

BUILDING SCIENCE LIVE  
NOVEMBER 24, 2020

# Connecting the Dots: Detailing for Better Wood-Frame Buildings

James Higgins, ASCT  
Building Science Technologist



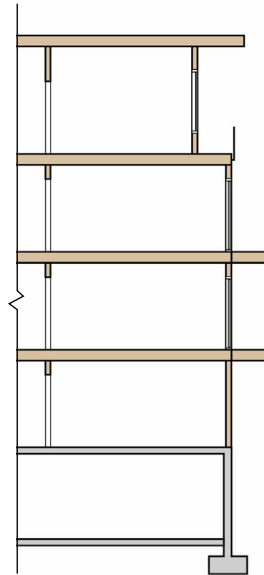
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## Detailing for Better Wood-Frame Buildings

- The “Dots” We’re Trying to Connect
- Why Wood?
- The Enclosure Basics
- Example Details
  - Rim Joist
  - Window
  - Roof-to-Wall



## See Also: Building Enclosure Design Guide

6 DETAILS 6 DETAILS 6 DETAILS 6 DETAILS 6 DETAILS 6 DETAILS 6 DETAILS 6 DETAILS 6 DETAILS 6 DETAILS 6 DETAILS 6 DETAILS 6 DETAILS 6 DETAILS

**6.1 Detail**

The foundation elements in a bulk continuous enclosure are exterior. Any exterior barrier is not only present, but also placed at the exterior most common and most durable location for building enclosure.

Design of all bulk projects, however, requirements may vary depending on the building enclosure. In this design, the exterior enclosure is placed based on a minimum exterior depending on the exterior enclosure.

**6.1 Cont'd**

It is worth noting that the products used by the manufacturer are limited to the wood, aluminum, steel, and plastic. Therefore, moisture sources and/or with water being placed of self-adhered membrane.

**Table 6-1 List of Detail**

Component	Detail
Concrete Foundation	Detail 1 - Foundation
Base of Wall	Detail 2 - Base of Wall
Clearance	Detail 3 - Clear (R/S)
Wall Details	Detail 4 - Stud Wall Detail 5 - Wood-Covered Detail 6 - Exterior Cl Detail 7 - Interior Cl Detail 8 - Cladding Th Detail 9 - The Wall

**BALCONY EDGE / WALL | DETAIL 31 EMB 3D**  
 Exterior Air Barrier: 100 Impermeable Membrane  
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[rdh.com/resource/building-enclosure-design-guide-for-wood-frame-multi-unit-residential-buildings](http://rdh.com/resource/building-enclosure-design-guide-for-wood-frame-multi-unit-residential-buildings)



## Detailing “Dots”

- Centuries old technology
- 21<sup>st</sup> century demands
- “How we’ve always done it”
- New materials and methods
- Performance and cost balance
- Taller, stronger, faster buildings



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## Connecting the Dots – Details that are:

**Cost Conscious**

**Durable**

**Buildable**

**Future Ready**

**LEGEND**

- 1 Wall assembly
  - Fibre cement board siding
  - Pressure treated wood sheathing cavity
  - Rigid mineral wool exterior insulation
  - VP sheathing membrane (A50V100)
  - Sheathing
  - 2x6 wood framing
  - Batt insulation
  - Vapour control layer
  - Interior gypsum wall board
- 2 Pre-finished metal flashing
- 3 Perforated soffit panel

- 4 Continuous exterior insulation (A50V100)
- 5 Continuous exterior insulation (A50V100)
- 6 Vent & insulation
- 7 Roof underlayment
- 8 Roofing shingles
- 9 Self adhesive membrane (A50V100)

- 10 Continuous sealant (A5)
- 11 Continuous angle
- 12 Interdigitated slats
- 13 Continuous sealant
- 14 Pre-finished metal flashing s/s fastening detail
- 15 Drain mat
- 16 Insert screen
- 17 Self adhesive membrane (A50V100)
- 18 VP sheathing membrane (A50V100)

- 19 Gypsum board (A50V100)
- 20 Gypsum board (A50V100)
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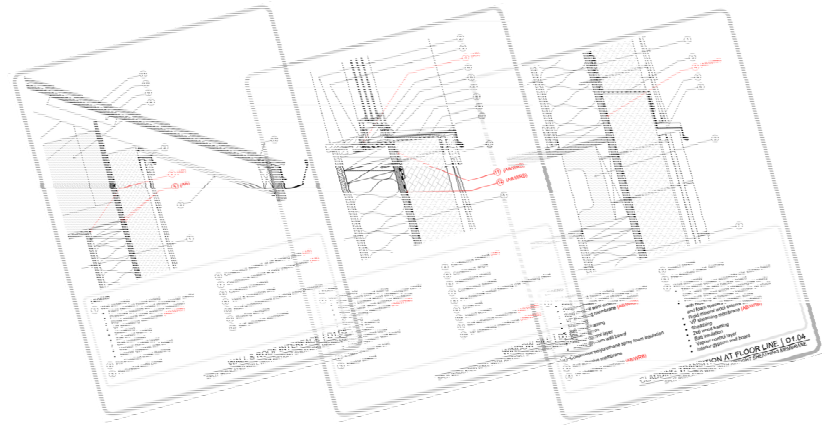
WALL & ROOF INTERFACE | D1.05  
“SPLIT INSULATED WALL WITH AIRTIGHT SHEATHING MEMBRANE”

WINDOW SILL | D1.06  
“SPLIT INSULATED WALL WITH AIRTIGHT SHEATHING MEMBRANE”

ADDING TRANSITION AT FLOOR LINE | D1.04  
“SPLIT INSULATED WALL WITH AIRTIGHT SHEATHING MEMBRANE”

# Detailing is a Verb

- Early
- Often
- Again
- By Hand





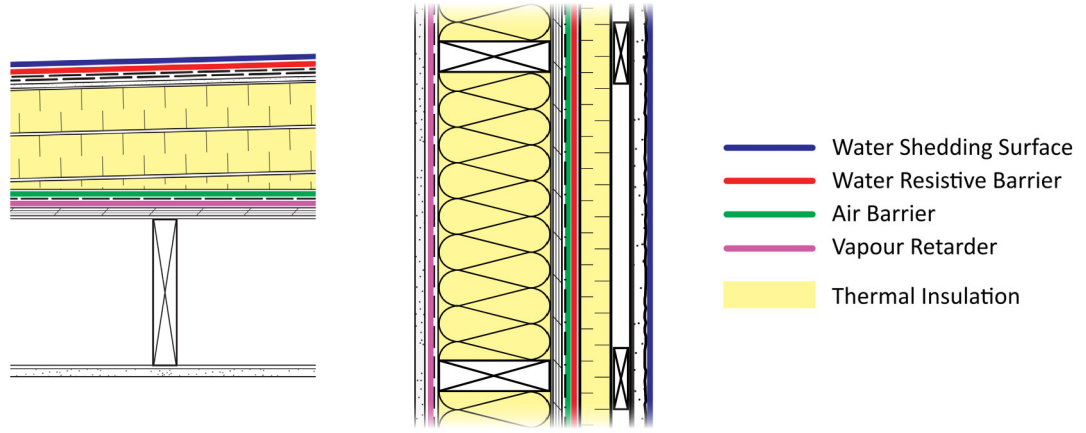
## Why Wood?

- Softwood Lumber – Coniferous Trees
- High strength to weight ratio
- Economical
- Easy to work with
- Carbon sink
- Low thermal conductivity
- Moisture tolerant
- Airtight

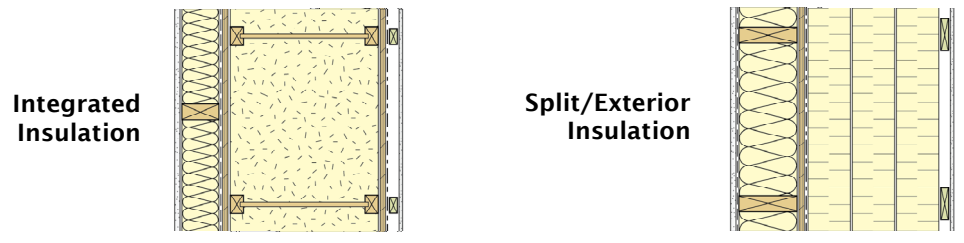


## The Enclosure

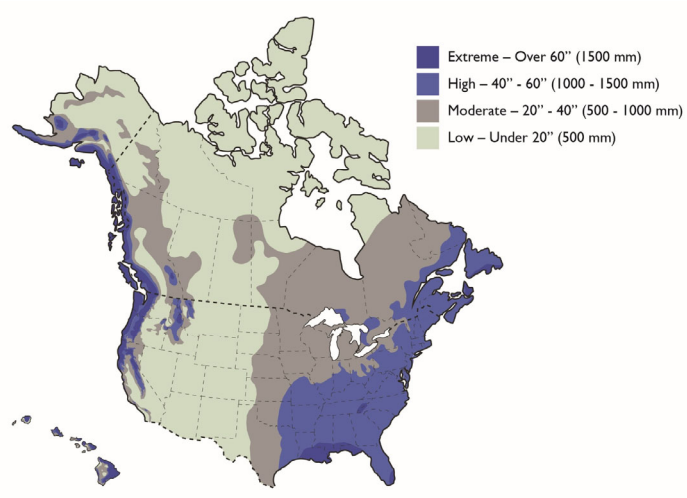
### Critical Barriers



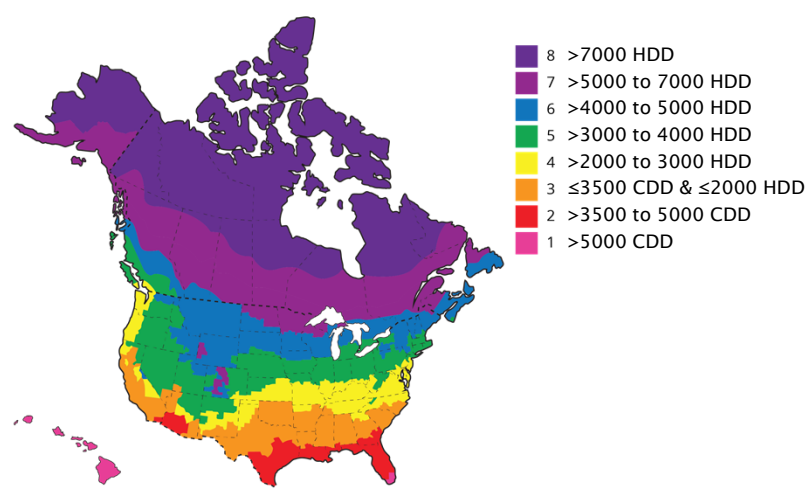
### Insulation Locations - Walls



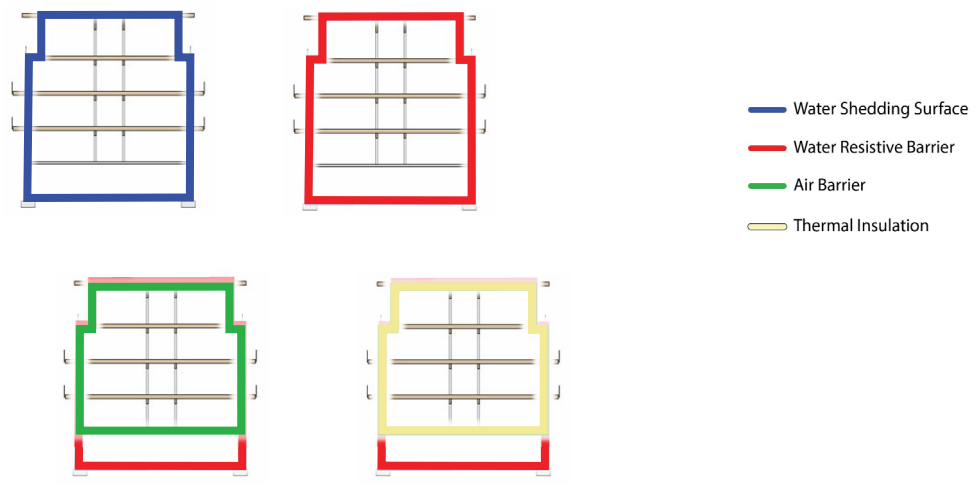
### Exterior Environment - Precipitation



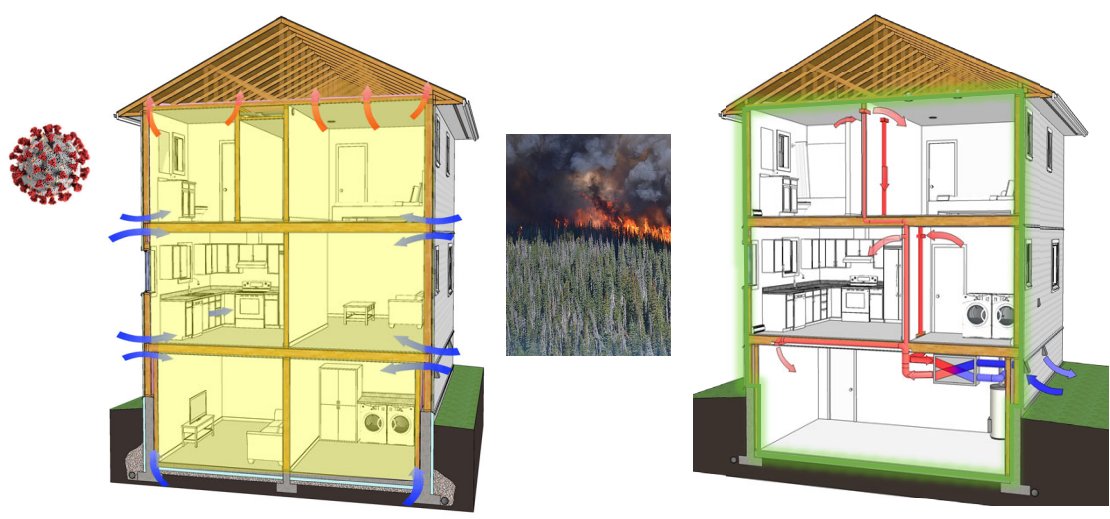
### Exterior Environment - Climate Zone



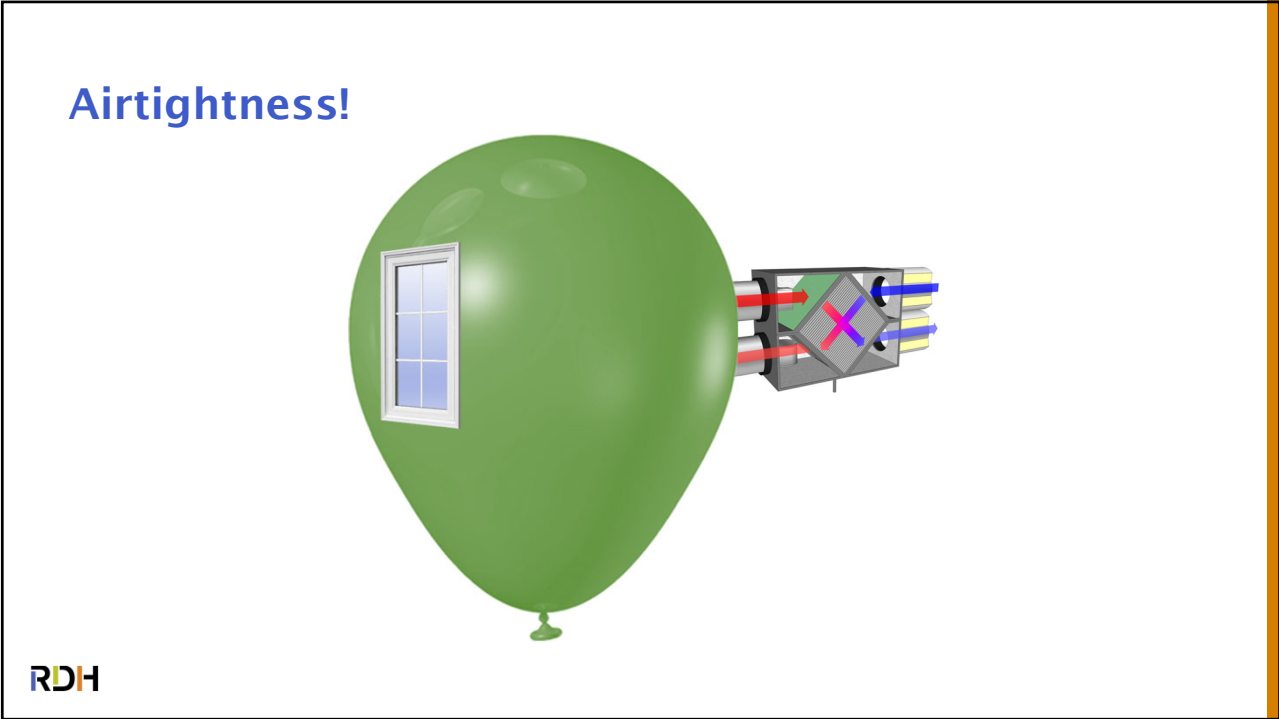
### Detailing - Across the Entire Enclosure



### Airtightness?

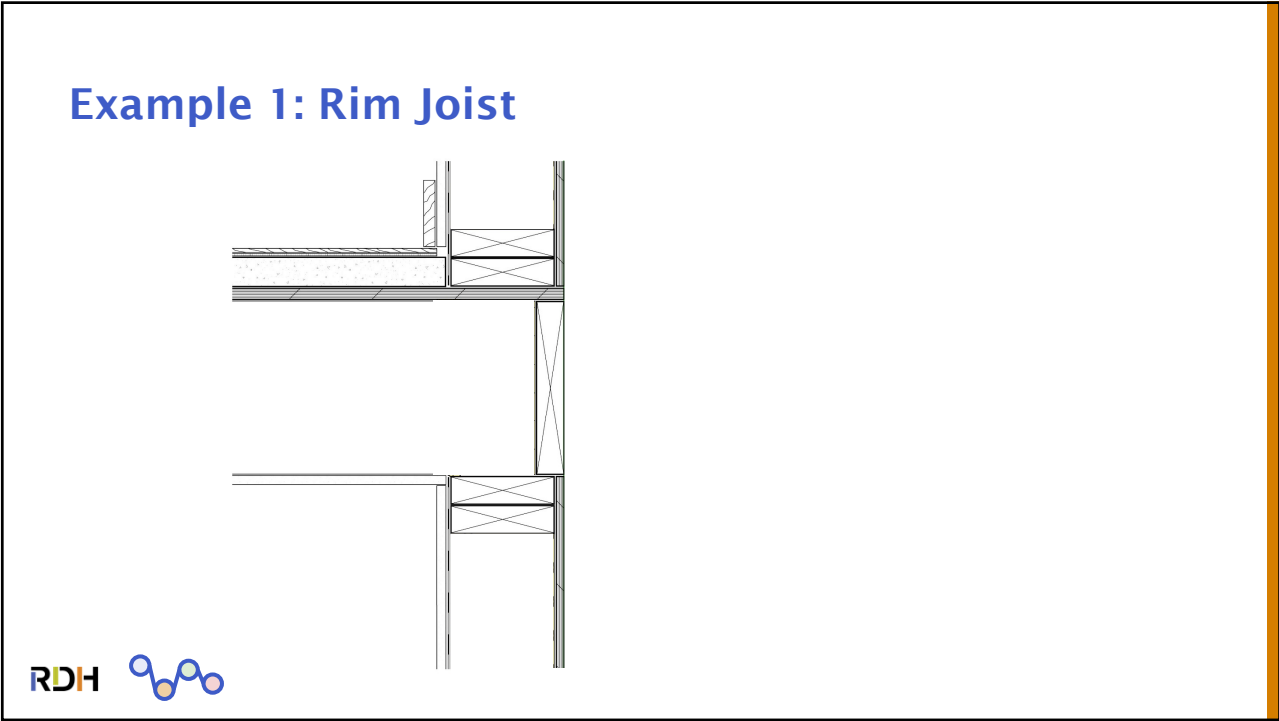
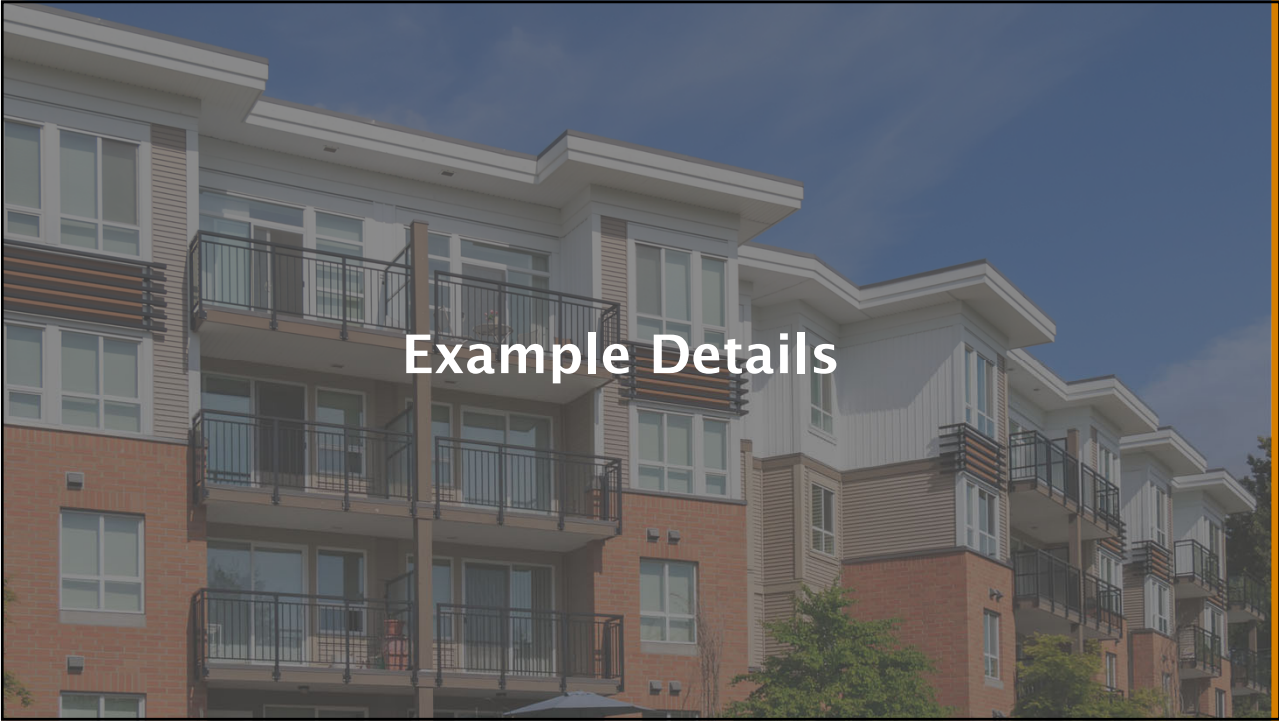




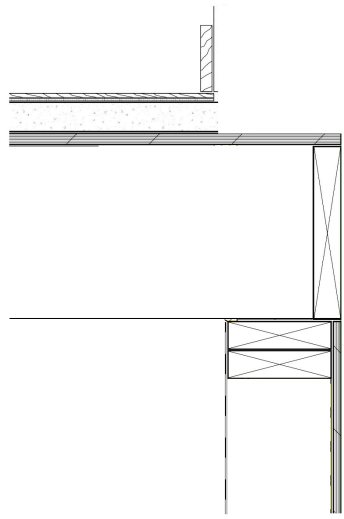




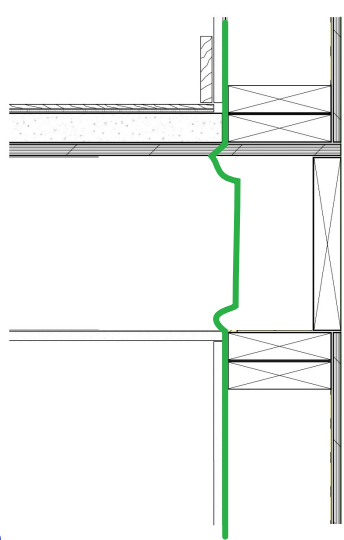




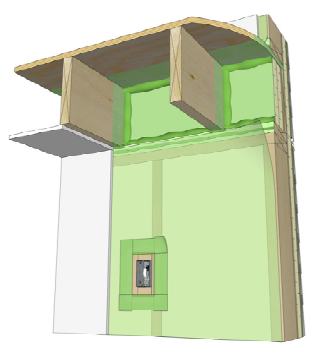
### Example 1: Rim Joist



### Example 1: Rim Joist

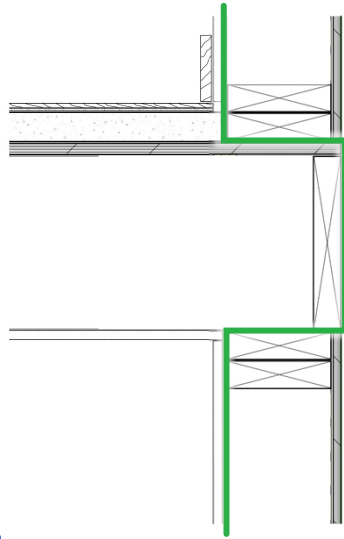


- Water Shedding Surface
- Water Resistive Barrier
- Air Barrier
- Thermal Insulation





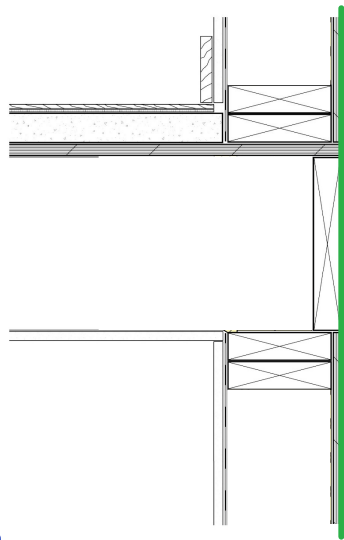
### Example 1: Rim Joist



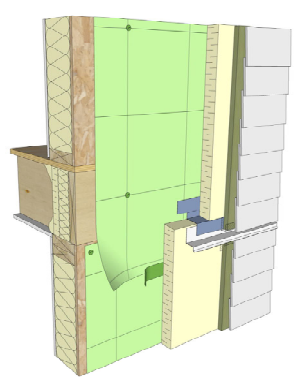
- Water Shedding Surface
- Water Resistive Barrier
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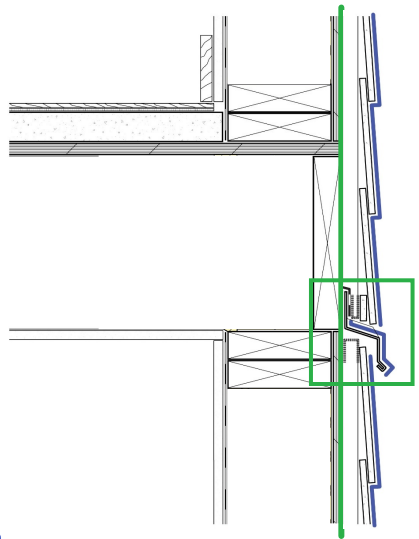
### Rim Joist



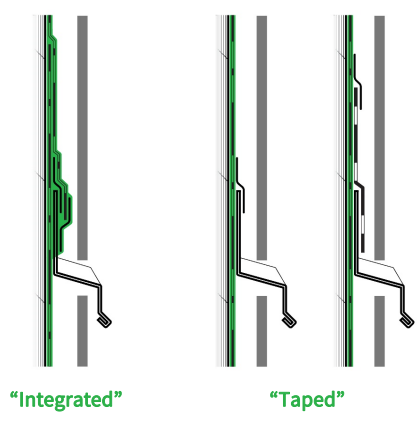
- Water Shedding Surface
- Water Resistive Barrier
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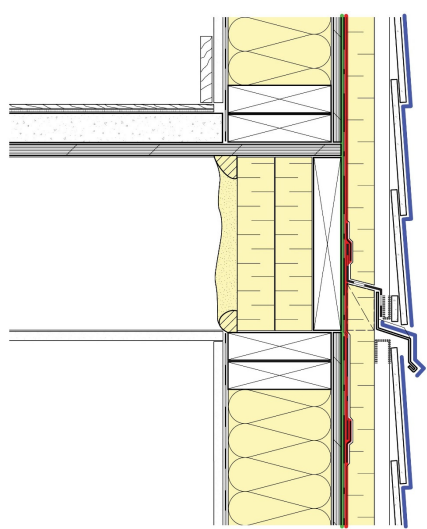
### Rim Joist - Simple and Continuous



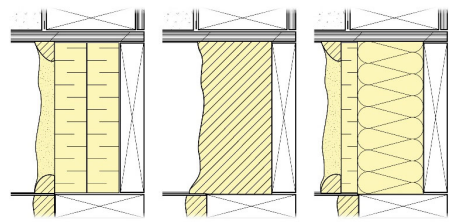
- Water Shedding Surface
- Water Resistive Barrier
- Air Barrier
- Thermal Insulation



### Rim Joist - Interior Doesn't Matter

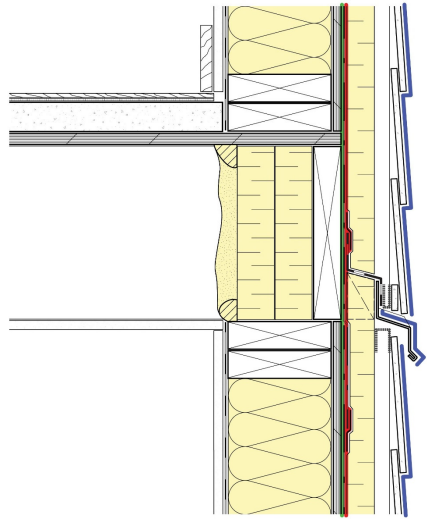


- Water Shedding Surface
- Water Resistive Barrier
- Air Barrier
- Thermal Insulation

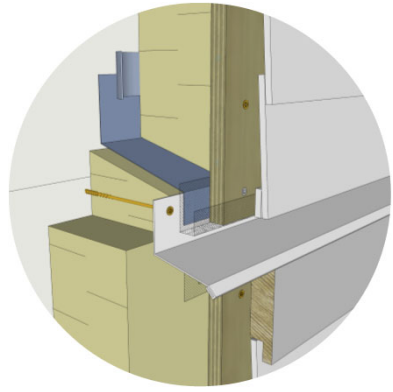




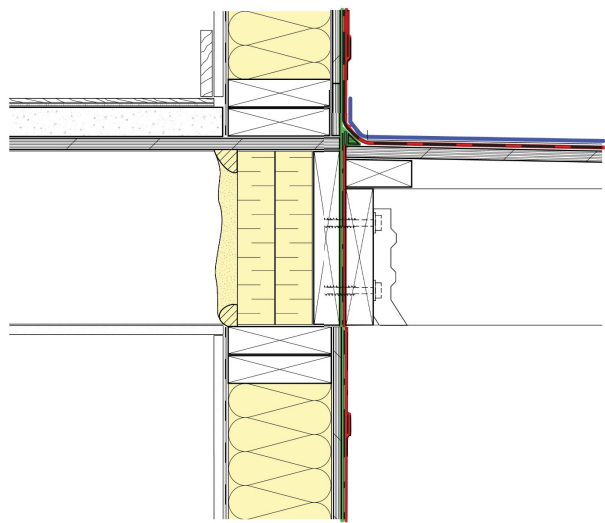
### Rim Joist - Exterior Insulation



- Water Shedding Surface
- Water Resistive Barrier
- Air Barrier
- Thermal Insulation



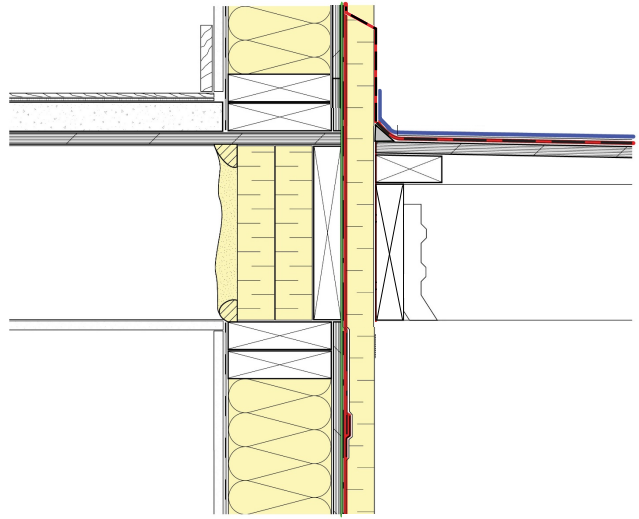
### Rim Joist - Balcony/Walkway



- Water Shedding Surface
- Water Resistive Barrier
- Air Barrier
- Thermal Insulation



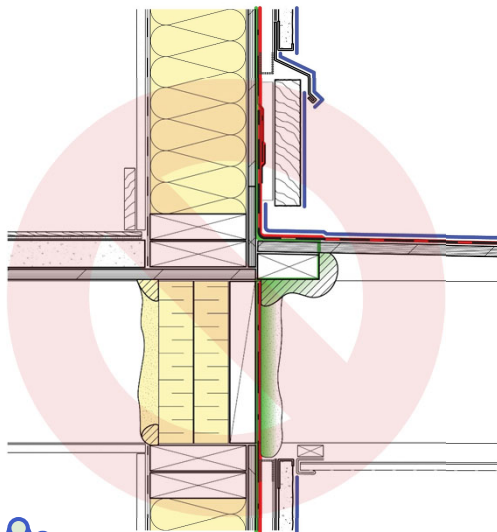
# Rim Joist - Balcony/Walkway



- Water Shedding Surface
- Water Resistive Barrier
- Air Barrier
- Thermal Insulation



## Cantilevered Balcony...



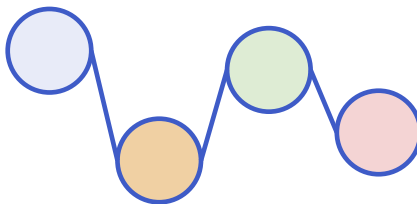
— Water Shedding Surface  
— Water Resistive Barrier  
— Air Barrier  
— Thermal Insulation



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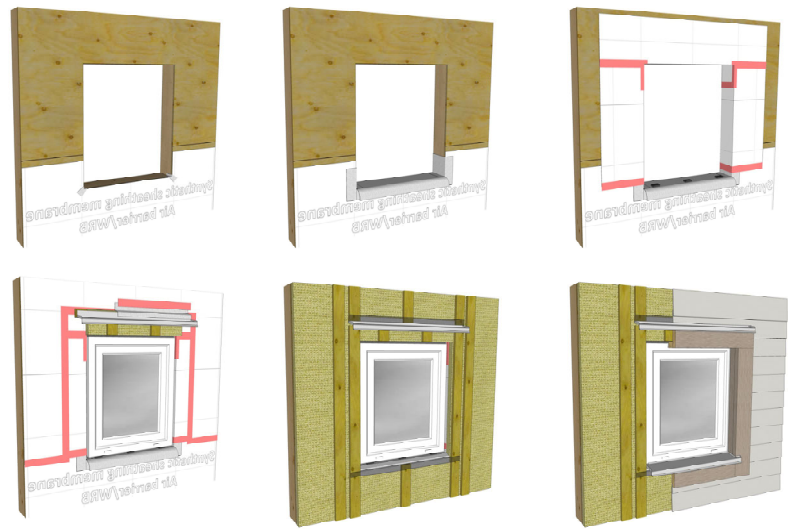
## Detailing to Connect the Dots:

- Use conventional materials
- Study the sequencing and “decouple”
- Prioritize continuity
- Be ready to ask for more from the details

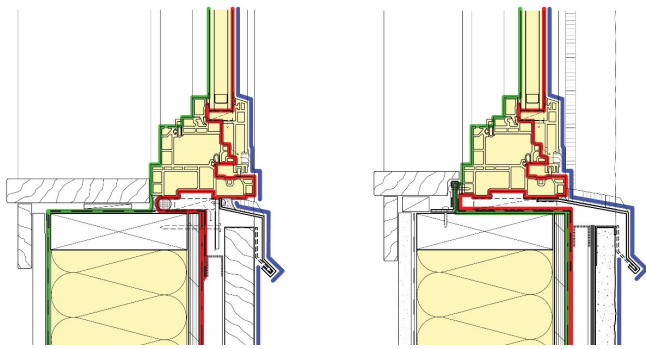


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### Example 2: Windows



### Window Sill – Flanged vs Non-Flanged

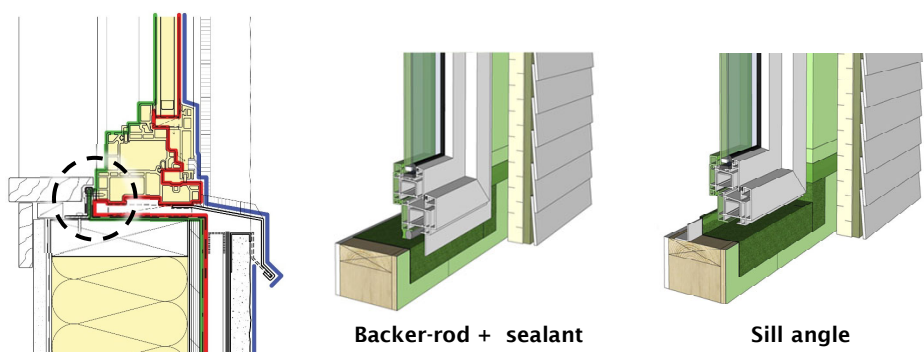


Flanged

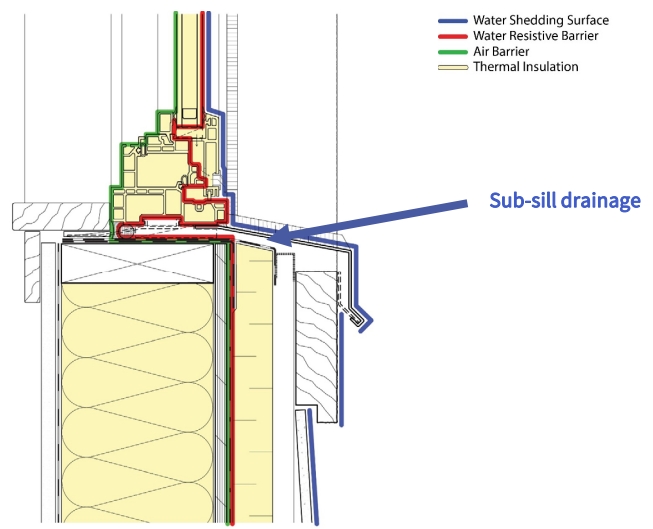
Non-Flanged



### Window Sill - Perimeter Seal

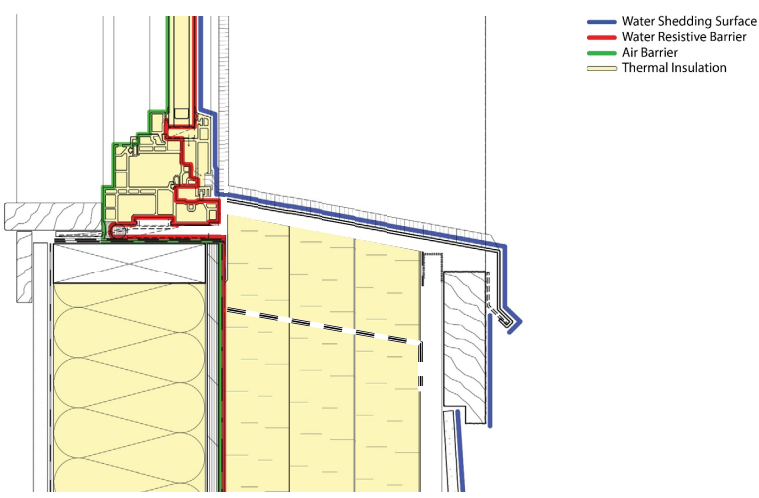


### Non-Flanged Window Sill

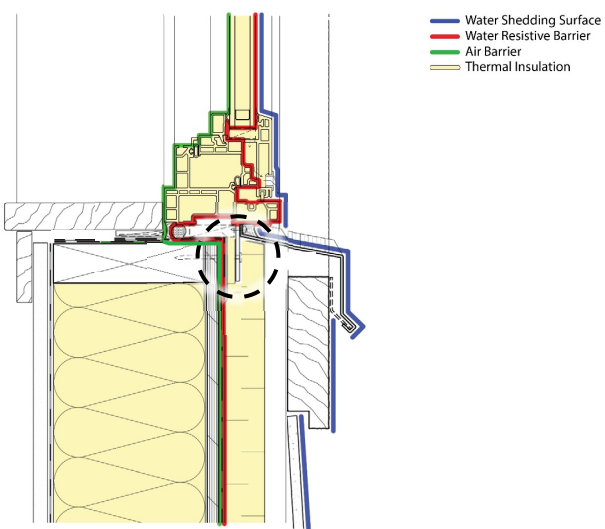




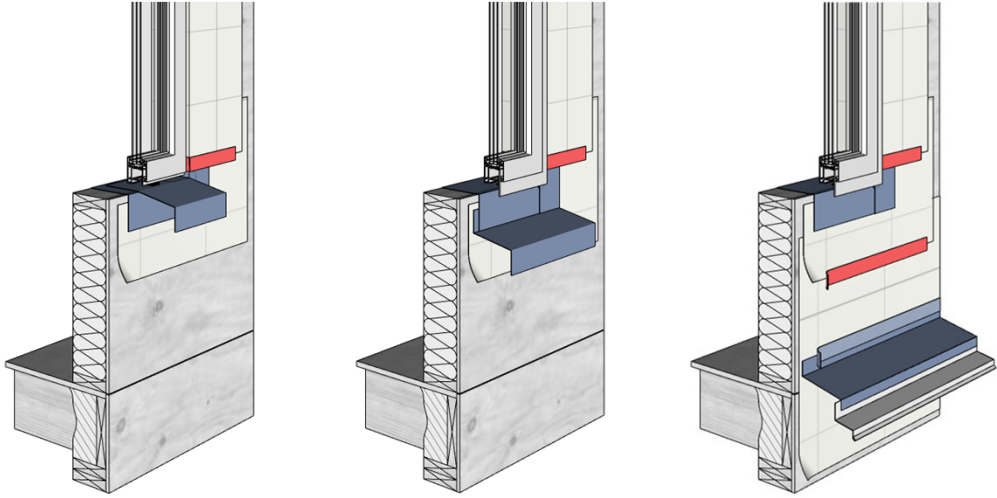
### Window Sill - Future Ready?



### Flanged Window Sill w/ Exterior Insulation?



### Window Sub Sill Drainage Options



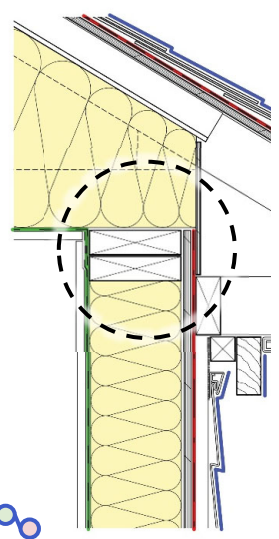
### Window Install - Clean & Tidy?



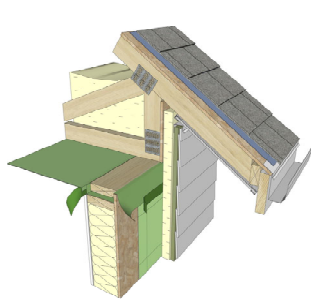
### Window Install - Clean & Tidy!



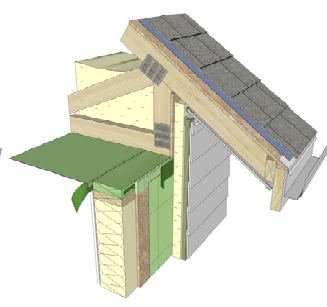
### Example 3: Roof to Wall



Ceiling to Wall Ext AB Transition?



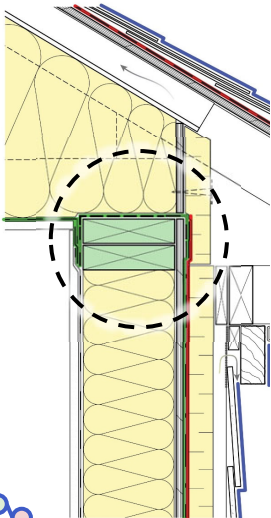
Pre-Strip



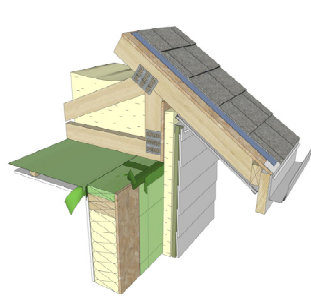
Sealant



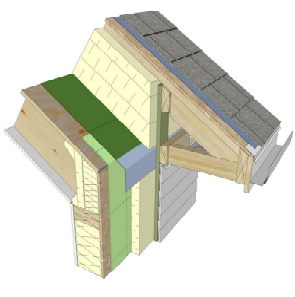
### Water Shedding Roof / Wall



Ceiling to Wall Ext AB Transition?



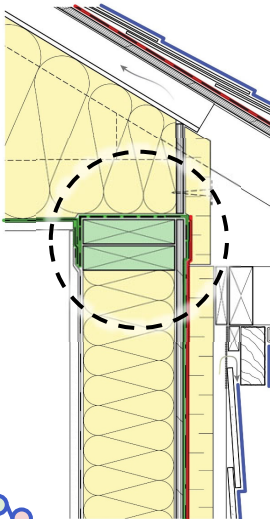
Taped Top Plate



Ext AB ("Monopoly Roof")



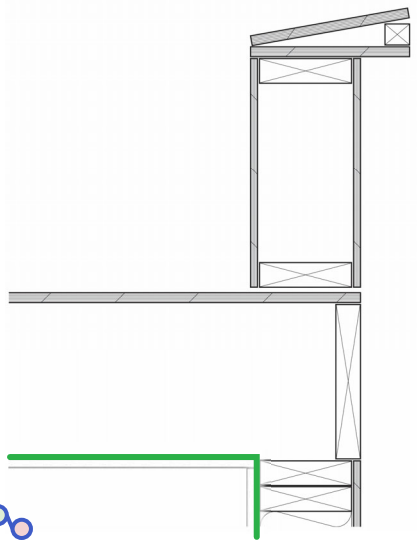
### Water Shedding Roof / Wall



Ceiling to Wall Ext AB Transition?



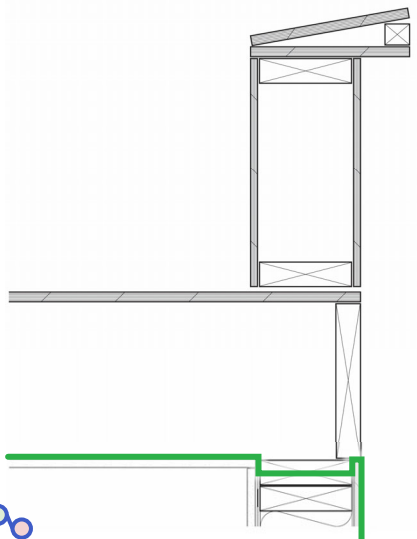
### Roof Parapet - Interior Air Barrier



Ceiling to Wall - Interior



### Roof Parapet - Sequencing and Continuity

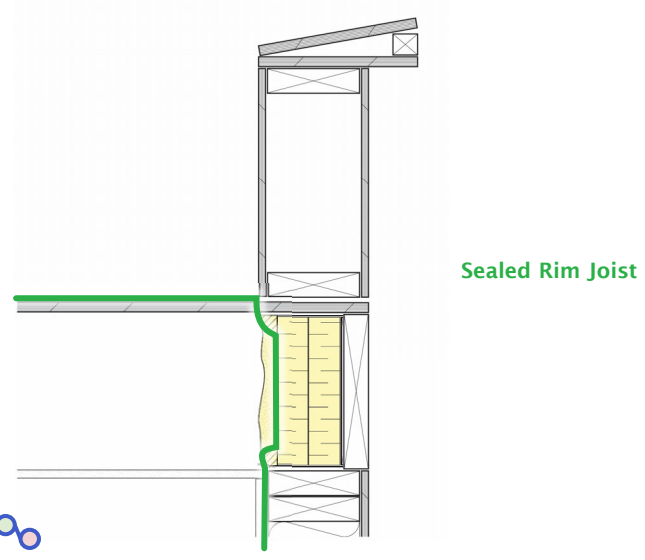


Top Plate Transition

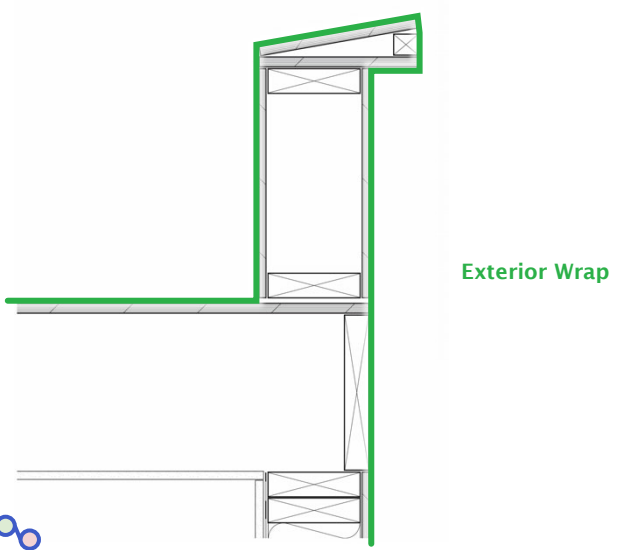




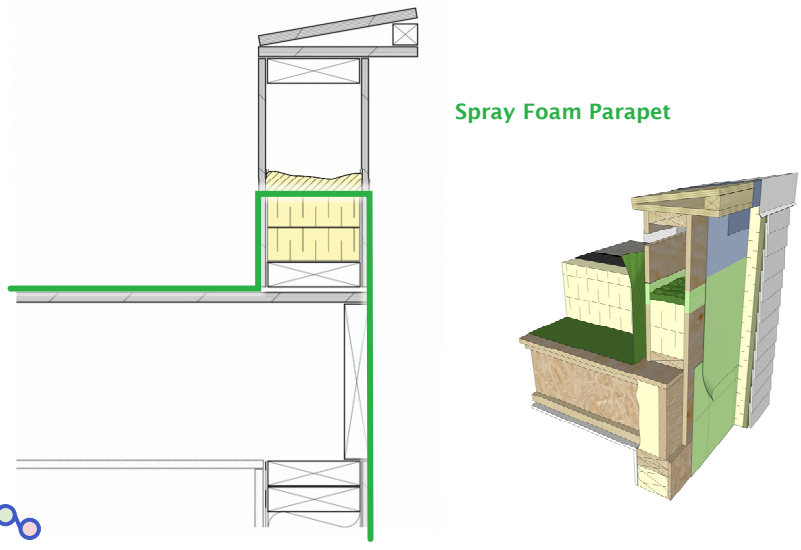
### Roof Parapet - Sequencing and Continuity



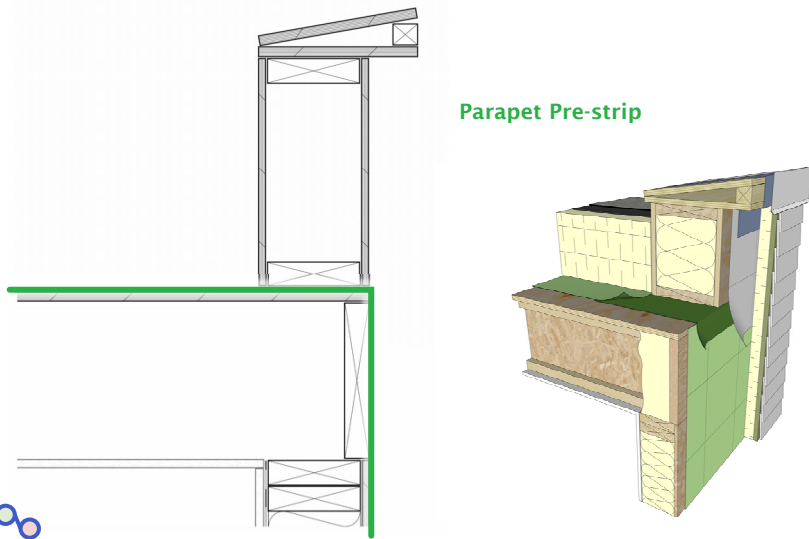
### Roof Parapet - Sequencing and Continuity



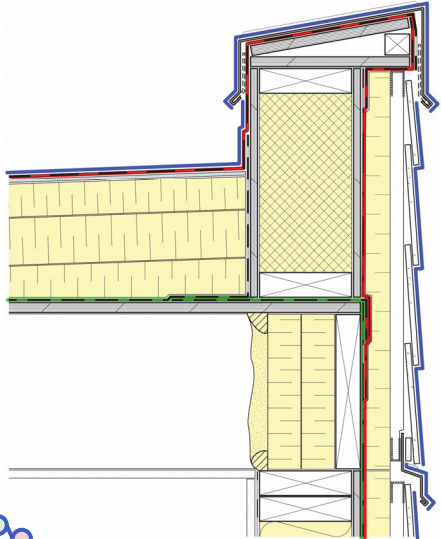
### Roof Parapet – Sequencing and Continuity



### Roof Parapet – Simple and Continuous



# Roof Parapet



## Detailing for Better Wood-Frame Buildings



James Higgins  
 jhiggins@rdh.com

