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BUILDING ENCLOSURE CONFERENCE 2023

Installing Weather-Resistant Barriers: A General Contractor's Perspective

Brian Lenz

Walsh Construction Company

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BE BUILDING ENCLOSURE

Installing Weather-Resistant Barriers: A General Contractor's Perspective

Brian Lenz

Brian Lenz has worked as a Quality Assurance Manager for 12 years with Walsh Construction Company in Seattle, WA. He performs constructability reviews, construction phase site inspections, infrared imagery, qualitative blower door testing, in-house material testing and oversight of project mockups. He leads installer and employee training sessions and has presented to industry groups on strategies for constructing airtight buildings. Prior to joining WALSH, he had more than 20 years of hands-on experience in residential construction. Brian earned his B.A. from Northwestern University and a Master of Architecture from the University of Washington.

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Learning Objectives

1. Describe and illustrate multiple options for weather-resistant barrier systems on multi-family projects.
2. Provide an understanding of key factors that are considered by the design team when specifying a particular system.
3. Equip participants with examples of areas and details likely to present challenges in maintaining air barrier continuity.
4. Provide an understanding of the guidelines for determining which of the system choice-determining factors may or may not apply in other regions of the continent.

WALSH Construction

Quality Assurance / Quality Control

- Resident Comfort
- Energy Efficiency
- Reduced Maintenance
- Cost-effective Construction

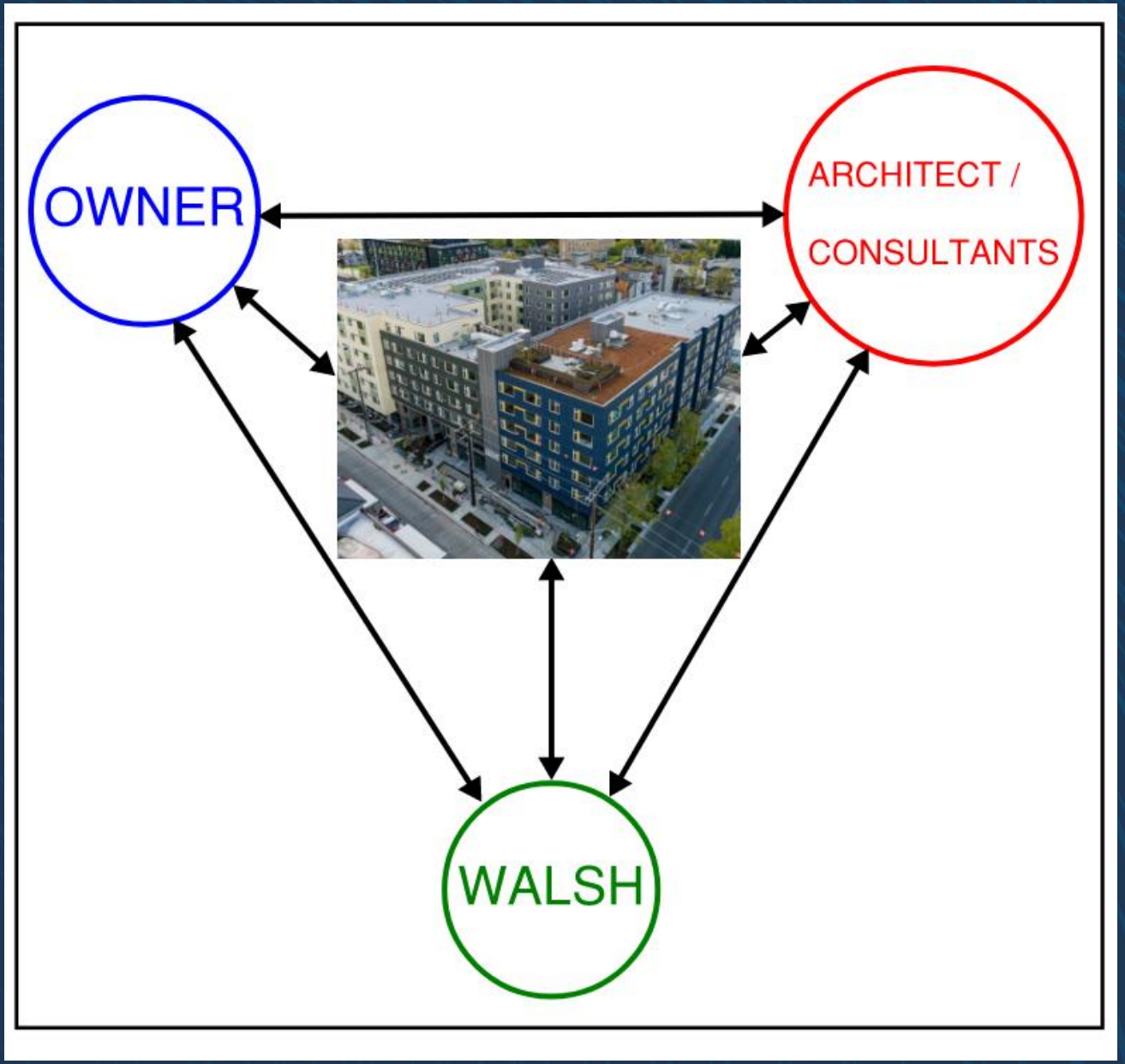
Whole Building Air Barrier Test – Allowable Air Leakage

- WA State Energy Code
- Seattle Energy Code

- 2012 0.40 cfm/sq ft
- 2015 0.30 cfm/sq ft (0.25 C406.9)
- 2018 0.25 cfm/sq ft (0.17 C406.9)

Preconstruction Collaboration

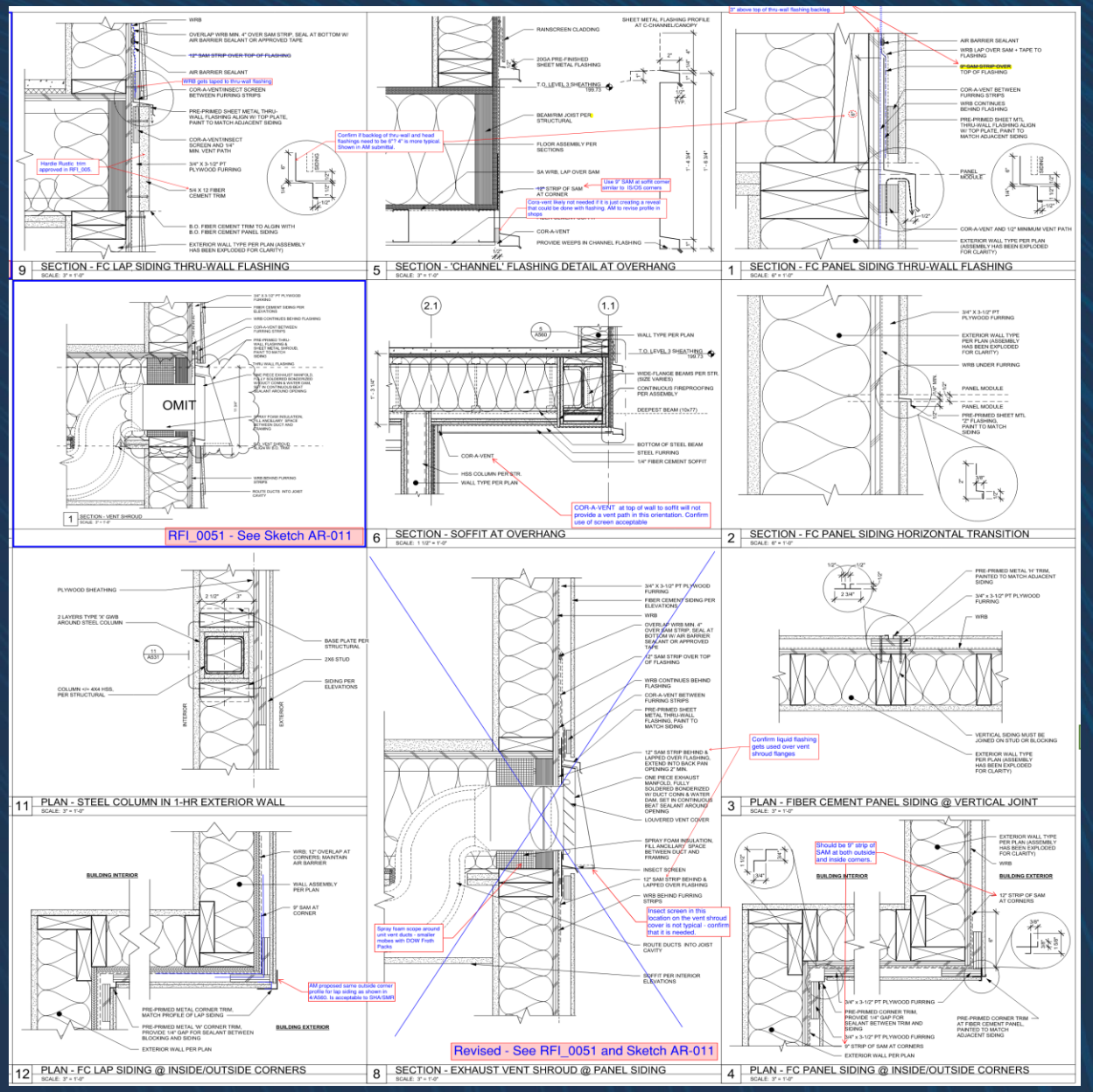
- Constructability Reviews
- Plans and Specifications
- Installer and Manufacturer Input



Constructability Reviews

Goals:

- Airtight / Watertight
- Durability / Ease of Maintenance
- Simplify / Reduce Material Transitions
- Installer Interface / Sequencing
- Cost Effective
- Clear Bidding Documents



Building **E**nclosure **C**oordination Meeting

- WALSH Team
- Design Team
- Owner
- Installers
- Product Representatives

Project- Specific Mockup

- WRB/A.B. and Accessories
- Largest Window
- Penetrations
- Cladding and Flashings
- Testing

Weather-Resistant Barriers (WRB)

Installation Scope

- WRB
- Windows and Doors

Weather-Resistant Barriers (WRB)

- Mechanically Attached
- Self-Adhered
- Liquid Applied
- Integrated WRB/A.B. Sheathing

Mechanically Attached WRB

- Rapid Installation
- PNW “Weather Friendly”

Mechanically Attached WRB

- Rough Opening Waterproofing
- Window Installation

Mechanically Attached WRB

- Floor-to-Floor Coursing Possible
- Thru-wall flashings later by cladding installer
- Rainscreen Furring

Mechanically Attached WRB

- Sequencing Challenges

Self-Adhered WRB

- Improved Airtightness
- Simpler Connections to Transition Membranes and Flashings
- Fewer Sealants and Tapes
- Dry Substrate Required

Self-Adhered WRB

- Soffits

Self-Adhered WRB

- Concrete Walls
- Behind Masonry

Self-Adhered WRB

- Vertical Installation Acceptable

Liquid Applied WRB

- Monolithic
- No Reverse-lapping
- Non-nailable Substrates
- Sequencing Options
- Dry Substrate Required

Liquid Applied WRB

- Spray Application

Liquid Applied WRB

- Roller Application

Sheathing with Integral WRB/AB

- Factory Controlled Process
- Pre-fabbed Wall Panels
- Installer Scope Challenges

Design Selection Criteria

- Product Track Record
- Project Details
- Cost
- Schedule / Weather
- Staging/Site Logistics
- Installer Experience

Window Installation

- Best Combination of Products for the Project
- Most Robust Materials at High Risk Locations
- “Bang for the Buck”

Window Installation

Vapor-open
Rough Opening

- Self-adhered WRB at Jambs/Head
- 40mil SAM at Sill

Window Installation

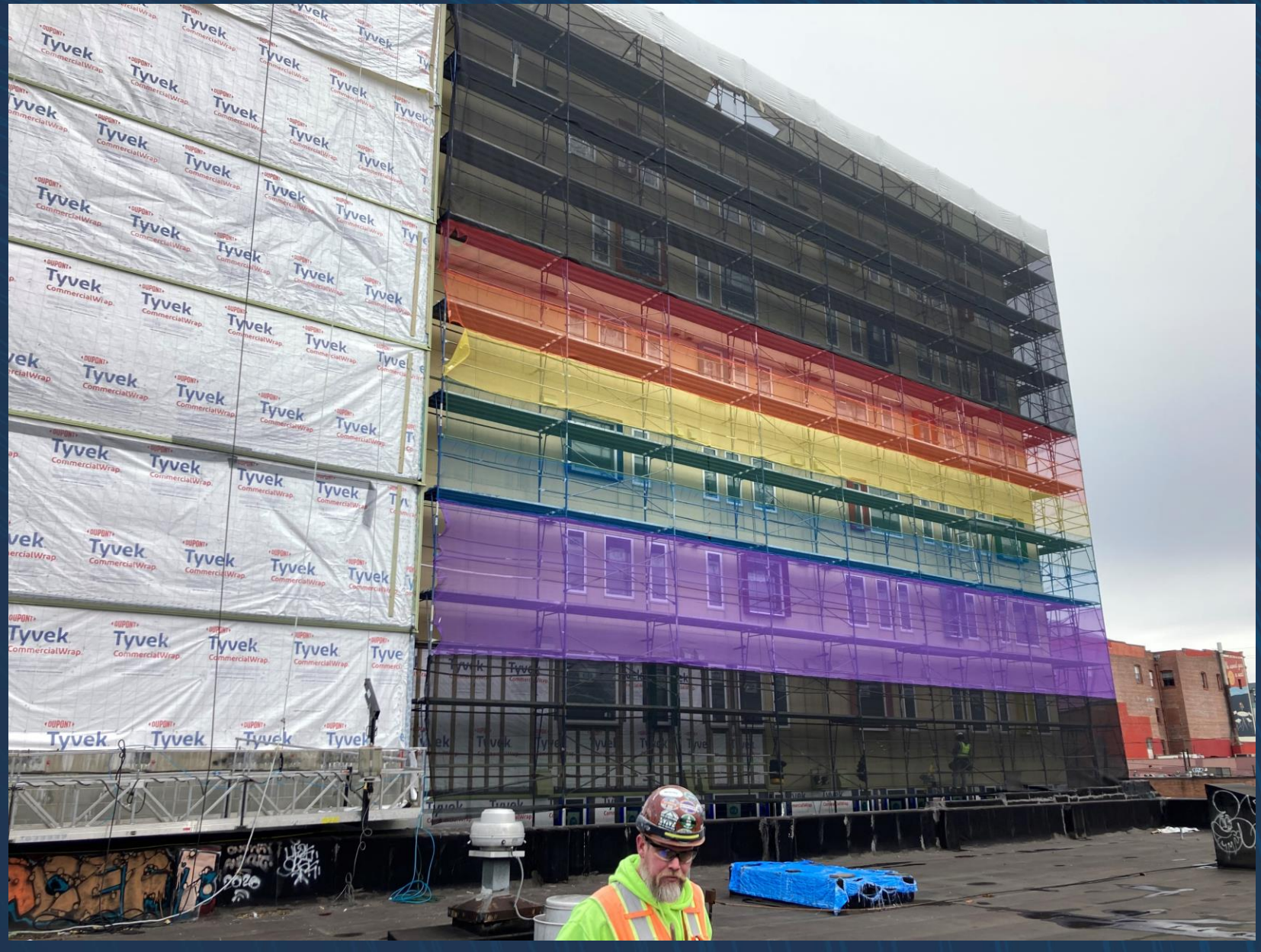
- Vapor-impermeable
- Rough Opening

Window Installation

- Hybrid Rough Opening

Staging for Installation

- Scaffolding
- Swing Stage



Staging for Installation

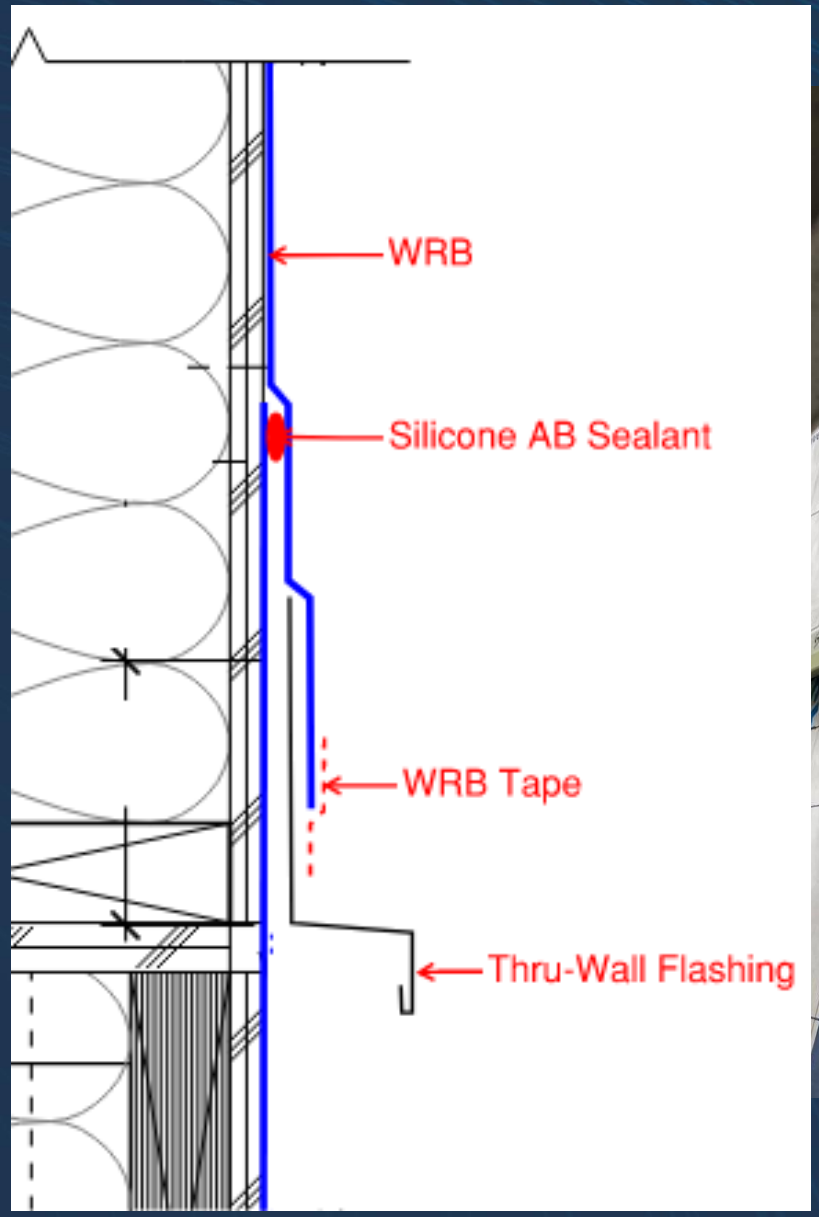
- Scissor Lift

Staging for Installation

- Boom Lifts

Thru-Wall Flashings

- Installer Sequencing

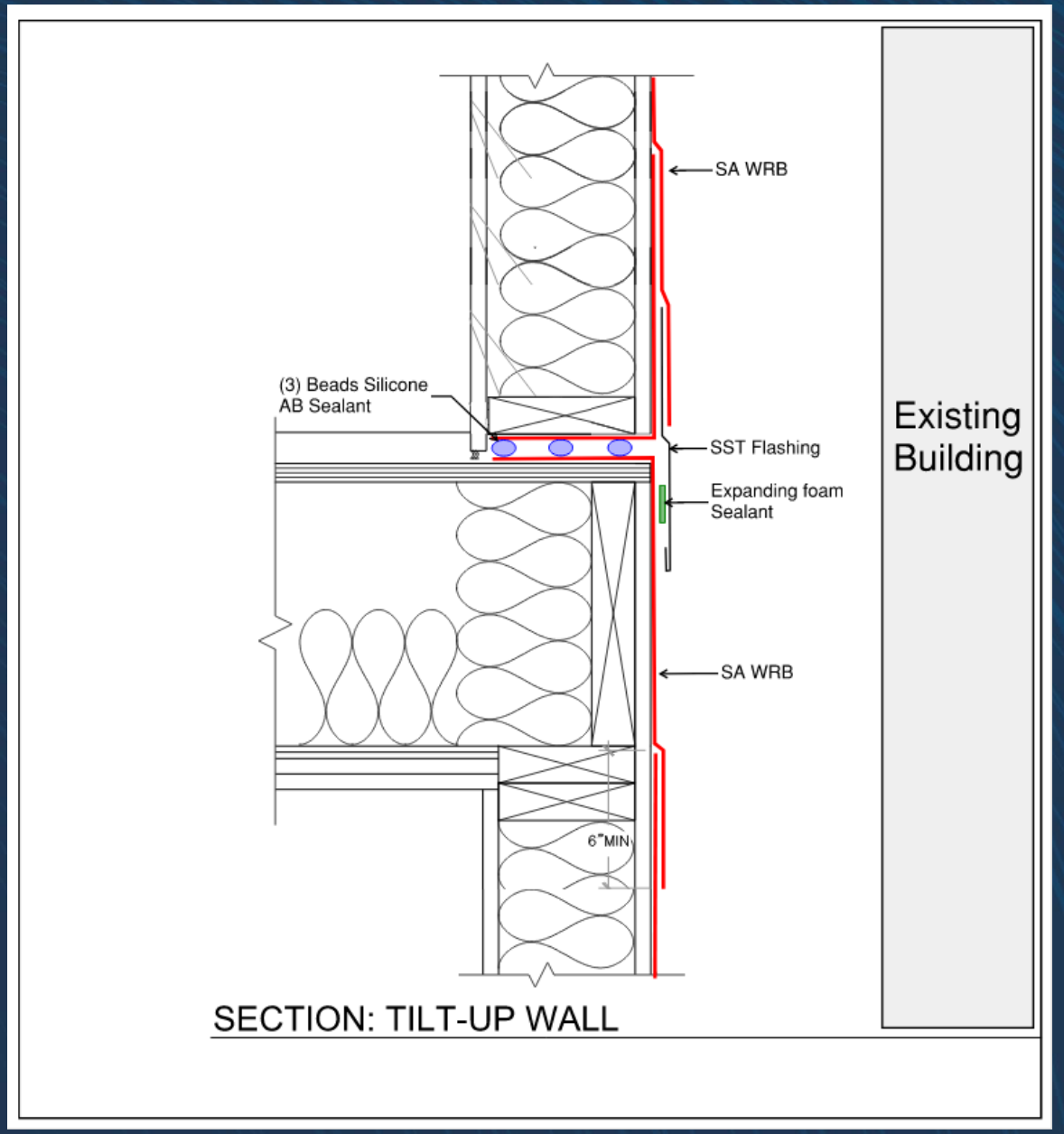


Thru-Wall Flashings and Corners

- High Fastener Concentration
- 40mil SAM as Protection Gasket

Property Line Walls

- Pre-Installed Fully Adhered WRB
- Stainless Steel Flashing
- Sealants



Property Line Walls

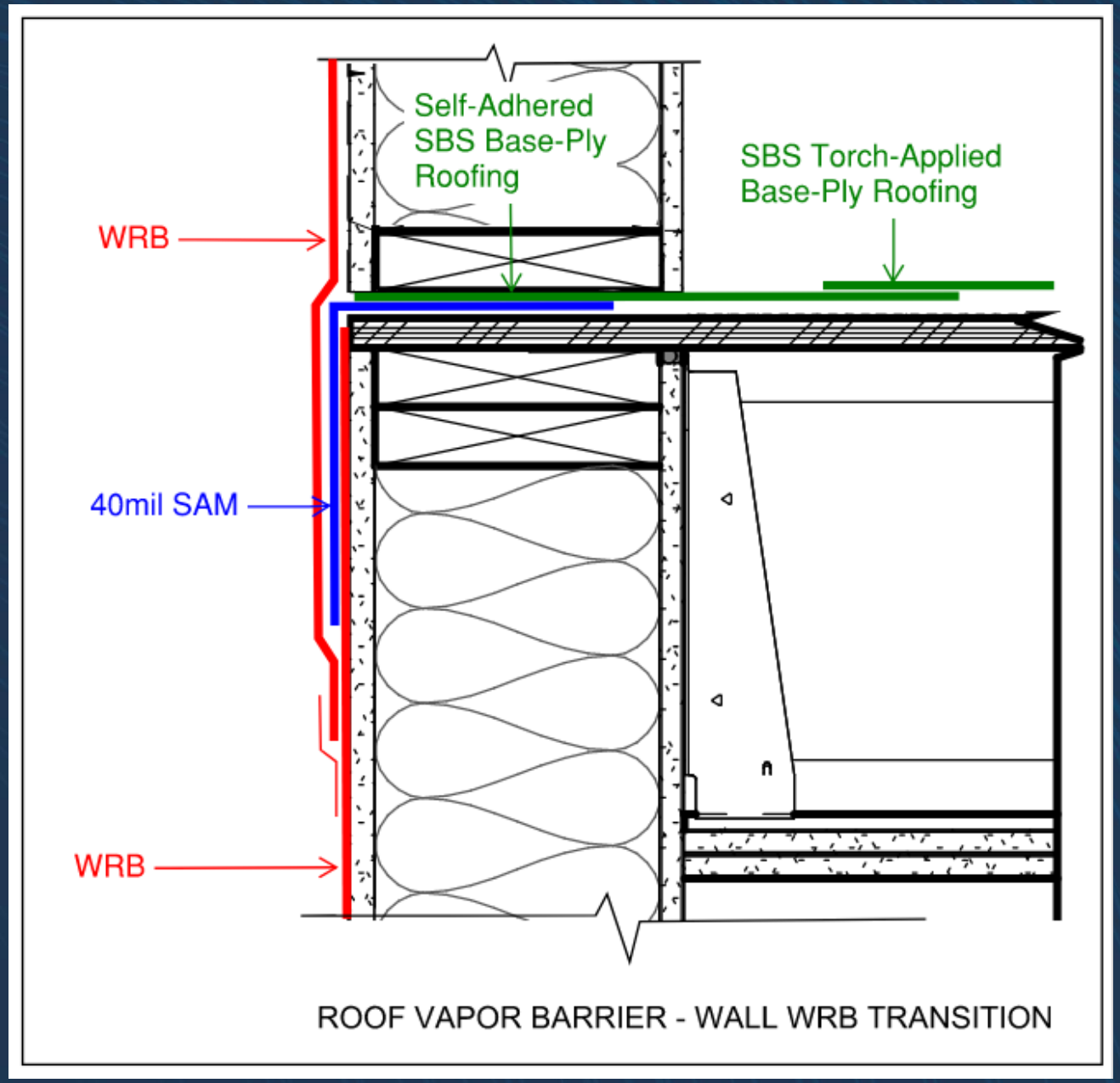
- Fully Adhered WRB
- Tilted Up Floor by Floor

Roof-to-Wall A.B. connection

- Multiple Material Transitions
- Installer Sequencing
- Structural Challenges

Roof-to-Wall A.B. connection

- Material Transitions



Roof-to-Wall A.B. Connection

- Multiple Installer Scopes

Roof-to-Wall A.B. Connection

- Varying Wall Assemblies

Roof-to-Wall A.B. connection

- Careful QC Detailing

Roof-to-Wall A.B. connection

- Structural Design

Material and System Transitions

- Multiple Cladding Types
- Storefront and Flanged Windows
- Steel Canopies
- Installer Sequencing

Material Transitions

- Roofing or WRB?

Rooftop Penthouses

- Elevator / Stair Overruns
- High Exposure
- Multiple Pipe/Conduit Penetrations
- Late Completion of Cladding

Rooftop Penthouses

Liquid Applied WRB

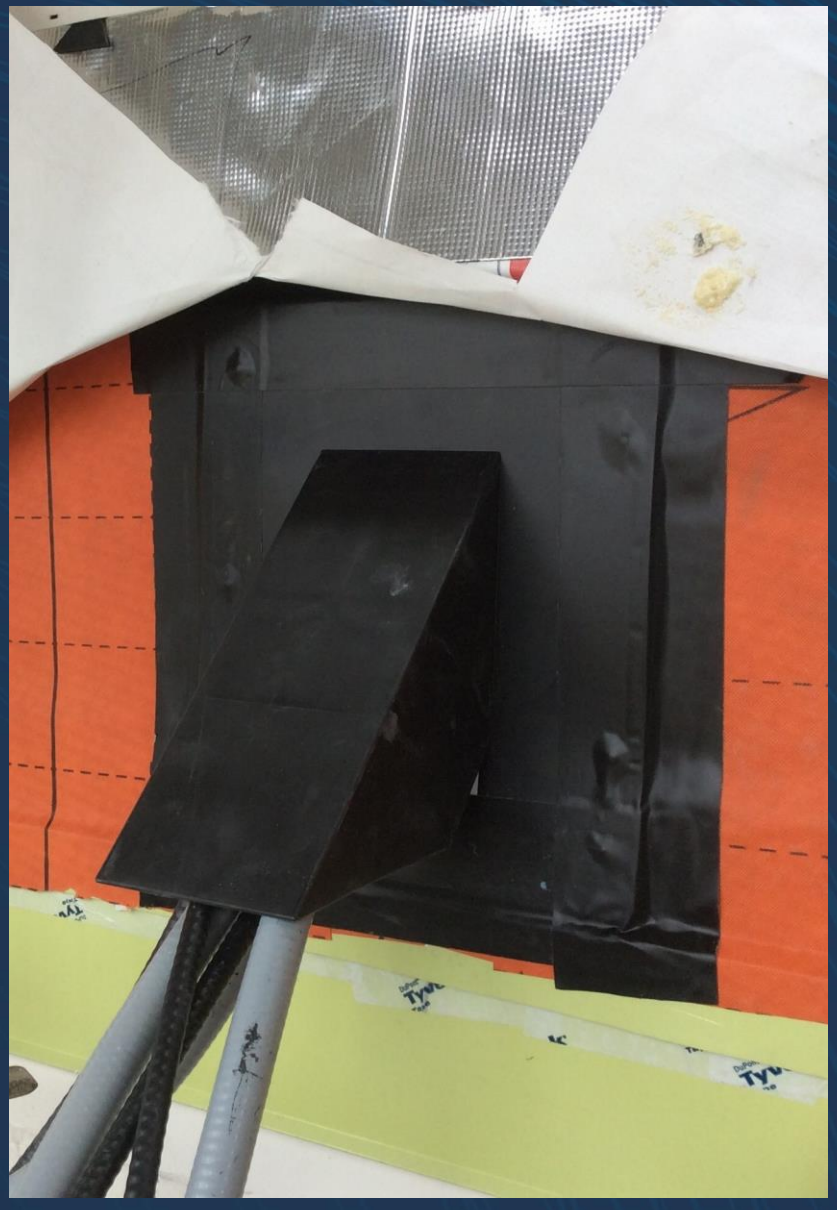
- Easily Repaired
- Sealing to Late Penetrations
- Durable While Exposed

Penetrations

- Multiple Conduits

Penetrations

- Manufactured Flashings

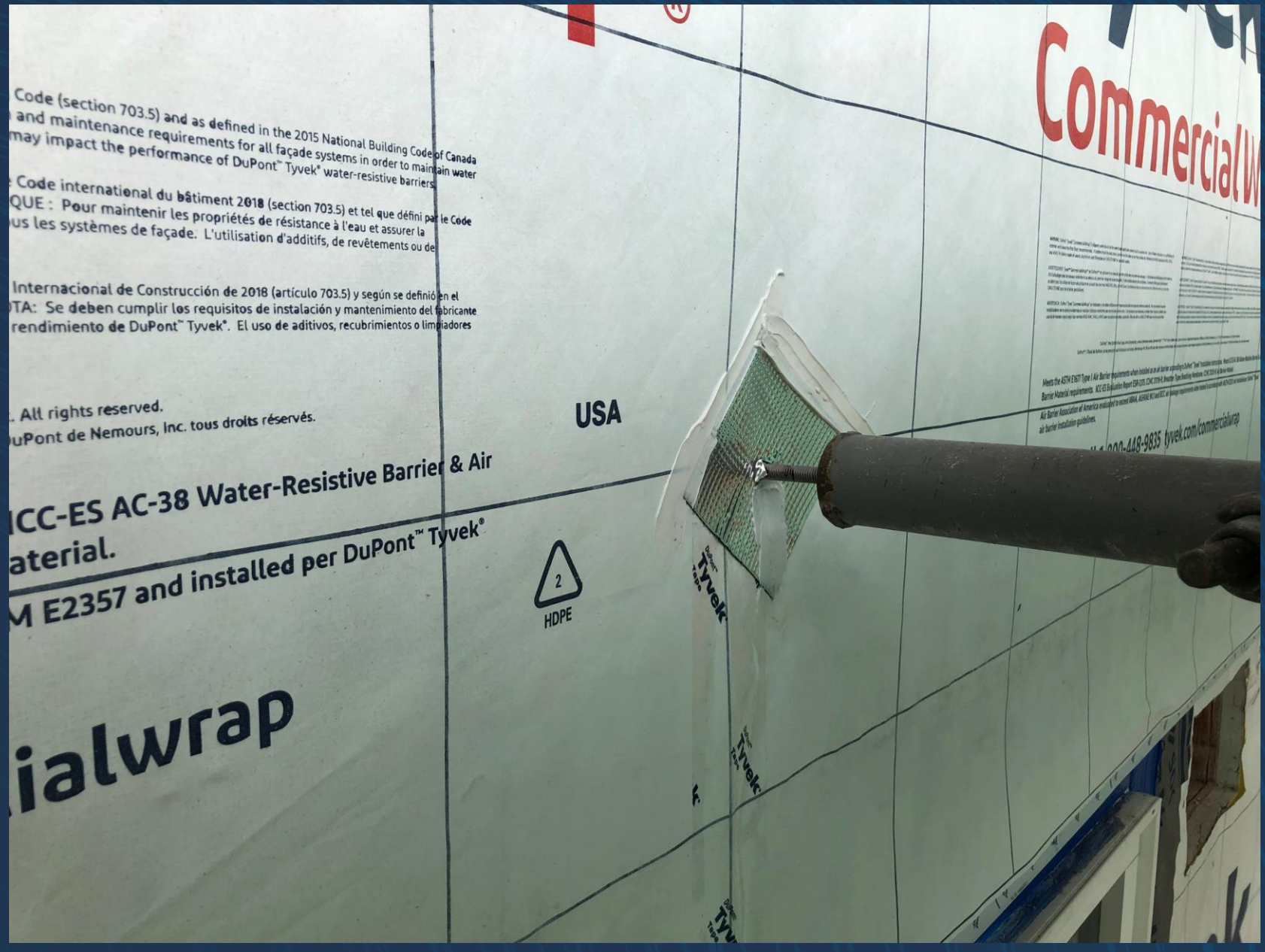


Penetrations

- Steel Knife Plates

Penetrations

- Scaffolding
- Tie-backs



Penetrations

- Exhaust Venting

Lessons Learned

- Debrief with WALSH Project Team
- Installer Feedback
- Informs Constructability Reviews
- Continual Process

QUESTIONS?