WOODWORKS
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Exterior Wall Detailing Zero-Lot Lines

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Making Buildings Better

OUTLINE

1. Building enclosure design + blind walls
2. How does a window wall work?
3. Case Studies

Building Enclosure Design @ Blind Walls

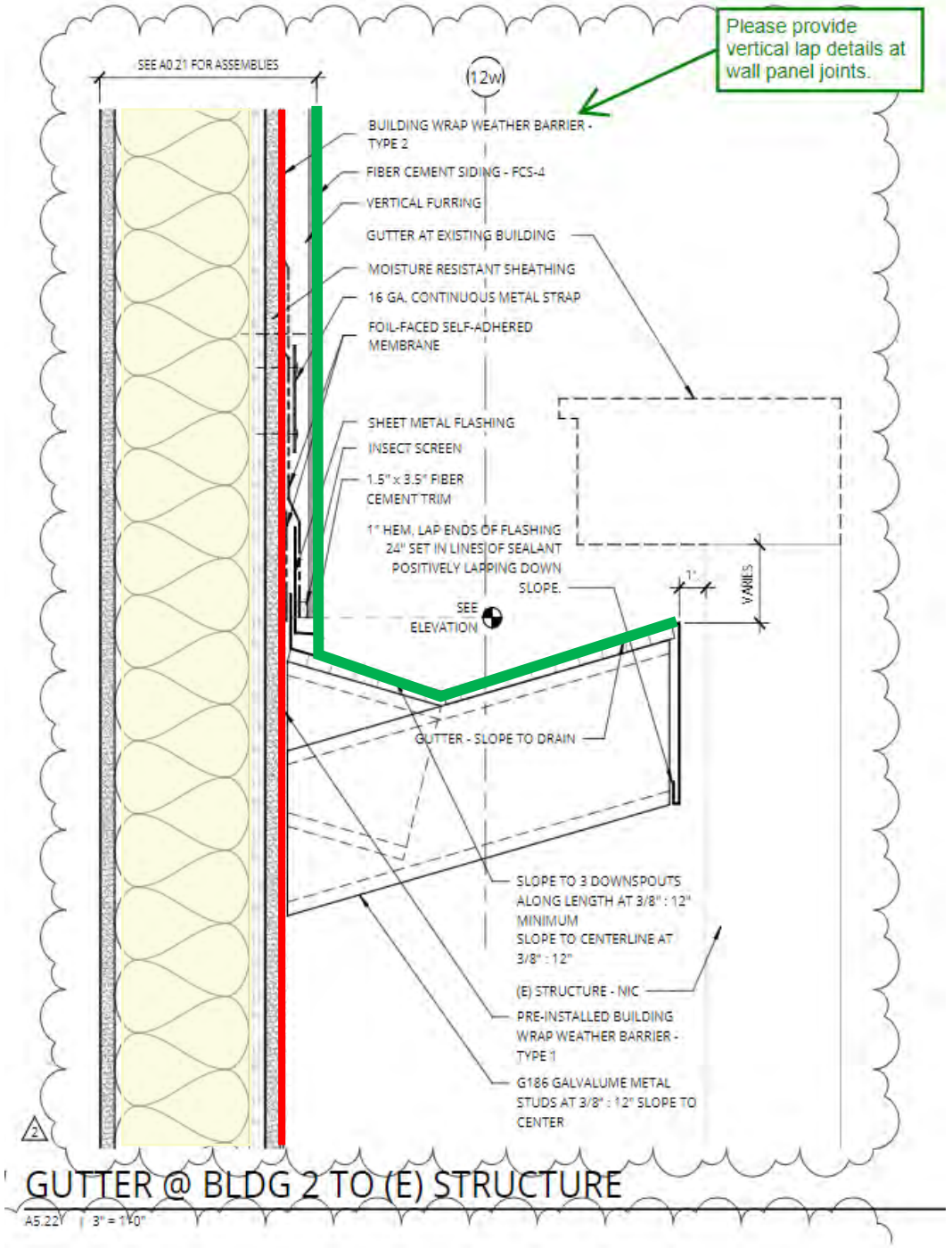
Enclosure Design 101

- **Support**
  - Structural loads / structural movements
- **Control**
  - Water penetration
  - Air flow
  - Vapor diffusion / condensation
  - Heat flow
  - Bugs
  - Light and solar radiation
  - Noise, fire, and smoke
- **Finish**


The Building Enclosure

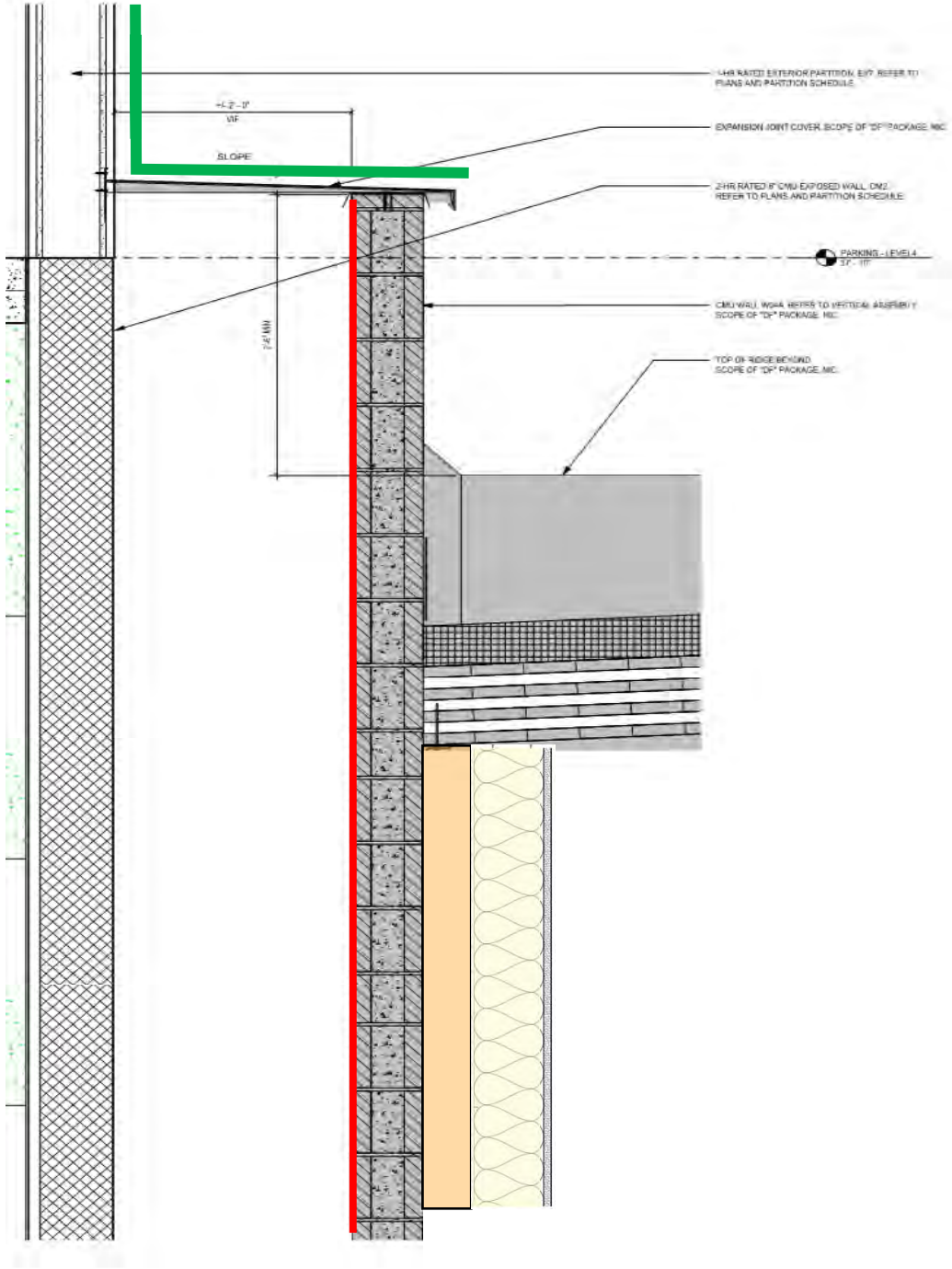
Separating Inside from Outside

- **Support**
  - Structural loads / structural movements
- **Control**
  - Water penetration – *WRB + WSS*
  - Air flow – *Air barrier*
  - Vapor diffusion / condensation – *Climate dependent*
  - Heat flow
  - Bugs
  - Light and solar radiation
  - Noise, fire, and smoke
- **Finish**



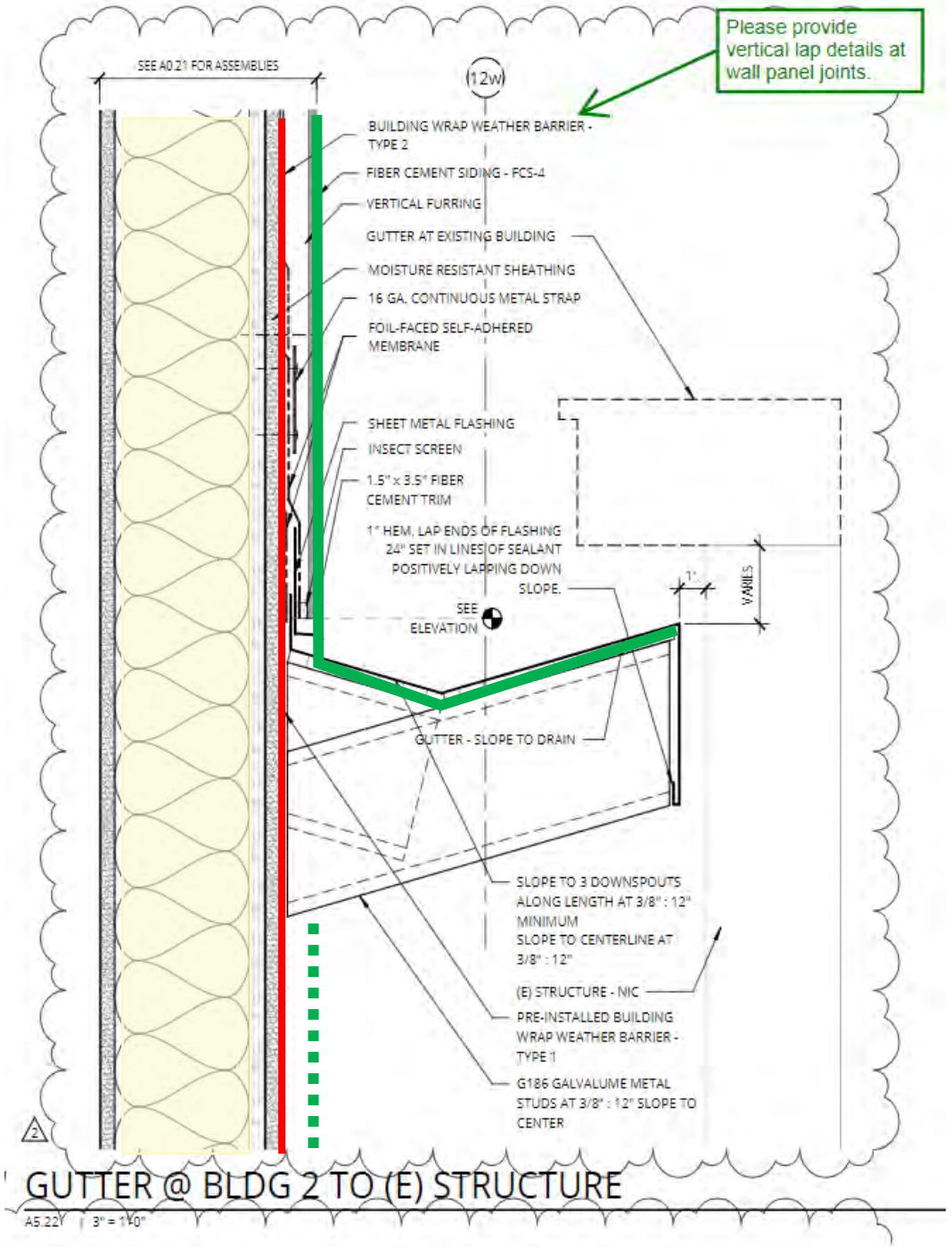
CMU Exterior Wall Option

- CMU provides “support” function; fully independent from adjacent building. Installed from interior.
- CMU typically unfaced in blind area, protected with curb-mounted expansion joint above
- Fully grouted CMU meets air barrier requirements in most US energy codes
- Insulation (ccSPF) and finish on interior



Wood-Framed Exterior Wall

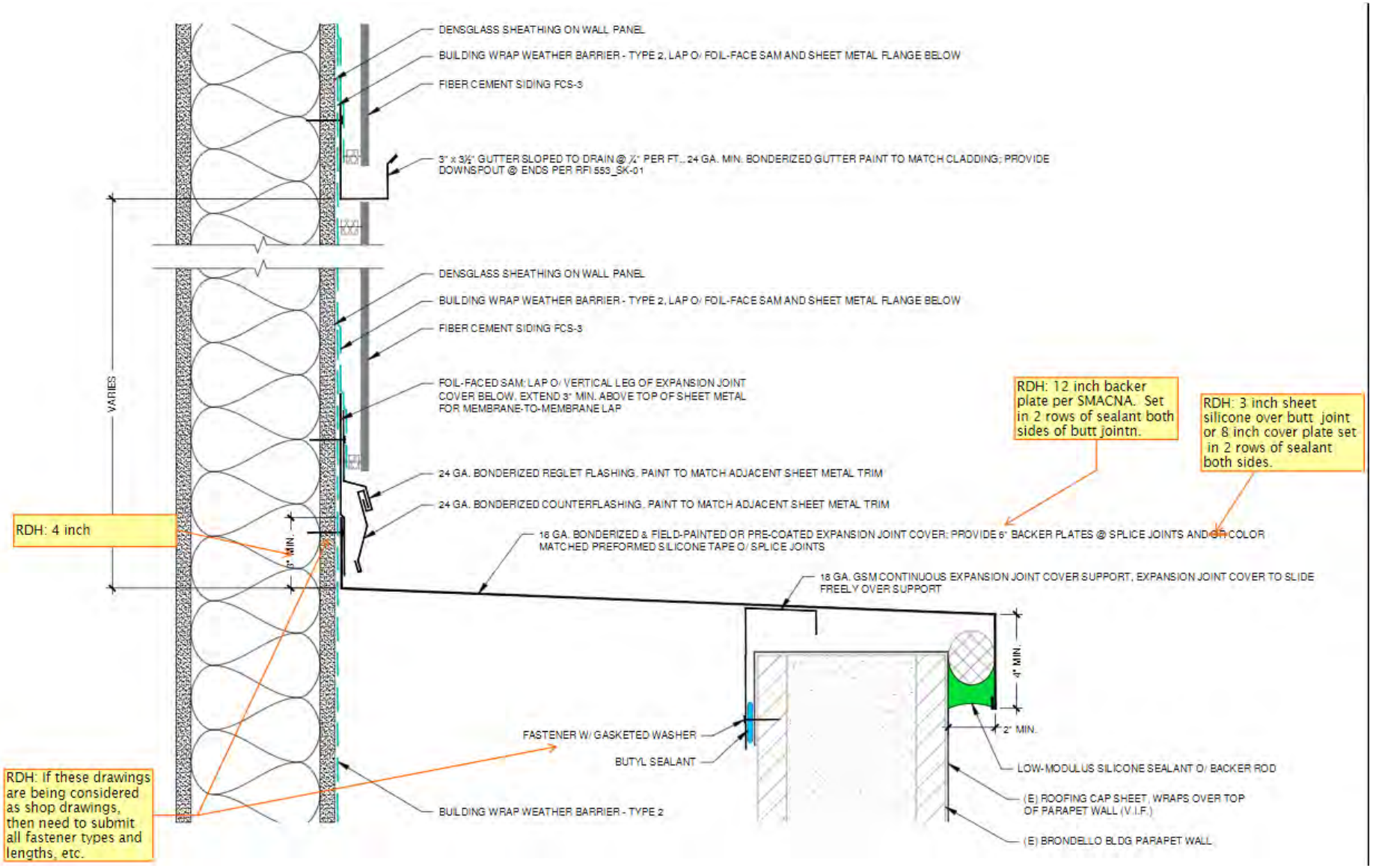
- Framed wall provides “Support” function; fully independent from adjacent building. Installed from interior.
- Top of concealed area typically protected with curb-mounted expansion joint above (WSS)
- Need to provide air barrier and WRB on face of framed wall as part of building enclosure. Installed from interior.
- Batt insulation between studs. CI in some cases.



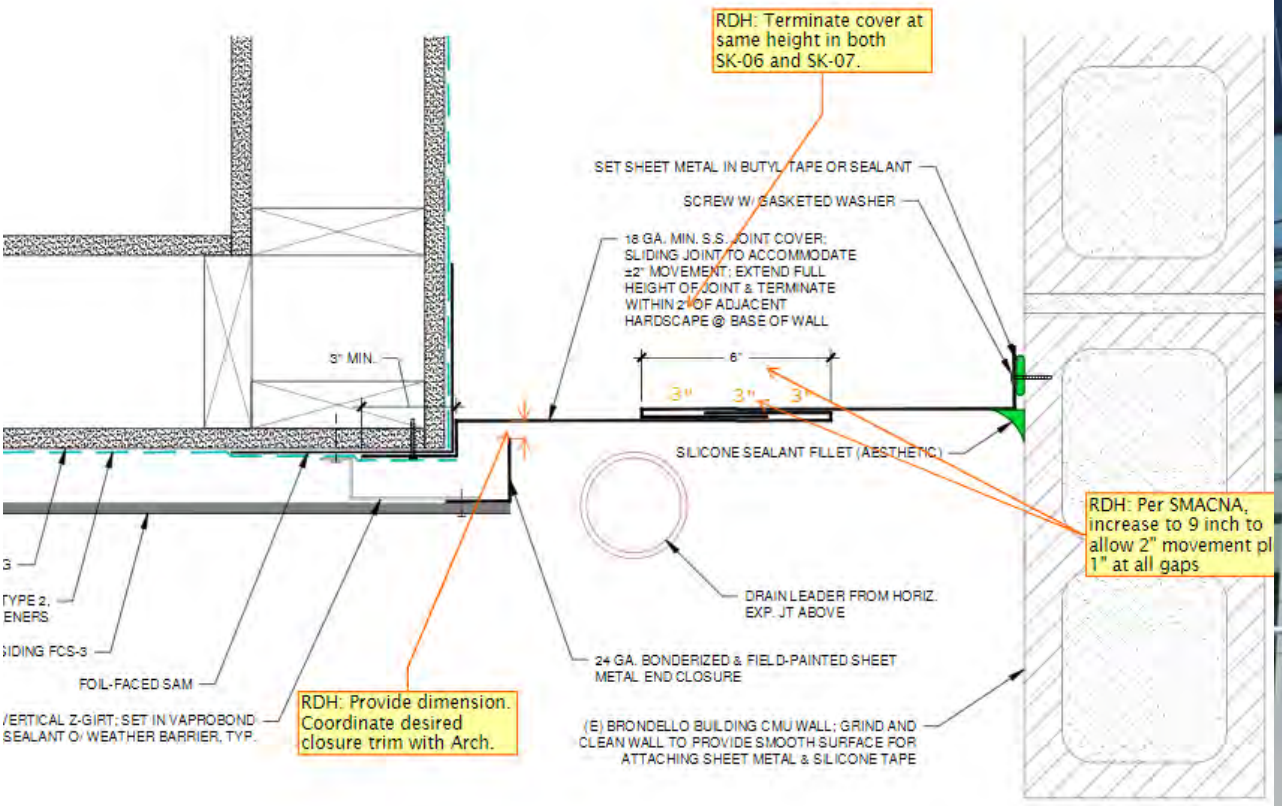
Roof Expansion Joints

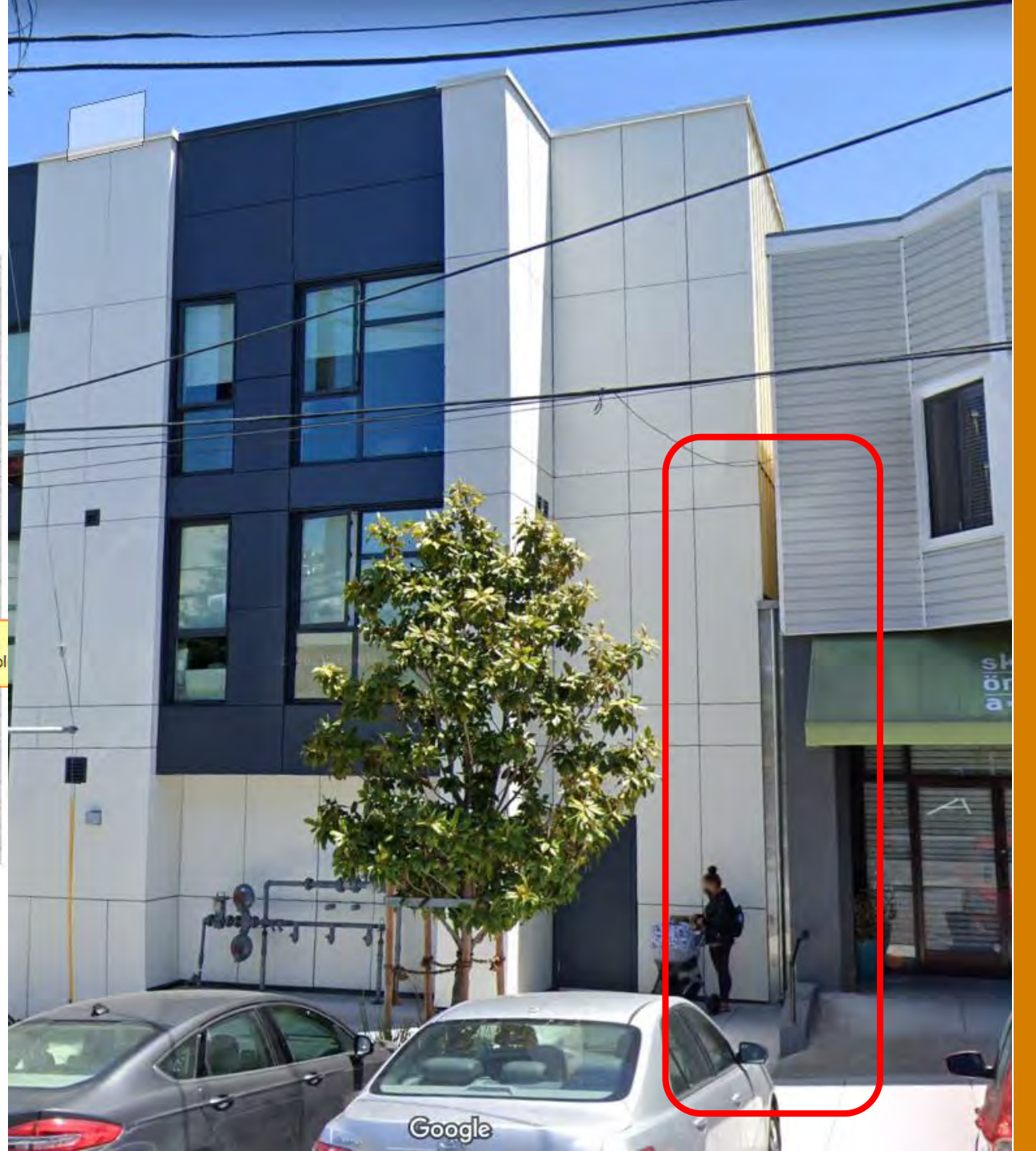
- Many different types, sizes, and styles
- Top priority:
  - Provide a deflective element to prevent bulk water from wetting concealed wall below (like a cladding)
  - Can incorporate backup membrane to further limit water penetration across EJ
- Other functions:
  - Not typically relied upon for air tightness
  - Can incorporate thermal and fire barriers if needed

Roof Expansion Joints



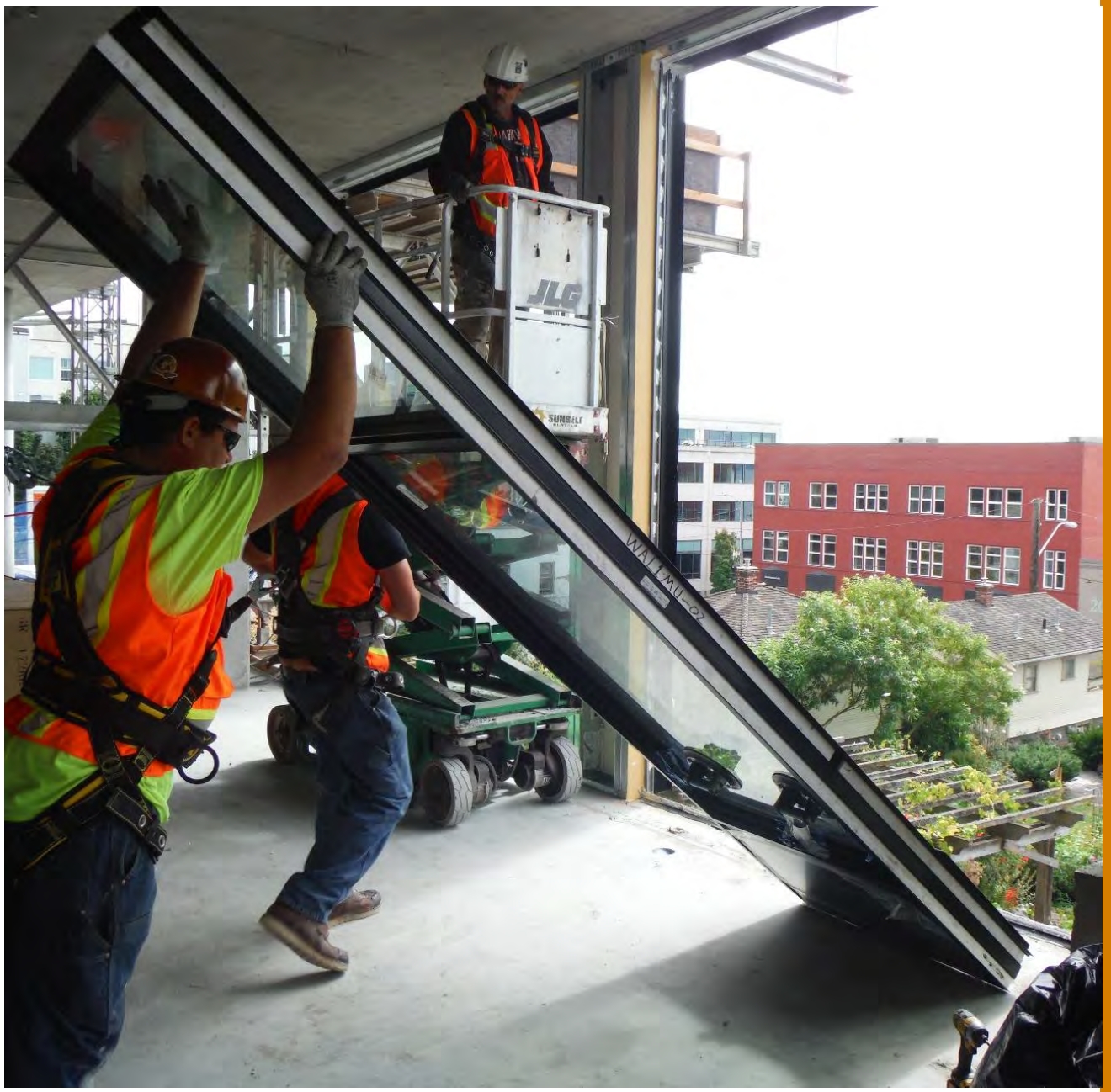
Vertical Expansion Joints





An Aside: Window Wall

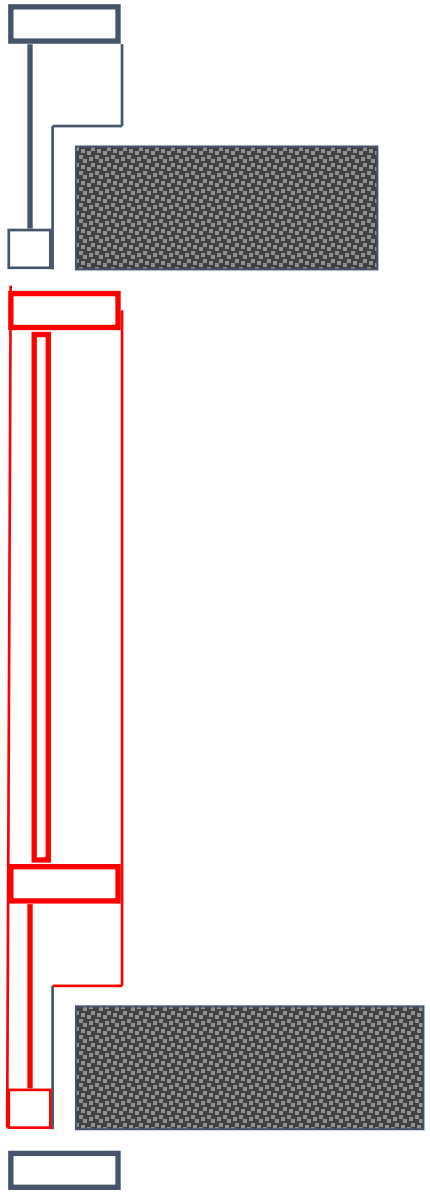
- Unitized, factory assembled glazing system, installed from interior
- Non-load bearing; spans floor-to-floor
- No exterior access needed:
  - Slab edge protection installed from interior prior to installing unit
  - Gaskets and seals installed between adjacent units
- Encloses the open area between floors, while also incorporating a “slab cover”

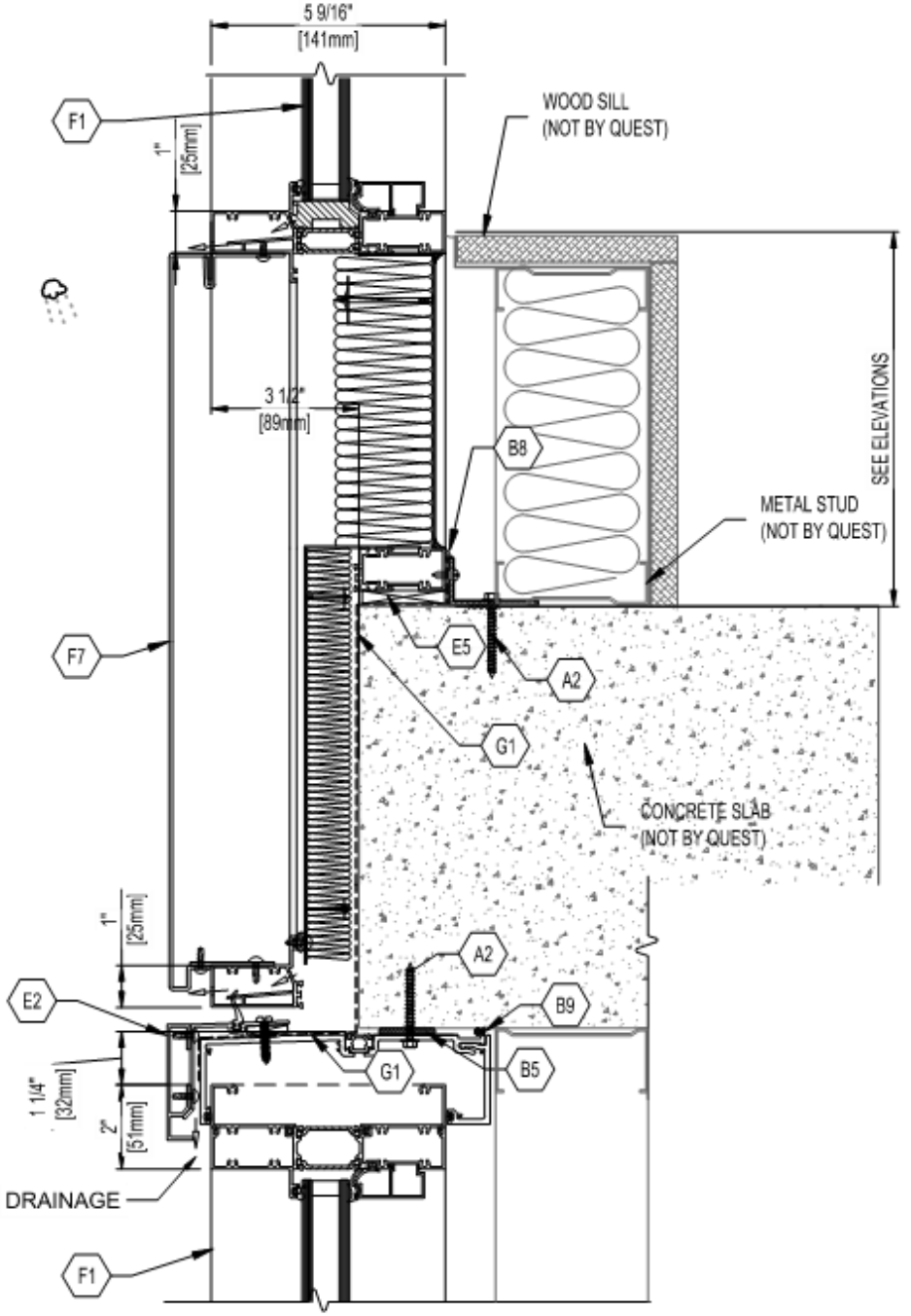


An Aside: Window Wall

Anchorage Basics

- Units sit on slab edge
  - Dead load on shims
- Fastened through back angle at sill
  - Resists wind load and supports DL
- Deflection header
  - Installed on underside of slab above
  - Resists wind load
  - Allows vertical / drift movements

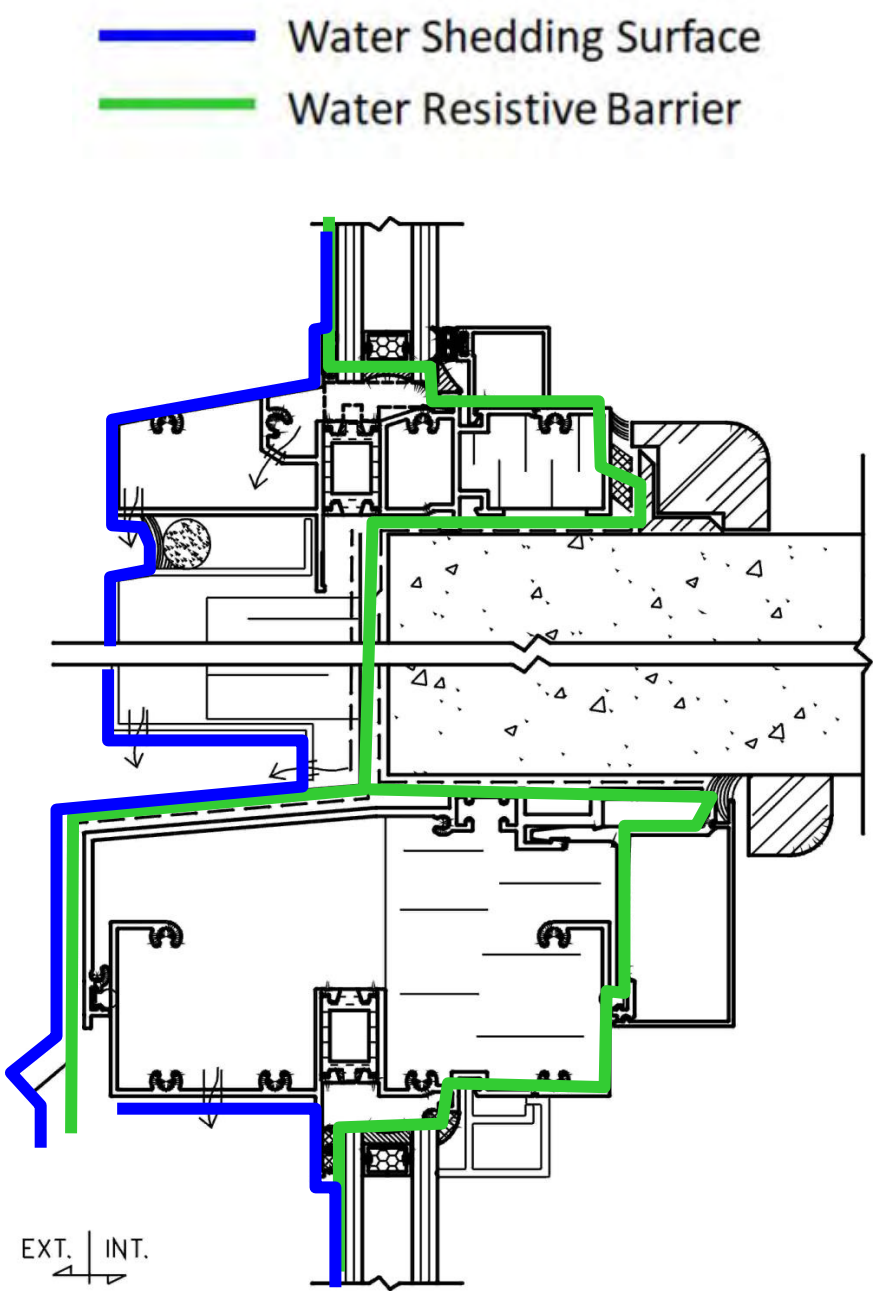




An Aside: Window Wall

Control Layers

- Sill detailed similar to standard punched window
- Primary air & water control at back and around slab
- Slab edge wrapped with FFSAM



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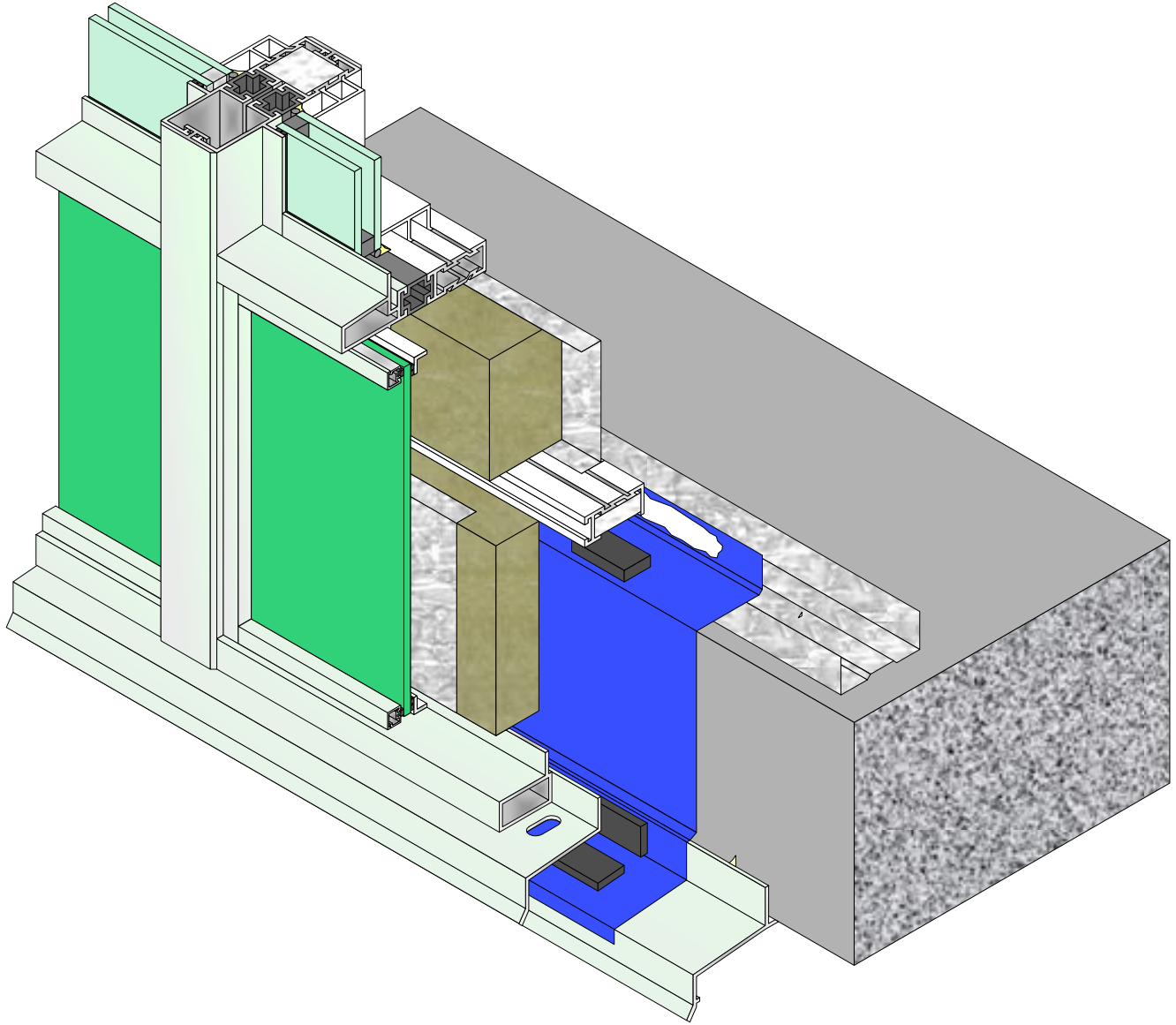


Concrete slab

Deflection head flashing

Sealant

Back angle
Membrane

Shims

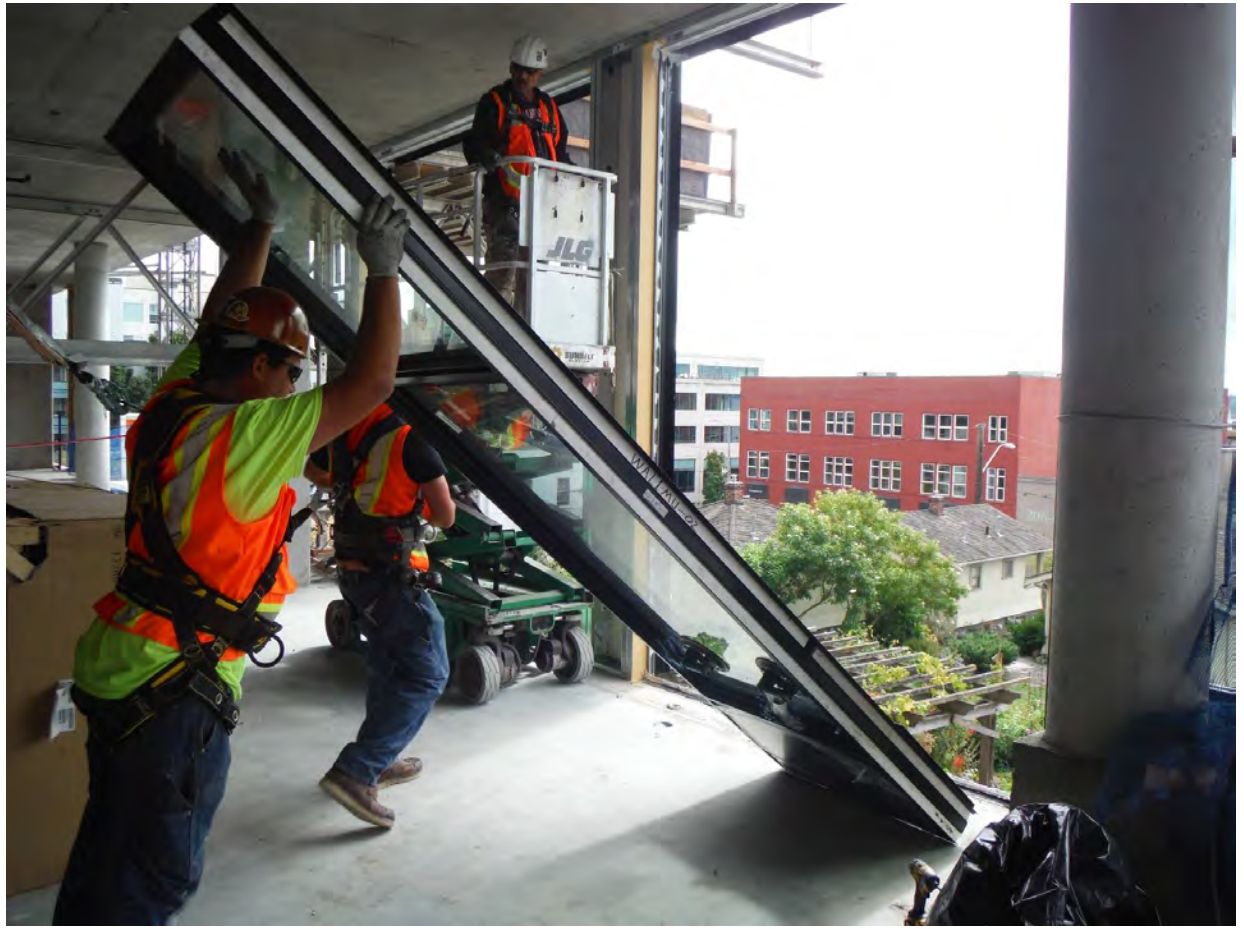
Cover flashing

Window wall


STANLEY
INSPECTED

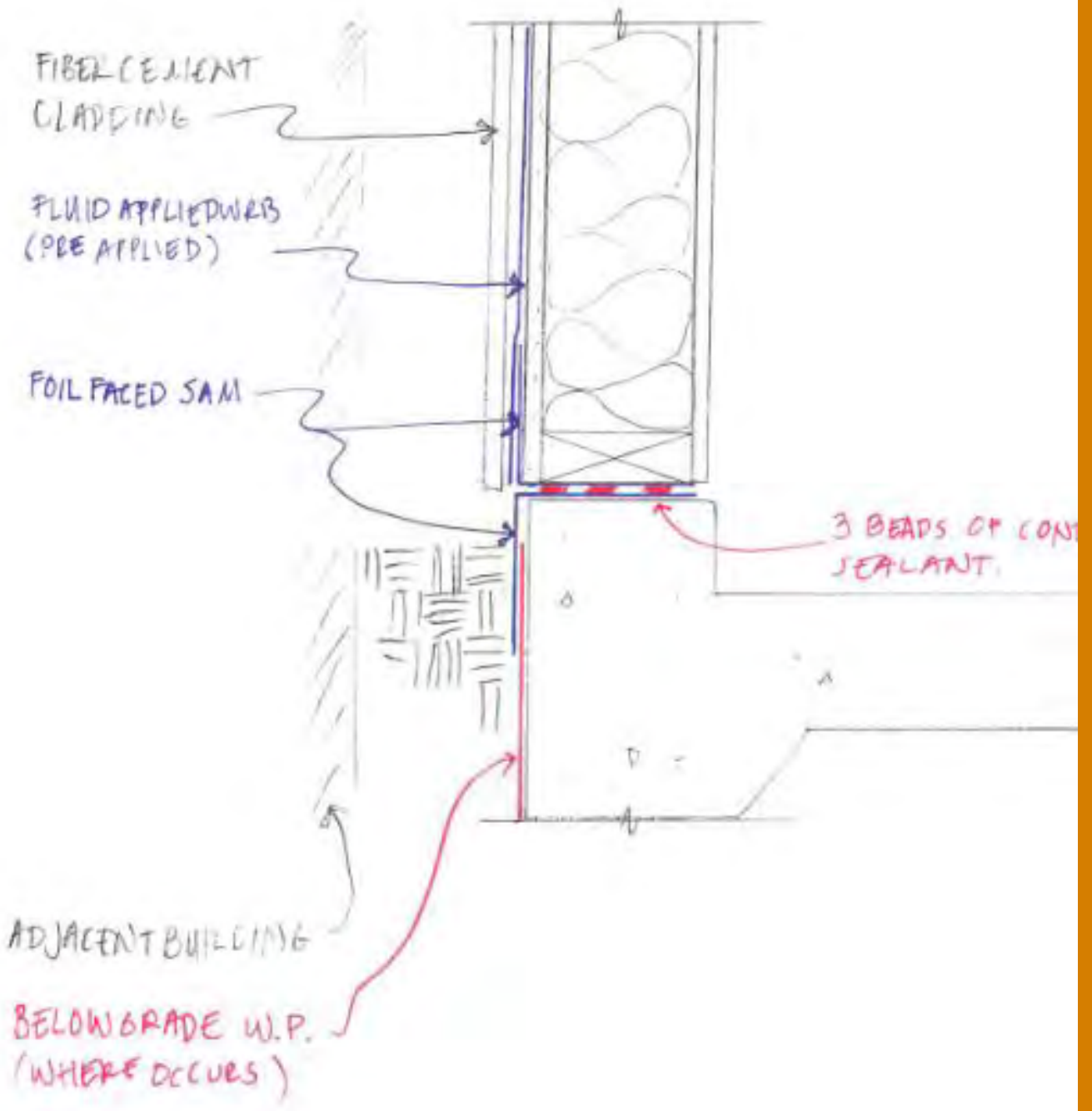
Slab Edge Preparation - Sill

Window Wall Installation



Base of Wall Condition

- Installed and detailed similar to window wall
- Sequencing:
  - Lower slab edge preparation
  - Install head compensation channel
  - Install panelized wall (with WRB installed)
  - Anchor and seal panelized wall to lower slab edge membrane (air and water tightness)
- Optional exterior cladding



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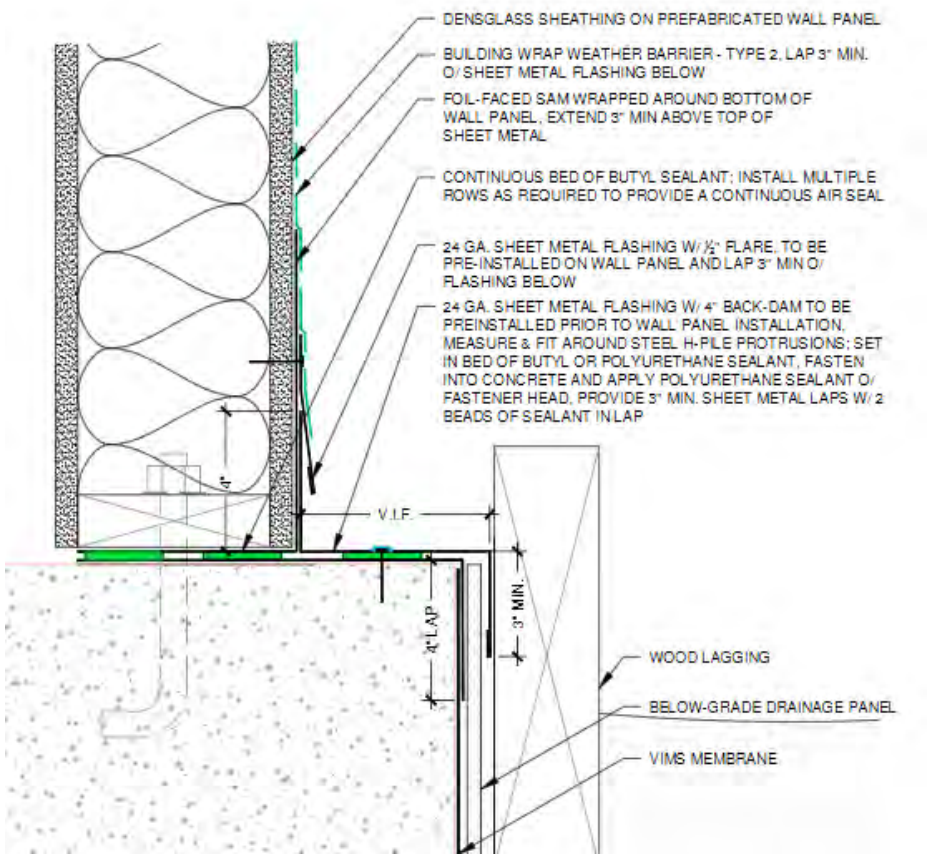
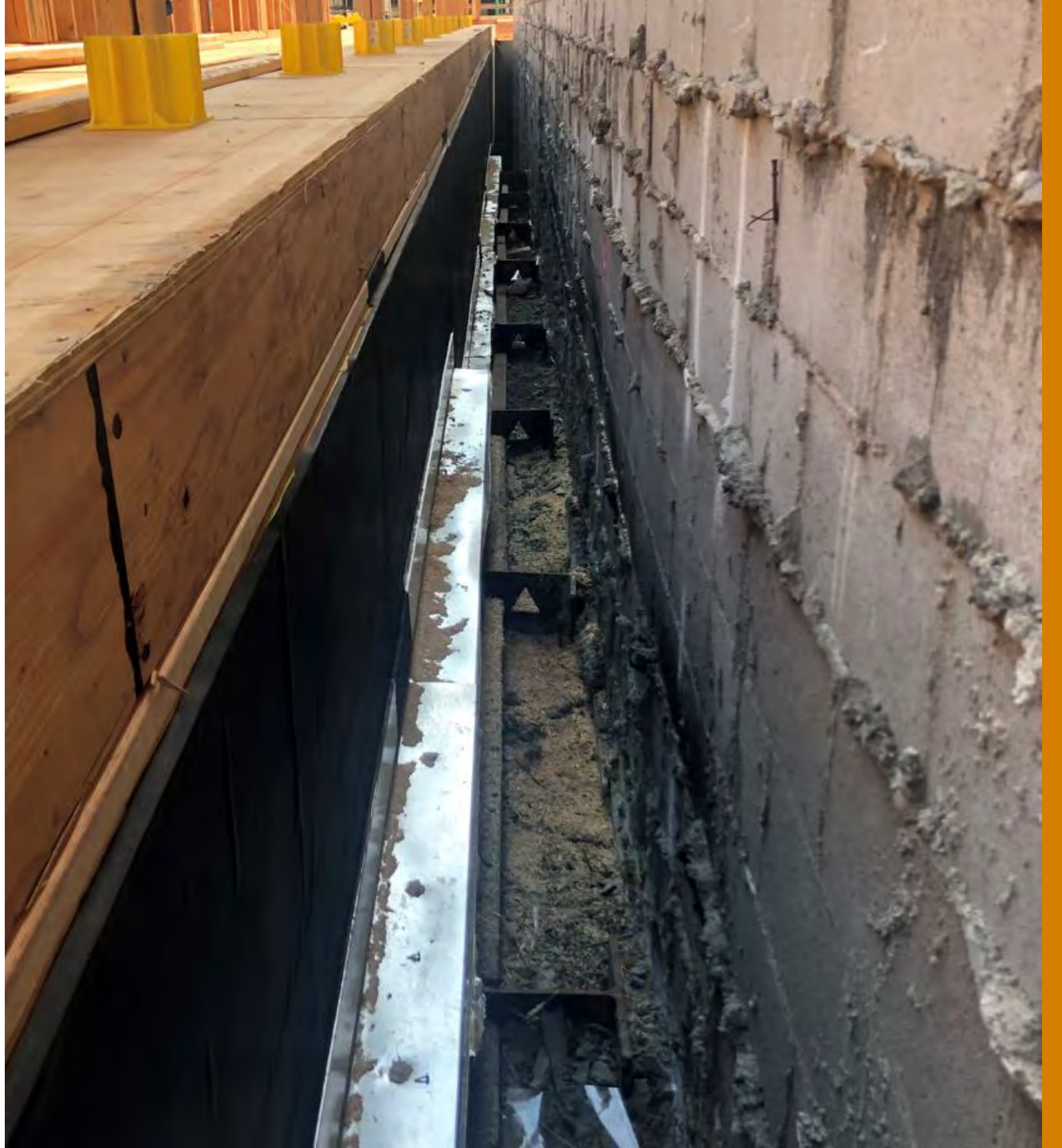
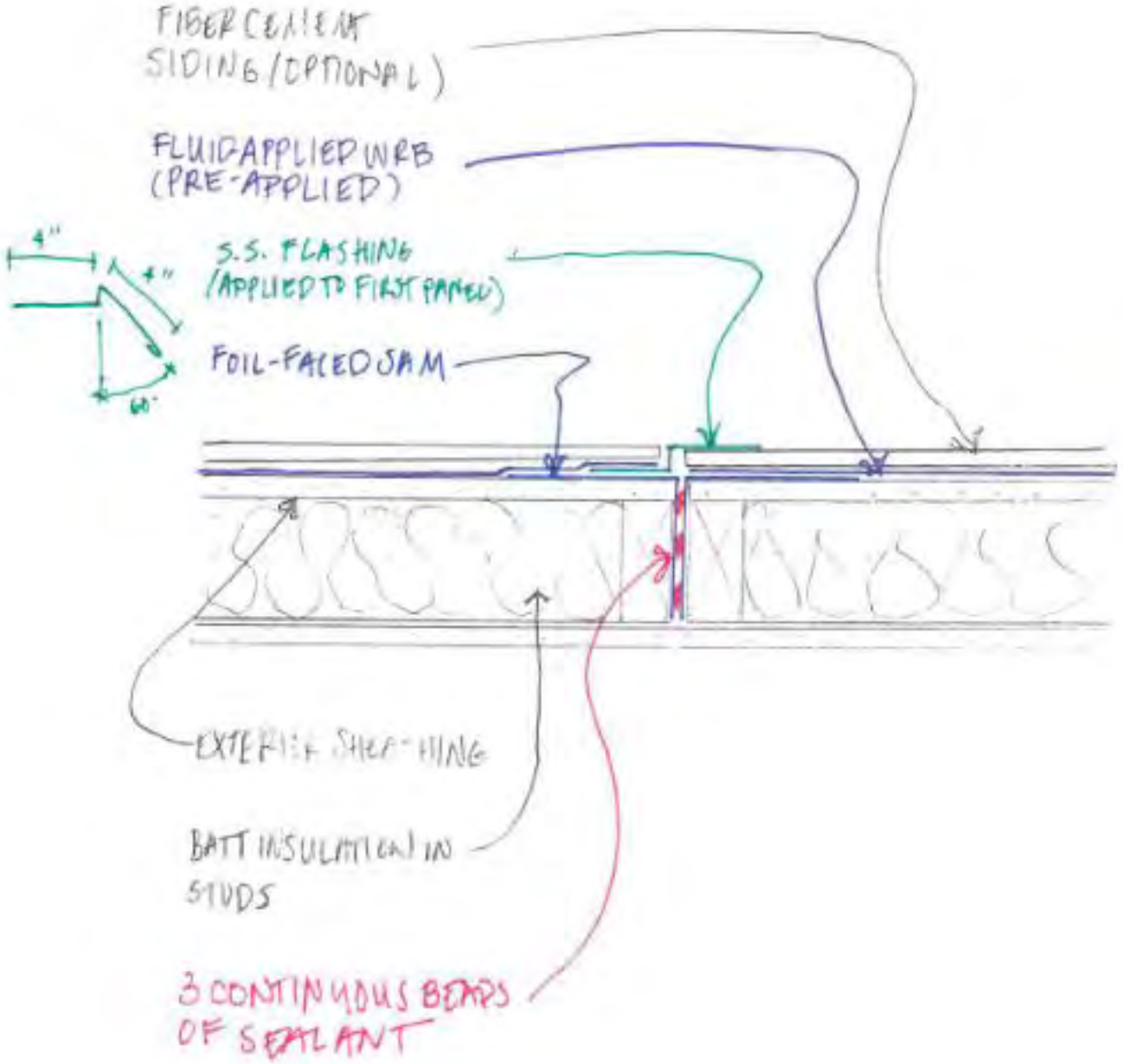




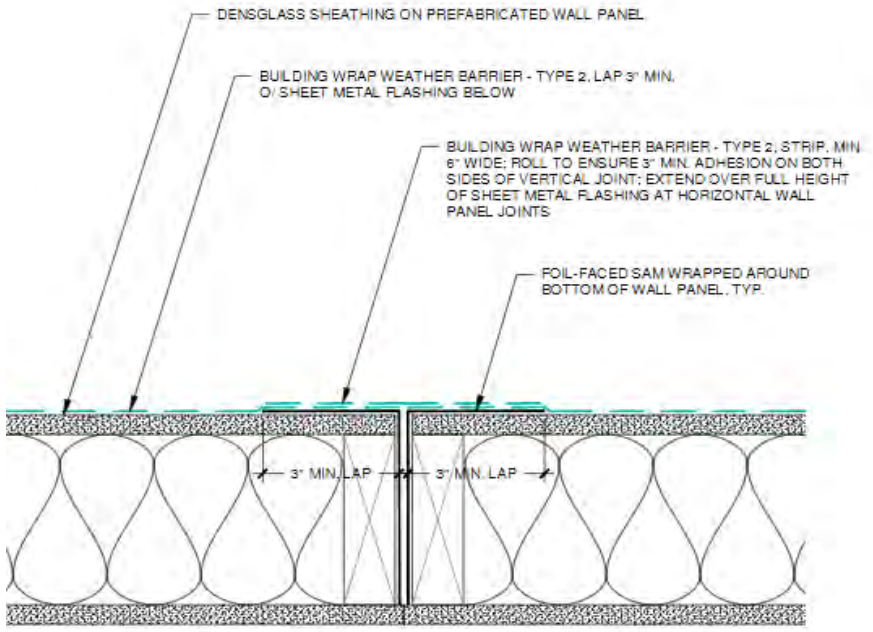
Vertical Panel Joints

- Return membrane onto panel edges.
- Seal vertical joints together from interior, marrying with sealant joints at sill and head
- Optional exterior cladding



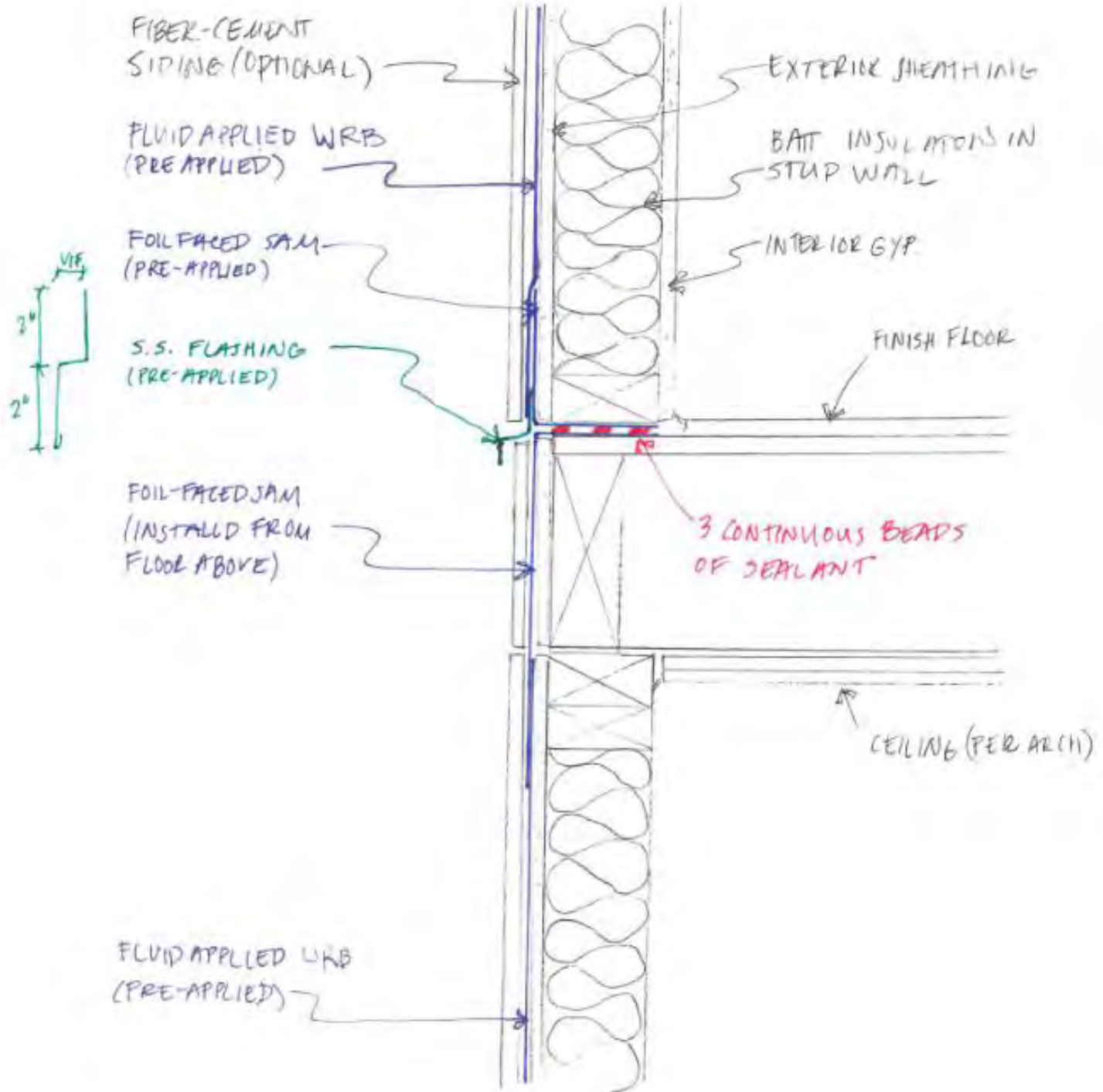
Vertical Panel Joints

- Sealant along vertical edges
- Depending on size of space, may be able to install membrane along full height of vertical joint



Floor Line Joints

- Membrane return onto top of floor similar to window wall installation details
  - Lap over top of lower panel for continuous horizontal tie-in
- Install head compensation channel and upper panelized
- Install panelized wall (with WRB installed)



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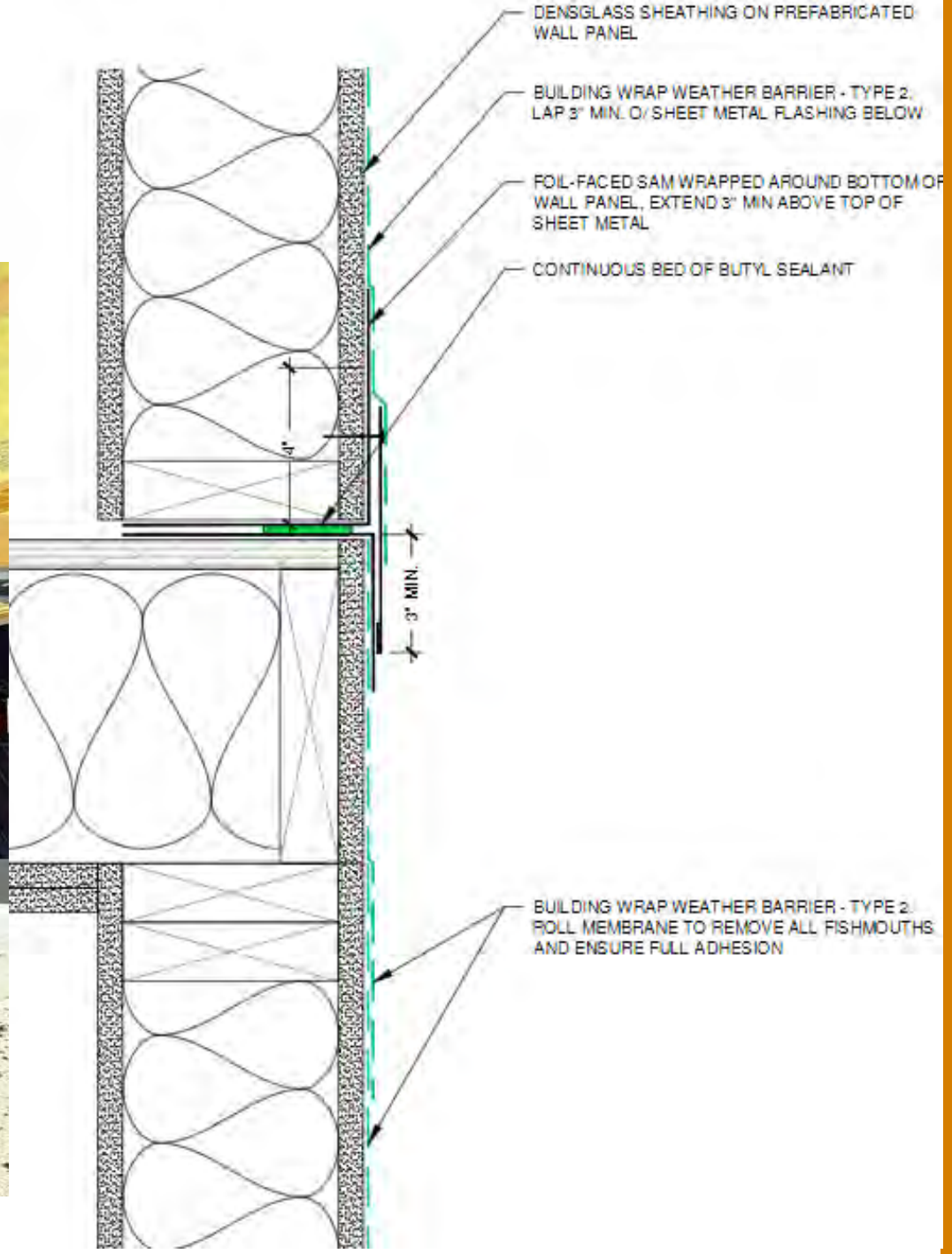

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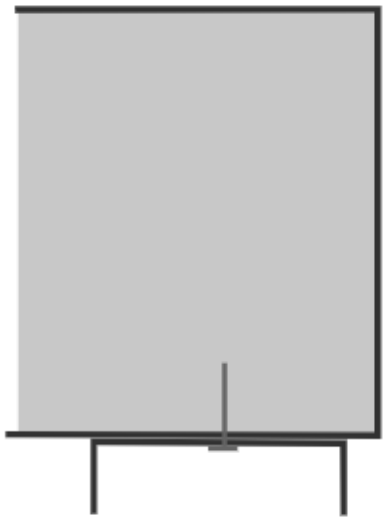

Suggested Sequence

1. Head deflection track.

2. Framed wall panel with exterior sheathing, FFSAM (blue) at top edge of sheathing, lapped onto framing at sill and jamb, fluid applied air water barrier (green dashed), mineral wool on impaling pins.

3. FFSAM (blue) at top of slab and down vertical face of edge of slab.

4. Silicone sheet flashing (magenta) bedded in liquid flashing (dark green) onto FFSAM (blue).

5. Mineral wool insulation at edge of slab, lap over silicone sheet flashing.

6. Two continuous beads of sealant (orange) over FFSAM at sill. Also two continuous beads of sealant at panel to panel joints.

7. Framed wall panel with exterior sheathing, FFSAM (blue) at top edge of sheathing, lapped onto framing at sill and jamb, fluid applied air water barrier (green dashed), mineral wool on impaling pins. Metal flashing at base of wall panel to deflect water over insulation panel below. Set metal flashing in bead of liquid flashing. Lap liquid flashing (dark green) over top leading edge of metal flashing. Head similar to sequence steps 2-6.

8. Interior finish.

RDH

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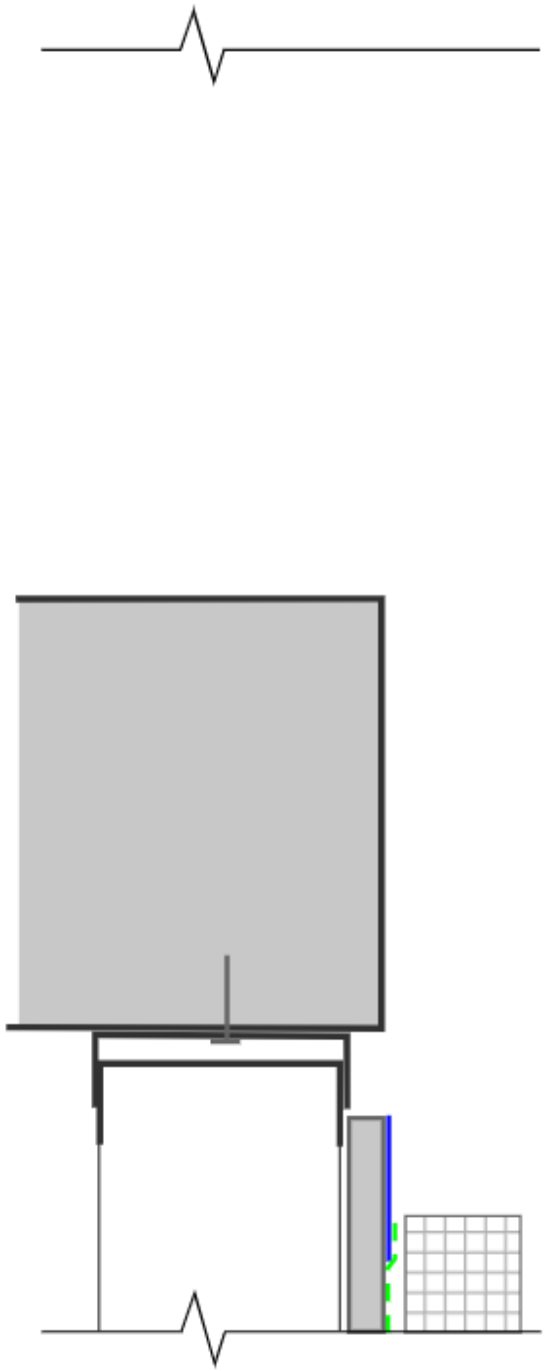

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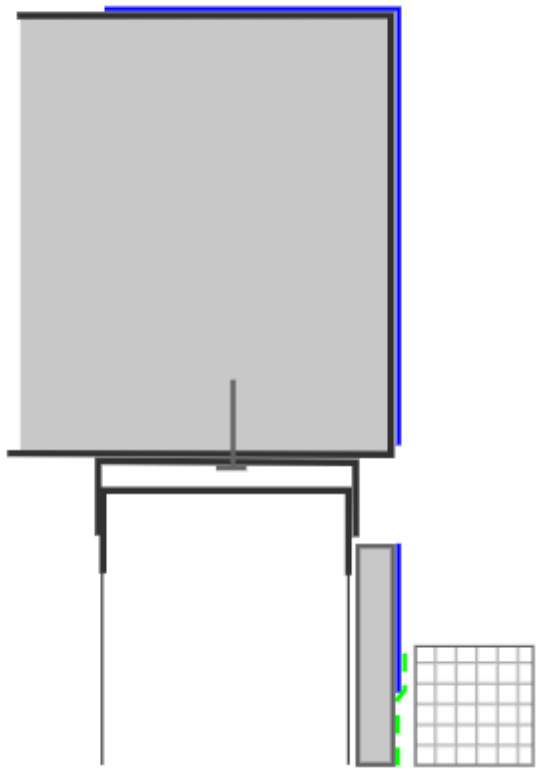

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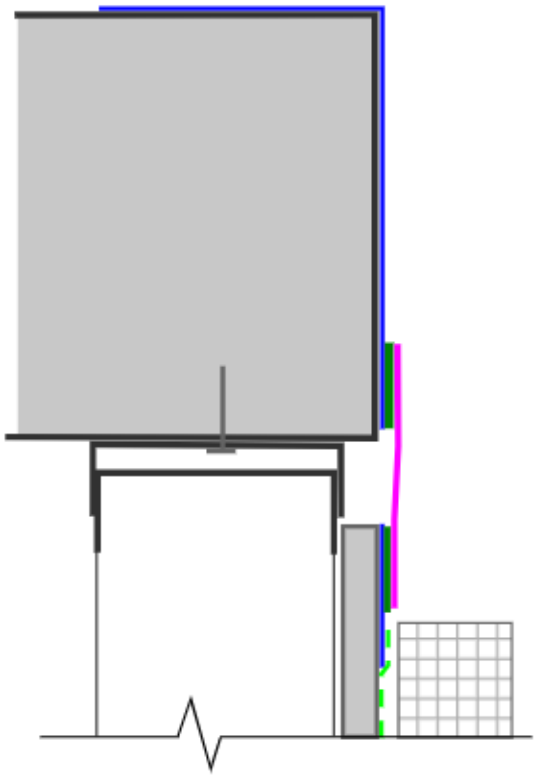

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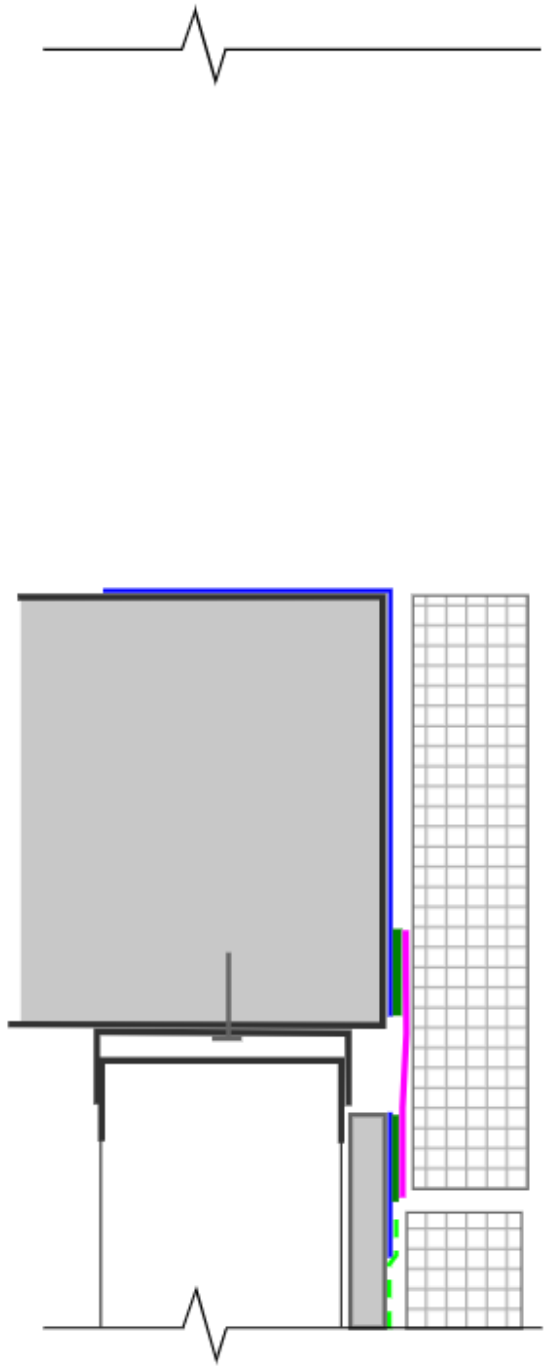

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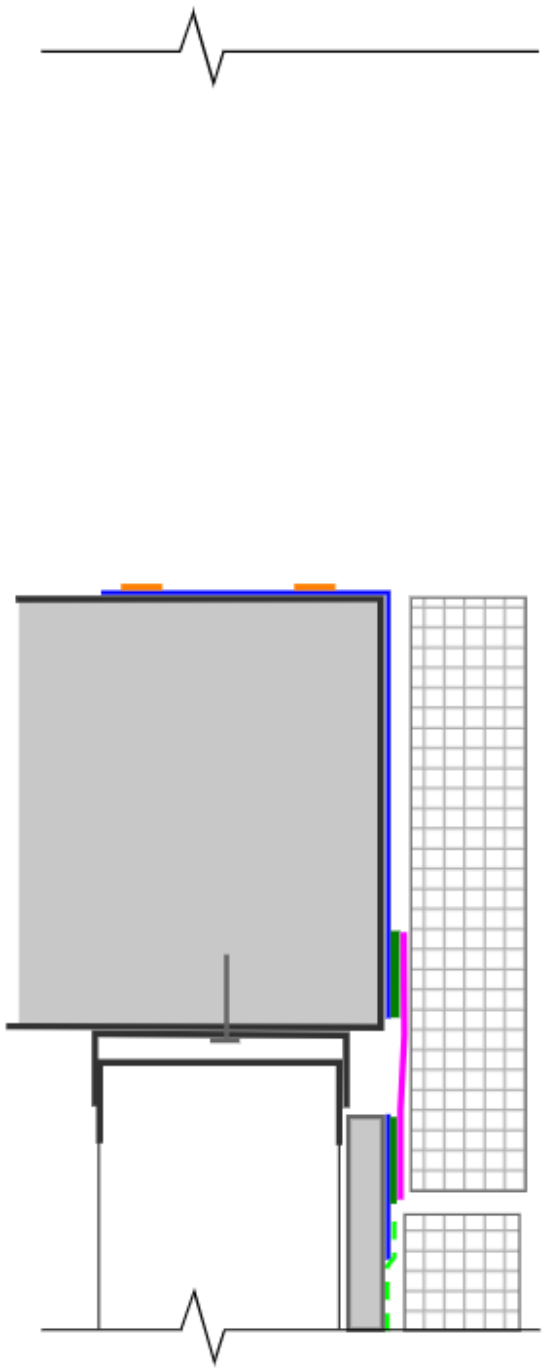

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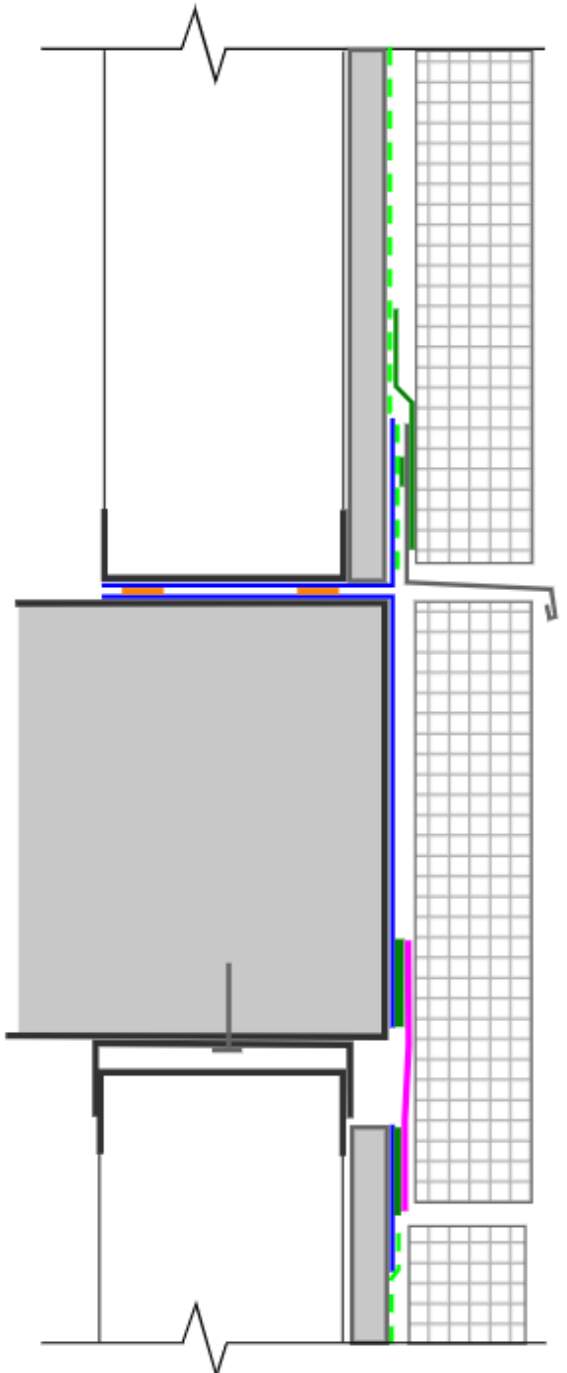

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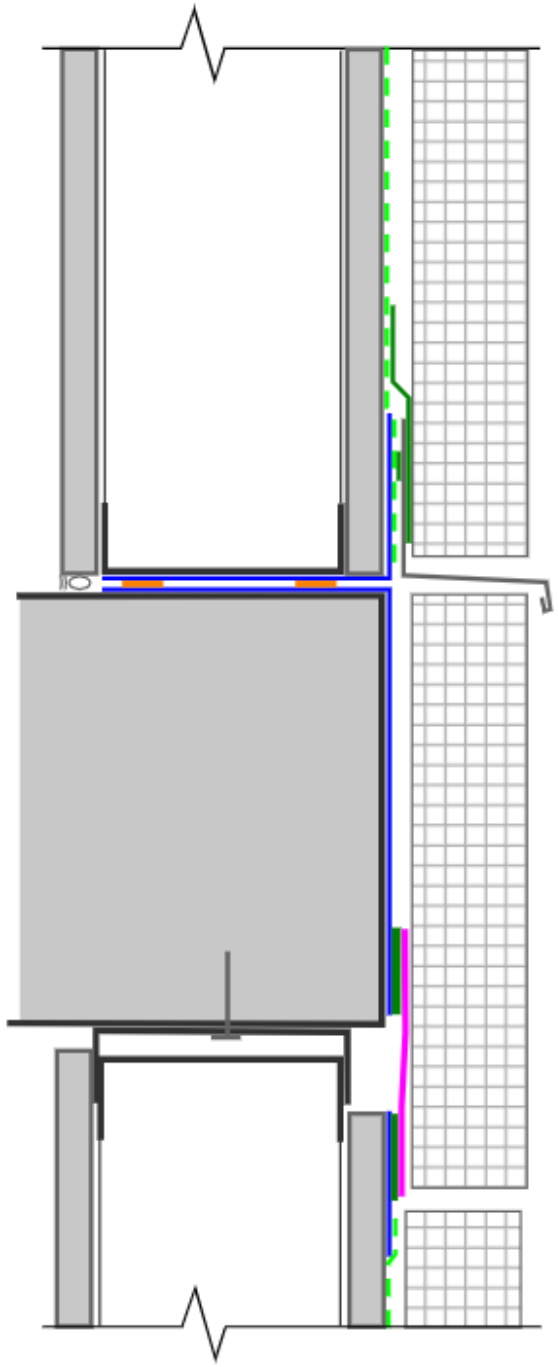

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Discussion + Questions

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