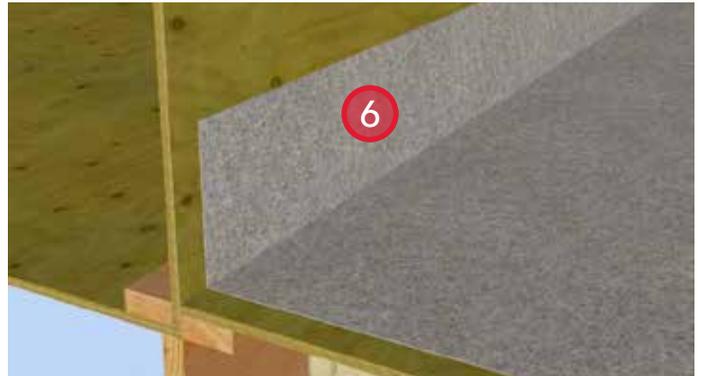
3. Install sheathing membrane and apply pressure to ensure adhesion to the acoustical sealant bead.



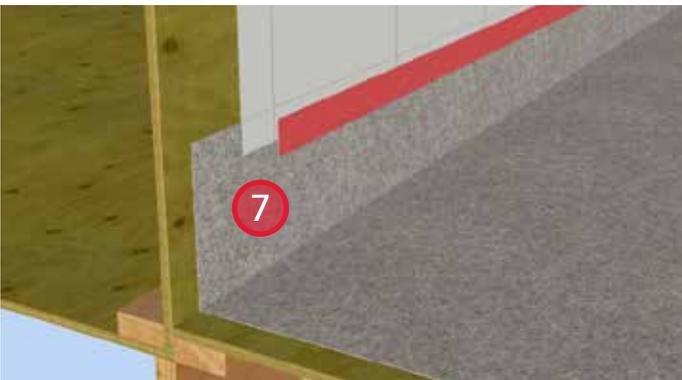
4. Install ROCKWOOL COMFORTBOARD™ and strapping with bugscreens, leaving a  $\frac{3}{4}$ " gap to ensure air barrier continuity through sheathing to rim joist interface. Suggest using a 1x4 temporary spacer board to space the insulation.



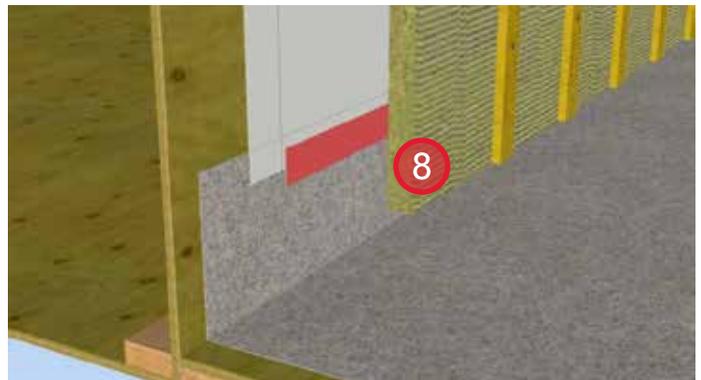
5. Remove the spacer board and install 2 lb. closed-cell spray foam or sealant at all joints in the joist cavity to maintain air barrier continuity.



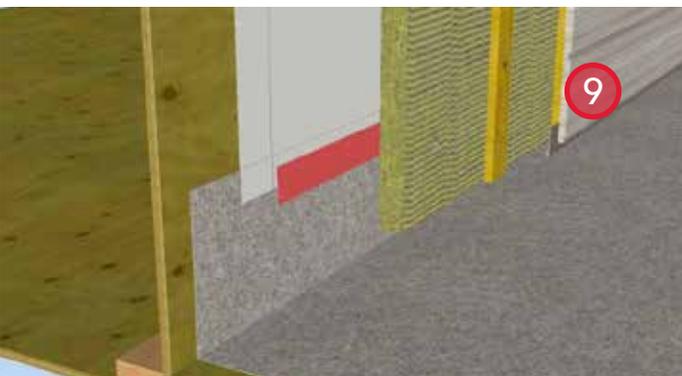
6. Install waterproof PVC balcony membrane and extend 8" up adjacent wall.



7. Install sheathing membrane and seal the leading edge to the balcony membrane with sheathing tape to maintain air barrier continuity.



8. Install ROCKWOOL COMFORTBOARD™ insulation and strapping to the exterior of the wall. Provide bugscreens at the top and bottom of the cladding.



9. Install cladding.



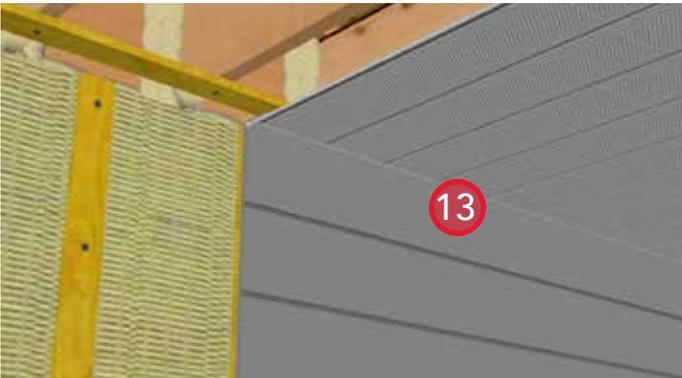
10. Install ROCKWOOL COMFORTBATT® in the interior stud cavities.



11. Install 3" rigid insulation in joist cavities. ROCKWOOL COMFORTBOARD™ and ROCKWOOL COMFORTBATT® can be used to meet thermal barrier protection requirements for foamed plastics.

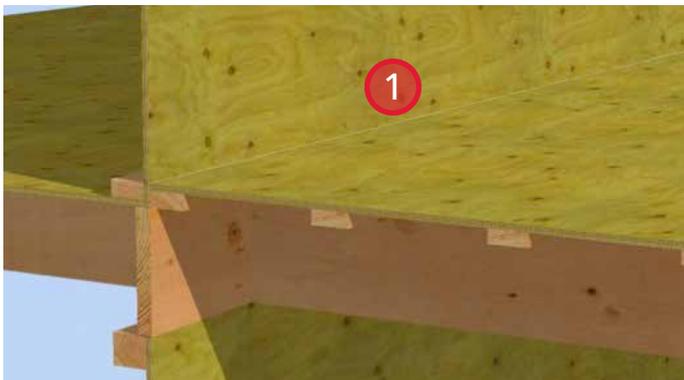
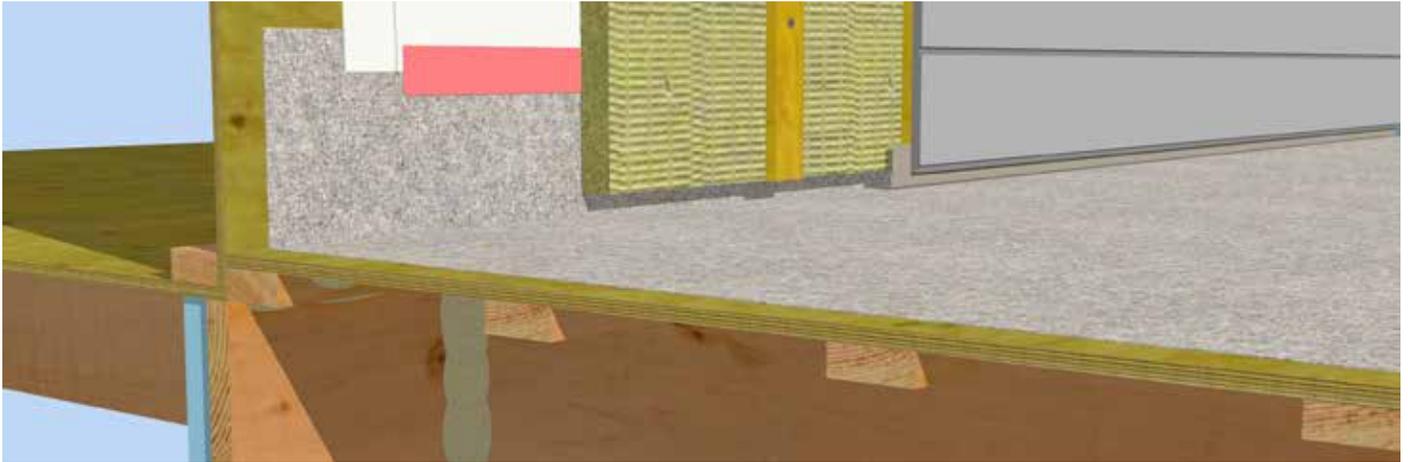


12. Install 2 lb. closed-cell spray or sealant around the perimeter of the rigid insulation to ensure air tightness and thermal barrier continuity.



13. Install cladding and vented soffit panels below balcony.

# Above Grade Wall at Cantilevered Balcony



1. Typical wood frame construction at cantilevered balcony to above grade wall interface.



2. Install a bead of sealant along the sheathing directly below the balcony joists to provide for air barrier continuity.



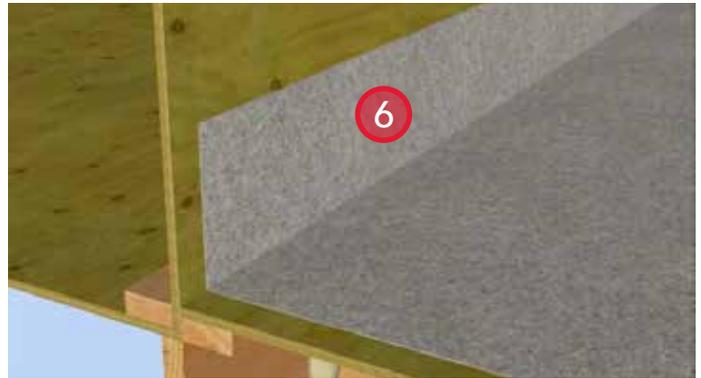
3. Install sheathing membrane and apply pressure to ensure adhesion to the sealant bead.



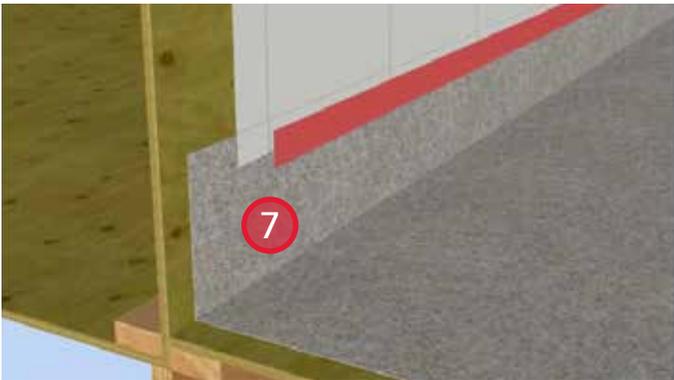
4. Install ROCKWOOL COMFORTBOARD™ and strapping with bugscreens, leaving a  $\frac{3}{4}$ " gap between the insulation and the top of the wall. Suggest using a 1x4 temporary spacer board to space the insulation.



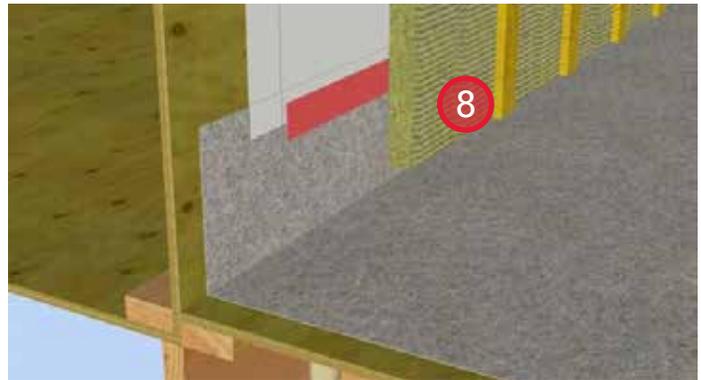
5. Remove the spacer board and install 2 lb. closed-cell spray foam or sealant at all joints in the joist cavity to maintain air barrier continuity.



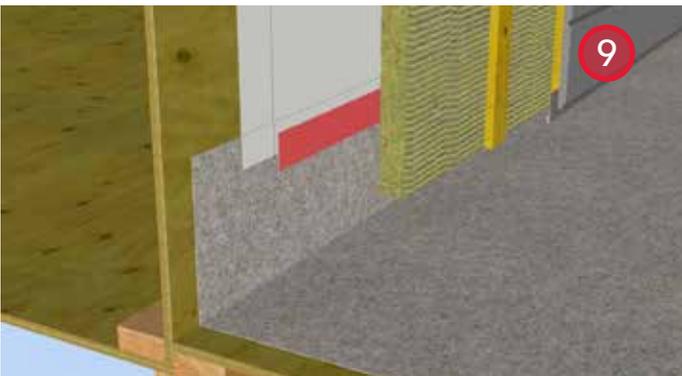
6. Install waterproof PVC balcony membrane and extend 8" up adjacent wall.



7. Install sheathing membrane and seal the leading edge to the balcony membrane with sheathing tape to maintain air barrier continuity.



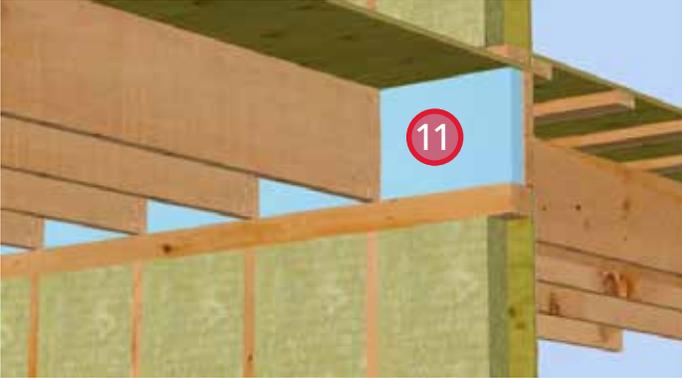
8. Install ROCKWOOL COMFORTBOARD™ insulation and strapping to the exterior of the wall. Provide bugscreens at the top and bottom of the cladding.



9. Install cladding.



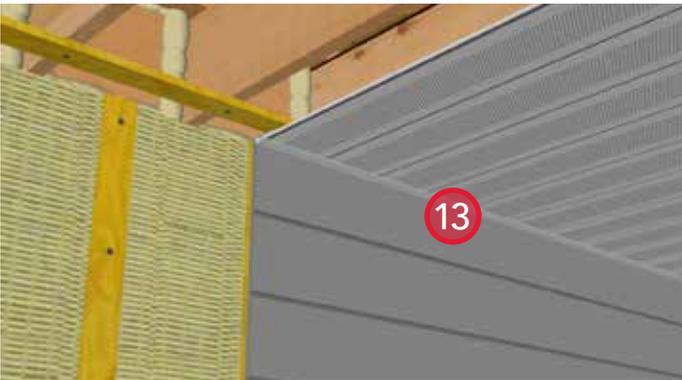
10. Install ROCKWOOL COMFORTBATT® in the interior stud cavities.



11. Install rigid insulation in joist cavities. ROCKWOOL COMFORTBOARD™ and ROCKWOOL COMFORTBATT® can be used to meet thermal barrier protection requirements for foamed plastics.

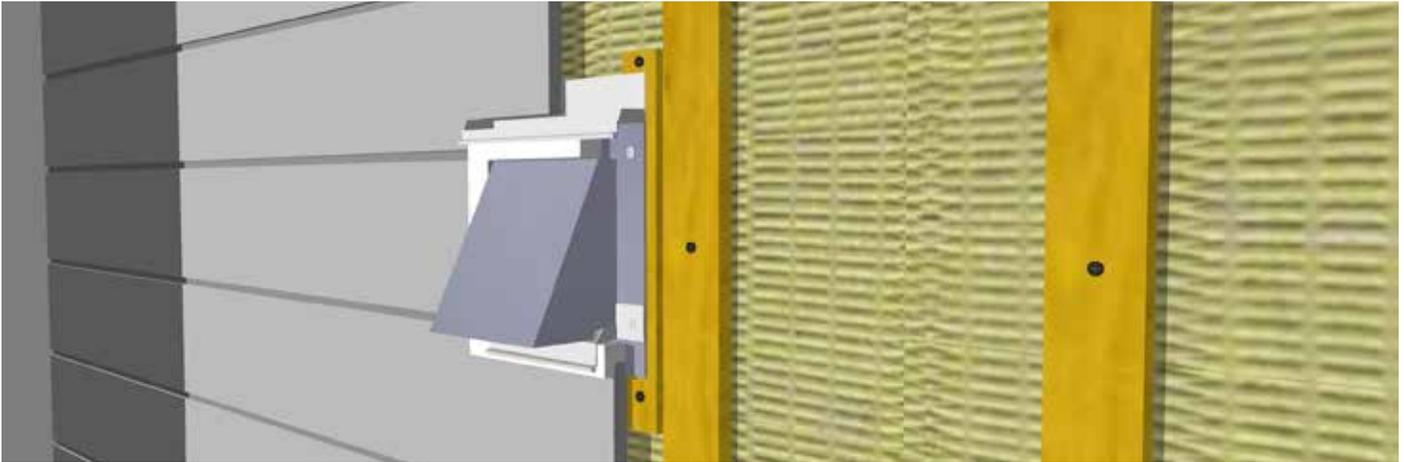


12. Install 2 lb. closed-cell spray or sealant around the perimeter of the rigid insulation to ensure air tightness and thermal barrier continuity.



13. Install cladding and vented soffit panels to the underside of the balcony.

## Exhaust Vent



1. Install exhaust vent duct into an appropriately sized penetration in the sheathing and sheathing membrane. Place blocking/support on the interior side of the wall if required to secure the duct in place.



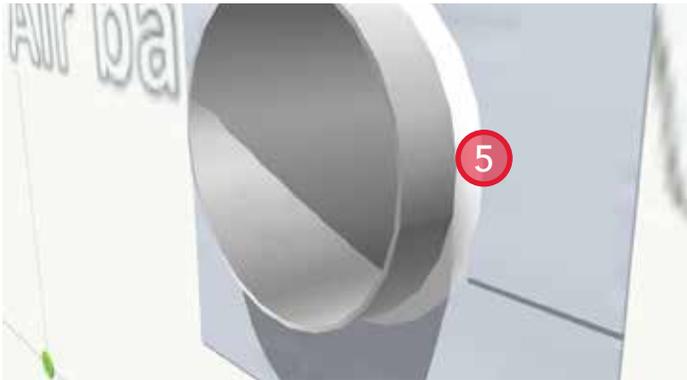
2. Install horseshoe-shaped self-adhered membrane below the exhaust vent.



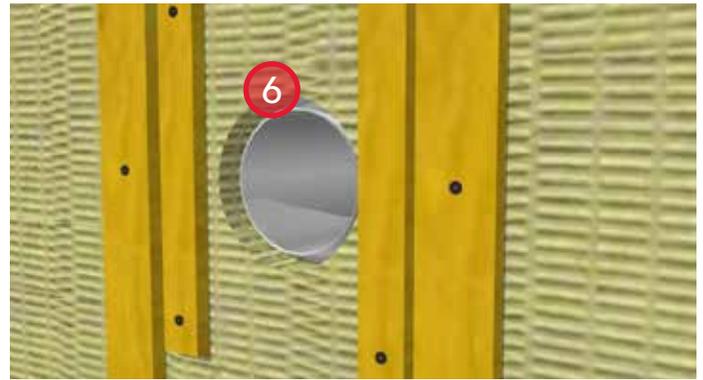
3. Install horseshoe-shaped self-adhered membrane above the exhaust vent. Taper the top of the membrane to facilitate water drainage.



4. Seal the leading edge of the foil-faced membrane with mastic or another compatible sealant.



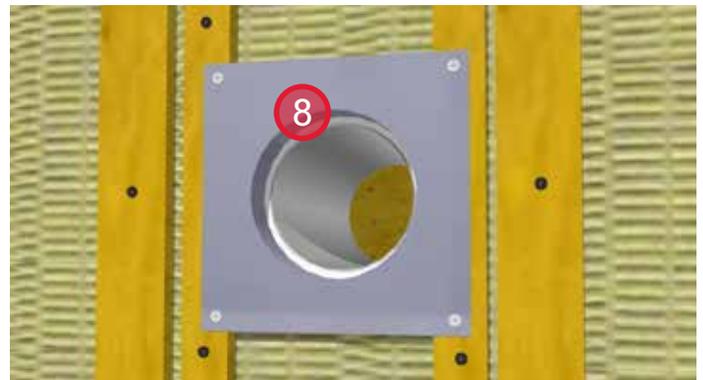
5. Apply sealant between the exhaust vent and the self-adhered membrane to maintain air barrier continuity.



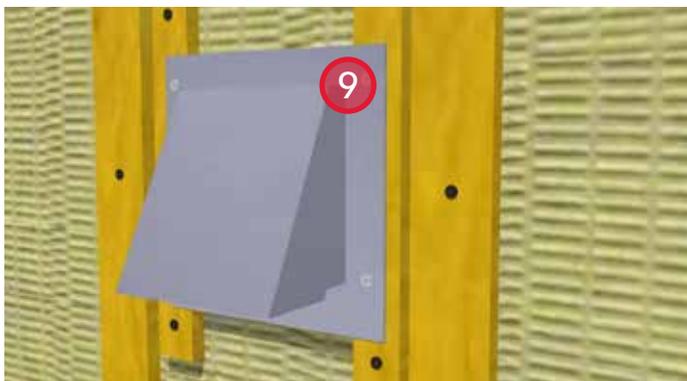
6. Install ROCKWOOL COMFORTBOARD™ and strapping. Provide bugscreens at the top and bottom of the strapping. Provide strapping around penetration to support the adaptor flange.



7. Install adaptor flange and secure to the support strapping.



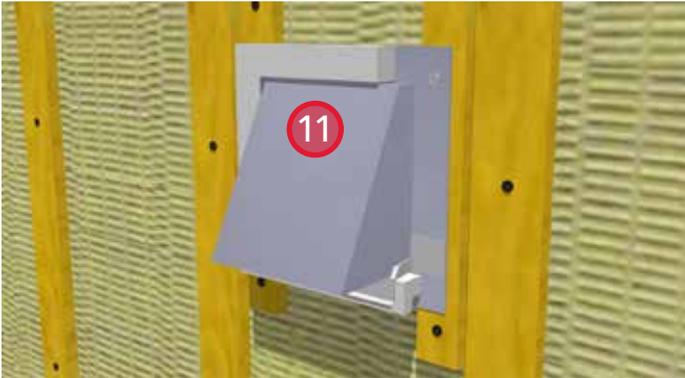
8. Apply backer rod and sealant between the duct and the adaptor flange to avoid air leakage into the wall cavity.



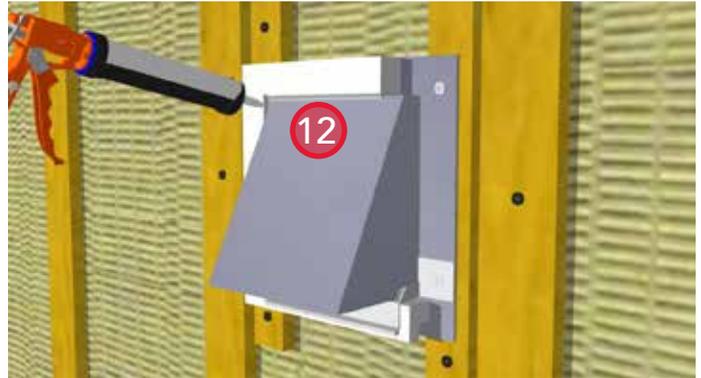
9. Install exhaust vent hood, bedded in sealant to the adaptor flange.



10. Install prefinished metal flashing below the exhaust vent hood.



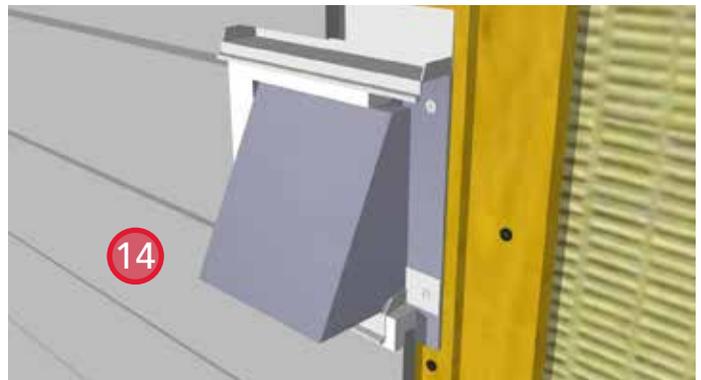
11. Install cladding and trim boards around the exhaust vent hood.



12. Apply a bead of sealant between the exhaust vent hood and the trim boards (top and sides).

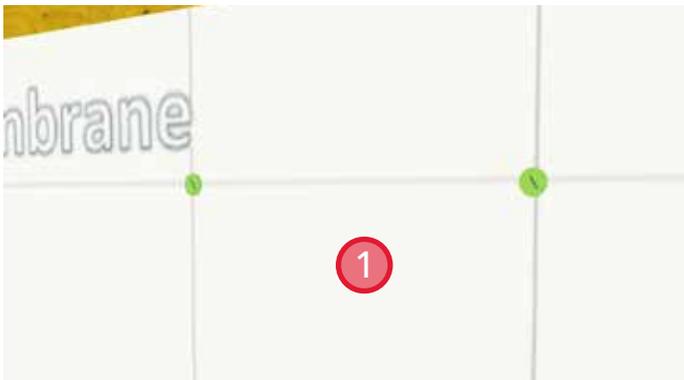


13. Install prefinished metal flashing above the vent hood trim.

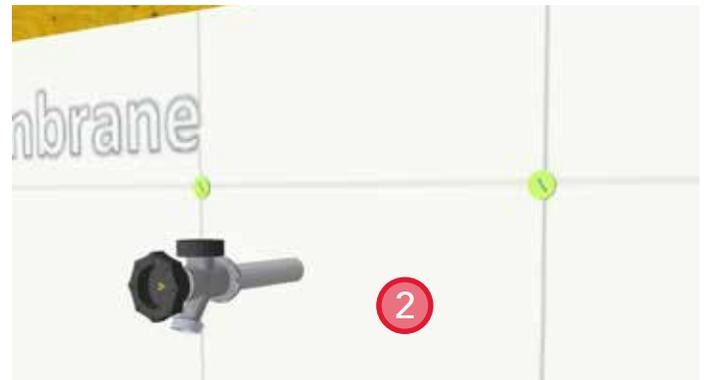


14. Install cladding.

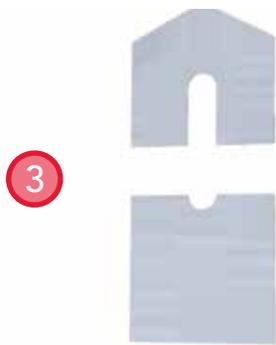
# Hose Bib



1. Install sheathing membrane at the proposed penetration for the hose bib.



2. Install frost-free hose bib through an appropriately sized penetration.



3. Construct a two-part backing of foil-faced, self-adhered membrane as shown above.



4. Install the bottom sheet of foil-faced, self-adhered membrane, ensuring a tight fit to the underside of the hose bib.



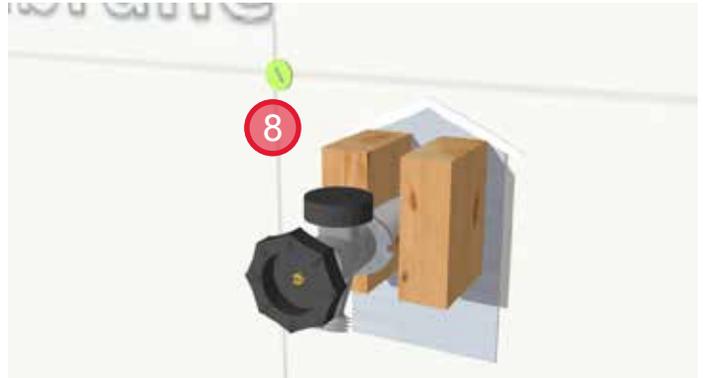
5. Install top sheet of foil-faced membrane. Positively lap the top sheet over the bottom sheet a minimum of 2".



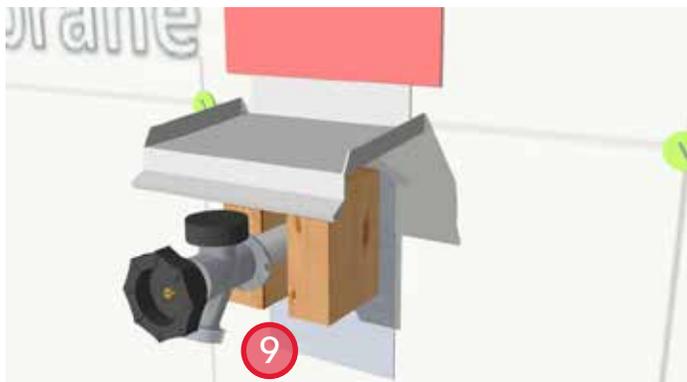
6. Apply mastic or other compatible sealant at the leading edge of the foil-faced membrane.



7. Apply a bead of sealant around the perimeter of the hose bib, ensuring good adhesion to the foil-faced membrane to maintain air barrier continuity.



8. Install blocking to support the hose bib and onto which the face plate will be attached.



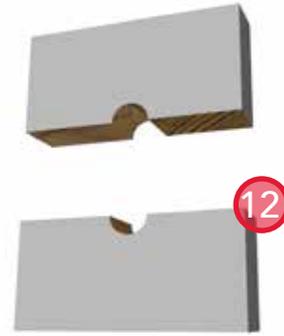
9. Install prefinished metal flashing above the hose bib and seal the leading edge with sheathing tape to provide for air barrier continuity.



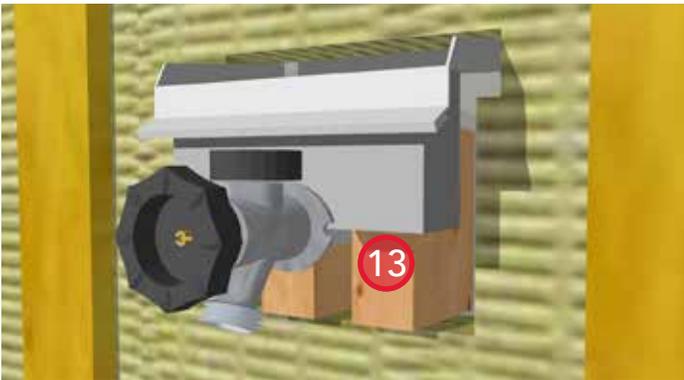
10. Install sheathing membrane and seal the leading edge with sheathing tape to maintain air barrier continuity. Ensure the membrane positively laps over other membranes and flashing.



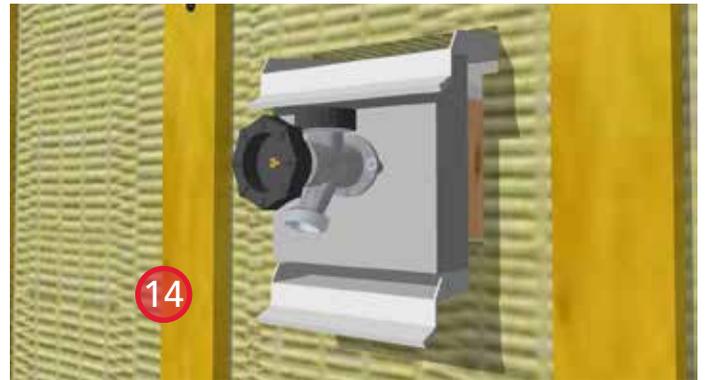
11. Install ROCKWOOL COMFORTBOARD™ and strapping. Provide bugscreens at the top and bottom of the strapping.



12. Create the wood face plate from dimensional lumber. The diameter of the hole in the center is equal to the diameter of pipe on the hose bib.



13. Install the top piece of the wood face plate and secure in place.



14. Install the bottom block and sill flashing. The sill flashing is fastened to the back of the bottom block.

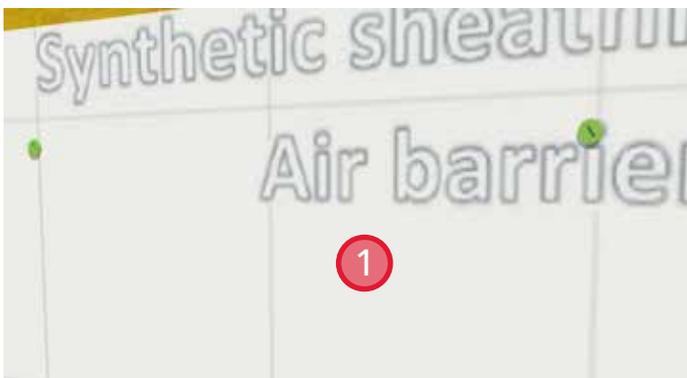
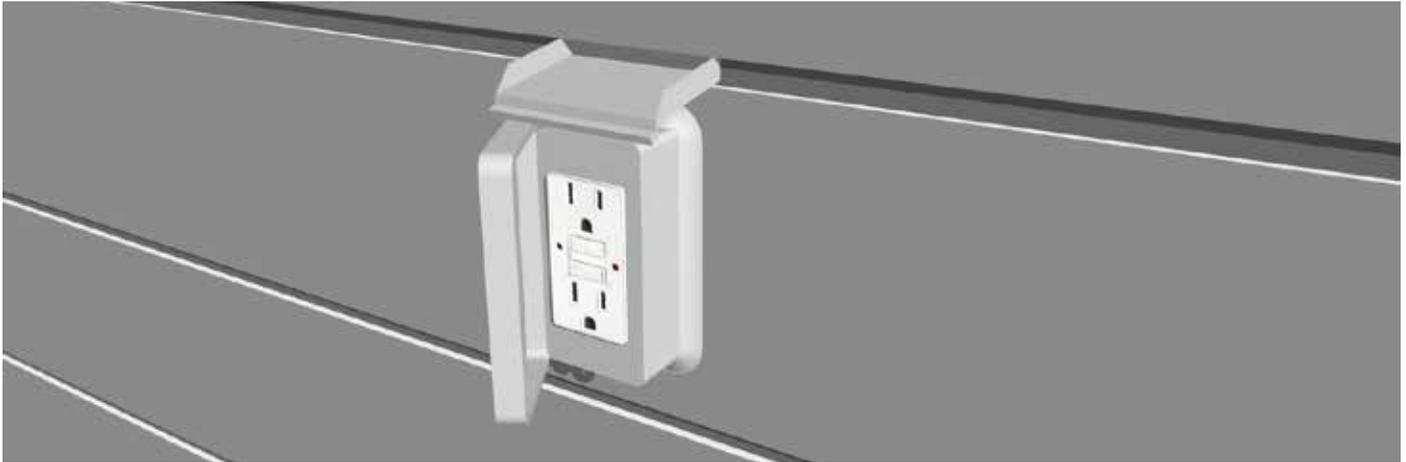


15. Install the cladding.



16. Apply sealant around the perimeter of the face plate and sill flashing (bottom and sides).

# Exterior Electrical Outlet



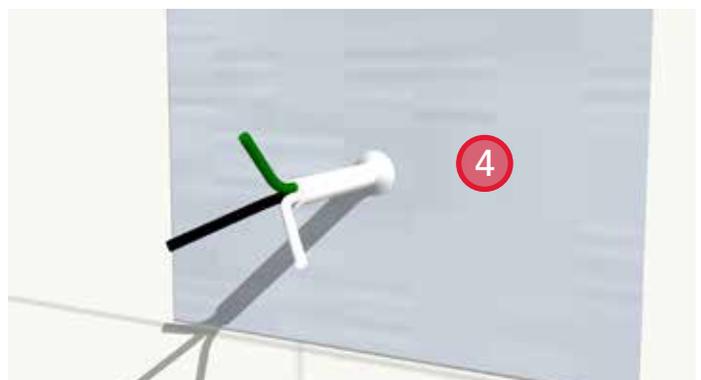
1. Install sheathing membrane starter strip under proposed electrical outlet installation site.



2. Install foil-faced, self-adhered membrane at the location of the electrical outlet.



3. Pull the electrical wire through the wall and foil-faced, self-adhered membrane.



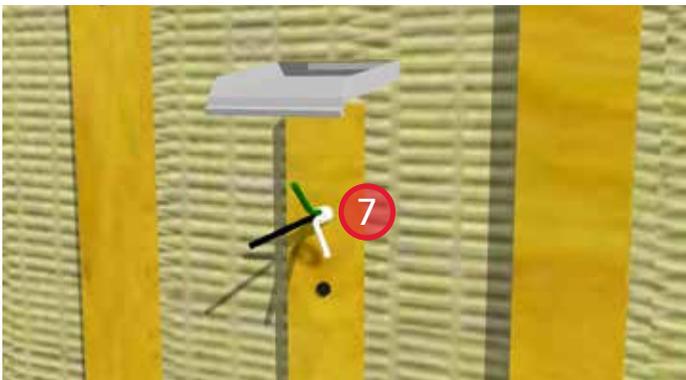
4. Seal around the perimeter of the electrical wire housing to the foil-faced, self-adhered membrane to maintain air barrier continuity.



5. Install prefinished metal flashing over the penetration and seal with sheathing tape to provide for air barrier continuity.



6. Install second layer of sheathing membrane and lap over the metal flashing. Seal the leading edge with sheathing tape to maintain air barrier continuity.



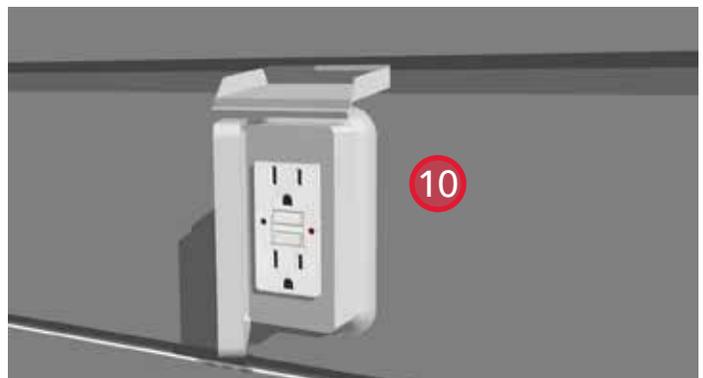
7. Install ROCKWOOL COMFORTBOARD™ and strapping. Provide bugscreens at the top and bottom of the strapping.



8. Install electrical box.

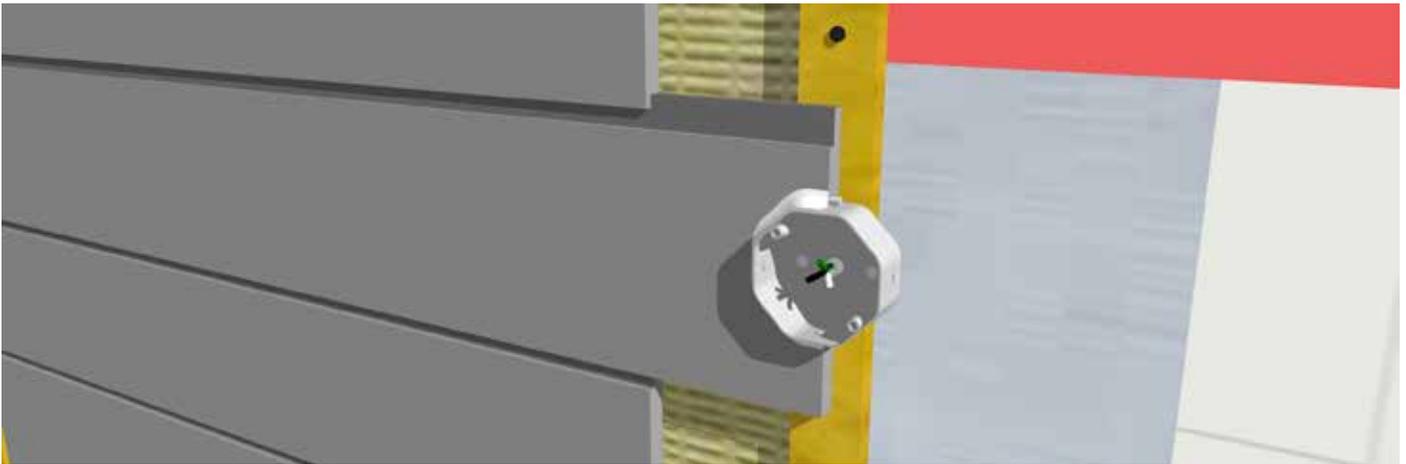


9. Install cladding.

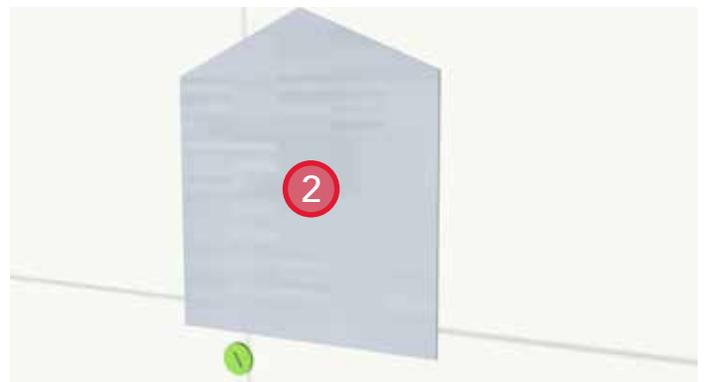


10. Install sealant around the perimeter of the electrical box (top and sides).

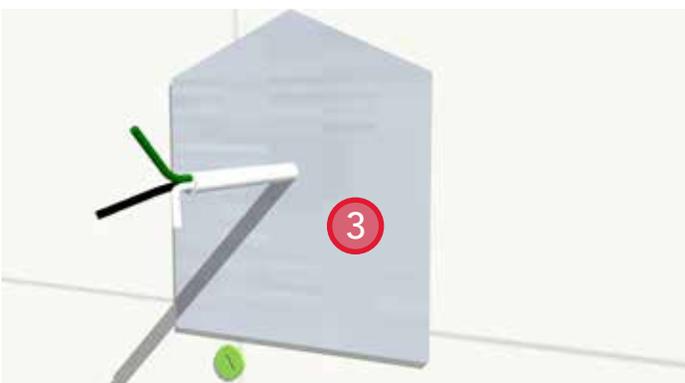
## Exterior Light Fixture



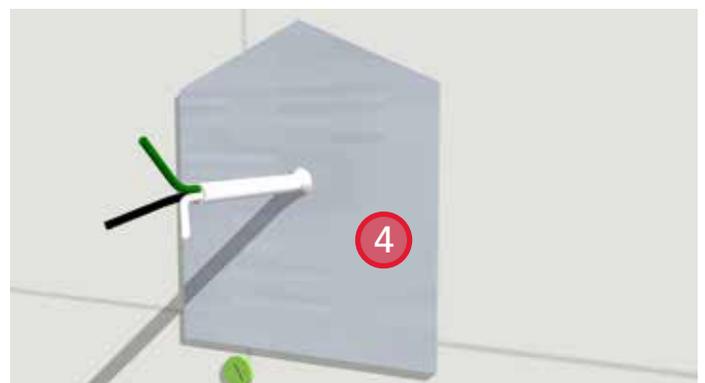
1. Install sheathing membrane at proposed electrical outlet installation site.



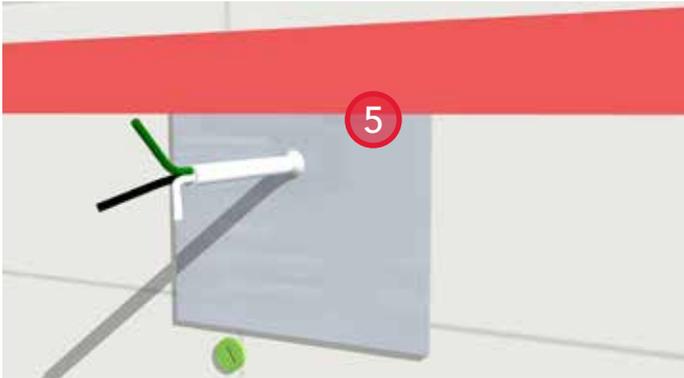
2. Install a piece of foil-faced, self-adhered membrane over the sheathing membrane. Taper top edge to facilitate drainage and install sealant.



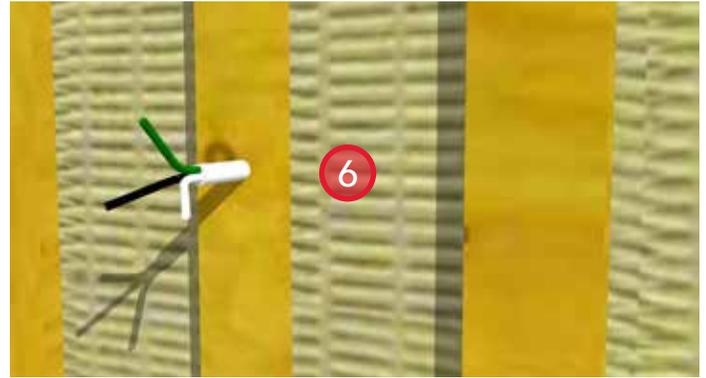
3. Pull wire through both membranes.



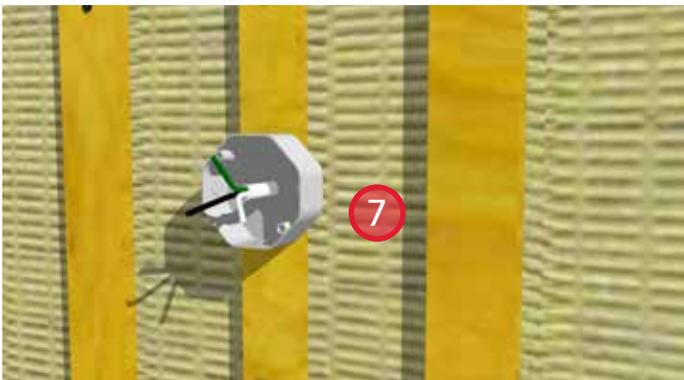
4. Seal around the perimeter of the electrical cable to maintain air barrier continuity.



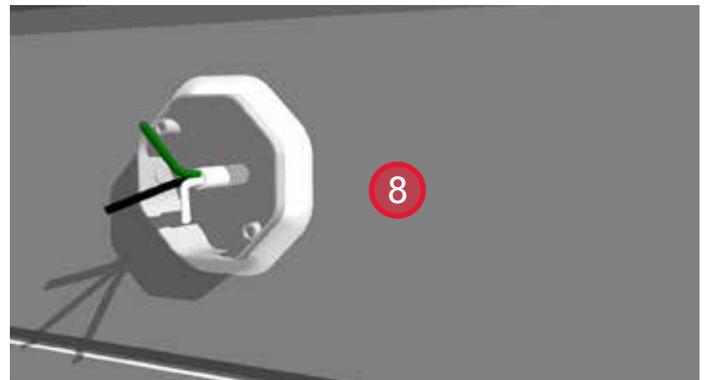
5. Install sheathing membrane and seal the leading edge with sheathing tape to maintain air barrier continuity. Ensure a positive lap over the preceding membranes.



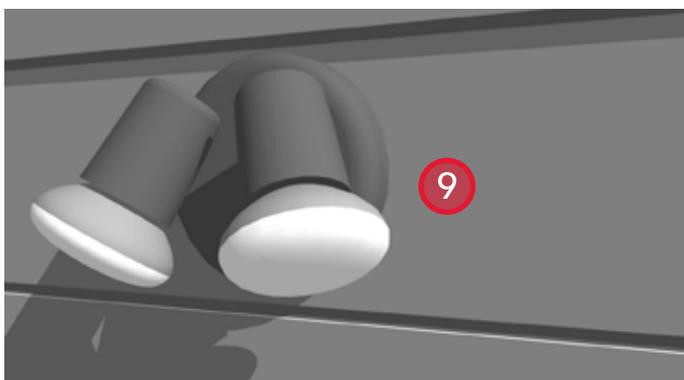
6. Install ROCKWOOL COMFORTBOARD™ and secure in place with strapping. Provide strapping at the site of the exterior light penetration and pull the electrical wire through it. Provide bugscreens at the top and bottom of the strapping.



7. Install watertight, exterior light fixture box.



8. Install cladding and provide backer rod and sealant around the perimeter of the exterior light fixture box.

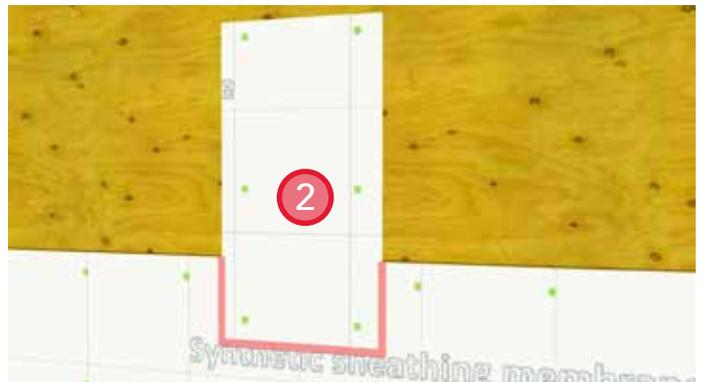


9. Install light fixture per manufacturer's specifications.

# Railing Penetration



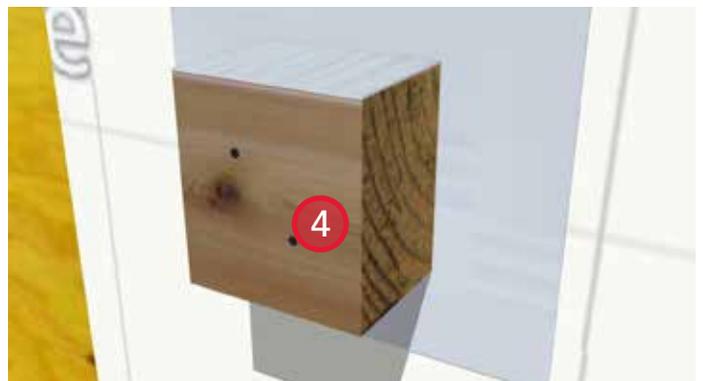
1. Install two blocks between interior studs where railing penetration will occur. This will provide structural support for the engineered railing attachment.



2. Install starter sheathing membrane under area where railing will meet the wall.



3. Install a backing of self-adhered membrane over the starter sheathing membrane. Install sealant at the top and sides of the self-adhered membrane.



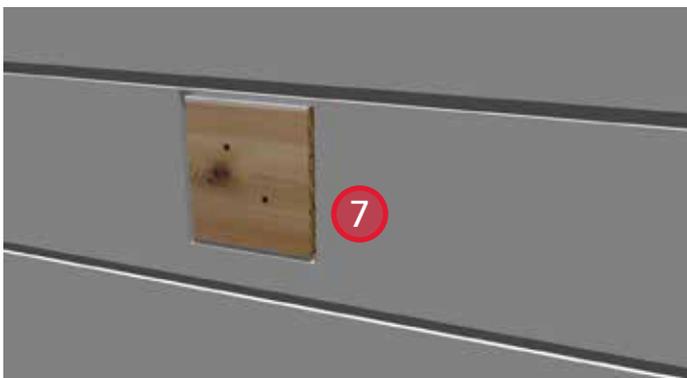
4. Install treated wood blocking on the self-adhered membrane. Install self-adhered membrane over top of the blocking to aid in water diversion.



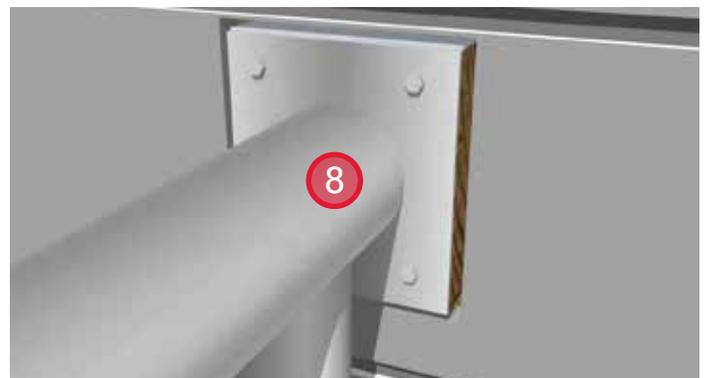
5. Install sheathing membrane and seal the leading edge to maintain air barrier continuity. Ensure the sheathing membrane laps over all previous membranes.



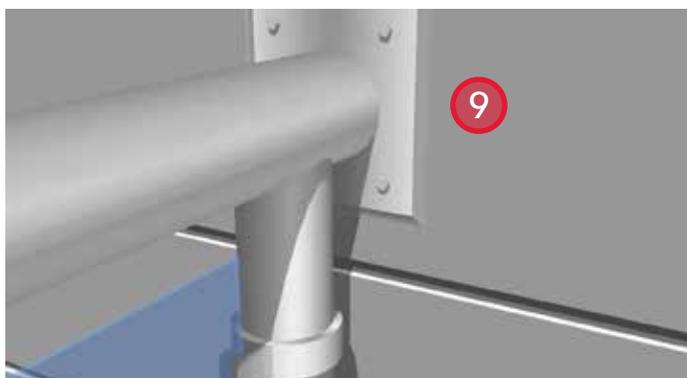
6. Install ROCKWOOL COMFORTBOARD™ and strapping. Provide bugscreens at the top and bottom of the strapping.



7. Install the cladding.



8. Install the railing. Fasteners must be sized to reach the blocking placed in the stud wall.

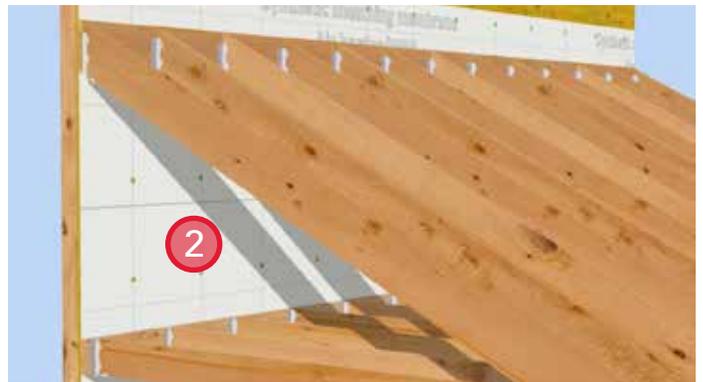


9. Install backer rod and sealant between the railing support flange and the cladding.

# Exterior Canopy



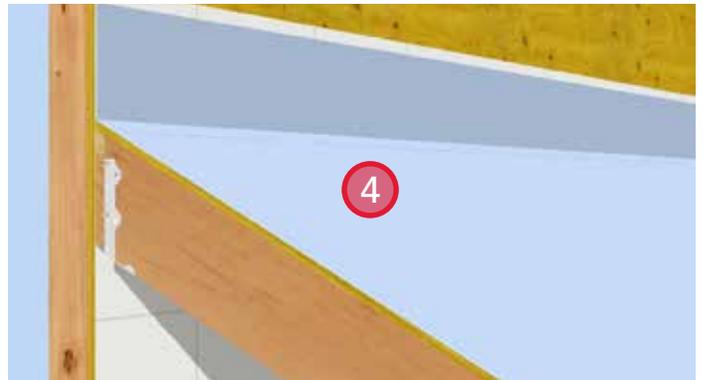
1. Install starter sheathing membrane under area where canopy will meet the wall.



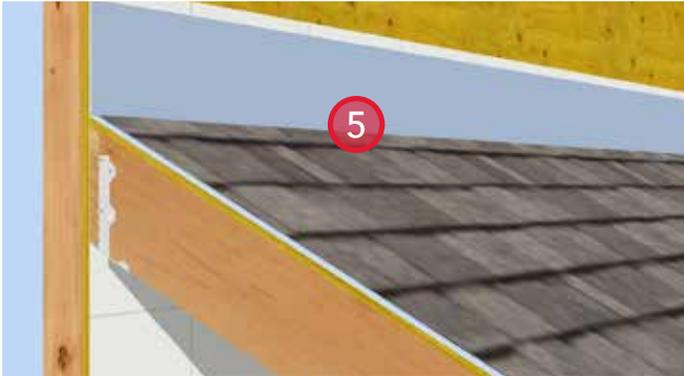
2. Install canopy framing.



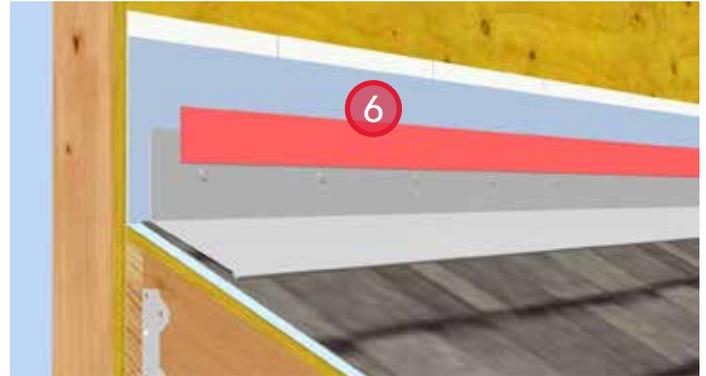
3. Install canopy roof deck material.



4. Install waterproof canopy deck membrane. Return the membrane 8" up the adjacent wall.



5. Install shingles.



6. Install prefinished metal closure flashing and seal the leading edge with sheathing tape to provide for air barrier continuity.



7. Install sheathing membrane. Lap the membrane over the closure flashing and seal the leading edge with sheathing tape to maintain air barrier continuity.



8. Install ROCKWOOL COMFORTBOARD™ and secure in place with strapping. Provide bugscreens at the top and bottom of the strapping.



9. Install cladding and closure flashing.



10. Install ROCKWOOL COMFORTBOARD™ on the exterior of the wall between canopy ledger boards with recommended fasteners.



11. Install sheathing membrane below the canopy. Ensure the membrane laps under the starter strip. Seal the leading edge of the starter strip membrane with sheathing tape to maintain air barrier continuity.



12. Install ROCKWOOL COMFORTBOARD™ and secure in place with strapping. Provide bugscreens at the top and bottom of the strapping.

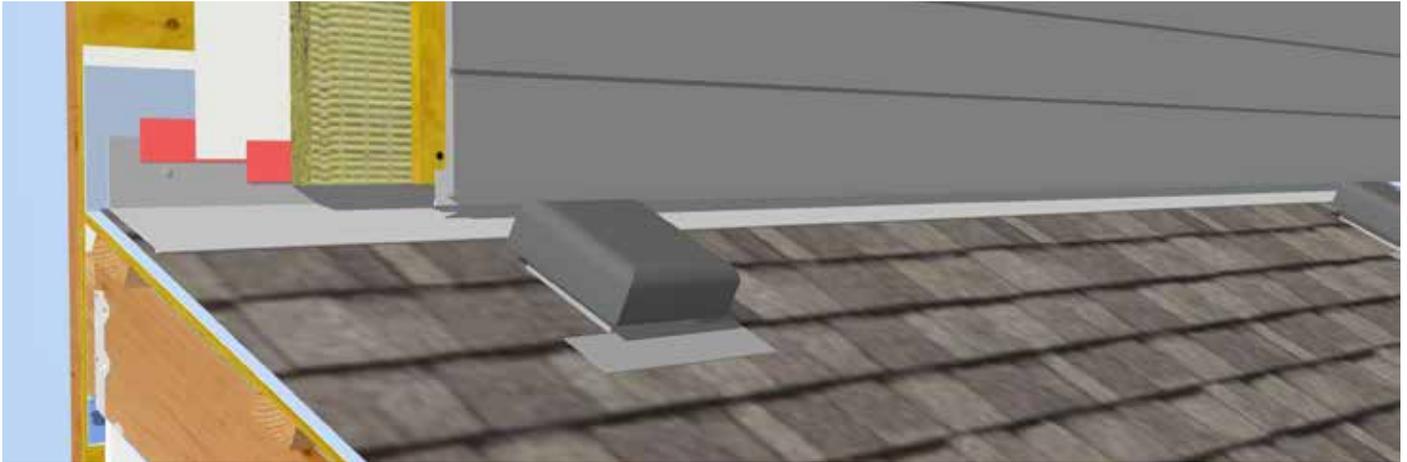


13. Install cladding.



14. Install vented soffit material.

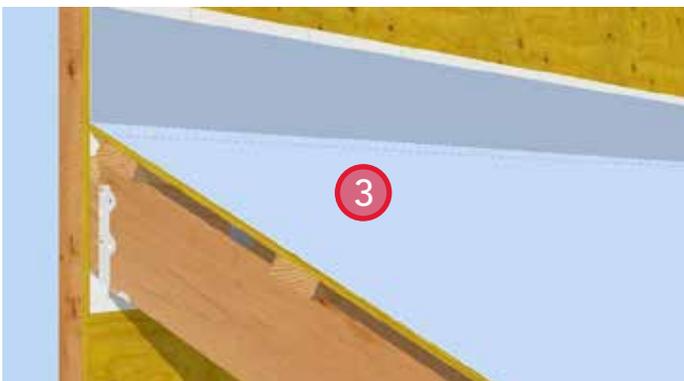
## Sloped Roof (Cathedral) to Above Grade Wall



1. Install a starter strip of sheathing membrane to extend above and below the roof plane. This will allow for air-barrier transition to be completed later.



2. Attach a ledger board and roof framing.



3. Install waterproof membrane. Extend the roof membrane 8" up the wall.



4. Install shingles and provide venting at the top of the roof.



5. Install a metal closure flashing and seal the leading edge with sheathing tape to the waterproof membrane, to provide for air barrier continuity.



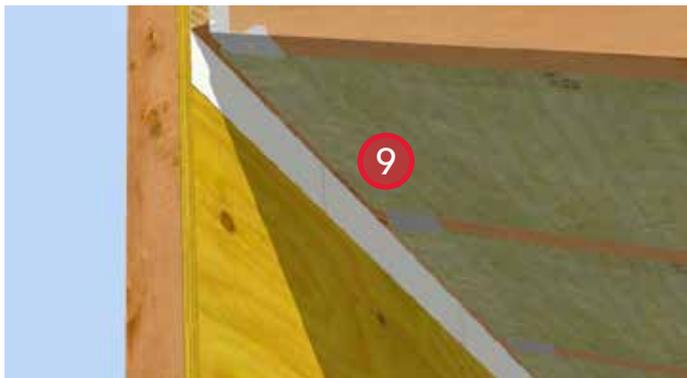
6. Install sheathing membrane and lap over the metal flashing. Seal the leading edge with sheathing tape to complete air barrier transition.



7. Install ROCKWOOL COMFORTBOARD™ and secure with strapping. Provide bugscreens at the top and bottom of the strapping.



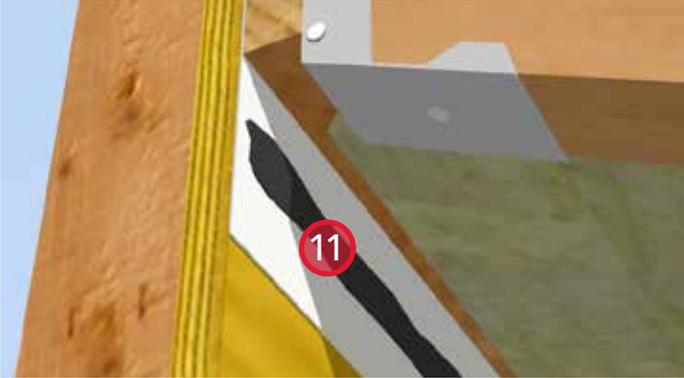
8. Install cladding.



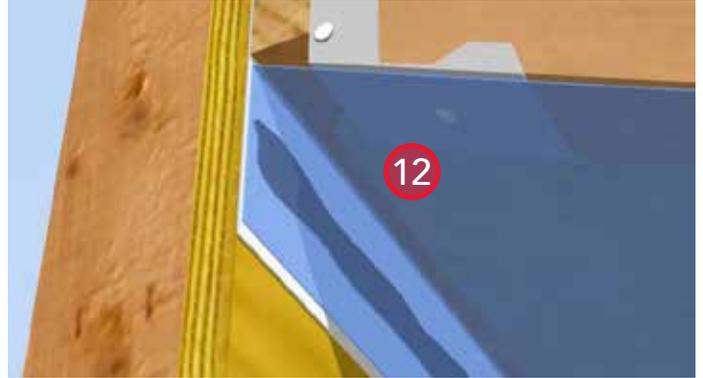
9. Install ROCKWOOL COMFORTBATT® in the rafter cavities.



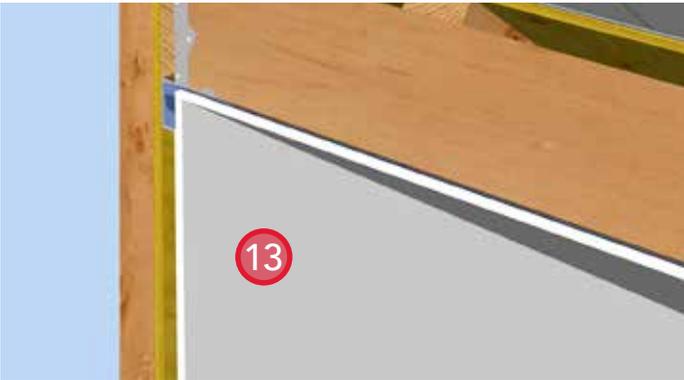
10. Apply a bead of sealant between the sheathing and sheathing membrane below the roof to increase air tightness.



11. Apply a bead of sealant to the exterior of the sheathing membrane for air barrier continuity.

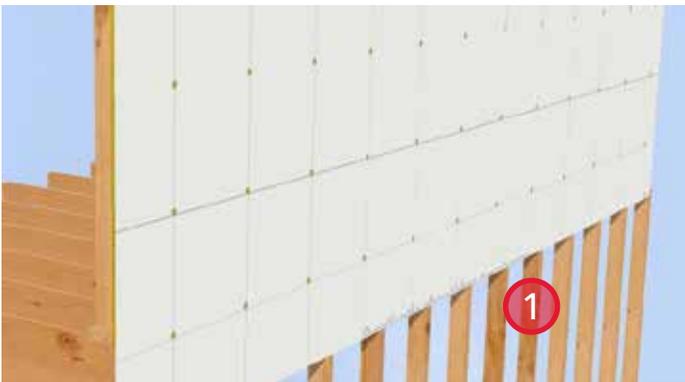
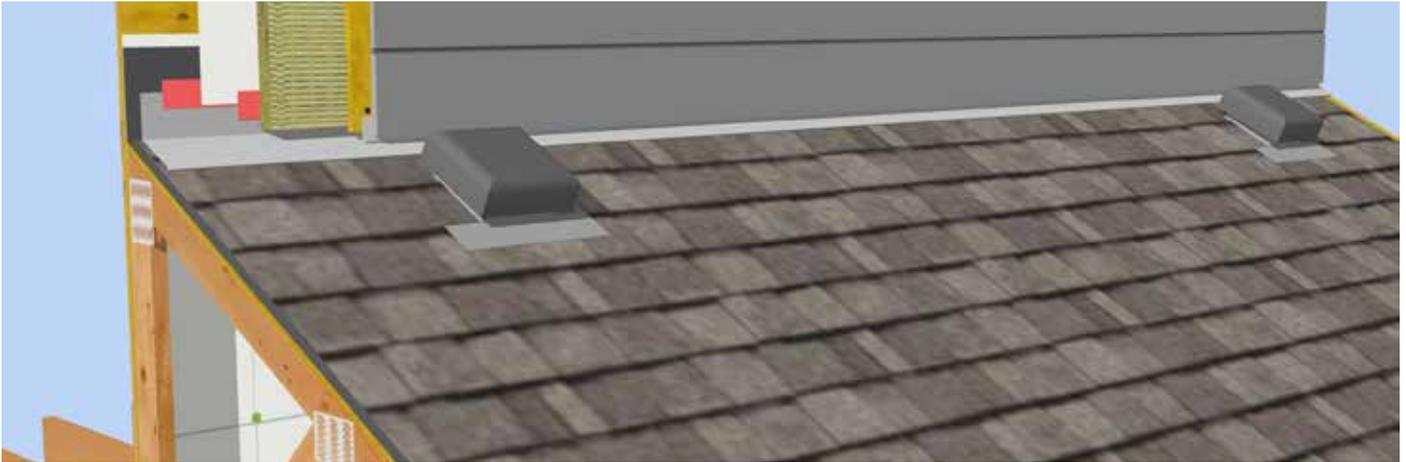


12. Install poly and seal the leading edge to the sheathing membrane with staples through the poly at the sealant bead to complete the air barrier transition.



13. Install interior finishes.

## Sloped Roof (Attic) to Above Grade Wall



1. Install a starter strip of sheathing membrane to extend above and below the roof plane. This will allow for air-barrier transition to be completed later.



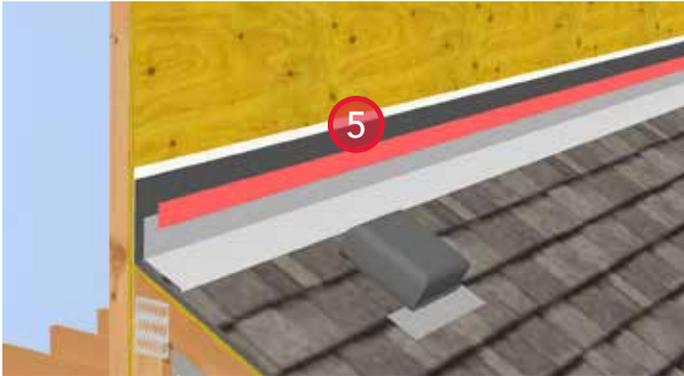
2. Attach joist hangers and roof framing.



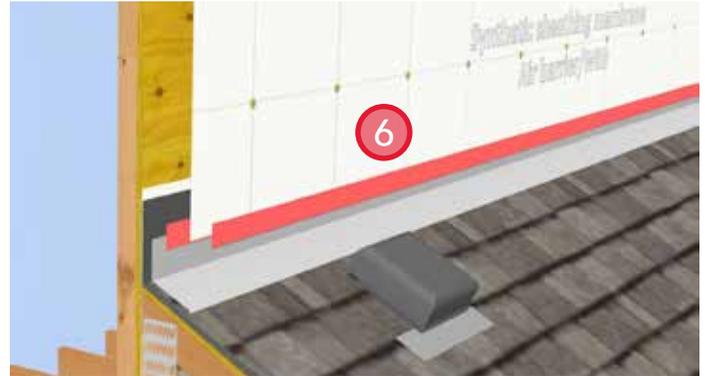
3. Install roof deck and waterproof membrane. Extend the waterproof membrane 8" up the wall.



4. Install shingles and provide venting at the top of the roof.



5. Install a metal closure flashing and seal the leading edge with sheathing tape to the waterproof membrane, to provide for air barrier continuity.



6. Install sheathing membrane and lap over the metal flashing. Seal the leading edge with sheathing tape to complete the air barrier continuity.



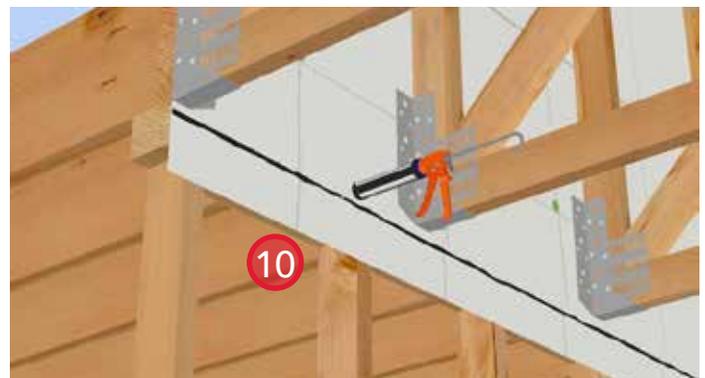
7. Install ROCKWOOL COMFORTBOARD™ and secure with strapping. Provide bugscreens at the top and bottom of the strapping.



8. Install cladding.



9. Apply a bead of sealant between the sheathing and sheathing membrane below the roof to increase air tightness.



10. Apply a bead of sealant to the exterior of the sheathing membrane to provide for air barrier continuity.



11. Install poly and seal the leading edge to the sheathing membrane with staples through the poly at the sealant bead to complete the air barrier continuity.

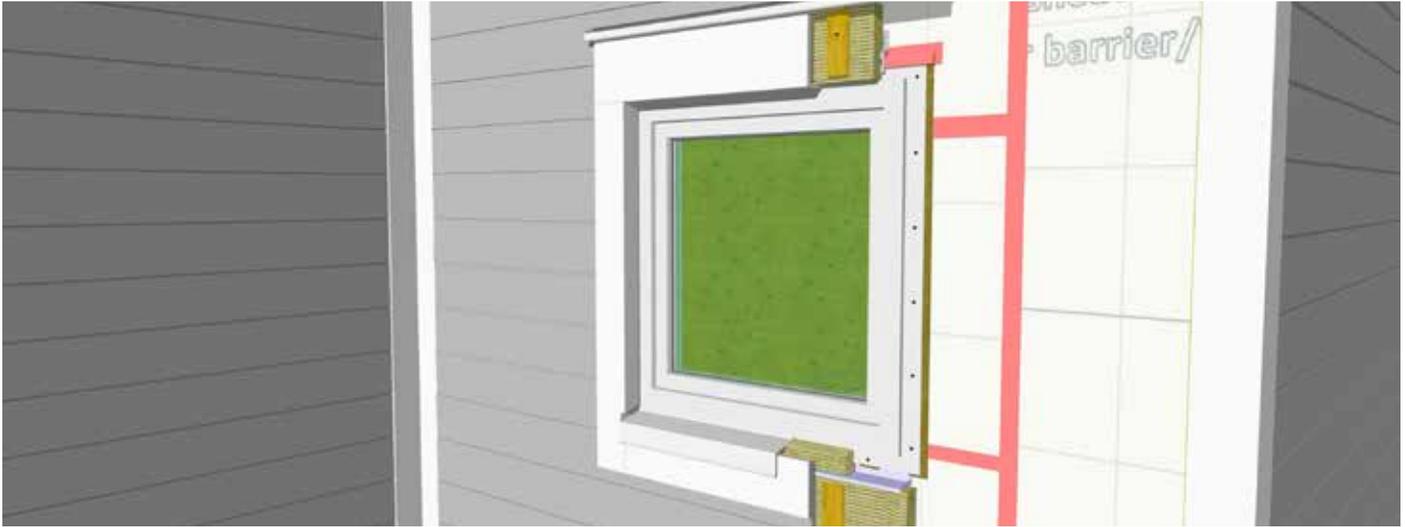


12. Install interior finishes.

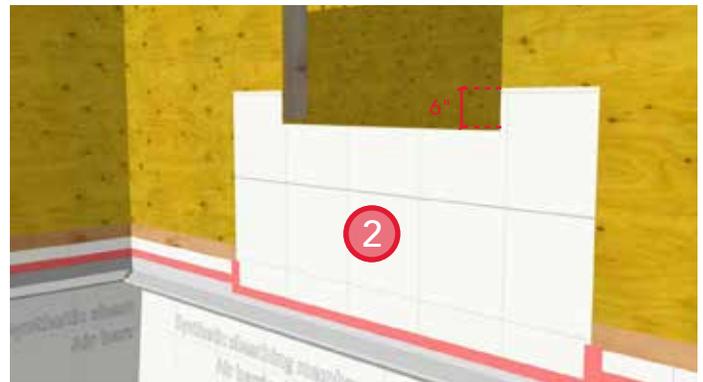


13. Install ROCKWOOL COMFORTBATT® in the attic space. Insulate wall adjoining attic space and occupied space with COMFORTBATT®.

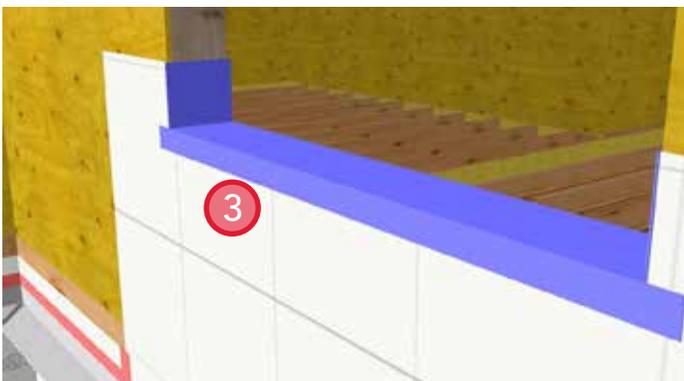
# Flange Mounted Window



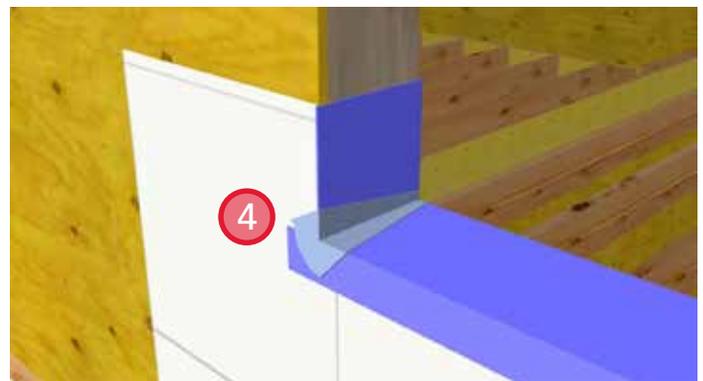
1. Typical wood frame construction at sheathing stage.



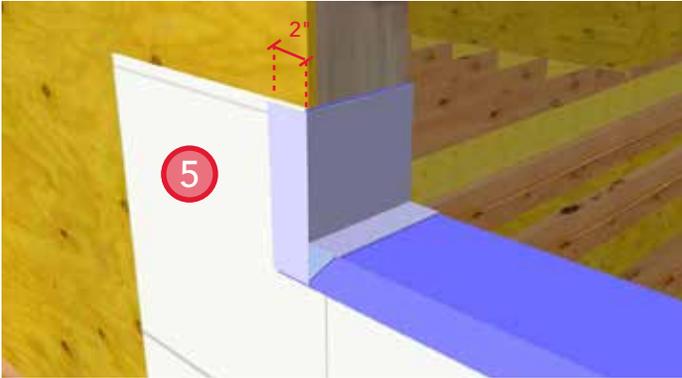
2. Install starter strip of sheathing membrane below the window rough opening. Seal the leading edges to the wall membrane below with sheathing tape.



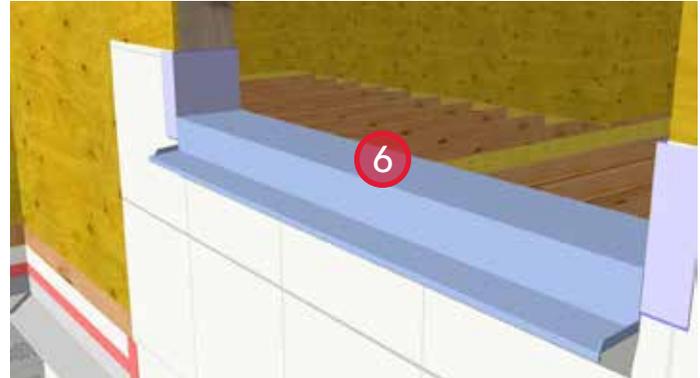
3. Install self-adhered sill membrane. Extend membrane up the jambs and onto the face of the wall.



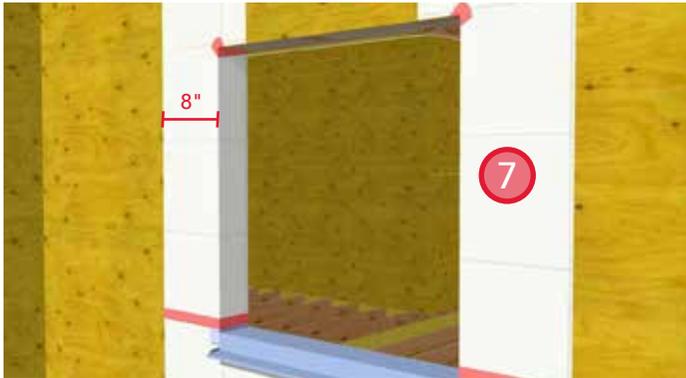
4. Install self-adhered membrane gussets at lower corners.



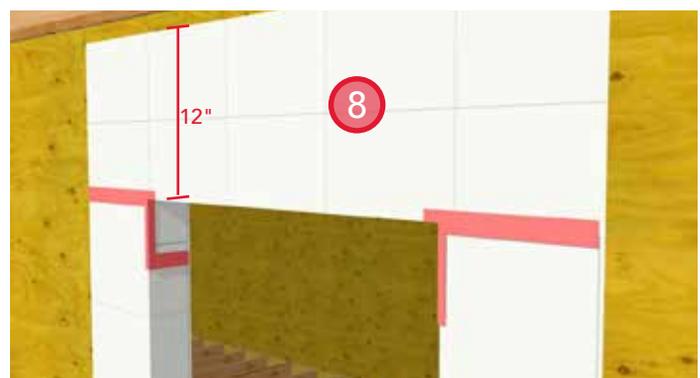
5. Install self-adhered membrane at sill corners, extending up the jamb to the height of the sheathing membrane. Finish the self-adhered membrane 2" onto the face of the wall.



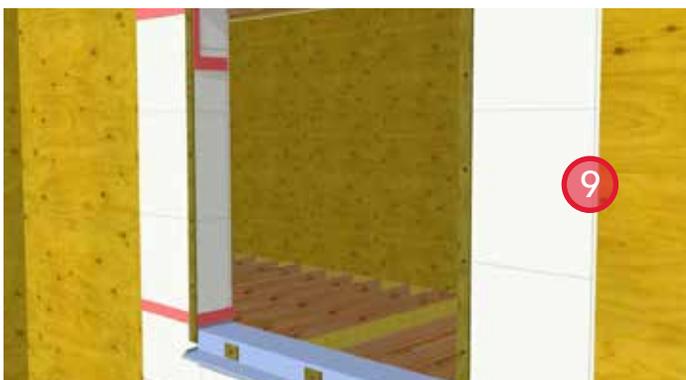
6. Install self-adhered subsidiary sill membrane to aid in water diversion over the ROCKWOOL COMFORTBOARD™. Leave backer on unsupported portion of the membrane until after exterior insulation is installed.



7. Install sheathing membrane pre-strips at the jambs and extend onto face of wall a minimum of 8". Seal the leading edges with sheathing tape.



8. Install sheathing membrane at the head of the rough opening, extending a minimum of 12" up the face of the wall. Seal the leading edges with sheathing tape.

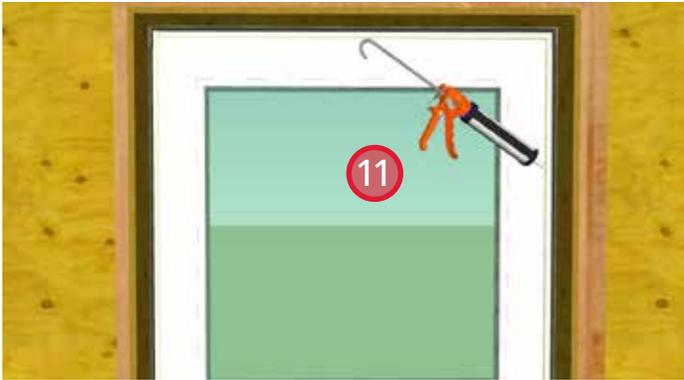


9. Install 3/8" furring strips around the jambs and head and intermittently at the sill to allow for drainage. The nailing flange will be mounted onto the furring strips.<sup>1</sup>

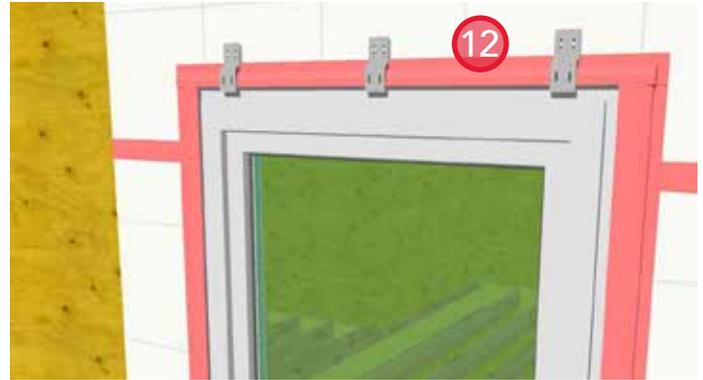


10. Install and structurally attach the window per manufacturer's specifications.

<sup>1</sup>The furring strips keep the window in place, while providing good sub-sill drainage. The furring strips are not required for window installation, but are included here as an alternative best practice to conventional window installations.



11. Install backer rod and sealant around the interior perimeter of the window to complete air barrier continuity.



12. Install sheathing tape along the jambs and head of the window frame and extend onto the face of the wall. Install clips above the head flange to allow for shrinkage in the framing above the window opening.



13. Install metal flashing at the head of the window. Seal the leading edge of the flashing with sheathing tape.



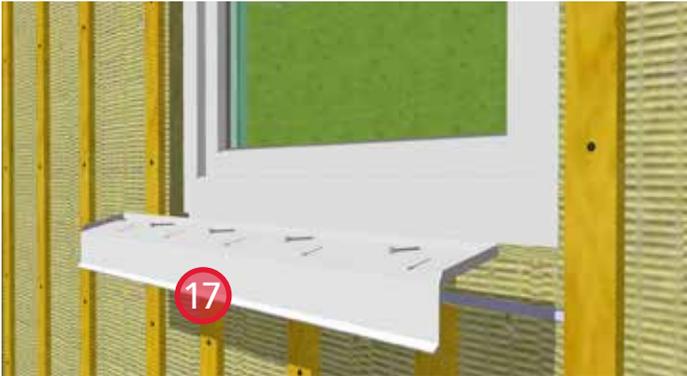
14. Install sheathing membrane. Ensure positive laps over all other layers. Seal all membrane laps with sheathing tape.



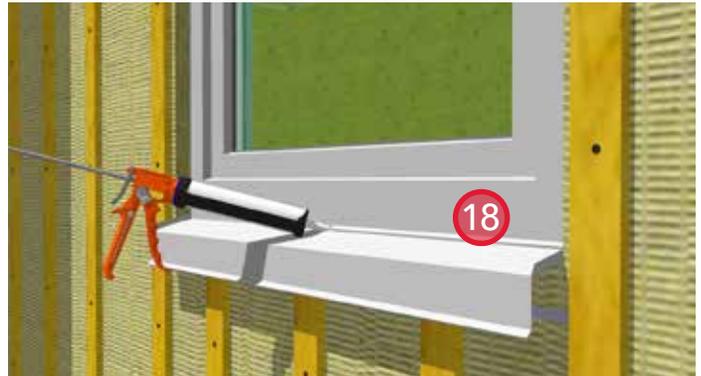
15. Install ROCKWOOL COMFORTBOARD™ at the window head and secure with strapping. Provide bugscreens at the top and bottom of the strapping.



16. Install ROCKWOOL COMFORTBOARD™ above the self-adhered subsidiary sill membrane.



71. Install prefinished metal sill flashing. Attach the sill flashing to the nailing flange under the window sill.



18. Apply sealant between the metal flashing and the window sill.



19. Install window trim boards

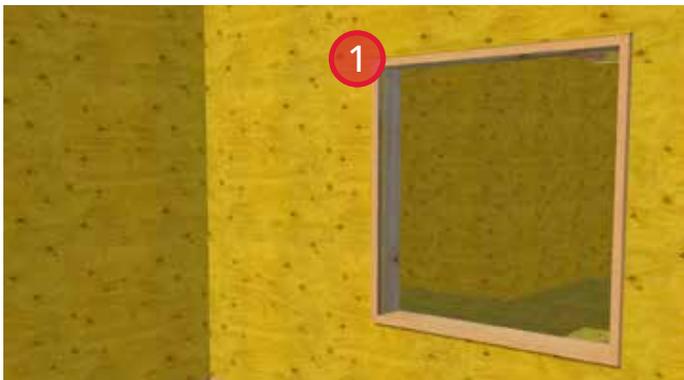
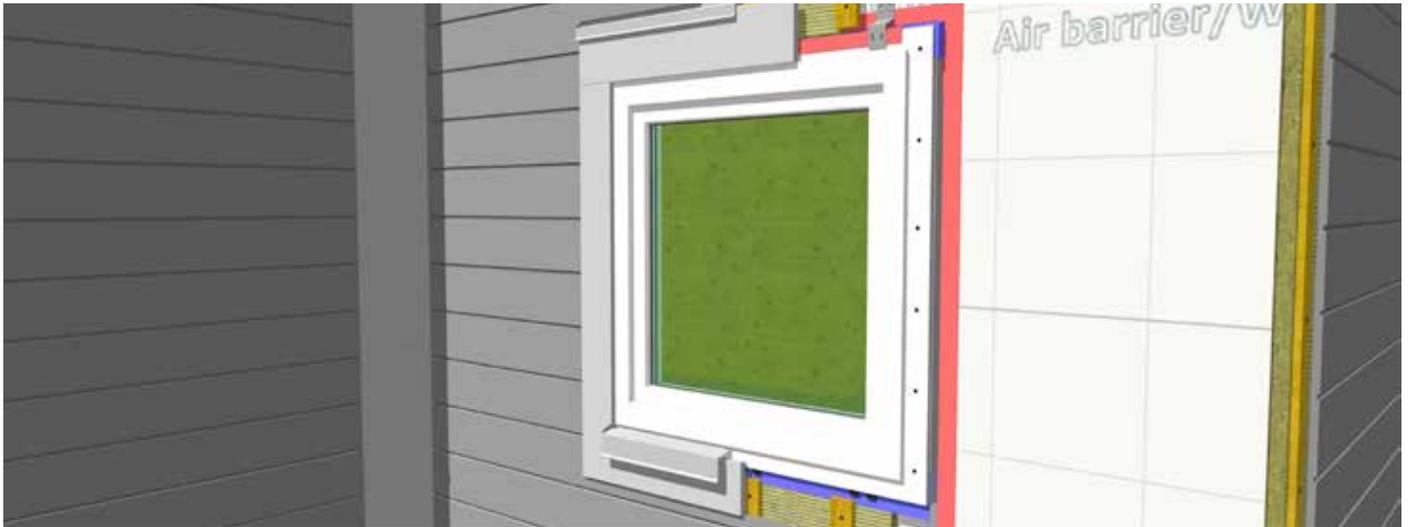


20. Install cladding.

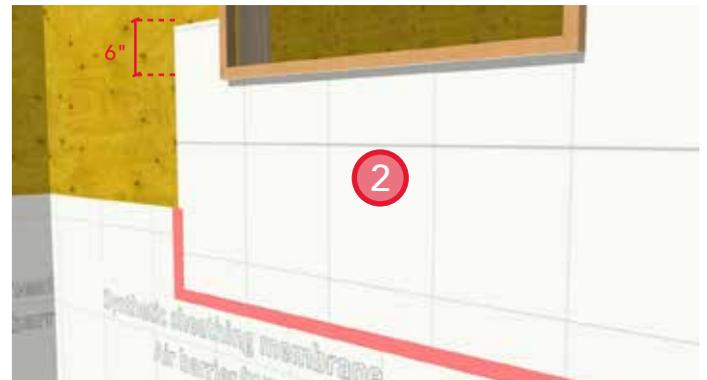


21. Apply sealant around the perimeter of the window (top and sides) between the frame and window trim boards.

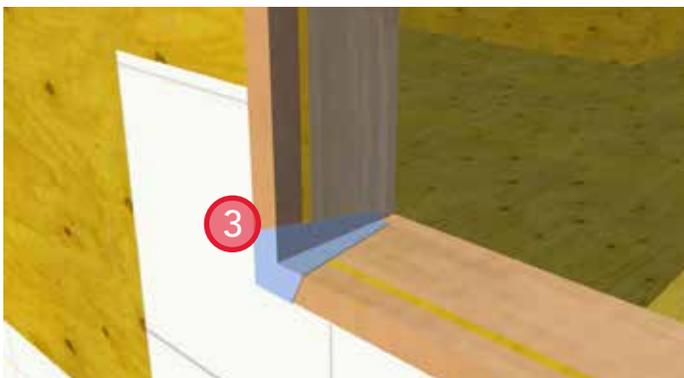
## Flange Mounted Window (Buck-out)



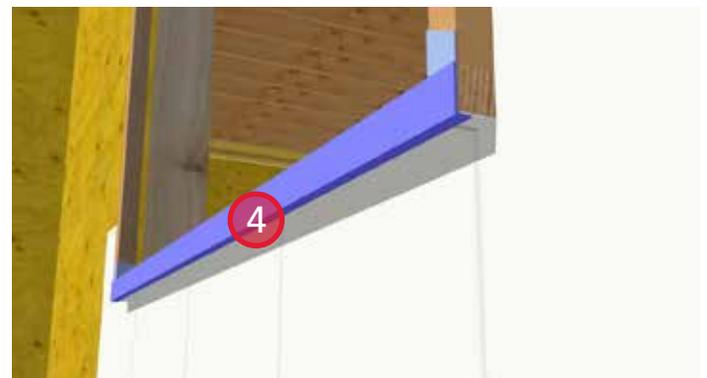
1. Typical wood frame construction at sheathing stage with 2x2 window buck. The window buck thickness should match the depth of the installed insulation. Install sloped window head at top of buck-out.



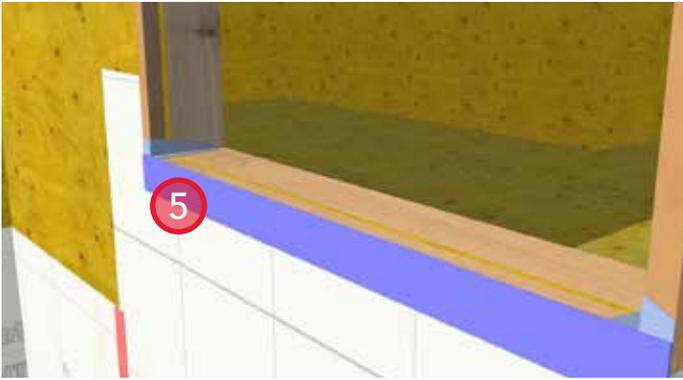
2. Install starter strip of sheathing membrane below the window rough opening. Slit sheathing membrane to cover underside of window buck-out. Seal the leading edges to the wall membrane below with sheathing tape.



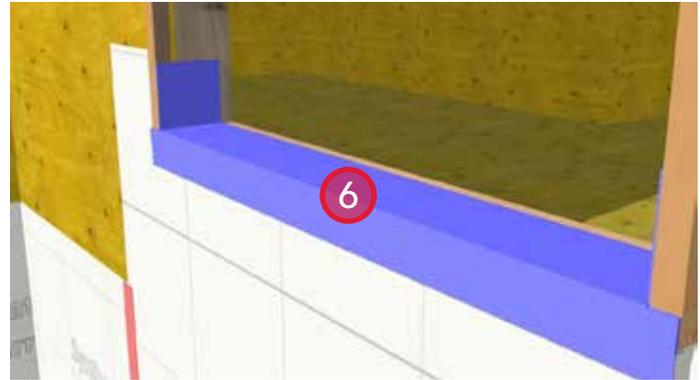
3. Install self-adhered membrane gussets at lower corners.



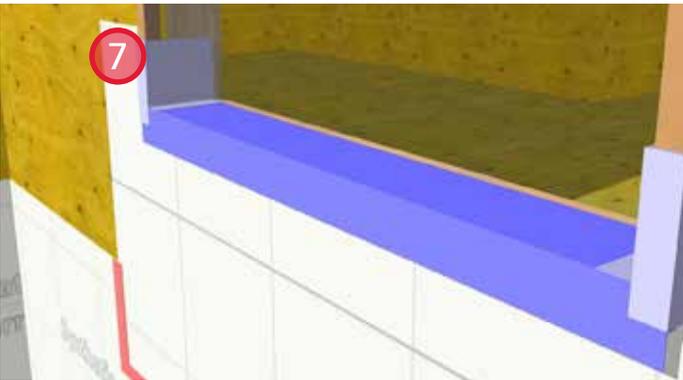
4. Install self-adhered membrane between sheathing membrane and wood frame buck-out.



5. Install self-adhered membrane skirt to exterior face of wood buck-out to aid in water diversion over the ROCKWOOL COMFORTBOARD™. Leave backer on unsupported portion of the membrane until after exterior insulation is installed.



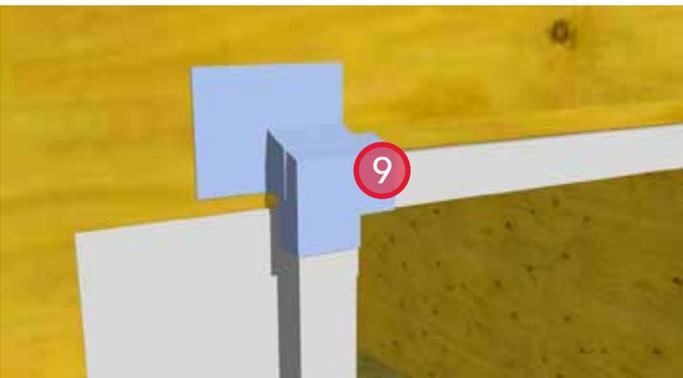
6. Install self-adhered sill membrane. Extend membrane up the jambs and over the self adhered membrane skirt.



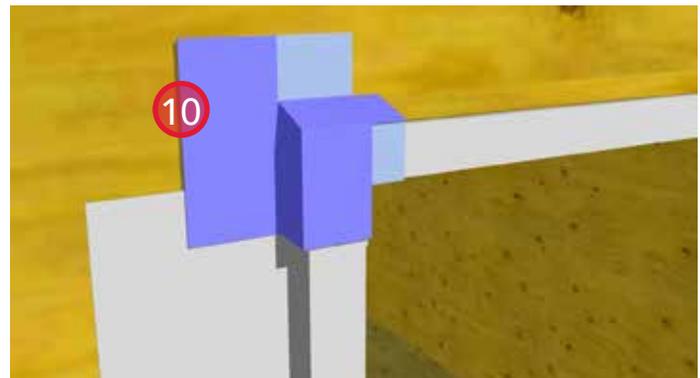
7. Install self-adhered membrane at sill corners, extending up the jamb to the height of sheathing membrane and wrapping around the buck-out onto the sheathing membrane prestrip a minimum 3".



8. Wrap the buck-out jambs and window head with vapor permeable self-adhered membrane and positively lap over the membrane below.

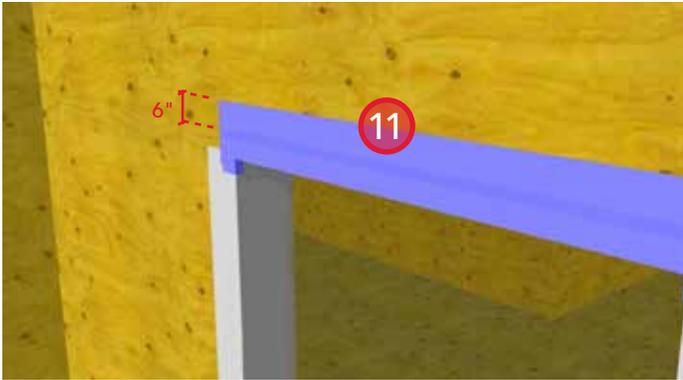


9. Install self-adhered membrane gussets at the top corners of the buck-out and at transition to plywood sheathing.



10. Apply self-adhered membrane<sup>1</sup> to plywood sheathing immediately above window head to transition gussets to plywood sheathing and ensure membrane continuity.

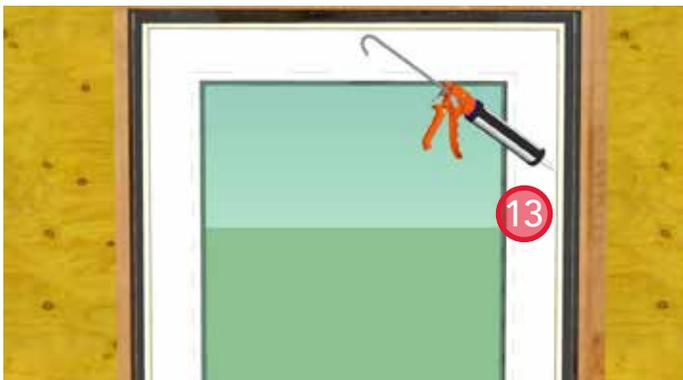
<sup>1</sup> Vapor permeable liquid-applied flashing membranes can be used in place of self-adhered membrane at the head and jambs of the window rough opening (buck).



11. Install self-adhered membrane over the top of the wood buck-out extending 6" onto the plywood sheathing.



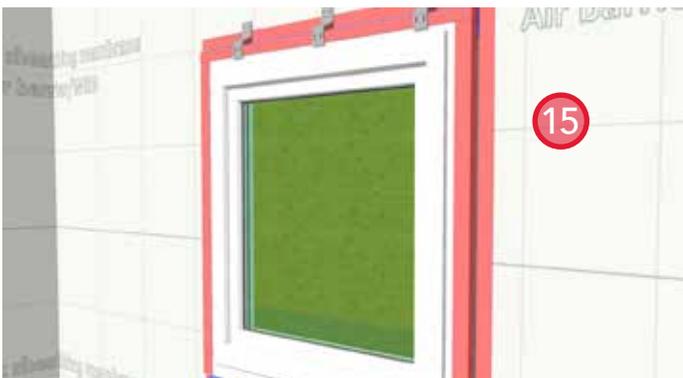
12. Install and structurally attach the window per manufacturer's specifications. Install 1/8" horseshoe shims behind sill flange to provide sub-sill drainage.



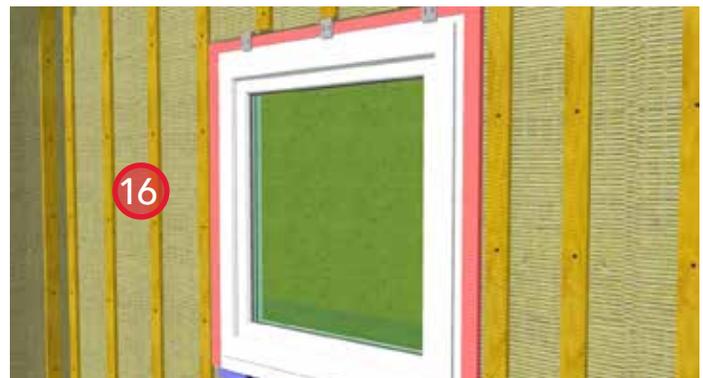
13. Install backer rod and sealant around the interior perimeter of the window to complete air barrier continuity.



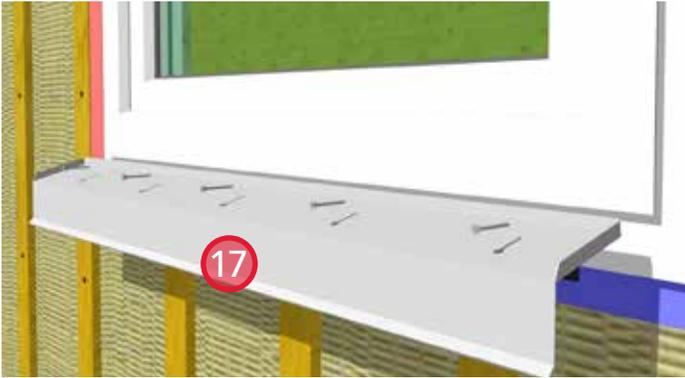
14. Install sheathing tape along the jambs and head of the window frame and extend onto the face of the wall. Install clips above the head flange to allow for shrinkage in the framing above the window opening.



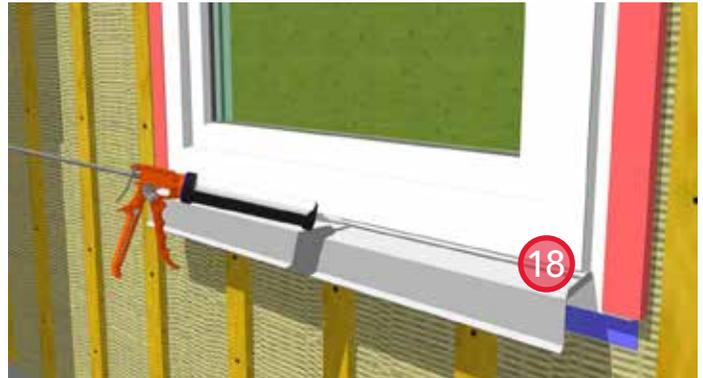
15. Install sheathing membrane. Ensure positive laps over all other layers. Seal all membrane laps with sheathing tape.



16. Install ROCKWOOL COMFORTBOARD™ and secure with strapping. Provide bugscreens at the top and bottom of the strapping.



17. Install prefinished metal sill flashing. Attach the sill flashing to the nailing flange under the window sill.



18. Apply sealant between the metal flashing and the window sill.



19. Install window trim boards.



20. Install metal flashing to the strapping over the top window trim board.

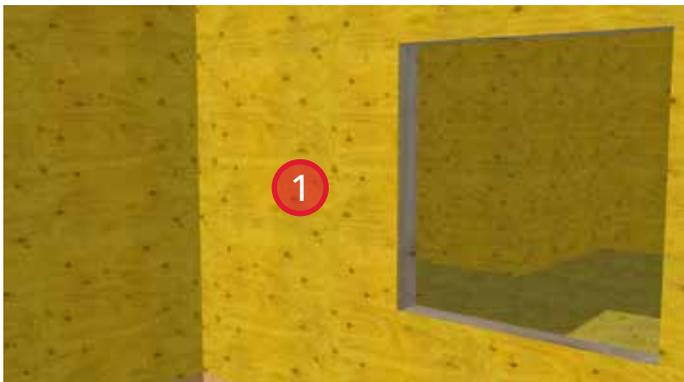


21. Install cladding.

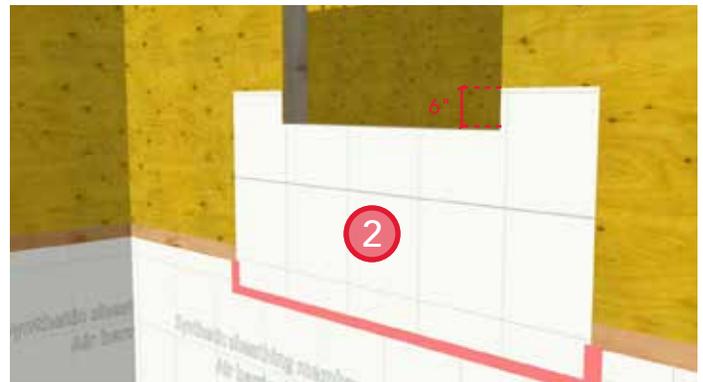


22. Apply sealant around the perimeter of the window (top and sides) between the frame and window trim boards.

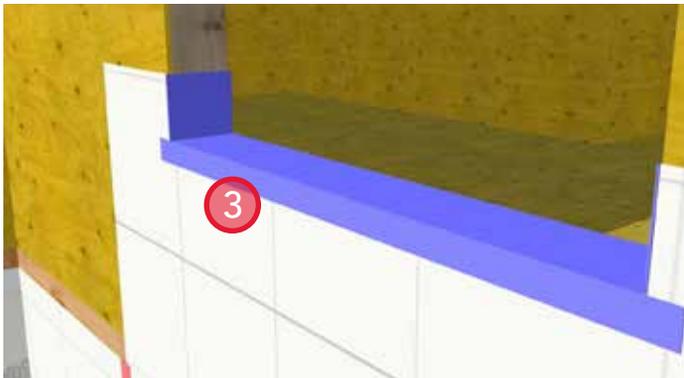
## Flange Mounted Window (cultured stone)



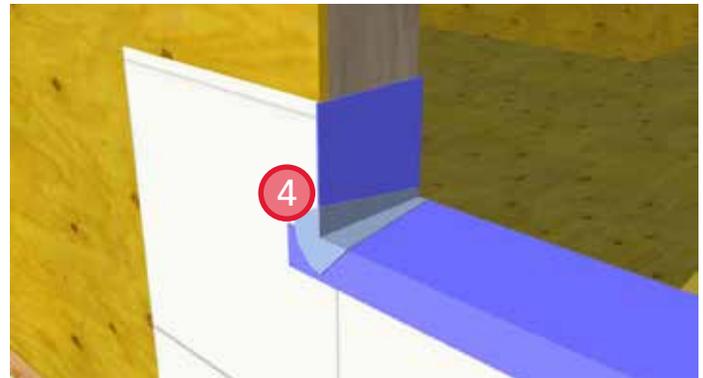
1. Typical wood frame construction at sheathing stage.



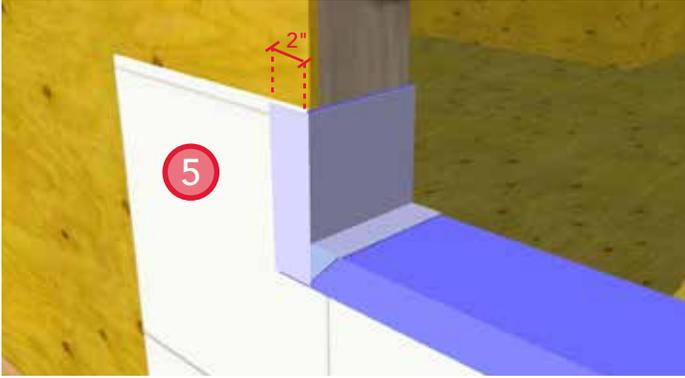
2. Install starter strip of sheathing membrane below the window rough opening. Seal the leading edges to the wall membrane below with sheathing tape.



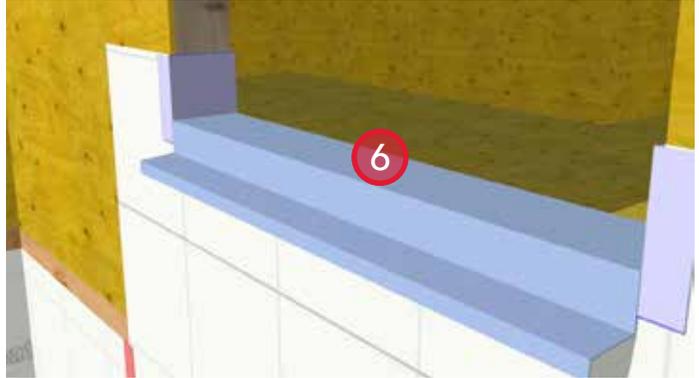
3. Install self-adhered sill membrane. Extend membrane up the jambs and onto the face of the wall.



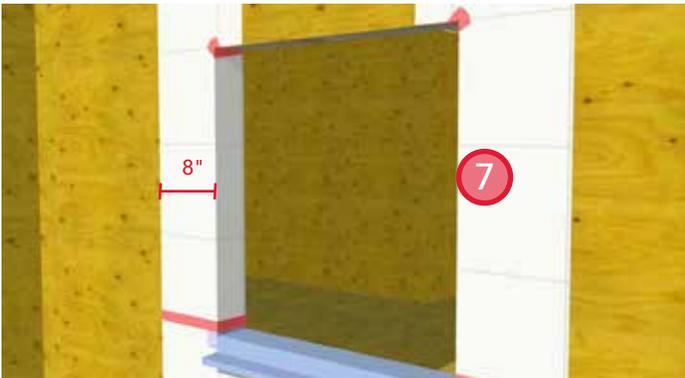
4. Install self-adhered membrane gussets at lower corners.



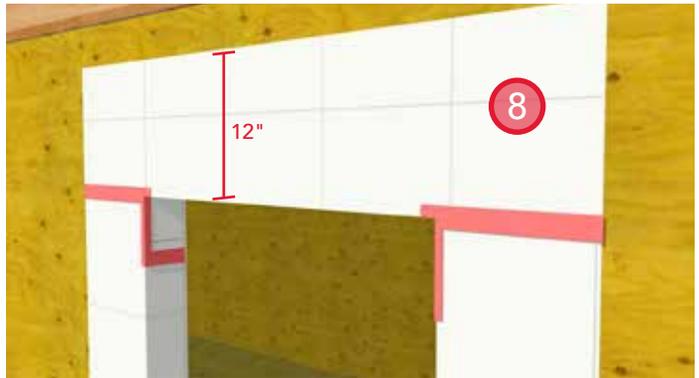
5. Install self-adhered membrane at sill corners, extending up the jamb to the height of the sheathing membrane. Finish the self-adhered membrane 2" onto the face of the wall.



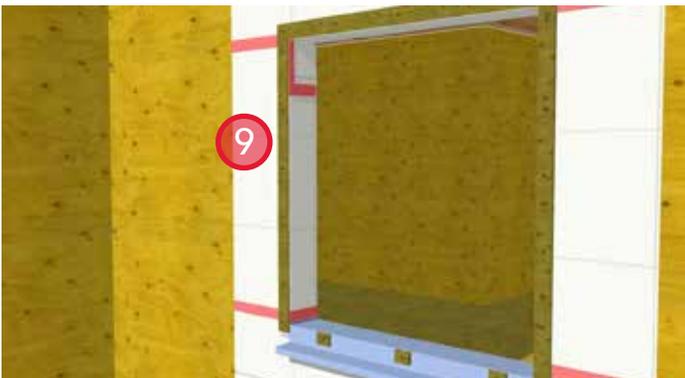
6. Install self-adhered subsidiary sill membrane to aid in water diversion over the ROCKWOOL COMFORTBOARD™. Leave backer on unsupported portion of the membrane until after exterior insulation is installed.



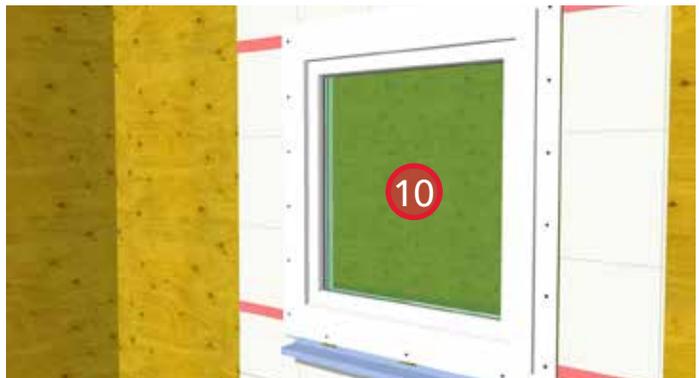
7. Install sheathing membrane pre-strips at the jambs and extend onto face of wall a minimum of 8". Seal the leading edges with sheathing tape.



8. Install sheathing membrane at the head of the rough opening, extending a minimum of 12" up the face of the wall. Seal the leading edges with sheathing tape.

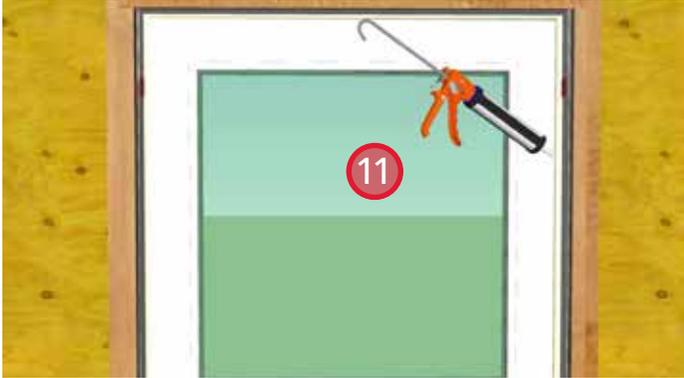


9. Install 3/8" furring strips around the jambs and head and intermittently at the sill to allow for drainage. The nailing flange will be mounted onto the furring strips.<sup>1</sup>

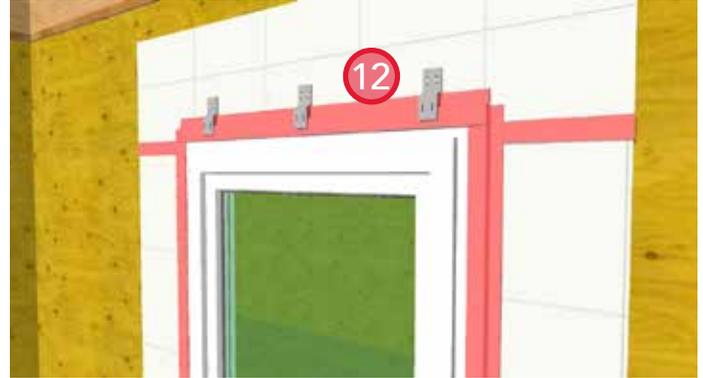


10. Install and structurally attach the window per manufacturer's specifications.

<sup>1</sup>The furring strips keep the window in place, while providing good sub-sill drainage. The furring strips are not required for window installation, but are included here as an alternative best practice to conventional window installations.



11. Install backer rod and sealant around the interior perimeter of the window to complete air barrier continuity.



12. Install sheathing tape along the jambs and head of the window frame and extend onto the face of the wall. Install clips above the head flange to allow for shrinkage in the framing above the window opening.



13. Install 2x4 blocking at jambs and head of window to support cultured stone trim. Taper the head blocking to provide slope for through wall flashing membrane.



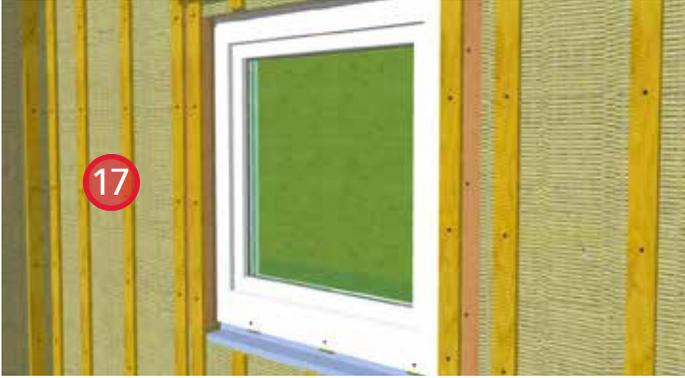
14. Install metal flashing to the head blocking to aid in water diversion.



15. Install self-adhered membrane through wall flashing over the head blocking and metal flashing back leg.



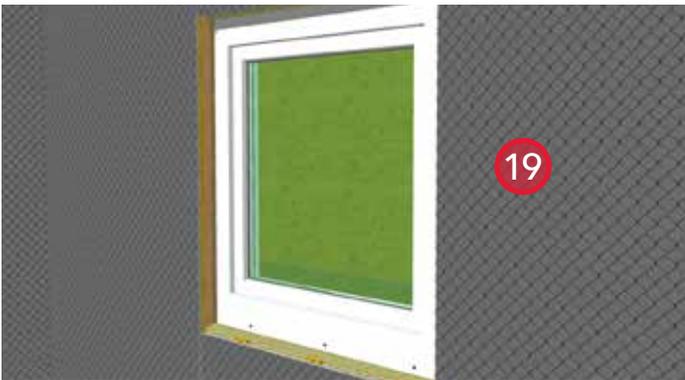
16. Install sheathing membrane. Ensure positive laps over all other layers. Seal all membrane laps with sheathing tape.



17. Install ROCKWOOL COMFORTBOARD™ and secure with strapping. Provide bugscreens at the top and bottom of the strapping.



18. Install ROCKWOOL COMFORTBOARD™ above the self-adhered subsidiary sill membrane.



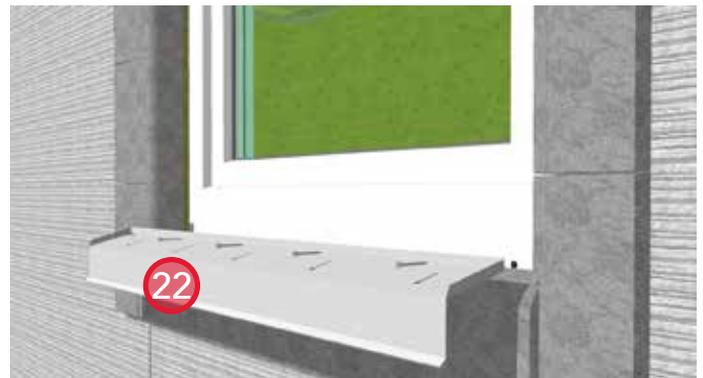
19. Secure cement backer board and metal lath to the strapping.



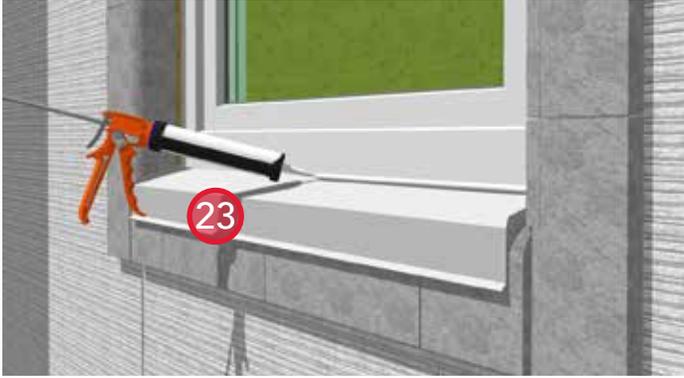
20. Install mortar scratch coat. Provide horizontal and vertical gaps (control joints) as necessary to account for differential movement between the wood framing and adhered masonry cladding.



21. Adhere stone trim with mortar bond coat.



22. Install prefabricated metal sill flashing. Attach the sill flashing to the nailing flange under the window sill.



17. Apply sealant between the metal flashing and the window sill.

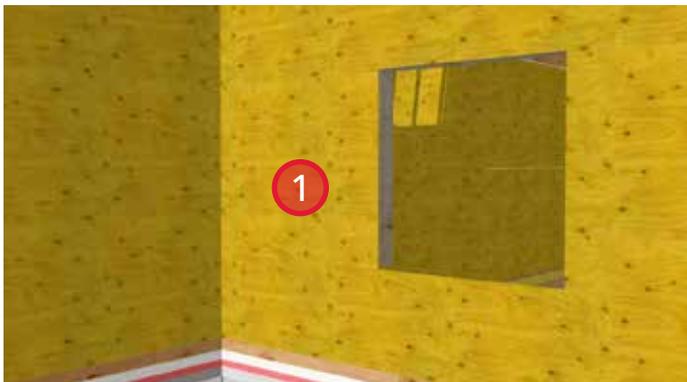
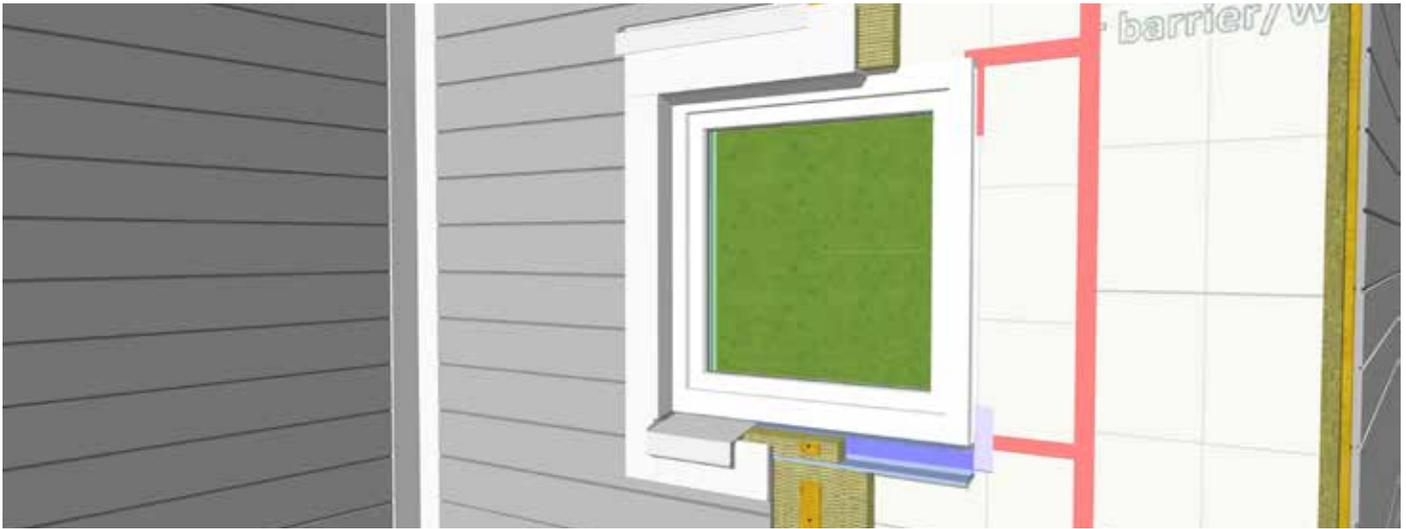


18. Adhere cultured stone cladding with mortar bond coat. Grout stone cladding joints to maintain continuity of the water shedding surface.

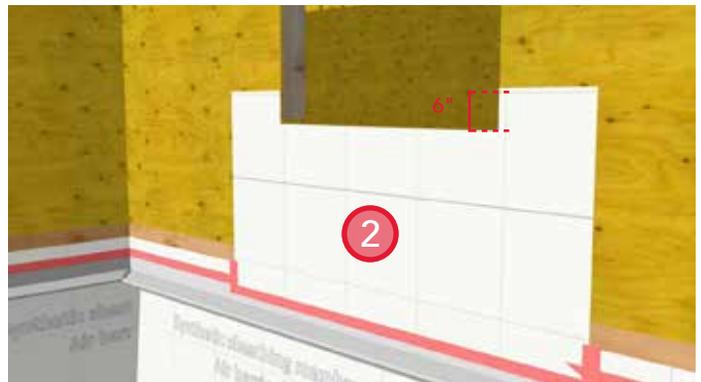


19. Apply sealant around the perimeter of the window (top and sides) between the frame and the cultured stone trim.

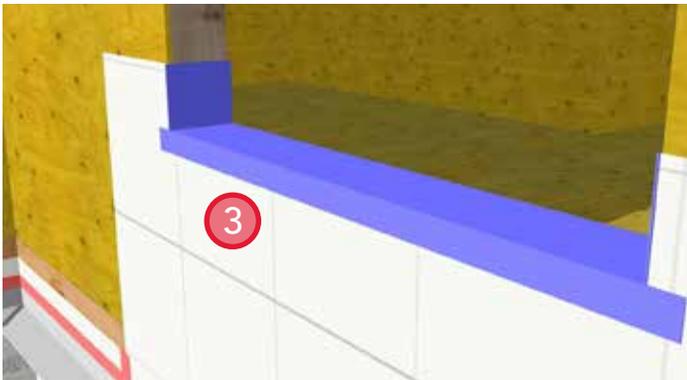
# Non-Flange Mounted Window



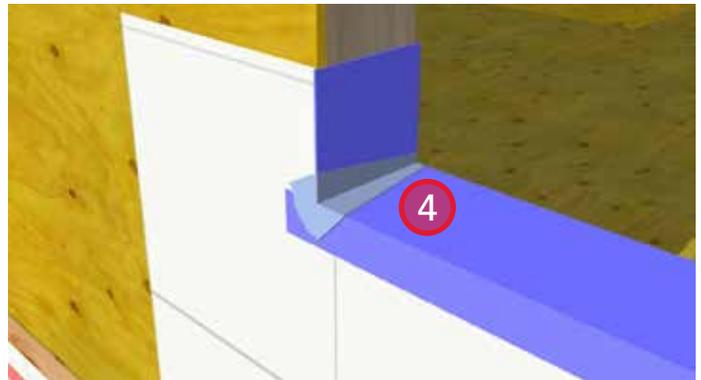
1. Typical wood frame construction at sheathing stage.



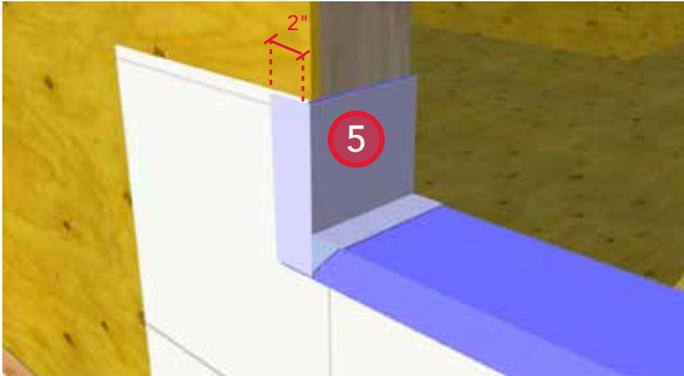
2. Install starter strip of sheathing membrane below the window rough opening. Seal the leading edges to the wall membrane below with sheathing tape.



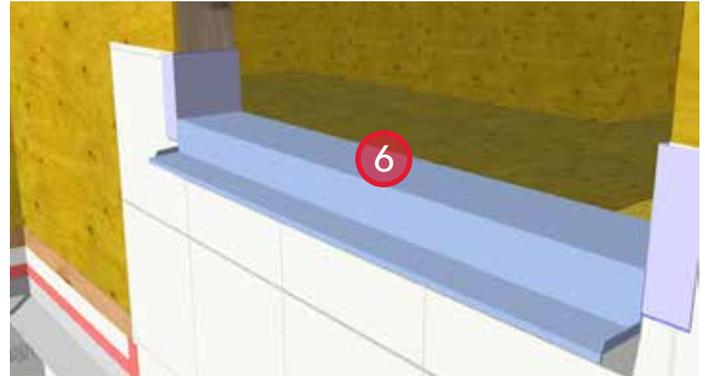
3. Install self-adhered sill membrane. Extend membrane up the jambs and onto the face of the wall.



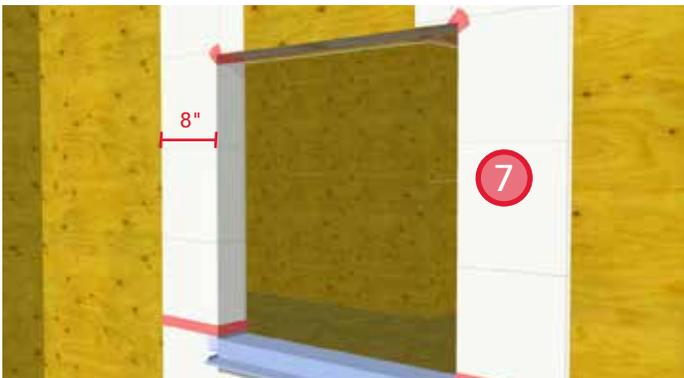
4. Install self-adhered membrane gussets at lower corners.



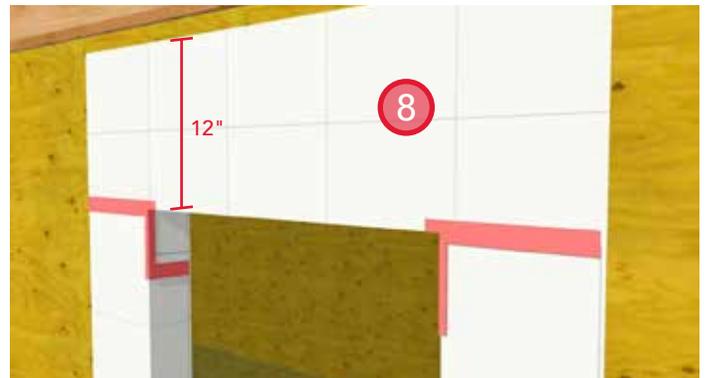
5. Install self-adhered membrane at sill corners, extending up the jamb to the height of the sheathing membrane. Finish the self-adhered membrane 2" onto the face of the wall.



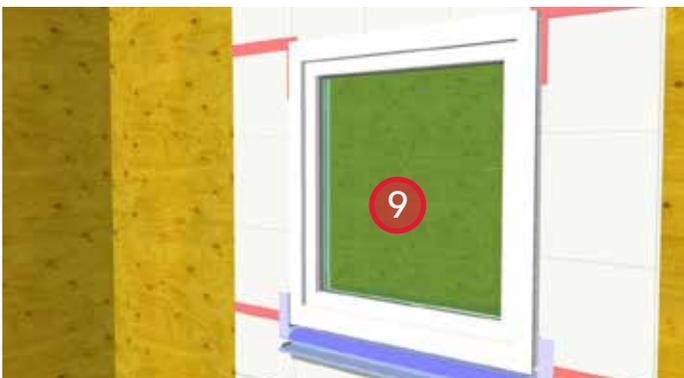
6. Install self-adhered subsidiary sill membrane to aid in water diversion over the ROCKWOOL COMFORTBOARD™. Leave the backer on the unsupported portion of the membrane until insulation is installed.



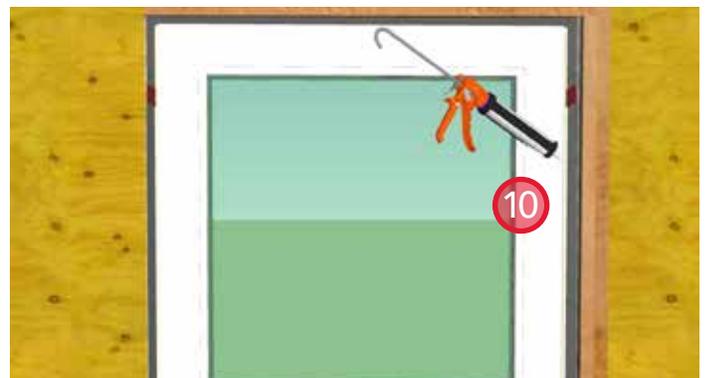
7. Install sheathing membrane pre-strips at the jambs and extend onto face of wall a minimum of 8". Lap the sheathing membrane over the self-adhered membrane at the corners and seal the leading edges with sheathing tape.



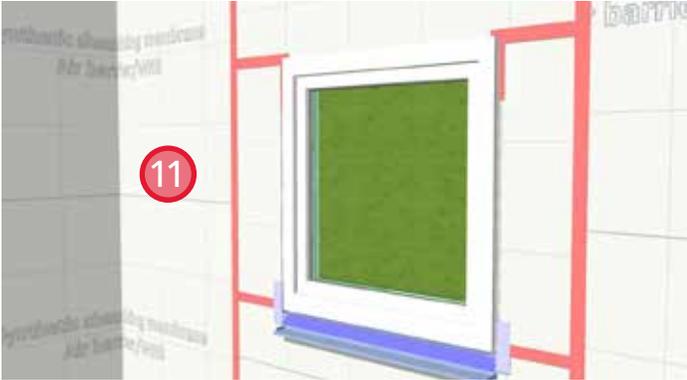
8. Install sheathing membrane at the head of the rough opening, extending a minimum of 12" up the face of the wall. Seal the leading edges with sheathing tape.



9. Install and structurally attach window per manufacturer's specifications. Position the window at the front of the rough opening in order to minimize thermal bridging effects.



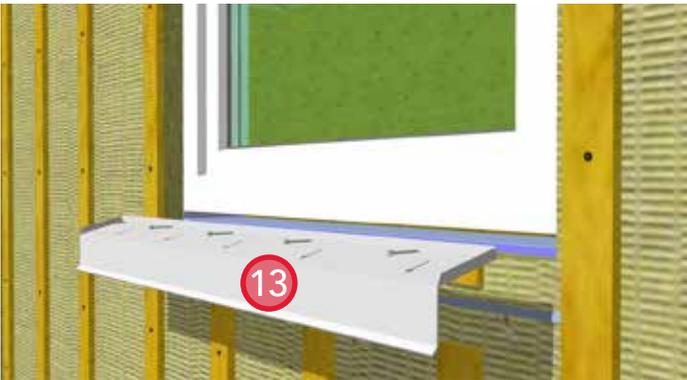
10. Install backer rod and sealant around the interior perimeter of the window to complete air barrier continuity.



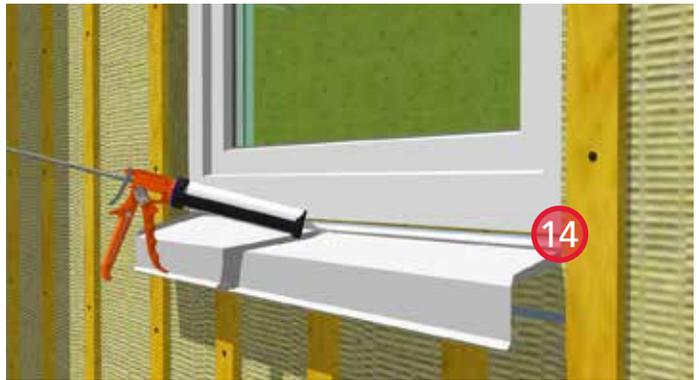
11. Install sheathing membrane. Ensure positive laps over all other layers. Seal all membrane laps with sheathing tape.



12. Install ROCKWOOL COMFORTBOARD™ and secure with strapping. Provide bugscreens at the top and bottom of the strapping.



13. Install prefinished metal sill flashing. Refer to window manufacturer's specifications for more information.



14. Apply sealant between the metal flashing and the window sill.



15. Install window trim.



16. Install metal flashing to the strapping at the top window trim board to aid in water diversion.

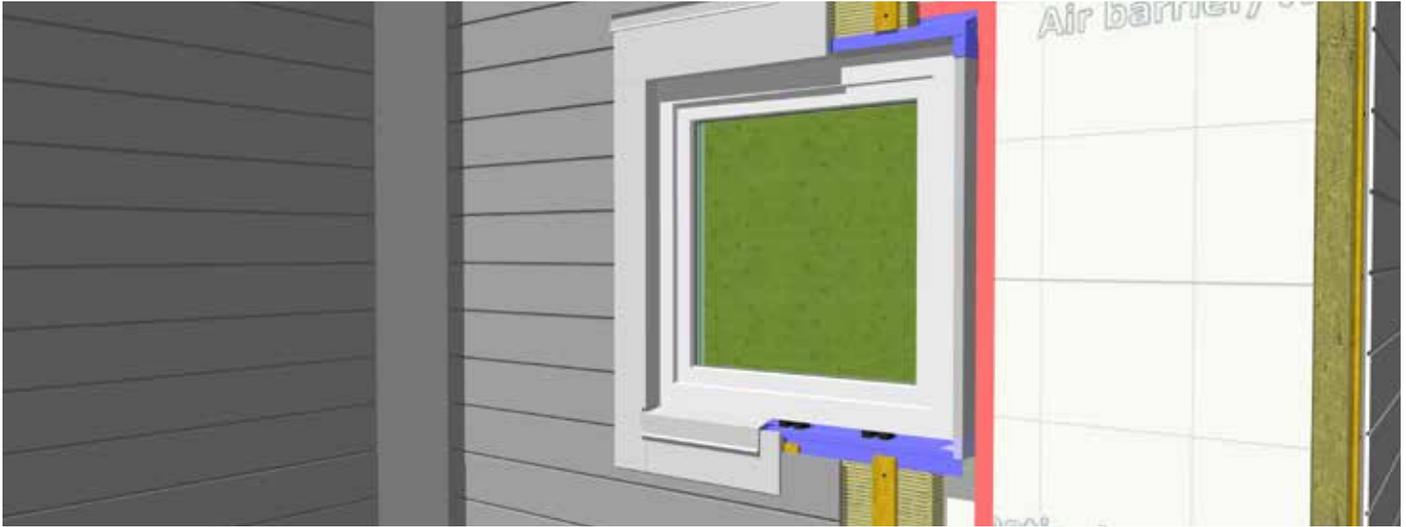


17. Install cladding.

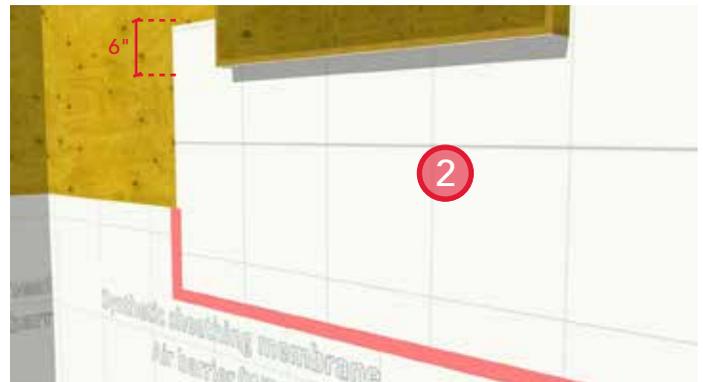


18. Install sealant around the perimeter of the window (top and sides) between the frame and window trim boards.

## Non-Flange Mounted Window (Buck-out)



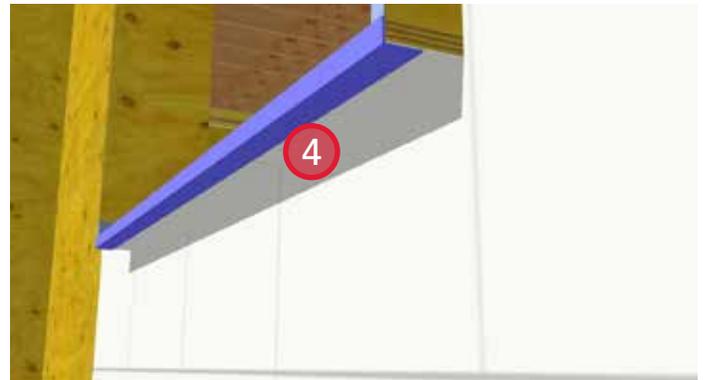
1. Typical wood frame construction at sheathing stage with 3/4" plywood window buck. The window buck depth should match the thickness of the installed insulation. Install sloped window head at top of buck-out.



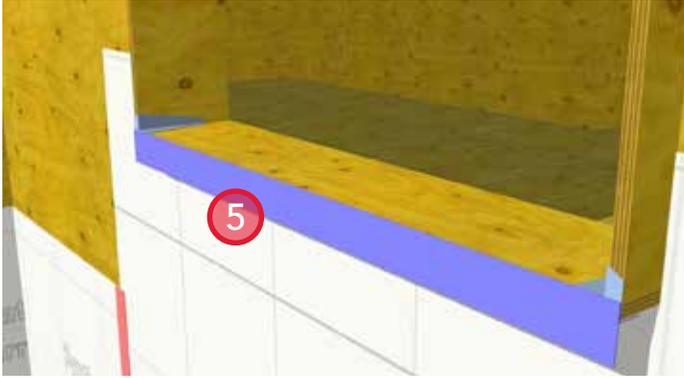
2. Install starter strip of sheathing membrane below the window rough opening. Slit sheathing membrane to cover underside of window buck-out. Seal the leading edges to the wall membrane below with sheathing tape.



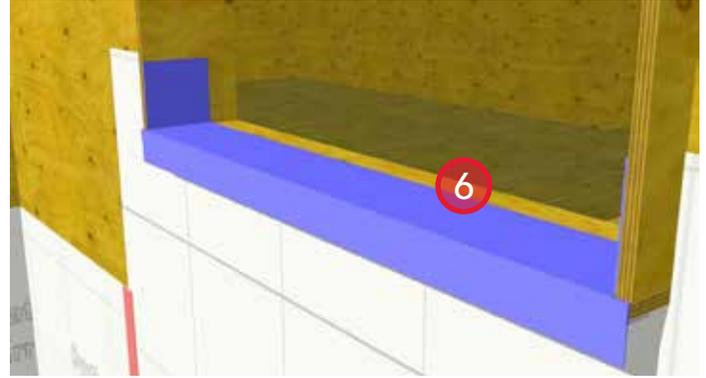
3. Install self-adhered membrane gussets at lower corners.



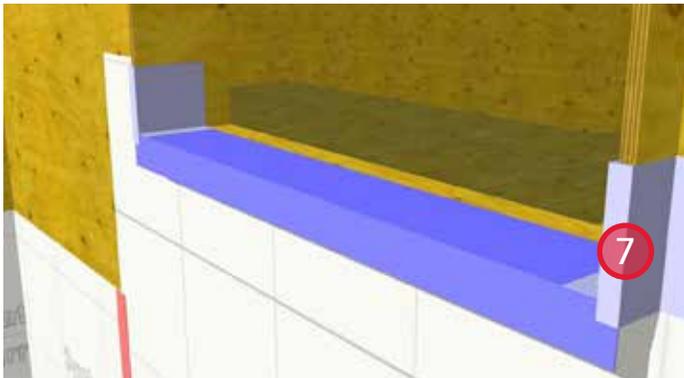
4. Install self-adhered membrane between sheathing membrane and edge grain of plywood buck-out.



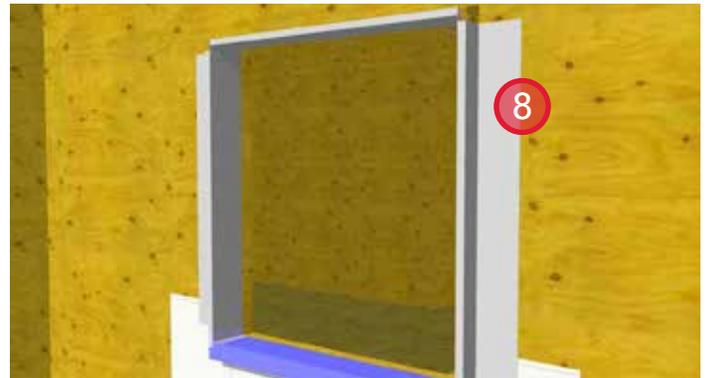
5. Install self-adhered membrane skirt to exterior face of plywood buck-out to aid in water diversion over the ROCKWOOL COMFORTBOARD™. Leave backer on unsupported portion of the membrane until after exterior insulation is installed.



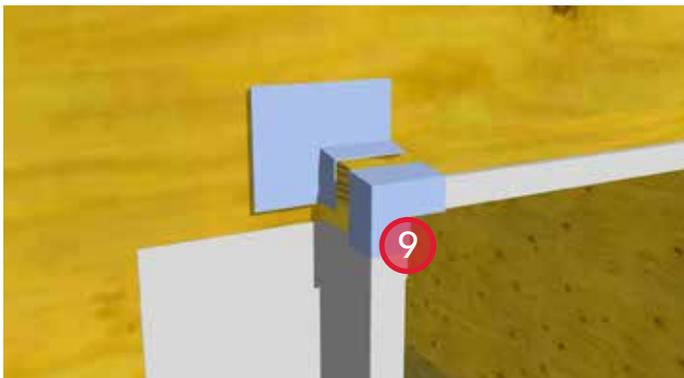
6. Install self-adhered sill membrane. Extend the membrane up the jamb and over the self-adhered membrane skirt.



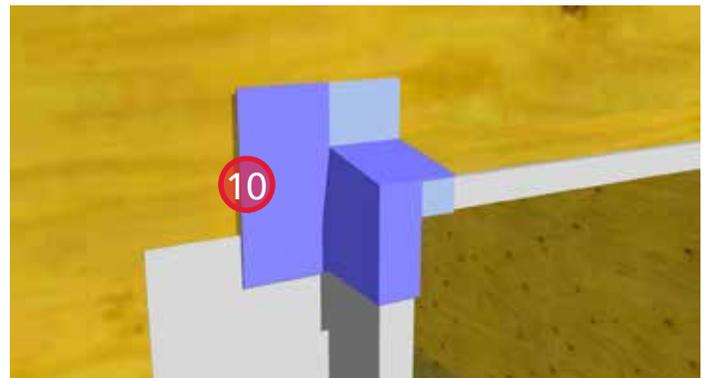
7. Install self-adhered membrane at sill corners, extending up the jamb to the height of sheathing membrane and wrapping around the buck-out onto the sheathing membrane prestrip a minimum 3".



8. Wrap the buck-out jamb and window head with vapor permeable self-adhered membrane and positively lap over the membrane below.

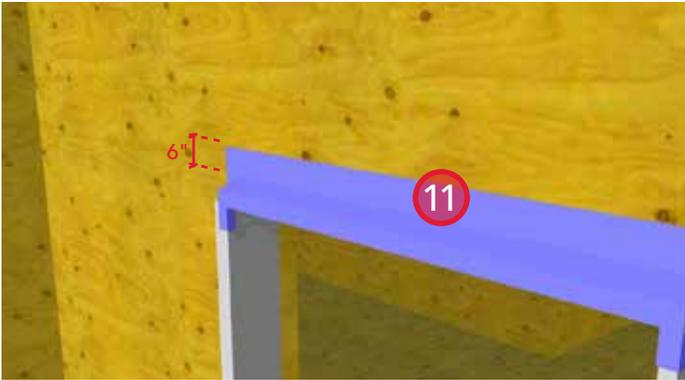


9. Install self-adhered membrane gussets at the top corners of the buck-out and at transition to plywood sheathing.

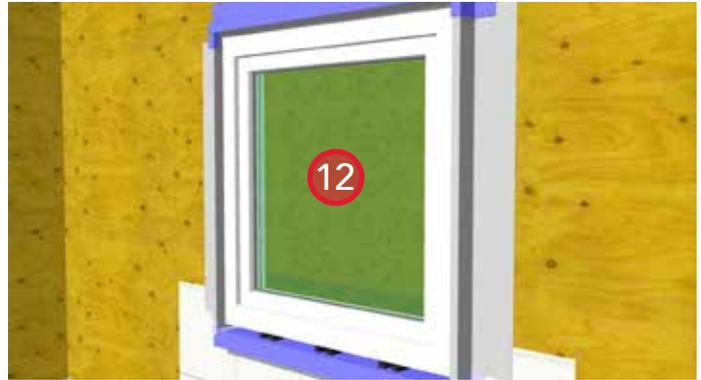


10. Apply self-adhered membrane<sup>1</sup> to plywood sheathing immediately above window head to transition gussets to plywood sheathing and ensure membrane continuity.

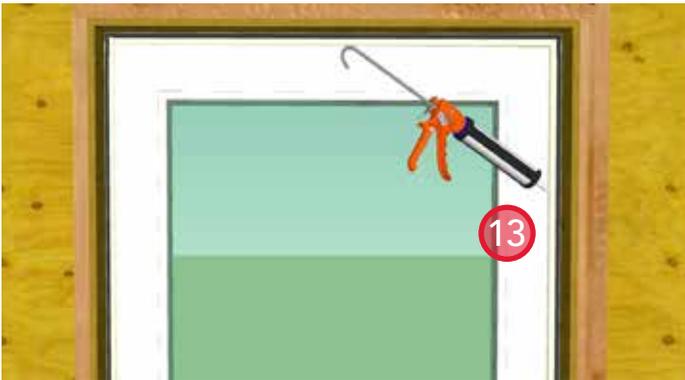
<sup>1</sup> Vapor permeable liquid-applied flashing membranes can be used in place of self-adhered membrane at the head and jambs of the window rough opening (buck-out).



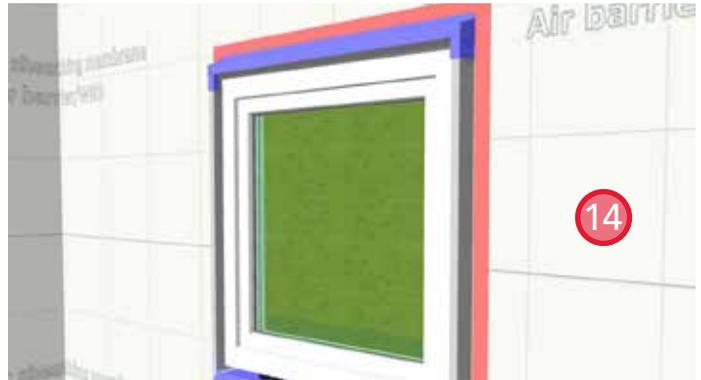
11. Install self-adhered membrane over the top of the plywood buck-out extending onto the plywood sheathing.



12. Install and structurally attach the window per manufacturer's specifications. Position the window at the front of the buck-out in order to minimize thermal bridging effects.



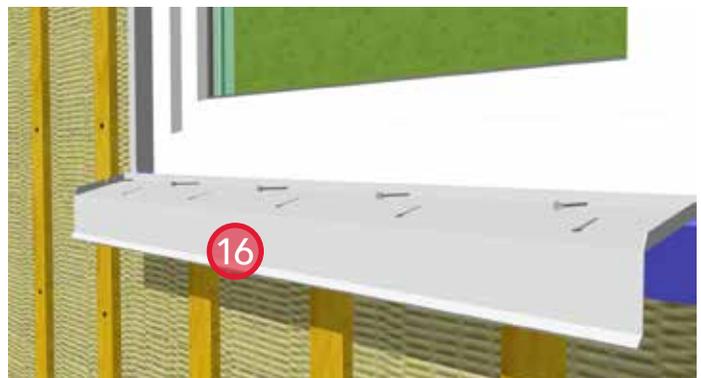
13. Install backer rod and sealant around the interior perimeter of the window to complete air barrier continuity.



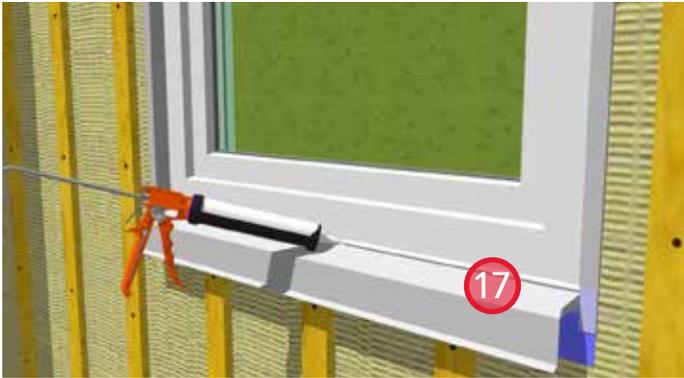
14. Install sheathing membrane. Ensure positive laps over all other layers. Seal all membrane laps with sheathing tape.



15. Install ROCKWOOL COMFORTBOARD™ and secure with strapping. Provide bugscreens at the top and bottom of the strapping.



16. Install prefinished metal sill flashing. Refer to window manufacturer's specifications for more information.



17. Apply sealant between the metal flashing and the window sill.



18. Install window trim.



19. Install metal flashing to the strapping at the top window trim board to aid in water diversion.

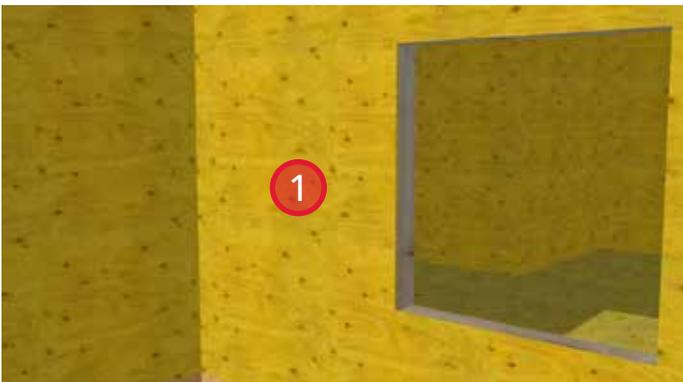
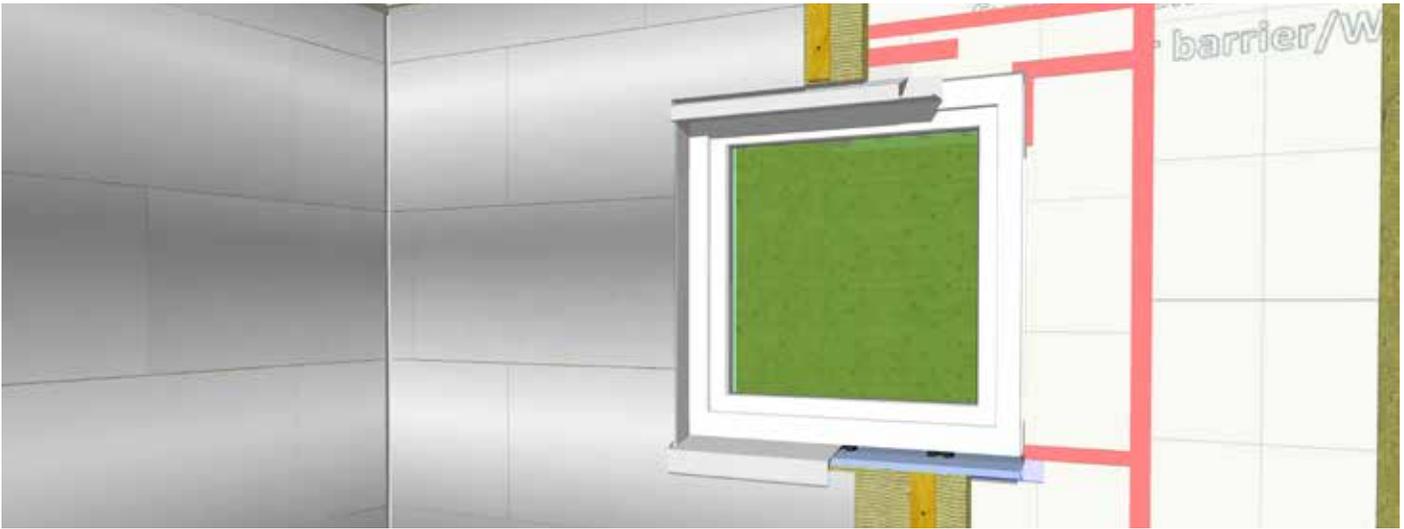


20. Install cladding.

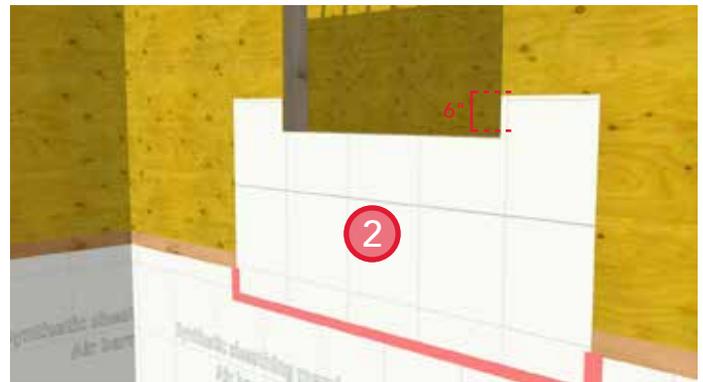


21. Apply sealant around the perimeter of the window (top and sides) between the frame and window trim boards.

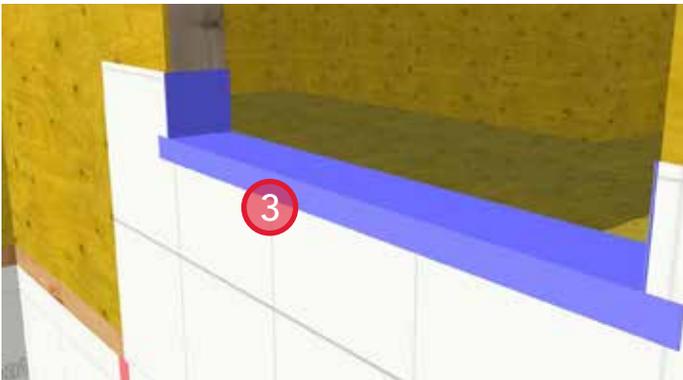
## Non-Flange Mounted Window (Metal Panel)



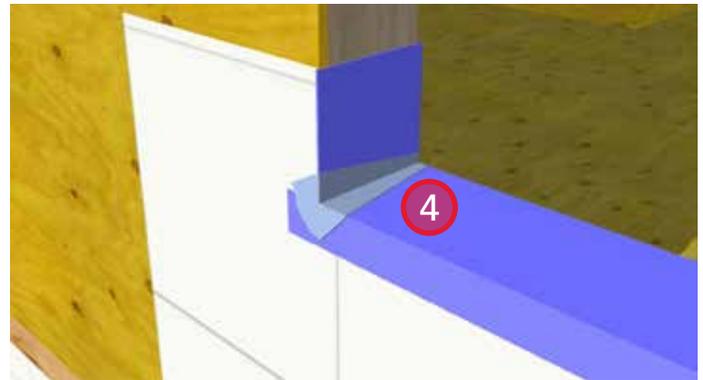
1. Typical wood frame construction at sheathing stage.



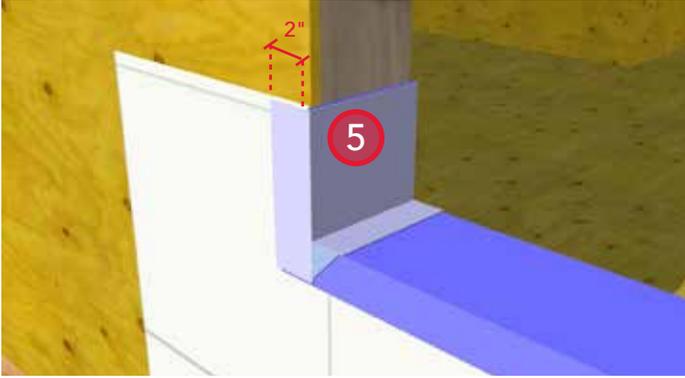
2. Install starter strip of sheathing membrane below the window rough opening. Seal the leading edges to the wall membrane below with sheathing tape.



3. Install self-adhered sill membrane. Extend membrane up the jambs and onto the face of the wall.



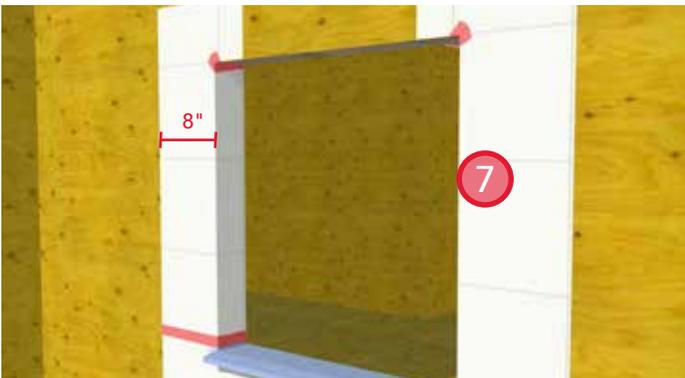
4. Install self-adhered membrane gussets at lower corners.



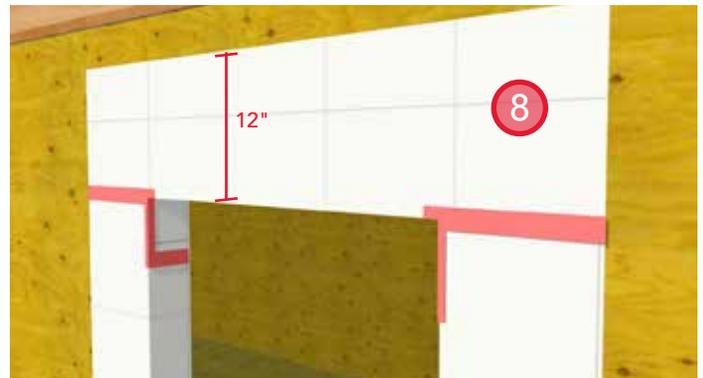
5. Install self-adhered membrane at sill corners, extending up the jamb to the height of the sheathing membrane. Finish the self-adhered membrane 2" onto the face of the wall.



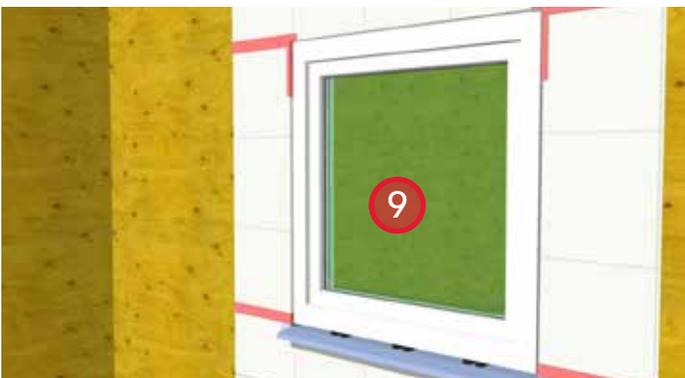
6. Install self-adhered subsidiary sill membrane to aid in water diversion over the ROCKWOOL COMFORTBOARD™. Leave the backer on the unsupported portion of the membrane until insulation is installed.



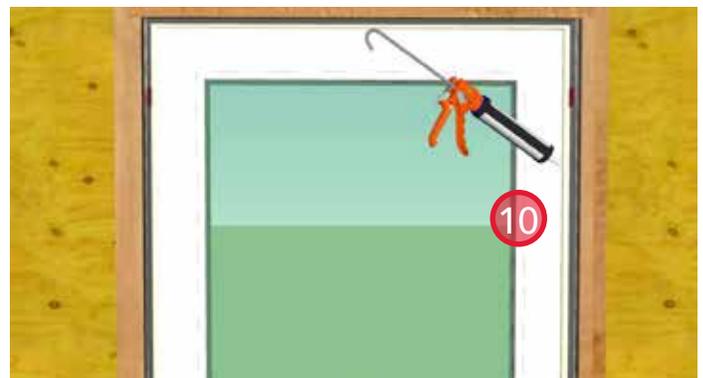
7. Install sheathing membrane pre-strips at the jambs and extend onto face of wall a minimum of 8". Lap the sheathing membrane over the self-adhered membrane at the corners and seal the leading edges with sheathing tape.



8. Install sheathing membrane at the head of the rough opening, extending a minimum of 12" up the face of the wall. Seal the leading edges with sheathing tape.



9. Install and structurally attach window per manufacturer's specifications. Position the window at the front of the rough opening in order to minimize thermal bridging effects.



10. Install backer rod and sealant around the interior perimeter of the window to complete air barrier continuity.



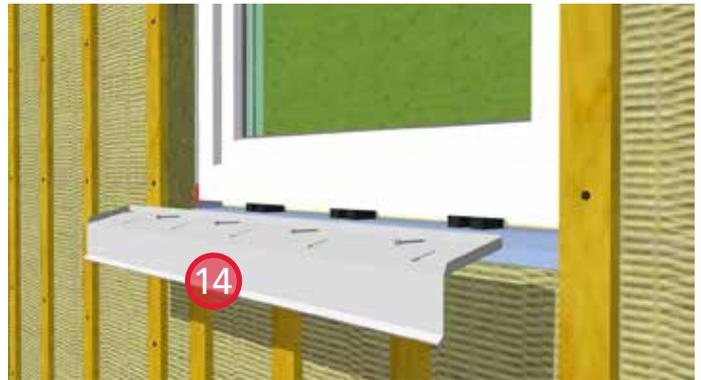
11. Install metal flashing at the head of the window. Seal the leading edge of the flashing with sheathing tape.



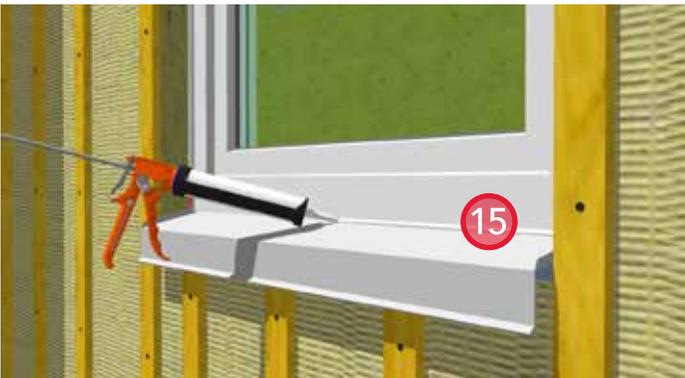
12. Install sheathing membrane. Ensure positive laps over all other layers. Seal all membrane laps with sheathing tape.



13. Install ROCKWOOL COMFORTBOARD™ and secure with strapping. Provide bugscreens at the top and bottom of the strapping.



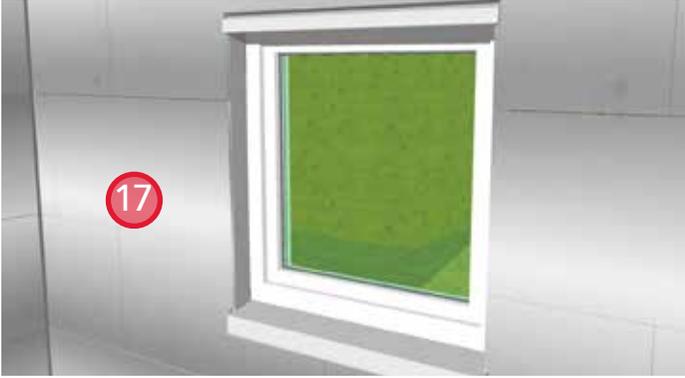
14. Install prefinished metal sill flashing. Refer to window manufacturer's specifications for more information.



15. Apply sealant between the metal flashing and the window sill.



16. Install metal closure flashings at jambs to aid in water diversion. Flashing is supported by the wood strapping.



17. Install metal panel cladding. Metal panels may rely on a proprietary attachment system or be fastened directly to the strapping.



18. Install sealant around the perimeter of the window (top and sides) between the frame and metal closure flashings.

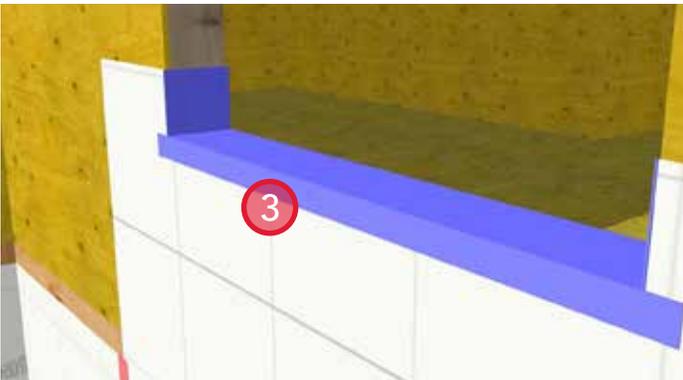
## Non-Flange Mounted Window (Stucco)



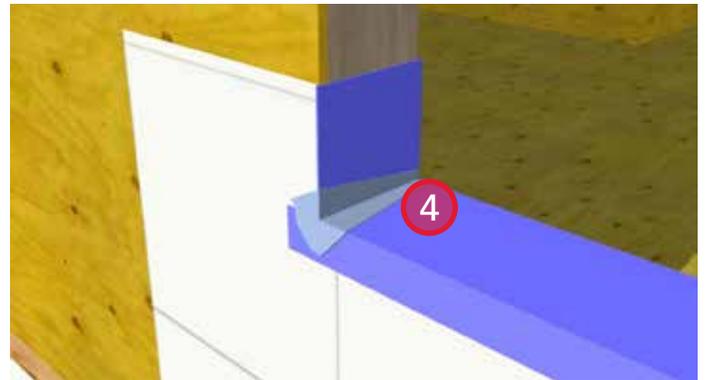
1. Typical wood frame construction at sheathing stage.



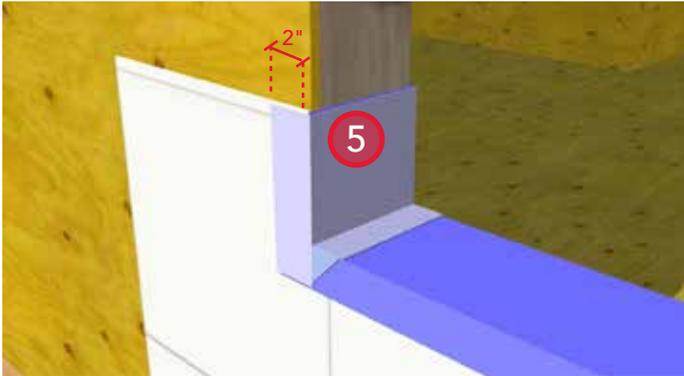
2. Install starter strip of sheathing membrane below the window rough opening. Seal the leading edges to the wall membrane below with sheathing tape.



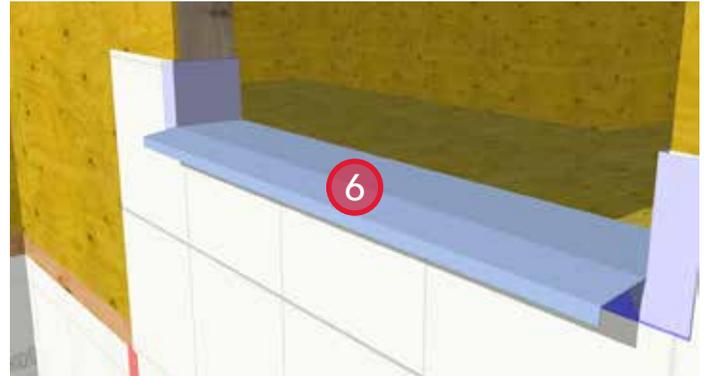
3. Install self-adhered sill membrane. Extend membrane up the jambs and onto the face of the wall.



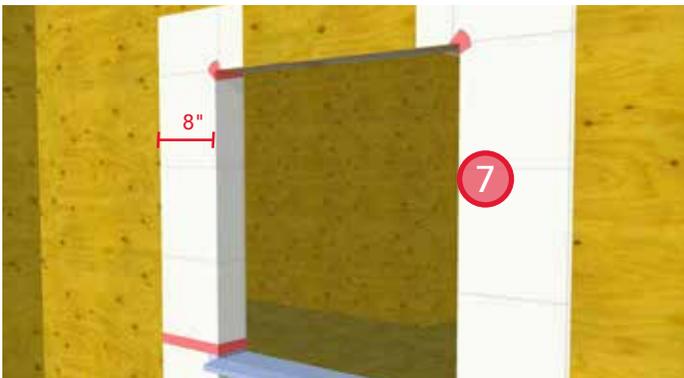
4. Install self-adhered membrane gussets at lower corners.



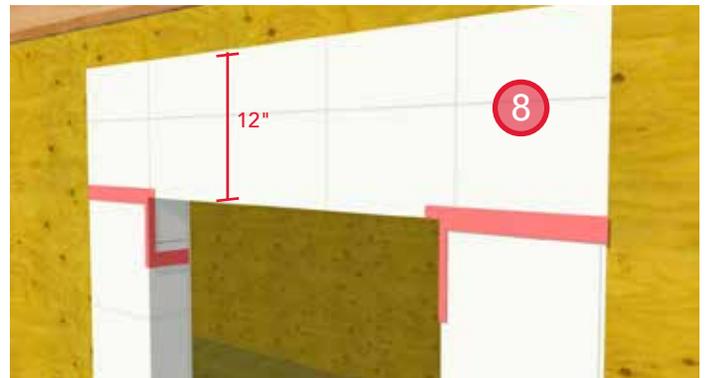
5. Install self-adhered membrane at sill corners, extending up the jamb to the height of the sheathing membrane. Finish the self-adhered membrane 2" onto the face of the wall.



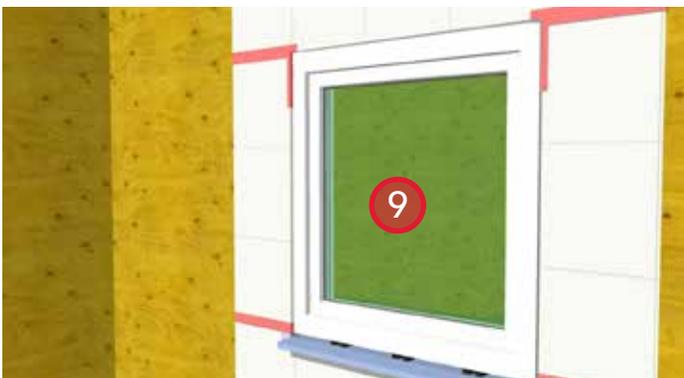
6. Install self-adhered subsidiary sill membrane to aid in water diversion over the ROCKWOOL COMFORTBOARD™. Leave the backer on the unsupported portion of the membrane until insulation is installed.



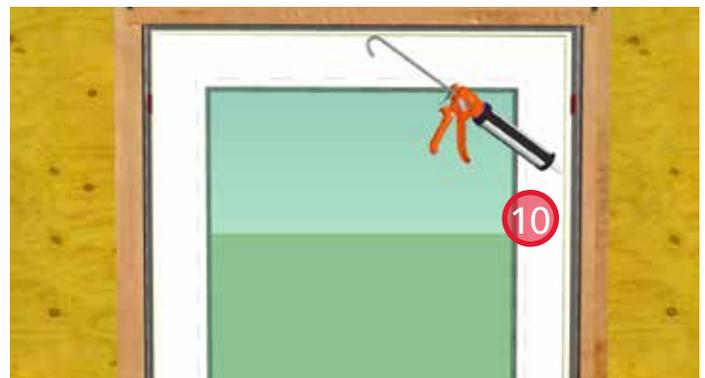
7. Install sheathing membrane pre-strips at the jambs and extend onto face of wall a minimum of 8". Lap the sheathing membrane over the self-adhered membrane at the corners and seal the leading edges with sheathing tape.



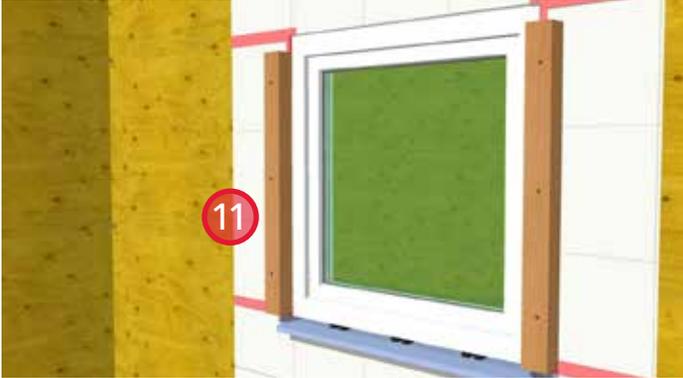
8. Install sheathing membrane at the head of the rough opening, extending a minimum of 12" up the face of the wall. Seal the leading edges with sheathing tape.



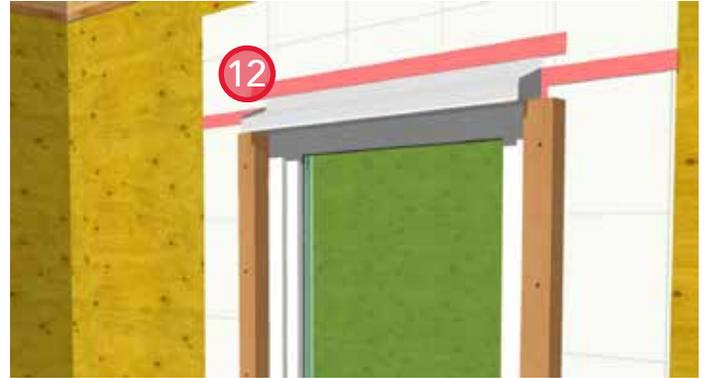
9. Install and structurally attach window per manufacturer's specifications. Position the window at the front of the rough opening in order to minimize thermal bridging effects.



10. Install backer rod and sealant around the interior perimeter of the window to complete air barrier continuity.



11. Install 2x4 blocking at jambs to support future stucco returns.



12. Install metal flashing at the head of the window. Seal the leading edge of the flashing with sheathing tape.



13. Install sheathing membrane. Ensure positive laps over all other layers. Seal all membrane laps with sheathing tape.



14. Install ROCKWOOL COMFORTBOARD™ and secure with strapping. Provide bugscreens at the top and bottom of the strapping.



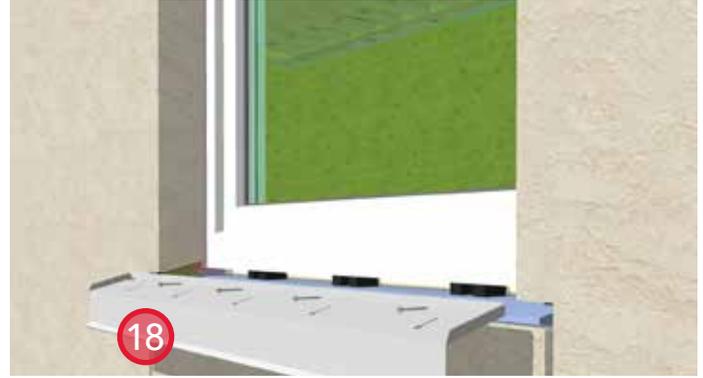
15. Secure stucco backer board and metal lath to the strapping. Secure backer board to blocking at jambs to support stucco returns.



16. Install stucco scratch coat. Provide horizontal and vertical gaps (control joints) as necessary to account for differential movement between the wood framing and stucco cladding.



17. Install stucco brown coat and finish coat.



18. Install prefinished metal sill flashing. Refer to window manufacturer's specifications for more information.

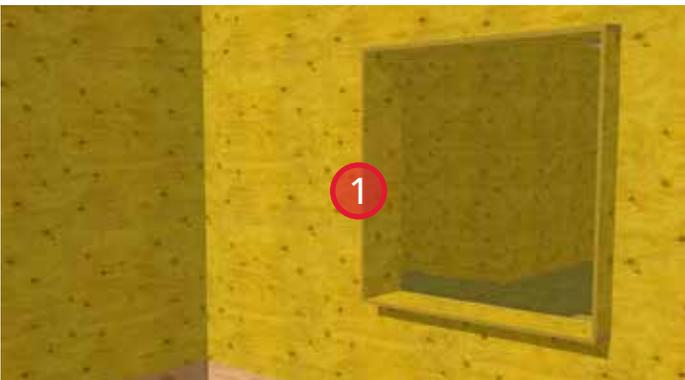
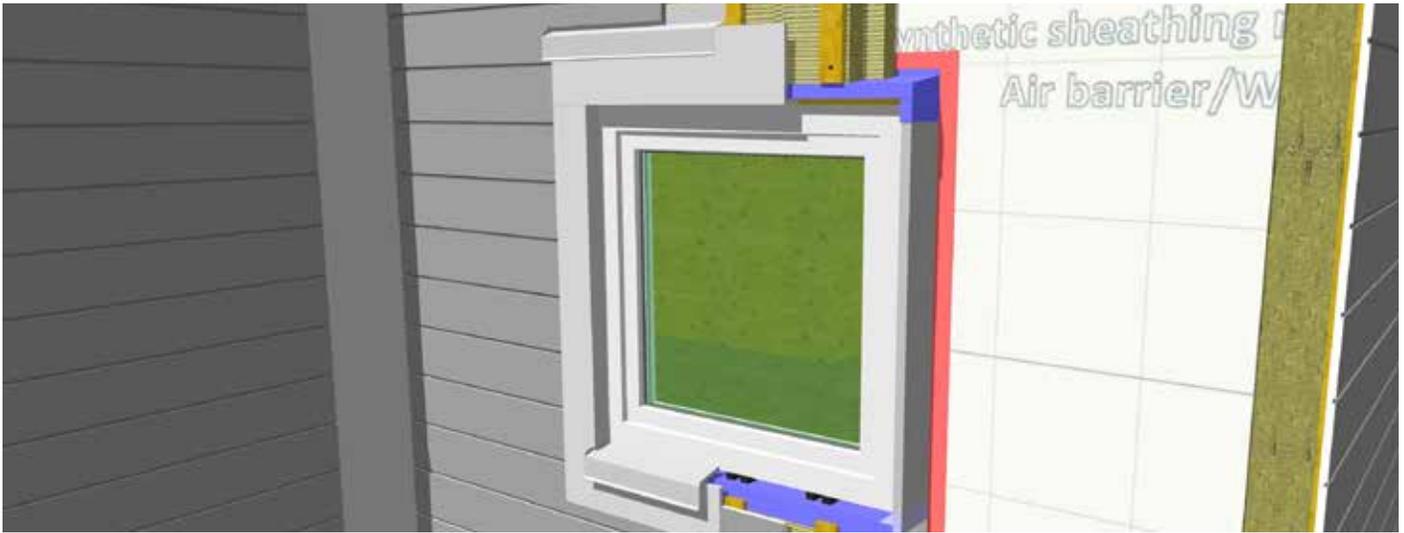


19. Apply sealant between the metal flashing and the window sill.

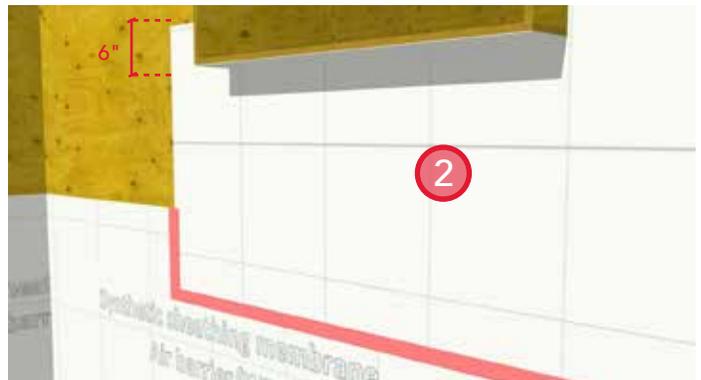


20. Install sealant around the perimeter of the window (top and sides) between the frame and stucco returns.

# Non-Flange Mounted Window (Buck-out, Deep Insulation)



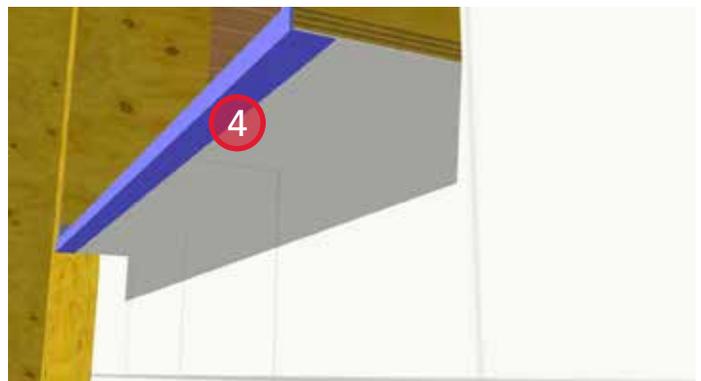
1. Typical wood frame construction at sheathing stage with 3/4" plywood window buck. The window buck depth should match the thickness of the installed insulation. Install sloped window head at top of buck-out.



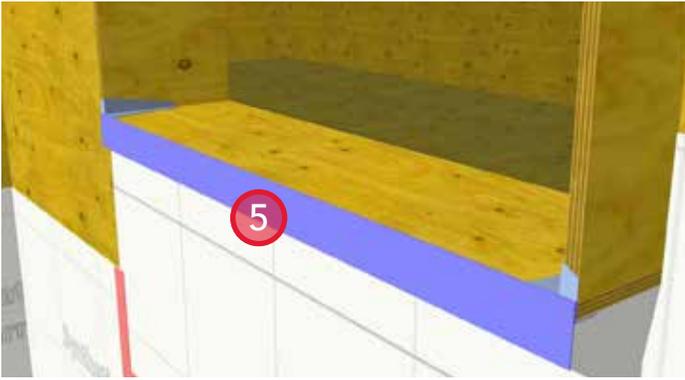
2. Install starter strip of sheathing membrane below the window rough opening. Slit sheathing membrane to cover underside of window buck-out. Seal the leading edges to the wall membrane below with sheathing tape.



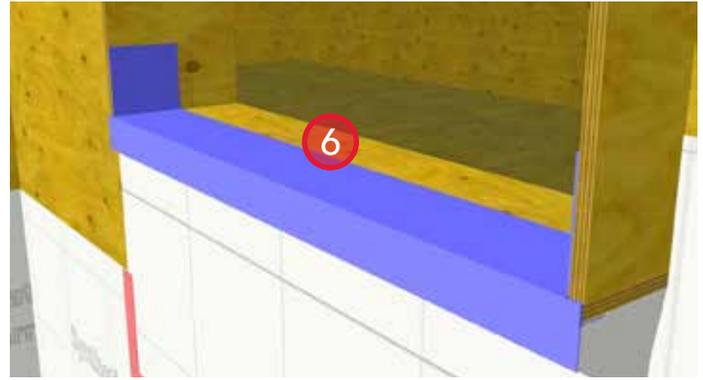
3. Install self-adhered membrane gussets at lower corners.



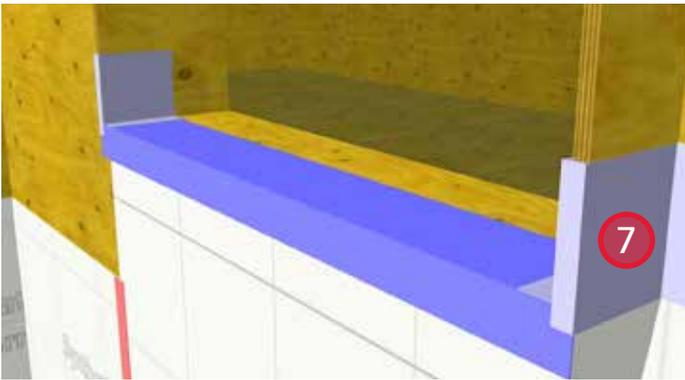
4. Install self-adhered membrane between sheathing membrane and edge grain of plywood buck-out.



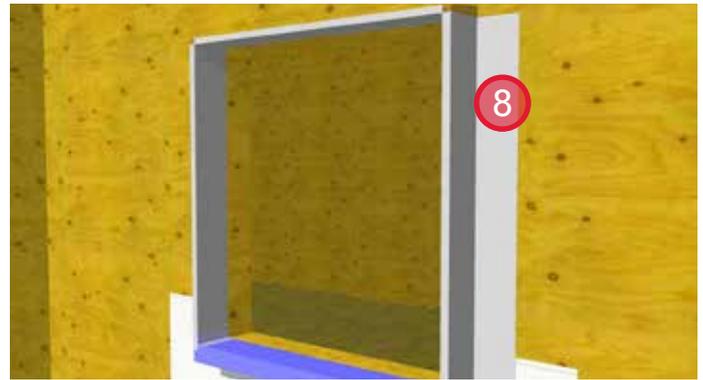
5. Install self-adhered membrane skirt to exterior face of plywood buck-out to aid in water diversion over the ROCKWOOL COMFORTBOARD™. Leave backer on unsupported portion of the membrane until after exterior insulation is installed.



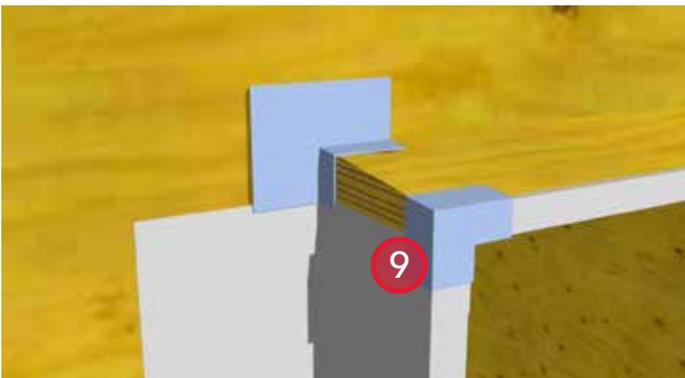
6. Install self-adhered sill membrane. Extend the membrane up the jambs and over the self-adhered membrane skirt.



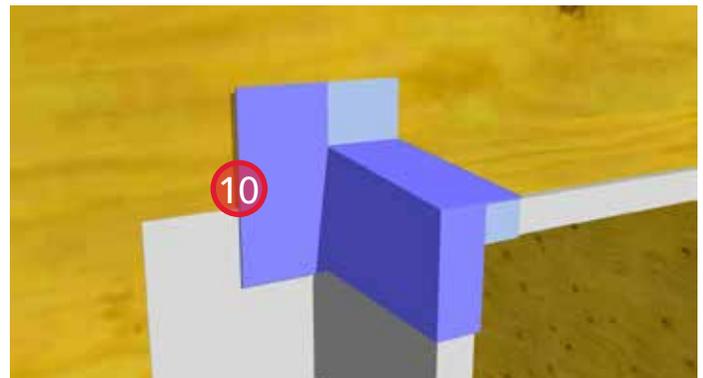
7. Install self-adhered membrane at sill corners, extending up the jamb to the height of sheathing membrane and wrapping around the buck-out onto the sheathing membrane prestrip a minimum 3".



8. Wrap the buck-out jambs and window head with vapor permeable self-adhered membrane and positively lap over the membrane below.



9. Install self-adhered membrane gussets at the top corners of the buck-out and at transition to plywood sheathing.

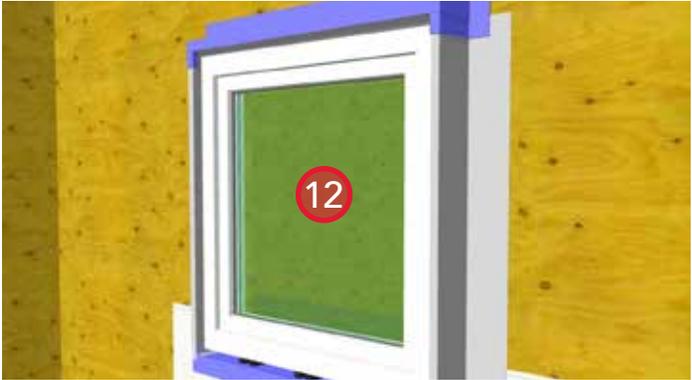


10. Apply self-adhered membrane<sup>1</sup> to plywood sheathing immediately above window head to transition gussets to plywood sheathing and ensure membrane continuity.

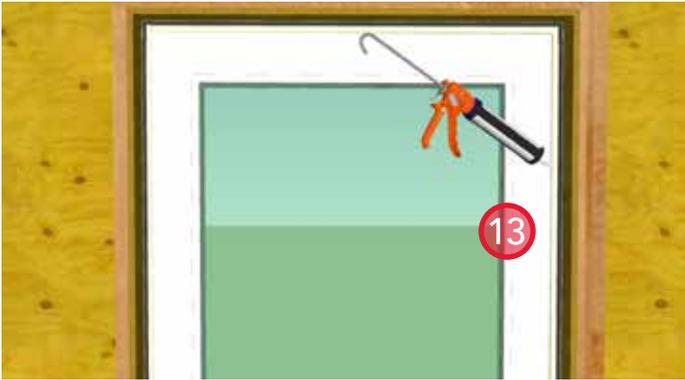
<sup>1</sup> Vapor permeable liquid-applied flashing membranes can be used in place of self-adhered membrane at the head and jambs of the window rough opening (buck-out).



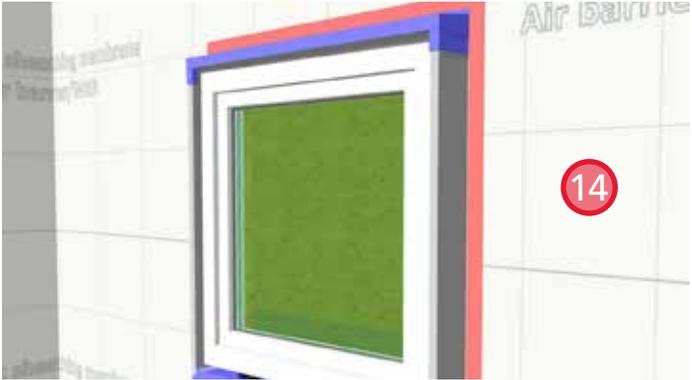
11. Install self-adhered membrane over the top of the plywood buck-out extending onto the plywood sheathing.



12. Install and structurally attach the window per manufacturer's specifications. Position the window at the front of the buck-out in order to minimize thermal bridging effects.



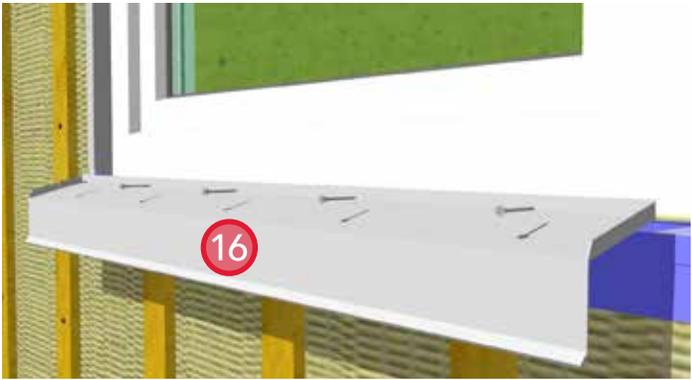
13. Install backer rod and sealant around the interior perimeter of the window to complete air barrier continuity.



14. Install sheathing membrane. Ensure positive laps over all other layers. Seal all membrane laps with sheathing tape.



15. Install two layers of ROCKWOOL COMFORTBOARD™ and secure with strapping. Provide bugscreens at the top and bottom of the strapping.



16. Install prefinished metal sill flashing. Refer to window manufacturer's specifications for more information.



17. Apply sealant between the metal flashing and the window sill.



18. Install window trim.



19. Install metal flashing to the strapping at the top window trim board to aid in water diversion.

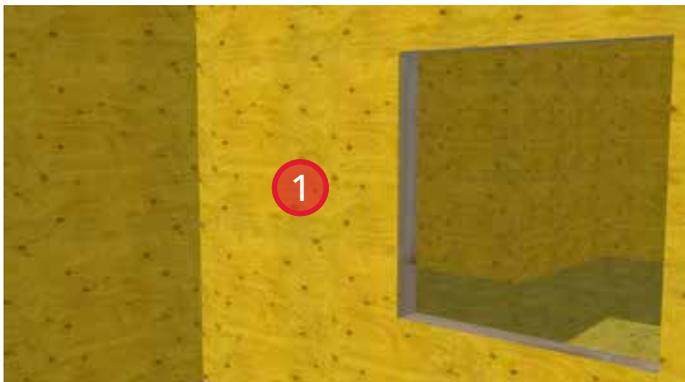
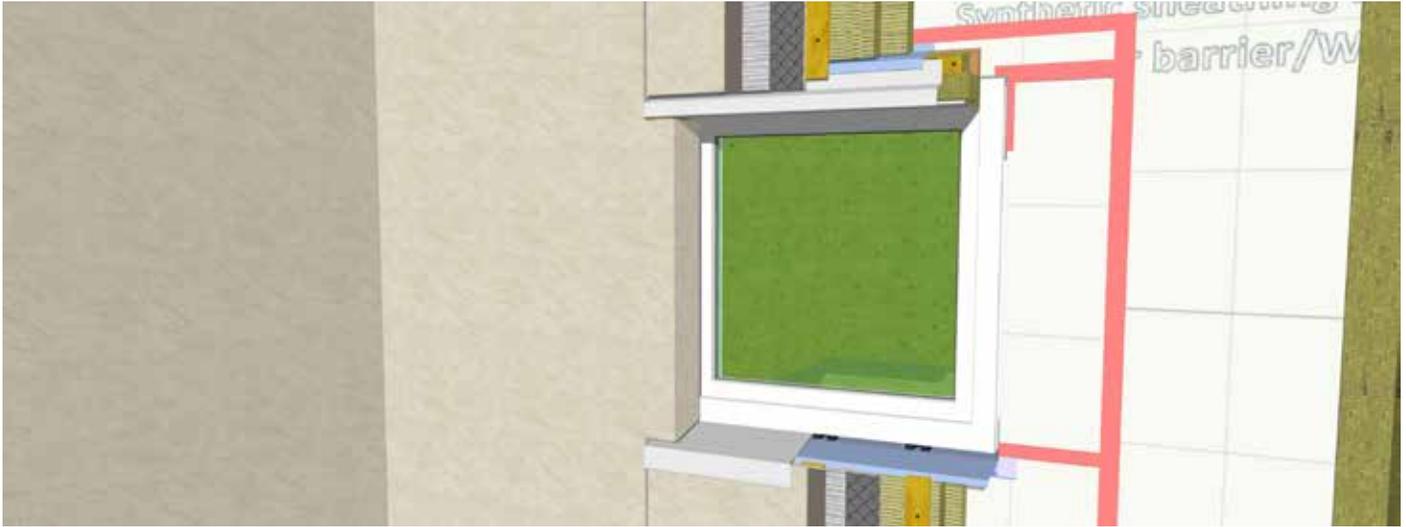


20. Install cladding.

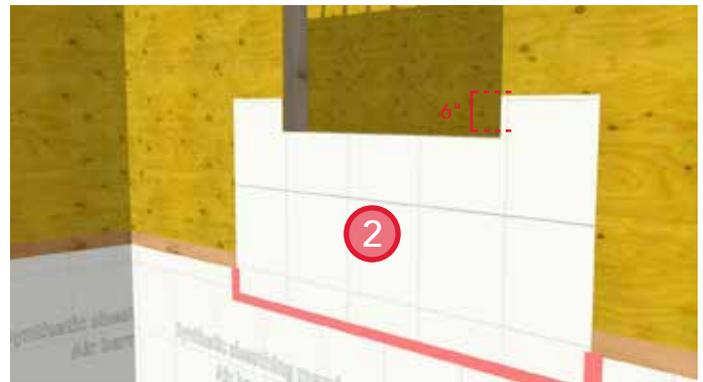


21. Apply sealant around the perimeter of the window (top and sides) between the frame and window trim boards.

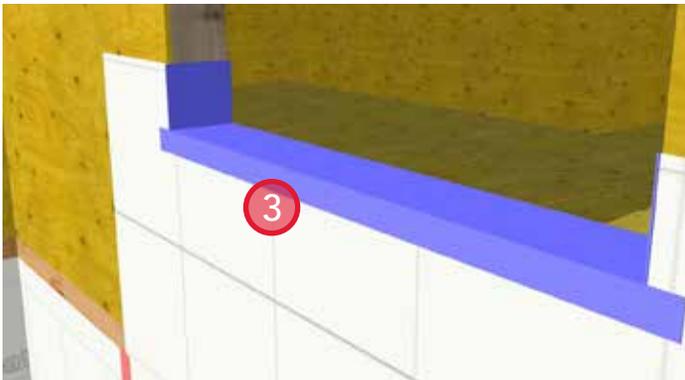
## Non-Flange Mounted Window (Stucco, Deep Insulation)



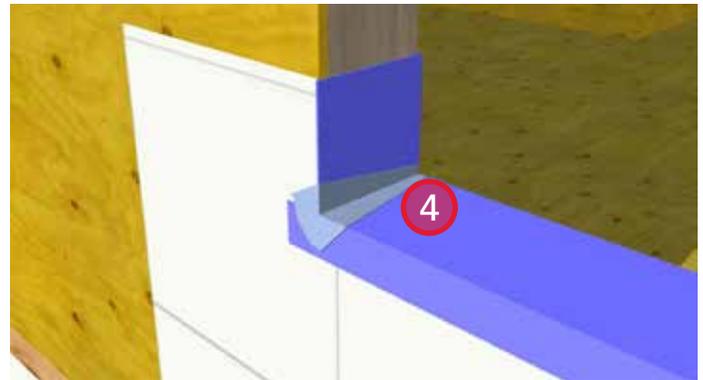
1. Typical wood frame construction at sheathing stage.



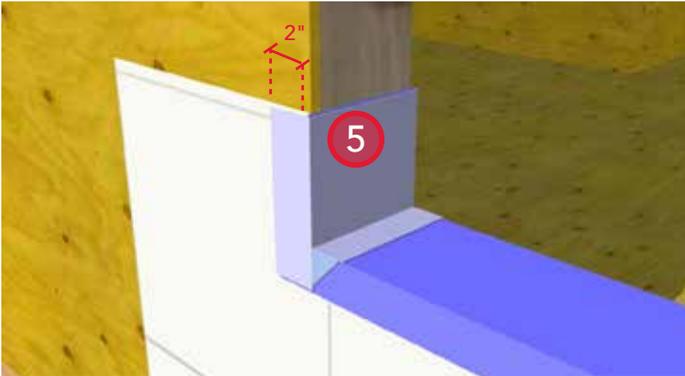
2. Install starter strip of sheathing membrane below the window rough opening. Seal the leading edges to the wall membrane below with sheathing tape.



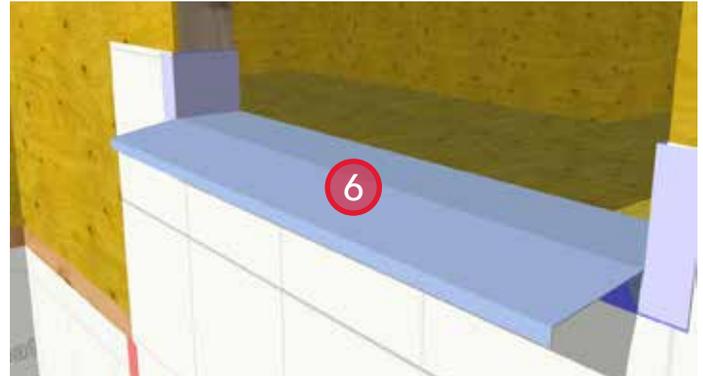
3. Install self-adhered sill membrane. Extend membrane up the jambs and onto the face of the wall.



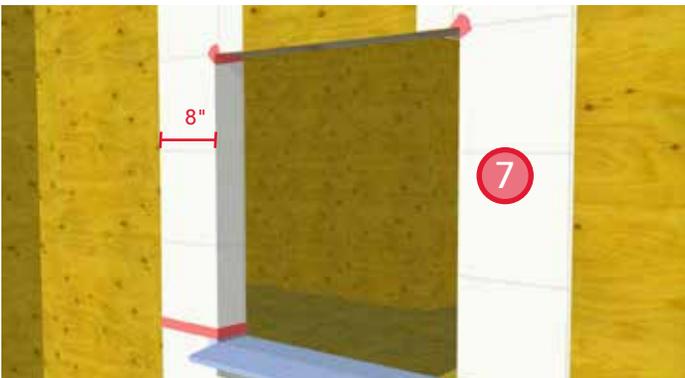
4. Install self-adhered membrane gussets at lower corners.



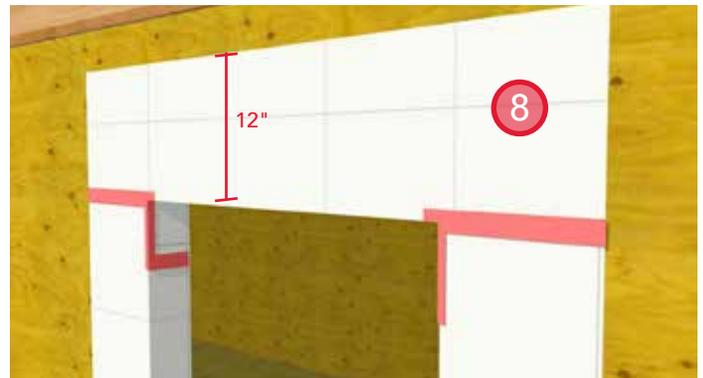
5. Install self-adhered membrane at sill corners, extending up the jamb to the height of the sheathing membrane. Finish the self-adhered membrane 2" onto the face of the wall.



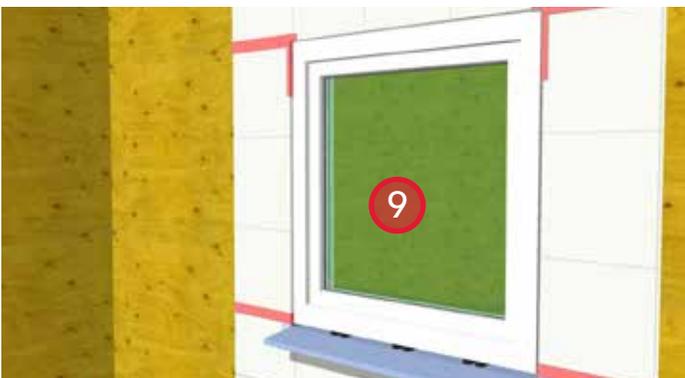
6. Install self-adhered subsidiary sill membrane to aid in water diversion over the ROCKWOOL COMFORTBOARD™. Leave the backer on the unsupported portion of the membrane until insulation is installed.



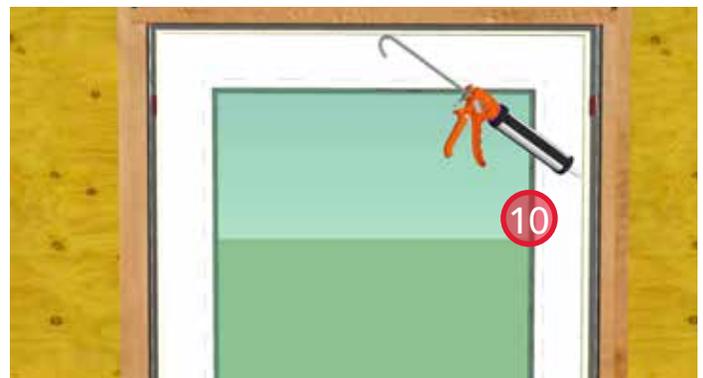
7. Install sheathing membrane pre-strips at the jambs and extend onto face of wall a minimum of 8". Lap the sheathing membrane over the self-adhered membrane at the corners and seal the leading edges with sheathing tape.



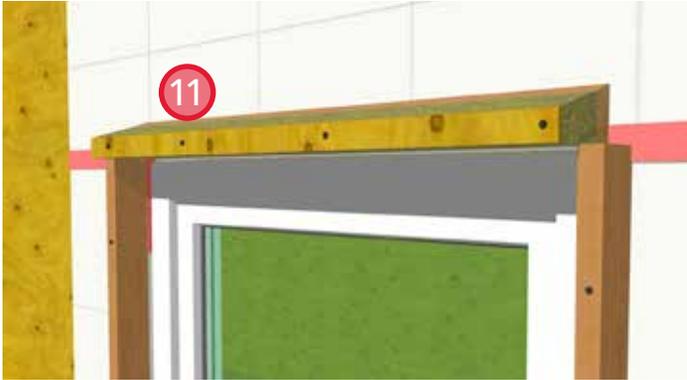
8. Install sheathing membrane at the head of the rough opening, extending a minimum of 12" up the face of the wall. Seal the leading edges with sheathing tape.



9. Install and structurally attach window per manufacturer's specifications. Position the window at the front of the rough opening in order to minimize thermal bridging effects.



10. Install backer rod and sealant around the interior perimeter of the window to complete air barrier continuity.



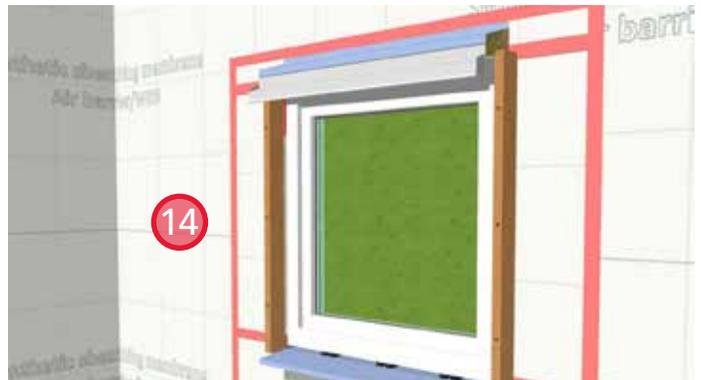
11. Install on-end 2x4 blocking at jambs to support future stucco returns. At the head, add insulation between a plywood strip and blocking to match future wall depth. Taper top of insulation to provide slope for through wall flashing membrane.



12. Install metal flashing to the head blocking assembly to aid in water diversion.



13. Install self-adhered membrane through wall flashing over the head blocking assembly and metal flashing back leg.



14. Install sheathing membrane. Ensure positive laps over all other layers. Seal all membrane laps with sheathing tape.



15. Install two layers of ROCKWOOL COMFORTBOARD™ and secure with strapping. Provide bugscreens at the top and bottom of the strapping.



16. Install prefinished metal sill flashing. Refer to window manufacturer's specifications for more information.



17. Apply sealant between the metal flashing and the window sill. Install stucco cladding. Secure stucco returns to blocking at the jambs.



18. Install additional ROCKWOOL COMFORTBOARD™ at the jambs and head to over-insulate the window frame and secure with strapping fastened back to the blocking.



19. Secure stucco backer board and metal lath to the strapping. Secure backer board to blocking at jambs to support stucco returns.



20. Install stucco scratch coat. Provide horizontal and vertical gaps (control joints) as necessary to account for differential movement between the wood framing and stucco cladding.



21. Install stucco brown coat and finish coat.



22. Install sealant around the perimeter of the window (top and sides) between the frame and stucco returns.

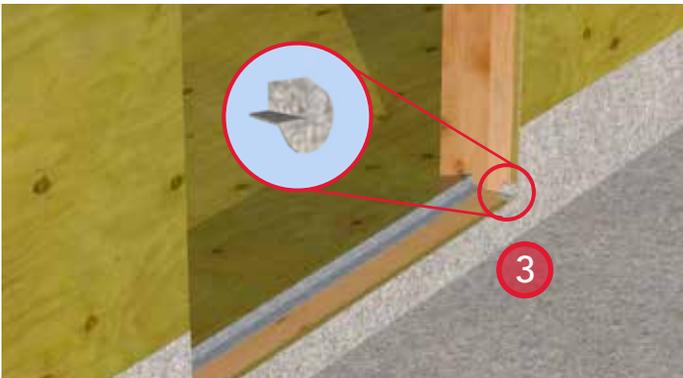
# Swing Door



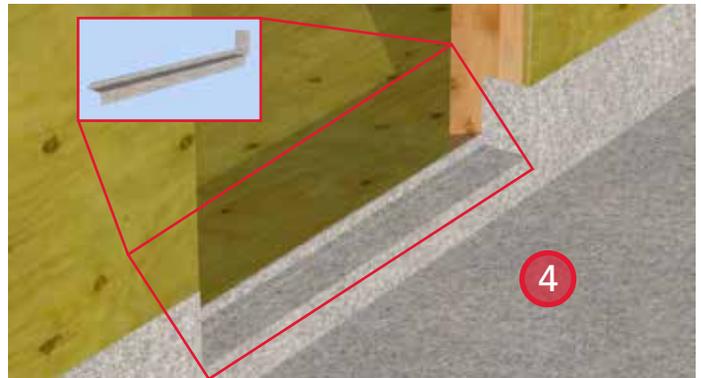
1. Typical wood frame rough opening for swing door. A back angle has been installed in the rough opening to aid in water diversion.



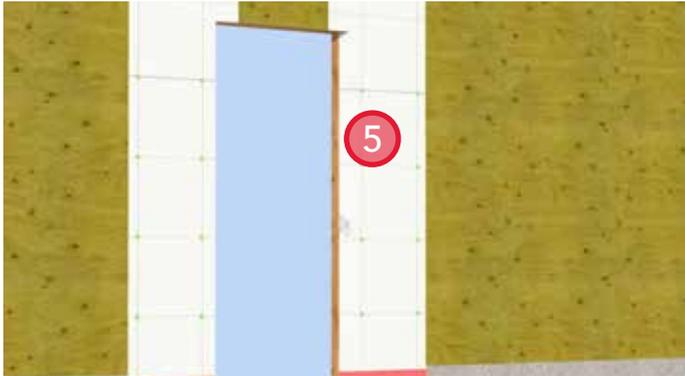
2. Install PVC balcony membrane. Extend the membrane to the height of the rough opening and elsewhere to a minimum height of 8" above the finished deck grade.



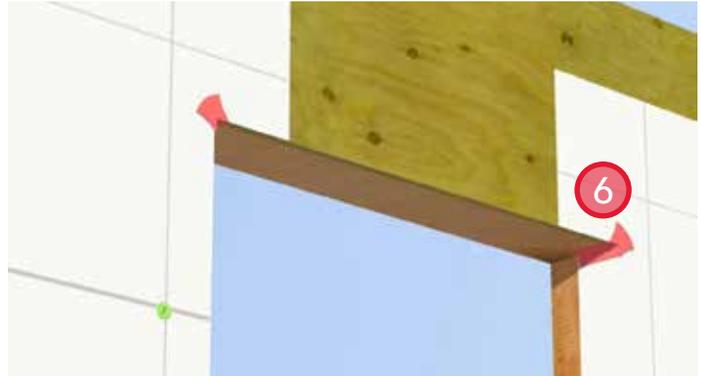
3. Install gussets made from PVC membrane at the corners of the rough opening.



4. Install a sill membrane constructed from PVC membrane. Extend the membrane 2" onto the face of the wall and up the jamb a minimum of 6".



5. Install sheathing membrane at the jambs and seal the leading edge with sheathing tape. Extend the membrane into the rough opening.



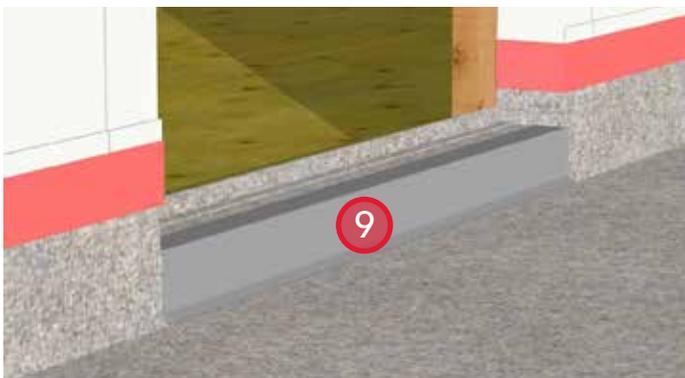
6. Install gussets constructed from sheathing tape at the upper corners of the rough opening.



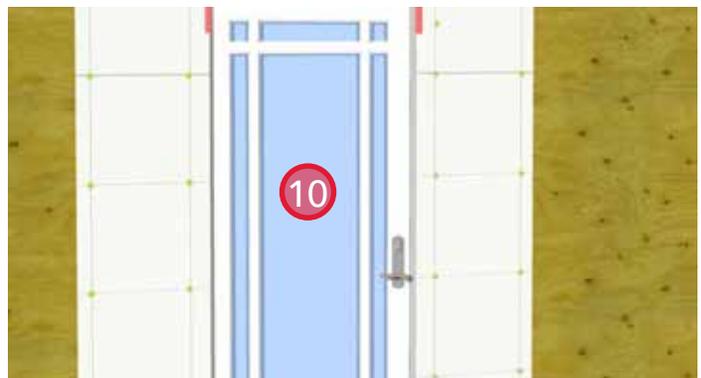
7. Install sheathing membrane at the head. Return the sheathing membrane into the rough opening.



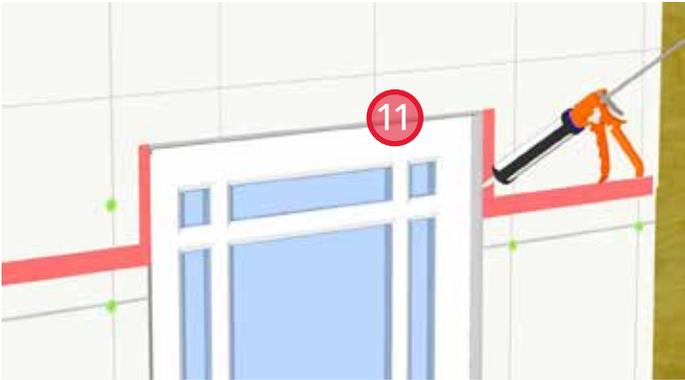
8. Install sheathing tape at the leading edges of the sheathing membrane to maintain air barrier continuity.



9. Install sub-sill prefinished metal flashing. Adhere to the PVC deck membrane to avoid puncture of the membrane.



10. Install and structurally attach swing door per manufacturer's specifications.



11. Install backer rod and sealant around the exterior perimeter of the door frame.



12. Install backer rod and sealant around the interior perimeter of the door frame to maintain air barrier continuity.



13. Install sheathing membrane to the rest of the wall. Seal the vertical leading edge with sheathing tape to maintain air barrier continuity.



14. Install sheathing membrane from above and seal the leading edge with sheathing tape to maintain air barrier continuity. Ensure the sheathing membrane laps over membrane layers below.



15. Install ROCKWOOL COMFORTBOARD™ and secure in place with strapping. Provide bugscreens at the bottom and top of the strapping.



16. Install swing door trim boards.

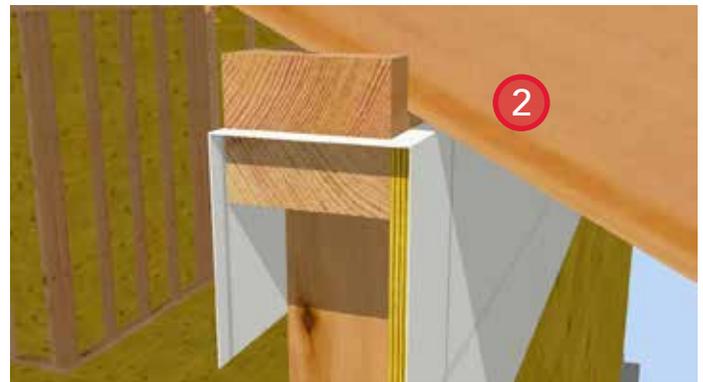
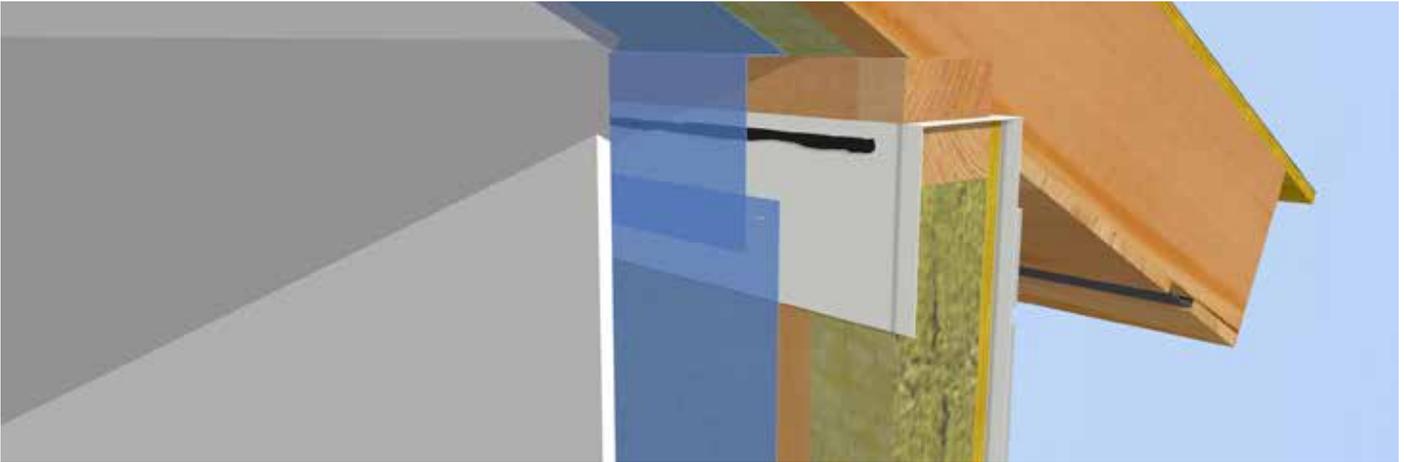


17. Install metal flashing to the strapping above the top trim board to aid in water diversion.



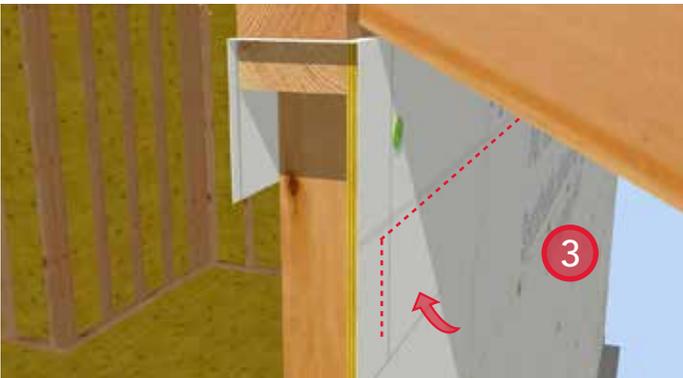
18. Install cladding.

## Above Grade Wall to Sloped Roof (Cathedral)



1. Install a starter strip of sheathing membrane between the top plates of the exterior walls. This will allow the air barrier to transition from the exterior sheathing membrane to the interior poly.

2. Install roof framing and roofing.



3. Install lower sheathing membrane. Make sure to lap under the starter strip.

4. Seal the leading edge of the starter strip sheathing membrane with sheathing tape to maintain air barrier continuity.



5. Install soffit material and vents.



6. Install ROCKWOOL COMFORTBOARD™ and strapping to the exterior of the wall. Provide bugscreens at the top and bottom of the strapping.



7. Install cladding. Allow for venting of the wall cavity at the top of the cladding underside of the soffit.



8. Install ROCKWOOL COMFORTBATT® in the stud cavities and roof cavity. Provide venting per building code requirements.



9. Install the poly sheet on the interior face of the wall. Fasten the poly to the sheathing membrane with staples at each stud.



10. Install a bead of acoustical sealant on the sheathing membrane at the lower top plate to transition the air barrier from the wall to the ceiling.

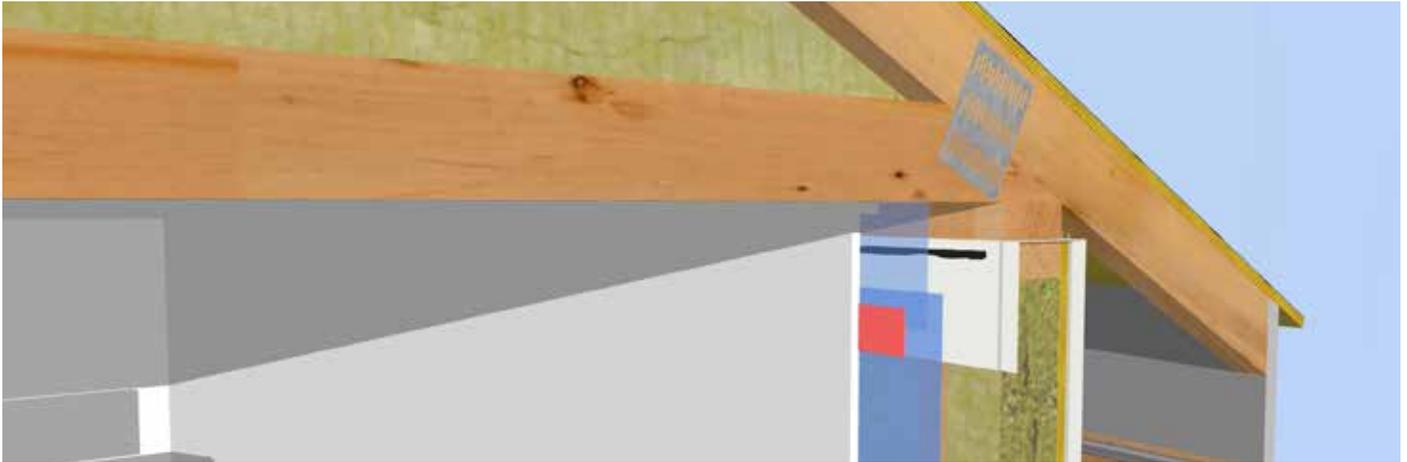


11. Install the poly sheet to the underside of the roof rafters. Fasten the poly sheet to the sheathing membrane with staples at the sealant bead to complete the air seal and seal the leading edge with sheathing tape.

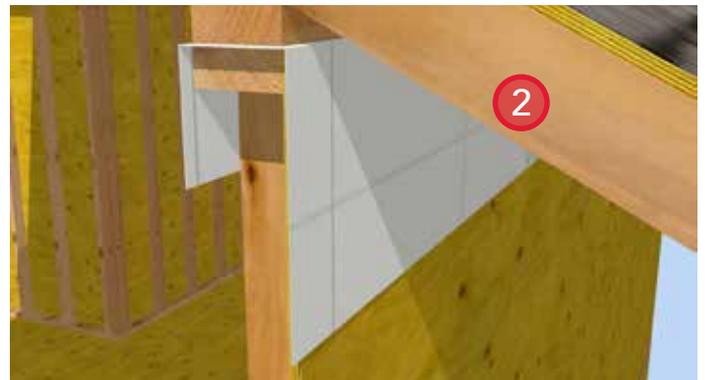


12. Install interior finishes.

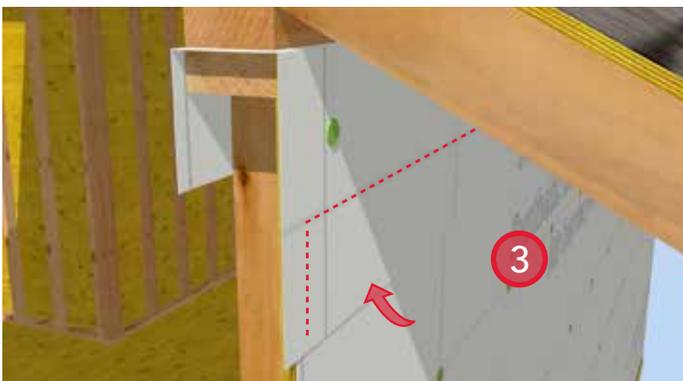
## Above Grade Wall to Sloped Roof (Attic)



1. Install a starter strip of sheathing membrane between the top plates of the exterior walls. This will allow the air barrier to transition from the exterior sheathing membrane to the interior poly.



2. Install roof framing and roofing.



3. Install lower sheathing membrane. Make sure to lap under the starter strip.



4. Install sheathing tape at the leading edge of the sheathing membrane to complete air barrier continuity.



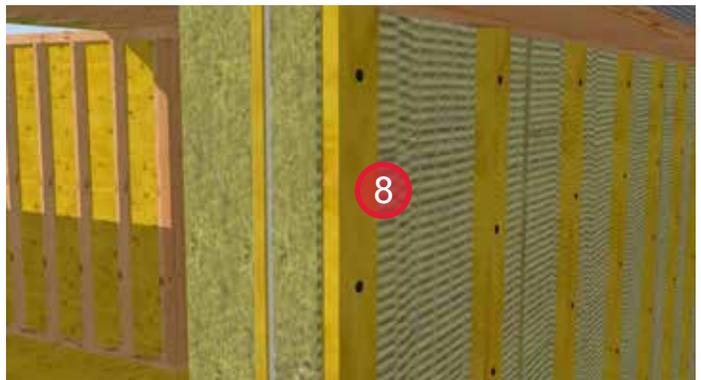
5. Install a 2x4 ledger board to support the soffit material and venting.



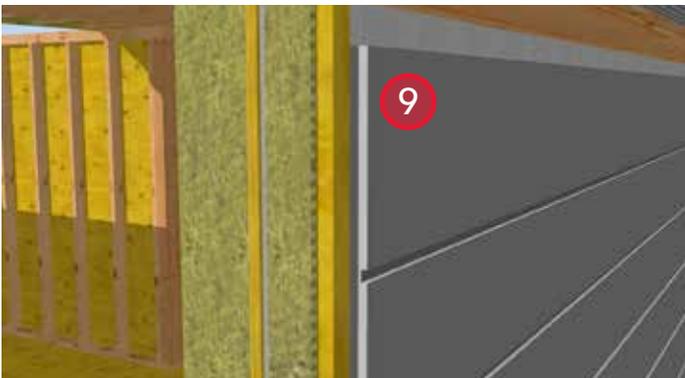
6. Install ROCKWOOL COMFORTBOARD™ and secure with recommended fasteners.



7. Install soffit materials and venting.



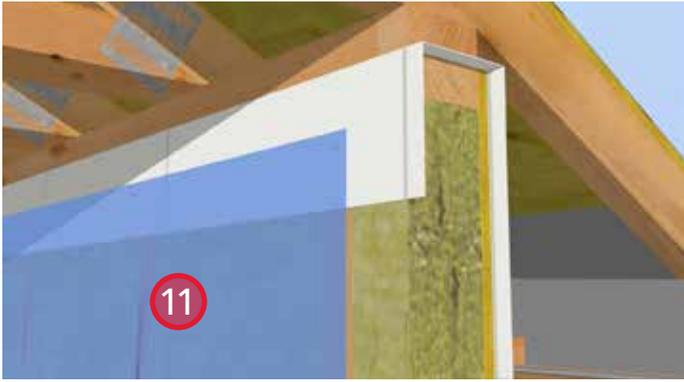
8. Install ROCKWOOL COMFORTBOARD™ and strapping. Provide bugscreens at the top and bottom of the strapping.



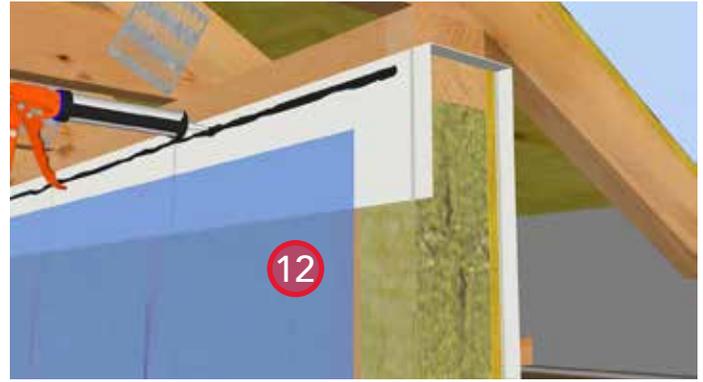
9. Install cladding. Provide venting at the top of the wall to allow for the free movement of air through the wall cavity. It is not recommended to vent the wall cavity into the roof.



10. Install ROCKWOOL COMFORTBATT® within the interior stud cavities.



11. Install poly and fasten to the sheathing membrane at each stud with staples.



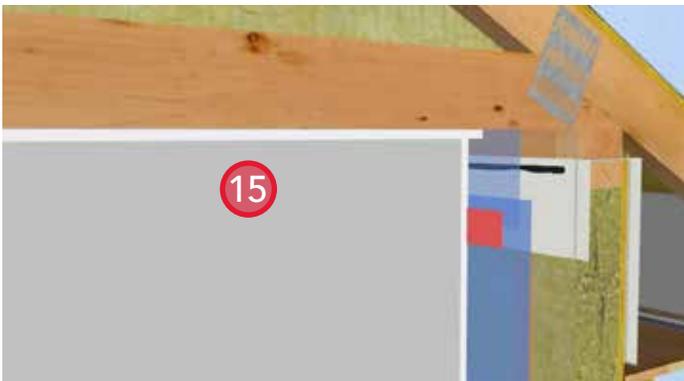
12. Install a bead of acoustical sealant to the sheathing membrane at the lower top plate to transition the air barrier from the wall to the ceiling.



13. Install poly to the underside of the roof rafters and fasten with staples at the sealant bead to complete the air seal. Seal the leading edge of the poly with sheathing tape to maintain vapor barrier continuity.

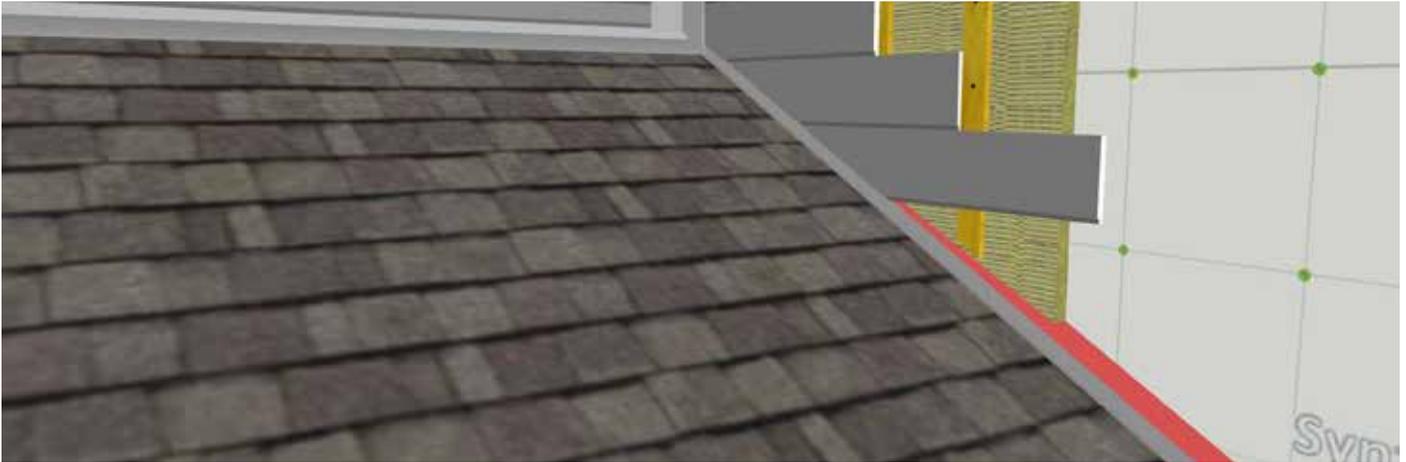


14. Install interior finishes.



15. Install ROCKWOOL COMFORTBATT® in the attic space.

# Sloped Roof At Intersecting Wall



1. Install a starter strip of sheathing membrane that will extend beyond the framing of the roof.



2. Construct the exterior load bearing wall. The wall must be bedded in sealant to the extent of the starter strip of sheathing membrane. See next step.



3. Install roof framing and deck material.



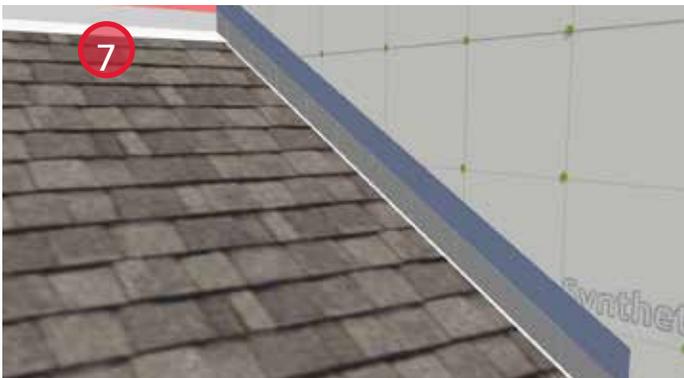
4. Install waterproof roof membrane. Return the membrane up the vertical face of the adjoining walls 1" beyond the projected back leg of the closure flashing.



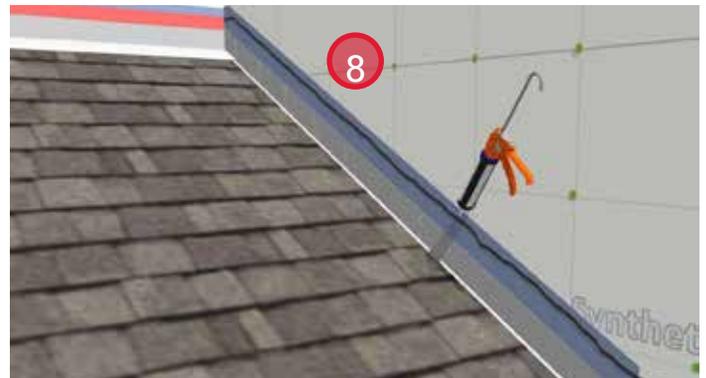
5. Install first step of the stepped flashing with a kickout to divert water towards the gutter and away from the adjacent wall.



6. Install step flashing and shingles.



7. Install prefinished metal closure flashing on the above wall and seal the leading edge with sheathing tape.



8. Install sealant along the exposed waterproof roof deck membrane. Extend the sealant down to the extent of overlap from the above layer of sheathing membrane to maintain air barrier continuity.



9. Install sheathing membrane. Ensure it laps over the prefinished metal closure flashing.



10. Seal all edges of the sheathing membrane with sheathing tape.



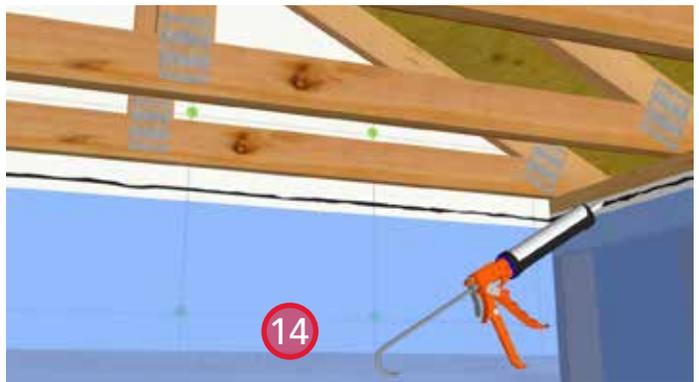
11. Install ROCKWOOL COMFORTBOARD™ and secure in place with strapping. Provide bugscreens at the top and bottom of the strapping.



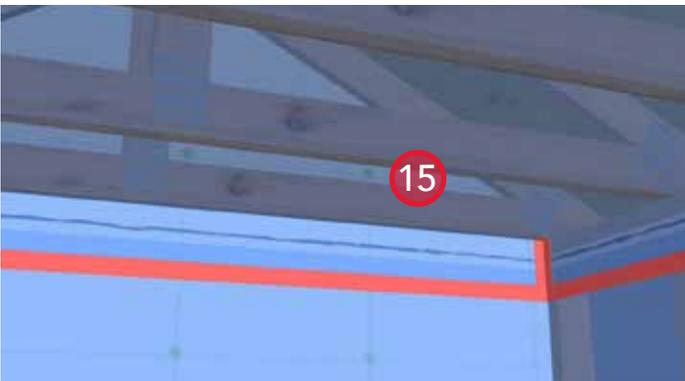
12. Install cladding and trim.



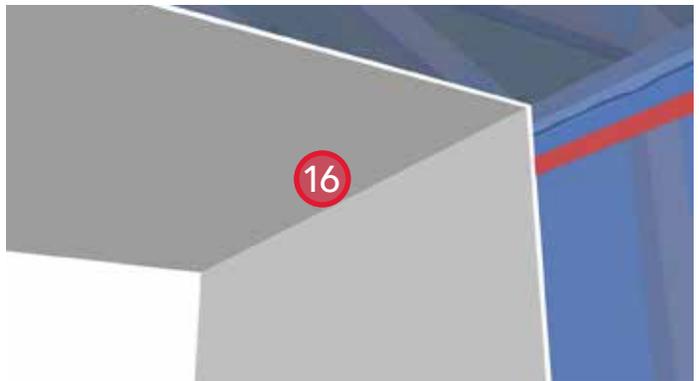
13. Install poly on the walls and fasten to the sheathing membrane with staples.



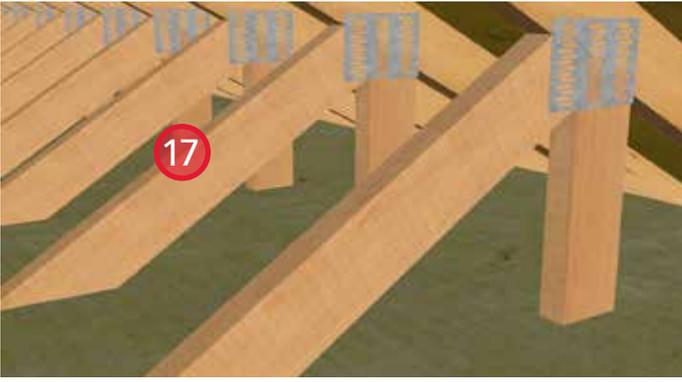
14. Install a bead of acoustical sealant along the sheathing membrane in line with the lower top plate of the exterior wall.



15. Install poly to the underside of the roof framing and fasten with staples at the sealant bead to complete the air seal. Seal the leading edge with sheathing tape.

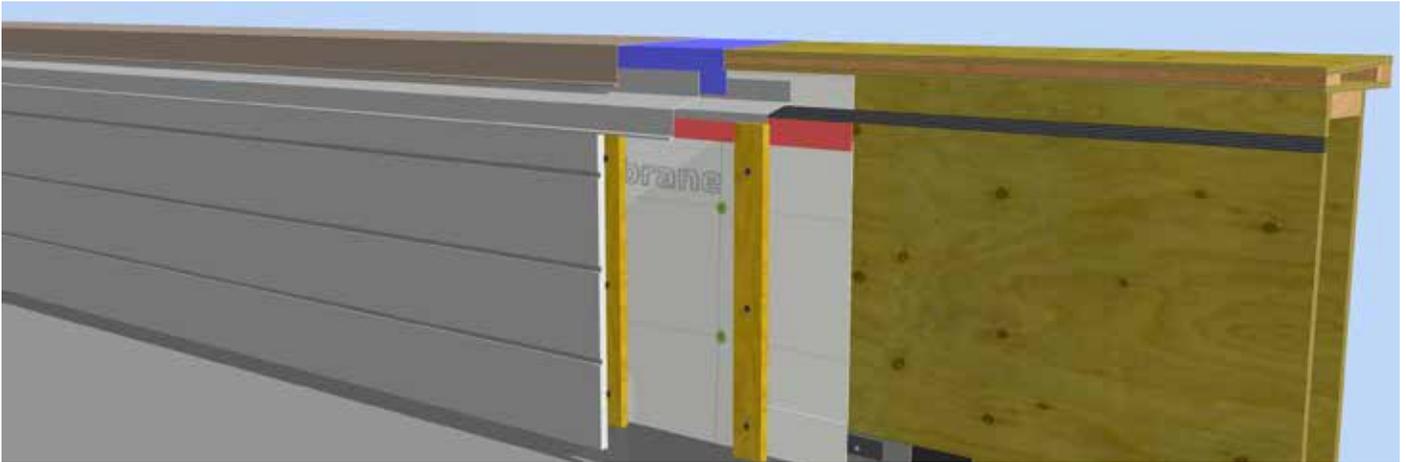


16. Install interior finishes.



17. Install ROCKWOOL COMFORTBATT® in the attic to the depth necessary to achieve desired R-value.

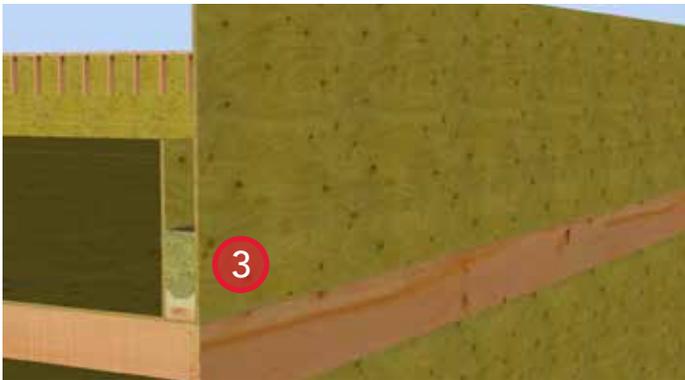
## Low Sloped Roof (Conventional) To Wall Parapet



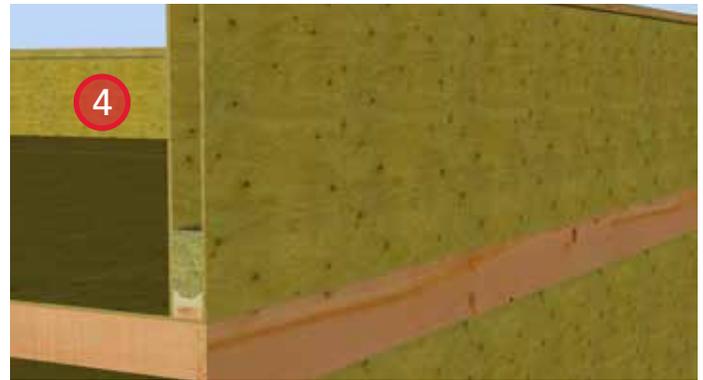
1. Typical conventional roof assembly construction. Parapet is partly framed to allow installation of insulation in the stud cavities.



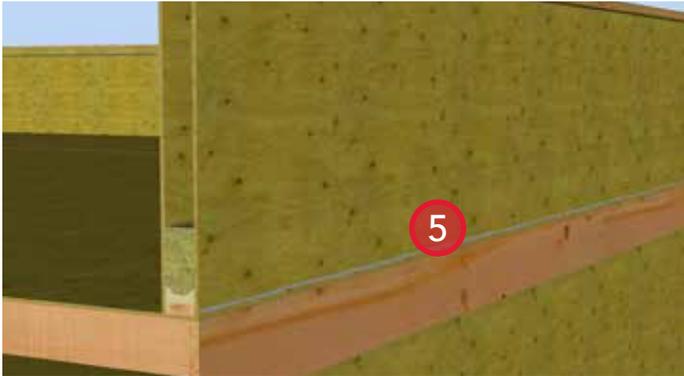
2. Install one 2" lift of 2 lb. closed-cell spray foam in the stud cavities of the parapet. Ensure the spray foam bonds to the sill plate and the sides of the parapet to complete the air barrier.



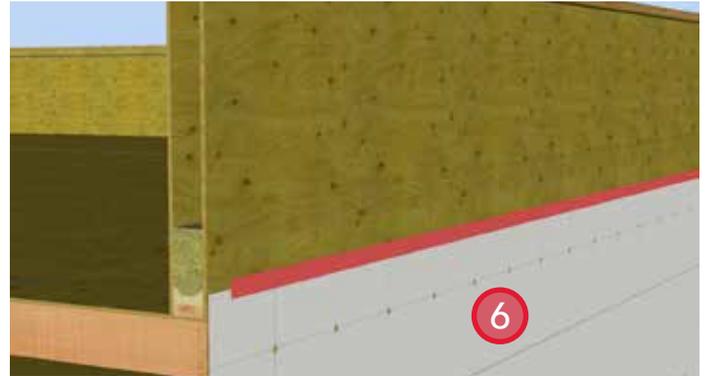
3. Install ROCKWOOL COMFORTBATT® insulation within the parapet to a height of the roof insulation as a minimum.



4. Complete the framing of the parapet.



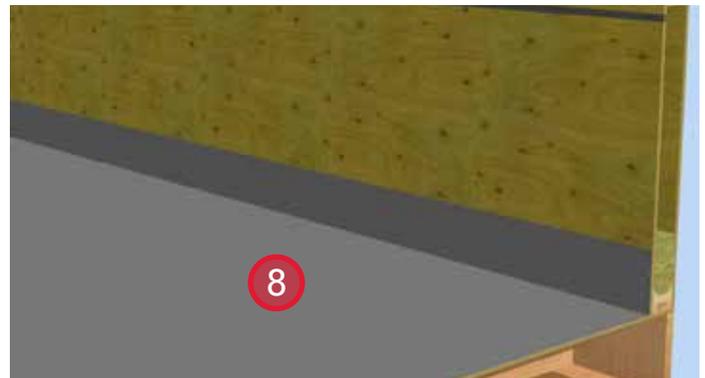
5. Install sealant at the leading edge of the sheathing membrane prior to installation of the sheathing membrane to improve adhesion and ensure air barrier continuity.



6. Install sheathing membrane and seal the leading edge with sheathing tape.



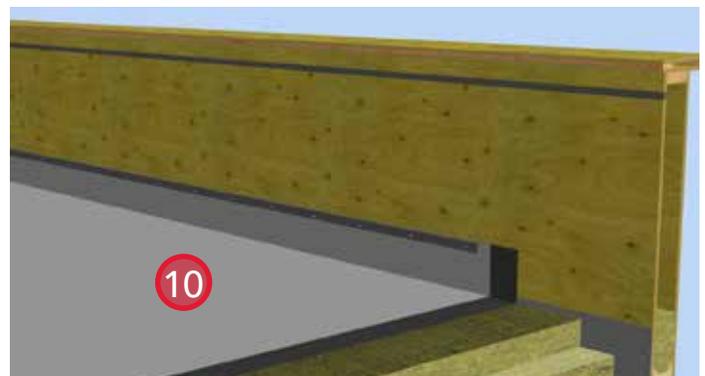
7. Install second layer of sheathing membrane and seal the leading edge with sheathing tape.



8. Install self-adhered waterproof membrane to the roof deck. Extend the membrane onto the parapet a minimum height of the roof insulation.



9. Install ROCKWOOL TOPROCK® DD as the bottom layer and TOPROCK® DD PLUS as the top layer.



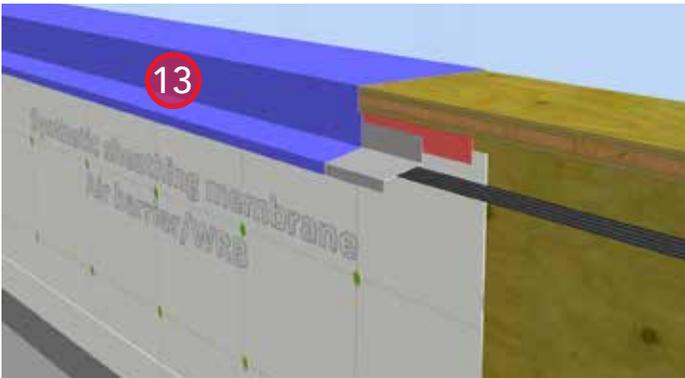
10. Install 2-PLY SBS modified bitumen roofing membrane and fasten leading edge with a termination bar. Extend roofing 8" above finished grade.



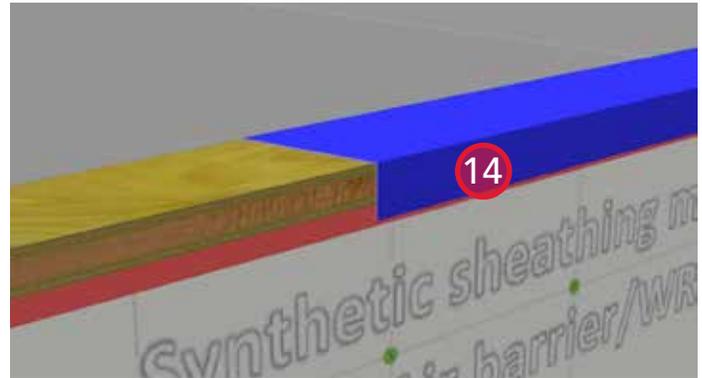
11. Install sheathing membrane as a water resistive barrier for the parapet. Seal the leading edge of the membrane with sheathing tape.



12. Install metal sub-flashing above parapet vent.



13. Install high-temperature, self-adhered membrane over the parapet coping. Extend the self-adhered membrane over the metal subflashing.



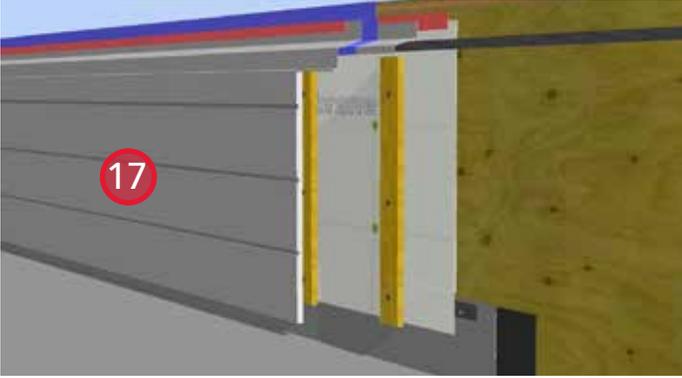
14. Leave the self-adhered membrane 0.5-0.75" long over the coping on the outside of the building to facilitate drainage away from the parapet.



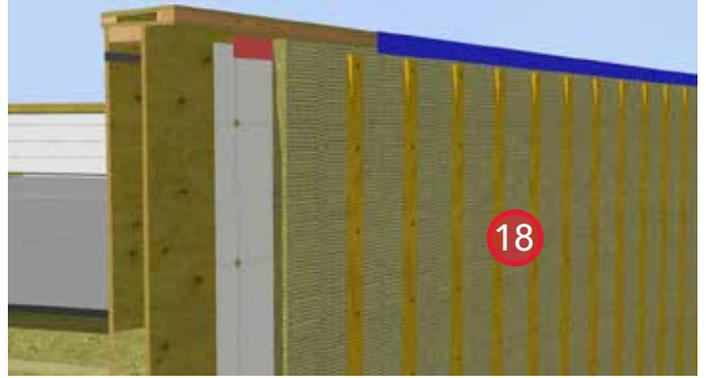
15. Install metal flashing and seal backleg with sheathing tape.



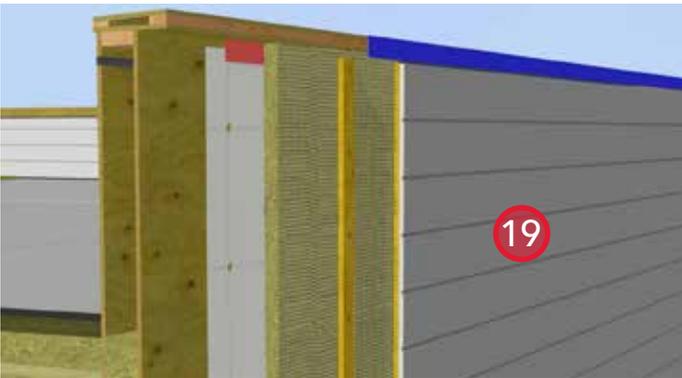
16. Install strapping and secure with recommended fasteners. Provide bugscreen at the top and bottom of the strapping and at the parapet vent.



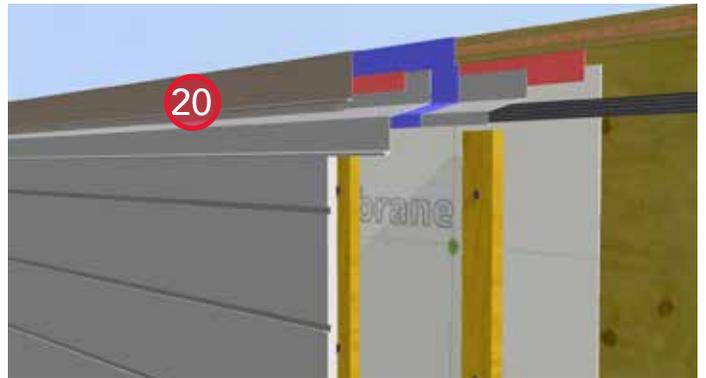
17. Install cladding.



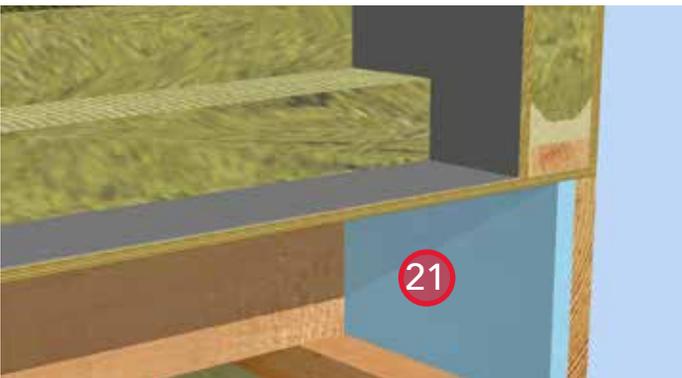
18. Install ROCKWOOL COMFORTBOARD™ on the face of wall, extending up to the parapet. Secure with strapping.



19. Install cladding.



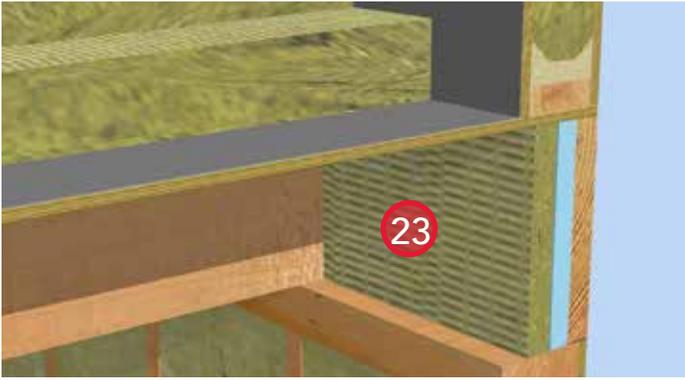
20. Install parapet cap.



21. Install extruded polystyrene insulation on the interior of the rim joist in the rafter cavities.

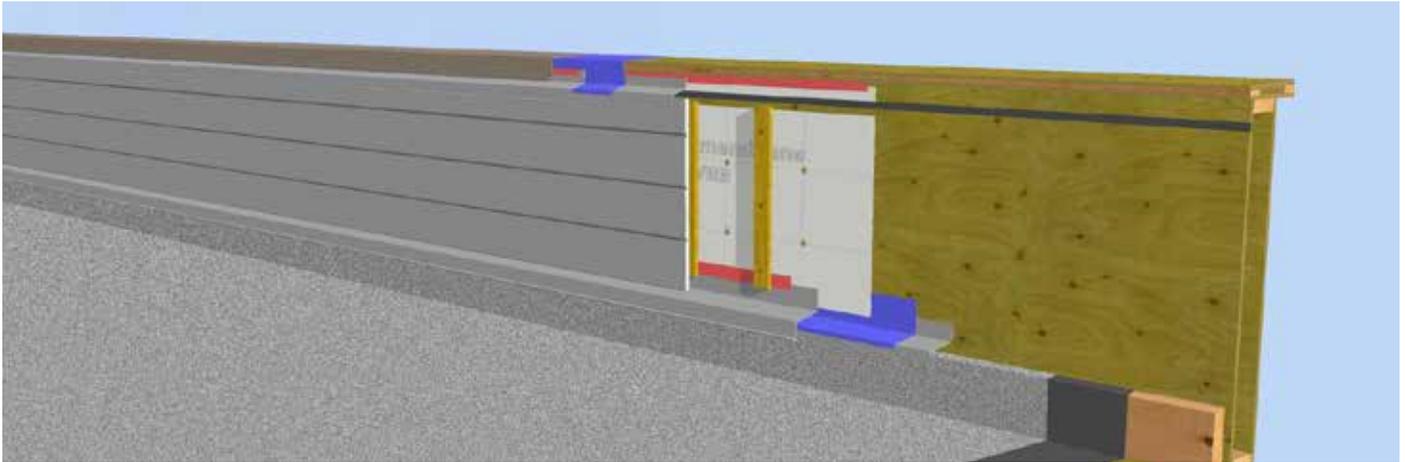


22. Install 2lb. closed-cell spray foam along the inside perimeter to maintain thermal barrier continuity.



23. ROCKWOOL CAVITYROCK® and ROCKWOOL COMFORTBOARD™ can be used to meet thermal requirements of foamed plastics.

## Low Sloped Roof (Vented) To Wall Parapet



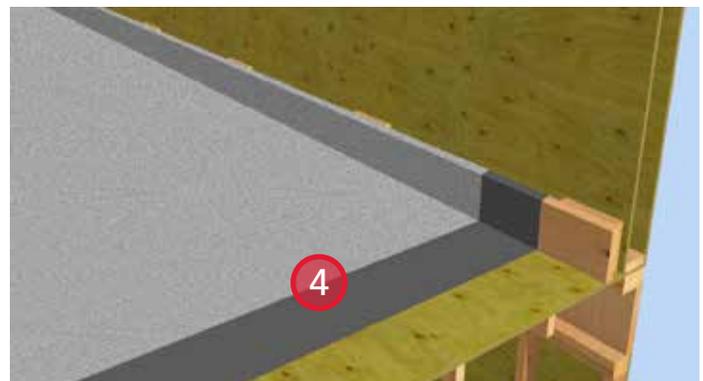
1. Typical vented roof assembly construction. Beveled strapping provides drainage slope.



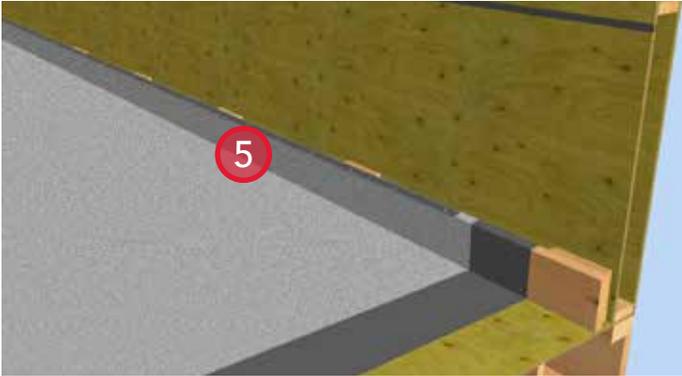
2. Provide ventilation in the roof deck. Drill 1" diameter holes along the perimeter. Roof ventilation will likely be supplemented with dog house vents.



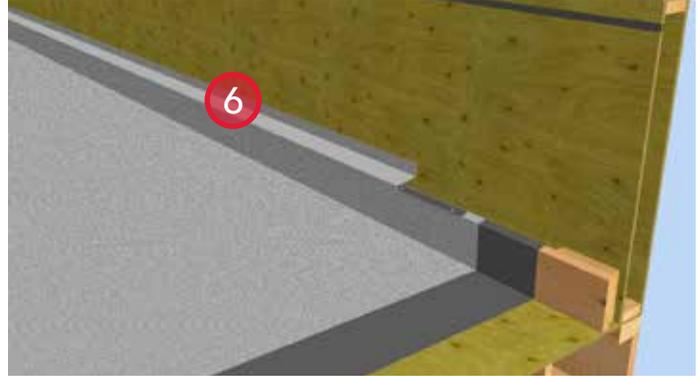
3. Install ventilation curb. Ensure the height of the curb is a minimum of 8" above the finished grade of the roof deck.



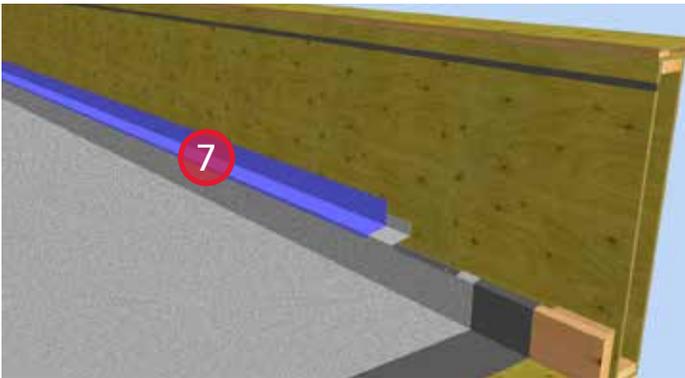
4. Install 2-Ply SBS modified bitumen roofing membrane. Install protection board if not using a torch-grade selfadhered base ply.



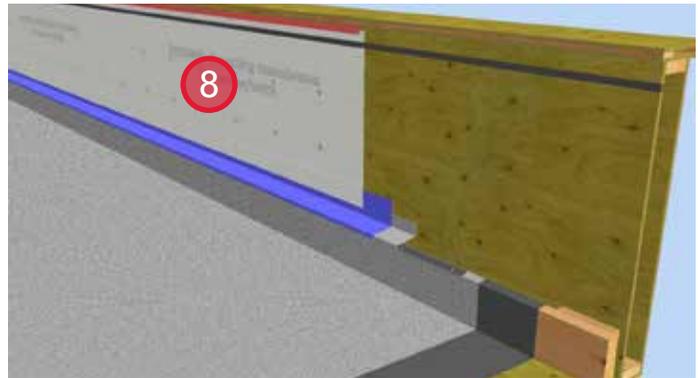
5. Back nail the leading edge of the roofing membrane or secure with a termination bar.



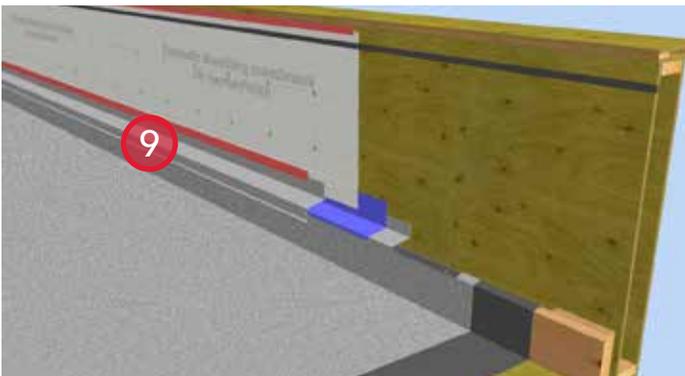
6. Install metal sub-flashing over ventilation curb. Provide bugscreen at ventilation curb.



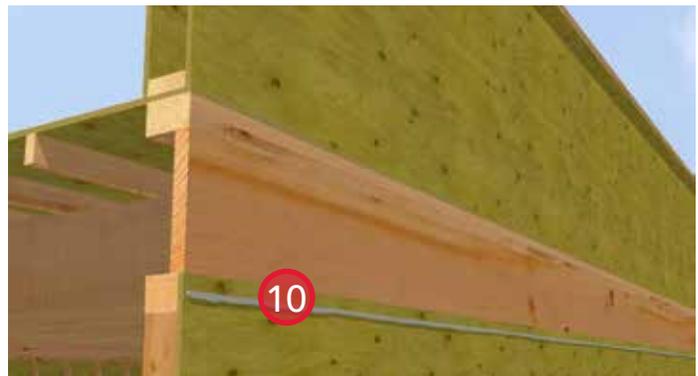
7. Install self-adhered membrane from the parapet wall to the sub-flashing and extend over the sub-flashing.



8. Install sheathing membrane. Seal leading edge with sheathing tape. Cut out strip adjacent parapet vent to allow for ventilation.



9. Install metal flashing and seal backleg with sheathing tape.



10. Install sealant bead in line with wall top plate. The air barrier transitions from the wall through the wall top plate to the poly sheet on the underside of the roof.<sup>1</sup>

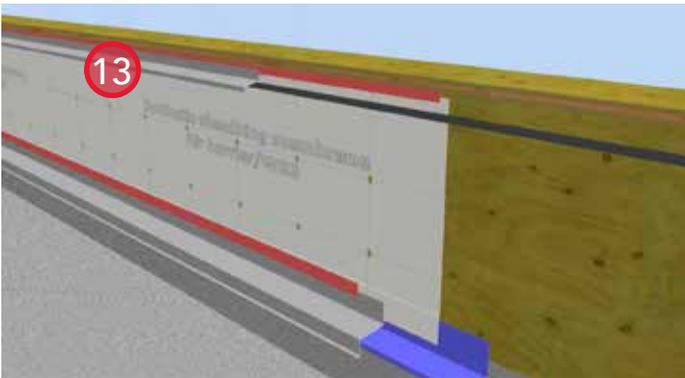
<sup>1</sup> Alternate air barrier detailing for this transition is referenced in Detail 22 – Sloped Roof (Attic) to Above Grade Wall



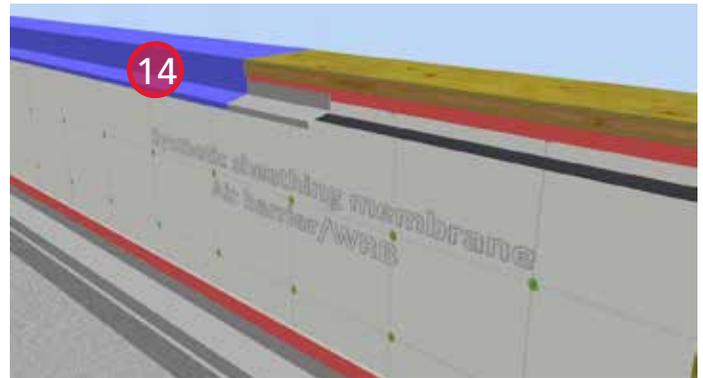
11. Install sheathing membrane and seal the leading edge with sheathing tape. Ensure pressure is applied to seal the sheathing membrane to the sealant bead.



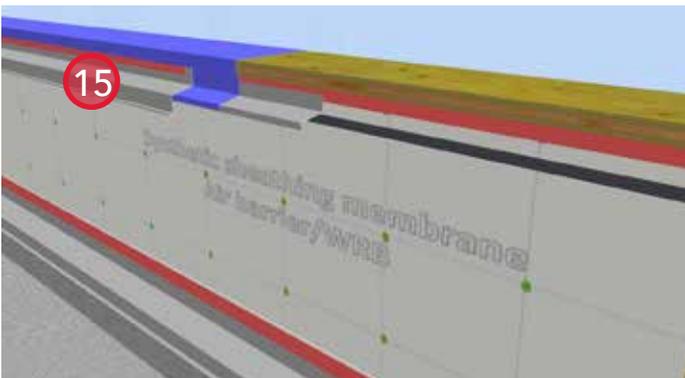
12. Install second layer of sheathing membrane and seal leading edges with sheathing tape.



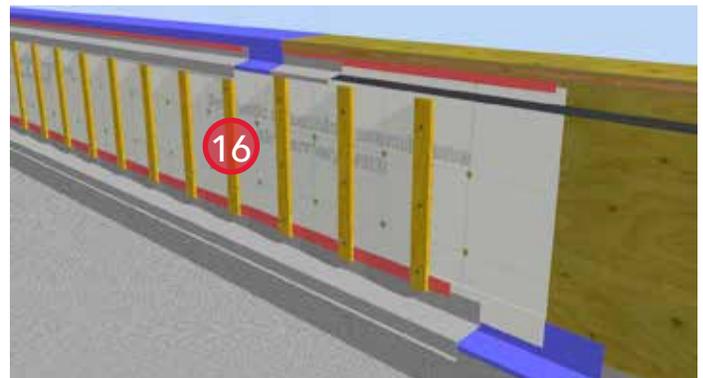
13. Install metal sub-flashing above parapet vent.



14. Install high-temperature, self-adhered membrane over parapet coping and extend onto metal sub-flashing.



15. Install metal flashing and seal backleg with sheathing tape.



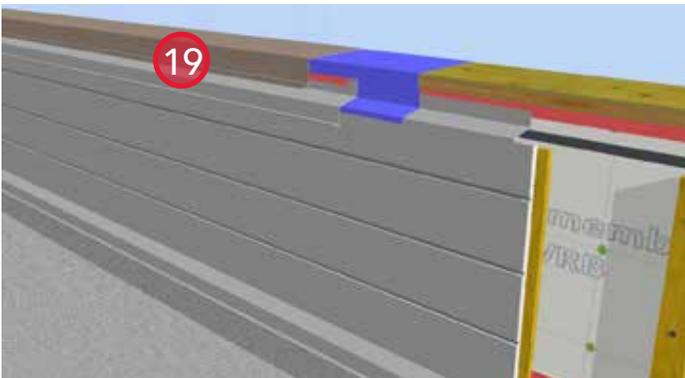
16. Install strapping. Ensure bugscreen is installed at the top and bottom of the strapping and at the parapet vent.



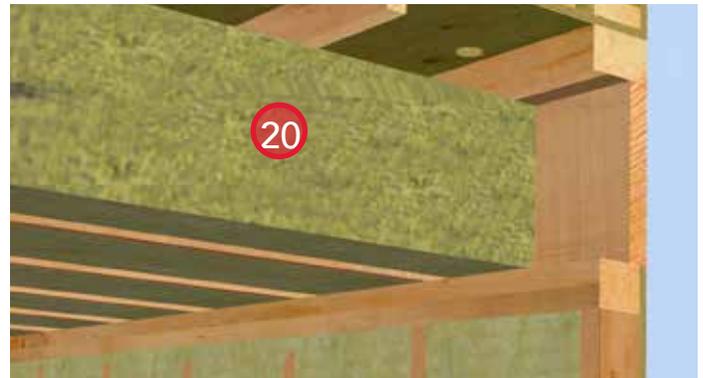
17. Install ROCKWOOL COMFORTBOARD™ and secure with strapping.



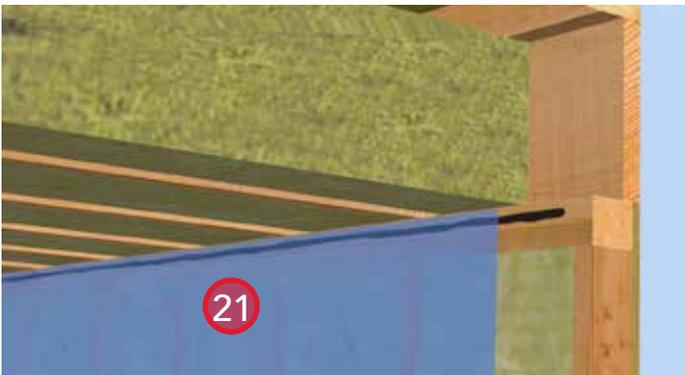
18. Install cladding.



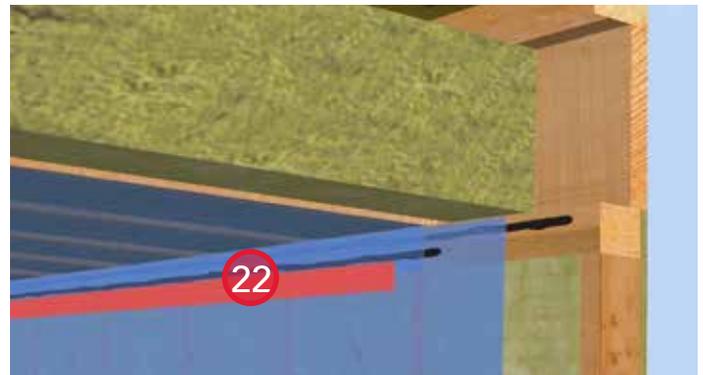
19. Install parapet flashing.



20. Install ROCKWOOL COMFORTBATT® into rafter and stud cavities.

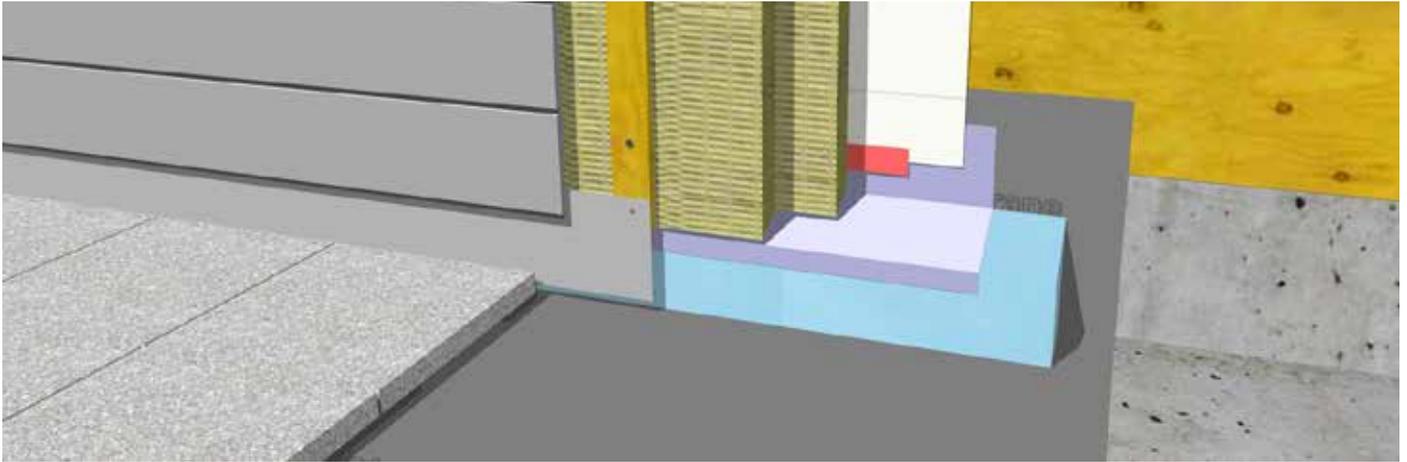


21. Install polyethylene sheet. Press the poly into the acoustical sealant and fasten with staples.



22. Install another bead of sealant over top of the first. Install polyethylene sheet on the underside of the roof and press into sealant. Seal the leading edge of the poly sheet with sheathing tape.

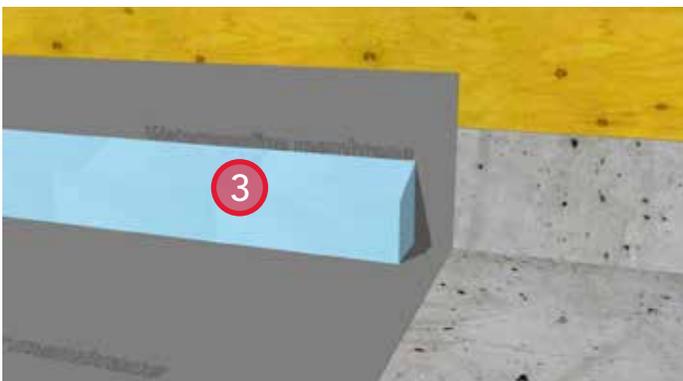
## Concrete Roof Deck (Podium) To Above Grade Wall



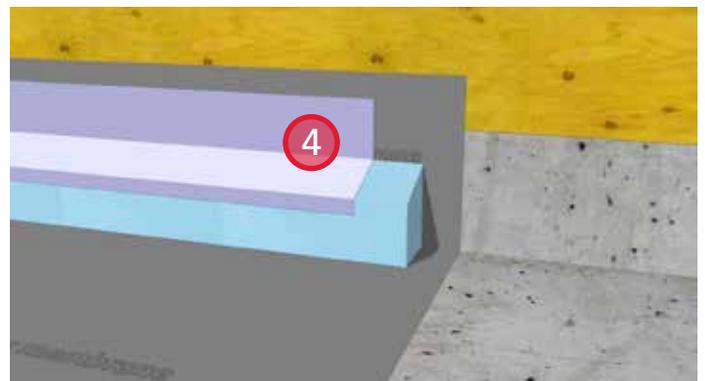
1. Typical wood frame construction at sheathing installation stage. Install wood framing on concrete curb extending 8" above concrete deck.



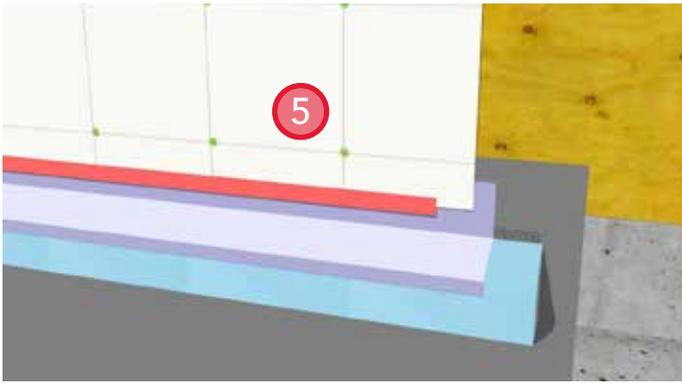
2. Install below-grade waterproofing membrane and extend a minimum 8" up adjacent wall. Provide a 2" overlap of waterproofing membrane onto the sheathing.



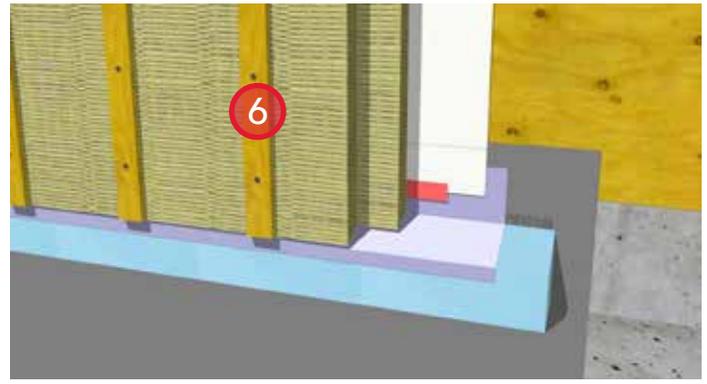
3. Install XPS board insulation at base of wall over deck waterproofing and taper top edge to drain.



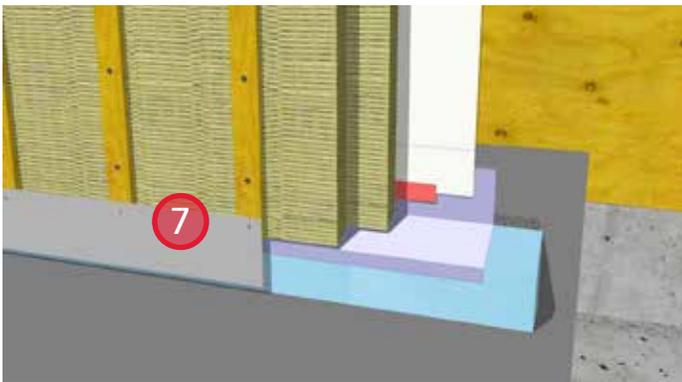
4. Install self-adhered membrane skirt and glue to the top of the insulation. Ensure that the membrane has a minimum 4" return up the wall.



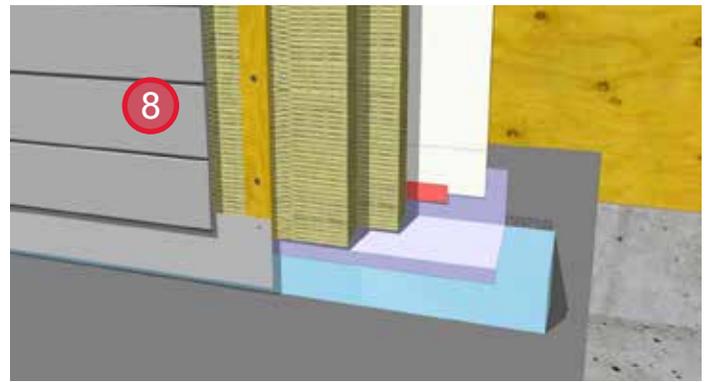
5. Install sheathing membrane and seal leading edge to the self-adhered membrane with sheathing tape to complete air barrier continuity.



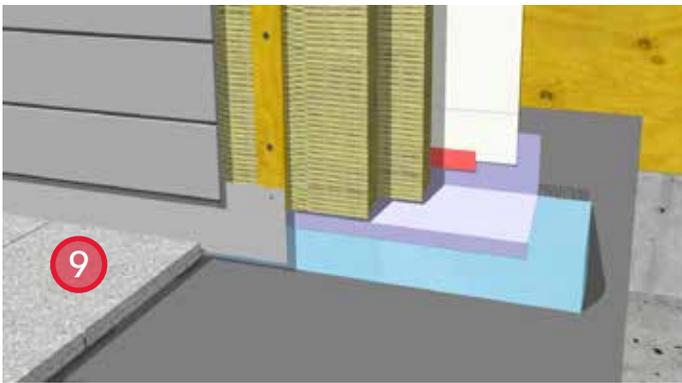
6. Install two layers of ROCKWOOL COMFORTBOARD™. Use strapping to hold the insulation and secure in place with recommended fasteners. Provide bugscreens at the top and bottom of the strapping.



7. Install prefinished metal closure flashing to assist with water shedding. Leave a 1" gap between the flashing and waterproofing membrane for wall ventilation.



8. Install cladding.



9. Install pavers (or other walking surface).



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Stone wool is a versatile material and forms the basis of all our businesses. With more than 11,000 passionate colleagues in 39 countries, we are the world leader in stone wool solutions, from building insulation to acoustic ceilings, external cladding systems to horticultural solutions, engineered fibres for industrial use to insulation for the process industry and marine & offshore.

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