
CASCADIA
WINDOWS & DOORS
CASCADIAWINDOWS.COM

CASCADIA – EDUCATIONAL PRESENTATION

MIND THE GAP

BETTER EXTERIOR WALL PERFORMANCE THROUGH CLADDING ATTACHMENTS

AGENDA: WHAT ARE WE LOOKING AT TODAY?

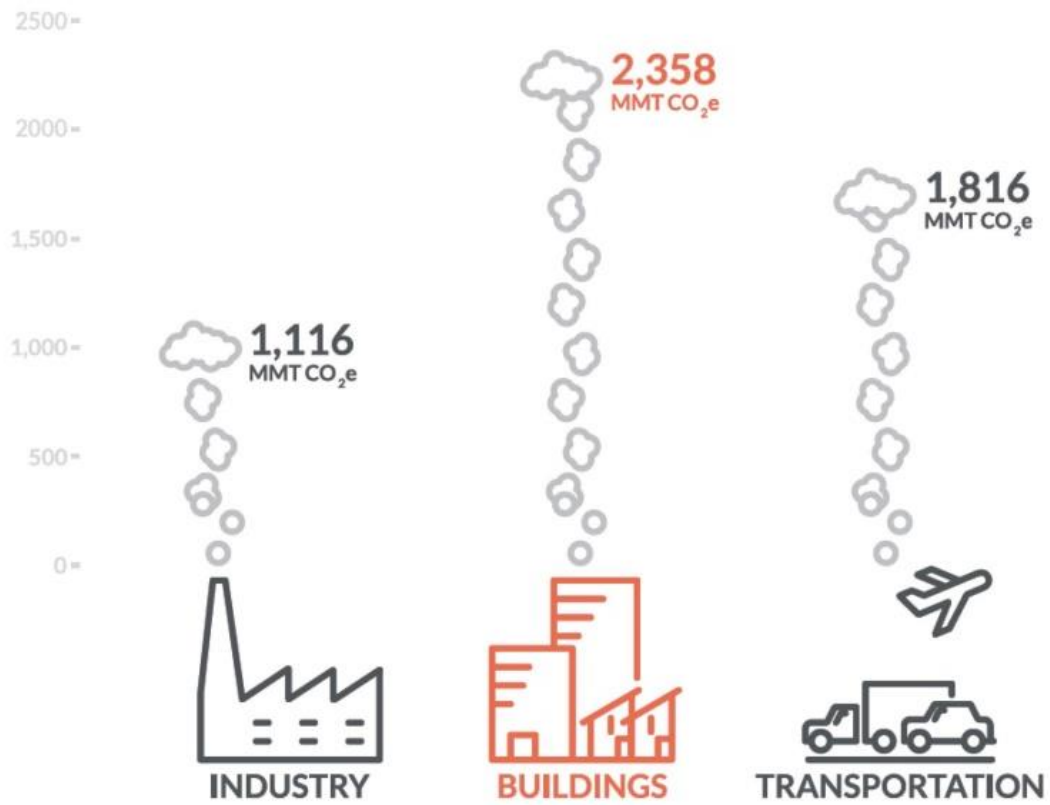
- INTRO TO CASCADIA WINDOWS & DOORS
- UNDERSTANDING THE IMPACTS OF THERMAL BRIDGING
- PRESCRIPTIVE VS U-VALUES / PSI & CHI VALUES
- INSULATION APPROACHES
- UNDERSTANDING CLADDING ATTACHMENT OPTIONS
- DESIGN & PERFORMANCE CHARACTERISTICS OF DIFFERENT CLADDING ATTACHMENTS
- CASE STUDIES
- WRAP UP

THE PROBLEM WITH BUILDINGS

Understanding the impact of buildings on our energy grid and environment

WHAT'S THE PROBLEM?

BUILDINGS ARE RESPONSIBLE FOR 44.5% OF US CO_2 EMISSIONS.

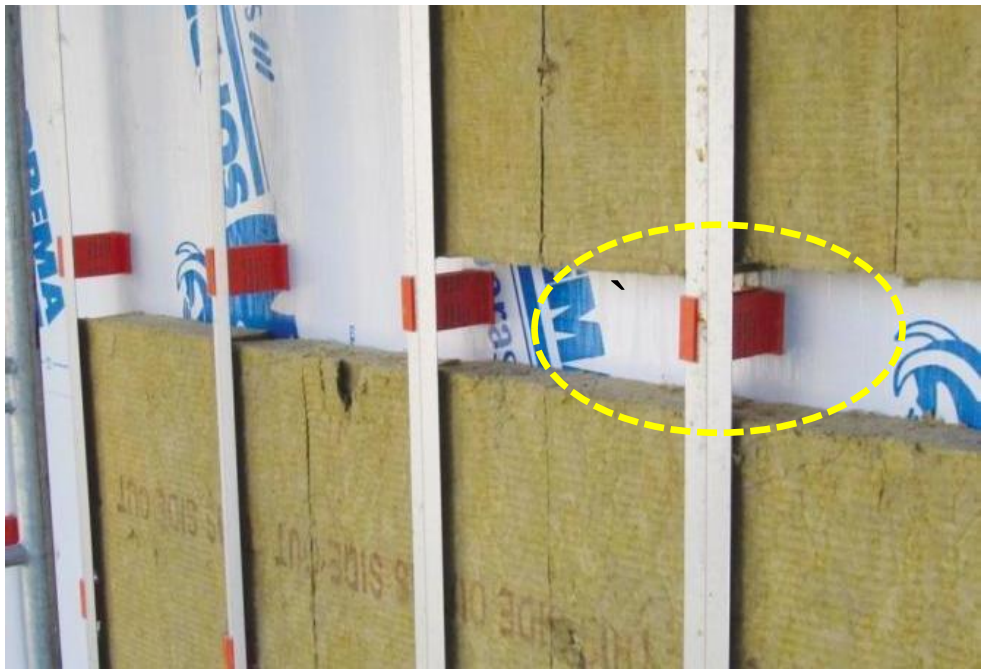


DATA SOURCE: ARCHITECTURE 2030
ILLUSTRATION: HAMMERANDHAND.COM

THE IMPORTANCE OF BUILDING SCIENCE

CLADDING ATTACHMENT MATTERS MOST

12” OF INSULATION



3.5” OF INSULATION

THINNER WALL HAS HIGHER EFFECTIVE R-VALUE

HEAT FLOW

"Hey Duke, doesn't that fire feel good."

"Ouch! That poker's too hot to hold with my bare hands."

"I'll turn on the fan. All the warmest air is up near the ceiling."

HEAT FLOW – CONDUCTION

CONDUCTION

HEAT FLOW THROUGH SOLID OBJECTS

CONDUCTIVITY

RATE OF CONDUCTIVE HEAT FLOW DEPENDS ON MATERIAL

Aluminum ~160 W/mK
Steel ~60 W/mK
Stainless Steel ~14 W/mK
Fiberglass ~0.15 to 0.30 W/mK
Wood ~0.10 to 0.15 W/mK
Insulation Materials 0.022 to 0.080 W/mK

CONDUCTANCE (U-VALUE)

LAYER OR ASSEMBLY

HEAT FLOW – U-VALUE AND R-VALUE

U-VALUE: CONDUCTANCE

HOW WELL HEAT MOVES THROUGH AN ASSEMBLY OR MATERIAL

THE LOWER THE U-VALUE, THE BETTER THE ASSEMBLY

$$\frac{1}{R} = U$$

R-VALUE: RESISTANCE

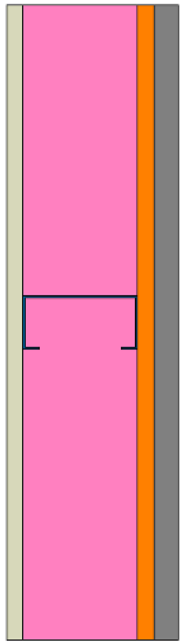
INVERSE OF U-VALUE

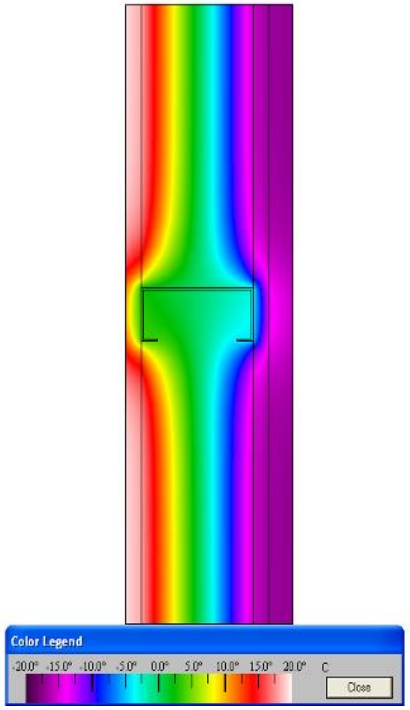
$$\frac{1}{U} = R$$

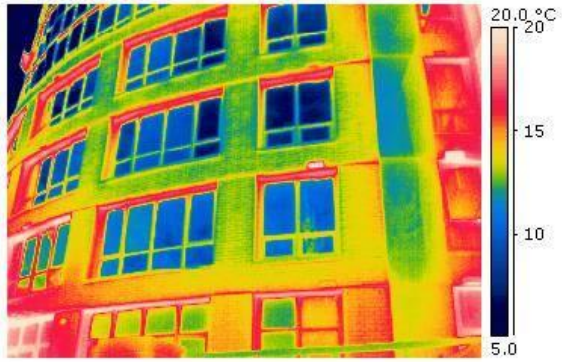
WHY ADDRESS THERMAL BRIDGING?

Understanding the impact of thermal bridging on a building's overall thermal performance

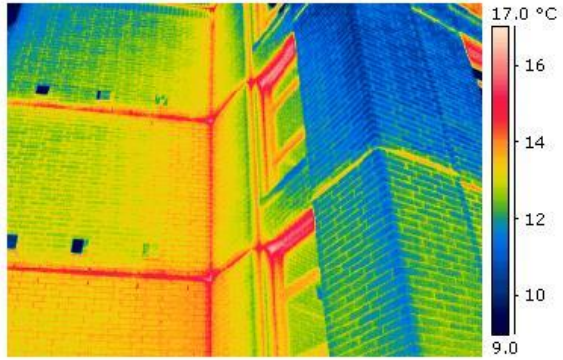
THERMAL BRIDGING



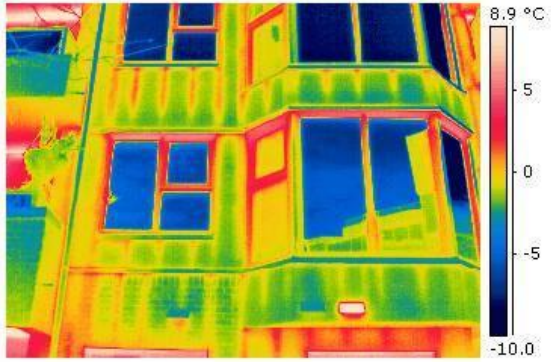




WINDOW FRAME

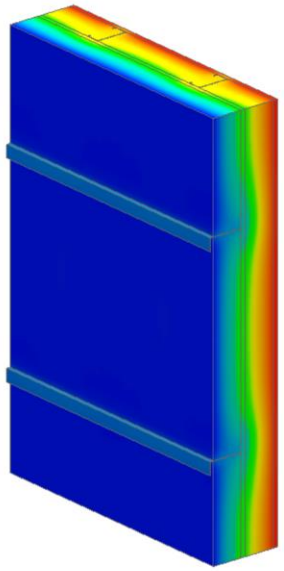


SHELF ANGLES



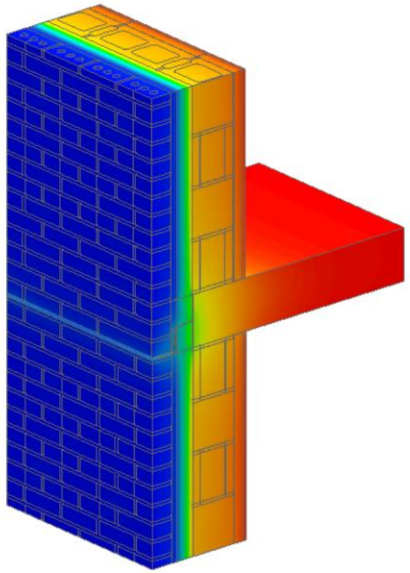
STEEL STUDS

DIFFERENT VALUES FOR DIFFERENT TYPES



Clear Field

U_o



Linear

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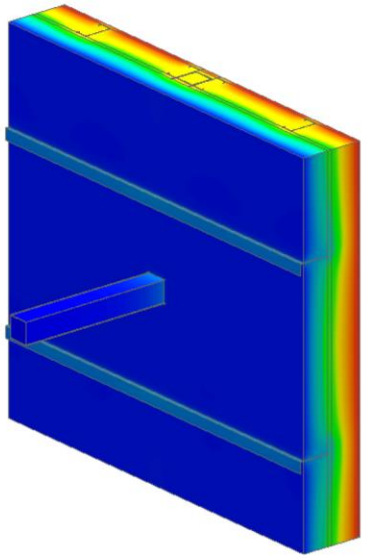
psi



Point

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Graphic credit to Morrison Hershfield
Ripped screaming from the pages of a 2012 report, authored by Neil Norris, Patrick Ropell, Mark Lawton

DICTATING BETTER PERFORMANCE

CA.GOV

CITY of BOSTON

CITY OF VANCOUVER

Connecticut

Minneapolis
City of Lakes

City of Seattle

NYC Buildings

Delaware

NEW YORK STATE

ILLINOIS.GOV

IDAHO

MOST COMMON WALL TARGET

	Assembly Maximum	Insulation Min. R-Value
Steel-Framed	U-0.064	R-13.0 + R-7.5 c.i.

Overall U-value (inverse of *Effective* R-value)

Nominal R-values

R-15.6 $_{eff}$

NEW CODES ARE DIFFERENT

PREVIOUS ENERGY CODES

SEPARATE ASSEMBLY R-VALUES

NOW (BC ENERGY STEP CODE EXAMPLE)

ONE ENERGY USE LIMIT

NEW CODES ARE DIFFERENT

- Where have we already seen a whole-building outcome-based target work?
- Passive House
- It is impossible to develop enough prescriptive detail to account for all influential factors (e.g. thermal bridging), while also being simple enough to actually follow and achieve
- Designing for results
- Flexibility and responsibility

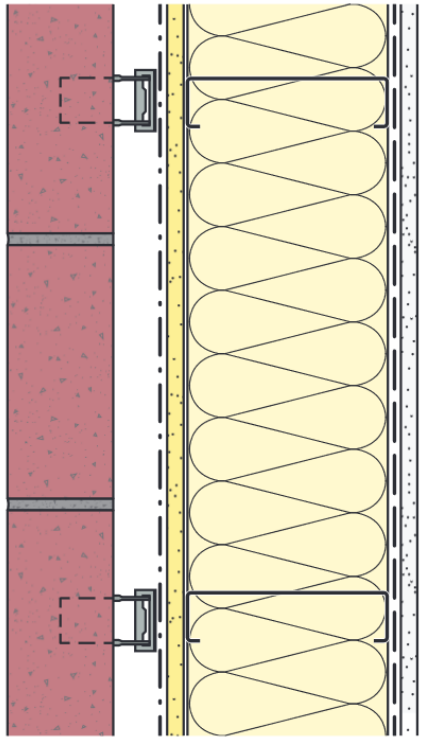
PHIUS
Passive House Institute US

Passive House Institute

WHY EXTERIOR INSULATION AND RAINSCREEN?

Gives us a chance to place insulation away from thermal-bridging of stud layer

INTERIOR INSULATION



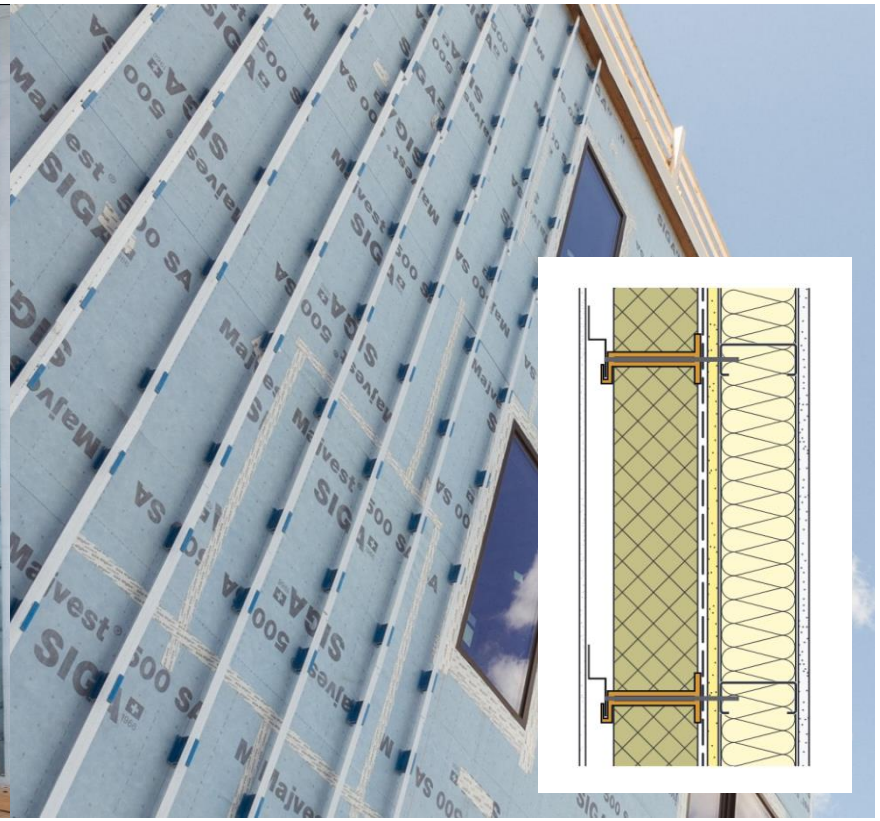
INSULATION LAYER IN STUD CAVITY

MODERATE THERMAL PERFORMANCE
(EFFICIENT IN WOOD FRAME / INEFFICIENT IN STEEL STUD)

HIGHER RISK OF MOISTURE IN WALLS

IMAGE COURTESY OF ROCKWOOL / RDH BUILDING SCIENCE

SPLIT INSULATION



INSULATION LAYER IN STUD CAVITY + EXTERIOR OF SHEETING

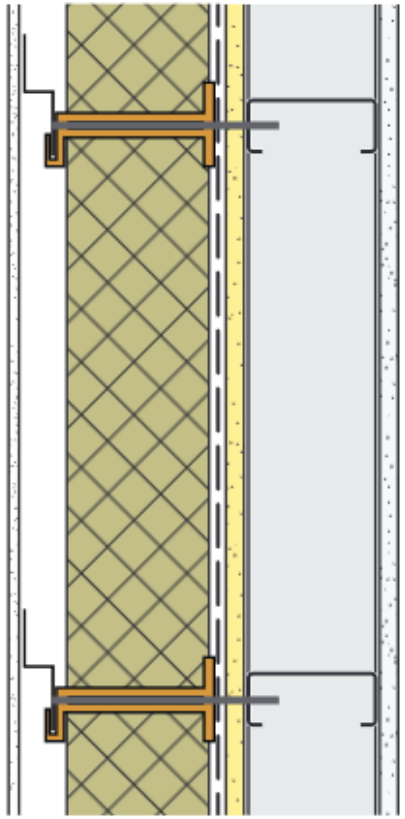
THERMAL PERFORMANCE
(BALANCING PERFORMANCE AND WALL THICKNESS)

MODERATE RISK OF MOISTURE IN WALLS
(DEPENDING ON CLIMATE ZONE & VAPOR/AIR BARRIERS)

MORE COMPLEX DESIGN & INSTALL
(MORE COMPONENTS, MORE CONSIDERATION TO LOCATION, PLACEMENT AND TYPE OF AIR AND VAPOR BARRIERS)

IMAGE COURTESY OF ROCKWOOL / CASCADIA WINDOWS & DOORS / RDH BUILDING SCIENCE

EXTERIOR INSULATION



INSULATION EXTERIOR OF SHEETING

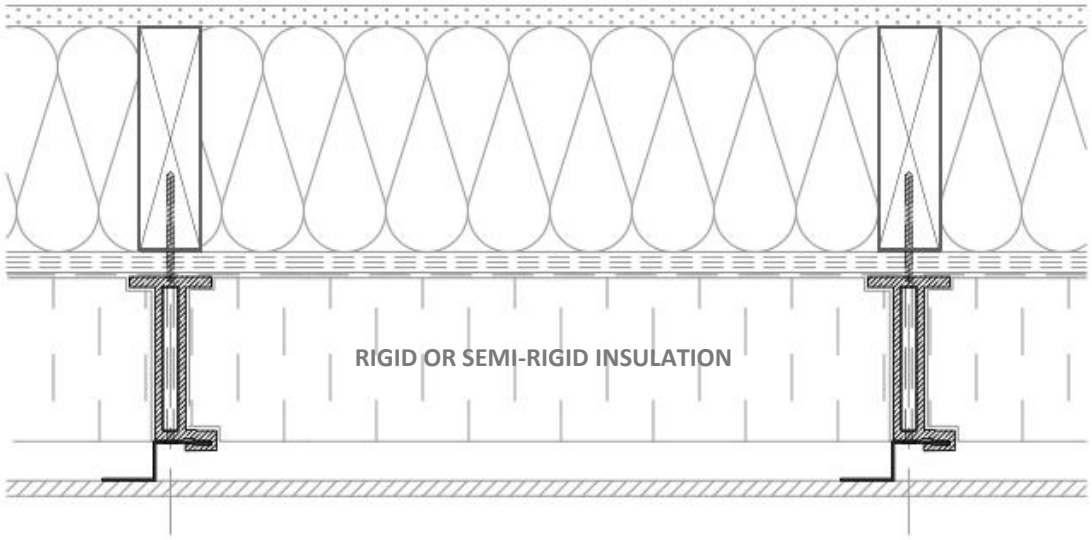
HIGH THERMAL PERFORMANCE
(MOST EFFICIENT USE OF INSULATION)

MINIMAL RISK OF MOISTURE IN WALLS

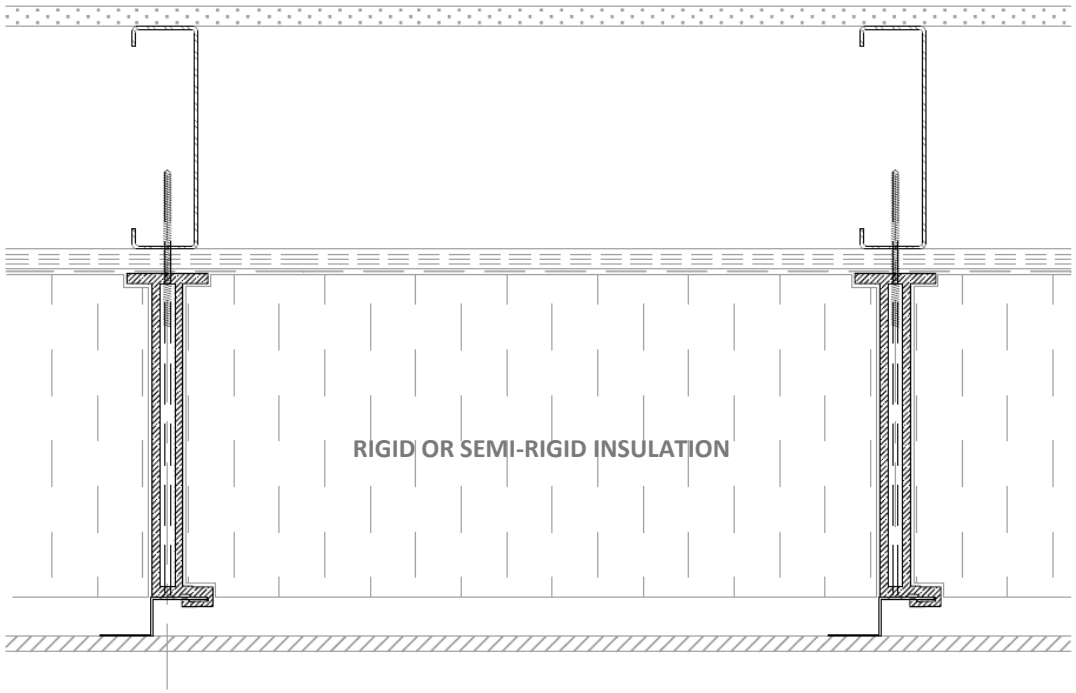
SIMPLE DESIGN & INSTALL
(LESS COMPONENTS, CAN COMBINE AIR AND VAPOR BARRIERS, WORKS IN ALL CLIMATE ZONES, MORE DURABLE)

IMAGE COURTESY OF RDH BUILDING SCIENCE / CASCADIA WINDOWS & DOORS

PASSIVE HOUSE ASSEMBLIES



SPLIT INSULATION



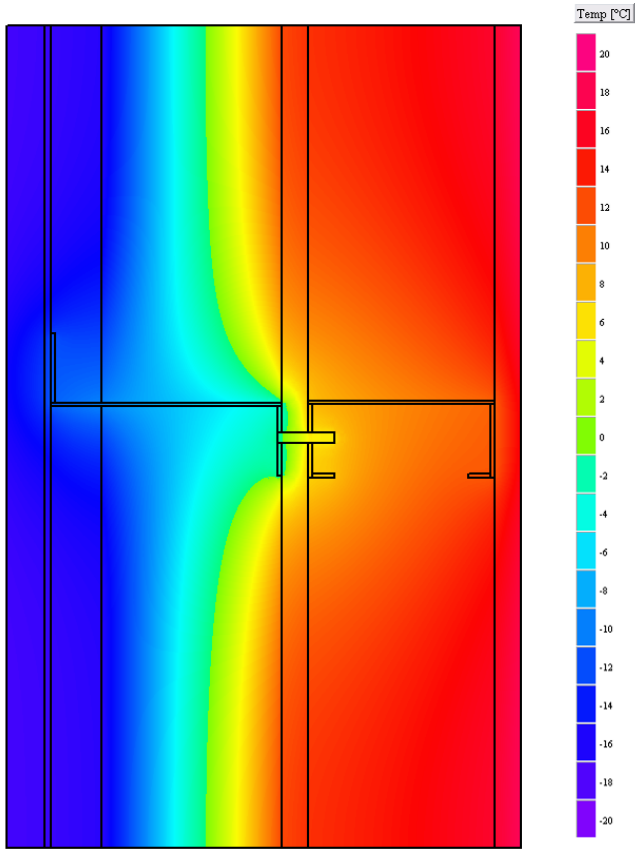
EXTERIOR INSULATION

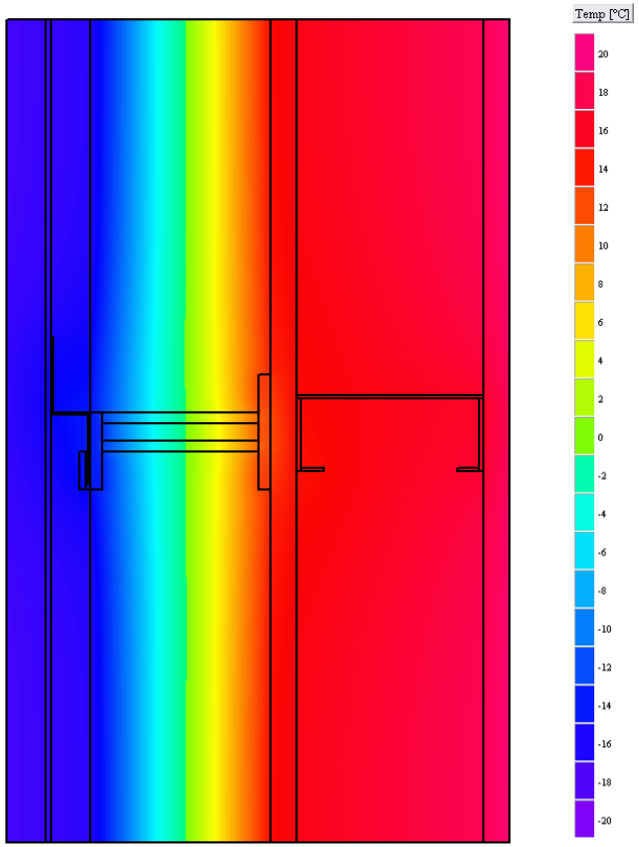
IMAGE COURTESY OF CASCADIA WINDOWS & DOORS

HOW CLADDING ATTACHMENT IMPACTS PERFORMANCE

Thermally-improved cladding attachments are more important than insulation type

IMPACTS OF HOW YOU ATTACH





CLADDING ATTACHMENTS

METAL GIRTS VERTICAL & HORIZONTAL	ALUMINUM T-CLIPS	GALVANIZED STEEL CLIPS	STAINLESS STEEL CLIPS
ISOLATED GALVANIZED CLIPS	FIBERGLASS CLIPS	DIRECT ATTACHMENT	FIBERGLASS GIRT

CLADDING ATTACHMENTS

METAL GIRTS VERTICAL & HORIZONTAL

THE “OLD” WAY

ALUMINUM T-CLIPS

GALVANIZED STEEL CLIPS

STAINLESS STEEL CLIPS

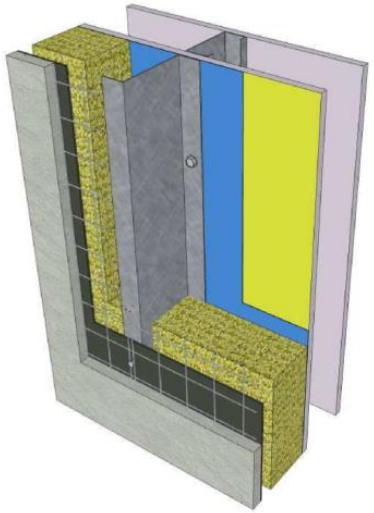
ISOLATED GALVANIZED CLIPS

FIBERGLASS CLIPS

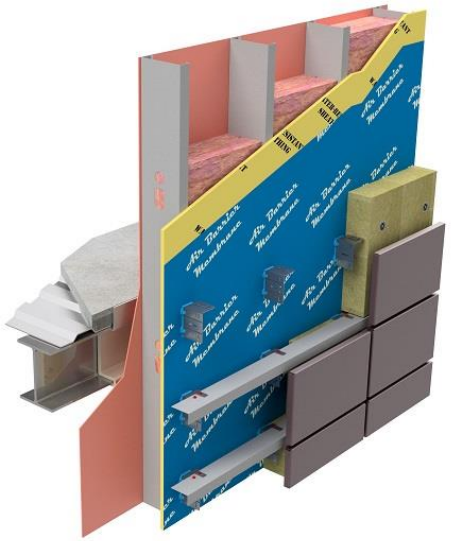
DIRECT ATTACHMENT

FIBERGLASS GIRT

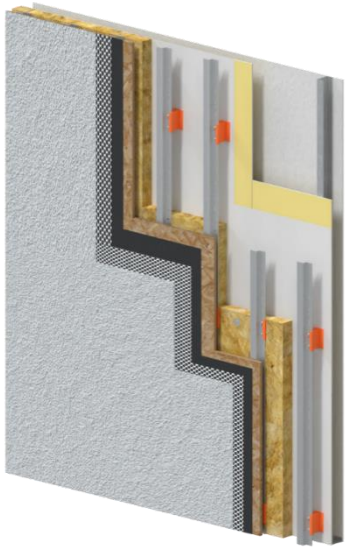
CLADDING ATTACHMENTS



METAL GIRTS
VERTICAL & HORIZONTAL



ISOLATED GALVANIZED CLIPS



FIBERGLASS CLIPS
GALVANIZED SCREWS

FIBERGLASS GIRT
NO THROUGH SCREWS

DIRECT ATTACHMENT
GALVANIZED STEEL SCREWS

IMAGE COURTESY OF RDH BUILDING SCIENCE / ISO CLIP / CASCADIA WINDOWS & DOORS / ARMATHERM / KNIGHT WALL SYSTEMS

DEFINING PERFORMANCE – THERMAL

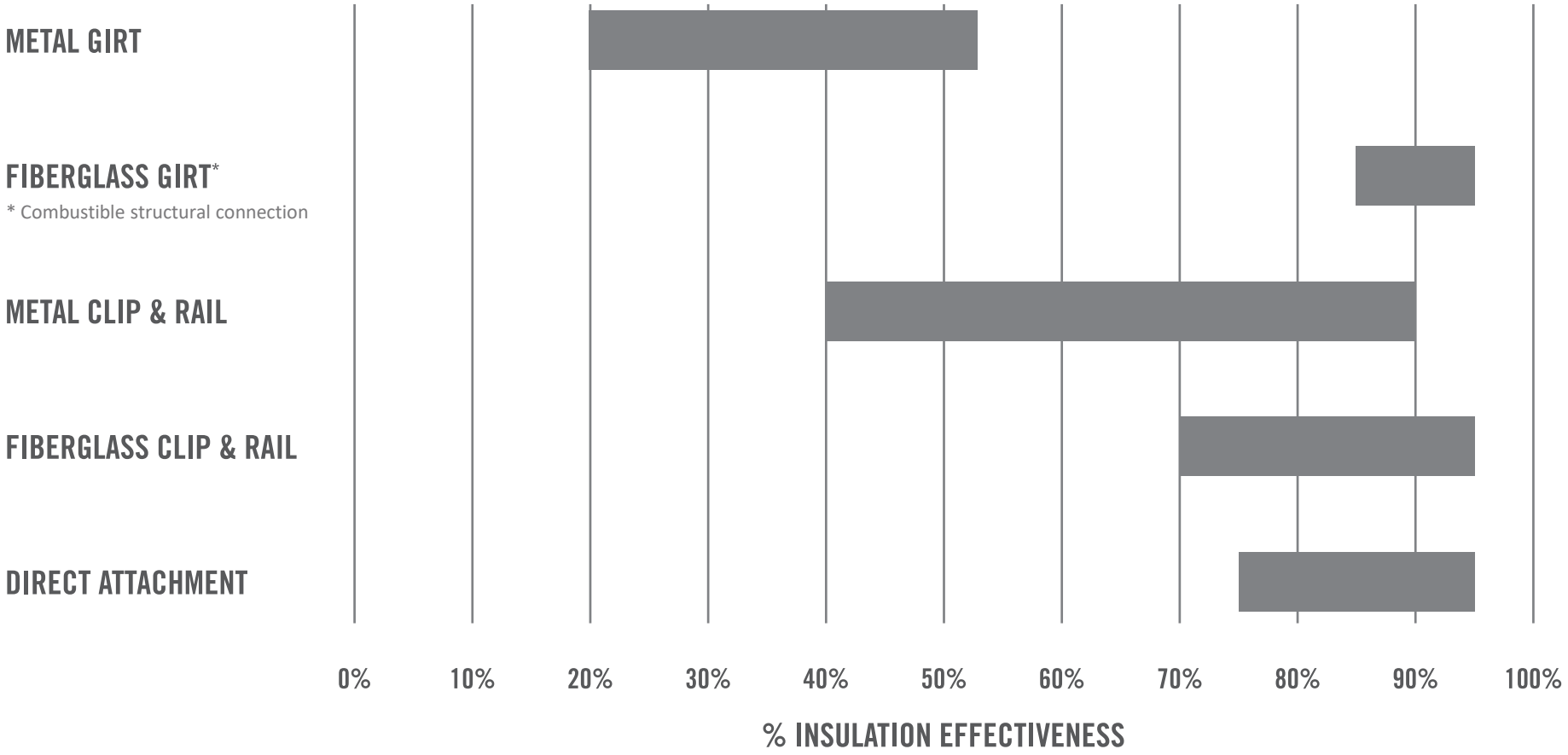


IMAGE COURTESY OF RDH BUILDING SCIENCE / CASCADIA WINDOWS & DOORS

DEFINING PERFORMANCE - STRENGTH

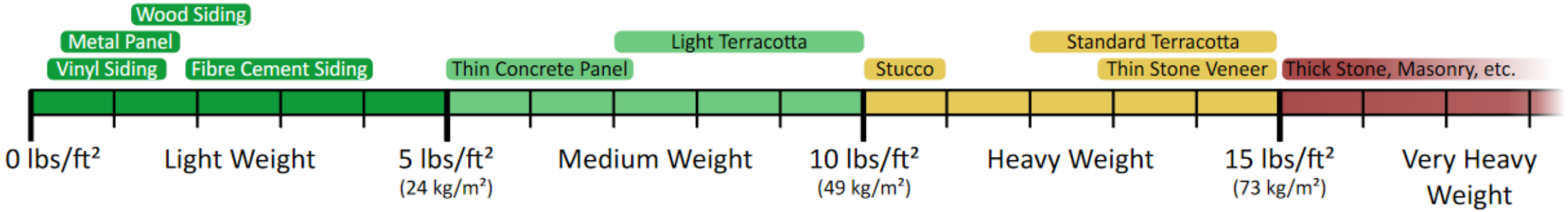
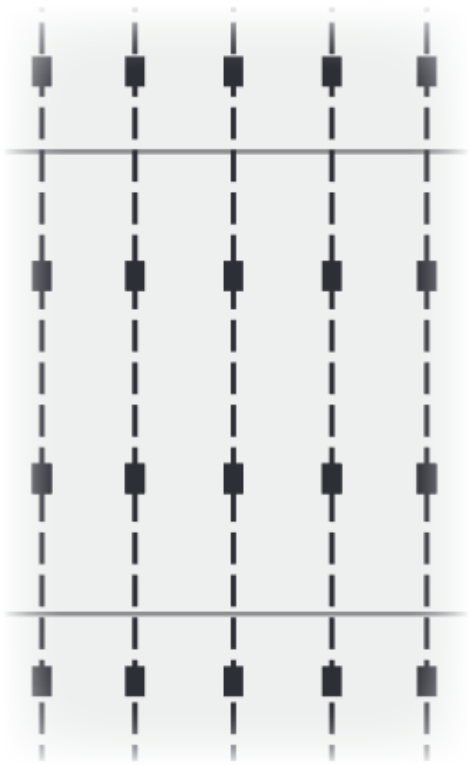
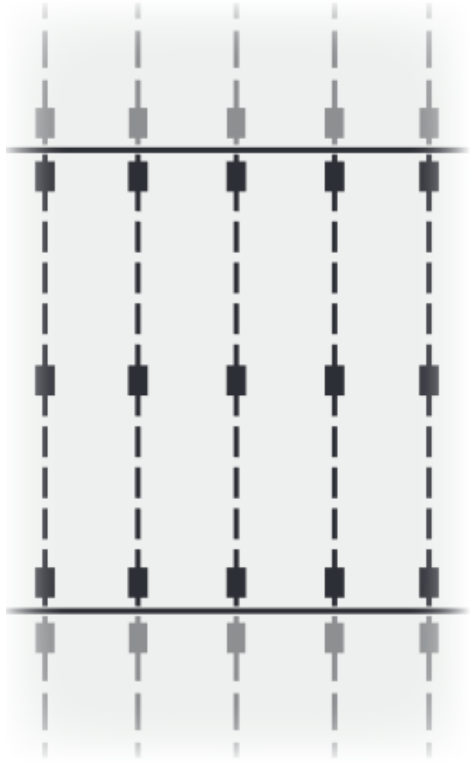


IMAGE COURTESY OF RDH BUILDING SCIENCE

DEFINING PERFORMANCE - COST





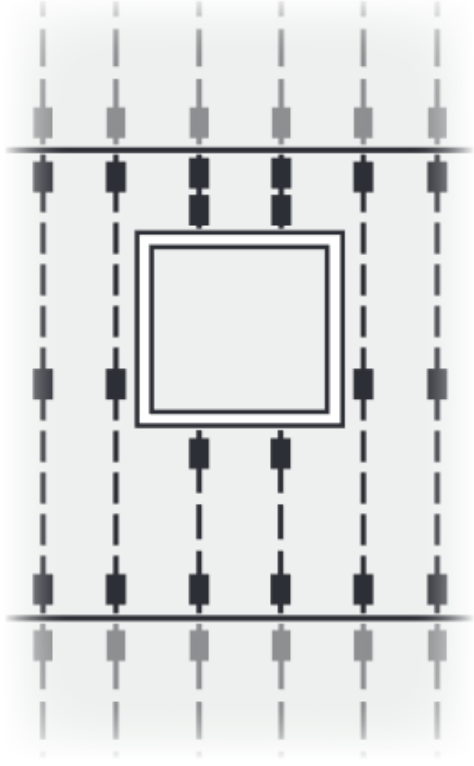


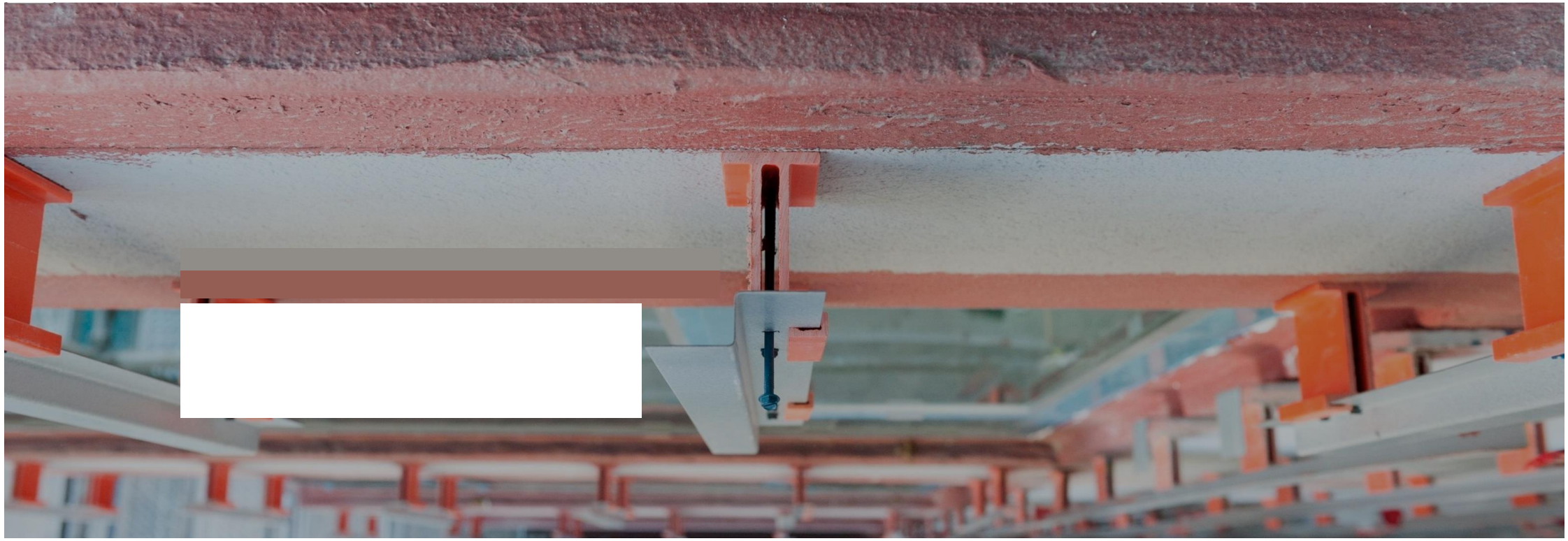
IMAGE COURTESY OF RDH BUILDING SCIENCE

DEFINING PERFORMANCE - COST

FIBERGLASS - CLIP AND RAIL

STANDARD STEEL/STAINLESS STEEL - CLIP AND RAIL

DESIGN TOOLS



CLIP SPACING – WIND LOAD PERFORMANCE

Steel Stud/Concrete Wall Substructure - Up to 30 psf Specified Wind

4" Wall Assembly – Vertical Clip Spacing (inches) - 2 attachment screws

Cladding Weight (psf)	18 Ga. Steel Studs/Concrete		20 Ga. Steel Studs	
	16" Horizontal Spacing	24" Horizontal Spacing	16" Horizontal Spacing	24" Horizontal Spacing
3	48	32	48	32
4	48	32	48	32
5	48	32	47	31
6	48	32	45	30
7	48	32	42	28
8	48	32	40	27
10	48	32	37	25
15	39	26	30	20

Steel Stud/Concrete Wall Substructure - Up to 50 psf Specified Wind

6" Wall Assembly – Vertical Clip Spacing (inches) - 3 attachment screws

Cladding Weight (psf)	18 Ga. Steel Studs/Concrete		20 Ga. Steel Studs	
	16" Horizontal Spacing	24" Horizontal Spacing	16" Horizontal Spacing	24" Horizontal Spacing
3	48	32	45	30
4	48	32	42	28
5	48	32	39	26
6	47	32	36	24
7	44	30	34	23
8	42	28	32	21
10	38	25	29	19
15	27	18	23	15

CLIP SPACING – WIND LOAD PERFORMANCE

Back up Wall Structure	3 5/8" Steel Stud - 18ga
Batts in Cavity?	Yes (R-13)
Exterior Insulation R-Value per Inch	R-4.3/inch
Fastener Type	2 x Galvanized Steel
Clip Horizontal Spacing	16 in
Cladding Dead Load (Weight)	7 psf
Exterior Insulation Depth / Clip Size	6 in
Clip Vertical Spacing	48 in

FULL WALL EFFECTIVE THERMAL PERFORMANCE

R-Value **30.4** [(ft²•°F•hr)/Btu]

U-Value **0.033** [Btu/(ft²•°F•hr)]

WALL STRUCTURAL CAPACITY

Max. Wind Load **53.3** [psf]

IP SI

Steel Stud/Concrete Wall Substructure - Up to 50 psf Specified Wind

6" Wall Assembly – Vertical Clip Spacing (inches) - 3 attachment screws

Cladding Weight (psf)	18 Ga. Steel Studs/Concrete		20 Ga. Steel Studs	
	16" Horizontal Spacing	24" Horizontal Spacing	16" Horizontal Spacing	24" Horizontal Spacing
3	48	32	45	30
4	48	32	42	28
5	48	32	39	26
6	47	32	36	24
7	44	30	34	23
8	42	28	32	21
10	38	25	29	19
15	27	18	23	15

R VALUE AND MAX ALLOWABLE WIND LOADS

FIBERGLASS - CLIP AND RAIL

Back up Wall Structure	3 5/8" Steel Stud - 18ga
Batts in Cavity?	No
Exterior Insulation R-Value per Inch	R-4.3/inch
Fastener Type	2 x Galvanized Steel
Clip Horizontal Spacing	16 in
Cladding Dead Load (Weight)	3 psf
Exterior Insulation Depth / Clip Size	4 in
Clip Vertical Spacing	48 in

FULL WALL EFFECTIVE THERMAL PERFORMANCE

R-Value	17.9	[(ft²•°F•hr)/Btu]
U-Value	0.056	[Btu/(ft²•°F•hr)]

WALL STRUCTURAL CAPACITY

Max. Wind Load	75.8	[psf]

IP SI

STANDARD STEEL/STAINLESS STEEL - CLIP AND RAIL

Your results

The results below are intended to provide estimated specified wind load and thermal performance, and is for advice and guidance based on the National Building Code of Canada, and must be verified by a licenced engineer of record in the province or state where the product is to be installed. Analysis of the bracket, girt and mechanical attachments was conducted by Morrison Hershfield.

Your chosen horizontal spacing	16 in
Your chosen vertical spacing	24 in
Maximum specified wind load	47 psf
Maximum possible effective R-value	R-16
Governing component	bracket-to-substrate connection
Clip count (per unit area)	0.375 per ft²
Suggested subgirt dimensions	2 ½ × 2"

Your chosen horizontal spacing	16 in
Your chosen vertical spacing	48 in
Maximum specified wind load	22 psf
Maximum possible effective R-value	R-18
Governing component	bracket-to-substrate connection
Clip count (per unit area)	0.188 per ft²
Suggested subgirt dimensions	2 ½ × 2"

R VELUE AND MAX ALLOWABLE WIND LOADS

FIBERGLASS - CLIP AND RAIL

PROJECT QUOTE DETAILS

Cladding Area (ft^2)	2,187
Cladding Type (optional)	TBD
Cladding Weight (psf) (optional)	3.0
Sub-Furring Required	Z-Girt (Vertical/Continuous)
Clip Size (in)	4
Horizontal Space (in)	16
Vertical Spacing (in)	48

Contingency (Estimate)

Contingency percentage accounts for openings, corners and tighter clip spacing a joints in sub-furring that may require additional materials.

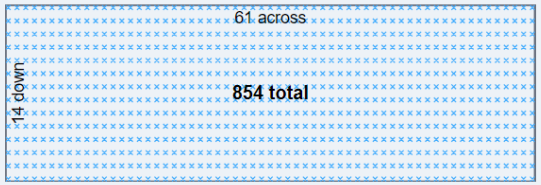
Clips (including 2 fasteners / clip)	10%
Z-Girt - Linear Feet	10%

QUANTITY CALCULATIONS

	UNITS
Clips (#)	453
Z-Girt - Linear Feet	1,810
Square footage / clip	4.83

STANDARD STEEL/STAINLESS STEEL - CLIP AND RAIL

Specify a wall width and height below to calculate the number of horizontal and vertical ranks of clips required, as well as the total number of clips required.



Wall width	81 ft
Wall height	27 ft

Your results

The results below are intended to provide estimated specified wind load and thermal performance, and is for advice and guidance based on the National Building Code of Canada, and must be verified by a licenced engineer of record in the province or state where the product is to be installed. Analysis of the bracket, girt and mechanical attachments was conducted by Morrison Hershfield.

Your chosen horizontal spacing	16 in
Your chosen vertical spacing	24 in
Maximum specified wind load	47 psf
Maximum possible effective R-value	R-16
Governing component	bracket-to-substrate connection
Clip count (per unit area)	0.375 per ft²
Suggested subgirt dimensions	2 ½ × 2"

PERFORMANCE IS A MATRIX

	RELATIVE COST	THERMAL EFFICIENCY	CONSTRUCTABILITY	COMBUSTIBILITY	STRENGTH
METAL GIRT	$$$	20-50%			
FIBERGLASS GIRT*	$$$	85-95%			
METAL CLIP & RAIL	$$$	40-90%			
FIBERGLASS CLIP & RAIL	$$$	70-95%			
DIRECT ATTACHMENT	$$$	75-95%			

* Combustible structural connection

IMAGE COURTESY OF RDH BUILDING SCIENCE / CASCADIA WINDOWS & DOORS

DEFINING PERFORMANCE

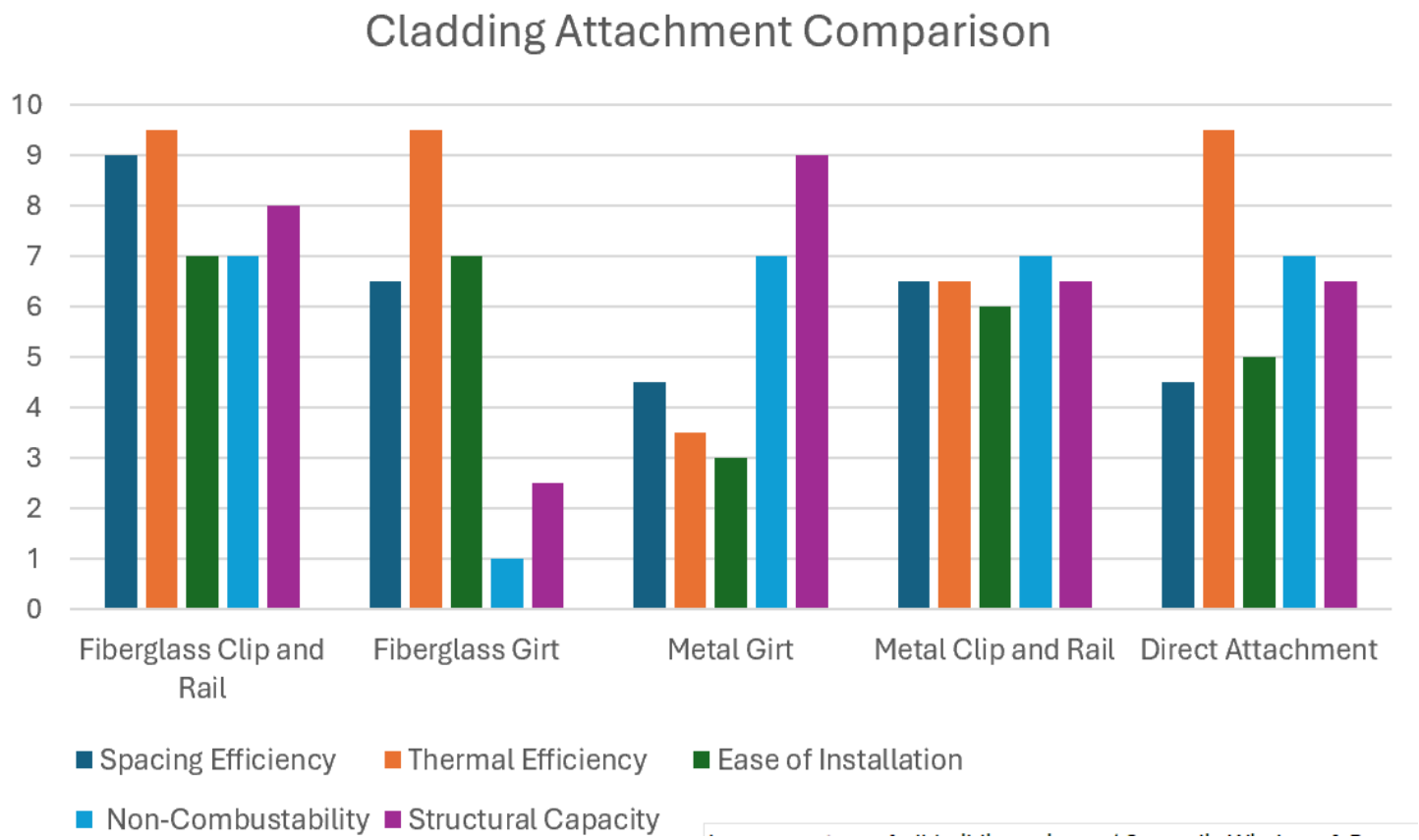


IMAGE COURTESY OF RDH BUILDING SCIENCE / CASCADIA WINDOWS & DOORS

FIRE PROTECTION – CLADDING BIG PICTURE

TO AVOID THIS…

ANALYSIS AND TESTING – FIRE PERFORMANCE

ENGINEERING ANALYSIS – FIRE PERFORMANCE:

Spacer is acceptable for use in:

- A WALL REQUIRED TO BE BUILT OF NON-COMBUSTIBLE CONSTRUCTION
- INCLUDING PERMITTED COMBUSTIBLE CLADDINGS (METAL COMPOSITE MATERIALS)
- ALSO, IN COMBUSTIBLE CONSTRUCTION (OBVIOUSLY)

Maintains the two code (and common sense) objectives, which are:

1. CANNOT ALTER INTENDED FIRE PERFORMANCE OF NON-COMBUSTIBLE WALL
2. CLADDING MUST STAY-IN-PLACE EVEN IF THE COMPONENT IS DAMAGED

No.1 is clear by analysis, and can be further supported by testing

No.2 is clear by observation—direct fastening

CANADIAN CODE EVALUATION

LMDG
Building Code Consultants Ltd

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
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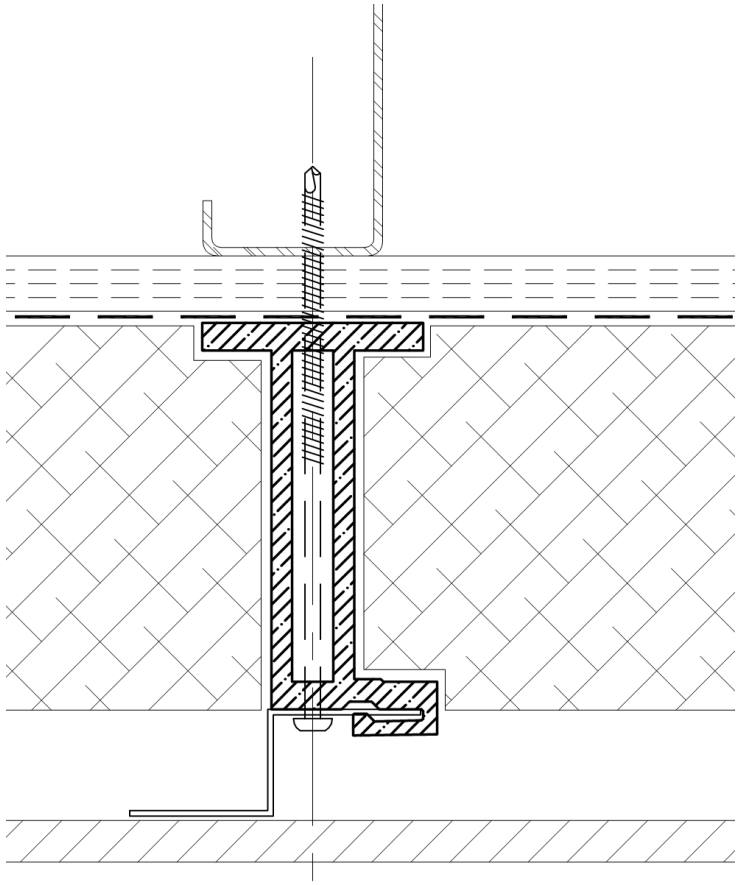
769 Roslyn Blvd, North Vancouver, B.C. V7G 1P4
Tel. **604-929-8520** Fax **604-929-8530** Cell **604-290-6569**

WORKS WITH ANY CLADDING TYPE

MINOR
COMBUSTIBLE COMPONENT

Building Code Appeal Board
c/o Building and Safety Standards Branch
PO Box 9844 Stn Prov Govt
Victoria BC V8W 9T2

NON-COMBUSTIBLE CONNECTION



CODE COMPLIANCE: IAPMO-UES REPORT

THIRD PARTY CERTIFICATION OF THE CASCADIA CLIP

APPROVES CLIP FOR USE IN IBC TYPES I, II, III, IV, AND V CONSTRUCTION

ICC-ES EQUIVALENT

LOOKS AT SEVERAL DIFFERENT ASPECTS OF DESIGN

ONLY CLIP SYSTEM WITH A NATIONALLY RECOGNIZED THIRD PARTY CODE COMPLIANCE REPORT

FIRE PERFORMANCE - TESTING

NFPA 285 TEST
FIRE PROPAGATION IN EXTERIOR WALL
FULL-ASSEMBLY TEST

FIRE PERFORMANCE - TESTING

FIRE PERFORMANCE – NFPA 285 RESULTS

SOLID PASS WITH MCM PANELS

FIRE PERFORMANCE – NFPA 285 RESULTS

SOLID PASS WITH MCM PANELS

FOR FIRE PERFORMANCE

CONCLUSION:
THE CLIP DOES…

NOTHING

AND THEREFORE
CHANGES NOTHING.

INTERTEK LISTING WITH ROXUL

ROXUL Inc.
Design No. RI/MFF 30-01
Mineral Wool Insulation
CAVITYROCK and COMFORTBOARD 110
NFPA 285 – Meets Conditions of Acceptance

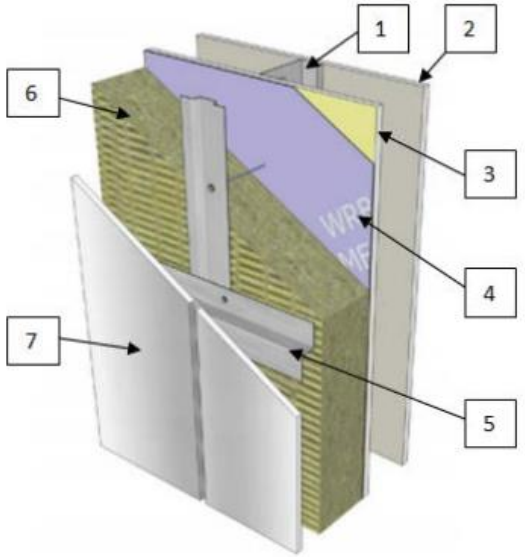


Figure 1: Construction with COMFORTBOARD 110

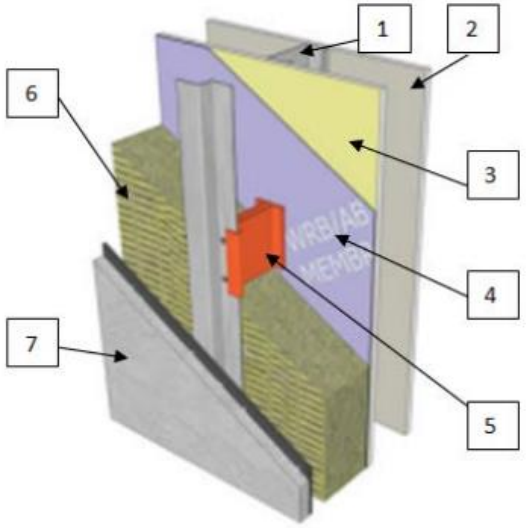
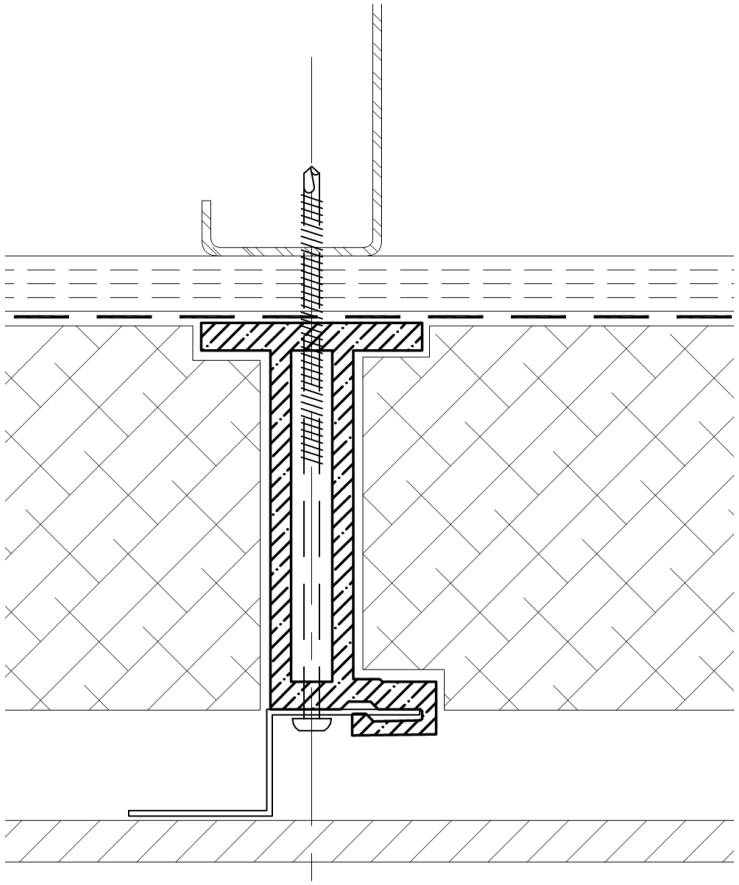


Figure 2: Construction with CAVITYROCK

Intertek

Valued Quality. Delivered.

A LENS TO JUDGE



TYPICAL INSTALLATION PRACTICES

Maximizing efficiency to streamline installation

INSTALLATION STEPS

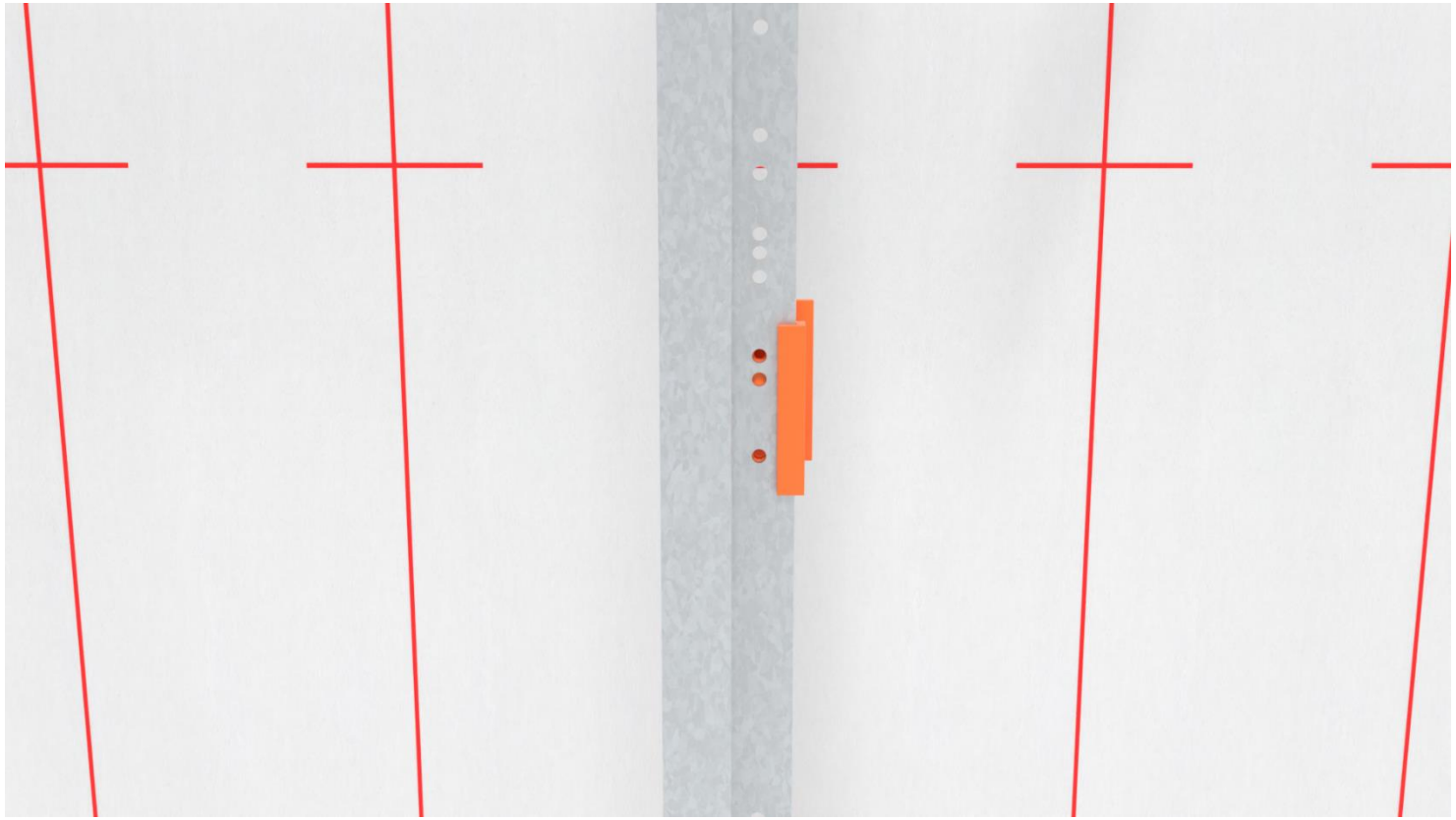
VERTICAL CLIP & RAIL

1. Mark spacing on backup wall

INSTALLATION STEPS

VERTICAL CLIP & RAIL

2. Snap clips to pre-punched z-girts



INSTALLATION STEPS

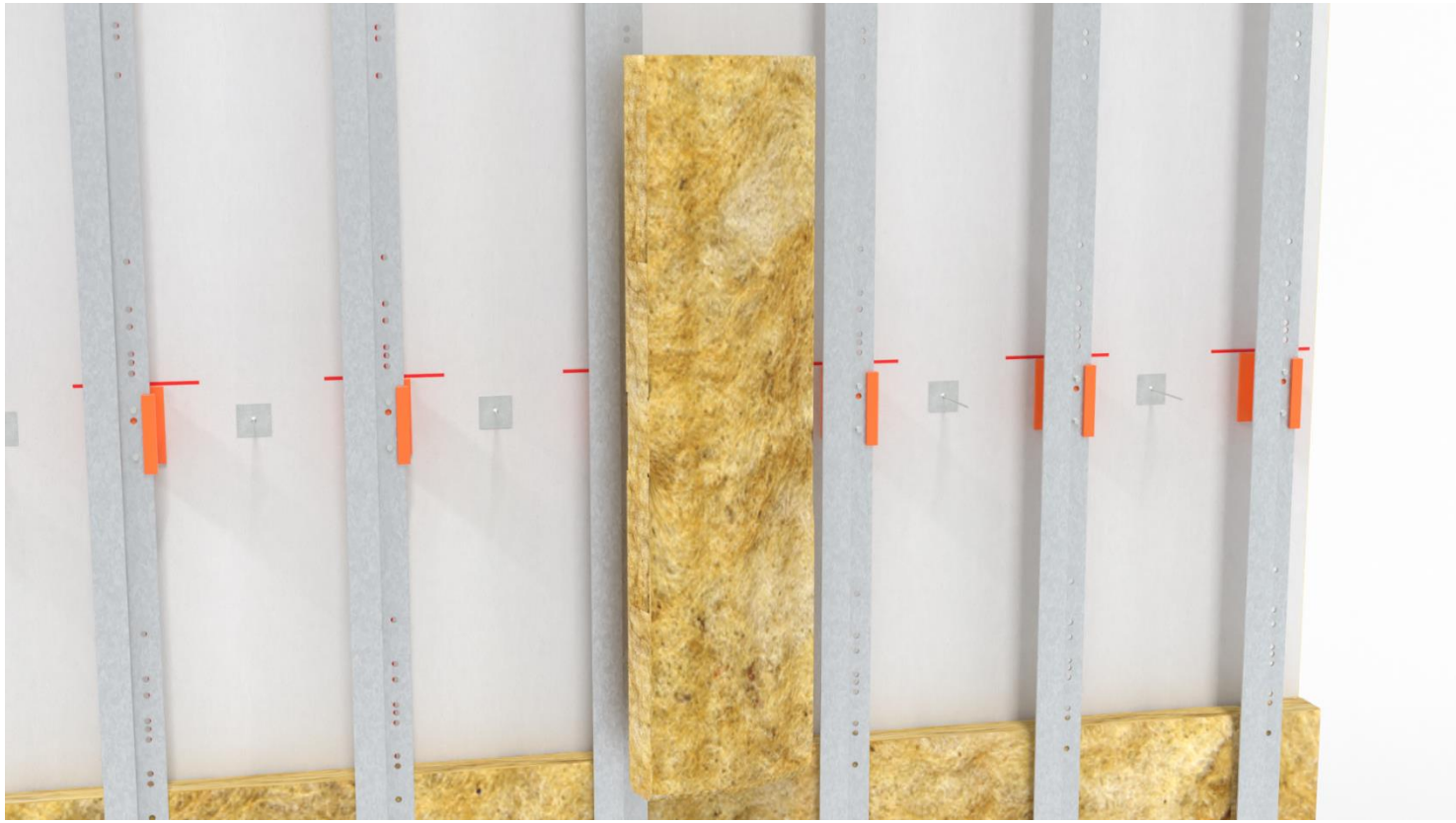
VERTICAL CLIP & RAIL

3. Secure clips to backup wall

INSTALLATION STEPS

VERTICAL CLIP & RAIL

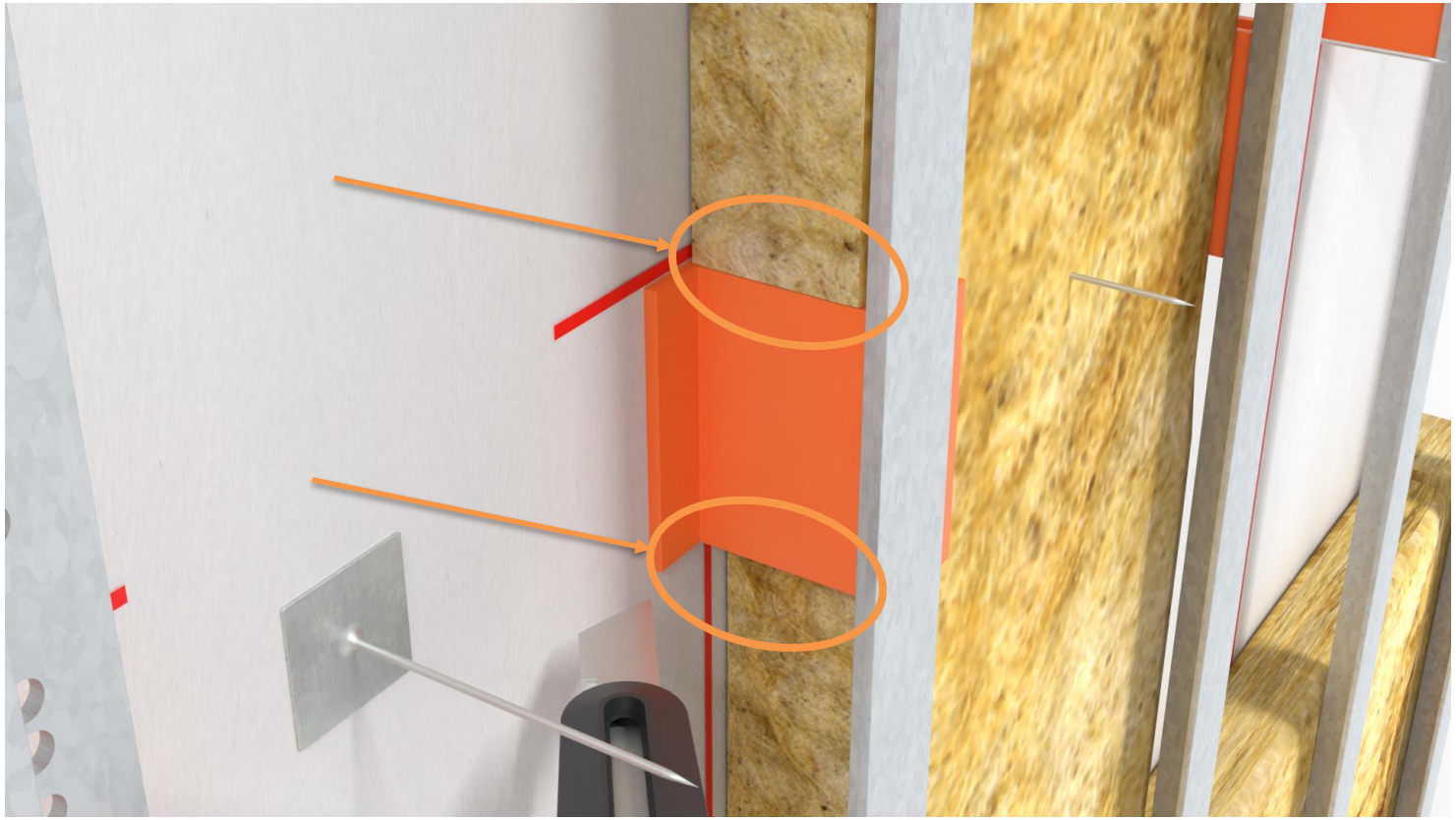
4. Install insulation



INSTALLATION STEPS

VERTICAL CLIP & RAIL

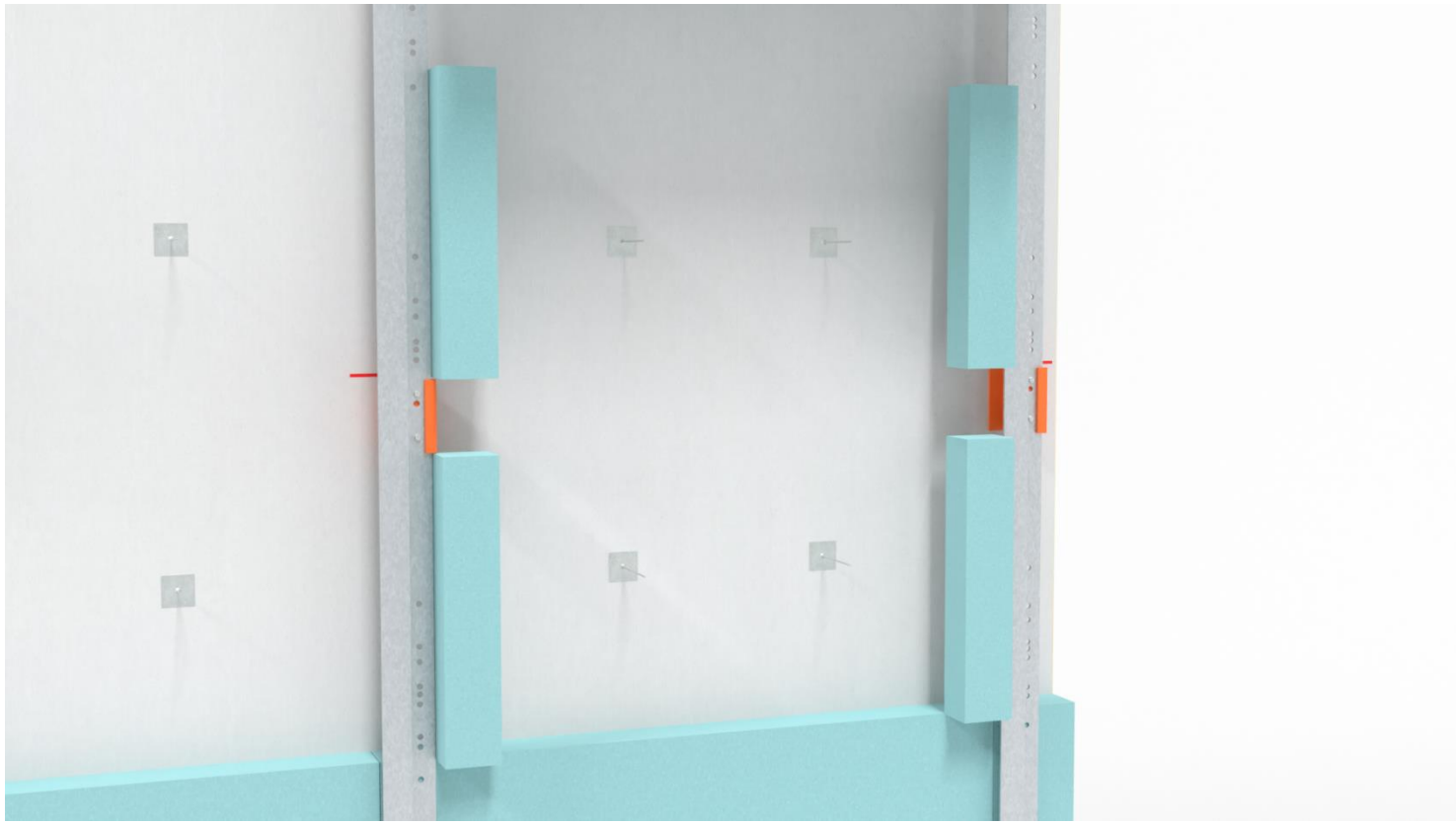
4. Install insulation



INSTALLATION STEPS

VERTICAL CLIP & RAIL

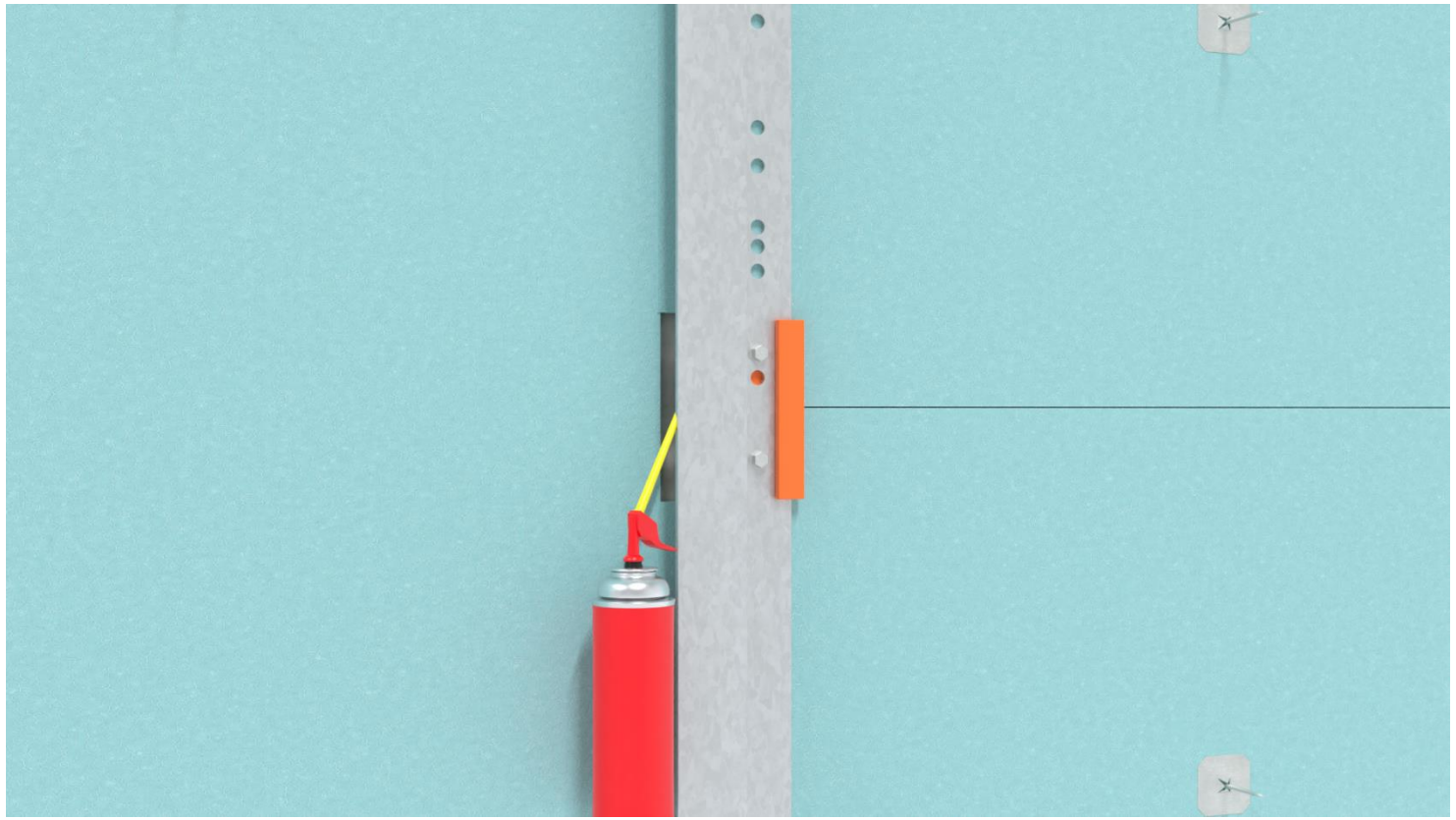
4. Install insulation (Rigid Insulation)



INSTALLATION STEPS

VERTICAL CLIP & RAIL

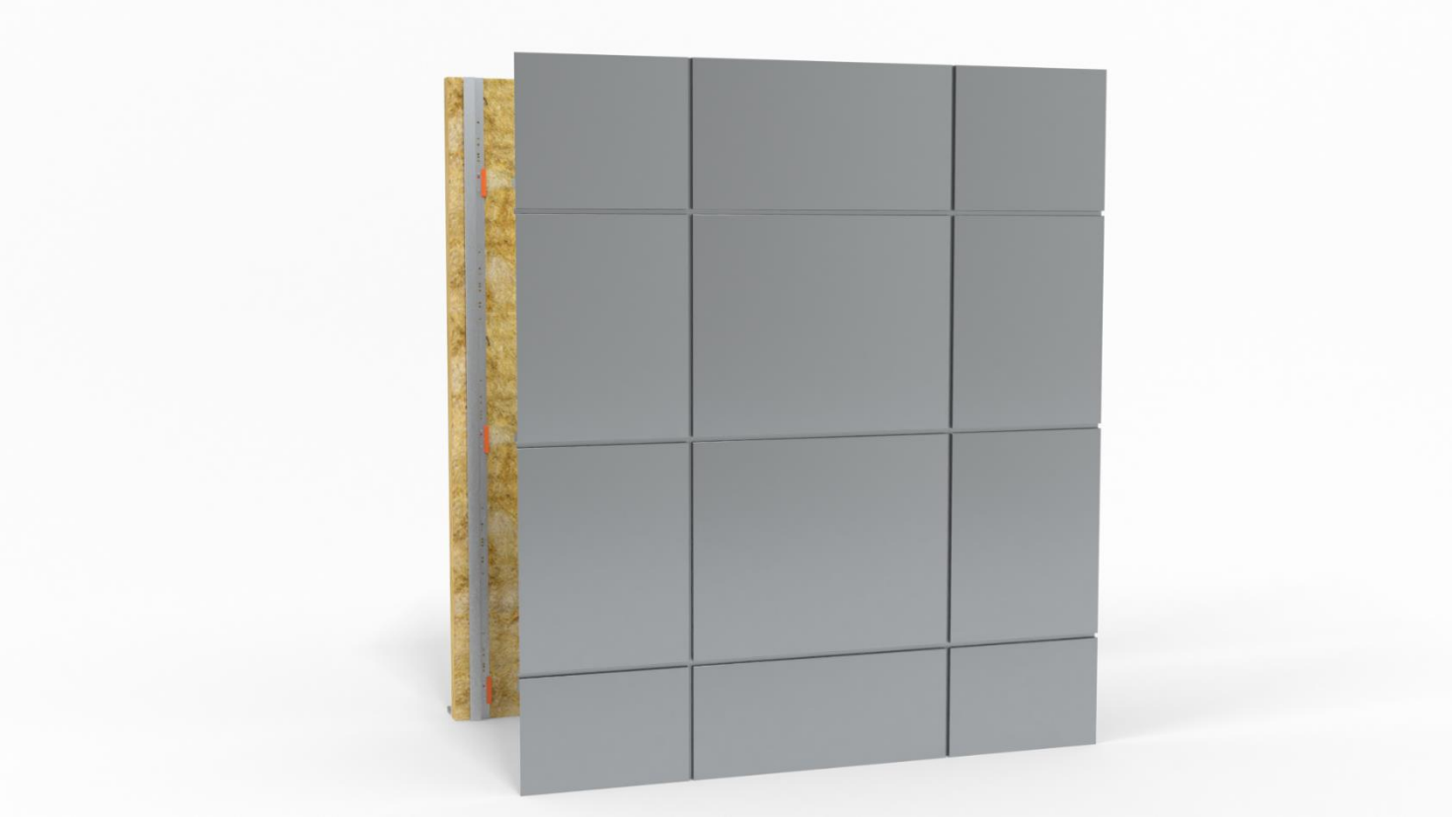
4. Install insulation (Rigid Insulation)



INSTALLATION STEPS

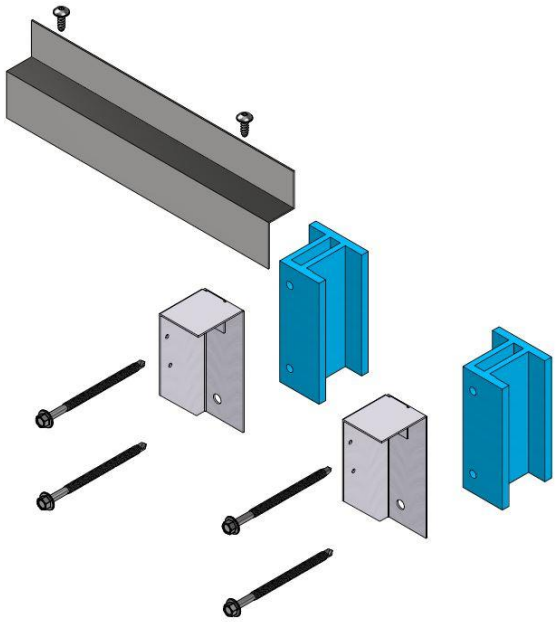
VERTICAL CLIP & RAIL

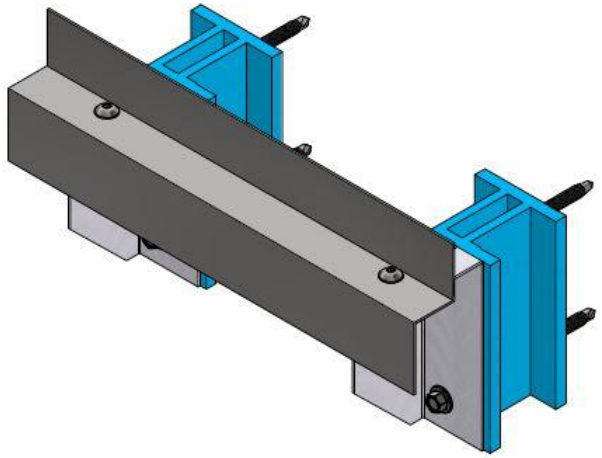
5. Install cladding

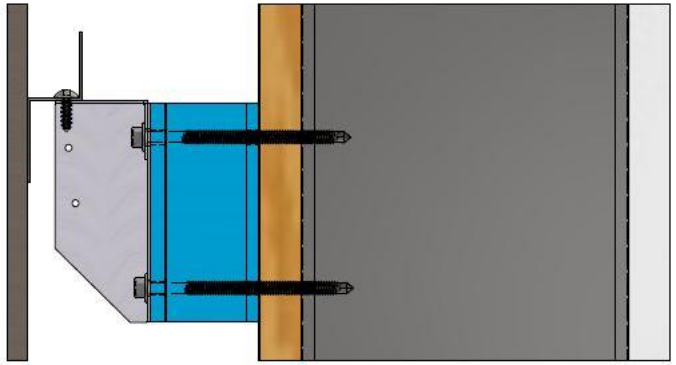


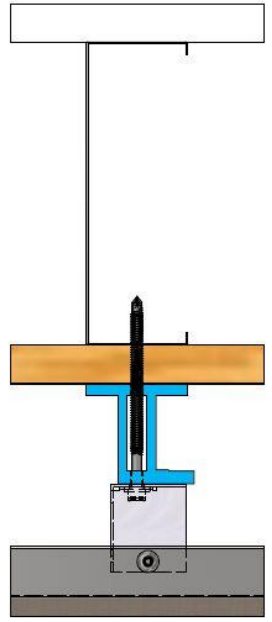
INSTALLATION STEPS - ADJUSTABILITY

HORIZONTAL + VERTICAL CLIP & RAIL



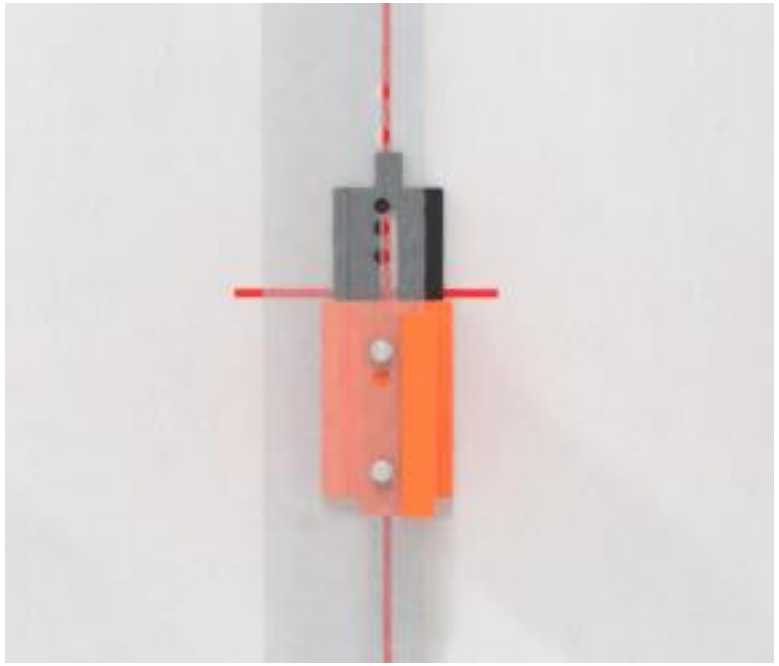




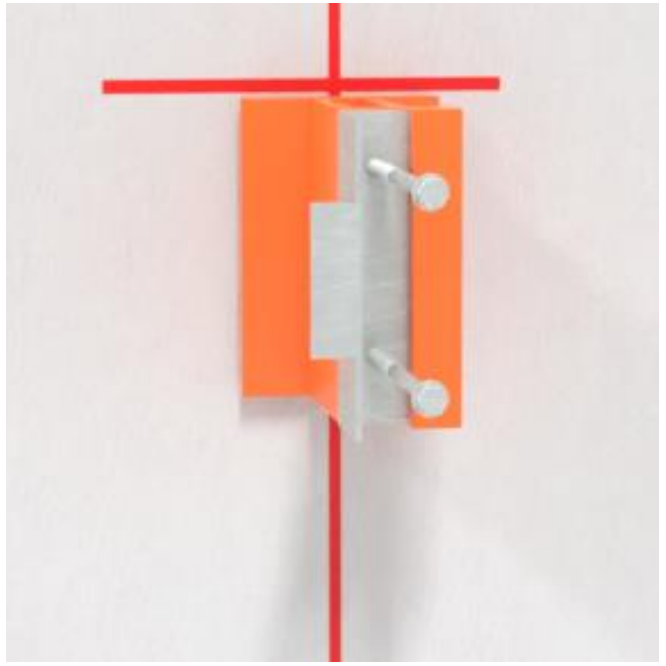


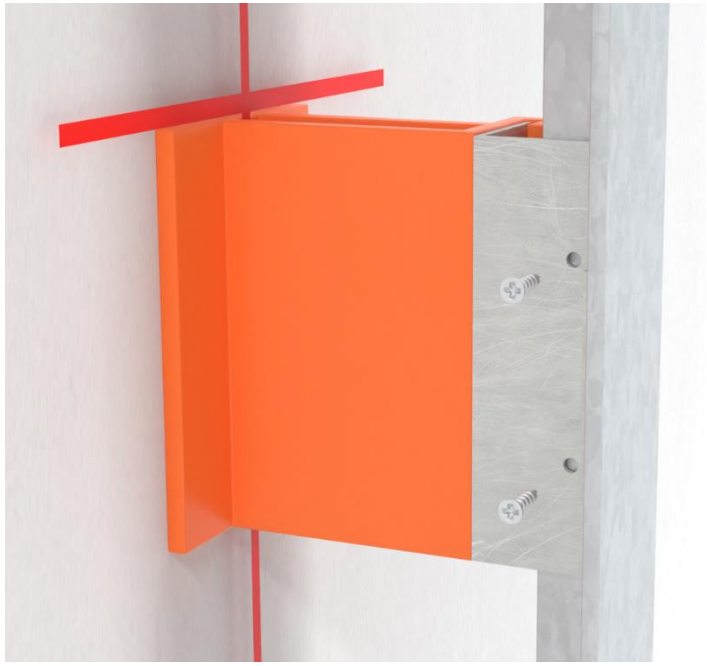
INSTALLATION STEPS - ADJUSTABILITY

VERTICAL CLIP & RAIL



Shims



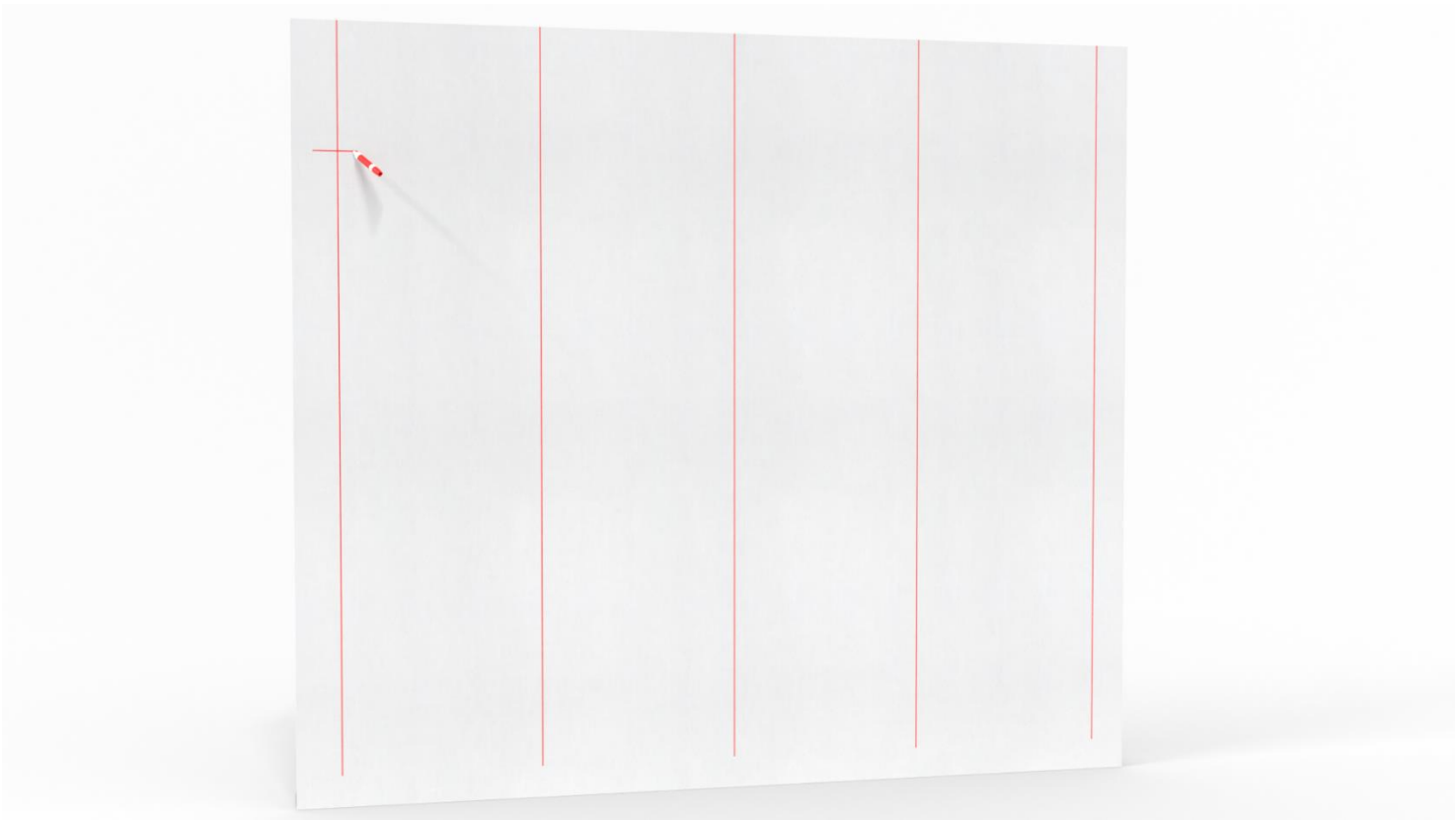


Adjustability Bracket

INSTALLATION STEPS

HORIZONTAL CLIP & RAIL

1. Mark spacing on backup wall



INSTALLATION STEPS

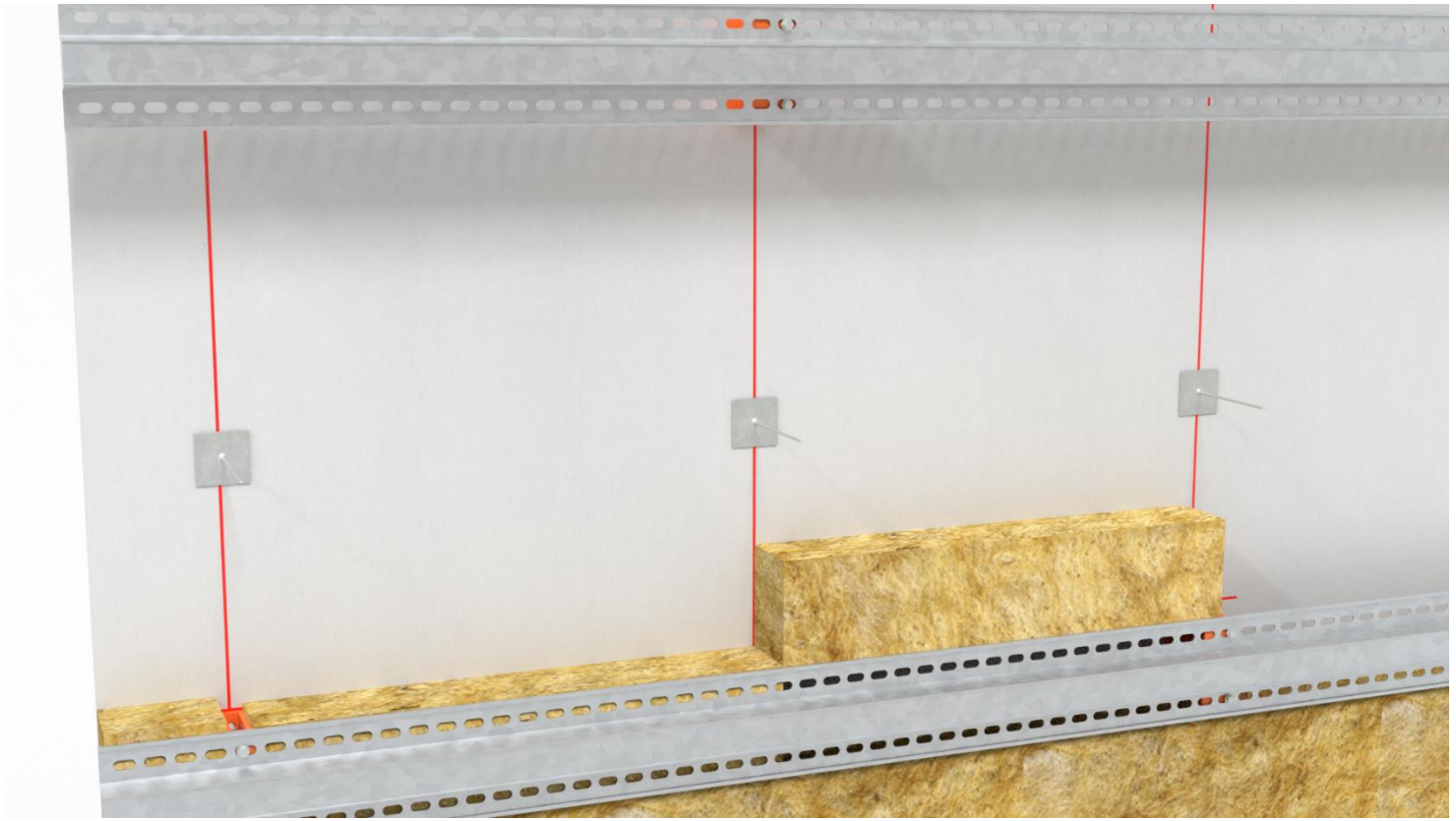
HORIZONTAL CLIP & RAIL

2. Secure clips to backup wall

INSTALLATION STEPS

HORIZONTAL CLIP & RAIL

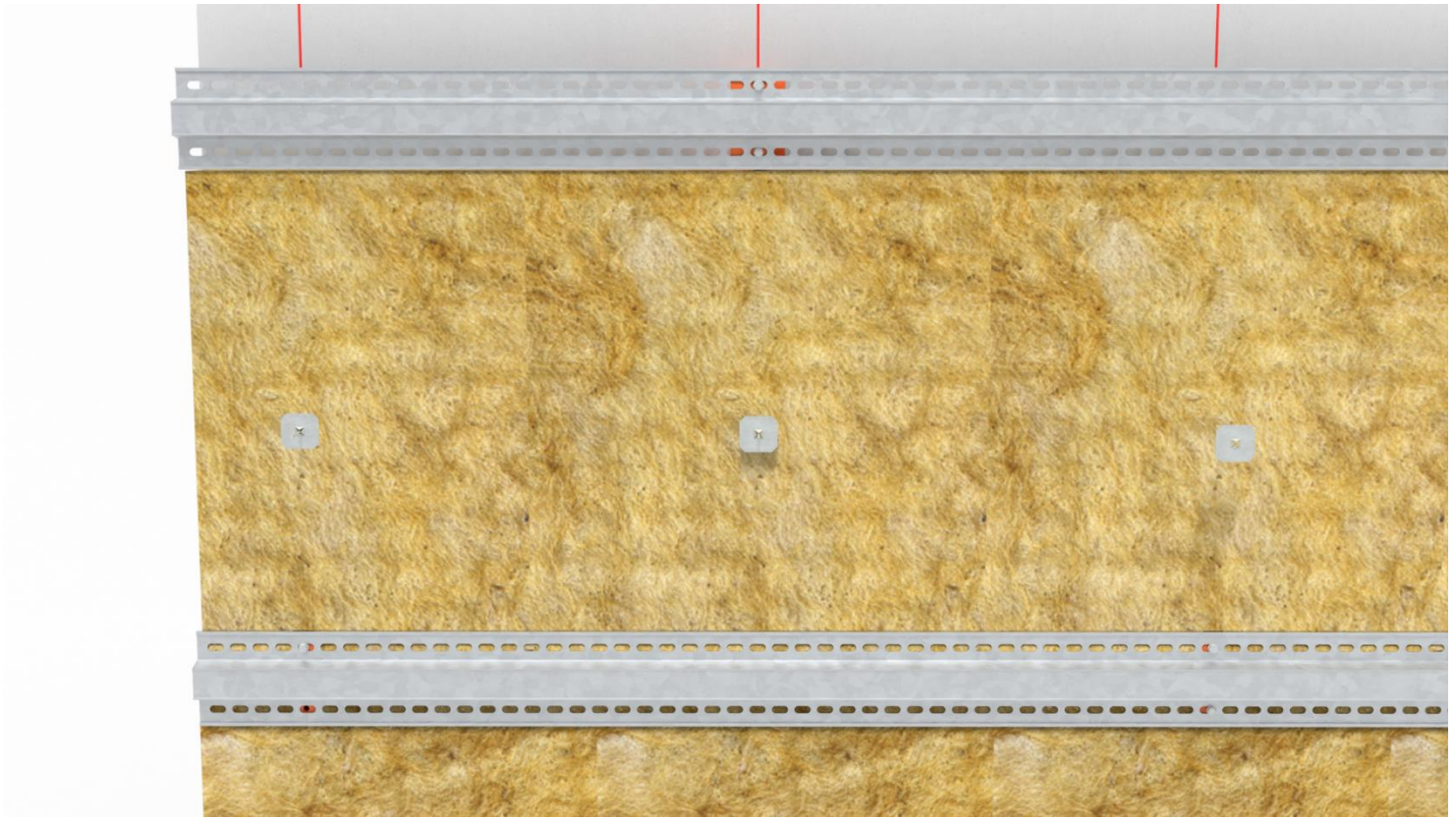
3. Install insulation



INSTALLATION STEPS

HORIZONTAL CLIP & RAIL

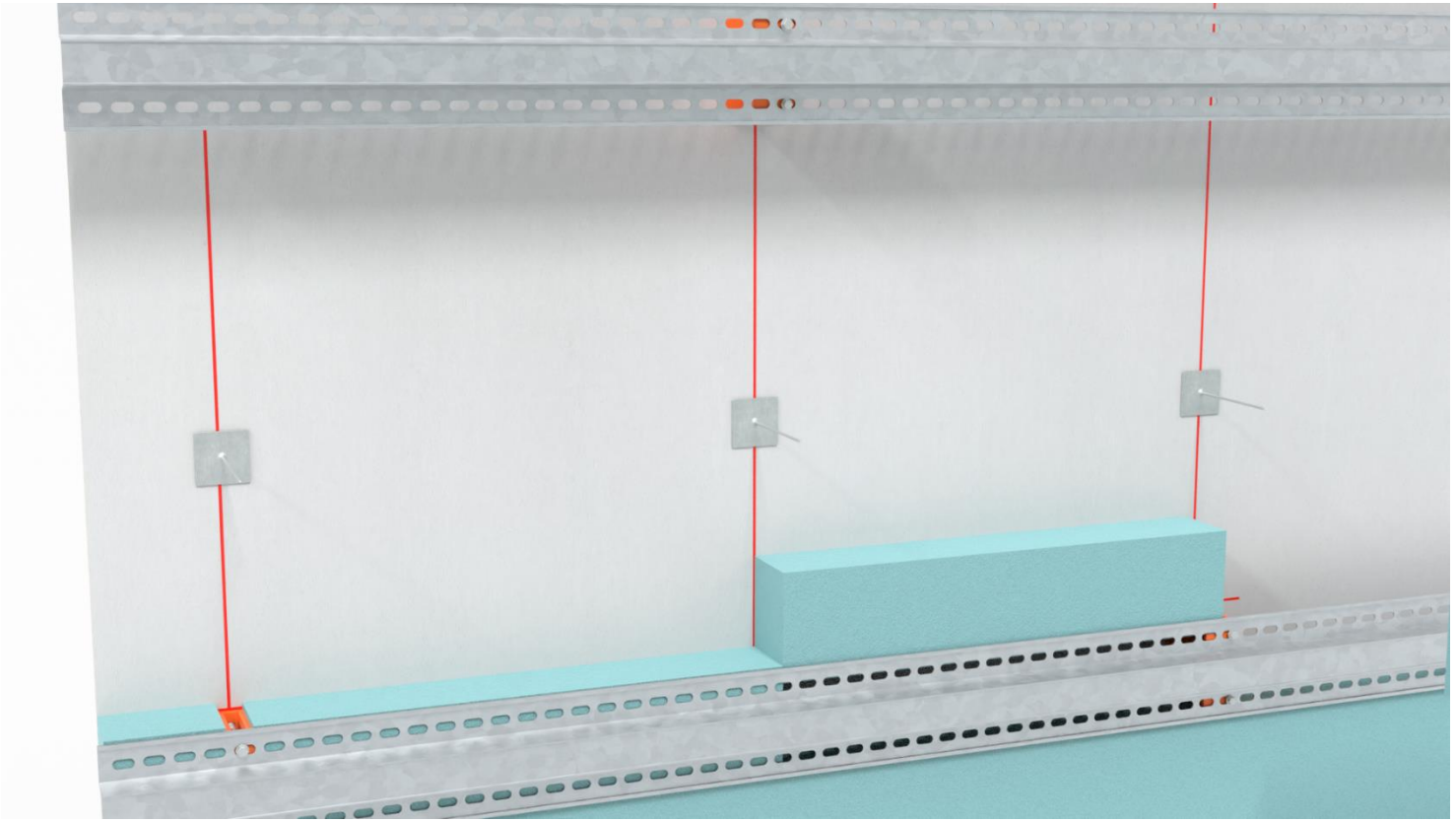
3. Install insulation



INSTALLATION STEPS

HORIZONTAL CLIP & RAIL

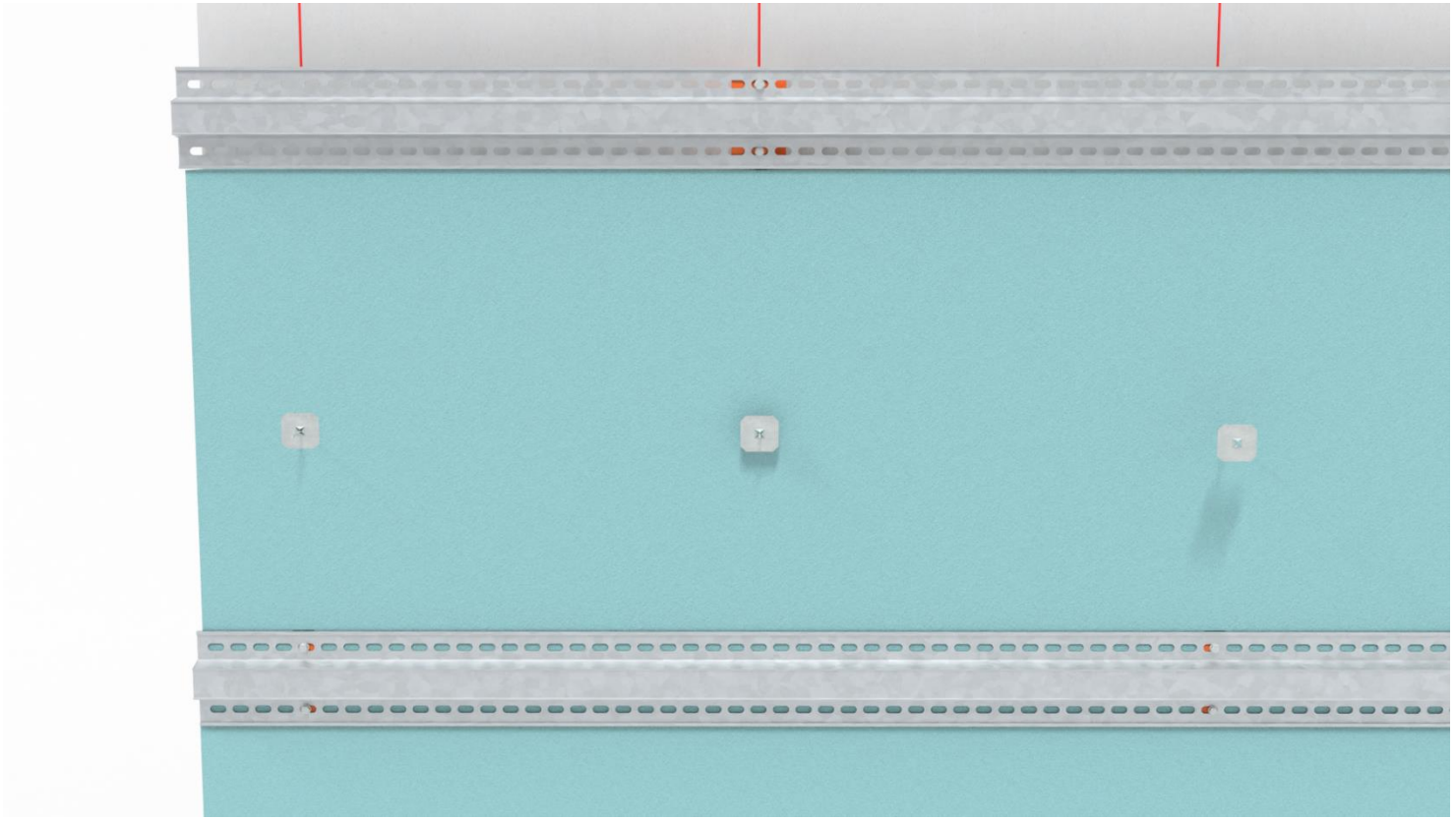
3. Install insulation (Rigid Foam)



INSTALLATION STEPS

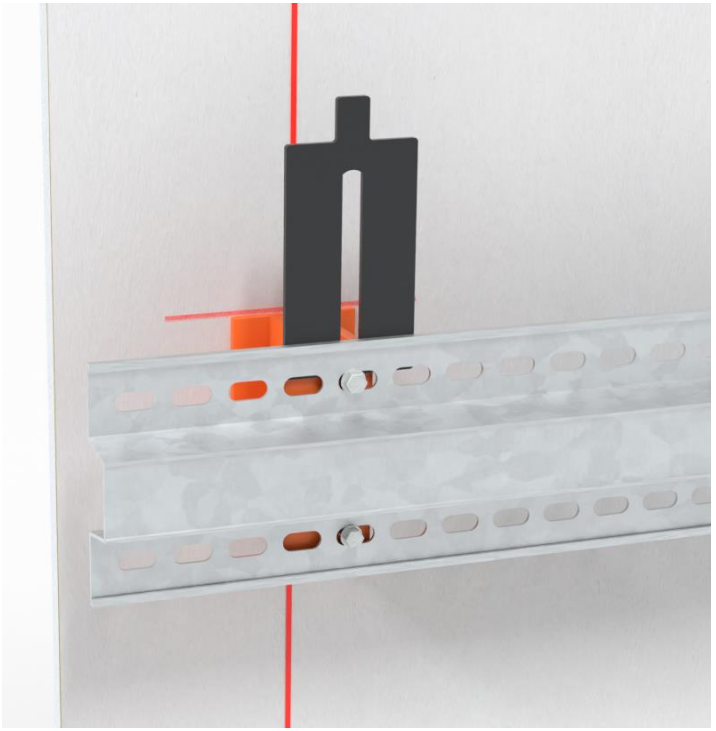
HORIZONTAL CLIP & RAIL

3. Install insulation (Rigid Foam)



INSTALLATION STEPS - ADJUSTABILITY

HORIZONTAL CLIP & RAIL



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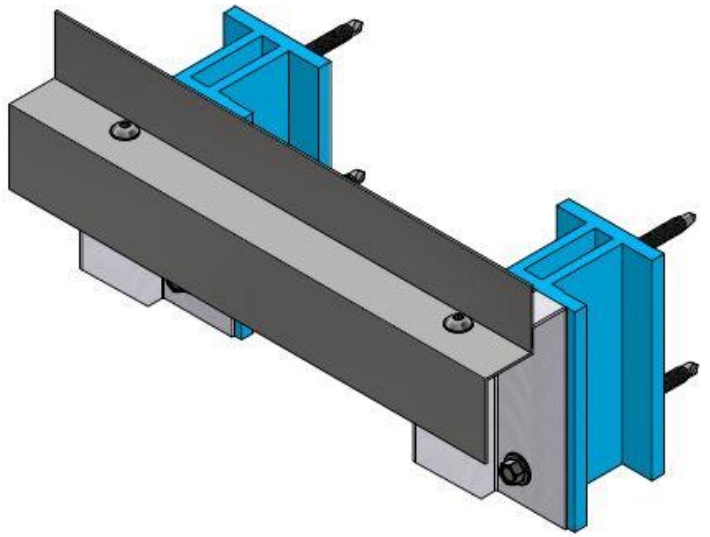


Adjustability Brackets

INSTALLATION STEPS

HORIZONTAL CLIP & RAIL

4. Install cladding

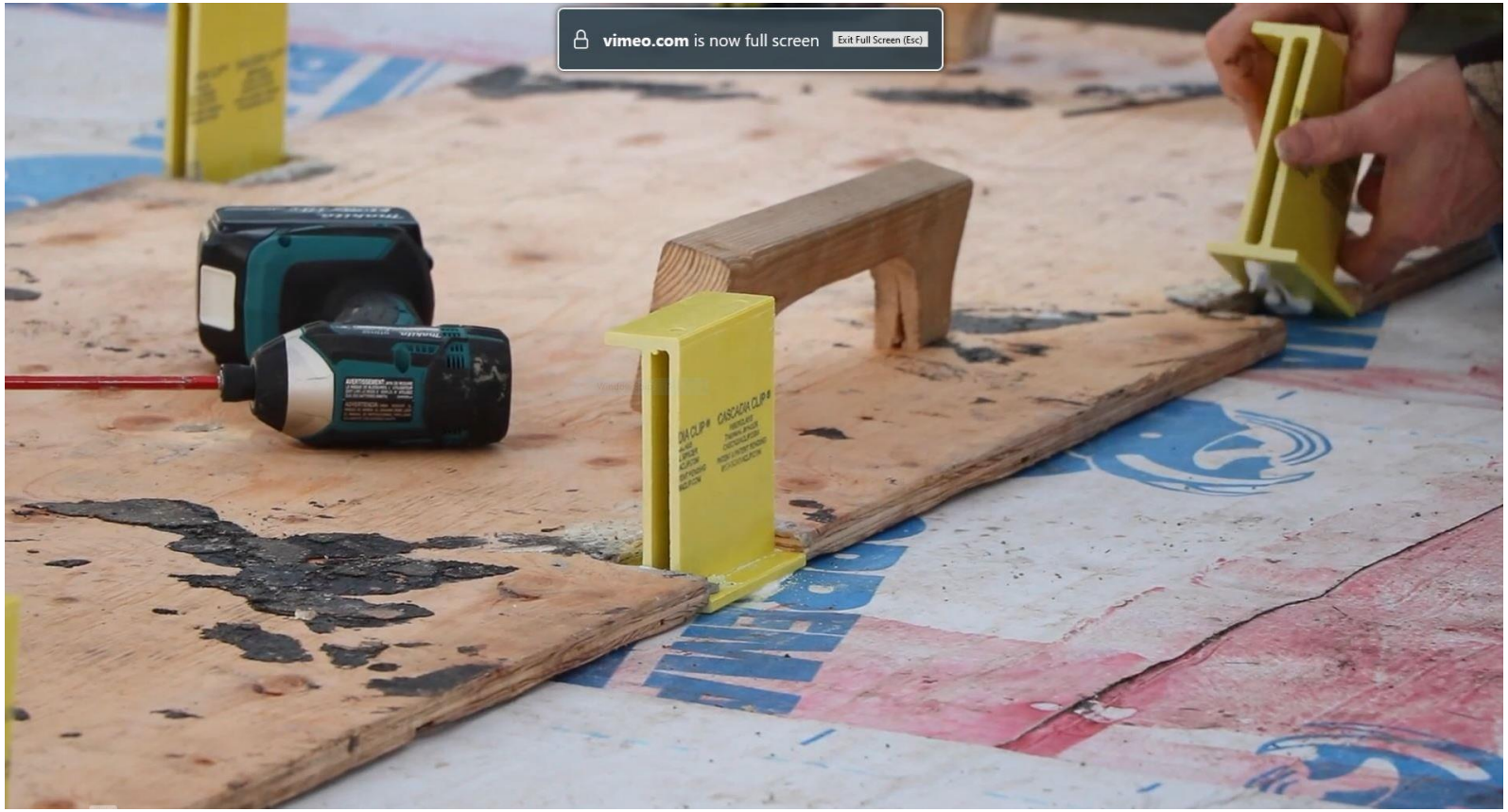
INSTALLATION STEPS

LOW SLOPED ROOF CLIP & RAIL

INSTALLATION STEPS

LOW SLOPED ROOF CLIP & RAIL

1. Use a simple jig to align and space clips.



INSTALLATION STEPS

LOW SLOPED ROOF CLIP & RAIL

2. Pre-fasten the clips to the decking.
Apply sealant.

INSTALLATION STEPS

LOW SLOPED ROOF CLIP & RAIL

3. Install insulation.

INSTALLATION STEPS

LOW SLOPED ROOF CLIP & RAIL

4. Install water-resistant membrane.

INSTALLATION STEPS

LOW SLOPED ROOF CLIP & RAIL

5. Install hattrack.

INSTALLATION STEPS

LOW SLOPED ROOF CLIP & RAIL

6. Install roofing.

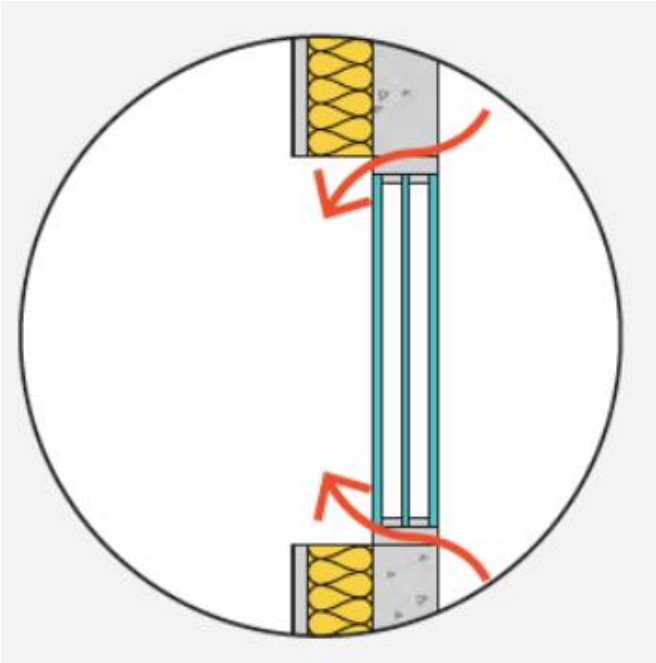
INSTALLATION STEPS

LOW SLOPED ROOF CLIP & RAIL

HIGH-PERFORMANCE INSTALLATION PRACTICES

Emerging installation practices streamlining openings & corners

HIGH-PERFORMANCE INSTALLATION



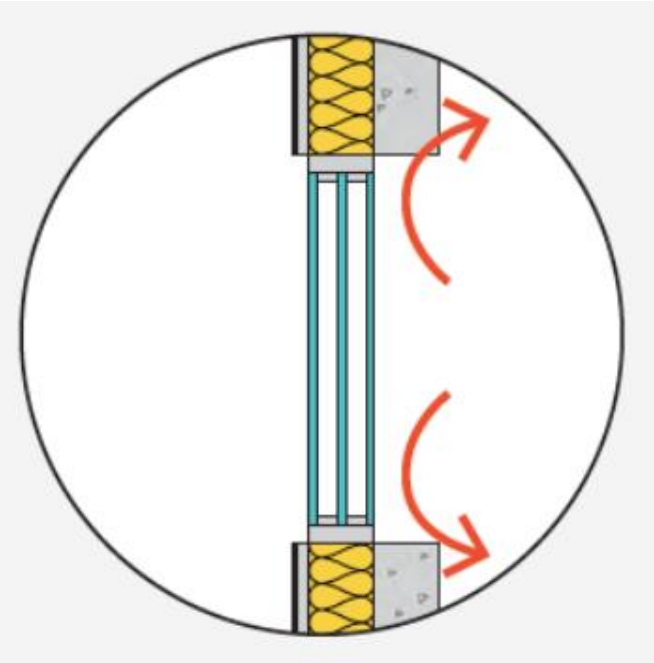
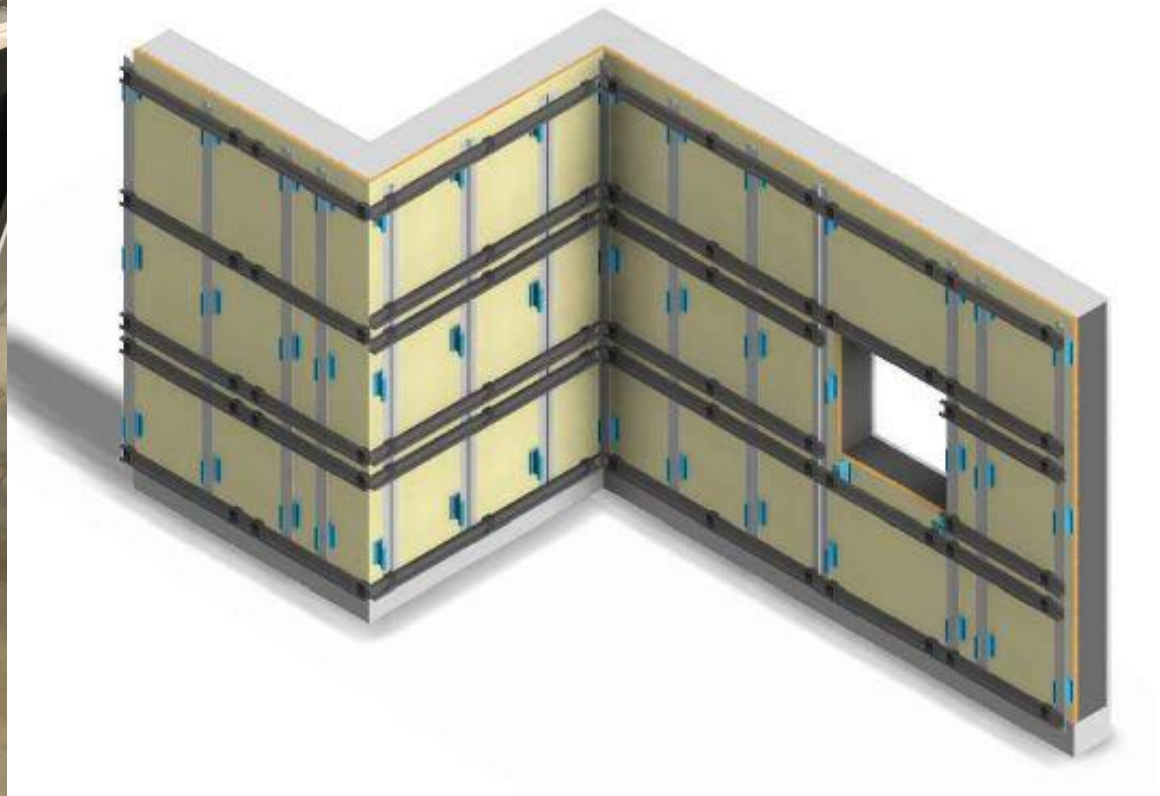


IMAGE: UBC SUSTAINABILITY SCHOLARS PROGRAM

HIGH-PERFORMANCE INSTALLATION



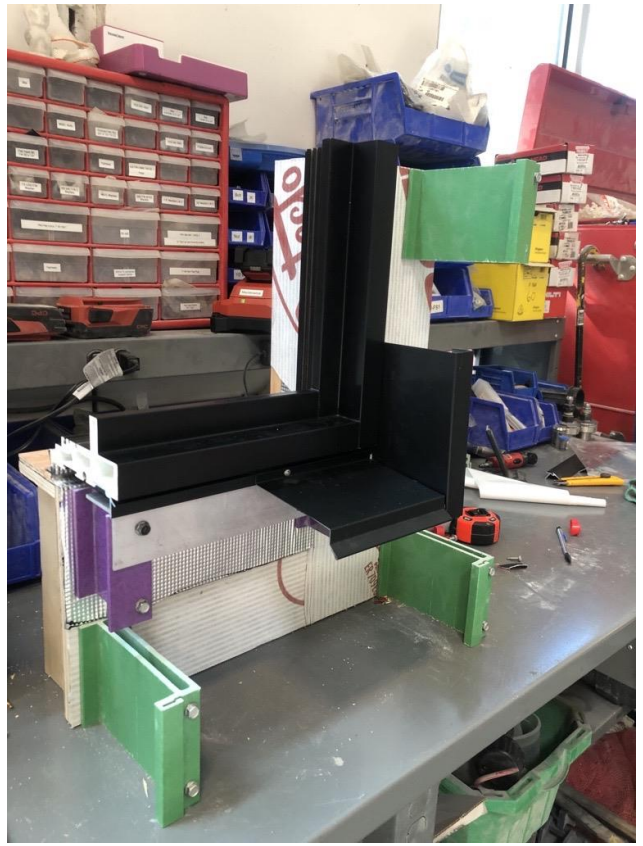


IMAGE: CASCADIA WINDOWS & DOORS

HIGH-PERFORMANCE INSTALLATION

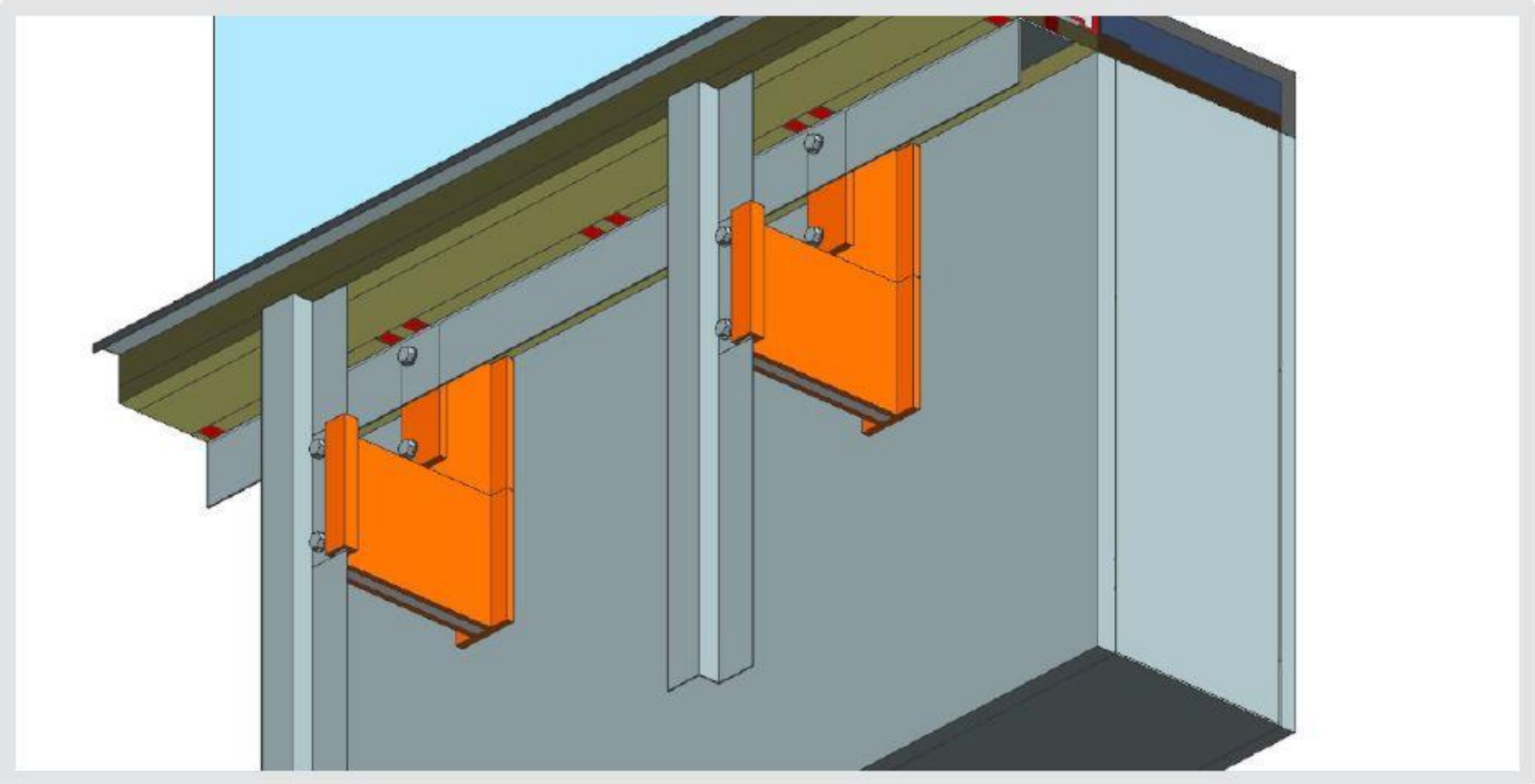
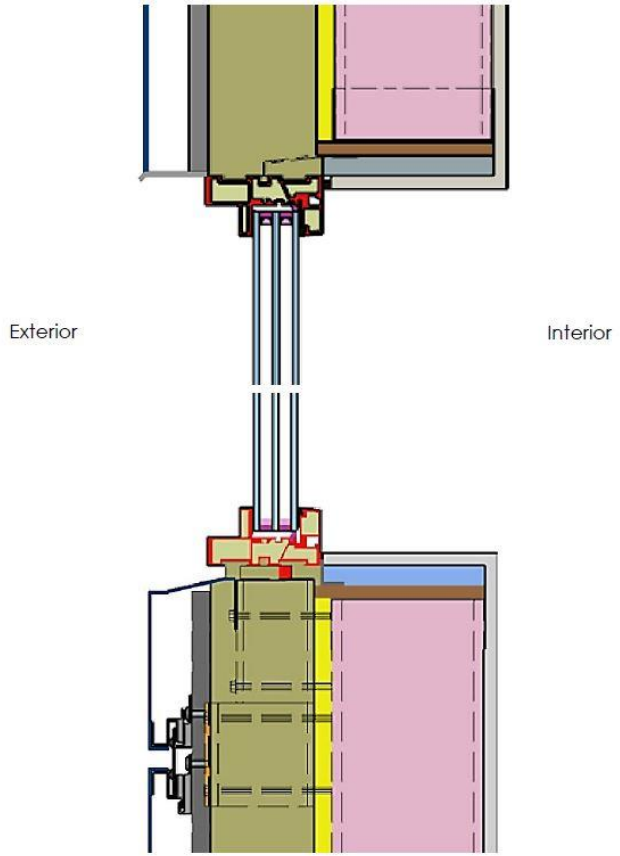


IMAGE: MORRISON HERSHFIELD / STANTEC

HIGH-PERFORMANCE INSTALLATION



WINDOWS INSTALLED IN LINE WITH THE INSULATION LAYER

IMPROVES THERMAL PERFORMANCE OF ENTIRE WALL ASSEMBLY
(WINDOWS ARE OFTEN THE WEAKEST LINK)

USES EXISTING PRODUCTS, JUST IN A NOVEL APPLICATION
(REDUCES DETAILING AND INSTALLATION COMPLEXITY)

IMAGE: MORRISON HERSHFIELD / STANTEC

CARBON & LIFECYCLE IMPACTS

Understanding the environmental impacts of assembly components

WHAT IS AN EPD?

PRODUCT CATEGORY RULES (PCR)

Product category rules (PCRs) allow for review and comparison of different environmental product attributes among products in a defined category.

LIFE CYCLE ASSESSMENT (LCA)

Life cycle assessment (LCA) is a method to assess potential environmental, social and economic impacts associated with all the stages of a product's life.

ENVIRONMENTAL PRODUCT DECLARATION (EPD)

An environmental product declaration (EPD) report provides a product's impact upon the environment, such as global warming potential, smog creation, ozone depletion and water pollution in a single, comprehensive report.

Reports are valid for 5-years.

NEW PCR FOR CLADDING SUPPORTS

Sustainable Minds Transparency Report™ / EPD Framework

Sustainable Minds

Part B: Product group definition | Cladding Support Components and Systems

Initiated by	**Rainscreen Association in North America (RAiNA)** jxec@rainscreenassociation.org https://rainscreenassociation.org/
Other company(s) and organization(s) involved	**Members of RAiNA:** Cascadia Windows & Doors Knight Wall Systems CLADIATOR Hohmann & Barnard Northern Facades Limited

Product group

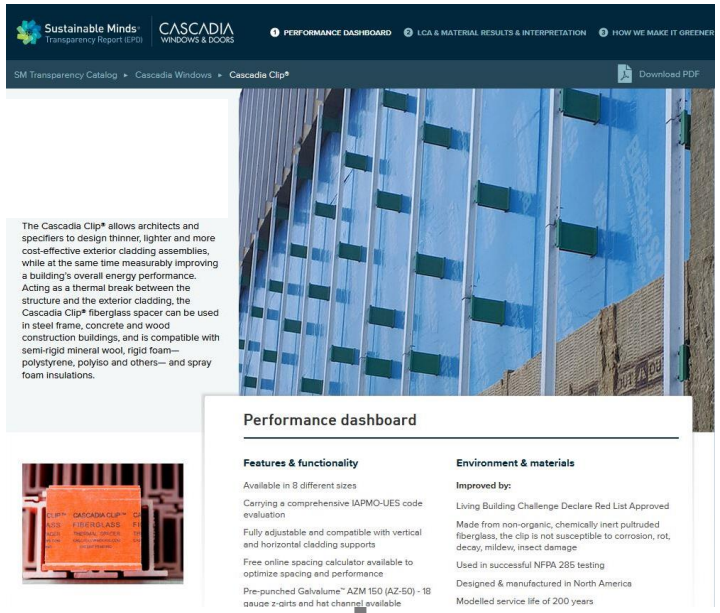
Name	**Cladding Support Components and Systems**	**CSI MasterFormat® #(s)**	07 05 43 Cladding Support System 07 48 00 Rainscreens
Description Define the types of products included under this Part B	Components or systems that provide support of exterior cladding and may also limit thermal transfer through the building envelope. *Note: This PCR does not cover masonry ties.*		
New Part B request? Yes / No	Yes	**Is this an update to an existing Part B?** Yes / No	No
Validity period	10/31/2022 – 10/30/2027		

NEW PCR – PART B PUBLISHED IN OCT 2022

NEW PCR IS VALID TO OCT 2027

MOST ACCURATE DATA AVAILABLE FOR PRODUCTS

CLADDING SUPPORT EPDS



HOW TO USE

SCHEMATIC DESIGN

PERFORMANCE DOCUMENTS

Based on client objectives, request EPDs from potential manufacturers/suppliers as part of standard performance documents.

DESIGN DEVELOPMENT

LIFECYCLE ASSESSMENTS

Utilize EPD data to help determine holistic impact of material selections and adjust product specs to meet carbon goals and project objectives.

BIDDING

ASSESSING ALTERNATIVES

When considering off-spec product alternatives, compare EPD data to confirm product's carbon impacts on project objectives.

THERMAL BRIDGING IN THE REAL-WORLD

Project examples of high-performance thermal bridging

BELMONT VILLAGE

- Long Island NY (2024)
- Project Team
  - Engineer – RICE Engineering
  - Contractor – Aurora GC
  - Installer – Certified Interiors

IMAGE COURTESY OF CASCADIA WINDOWS & DOORS


J11b


BB of DOOR

BELMONT VILLAGE

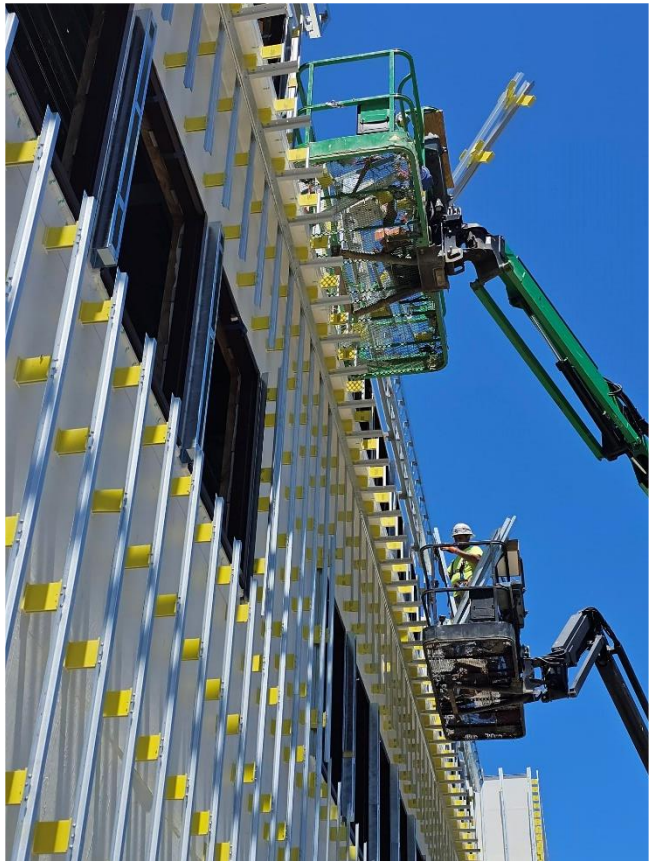


IMAGE COURTESY OF CASCADIA WINDOWS & DOORS

EASE OF INSTALLATION

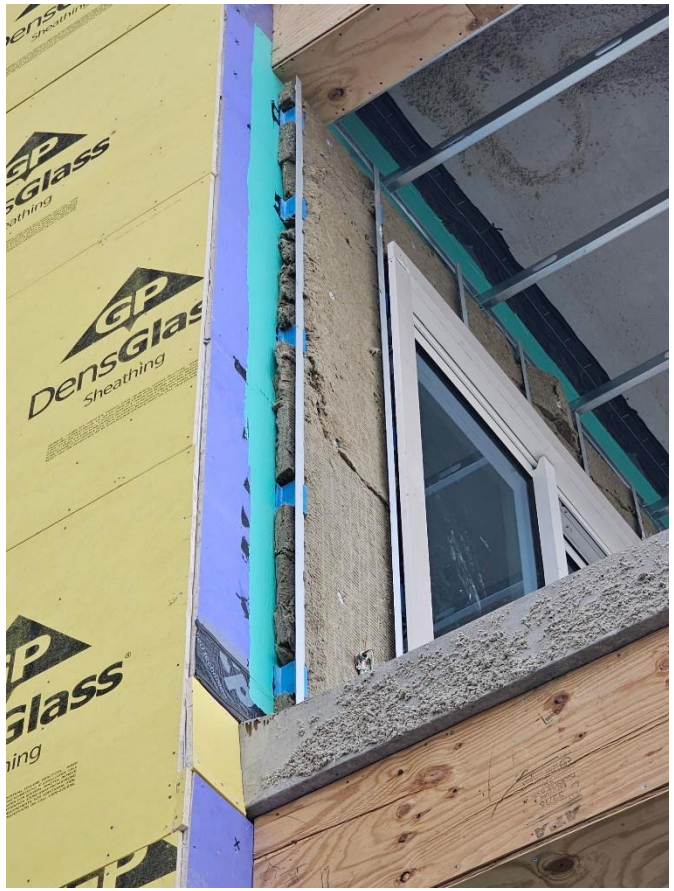
- Compatible with all Insulation types
- Compatible with all Façade panels
- Customized installation per wall – Adjustability
- Customized Pre-Installation options - Full Girt Solution
- Pre-assemble in House or Manufacturer

ROD & REEL RESORT

- Raleigh, North Carolina (2024)
- Project Team
  - Consultant – Spec One Systems
  - Installer – Alliance Exteriors

IMAGE COURTESY OF CASCADIA WINDOWS & DOORS

ROD & REEL



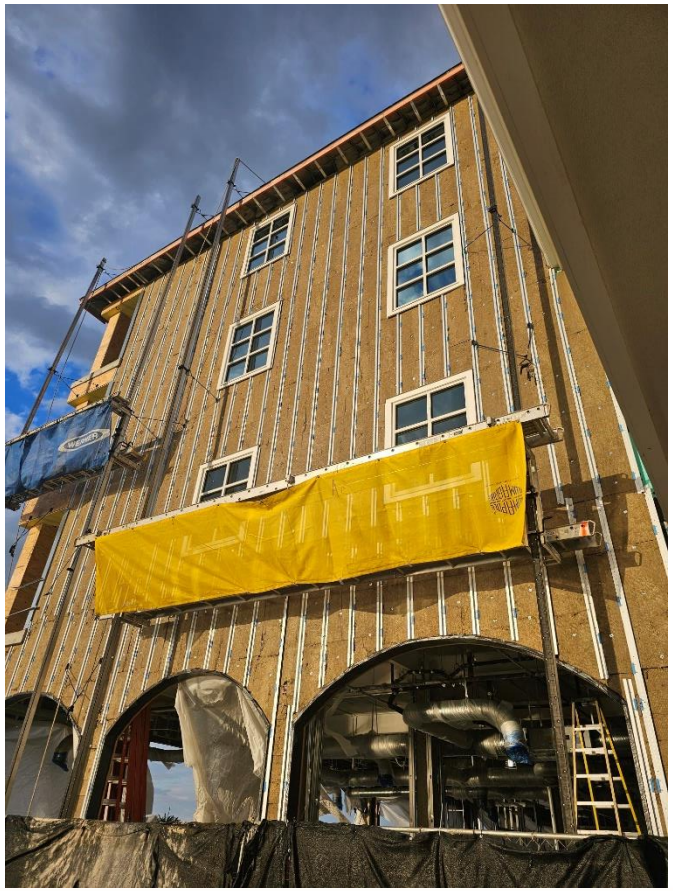


IMAGE COURTESY OF CASCADIA WINDOWS & DOORS

EASE OF INSTALLATION

- Sequencing flexibility
- Compatible with all Façade panels
- Customized installation per wall w adjustability options
- Customized adjustability HZ and VT

RESIDENTIAL / WOOD STRAPPING

- Clips for Wood Strapping on residential buildings
- Provides a path to hit the studs
- Provides a rigid sub structure for strapping and cladding attachment
- Allows for nail based cladding installation

IMAGE COURTESY OF BULLITT CENTER / BRAD KAHN

1620 MAIN ST E

- Hamilton ON (2024)
- Rapid Housing/Passive House
- 42 Unit affordable housing
- Project Team
  - Architect – McCallum Sather
  - Developer – CityHousing Hamilton
  - Engineer – RDH Building Science
  - Contractor – Westmount Systems

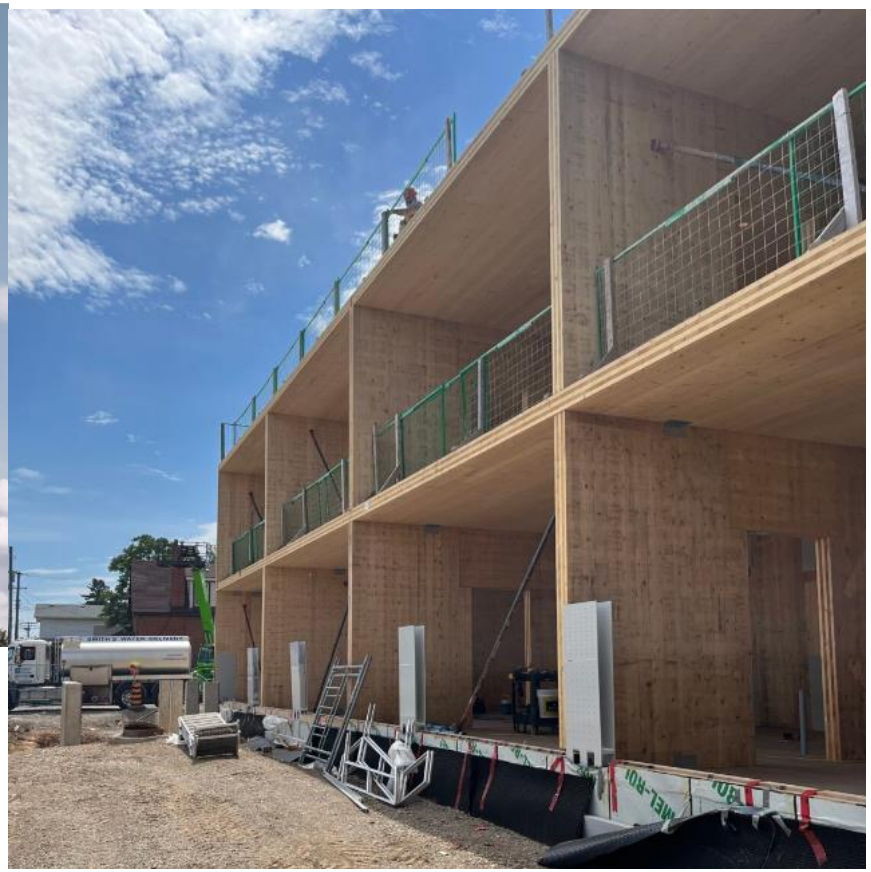


IMAGE COURTESY OF BULLITT CENTER / BRAD KAHN

ON5

- Vancouver, BC (2022)
- High-performance, pre-fab CTL
- Project Team
  - Architect - Hemsworth Architecture
  - Structural - Equilibrium Consulting Inc. & Timber Engineering
  - Contractor – Naikoon Construction

IMAGE COURTESY OF NAIKOON

ON5

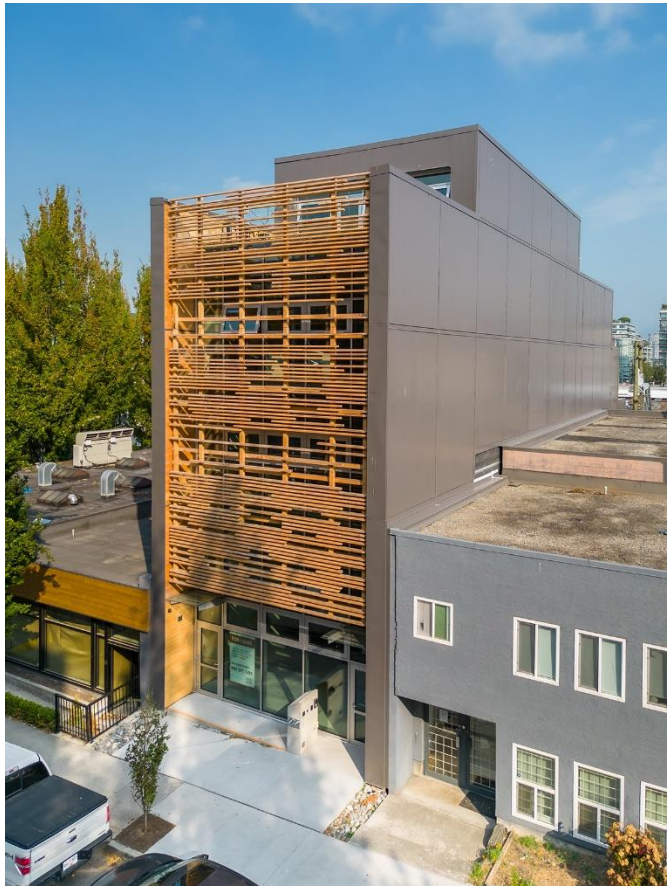


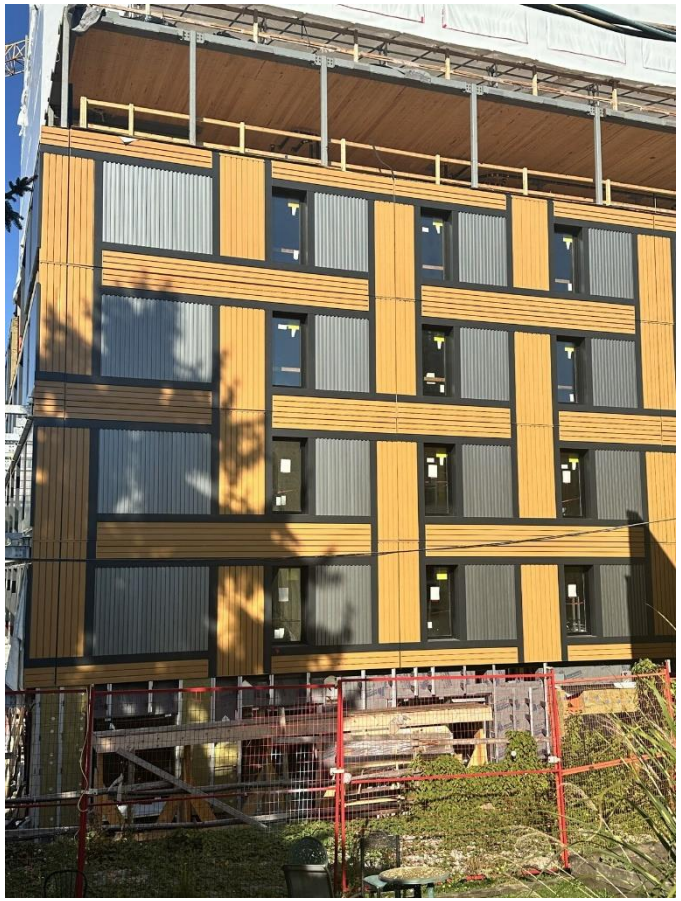
IMAGE COURTESY OF NAIKOON

FRANCES STREET

- Vancouver, BC (2025)
- High-performance, pre-fab CTL
- Project Team
  - Architect - GBL
  - Structural – Seagate Mass Timber
  - Contractor – Intelligent City & Ventana Construction
  - Installer- Maison Exteriors

IMAGE COURTESY OF GBL ARCHITECTS / M'AKOLA DEVELOPMENT

FRANCES STREET



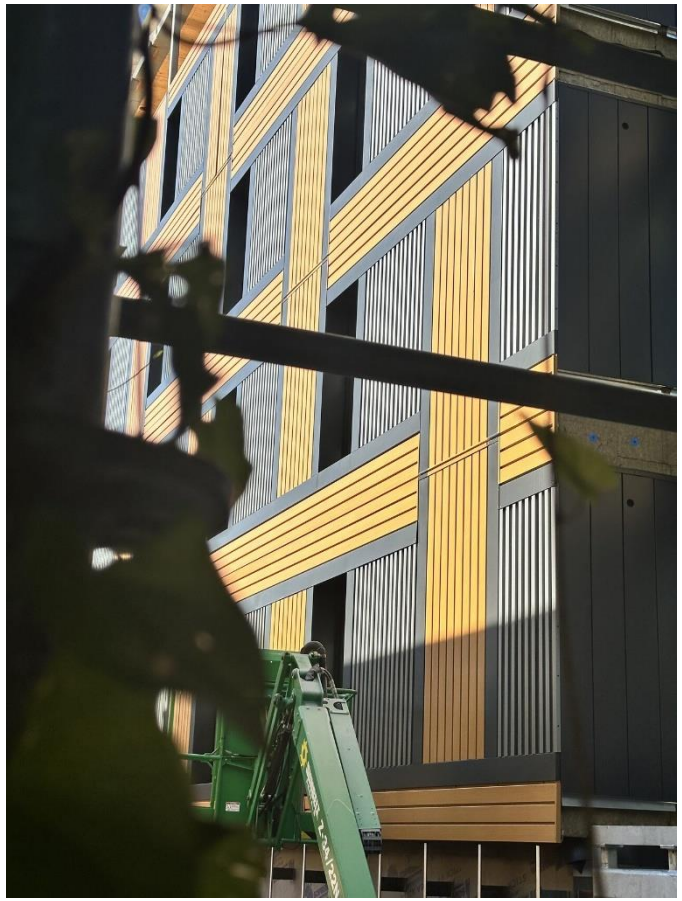
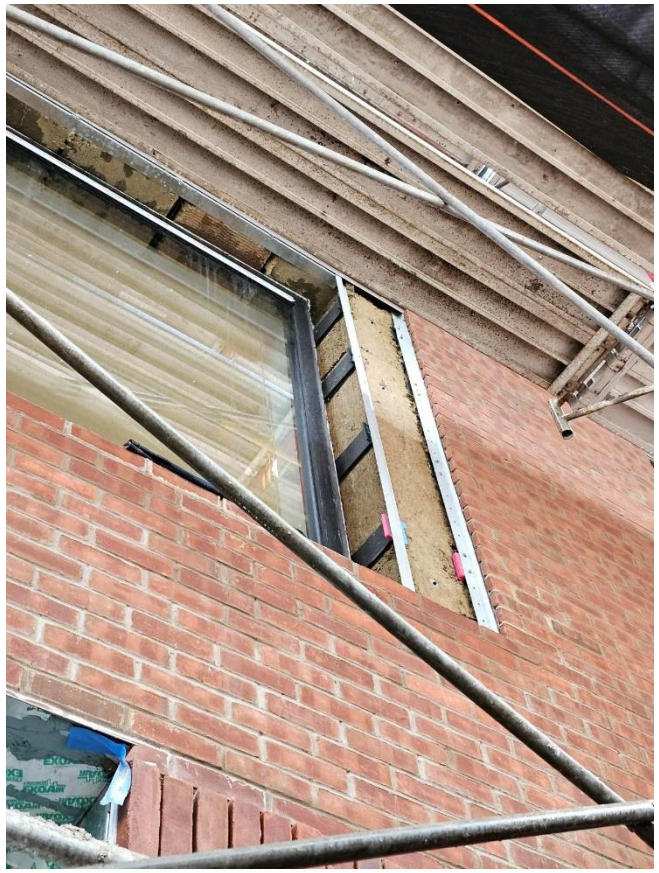


IMAGE COURTESY OF BC INDIGENOUS HOUSING SOCIETY

PREFAB- 147 ST. FELIX ST NY

- Bronx, NY (2025)
- High-performance, pre-fab CTL
- Project Team
  - Prefab Contractor – Assebmly OSM



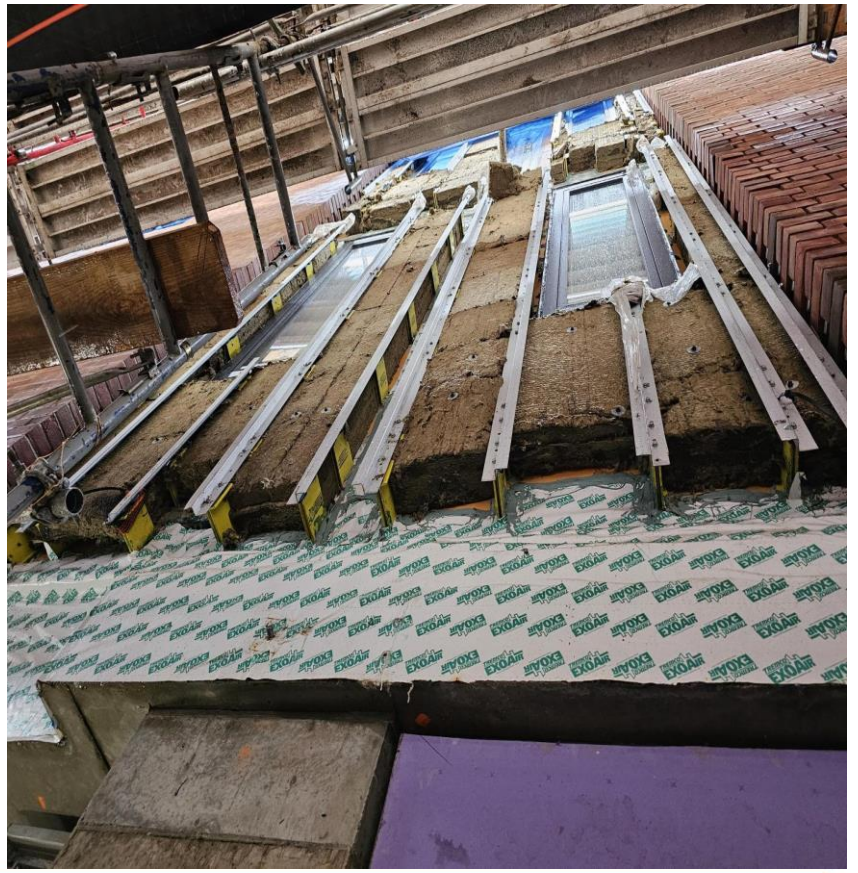


IMAGE COURTESY OF GBL ARCHITECTS / M'AKOLA DEVELOPMENT

BULLITT CENTER

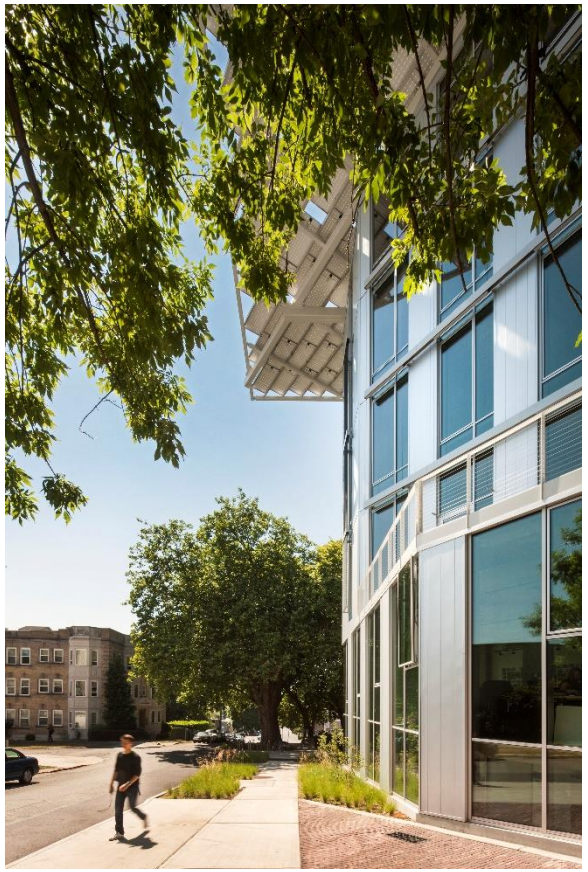
- Seattle, WA (2013)
- Living Building Certified
- Project Team
  - Architect - Miller Hull
  - Developer – Point 32
  - Engineer – PAE Engineers
  - Structural Engineer – DCI Engineers
  - Contractor - Schuchart

IMAGE COURTESY OF BULLITT CENTER / BRAD KAHN

BULLITT CENTER

IMAGE COURTESY OF BULLITT CENTER / BRAD KAHN

BULLITT CENTER



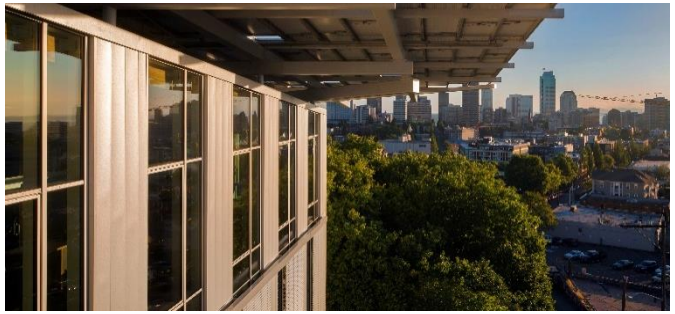


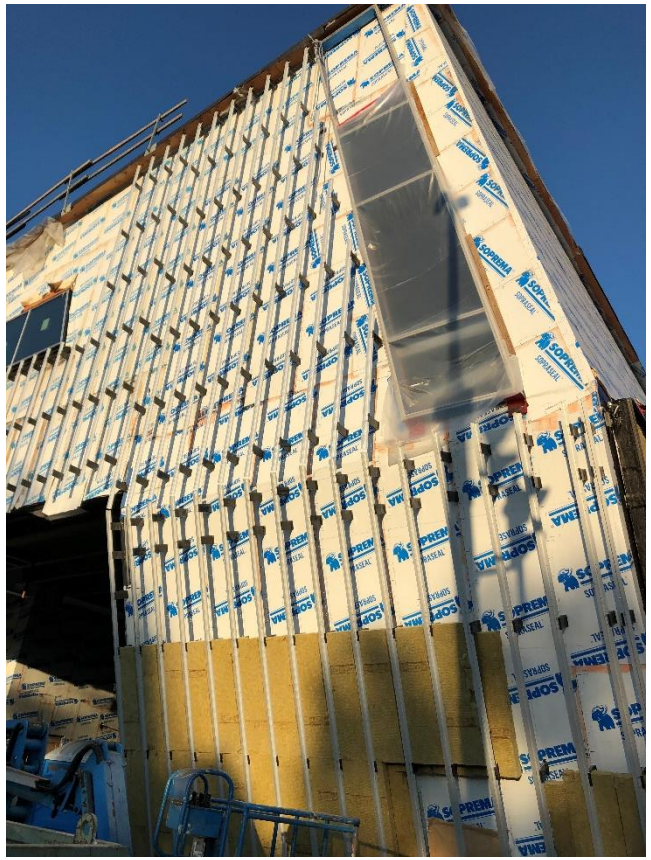
IMAGE COURTESY OF BULLITT CENTER / BRAD KAHN

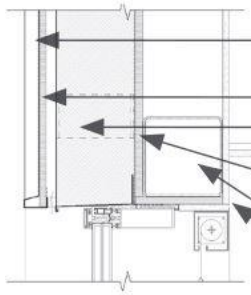
FIRE HALL 17 - VANCOUVER

- Vancouver, BC (est. 2022)
- Passive House Certified (pending)
- Project Team
  - Architect - HCMA
  - Owner – City of Vancouver
  - Structural Engineer – RJC Engineers
  - Construction Management – DGS Construction
  - Energy Modelling – Morrison Hershfield

IMAGE COURTESY OF HCMA

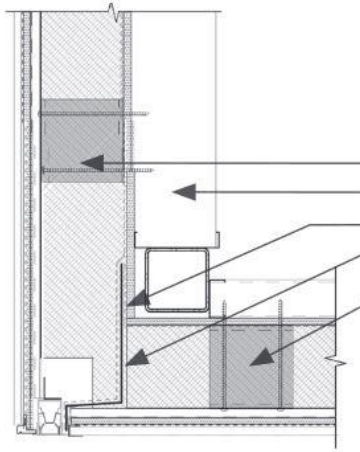
FIRE HALL 17 - VANCOUVER





WALL ASSEMBLY 2

38MM DOUBLE LOCK STANDING SEAM METAL
BREATHER MEMBRANE
16MM EXTERIOR GRADE PLYWOOD
200MM SEMI-RIGID MINERAL WOOL BOARD
INSULATION ON FIBERGLASS THERMAL CLIPS
19MM EXTERIOR GRADE PLYWOOD SHEATHING
AIR/VAPOUR BARRIER MEMBRANE
203MM STEEL STUD
16MM GYPSUM BOARD



SOFFIT EDGE

WALL ASSEMBLY 2
U/S STEEL
SELF-ADHERED MEMBRANE ABOVE FLASHING
PRE-FINISHED METAL THROUGH WALL FLASHING
FIBREGLASS THERMALLY-BROKEN CLIP

IMAGE COURTESY OF HCMA / CASCADIA WINDOWS & DOORS

PARKDALE LANDING

- Hamilton, ON (2018)
- EnerPHit Passive House Certified
- Project Team
  - Architect – Invizij Architects
  - Owner – Indwell
  - Contractor – Schilthuis Construction

IMAGE COURTESY OF INVIZIJ ARCHITECTS

PARKDALE LANDING

IMAGE COURTESY OF CASCADIA WINDOWS & DOORS

PARKDALE LANDING

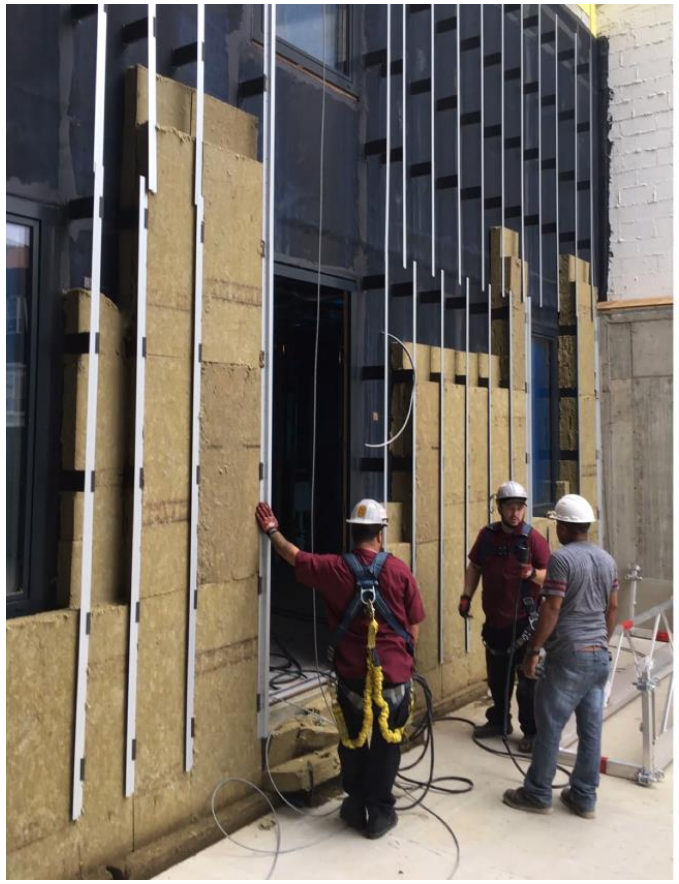
IMAGE COURTESY OF INVIZIJ ARCHITECTS / PASSIVE HOUSE ACCELERATOR

CANDELA LOFTS

- Hoboken, NJ (2019)
- Passive House Certified
- Project Team
  - Architect – Nastasi Architects
  - Contractor – Bijou Design Build
  - Passive House Consultant - bldgtyp

IMAGE COURTESY OF PETRARCH PANELS

CANDELA LOFTS



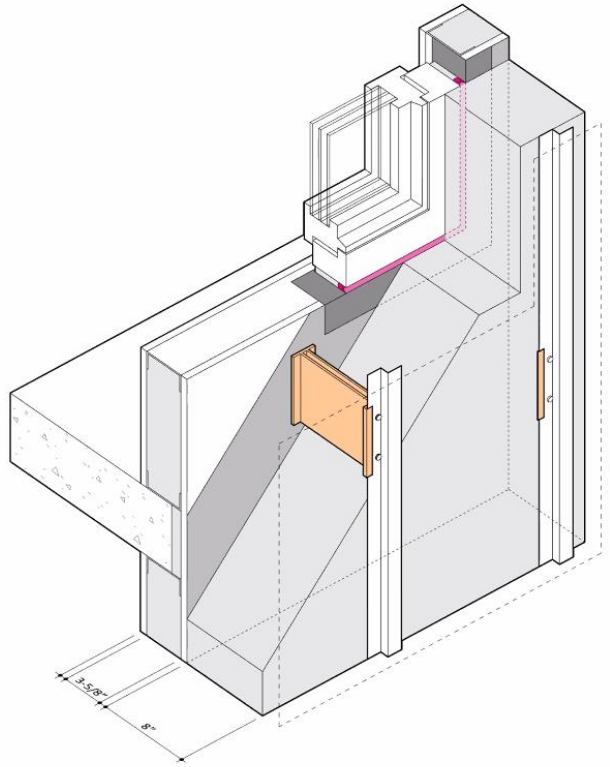
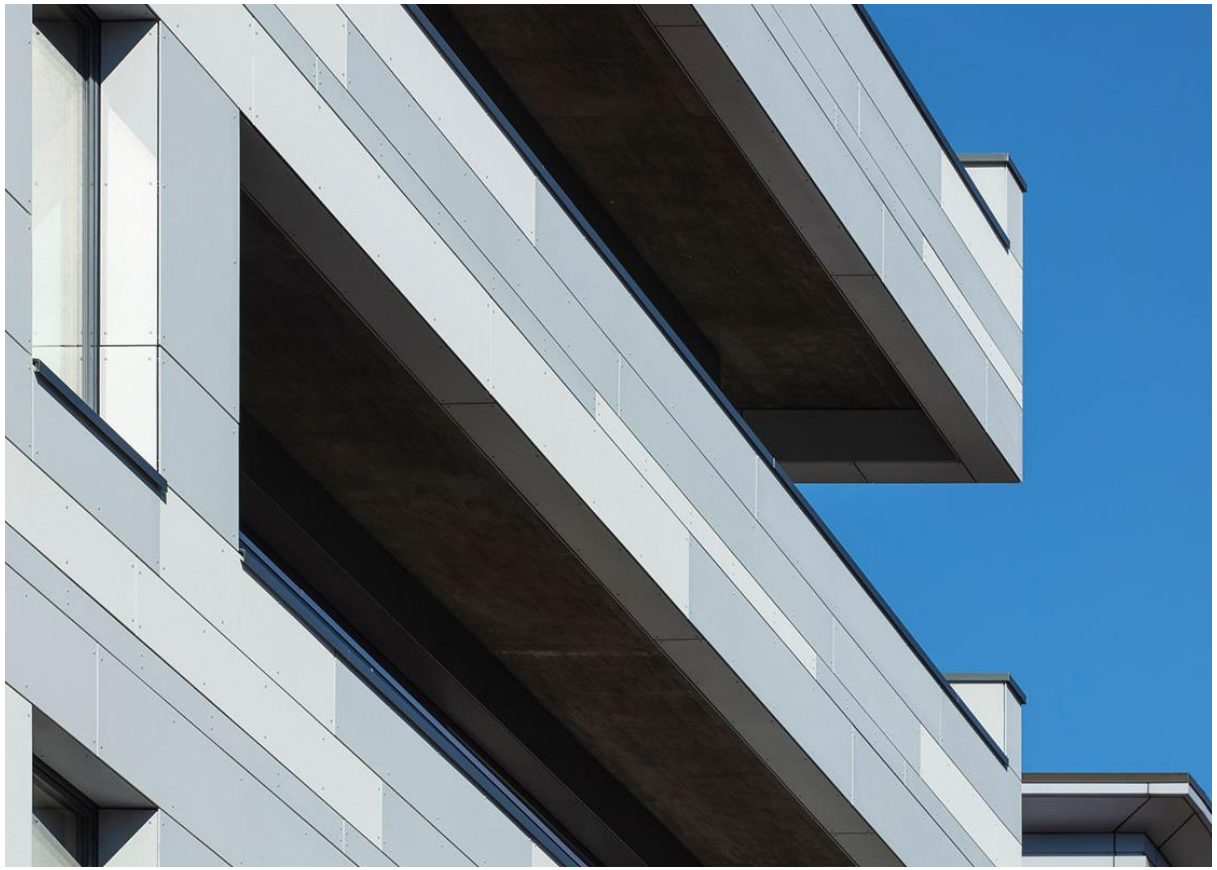


IMAGE COURTESY OF BLDGTYP

CANDELA LOFTS



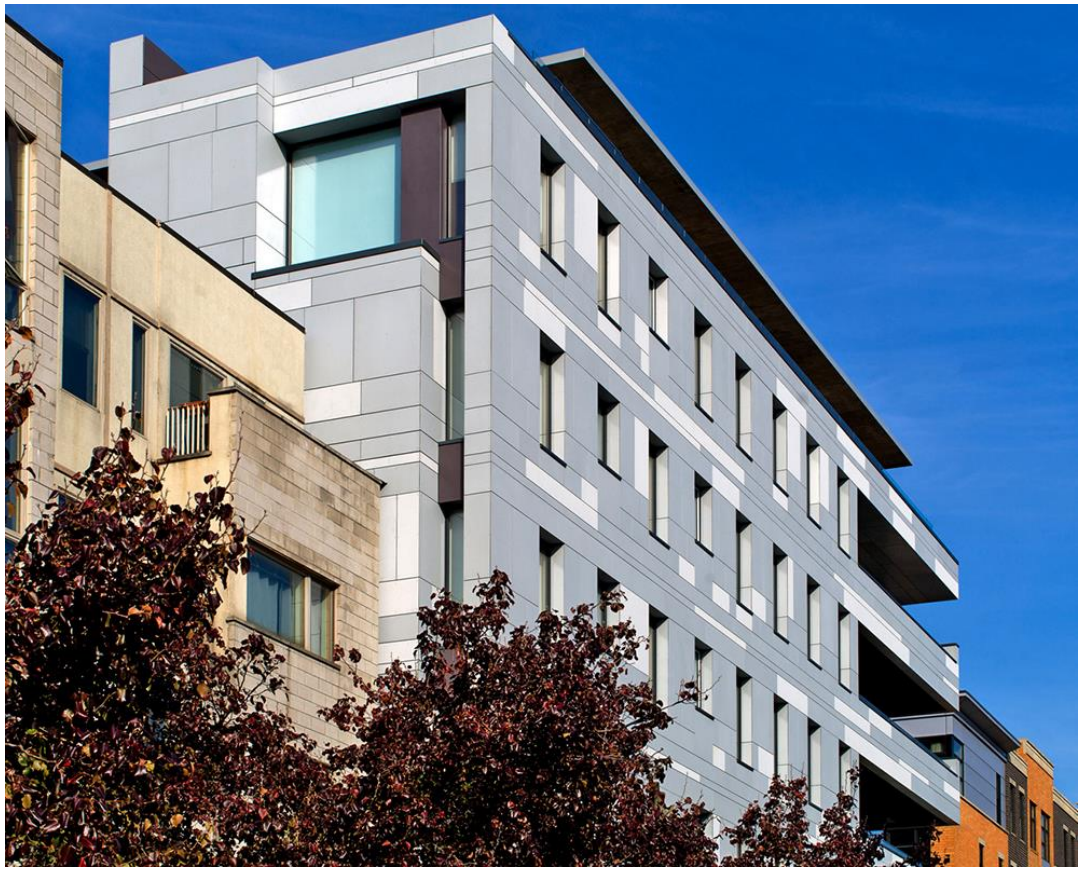


IMAGE COURTESY OF PETRARCH PANELS

FINCH CAMBRIDGE

- Cambridge, MA (2020)
- Passive House Certified
- Project Team
  - Architect – ICON Architecture
  - Developer – Homer's Rehab Inc. (HRI)
  - General Contractor
    – NEI General Contracting
  - Cladding Contractor
    - JKA construction

IMAGE COURTESY OF ICON ARCHITECTURE

FINCH CAMBRIDGE

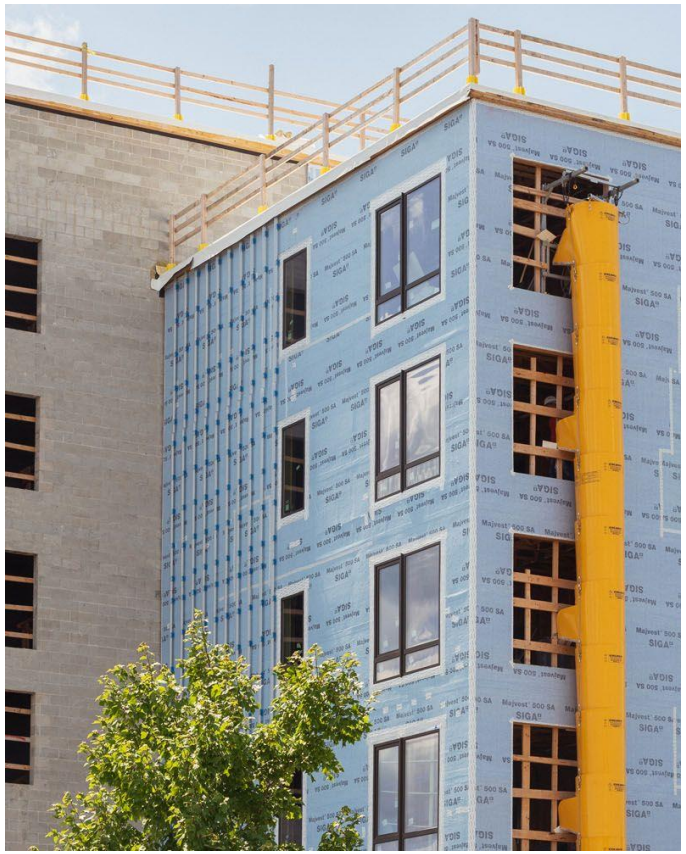


IMAGE COURTESY OF JKA CONSTRUCTION / SIGA

FINCH CAMBRIDGE

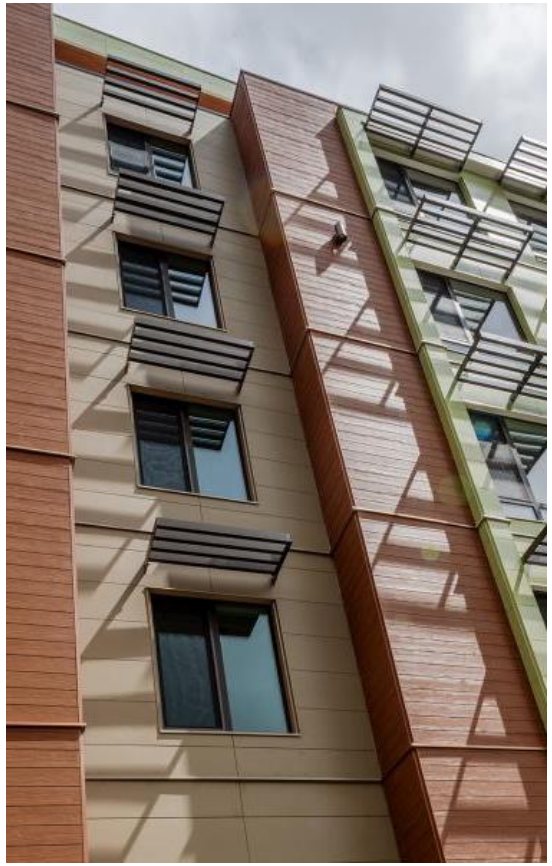


IMAGE COURTESY OF ICON ARCHITECTURE

UBC OKANAGAN - SKEENA HOUSE

- Prince George, BC (2020)
- Passive House Certified
- Project Team
  - Architect – PUBLIC
  - Developer – University of British Columbia
  - Construction Management
    - Sawchuck Developments
  - Consultant – RDH Building Science

IMAGE COURTESY OF PUBLIC

UBC OKANAGAN - SKEENA HOUSE

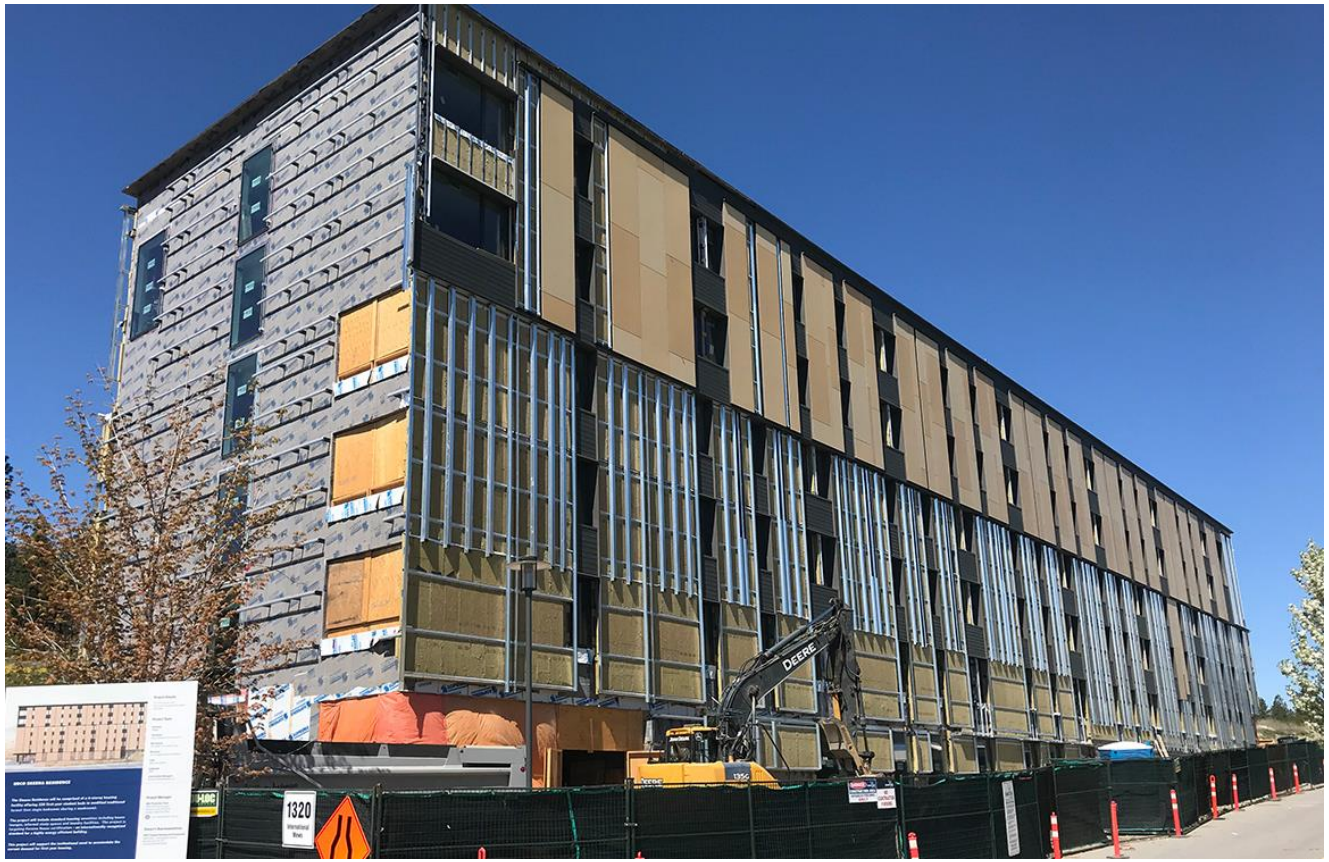


IMAGE COURTESY OF SAWCHUCK DEVELOPMENTS

UBC OKANAGAN - SKEENA HOUSE

IMAGE COURTESY OF ANDREW LATREILLE / SAWCHUCK DEVELOPMENTS

KEY TAKE AWAYS

Recap of key topics from today's session

KEY TAKE AWAYS

CLADDING ATTACHMENTS HAVE HUGE IMPACT

Design I Material I Installation

Thermal bridging through cladding attachments can reduce insulation efficacy by up to 50%

EMERGING BUILDING CODES OFFER FLEXIBILITY

Prescriptive vs Energy Use

Emerging, more stringent Building Energy Performance Standards (BEPS) allow for design flexibility

PRODUCT PERFORMANCE IS A MATRIX

A Feature vs Overall Performance

Cladding attachment performance must be evaluated holistically and aligned with project goals


QUESTIONS
& COMMENTS?

COMMON QUESTIONS

DETAILING SUPPORT:

- Do you have profile drawings and installation details available?
- Available for download (PDF & DWG)?

SPECIFYING SUPPORT:

- Do you have a 3-part spec?
- Do you have engineering reports available?
- Available for download (Word doc & PDFs)

INSTALLATION SUPPORT:

- Do you have installation videos & instructions available?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