

# Well, That Doesn't Look Like What's on Paper: Common Pitfalls in Air Barrier Coordination

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Simpson Gumpertz & Heger, Inc.



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**Elizabeth V. Rodenkirch,  
AIA, LEED AP BD+C**

Senior Consulting Architect  
SGH Chicago

# Well, That Doesn't Look Like What's on Paper

## Common Pitfalls in Air Barrier Coordination

Clear documentation can facilitate the coordination and leverage the unique expertise of each team member. We will highlight common oversights or omissions in design drawings, specifications, and construction of air barrier systems that may lead to issues on site, and we will discuss best practices for developing these documents to clearly show the design intent and contractors' proposed solutions.

### **Brian S. Rose, P.E.**

Brian is a senior project manager from SGH's Washington, D.C. office and provides a variety of building enclosure commissioning, consulting, expert witness, and investigation services for owners, architects, and contractors. He closely collaborates with teams to develop novel and reliable solutions for numerous mixed-use residential, office, higher education, and cultural buildings.

### **Elizabeth V. Rodenkirch, AIA**

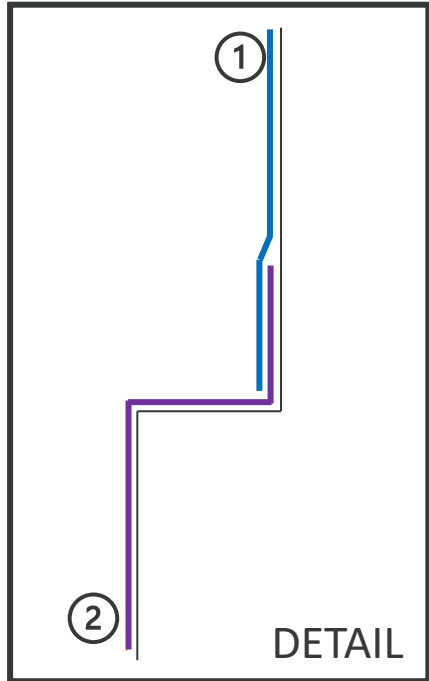
Elizabeth is a senior consulting architect from SGH's Chicago office. Her expertise focuses on building enclosure and sustainability, failure investigation, materials testing, and evaluation of resilient flooring systems. As an ABAA Licensed Field Auditor, Elizabeth is intimately familiar with air barriers and the different types available, how to detail and apply them, and how to identify and investigate air barrier breaches.



## Learning Objectives

1. Understand common coordination pitfalls related to the design and construction of air barrier systems and how to avoid them.
2. Compare the designers' and the installers' responsibilities for coordinating and documenting the air barrier detailing.
3. Examine the level of detail incorporated into the design document versus the level of detail incorporated into the shop drawings and examine when formal RFIs may be warranted to address unforeseen site conditions.
4. Learn best practices for coordinating air barrier systems and leveraging the strengths of each project team member to increase quality assurance on your projects.

WELL, THAT DOESN'T LOOK LIKE WHAT'S ON PAPER...



Between

Project Documents & As-built Construction

Among

Different Trades

Regarding

Unforeseen Conditions

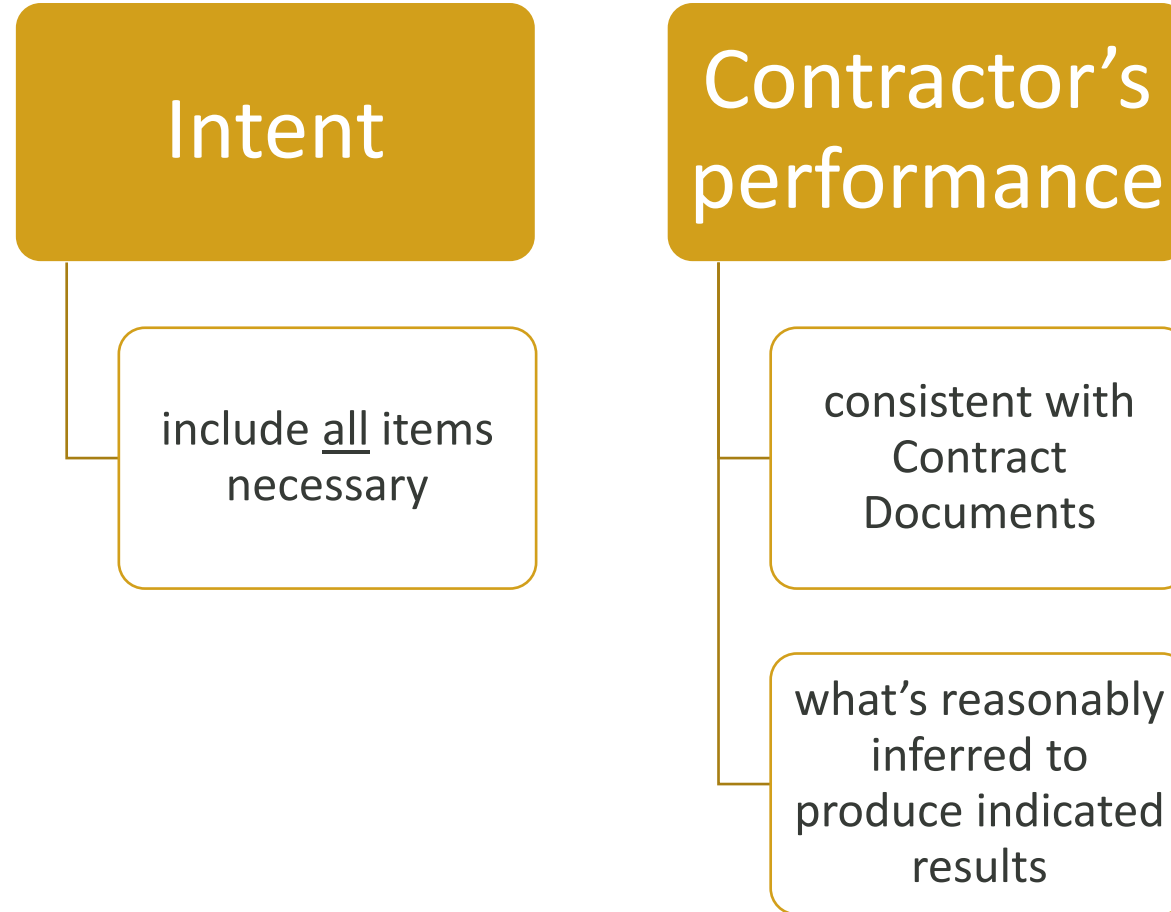
## Outline

- Design Drawings
- Specifications
- Shop Drawings
- Unforeseen Conditions

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## AIA A201:

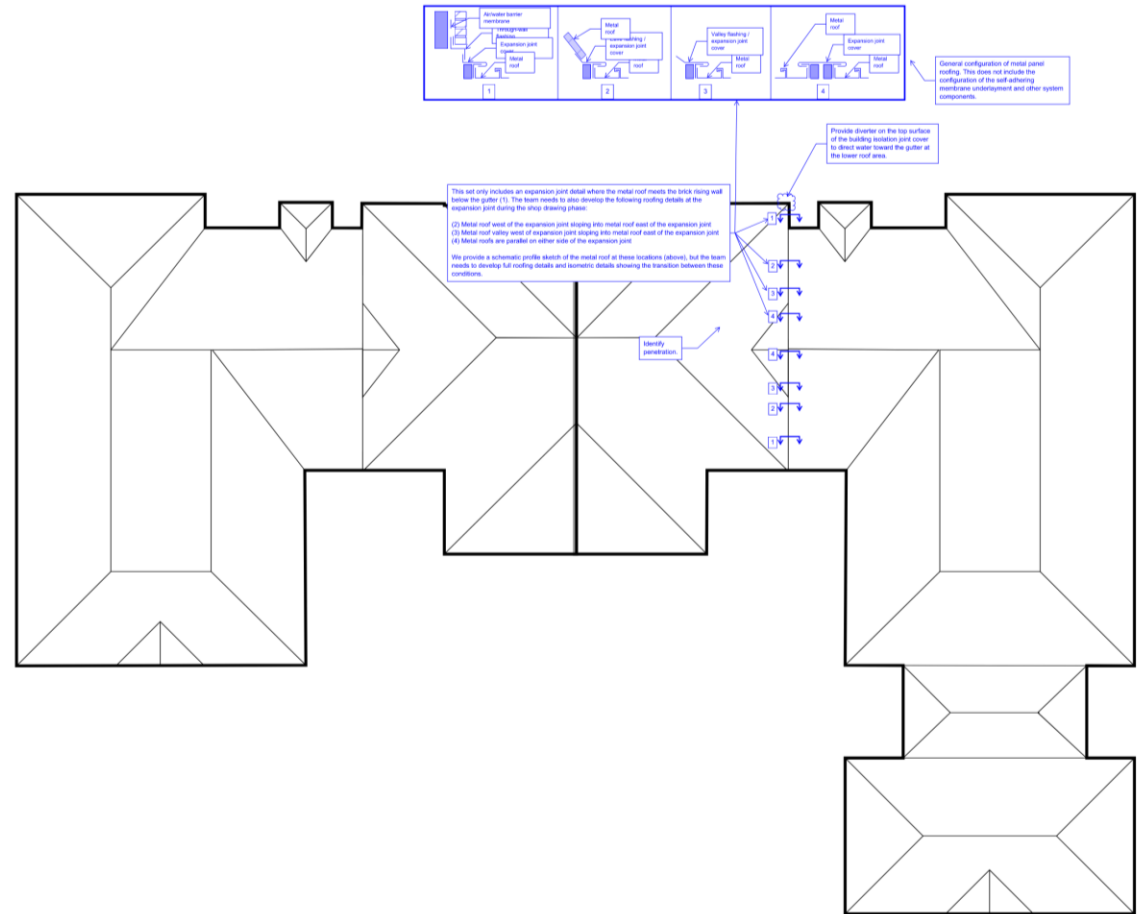




# CASE STUDY: UNCLEAR INTENT



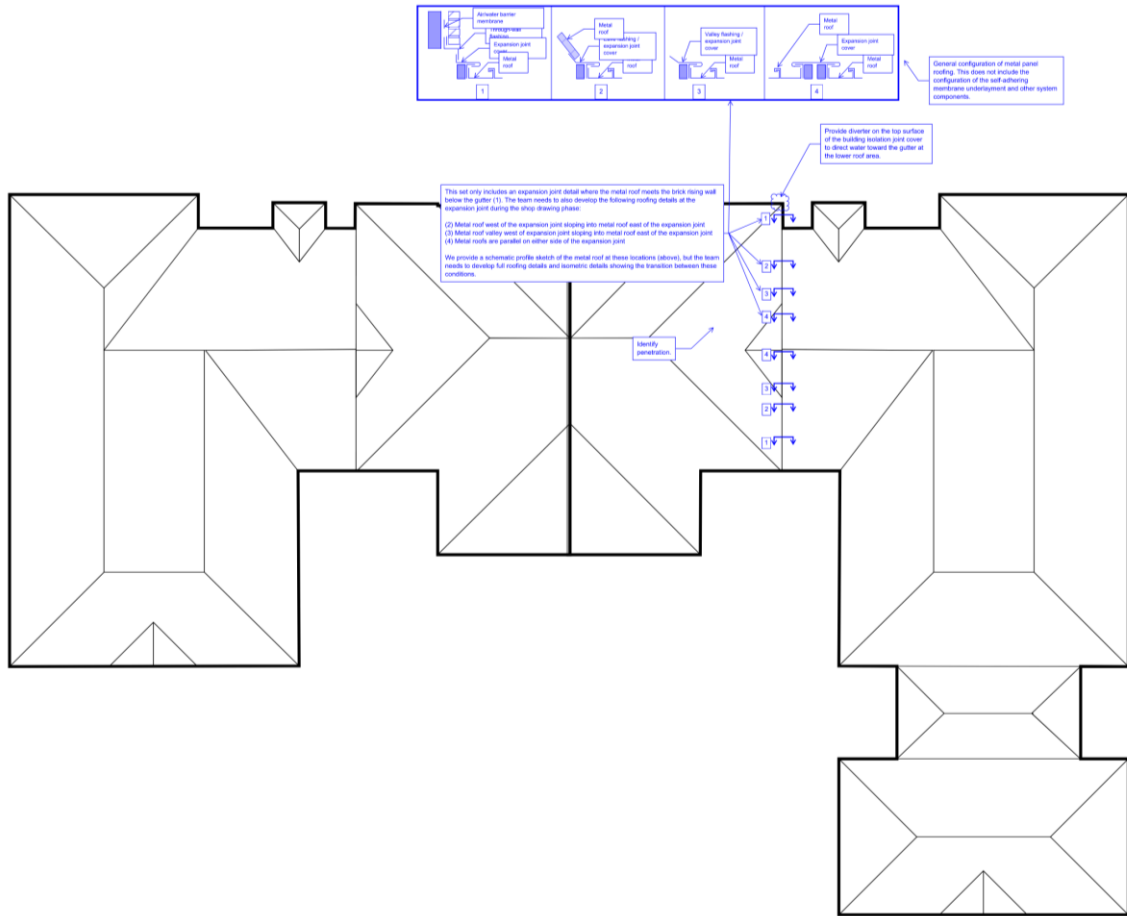
# CASE STUDY: UNCLEAR INTENT



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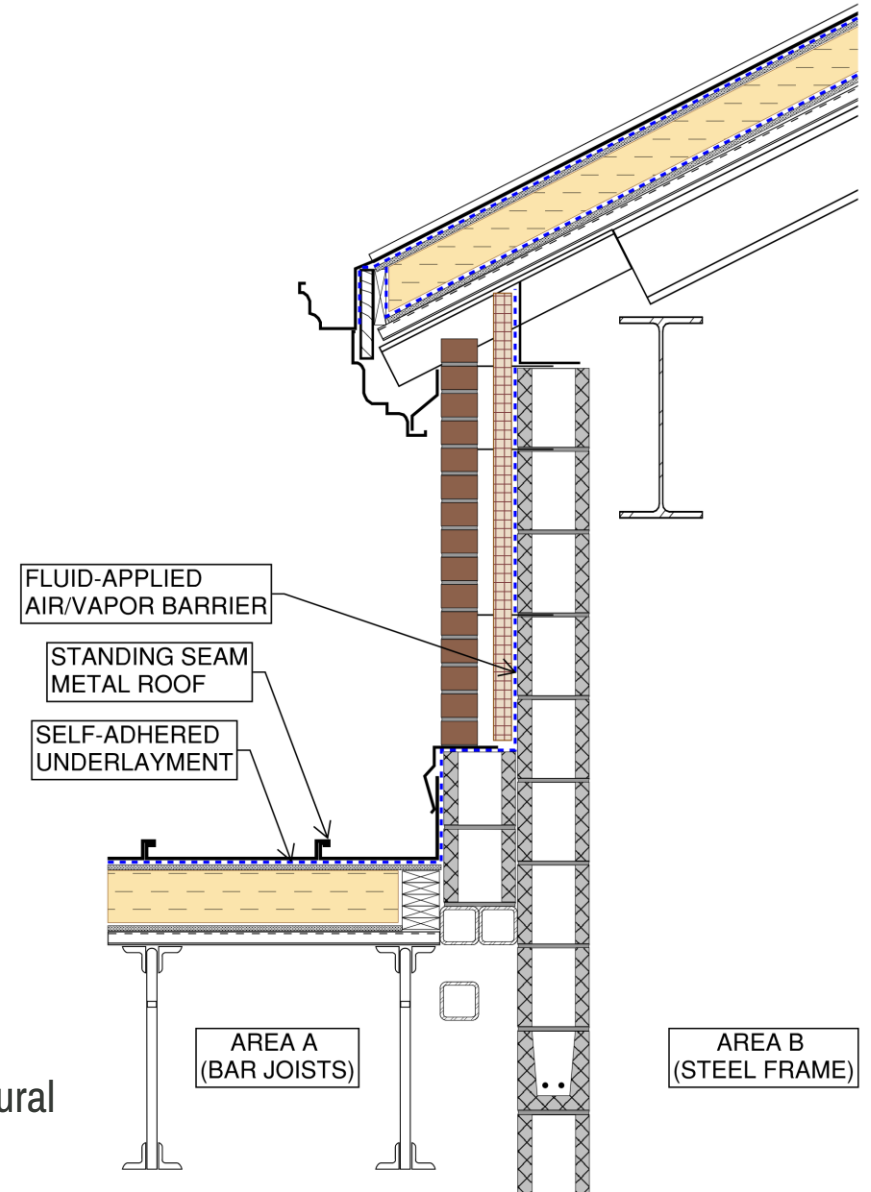


# CASE STUDY: UNCLEAR INTENT

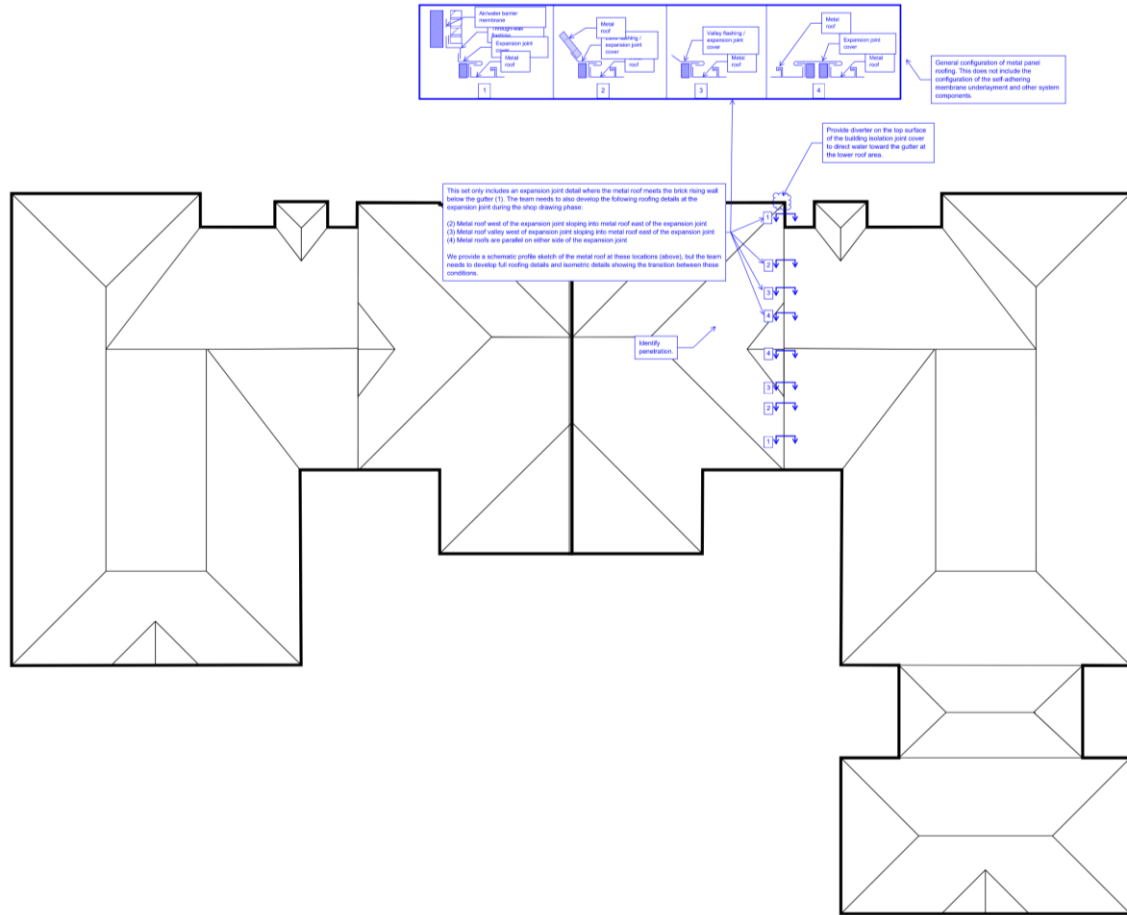


Roof Plan

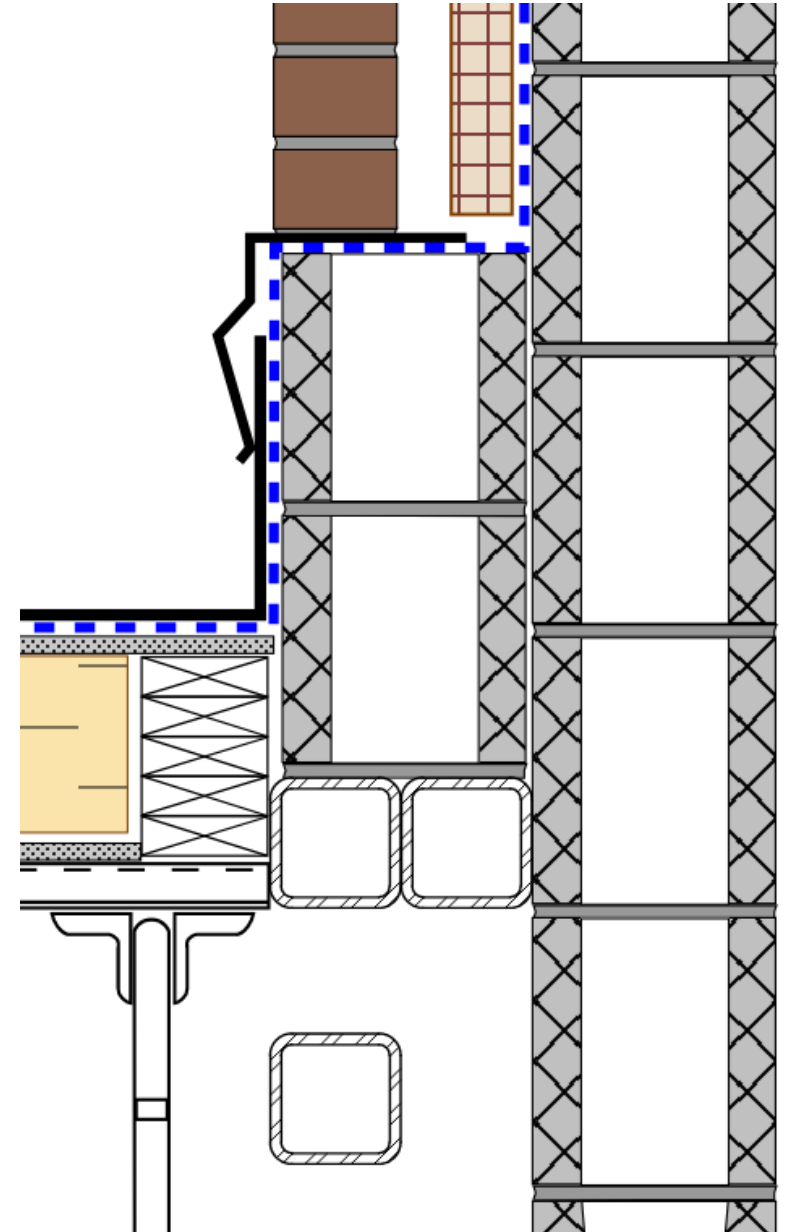
Architectural Detail



# CASE STUDY: UNCLEAR INTENT

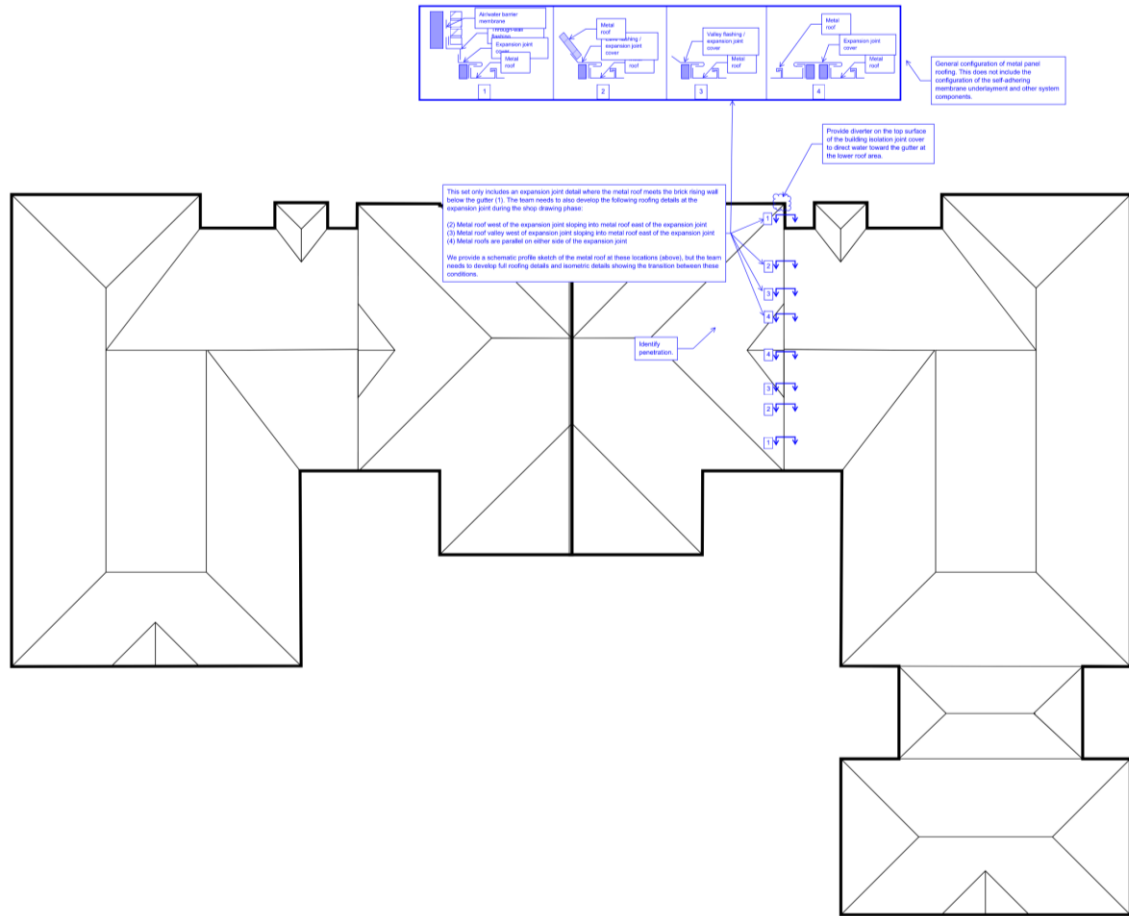


Roof Plan

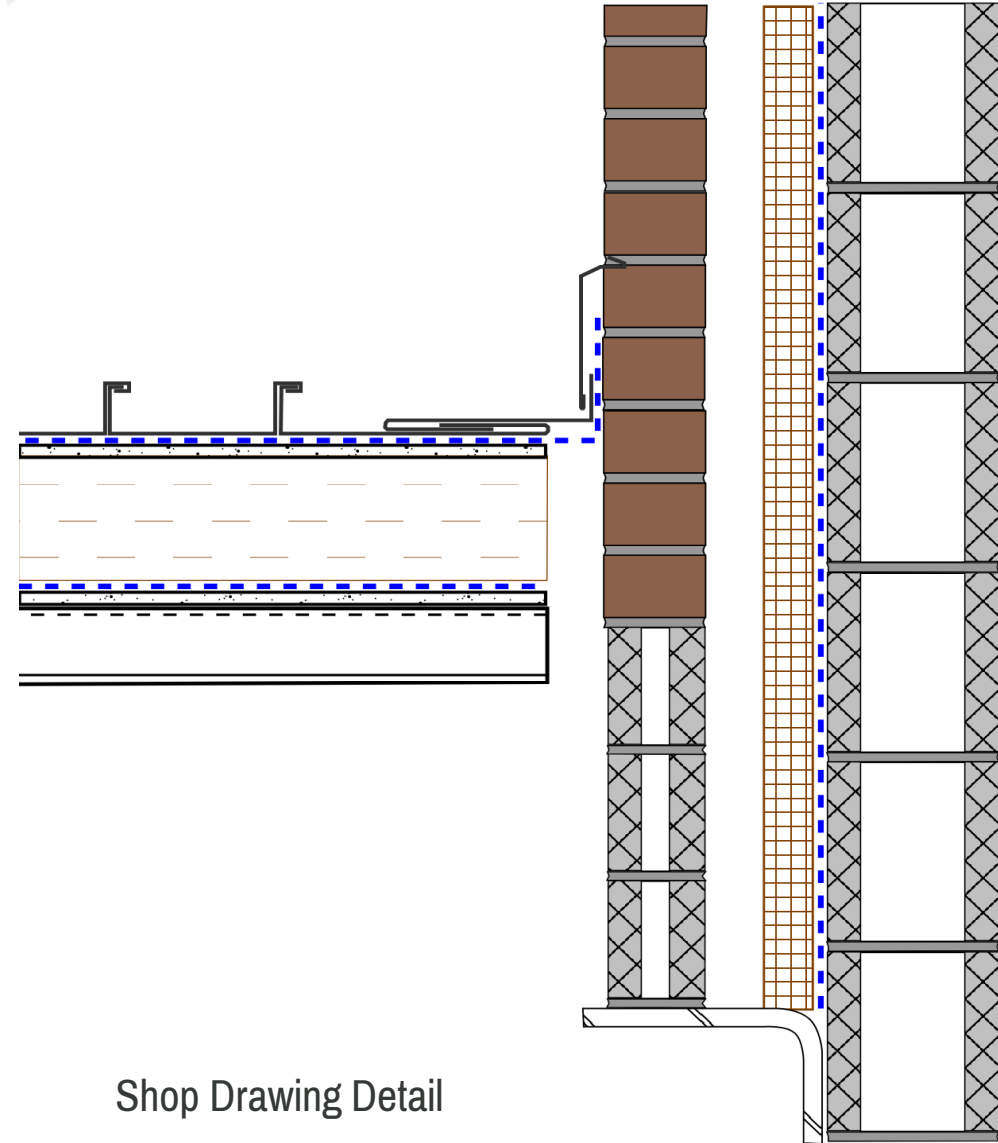


Architectural Detail

# CASE STUDY: UNCLEAR INTENT

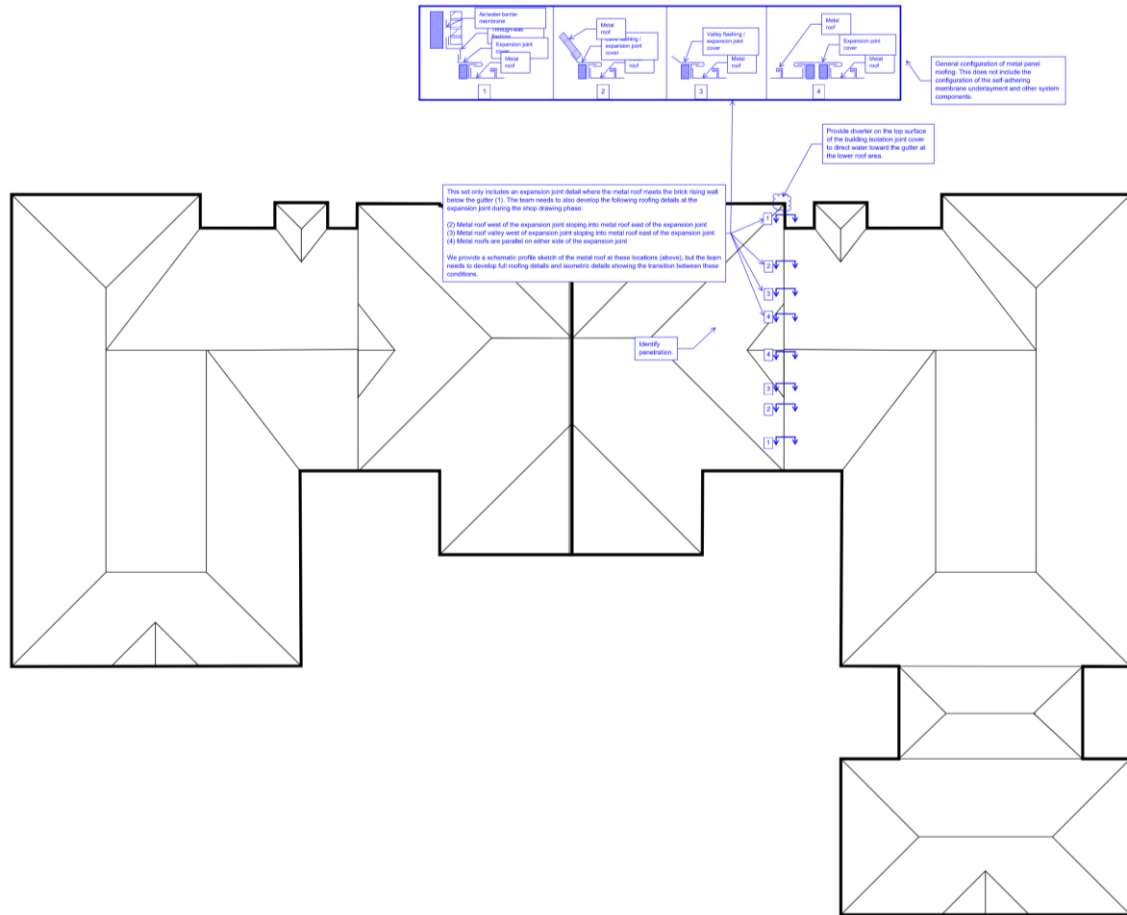


Roof Plan

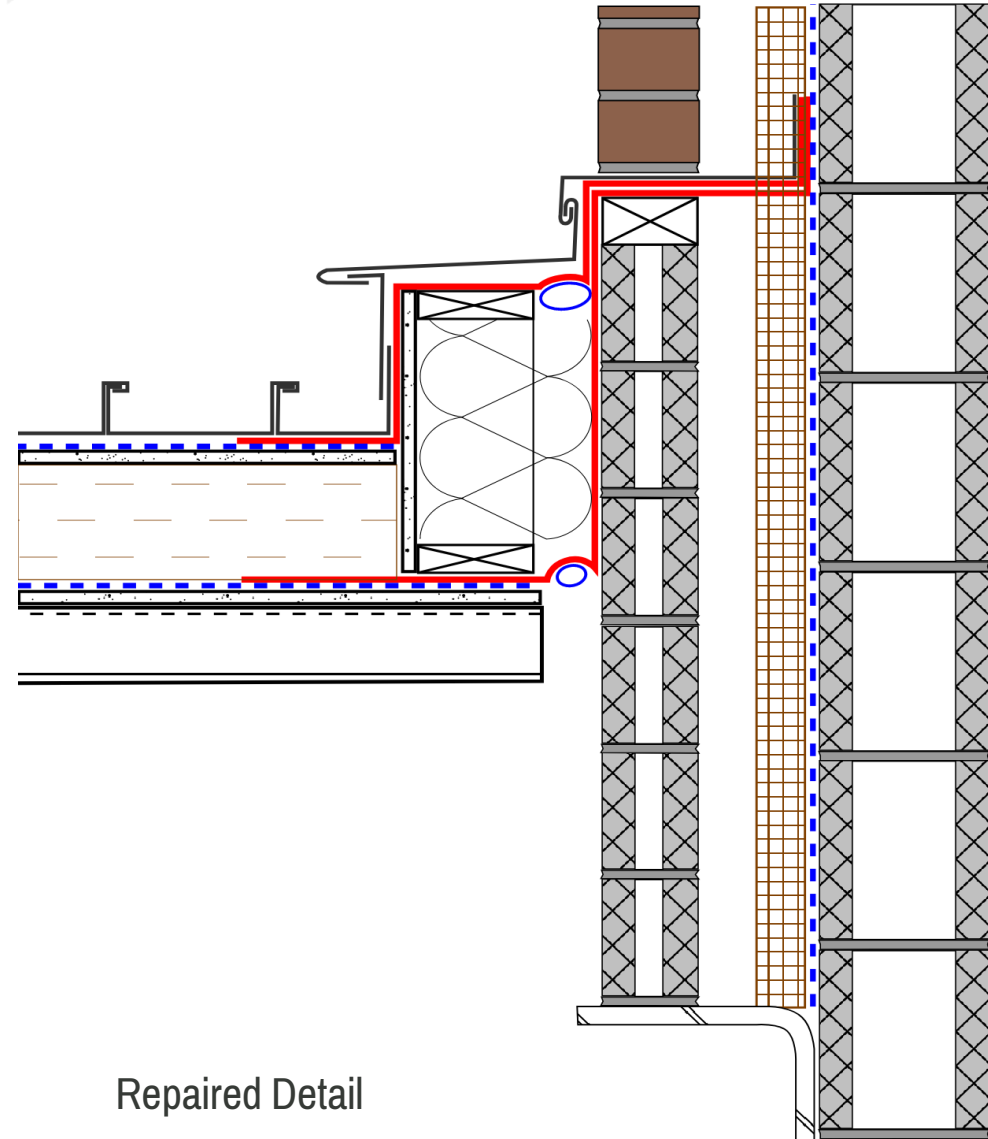


Shop Drawing Detail

# CASE STUDY: UNCLEAR INTENT



Roof Plan



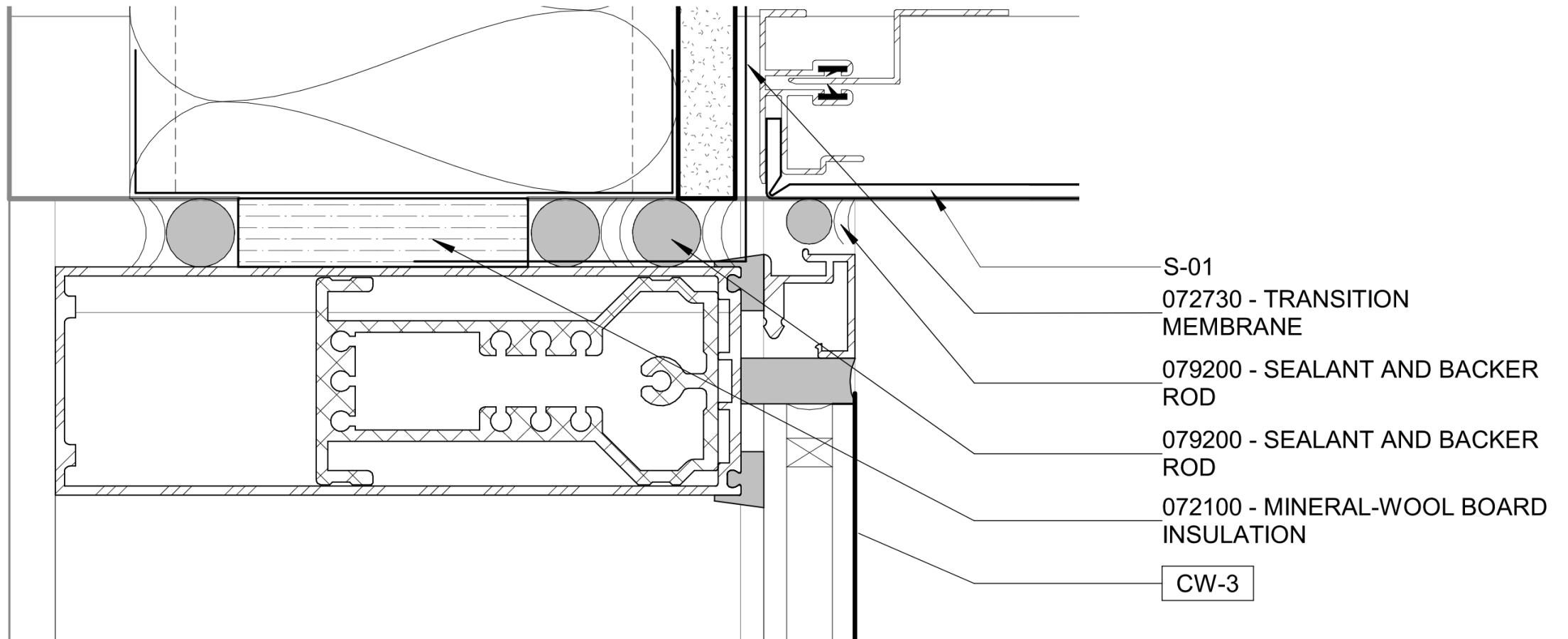
Repaired Detail

# CASE STUDY: UNDERSTANDING SYSTEMS

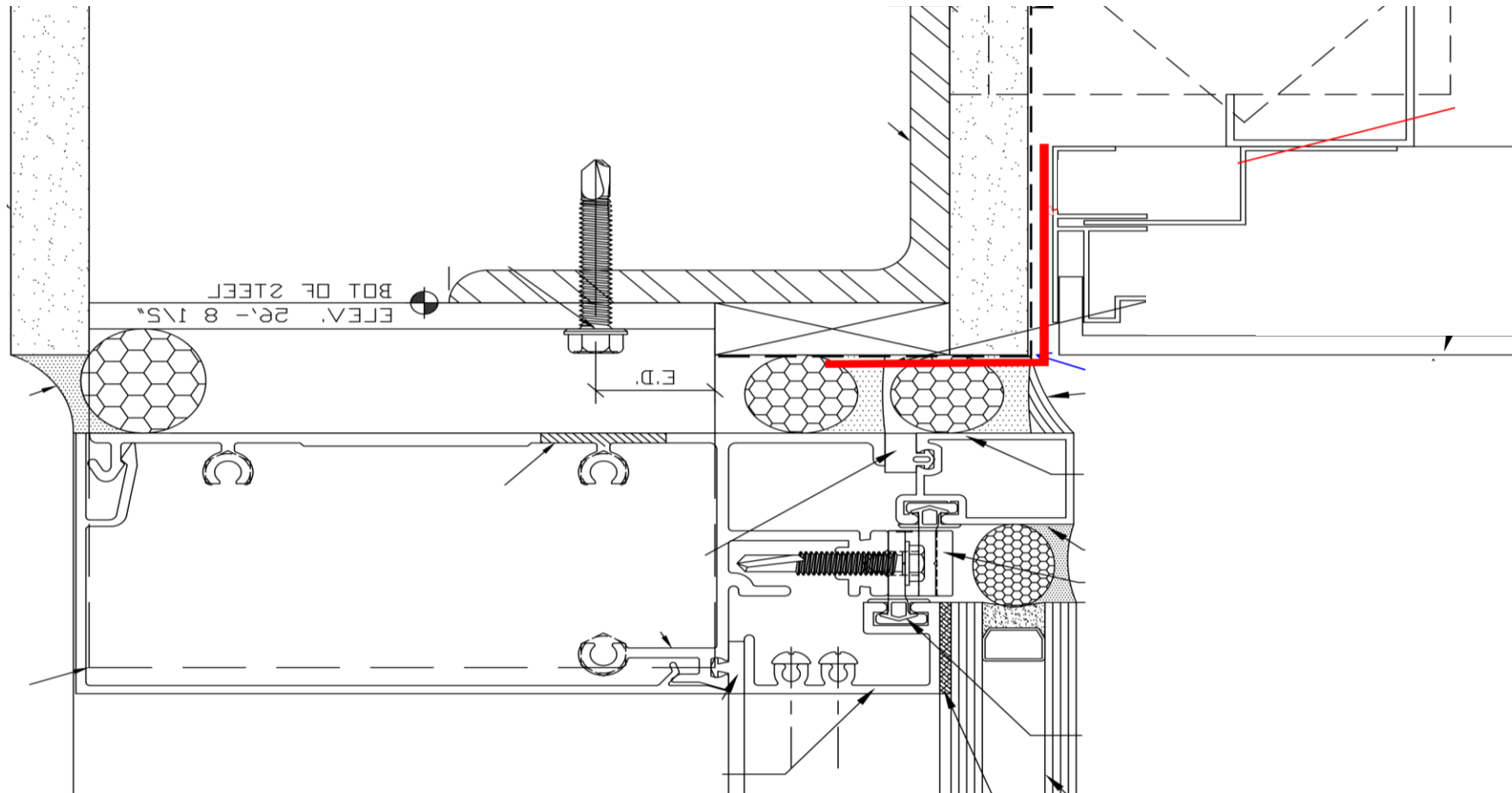




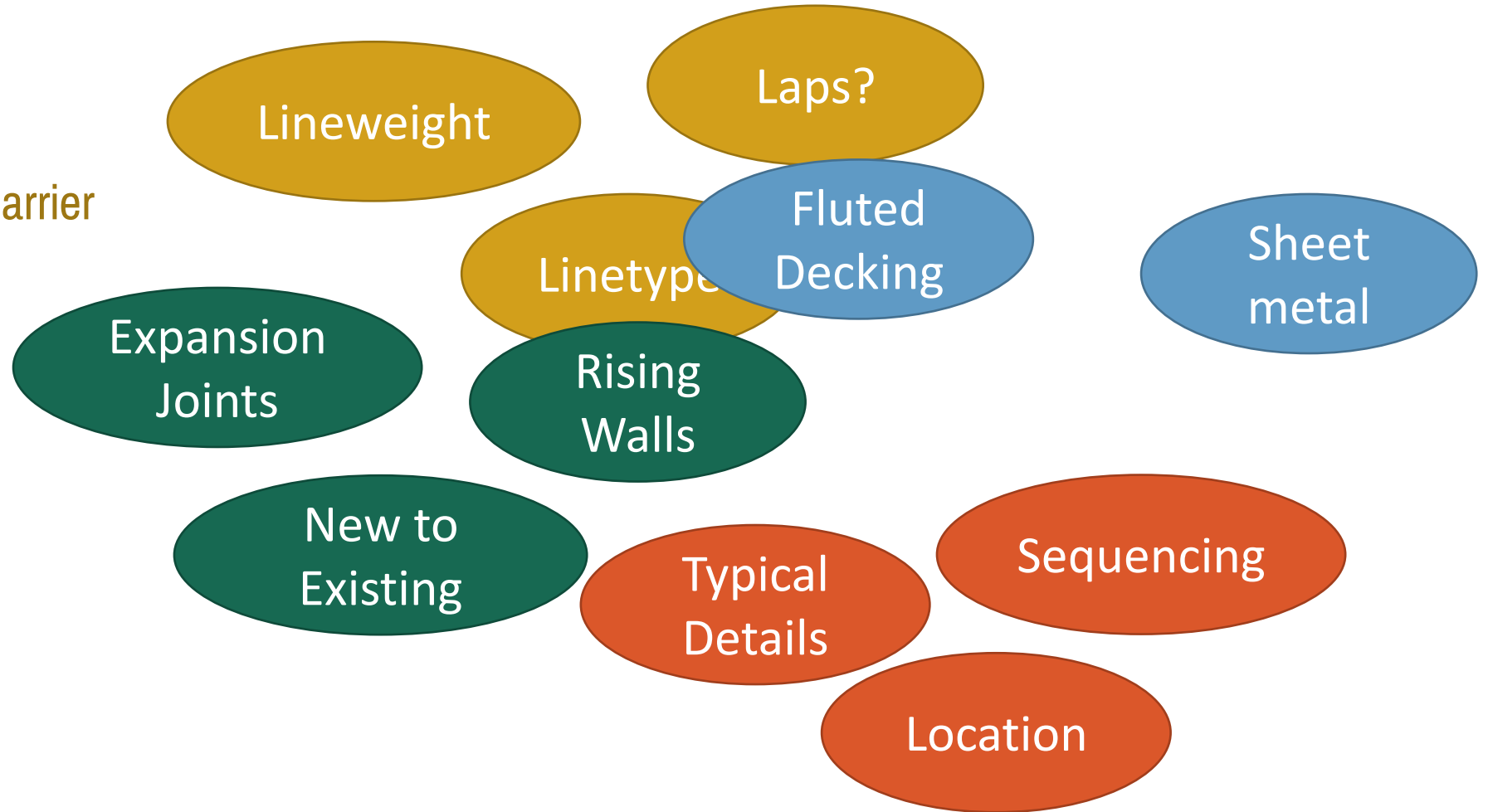
## ARCHITECTURAL: Curtain Wall Head At Soffit



## SHOP DRAWING: Curtain Wall Head At Soffit



- Representation of air barrier
- Continuous substrate
- Critical details
- Design intent



## Outline

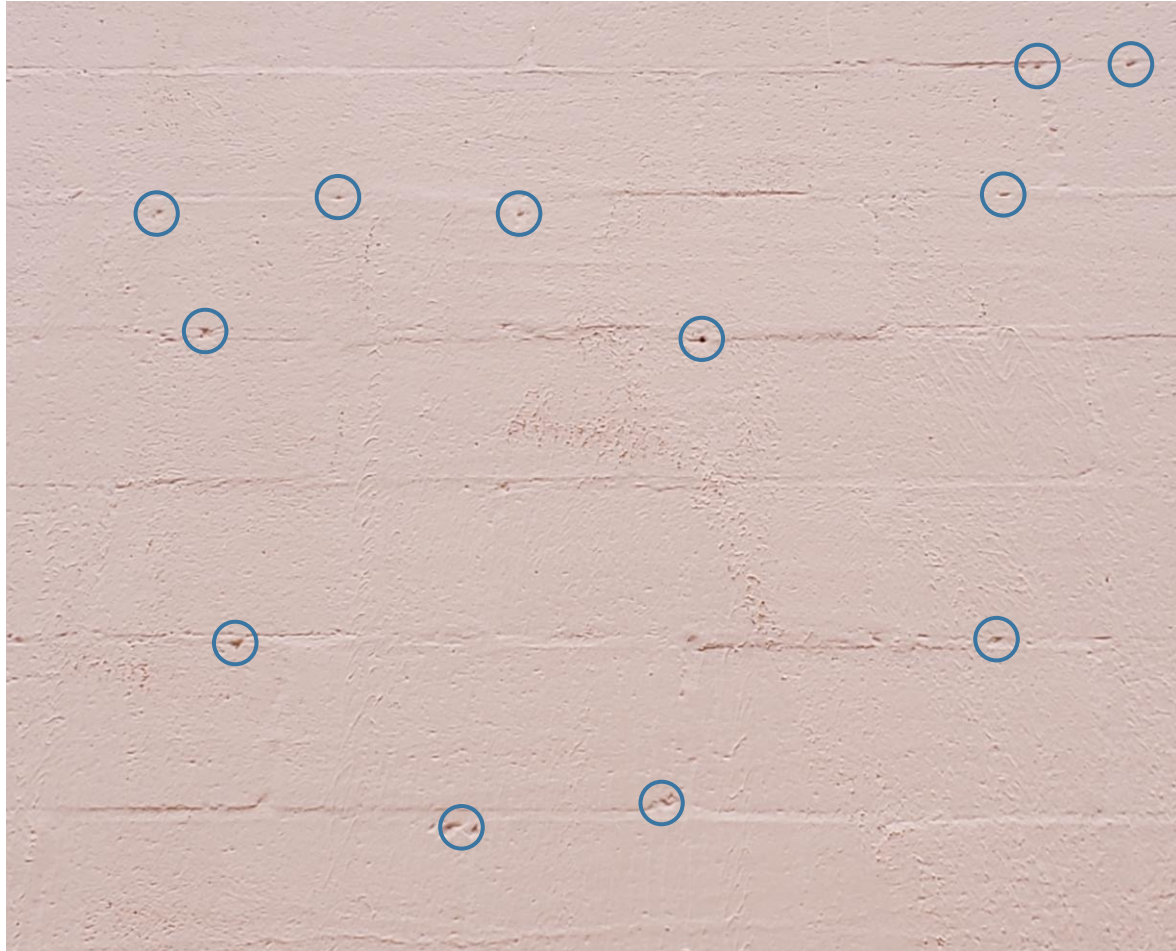
- Design Drawings
- **Specifications**
- Shop Drawings
- Unforeseen Conditions

## AIA A201: Specifications

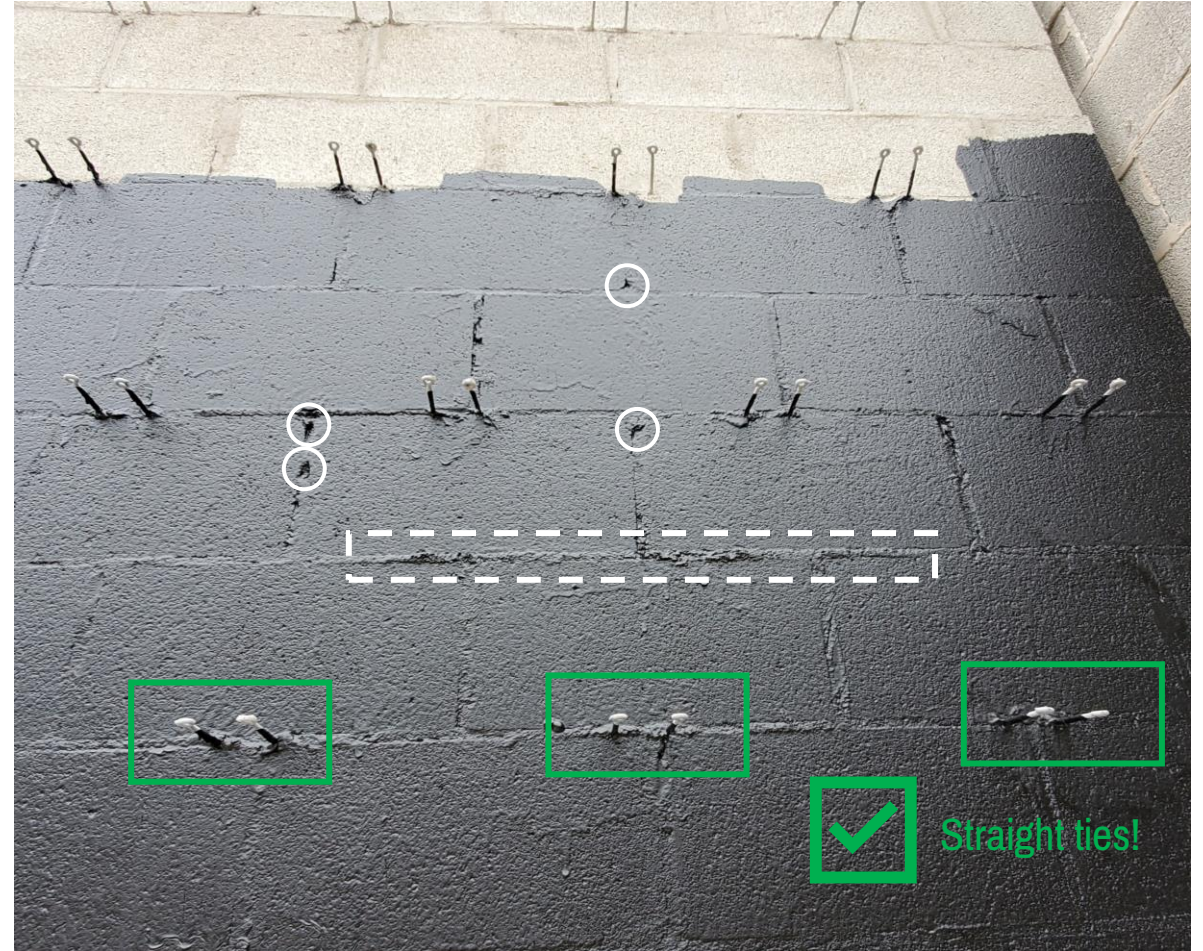
Written requirements for:



# CASE STUDY: SUBSTRATE



Voids



Excess mortar & voids.

# CASE STUDY: SUBSTRATE



Shadowing

# CASE STUDY: SUBSTRATE



Repair



Extra substrate preparation.







## CASE STUDY: SUBSTRATE

### CMU Substrate

- No voids
- No excess mortar
- Straight ties

Include in Specifications

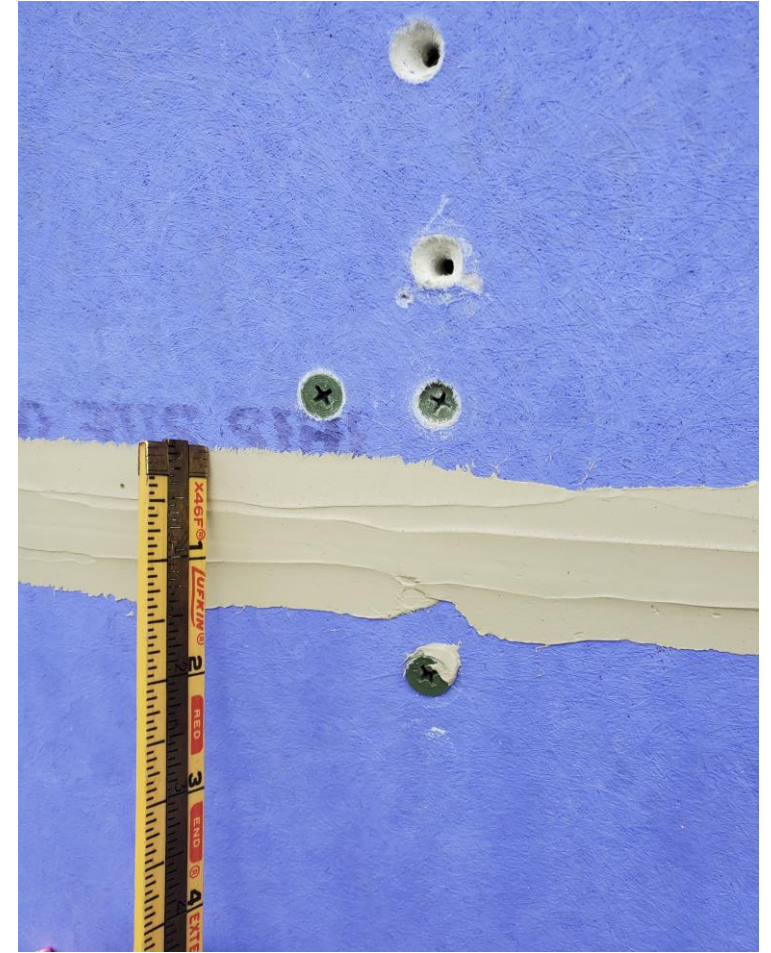
# CASE STUDY: SUBSTRATE



Chemical compatibilities



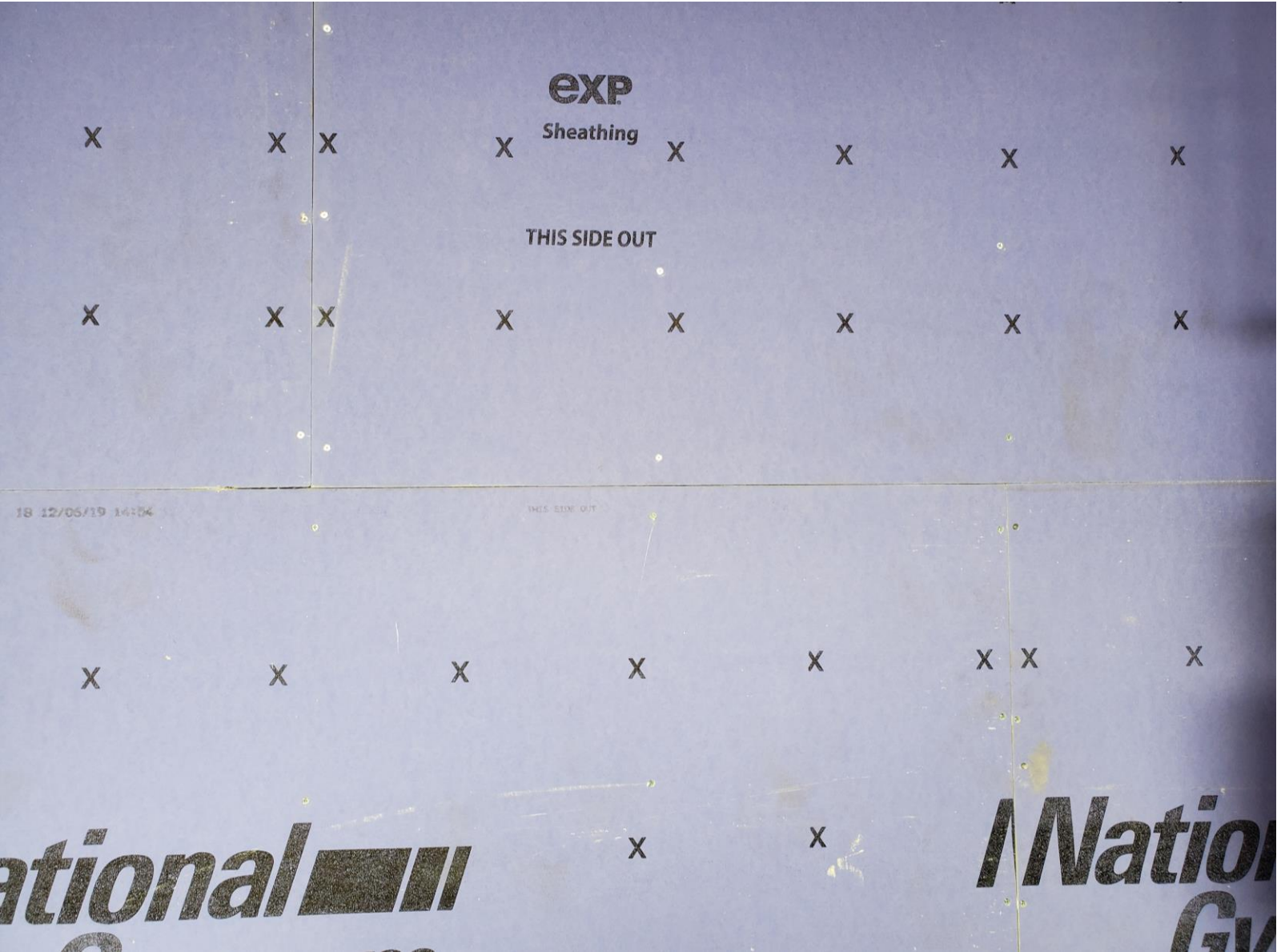
Countersunk fasteners



Fastener holes

# CASE STUDY: SUBSTRATE





## Gypsum Board Substrate

- Tight joints
- Fasteners driven flush
- Fasteners driven into framing

Include in Specifications

# CASE STUDY: SUBSTRATE



Provide for a continuous substrate in Design Drawings.

# CASE STUDY: TESTING FOR TESTING'S SAKE



# CASE STUDY: TESTING FOR TESTING'S SAKE



Exterior View: Water Testing



Interior View: Pressure Chamber

# CASE STUDY: TESTING FOR TESTING'S SAKE



## Specifications

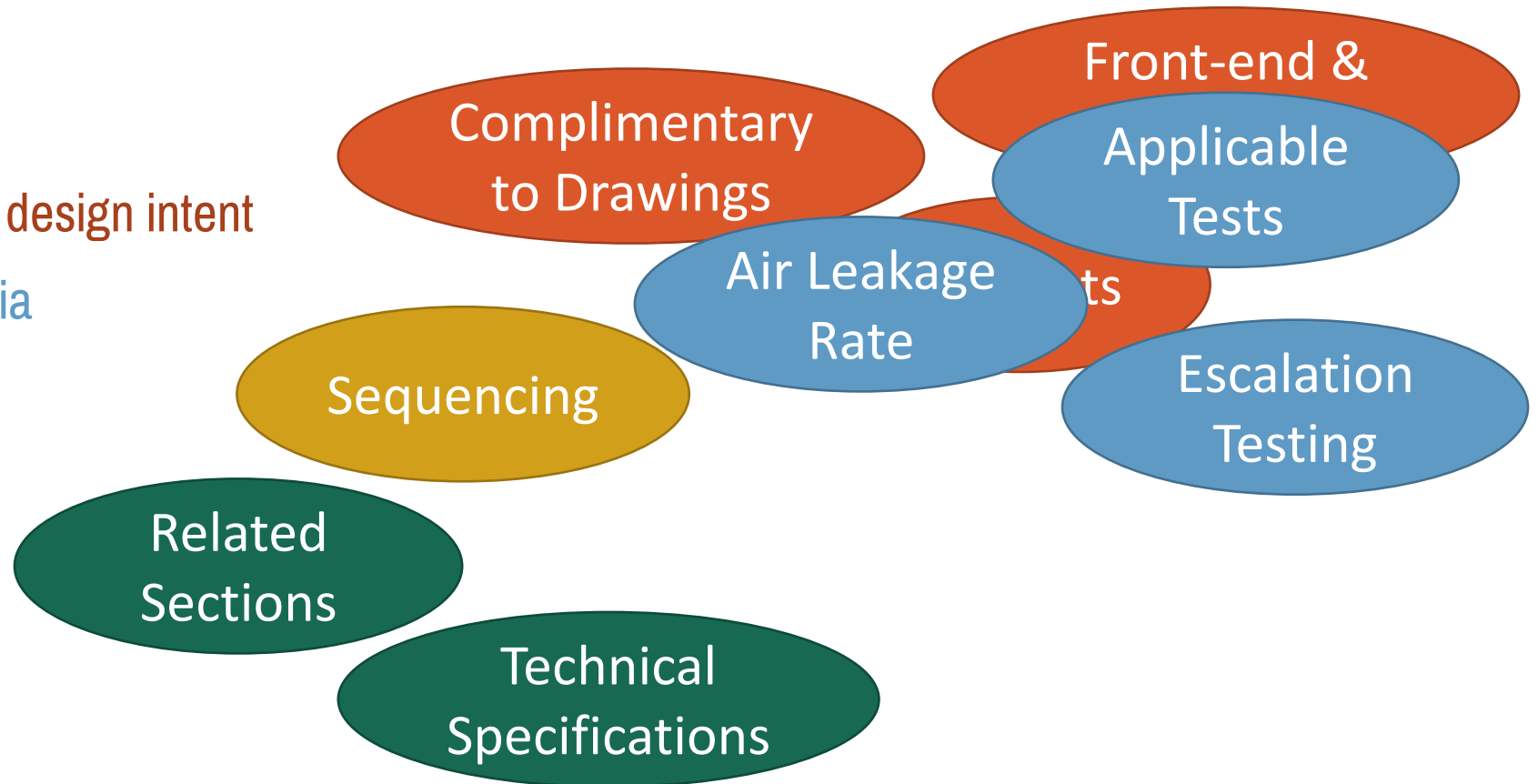
- Air Test: ASTM E783
- Water Test: ASTM E1105
- Air Test: ASTM E1186
  - Required regardless of chamber testing results
  - No pass/fail criteria



# CASE STUDY: TESTING FOR TESTING'S SAKE



- Further clarification of design intent
- Testing pass/fail criteria
- Execution - Section 3
- Temporary measures
- Substrate Finish



## Outline

- Design Drawings
- Specifications
- **Shop Drawings**
- Unforeseen Conditions

## Purpose



Demonstrate  
Conformance to  
Design

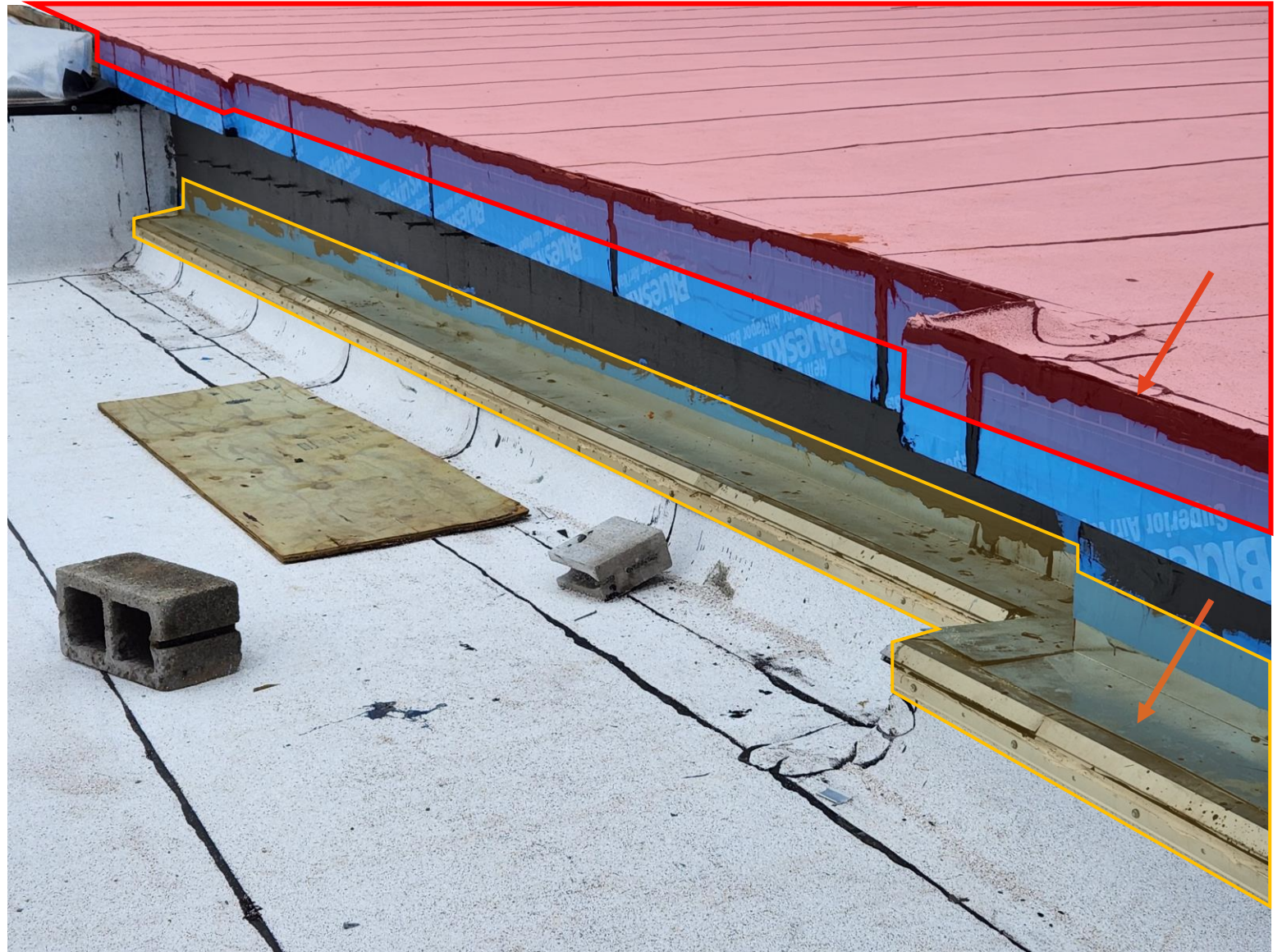
## Approval



Checks  
Conformance



## Roof/Wall Transitions



## Roof/Wall Transitions

- Overlaps not clear.
- Design intent not clarified.

Result:

Inadequate coordination between trades.



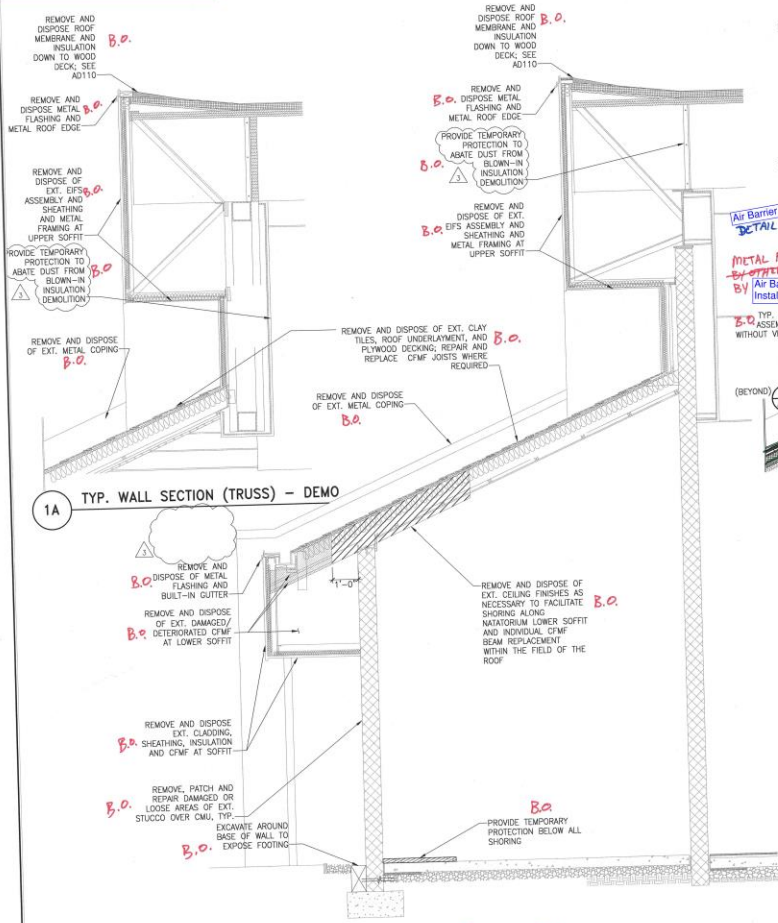
# CASE STUDY: SIMPLE & EFFECTIVE



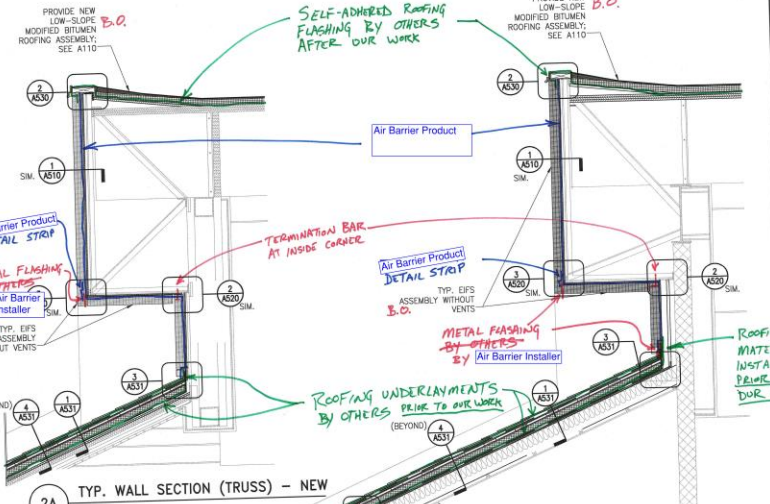
# CASE STUDY: SIMPLE & EFFECTIVE



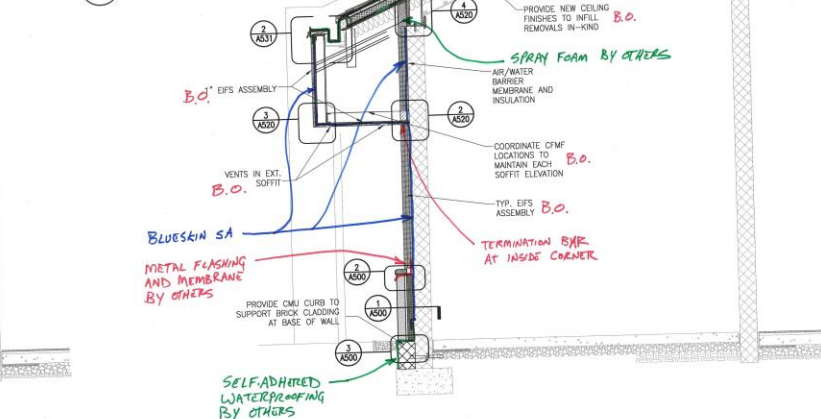
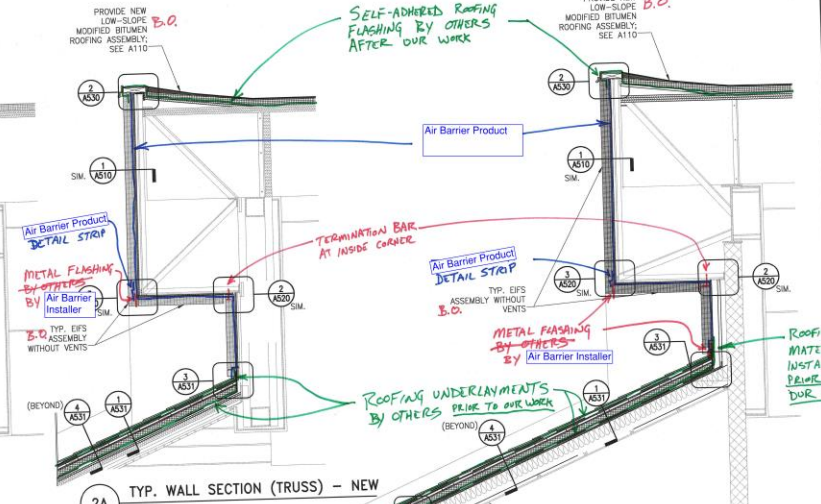
Submittal 072700-003.0



1 EXISTING TYP. WALL SECTION AT NATATORIUM - DEMO  
1/2"=1'-0"



2 TYP. WALL SECTION AT NATATORIUM - NEW  
1/2"=1'-0"



2 TYP. WALL SECTION AT NATATORIUM - NEW  
1/2"=1'-0"

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Baltimore, MD 21209  
410.323.0600

Air Barrier Installer's Stamp

IFC SET

No.	Date	Description	By
04/29/16		Issued for Construction Set	
02/22/16		Permit Response Set	
01/22/16		Bill Set	
11/20/15		Permit/Permit Set	
08/26/15		100% Design Development	

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**WALL SECTIONS**

Drawing Title

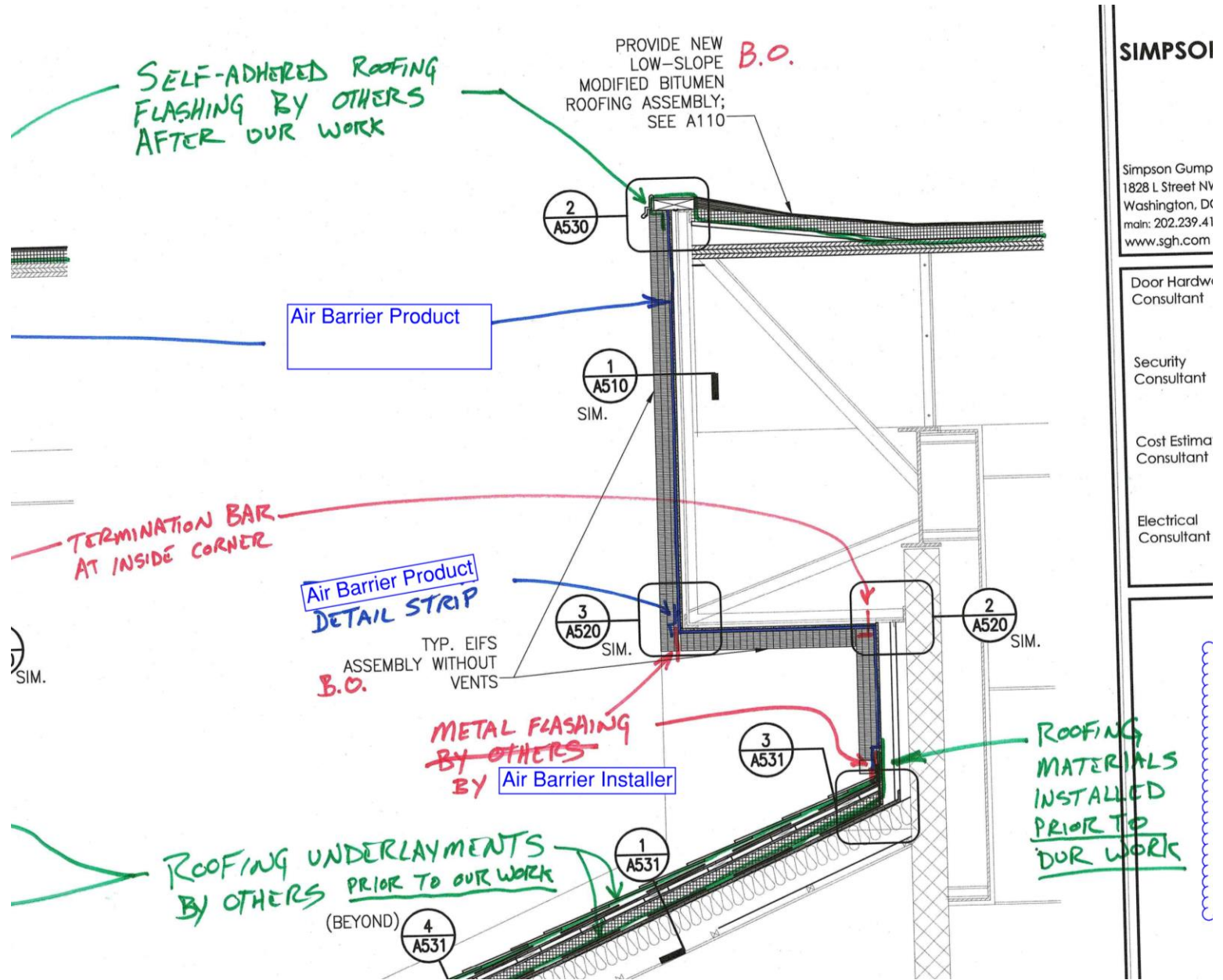
Project No. 150049.01  
Checked PKC  
Drawn CEM/BSR

Date 06/03/16  
Scale AS SHOWN

Drawing No. **A400**



# CASE STUDY: SIMPLE & EFFECTIVE



## SIMPSONI

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Consultant
- Security  
Consultant
- Cost Estima  
Consultant
- Electrical  
Consultant

- More detailed than Design Drawings
- Verify Contractor's understanding of design intent.



Details at  
larger scale

Include  
"BY OTHERS"

## Outline

- Design Drawings
- Specifications
- Shop Drawings
- **Unforeseen Conditions**

# UNFORESEEN CONDITIONS



UNEXPECTED

# CAST STUDY: UNFORESEEN CONDITIONS



Bubbling



Foreign material/contaminants

# CASE STUDY: UNFORESEEN CONDITIONS



- Pay attention to moisture & direct sunlight
- Utilize manufacturer

Include in Specifications

# CASE STUDY: UNUSUAL DETAIL



Exterior view



Interior view



Undetailed



## CASE STUDY: UNUSUAL DETAIL

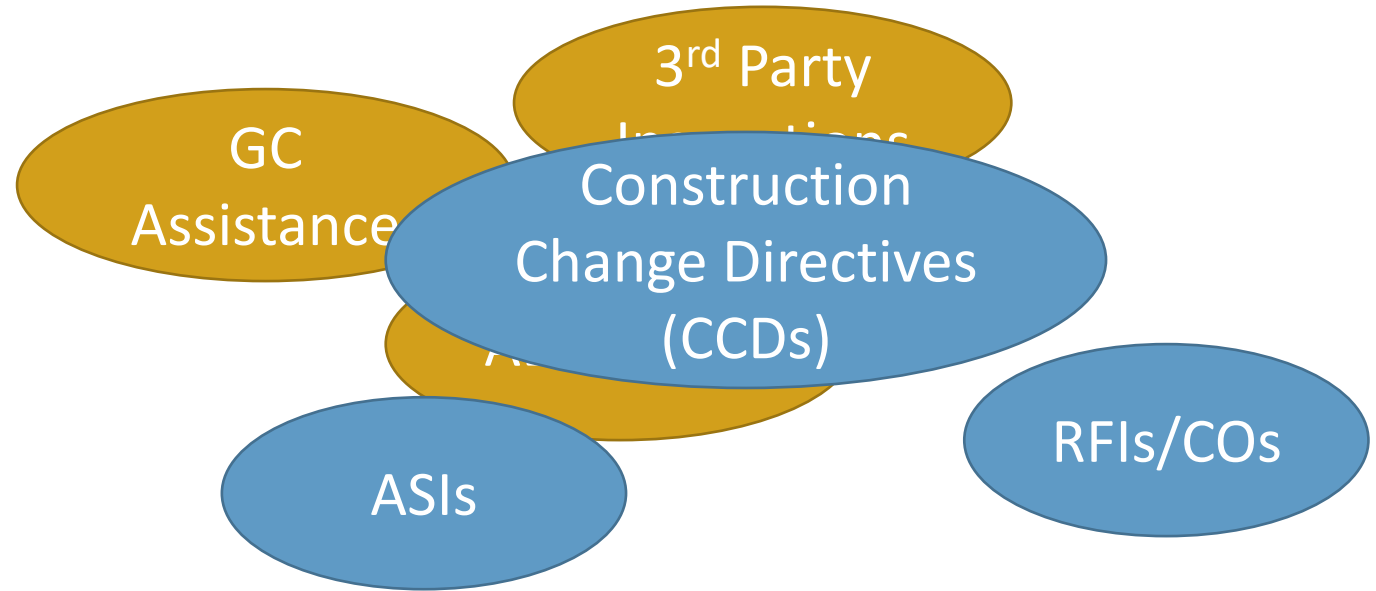
### Expansion Joint Termination @ Window

- Coordination between:
  - Installer & specifier
  - Installer & manufacturer
- Used proper channels for changes



# UNFORESEEN CONDITIONS

- Oversight
- Protocols
- Contingency



## Coordination is key...

Between

Project Documents & As-built Construction

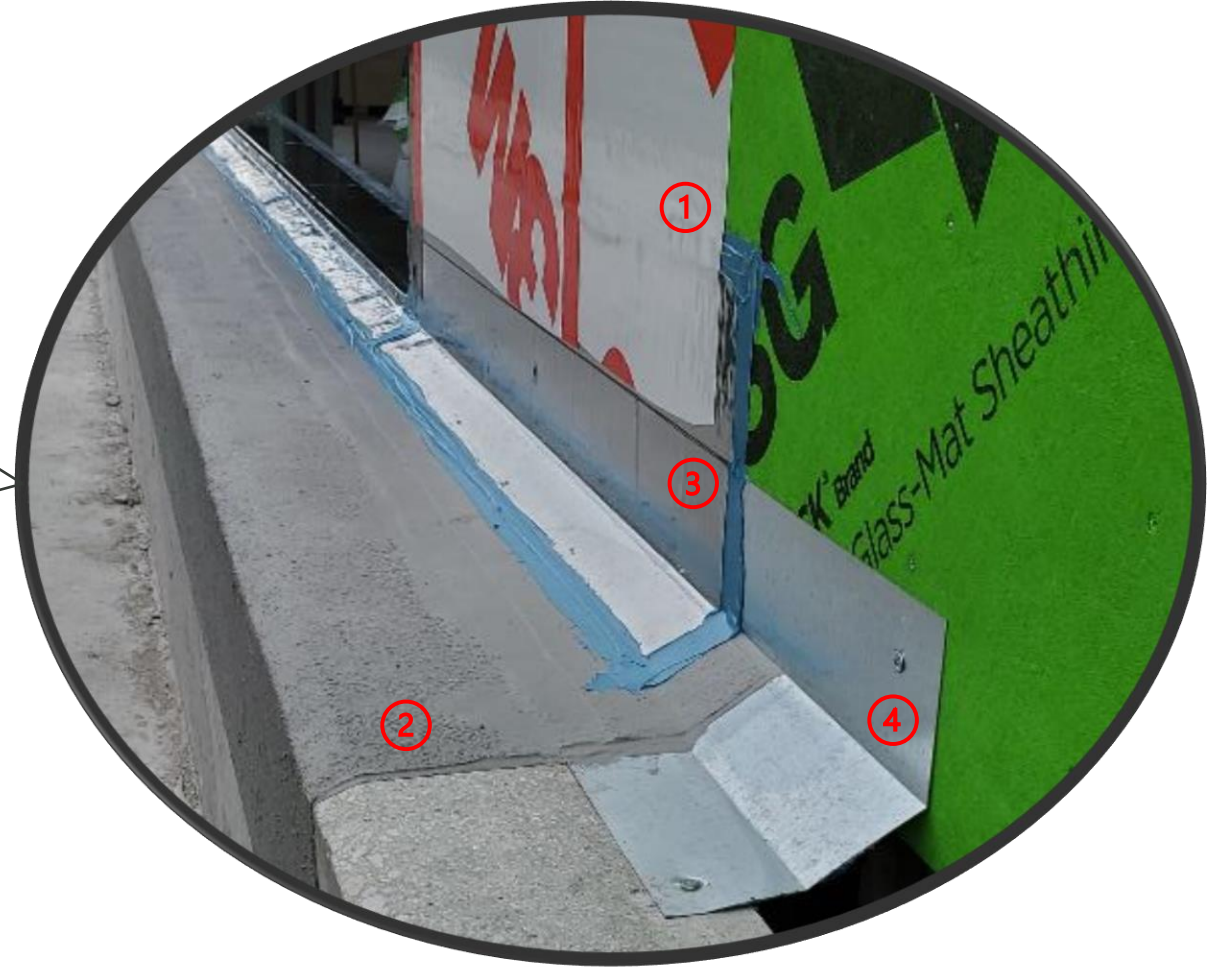
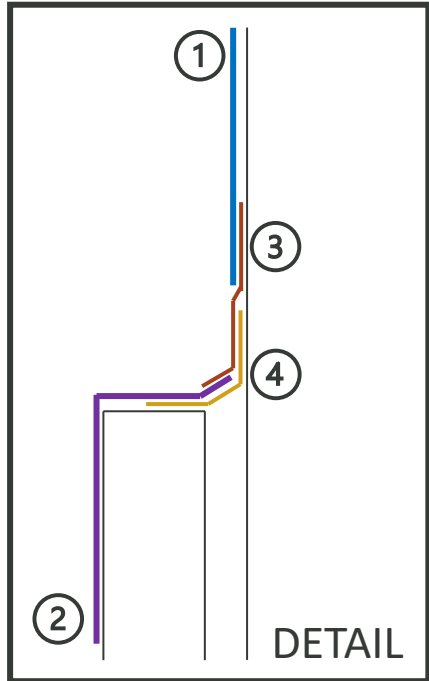
Among

Different Trades

Regarding

Unforeseen Conditions

**WELL, THAT DOESN'T LOOK LIKE WHAT'S ON PAPER...**



An aerial photograph of a large-scale construction project, showing a complex network of steel beams, concrete structures, and scaffolding. The entire image is overlaid with a semi-transparent yellow filter. In the center, the word "Questions" is written in a dark, sans-serif font.

# Questions



**THANK YOU**

Well, That Doesn't Look Like  
What's on Paper

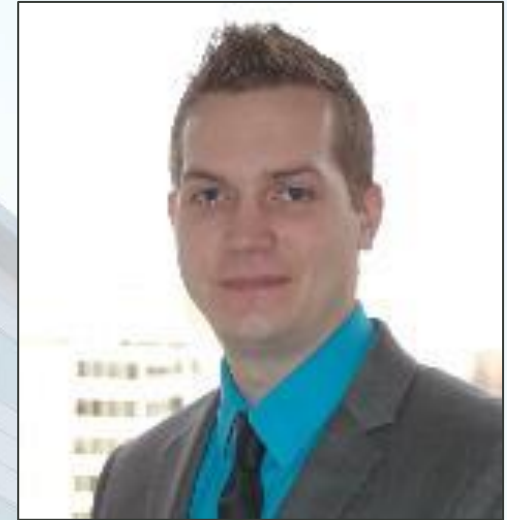
02 May 2023

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