

# Steel Frame Construction with Split Insulation up to 6 Stories: Lightweight Cladding.

## Intended Use of this Document

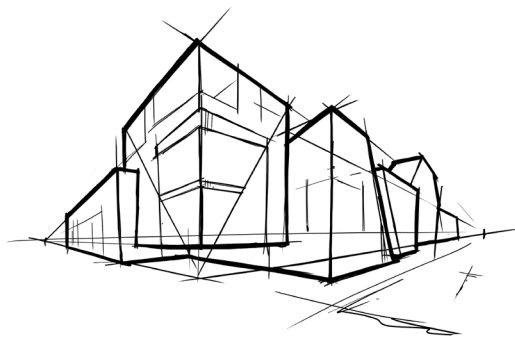
This document provides example key assembly interface details showing the use of ROCKWOOL® products within a split-insulated wall assembly for mid-rise residential and commercial buildings up to 6 stories.

The example details could be modified for other building types or applications. The intended use has been limited to 6 stories for the sole purpose of creating boundaries around the detail development. The example details are designed to be generally applicable across North America; however, specific end use applications vary widely as to design, materials, and environments. Therefore, what is appropriate in any specific end use application is a determination that must be made independently by the experienced Project Architect and/or Engineer in their own professional judgment. ROCKWOOL® fully disclaims any liability for any of the content contained herein whether such liability be premised on a theory of contract, tort, or otherwise.

These example details are intended to provide architects, builders, and contractors with general guidance on the best practice approach 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.

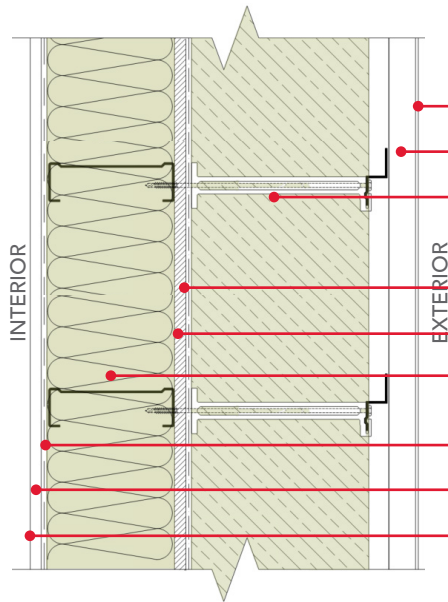
It is important to note these details show one method of constructing a split-insulated, exterior air barrier wall assembly; however, subtle changes at interface locations could be made to achieve the same intent. Review the building code requirements for your jurisdiction to ensure that all wall assembly detailing is in general conformance, or contact ROCKWOOL® Building Science Support for support on your project.



# Assembly Description and Clear-Wall Effective R-Value Calculation

The thermal resistance of building assemblies is commonly indicated using R-value, provided in imperial units of [ft<sup>2</sup>·°F·hr/Btu], and can also be provided as RSI-value, in metric units of [m<sup>2</sup>:K/W]. U-value is another way of describing heat flow through a wall, and is the inverse of R-value. The higher the R-value or the lower the U-value, the better the thermal performance.

Within this document, two-dimensional computer modeling was undertaken using Flixo to calculate two-dimensional heat transfer of the main wall assembly and calculate the effective R-value of the split-insulation steel-framed wall assembly. The results are summarized below.

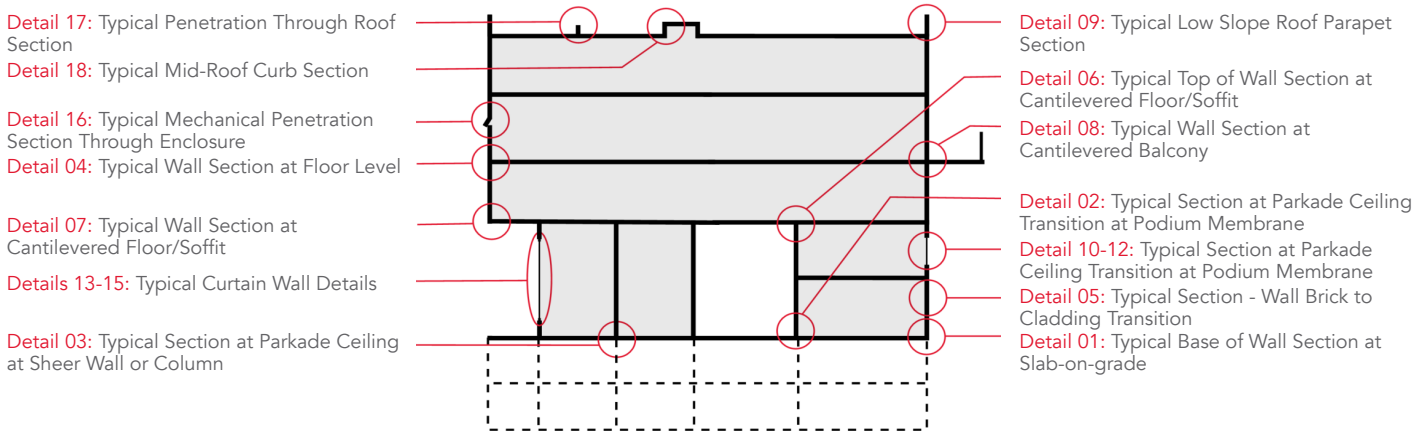


Material Layer	Thickness		Effective R-value	
	mm	inch	m <sup>2</sup> :K/W	h·ft <sup>2</sup> ·°F·hr/Btu
1 Exterior air film	0	0	0.121	0.687
2 Metal Panel Cladding	3.175	0.125	--	--
3 Air space	25.4	1	--	--
4 ROCKWOOL Cavityrock® insulation with intermittent thermally broken cladding support clip	203.2	8	4.73 *	26.8 *
5 Vapour permeable membrane	--	--	--	--
6 Exterior gypsum board sheathing	12.7	0.5	0.079	0.451
7 Steel-framed wall with ROCKWOOL Comfortbatt® insulation	152.4	6	1.96 **	11.1 **
8 Vapour control layer	--	--	--	--
9 Gypsum board	12.7	0.5	0.079	0.451
10 Latex paint	0	0	--	--
11 Interior air film	0	0	0.121	0.687
Total Clear Wall Thermal Performance	R-value		7.1	40.2
	U-value		0.141	0.025

Notes:  
 \* Assumes 20% degradation from thermally broken cladding support clip, spaced at 16" x 36" o.c  
 \*\* 54% degradation from steel framing

## Typical Building Details

To create effective and durable details for a steel-frame building, continuity of the air control layer, water control layer, thermal control layer, water-shedding surface, and sometimes the vapor control layer is needed throughout the building assemblies and at transitions and penetrations. This document presents eighteen typical building details that use ROCKWOOL® products; the locations of these common details on a theoretical building are shown in the figure below:



## Psi- and Chi- Values

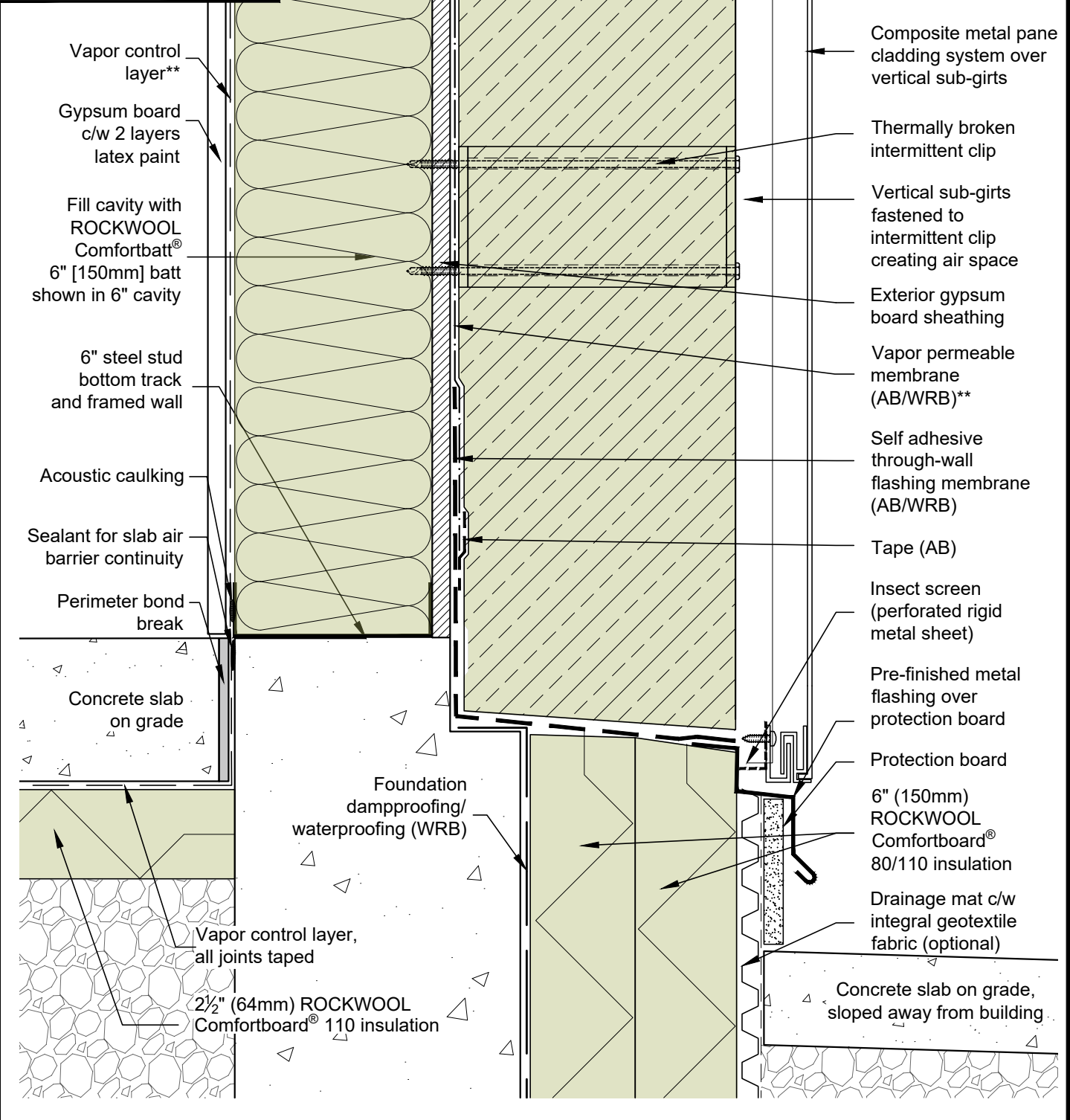
Heat travels through the path of least resistance, meaning that discontinuity in the thermal control layer and/or penetrations from conductive materials will result in greatly reduced effective R-values. Conductive materials like metal that penetrate the thermal barrier lead to heat loss and potential durability issues. These thermal bridges should be avoided and/or reduced to a minimum.

Thermal bridges are categorized in two forms, linear and point. A linear thermal bridge is represented by the Psi-value. Psi-value is the coefficient of the additional amount of heat flow along a line, seam, or joint between assemblies [W/m·K or BTU/hr·ft·°F]. A point thermal bridge is represented by the Chi-value, which is the additional amount of heat flow at a single point [W/K or BTU/hr·°F].

Psi Value  
(Interior Dimensions)  
**-0.960** W/m.K  
(-0.555 Btu/h.ft.F)

Psi Value  
(Exterior Dimensions)  
**-1.192** W/m.K  
(-0.689 Btu/h.ft.F)

The above thermal values provide a conservative estimate for use in early stage thermal analysis, whether using interior or exterior dimensions for area and length takeoffs. Note that subtle changes to the detail may result in significant changes to the thermal values. Designers are advised to refine the thermal analysis as the project design develops.  
[Source: Flixo 2D Thermal Modeling by RDH Building Science Inc.]  
Designers are encouraged to contact ROCKWOOL for technical support with project-specific thermal modeling.



<p><b>MULTI-UNIT RESIDENTIAL/COMMERCIAL STEEL FRAME CONSTRUCTION UP TO 6 STOREYS - LIGHTWEIGHT CLADDING</b></p>			
<p>DRAWING TITLE: <b>TYPICAL BASE OF WALL AT SLAB-ON-GRADE</b></p>		<p>DATE: NOVEMBER 2022</p>	

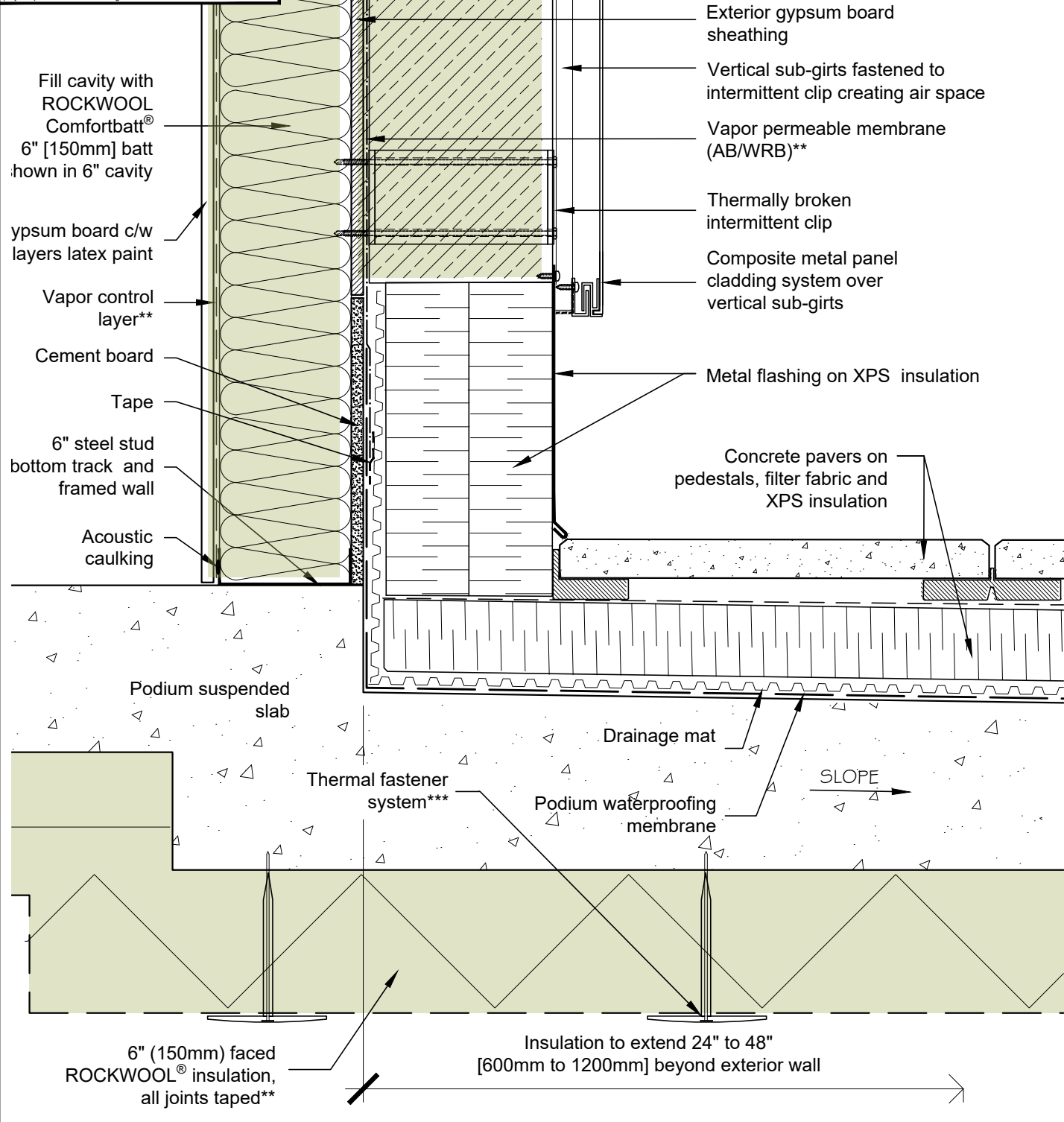
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\* For thermal performance of ROCKWOOL® products, please refer to ROCKWOOL® technical data sheets

\*\* For climate zone specific considerations for thermal, air and vapor control layer properties and requirements, please contact ROCKWOOL® Building Science for support.

Psi Value (Interior Dimensions) <b>0.350</b> W/m.K (0.202 Btu/h.ft.F)	Psi Value (Exterior Dimensions) <b>0.346</b> W/m.K (0.200 Btu/h.ft.F)
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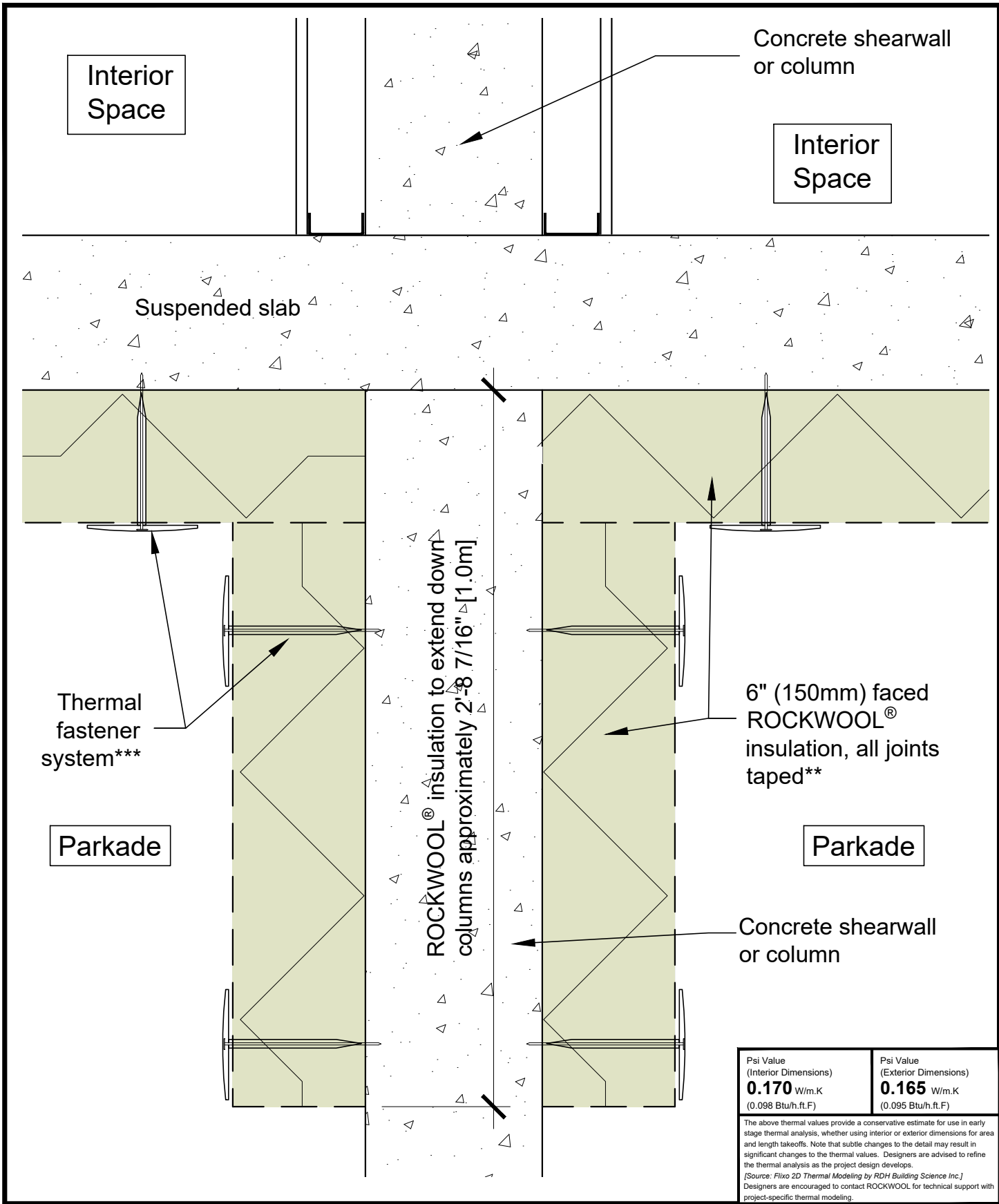
The above thermal values provide a conservative estimate for use in early stage thermal analysis, whether using interior or exterior dimensions for area and length takeoffs. Note that subtle changes to the detail may result in significant changes to the thermal values. Designers are advised to refine the thermal analysis as the project design develops.  
 [Source: Flixo 2D Thermal Modeling by RDH Building Science Inc.]  
 Designers are encouraged to contact ROCKWOOL for technical support with project-specific thermal modeling.



<b>MULTI-UNIT RESIDENTIAL/COMMERCIAL STEEL FRAME CONSTRUCTION UP TO 6 STOREYS - LIGHTWEIGHT CLADDING</b>			
DRAWING TITLE: <b>TYPICAL PARKADE CEILING TRANSITION AT PODIUM EXTERIOR WALL AND PLAZA DECK</b>		DRAWING NO.: <b>Detail 02</b>	SCALE: <b>2" = 1'-0"</b> DATE: <b>NOVEMBER 2022</b>

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\* For thermal performance of ROCKWOOL® products, please refer to ROCKWOOL® technical data sheets  
 \*\* For climate zone specific considerations for thermal, air and vapor control layer properties and requirements, please contact ROCKWOOL® Building Science for support.  
 \*\*\* Contact ROCKWOOL™ technical support for fastener guidelines.



Psi Value (Interior Dimensions) <b>0.170</b> W/m.K (0.098 Btu/h.ft.F)	Psi Value (Exterior Dimensions) <b>0.165</b> W/m.K (0.095 Btu/h.ft.F)
The above thermal values provide a conservative estimate for use in early stage thermal analysis, whether using interior or exterior dimensions for area and length takeoffs. Note that subtle changes to the detail may result in significant changes to the thermal values. Designers are advised to refine the thermal analysis as the project design develops. <small>[Source: Fibro 2D Thermal Modeling by RDH Building Science Inc.]</small> Designers are encouraged to contact ROCKWOOL for technical support with project-specific thermal modeling.	

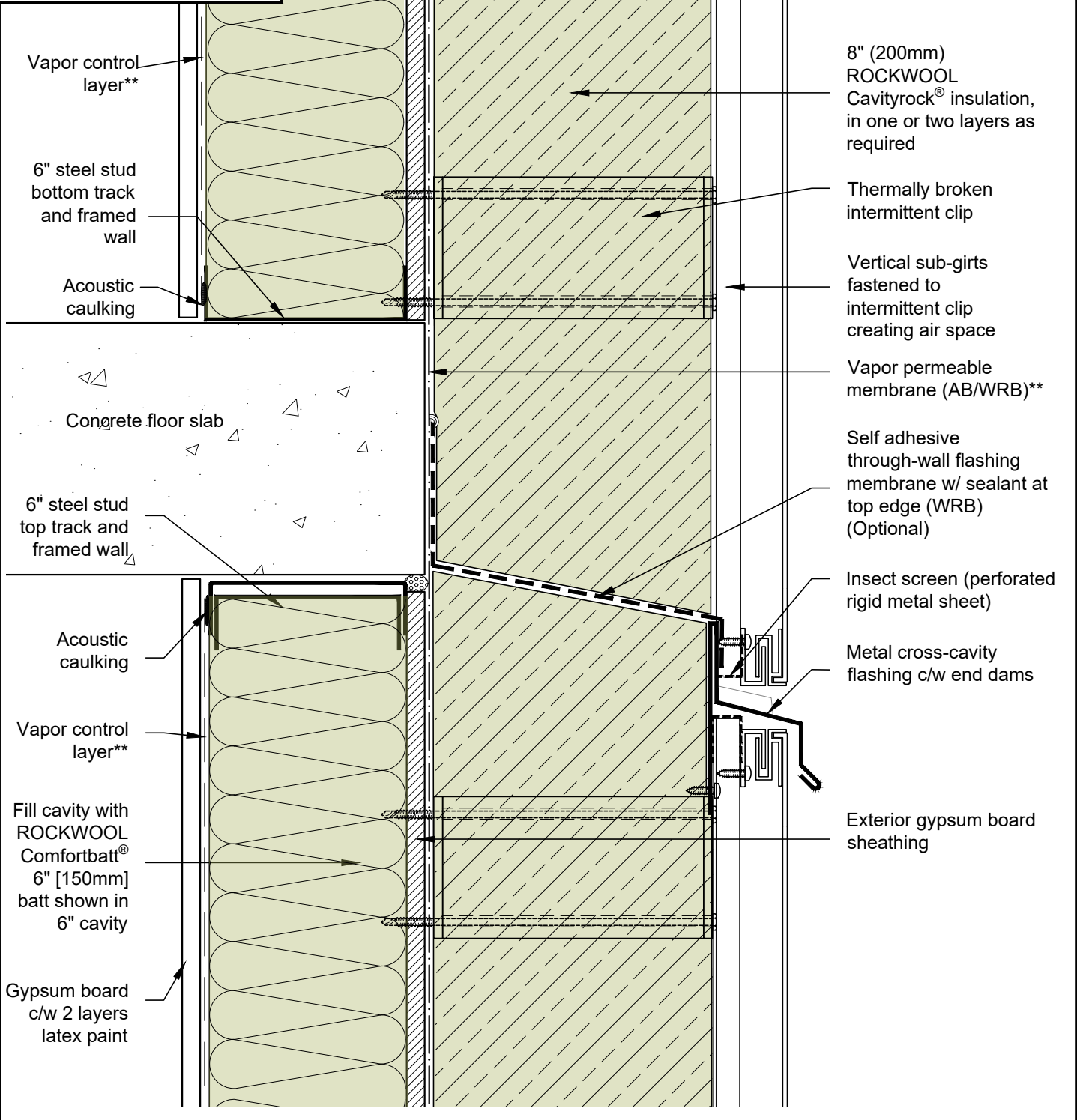
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<b>MULTI-UNIT RESIDENTIAL/COMMERCIAL STEEL FRAME CONSTRUCTION UP TO 6 STOREYS - LIGHTWEIGHT CLADDING</b>		<b>ROCKWOOL®</b>	
DRAWING TITLE: <b>TYPICAL PARKADE CEILING AT SHEER WALL OR COLUMN</b>	DRAWING NO.: <b>Detail 03</b>	SCALE: 2" = 1'-0" DATE: NOVEMBER 2022	

\* For thermal performance of ROCKWOOL® products, please refer to ROCKWOOL® technical data sheets  
 \*\* For climate zone specific considerations for thermal, air and vapor control layer properties and requirements, please contact ROCKWOOL® Building Science for support.  
 \*\*\* Contact ROCKWOOL™ technical support for fastener guidelines.

Psi Value (Interior Dimensions) <b>0.015</b> W/m.K (0.009 Btu/h.ft.F)	Psi Value (Exterior Dimensions) <b>0.015</b> W/m.K (0.009 Btu/h.ft.F)
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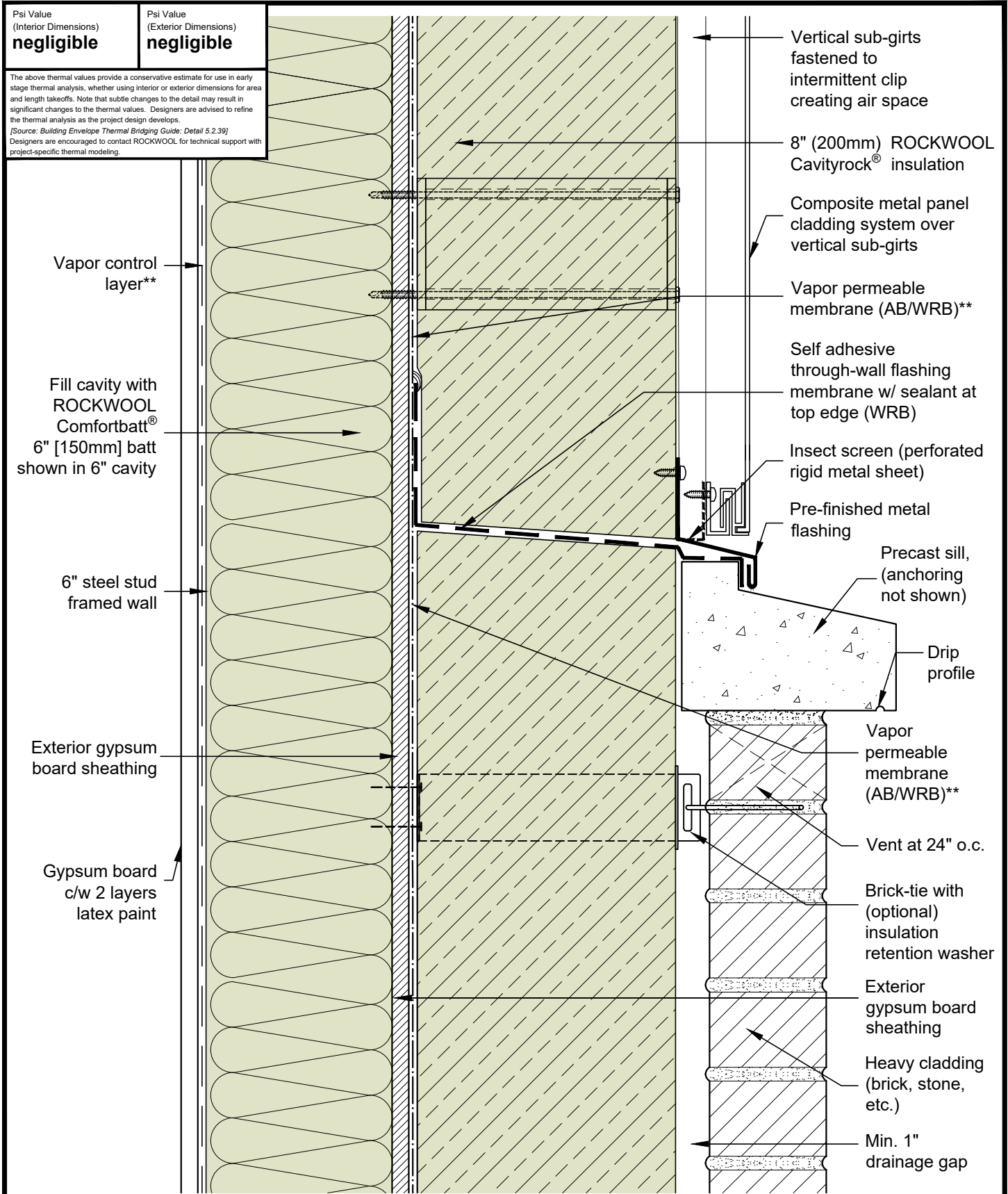
The above thermal values provide a conservative estimate for use in early stage thermal analysis, whether using interior or exterior dimensions for area and length takeoffs. Note that subtle changes to the detail may result in significant changes to the thermal values. Designers are advised to refine the thermal analysis as the project design develops.  
 [Source: Building Envelope Thermal Bridging Guide, Detail 5.2.39]  
 Designers are encouraged to contact ROCKWOOL for technical support with project-specific thermal modelling.



<b>MULTI-UNIT RESIDENTIAL/COMMERCIAL STEEL FRAME CONSTRUCTION UP TO 6 STOREYS - LIGHTWEIGHT CLADDING</b>			
DRAWING TITLE: <b>TYPICAL WALL AT FLOOR LEVEL</b>	DRAWING NO.: <b>Detail 04</b>	SCALE: 3" = 1'-0"	DATE: NOVEMBER 2022

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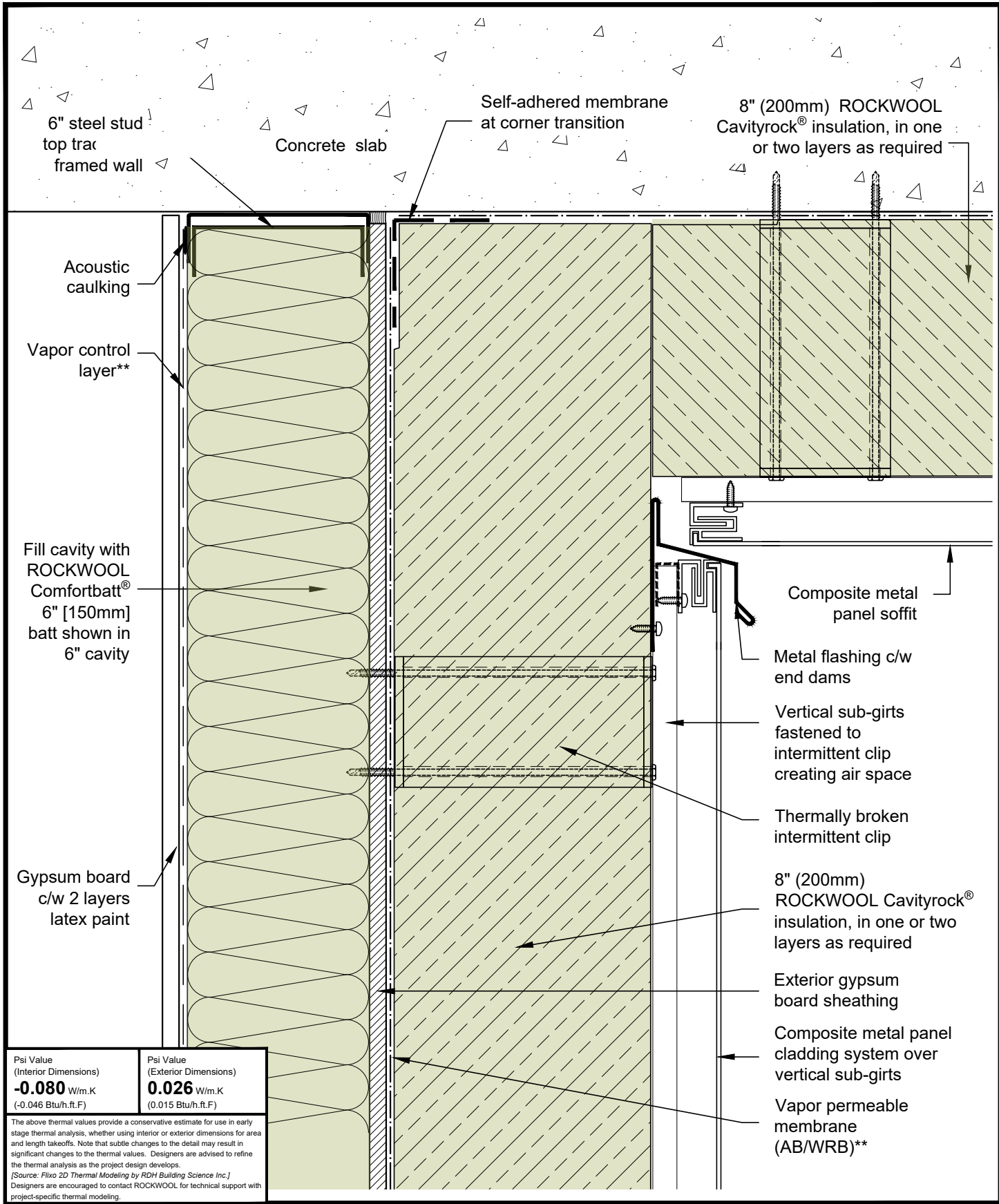
\* For thermal performance of ROCKWOOL® products, please refer to ROCKWOOL® technical data sheets  
 \*\* For climate zone specific considerations for thermal, air and vapor control layer properties and requirements, please contact ROCKWOOL® Building Science for support.



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<b>MULTI-UNIT RESIDENTIAL/COMMERCIAL STEEL FRAME CONSTRUCTION UP TO 6 STOREYS - LIGHTWEIGHT CLADDING</b>		<b>ROCKWOOL®</b>	
DRAWING TITLE: <b>TYPICAL BRICK VENEER TO LIGHTWEIGHT CLADDING TRANSITION</b>		DRAWING NO.: <b>Detail 05</b>	SCALE: <b>3" = 1'-0"</b>
			DATE: <b>NOVEMBER 2022</b>

\* For thermal performance of ROCKWOOL® products, please refer to ROCKWOOL® technical data sheets  
 \*\* For climate zone specific considerations for thermal, air and vapor control layer properties and requirements, please contact ROCKWOOL® Building Science for support.



Psi Value (Interior Dimensions)	Psi Value (Exterior Dimensions)
<b>-0.080</b> W/m.K	<b>0.026</b> W/m.K
(-0.046 Btu/h.ft.F)	(0.015 Btu/h.ft.F)

The above thermal values provide a conservative estimate for use in early stage thermal analysis, whether using interior or exterior dimensions for area and length takeoffs. Note that subtle changes to the detail may result in significant changes to the thermal values. Designers are advised to refine the thermal analysis as the project design develops.  
 [Source: Flixo 2D Thermal Modeling by RDH Building Science Inc.]  
 Designers are encouraged to contact ROCKWOOL for technical support with project-specific thermal modeling.

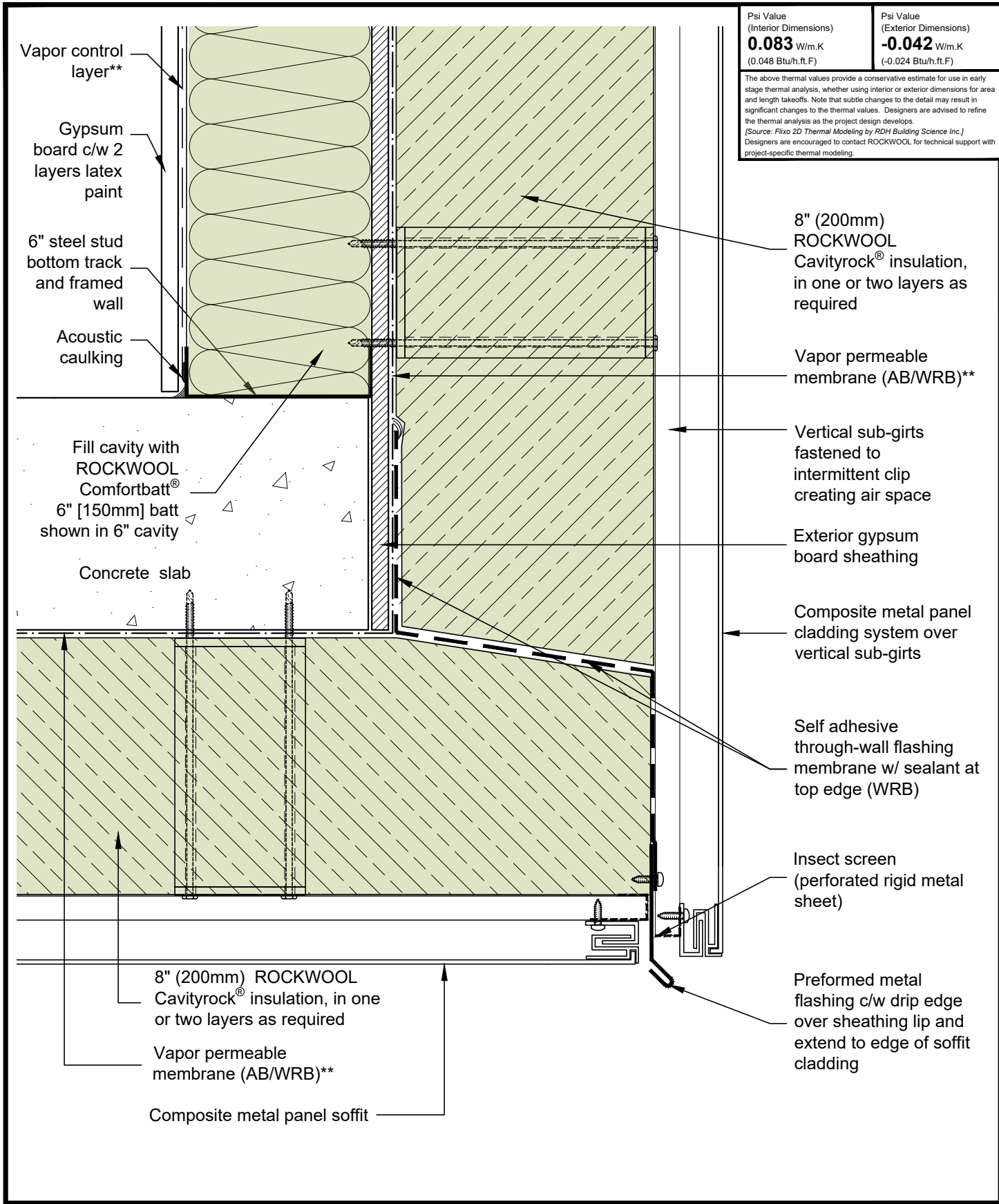
<b>MULTI-UNIT RESIDENTIAL/COMMERCIAL STEEL FRAME CONSTRUCTION UP TO 6 STOREYS - LIGHTWEIGHT CLADDING</b>		
DRAWING TITLE: TYPICAL TOP OF WALL AT CANTILEVERED FLOOR / SOFFIT		
DRAWING NO.: Detail 06	SCALE: 3" = 1'-0"	DATE: NOVEMBER 2022

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\* For thermal performance of ROCKWOOL® products, please refer to ROCKWOOL® technical data sheets  
 \*\* For climate zone specific considerations for thermal, air and vapor control layer properties and requirements, please contact ROCKWOOL® Building Science for support.



Psi Value (Interior Dimensions) <b>0.083</b> W/m.K (0.048 Btu/h.ft.F)	Psi Value (Exterior Dimensions) <b>-0.042</b> W/m.K (-0.024 Btu/h.ft.F)
<small>The above thermal values provide a conservative estimate for use in early stage thermal analysis, whether using interior or exterior dimensions for area and length takeoffs. Note that subtle changes to the detail may result in significant changes to the thermal values. Designers are advised to refine the thermal analysis as the project design develops.          [Source: Flixo 2D Thermal Modeling by RDH Building Science Inc.]          Designers are encouraged to contact ROCKWOOL for technical support with project-specific thermal modeling.</small>	

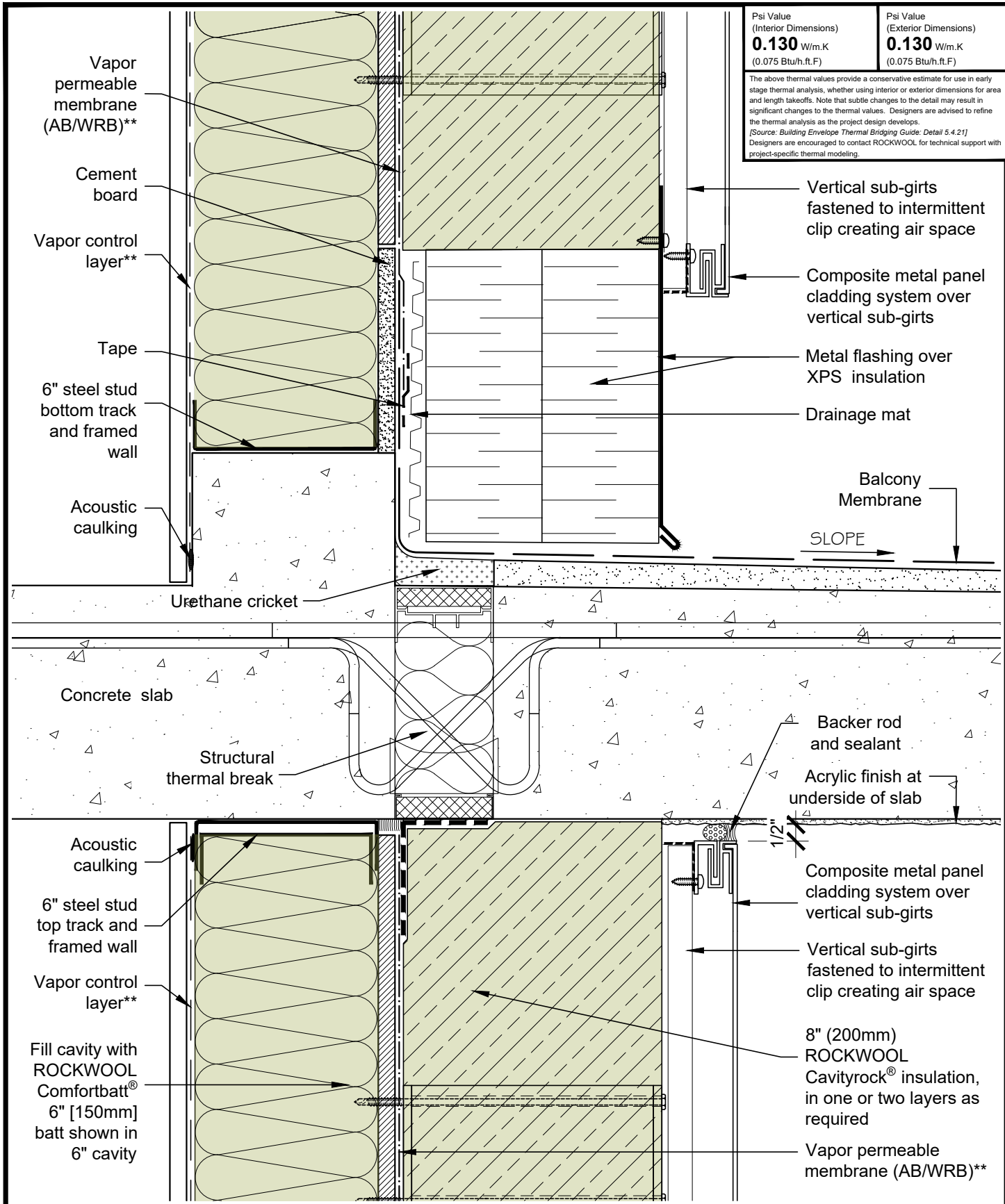


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<b>MULTI-UNIT RESIDENTIAL/COMMERCIAL STEEL FRAME CONSTRUCTION UP TO 6 STOREYS - LIGHTWEIGHT CLADDING</b>			
DRAWING TITLE:	TYPICAL WALL AT CANTILEVERED FLOOR / SOFFIT	DRAWING NO.:	SCALE: 3" = 1'-0"
		Detail 07	DATE: NOVEMBER 2022

\* For thermal performance of ROCKWOOL® products, please refer to ROCKWOOL® technical data sheets  
 \*\* For climate zone specific considerations for thermal, air and vapor control layer properties and requirements, please contact ROCKWOOL® Building Science for support.

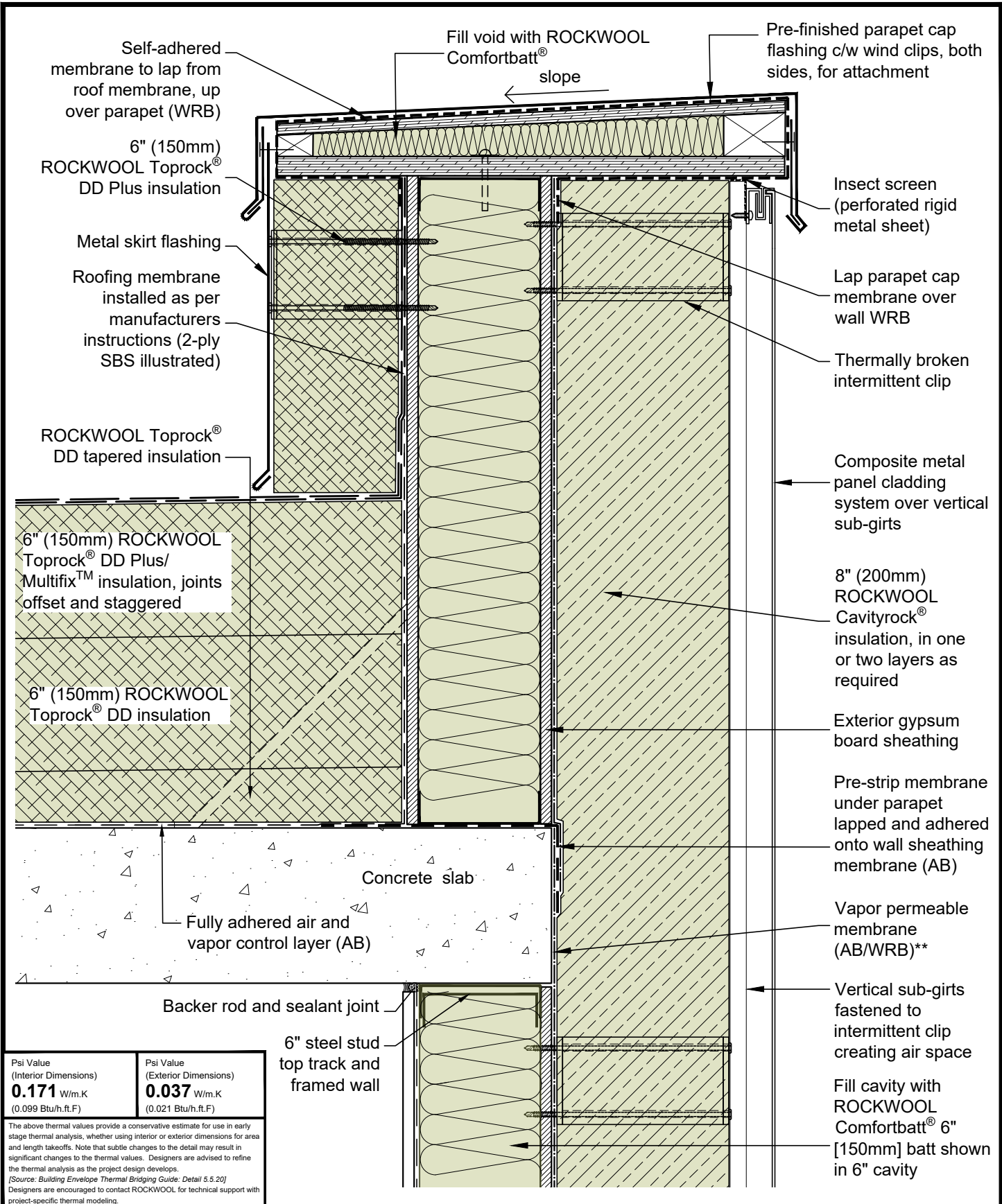
Psi Value (Interior Dimensions) <b>0.130</b> W/m.K (0.075 Btu/h.ft.F)	Psi Value (Exterior Dimensions) <b>0.130</b> W/m.K (0.075 Btu/h.ft.F)
The above thermal values provide a conservative estimate for use in early stage thermal analysis, whether using interior or exterior dimensions for area and length takeoffs. Note that subtle changes to the detail may result in significant changes to the thermal values. Designers are advised to refine the thermal analysis as the project design develops. <small>[Source: Building Envelope Thermal Bridging Guide: Detail 5.4.21]          Designers are encouraged to contact ROCKWOOL for technical support with project-specific thermal modeling.</small>	



<b>MULTI-UNIT RESIDENTIAL/COMMERCIAL STEEL FRAME          CONSTRUCTION UP TO 6 STOREYS - LIGHTWEIGHT CLADDING</b>		
<b>TYPICAL WALL AT CANTILEVERED BALCONY</b>		
DRAWING TITLE:	DRAWING NO.: <b>Detail 08</b>	SCALE: 3" = 1'-0" DATE: NOVEMBER 2022

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\* For thermal performance of ROCKWOOL® products, please refer to ROCKWOOL® technical data sheets  
 \*\* For climate zone specific considerations for thermal, air and vapor control layer properties and requirements, please contact ROCKWOOL® Building Science for support.



Psi Value (Interior Dimensions) <b>0.171</b> W/m.K (0.099 Btu/h.ft.F)	Psi Value (Exterior Dimensions) <b>0.037</b> W/m.K (0.021 Btu/h.ft.F)
<small>The above thermal values provide a conservative estimate for use in early stage thermal analysis, whether using interior or exterior dimensions for area and length takeoffs. Note that subtle changes to the detail may result in significant changes to the thermal values. Designers are advised to refine the thermal analysis as the project design develops.          [Source: Building Envelope Thermal Bridging Guide: Detail 5.5.20]          Designers are encouraged to contact ROCKWOOL for technical support with project-specific thermal modeling.</small>	

**MULTI-UNIT RESIDENTIAL/COMMERCIAL STEEL FRAME CONSTRUCTION UP TO 6 STOREYS - LIGHTWEIGHT CLADDING**



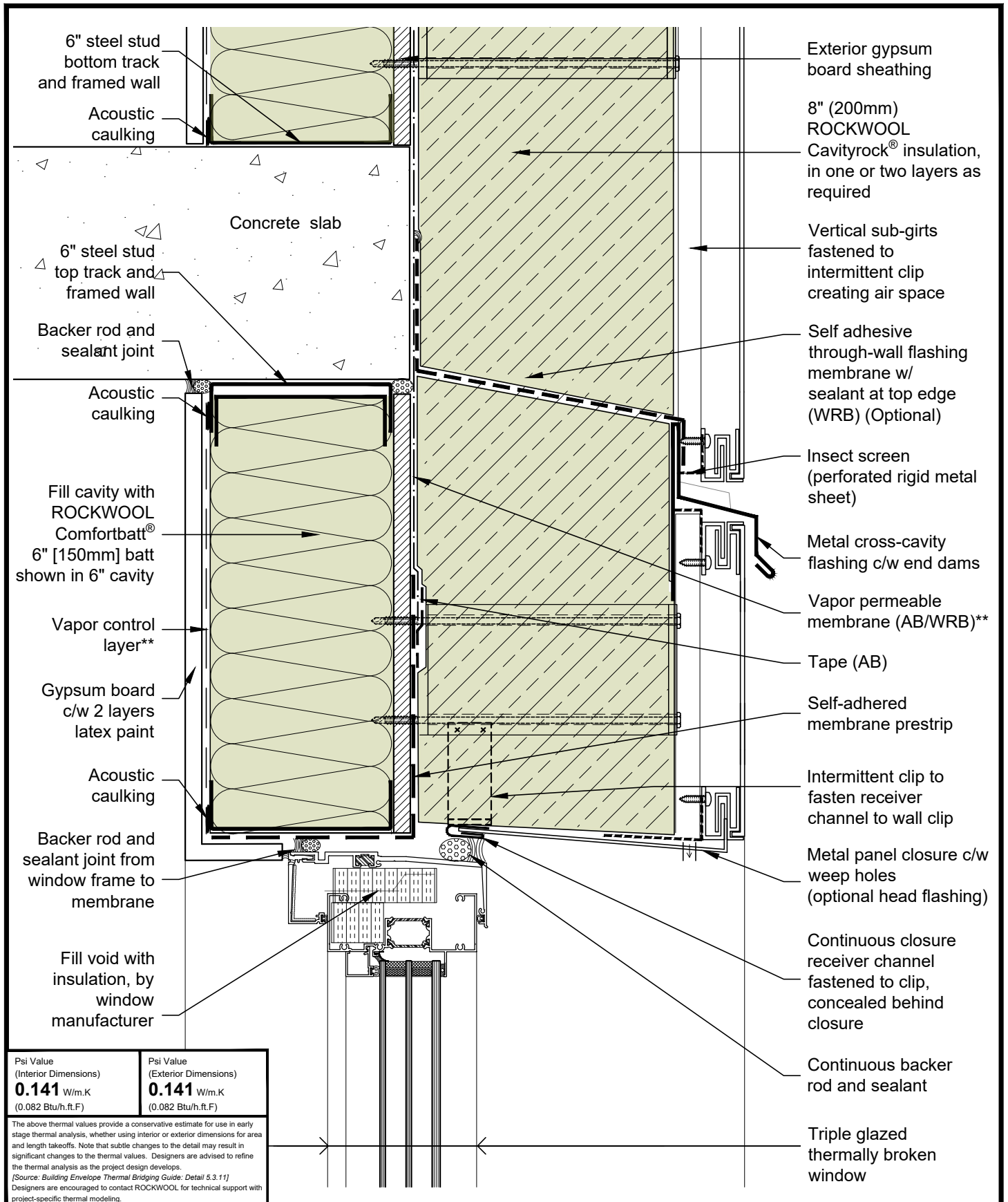
DRAWING TITLE: **TYPICAL LOW SLOPE ROOF PARAPET**

DRAWING NO.: **Detail 09**  
 SCALE: 2" = 1'-0"  
 DATE: NOVEMBER 2022

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\* For thermal performance of ROCKWOOL® products, please refer to ROCKWOOL® technical data sheets

\*\* For climate zone specific considerations for thermal, air and vapor control layer properties and requirements, please contact ROCKWOOL® Building Science for support.



Psi Value (Interior Dimensions) <b>0.141</b> W/m.K (0.082 Btu/h.ft.F)	Psi Value (Exterior Dimensions) <b>0.141</b> W/m.K (0.082 Btu/h.ft.F)
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The above thermal values provide a conservative estimate for use in early stage thermal analysis, whether using interior or exterior dimensions for area and length takeoffs. Note that subtle changes to the detail may result in significant changes to the thermal values. Designers are advised to refine the thermal analysis as the project design develops.  
 [Source: Building Envelope Thermal Bridging Guide: Detail 5.3.11]  
 Designers are encouraged to contact ROCKWOOL for technical support with project-specific thermal modeling.

## MULTI-UNIT RESIDENTIAL/COMMERCIAL STEEL FRAME CONSTRUCTION UP TO 6 STOREYS - LIGHTWEIGHT CLADDING

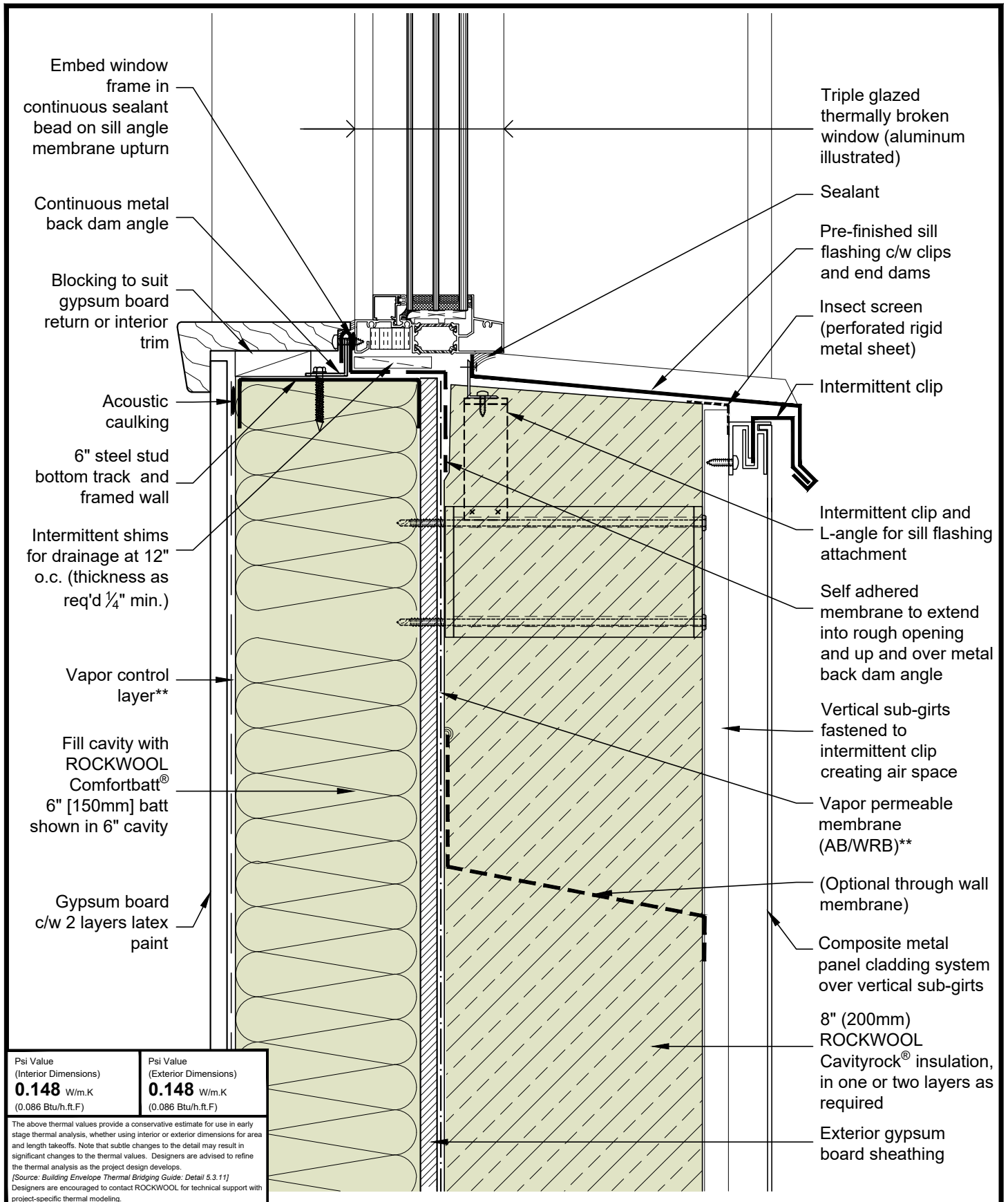


DRAWING TITLE: **TYPICAL FLANGELESS WINDOW HEAD**

DRAWING NO.: **Detail 10**  
 SCALE: 3" = 1'-0"  
 DATE: NOVEMBER 2022

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\* For thermal performance of ROCKWOOL® products, please refer to ROCKWOOL® technical data sheets  
 \*\* For climate zone specific considerations for thermal, air and vapor control layer properties and requirements, please contact ROCKWOOL® Building Science for support.



Psi Value (Interior Dimensions) <b>0.148</b> W/m.K (0.086 Btu/h.ft.F)	Psi Value (Exterior Dimensions) <b>0.148</b> W/m.K (0.086 Btu/h.ft.F)
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The above thermal values provide a conservative estimate for use in early stage thermal analysis, whether using interior or exterior dimensions for area and length takeoffs. Note that subtle changes to the detail may result in significant changes to the thermal values. Designers are advised to refine the thermal analysis as the project design develops.  
 [Source: Building Envelope Thermal Bridging Guide: Detail 5.3.11]  
 Designers are encouraged to contact ROCKWOOL for technical support with project-specific thermal modeling.

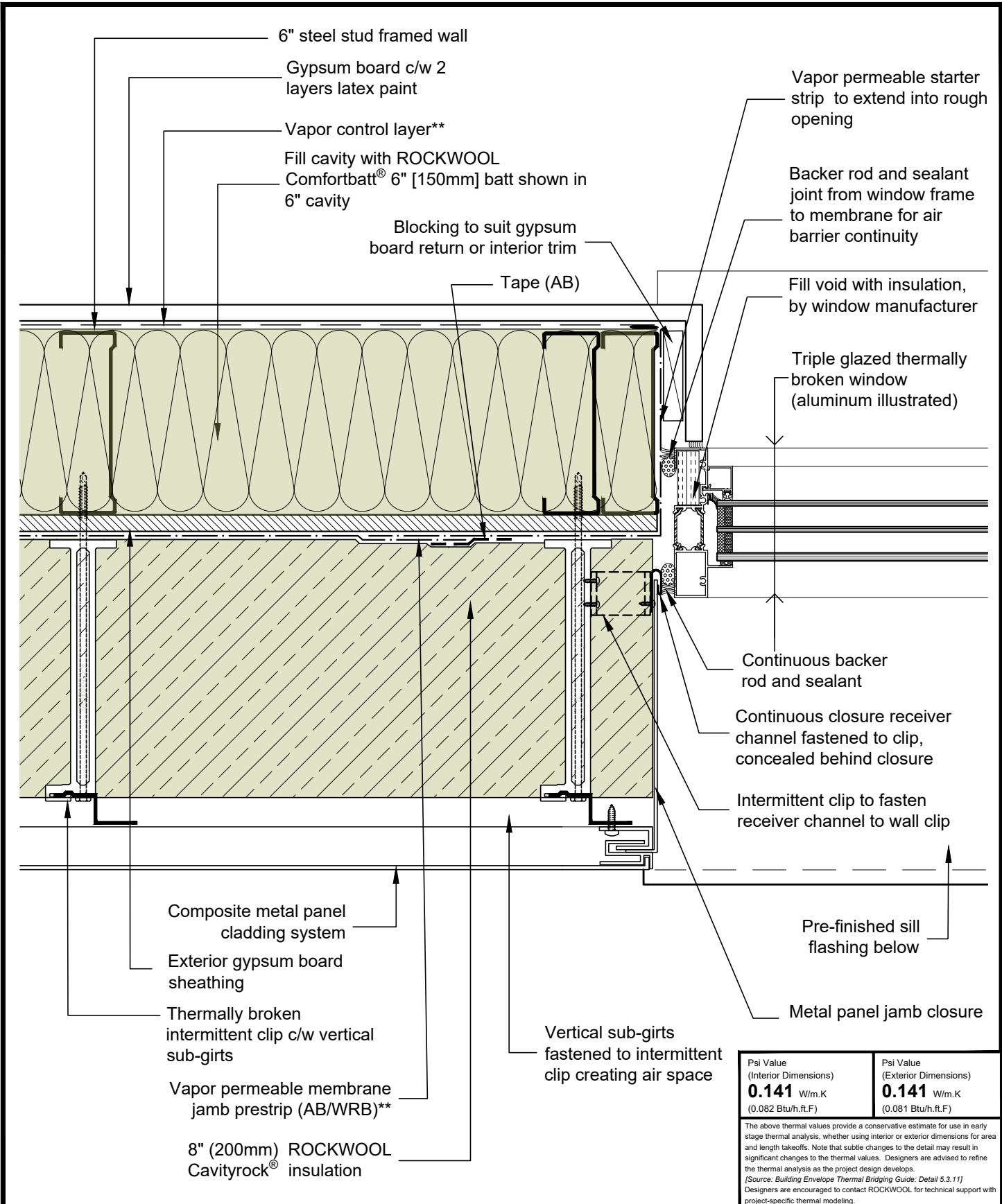
**MULTI-UNIT RESIDENTIAL/COMMERCIAL STEEL FRAME CONSTRUCTION UP TO 6 STOREYS - LIGHTWEIGHT CLADDING**



DRAWING TITLE: <b>TYPICAL FLANGLSS WINDOW SILL</b>	DRAWING NO.: <b>Detail 11</b>	SCALE: 3" = 1'-0"
		DATE: NOVEMBER 2022

\* For thermal performance of ROCKWOOL® products, please refer to ROCKWOOL® technical data sheets  
 \*\* For climate zone specific considerations for thermal, air and vapor control layer properties and requirements, please contact ROCKWOOL® Building Science for support.

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**MULTI-UNIT RESIDENTIAL/COMMERCIAL STEEL FRAME CONSTRUCTION UP TO 6 STOREYS - LIGHTWEIGHT CLADDING**

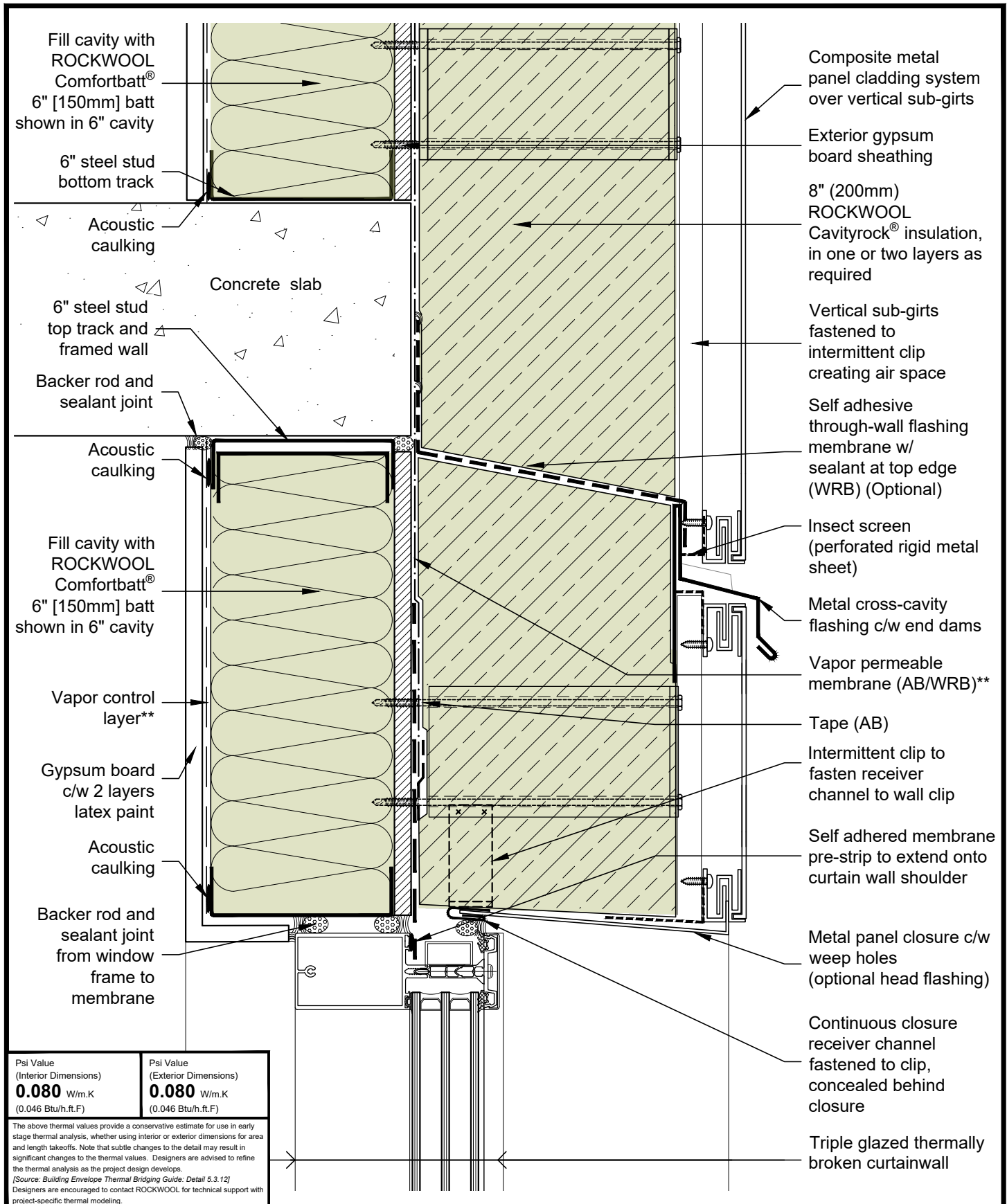


DRAWING TITLE: **TYPICAL FLANGLSS WINDOW JAMB**

DRAWING NO.: **Detail 12**  
 SCALE: 3" = 1'-0"  
 DATE: NOVEMBER 2022

\* For thermal performance of ROCKWOOL® products, please refer to ROCKWOOL® technical data sheets

\*\* For climate zone specific considerations for thermal, air and vapor control layer properties and requirements, please contact ROCKWOOL® Building Science for support.



Psi Value (Interior Dimensions) <b>0.080</b> W/m.K (0.046 Btu/h.ft.F)	Psi Value (Exterior Dimensions) <b>0.080</b> W/m.K (0.046 Btu/h.ft.F)
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The above thermal values provide a conservative estimate for use in early stage thermal analysis, whether using interior or exterior dimensions for area and length takeoffs. Note that subtle changes to the detail may result in significant changes to the thermal values. Designers are advised to refine the thermal analysis as the project design develops.  
 [Source: Building Envelope Thermal Bridging Guide: Detail 5.3.12]  
 Designers are encouraged to contact ROCKWOOL for technical support with project-specific thermal modeling.

**MULTI-UNIT RESIDENTIAL/COMMERCIAL STEEL FRAME CONSTRUCTION UP TO 6 STOREYS - LIGHTWEIGHT CLADDING**

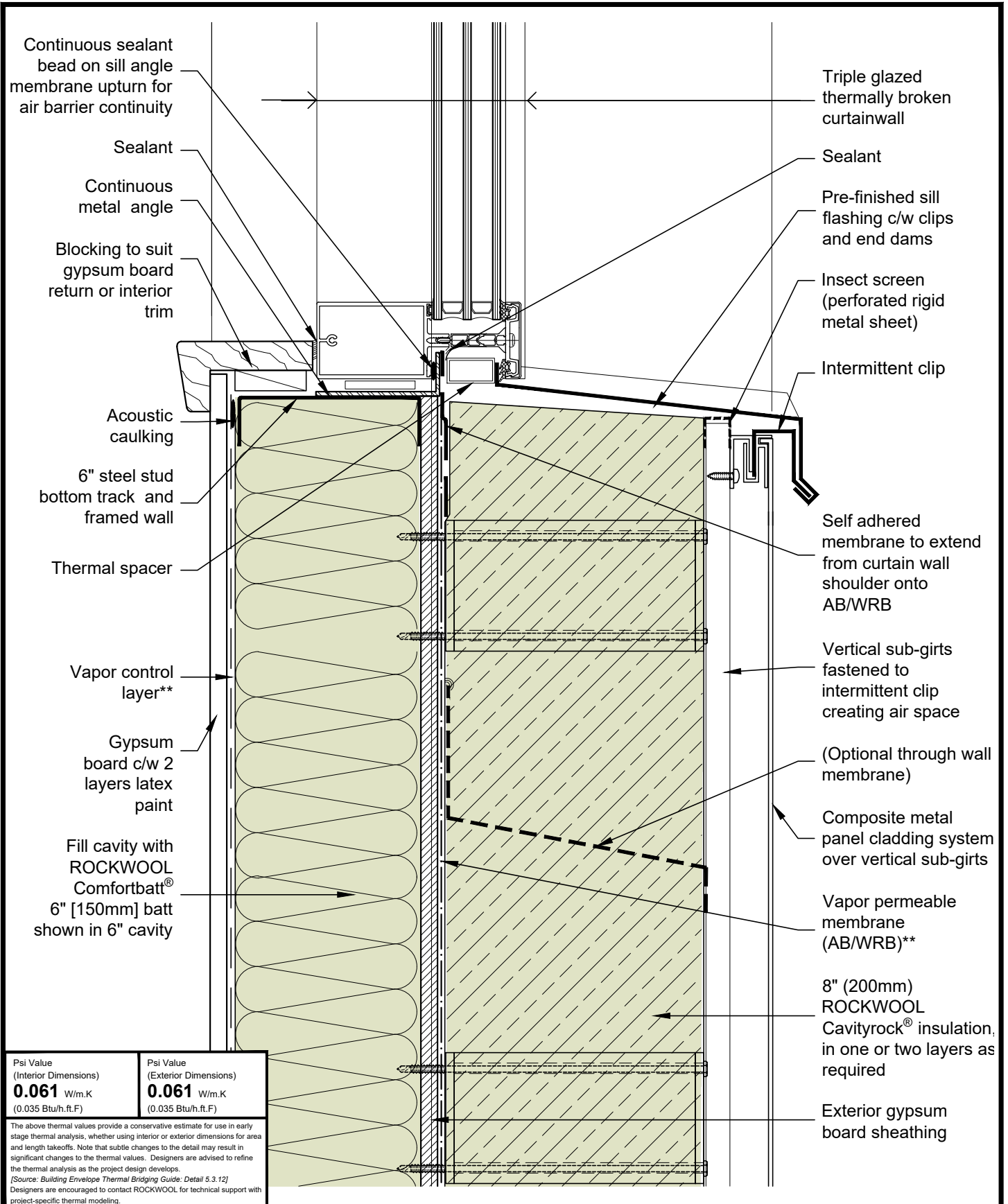


DRAWING TITLE: **TYPICAL CURTAIN WALL HEAD**

DRAWING NO.: **Detail 13**  
 SCALE: **3" = 1'-0"**  
 DATE: **NOVEMBER 2022**

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\* For thermal performance of ROCKWOOL® products, please refer to ROCKWOOL® technical data sheets  
 \*\* For climate zone specific considerations for thermal, air and vapor control layer properties and requirements, please contact ROCKWOOL® Building Science for support.



Psi Value (Interior Dimensions) <b>0.061</b> W/m.K (0.035 Btu/h.ft.F)	Psi Value (Exterior Dimensions) <b>0.061</b> W/m.K (0.035 Btu/h.ft.F)
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The above thermal values provide a conservative estimate for use in early stage thermal analysis, whether using interior or exterior dimensions for area and length takeoffs. Note that subtle changes to the detail may result in significant changes to the thermal values. Designers are advised to refine the thermal analysis as the project design develops.  
 [Source: Building Envelope Thermal Bridging Guide, Detail 5.3.12]  
 Designers are encouraged to contact ROCKWOOL for technical support with project-specific thermal modeling.

**MULTI-UNIT RESIDENTIAL/COMMERCIAL STEEL FRAME CONSTRUCTION UP TO 6 STOREYS - LIGHTWEIGHT CLADDING**

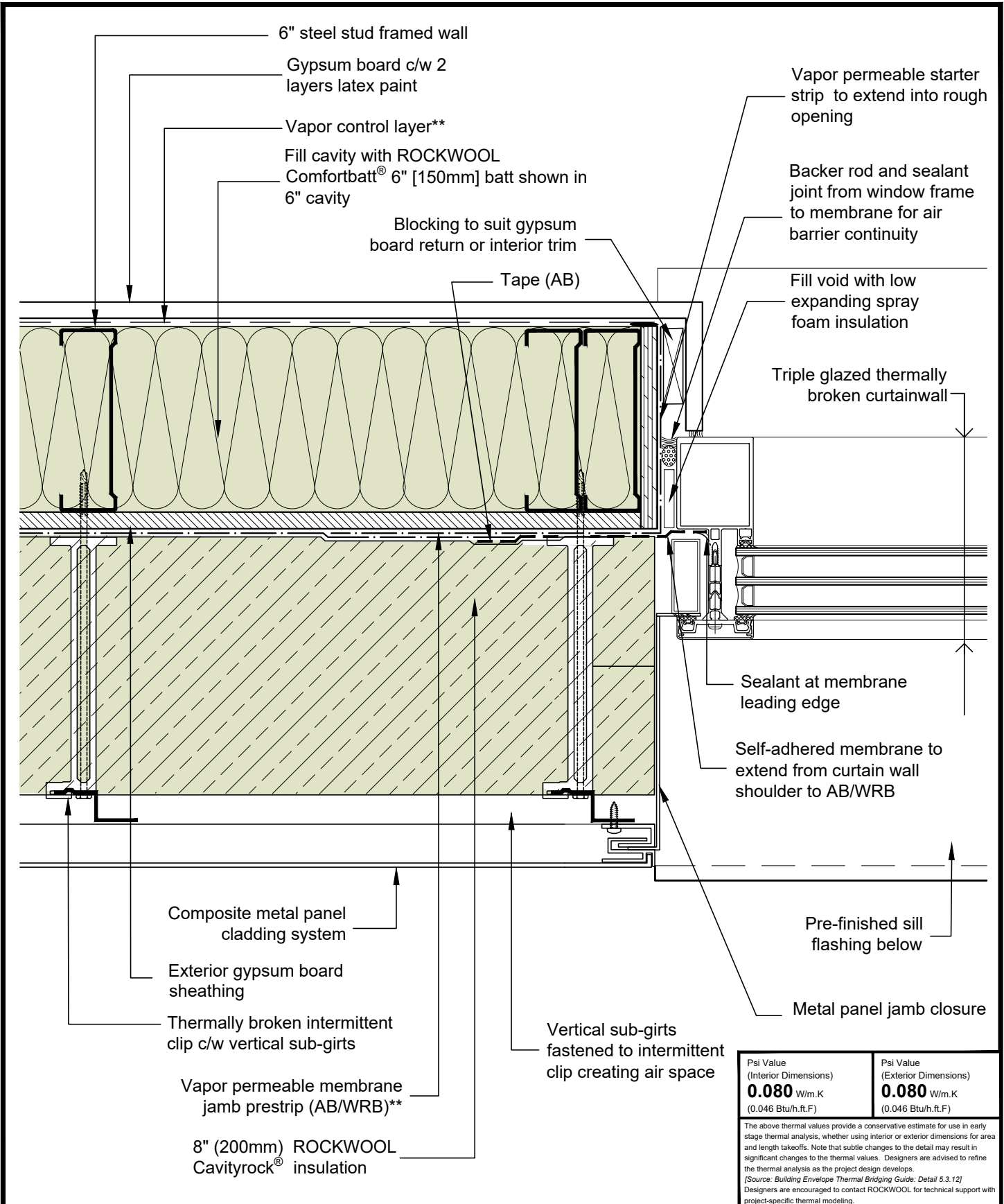


DRAWING TITLE: <p style="text-align: center;">TYPICAL CURTAIN WALL SILL</p>	DRAWING NO.: <p style="text-align: center;">Detail 14</p>	SCALE: 3" = 1'-0" DATE: NOVEMBER 2022
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\* For thermal performance of ROCKWOOL® products, please refer to ROCKWOOL® technical data sheets  
 \*\* For climate zone specific considerations for thermal, air and vapor control layer properties and requirements, please contact ROCKWOOL® Building Science for support.

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Psi Value (Interior Dimensions) <b>0.080</b> W/m.K (0.046 Btu/h.ft.F)	Psi Value (Exterior Dimensions) <b>0.080</b> W/m.K (0.046 Btu/h.ft.F)
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The above thermal values provide a conservative estimate for use in early stage thermal analysis, whether using interior or exterior dimensions for area and length takeoffs. Note that subtle changes to the detail may result in significant changes to the thermal values. Designers are advised to refine the thermal analysis as the project design develops.  
 [Source: Building Envelope Thermal Bridging Guide: Detail 5.3.12]  
 Designers are encouraged to contact ROCKWOOL for technical support with project-specific thermal modeling.

**MULTI-UNIT RESIDENTIAL/COMMERCIAL STEEL FRAME CONSTRUCTION UP TO 6 STOREYS - LIGHTWEIGHT CLADDING**

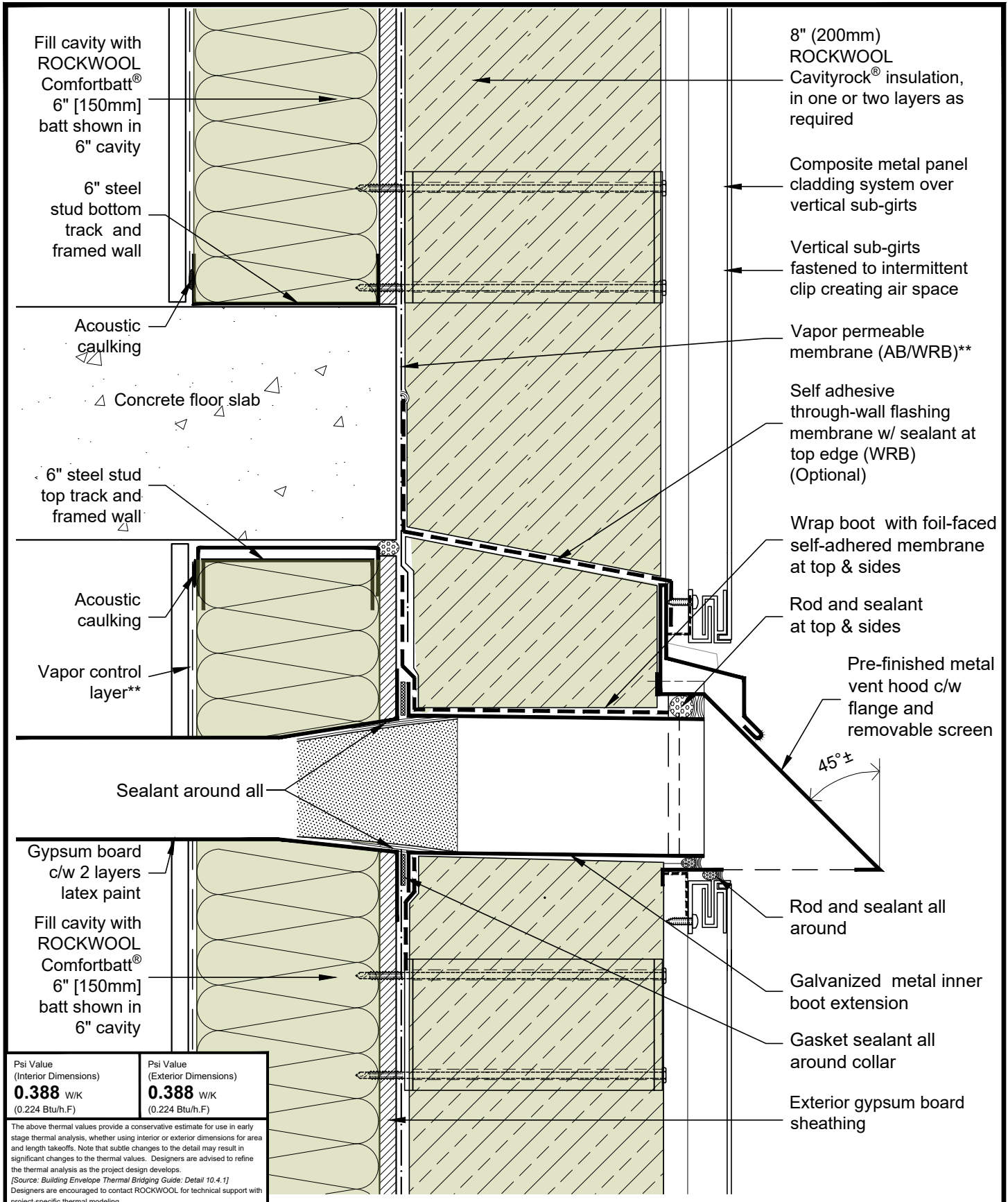


DRAWING TITLE: **TYPICAL CURTAIN WALL JAMB**

DRAWING NO.: **Detail 15**  
 SCALE: **3" = 1'-0"**  
 DATE: **NOVEMBER 2022**

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 \*\* For climate zone specific considerations for thermal, air and vapor control layer properties and requirements, please contact ROCKWOOL® Building Science for support.



Fill cavity with ROCKWOOL Comfortbatt® 6" [150mm] batt shown in 6" cavity

6" steel stud bottom track and framed wall

Acoustic caulking

△ Concrete floor slab

6" steel stud top track and framed wall

Acoustic caulking

Vapor control layer\*\*

Sealant around all

Gypsum board c/w 2 layers latex paint

Fill cavity with ROCKWOOL Comfortbatt® 6" [150mm] batt shown in 6" cavity

Psi Value (Interior Dimensions)  
**0.388** W/K  
(0.224 Btu/h.F)

Psi Value (Exterior Dimensions)  
**0.388** W/K  
(0.224 Btu/h.F)

The above thermal values provide a conservative estimate for use in early stage thermal analysis, whether using interior or exterior dimensions for area and length takeoffs. Note that subtle changes to the detail may result in significant changes to the thermal values. Designers are advised to refine the thermal analysis as the project design develops.  
[Source: Building Envelope Thermal Bridging Guide: Detail 10.4.1]  
Designers are encouraged to contact ROCKWOOL for technical support with project-specific thermal modeling.

8" (200mm) ROCKWOOL Cavityrock® insulation, in one or two layers as required

Composite metal panel cladding system over vertical sub-girts

Vertical sub-girts fastened to intermittent clip creating air space

Vapor permeable membrane (AB/WRB)\*\*

Self adhesive through-wall flashing membrane w/ sealant at top edge (WRB) (Optional)

Wrap boot with foil-faced self-adhered membrane at top & sides

Rod and sealant at top & sides

Pre-finished metal vent hood c/w flange and removable screen

45° ±

Rod and sealant all around

Galvanized metal inner boot extension

Gasket sealant all around collar

Exterior gypsum board sheathing

**MULTI-UNIT RESIDENTIAL/COMMERCIAL STEEL FRAME CONSTRUCTION UP TO 6 STOREYS - LIGHTWEIGHT CLADDING**

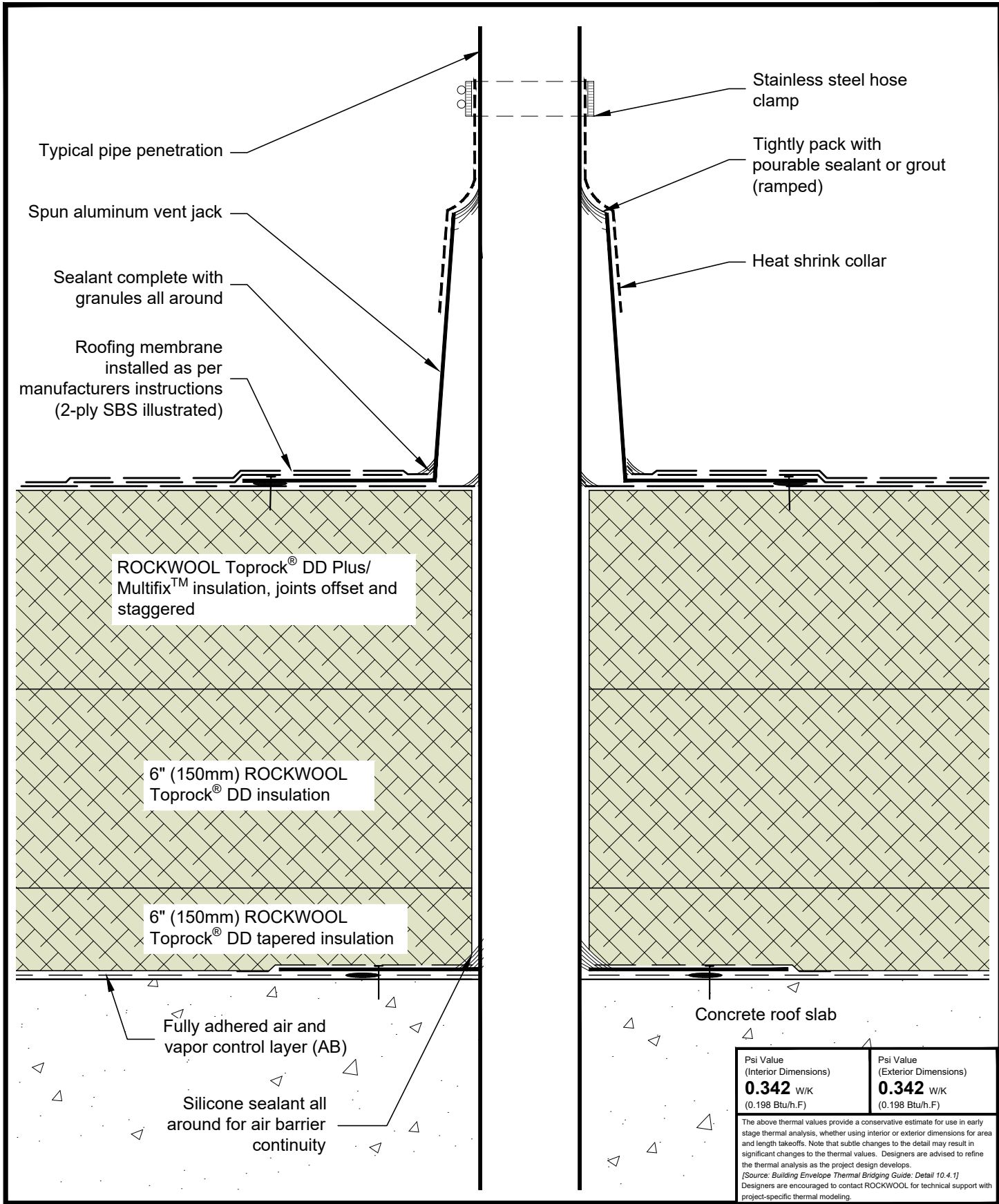


DRAWING TITLE: **TYPICAL MECHANICAL PENETRATION THROUGH ENCLOSURE**

DRAWING NO.: **Detail 16**  
SCALE: 3" = 1'-0"  
DATE: NOVEMBER 2022

November 02 2022 11:14 PM

\* For thermal performance of ROCKWOOL® products, please refer to ROCKWOOL® technical data sheets  
\*\* For climate zone specific considerations for thermal, air and vapor control layer properties and requirements, please contact ROCKWOOL® Building Science for support.

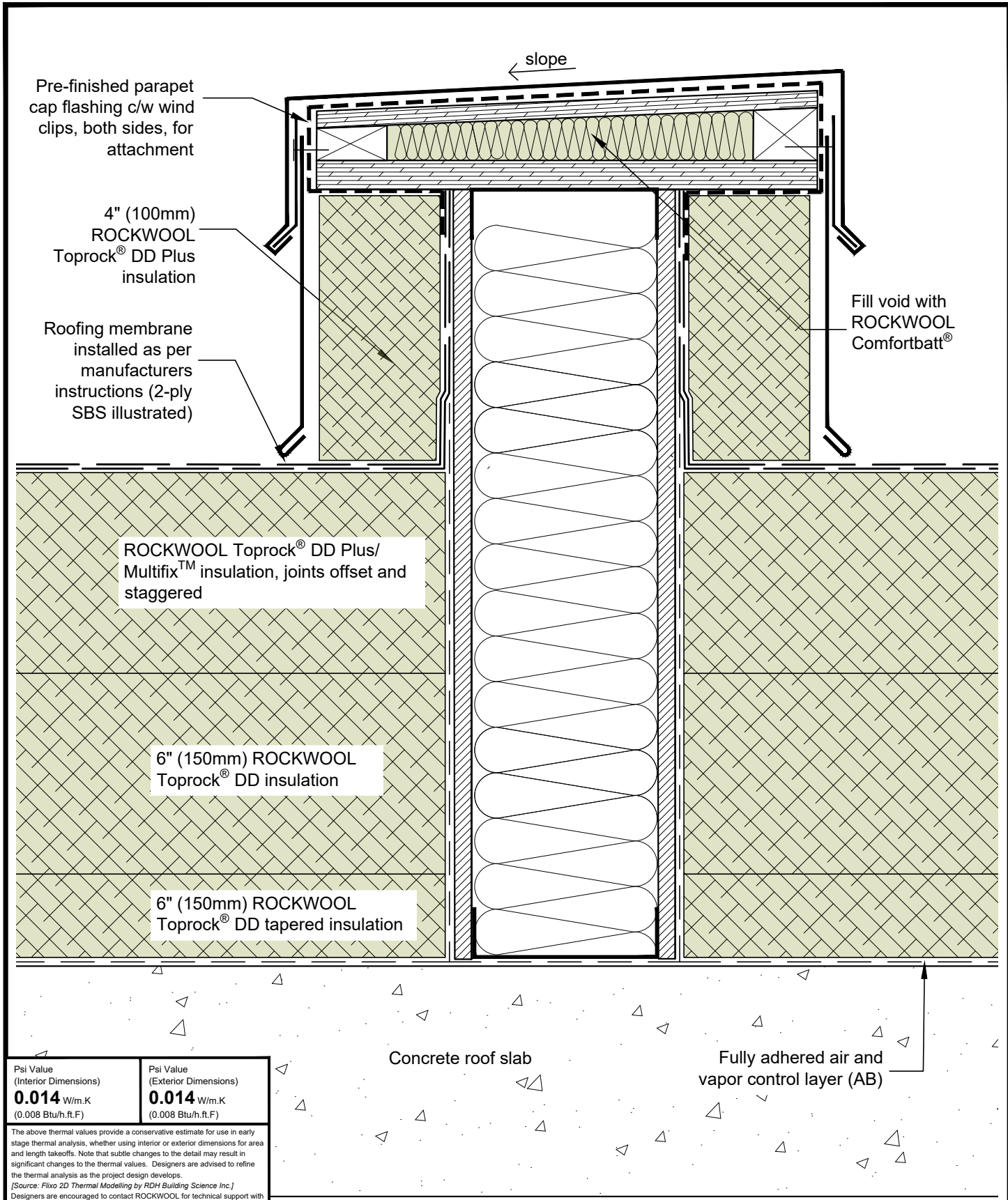


Psi Value (Interior Dimensions) <b>0.342</b> W/K (0.198 Btu/h.F)	Psi Value (Exterior Dimensions) <b>0.342</b> W/K (0.198 Btu/h.F)
The above thermal values provide a conservative estimate for use in early stage thermal analysis, whether using interior or exterior dimensions for area and length takeoffs. Note that subtle changes to the detail may result in significant changes to the thermal values. Designers are advised to refine the thermal analysis as the project design develops. <small>[Source: Building Envelope Thermal Bridging Guide: Detail 10.4.1]</small> Designers are encouraged to contact ROCKWOOL for technical support with project-specific thermal modeling.	

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<b>MULTI-UNIT RESIDENTIAL/COMMERCIAL STEEL FRAME CONSTRUCTION UP TO 6 STOREYS - LIGHTWEIGHT CLADDING</b>		
DRAWING TITLE: <p style="text-align: center;">TYPICAL PENETRATION THROUGH ROOF</p>	DRAWING NO.: <p style="text-align: center;">Detail 17</p>	

\* For thermal performance of ROCKWOOL® products, please refer to ROCKWOOL® technical data sheets  
 \*\* For climate zone specific considerations for thermal, air and vapor control layer properties and requirements, please contact ROCKWOOL® Building Science for support.



Psi Value (Interior Dimensions) <b>0.014</b> W/m.K (0.008 Btu/h.ft.F)	Psi Value (Exterior Dimensions) <b>0.014</b> W/m.K (0.008 Btu/h.ft.F)
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The above thermal values provide a conservative estimate for use in early stage thermal analysis, whether using interior or exterior dimensions for area and length takeoffs. Note that subtle changes to the detail may result in significant changes to the thermal values. Designers are advised to refine the thermal analysis as the project design develops.  
 [Source: Flixo 2D Thermal Modelling by RDH Building Science Inc.]  
 Designers are encouraged to contact ROCKWOOL for technical support with project-specific thermal modeling.

<b>MULTI-UNIT RESIDENTIAL/COMMERCIAL STEEL FRAME          CONSTRUCTION UP TO 6 STOREYS - LIGHTWEIGHT CLADDING</b>		
DRAWING NO.: <b>Detail 18</b>	SCALE: 3" = 1'-0" DATE: NOVEMBER 2022	
TYPICAL MID-ROOF CURB		

November 02 2022 11:14 PM

\* For thermal performance of ROCKWOOL® products, please refer to ROCKWOOL® technical data sheets  
 \*\* For climate zone specific considerations for thermal, air and vapor control layer properties and requirements, please contact ROCKWOOL® Building Science for support.