

air barrier
abaa
association of
america
**BUILDING
ENCLOSURE
CONFERENCE**
RESTON
VA
2022
MAY 10-11

The Key to a Successful Project: Preconstruction Building Enclosure Coordination Meetings

Derek J. Ziese, PE

Gale Associates, Inc.



Air Barrier Association of America (ABAA) is a Registered Provider with The American Institute of Architects Continuing Education Systems. Credit earned on completion of this program will be reported to CES Records for AIA members. Certificates of Completion for non-AIA members are available on request.

This program is registered with the AIA/CES for continuing professional education. As such, it does not include content that may be deemed or construed to be an approval or endorsement by the AIA of any material of construction or any method or manner of handling, using, distributing, or dealing in any material or product.

How many of you have attended an enclosure coordination meeting?



Objectives

Why?

Setting Up a Successful Project

BECx

Coordination Meetings – Who, When, How

Case Studies

Why Coordination Meetings?

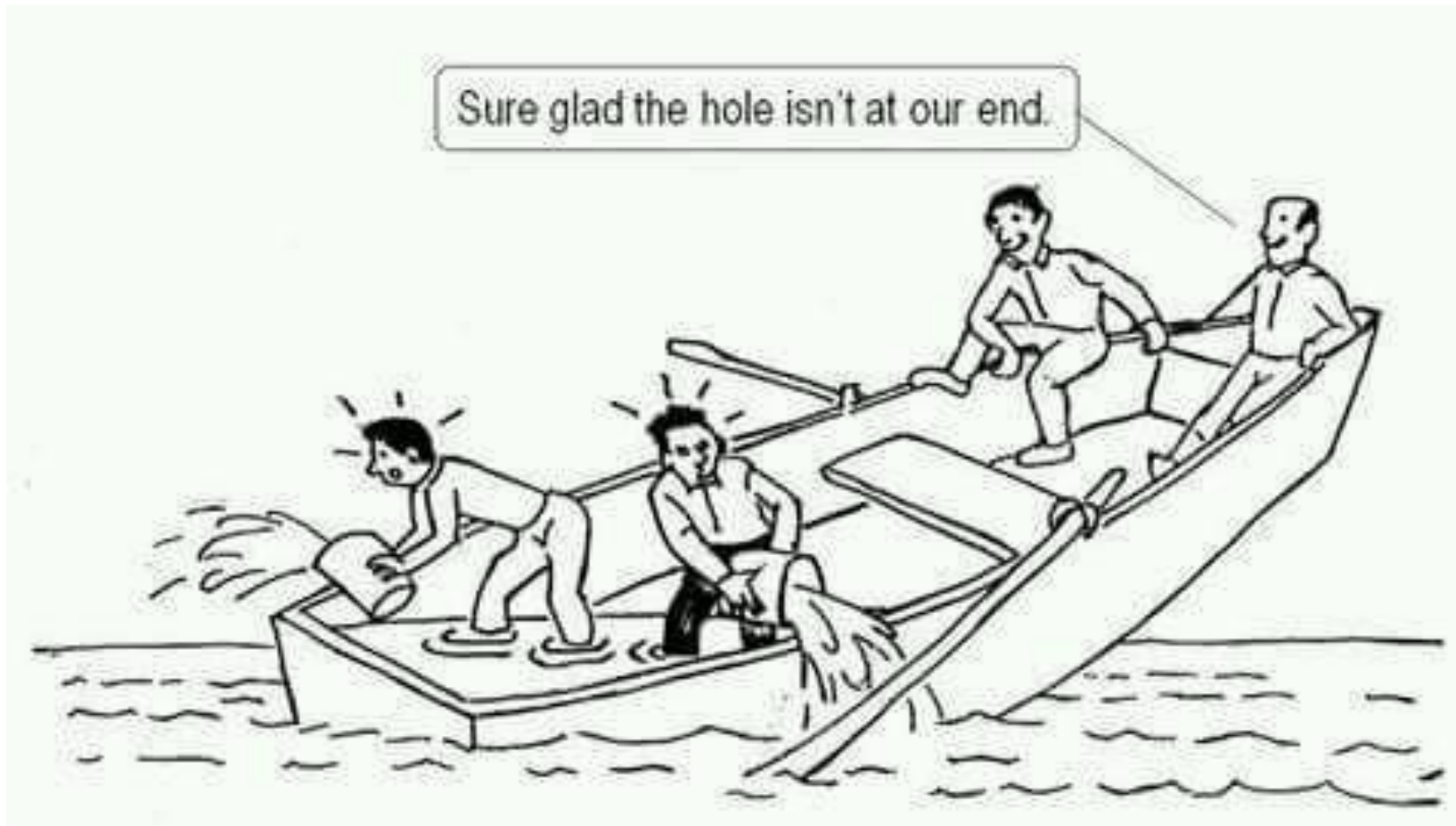
Importance

Building Enclosure Failures & Challenges

Legal fees, rework, and all forensics involved in investigating building failures account for billions spent in the construction industry annually.

Over 90% of these failures occur in 1% of the enclosure. *These failures are related to issues typically observed at penetrations, fenestrations, roof-to-wall transition, and dissimilar material transitions.*







air barrier
abaa
association of
america

**20th Century
Building
Enclosures:**



- Simple building materials
- Limited layers
- Trained workforce

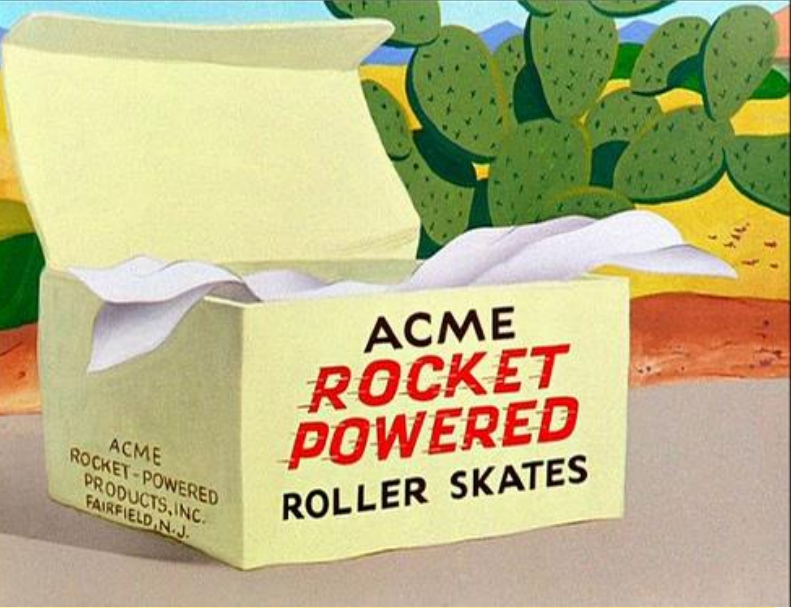


air barrier
abaa
association of
america

**Today's Building
Enclosures:**



- Complex, new building materials
- Multiple layers/configurations
- Limited designer/contractor experience



air barrier
abaa
association of
america

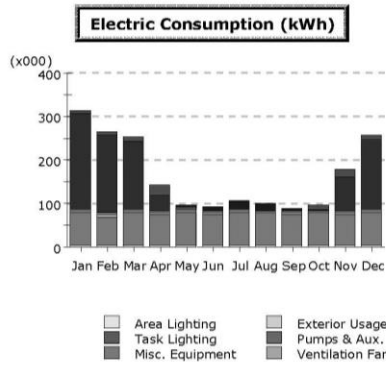
**New untested building materials
and assemblies**





air barrier
abaa
association of
america

**Repetitiveness of problem
details**

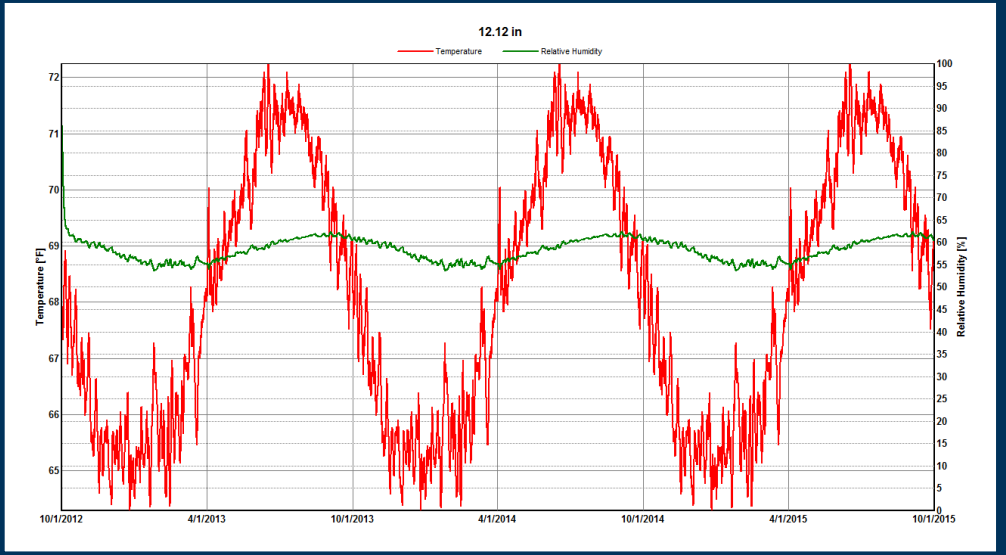
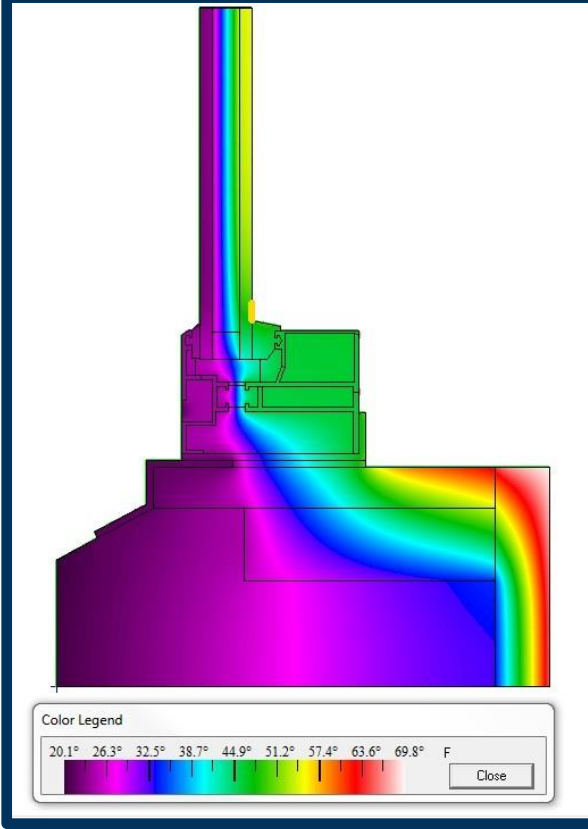


Electric Consumption (kWh x000)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Space Cool	-	-	0.0	0.3	3.4	10.4	22.5	17.9	7.0	0.4	0.1	-	61.9
Heat Reject.	-	-	-	-	-	-	-	-	-	-	-	-	-
Refrigeration	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	5.3	8.1	10.5	22.9	6.9	0.8	0.0	0.1	1.0	10.9	17.4	11.3	95.1
HP Supp.	220.9	177.9	156.7	36.1	0.7	-	-	-	-	1.0	77.8	160.1	831.1
Hot Water	3.8	3.5	3.9	3.6	3.3	2.9	2.7	2.6	2.6	2.9	3.1	3.6	38.5
Vent. Fans	6.1	5.5	5.7	4.6	3.6	3.7	4.2	4.0	3.5	3.7	4.9	5.7	55.1
Pumps & Aux.	-	-	-	-	-	-	-	-	-	-	-	-	-
Ext. Usage	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.5
Misc. Equip.	74.8	67.6	74.8	72.4	74.8	72.4	74.8	74.8	72.4	74.8	72.4	74.8	881.1
Task Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Area Lights	2.1	1.9	2.1	2.0	2.1	2.0	2.1	2.1	2.0	2.1	2.0	2.1	24.5
Total	313.1	264.5	253.8	142.0	95.0	92.4	106.4	101.6	88.6	95.9	177.8	257.7	1,988.8

Gas Consumption (Btu)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Space Cool													
Heat Reject.													
Refrigeration													
Space Heat													
HP Supp.													
Hot Water													
Vent. Fans													
Pumps & Aux.													
Ext. Usage													
Misc. Equip.													
Task Lights													
Area Lights													
Total													



air barrier
abaa
 association of
 america

Disconnect between designer and
 contractor

Insert cur



air barrier
abaa
association of
america

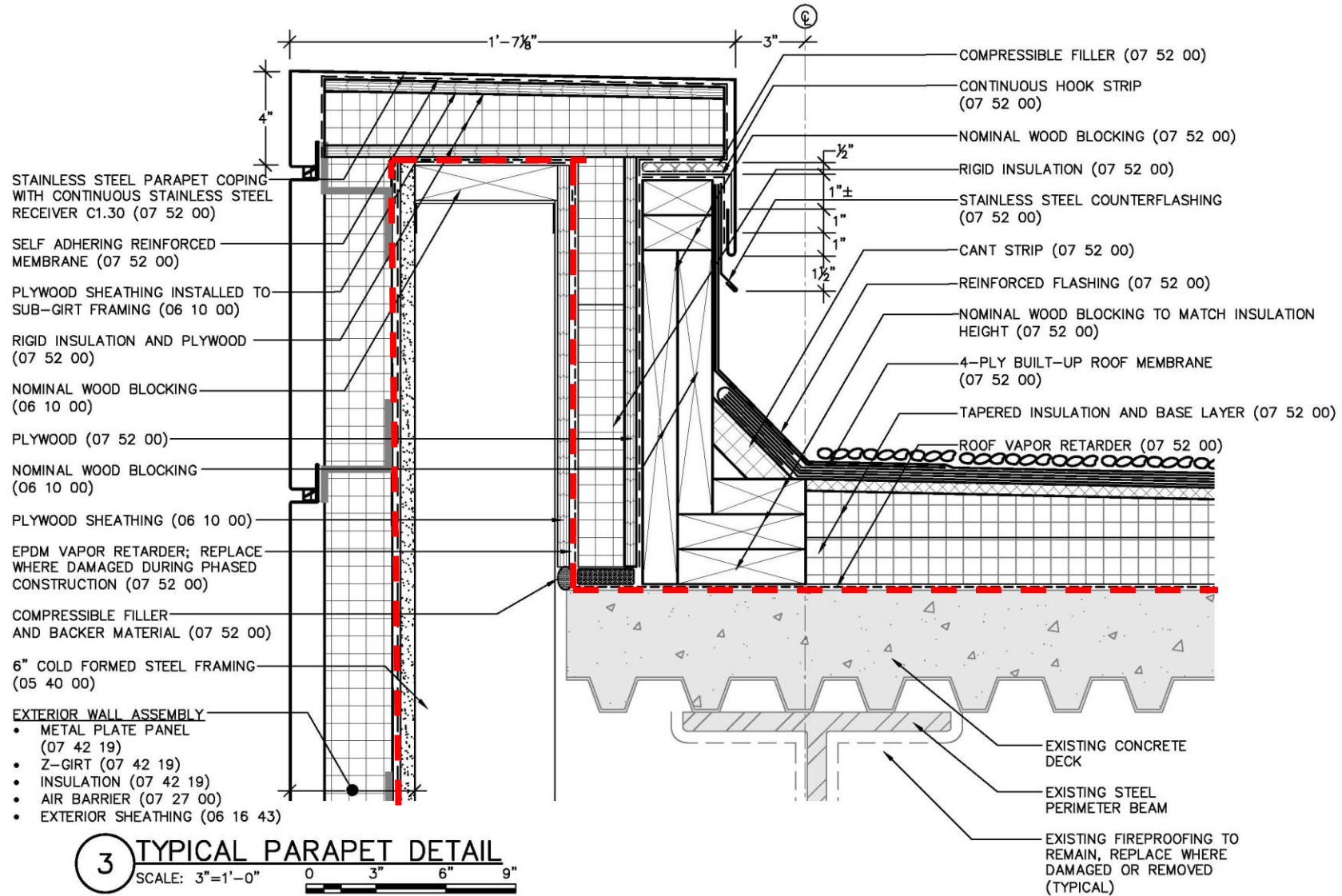
**Lack of coordinated details between
construction trades**

Setting up a Successful Meeting – Know the Fundamentals

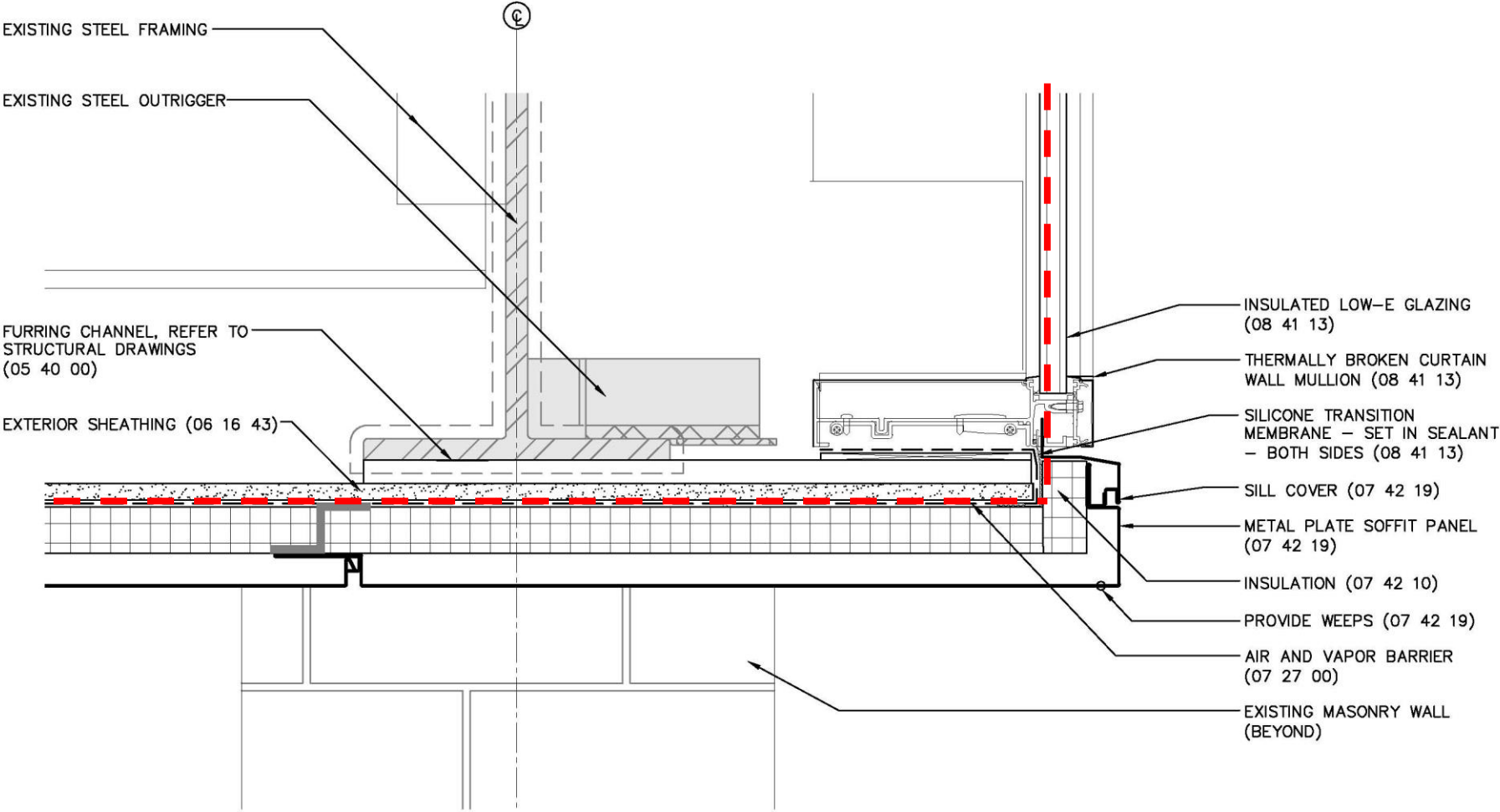
Fundamentals

- Continuity – air and moisture control layers must be continuous through the enclosure elements.
- Redundancy - Provide multiple point of contact with AVB at connections where possible
- Constructability – Construction sequencing and material compatibility need to be considered
- Appropriateness – Material is correct for application (ex. permeable vs nonpermeable)

Continuity



Continuity

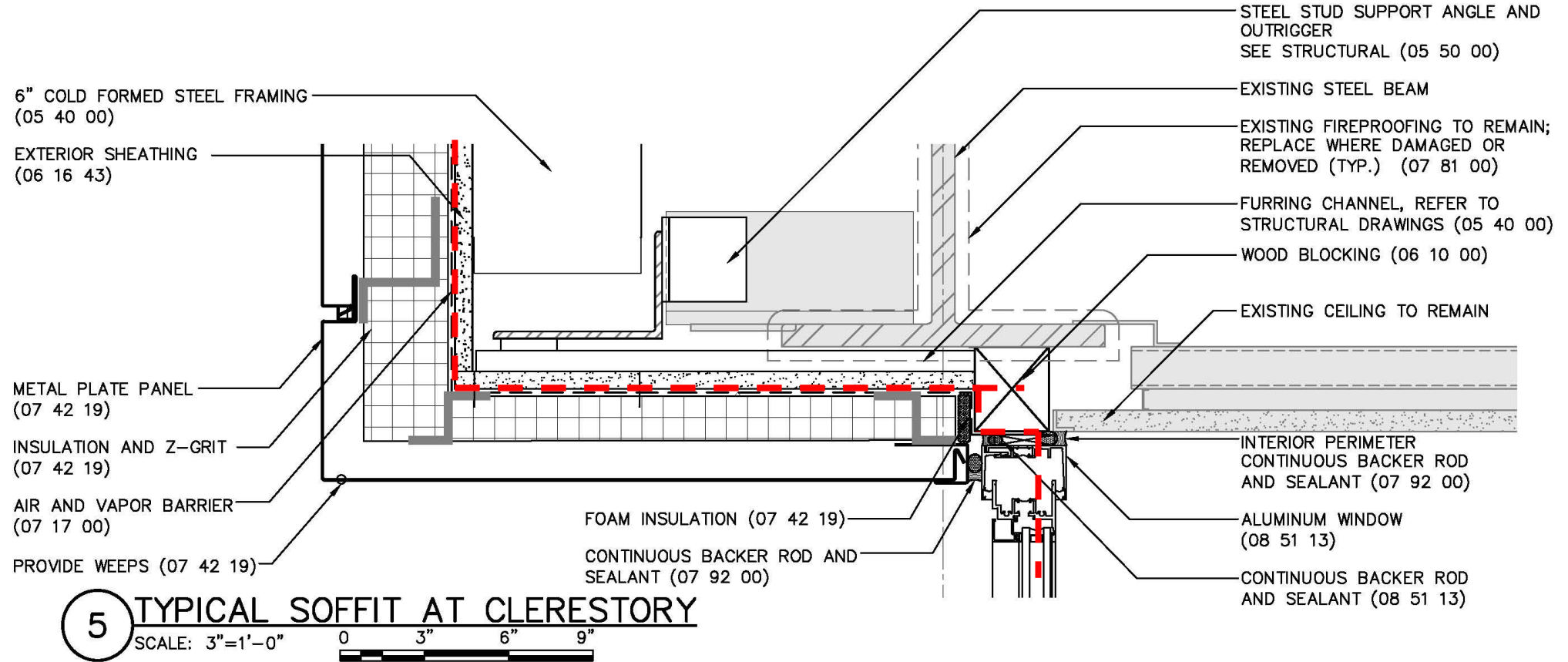


3 TYPICAL SOFFIT AT OVERHANG

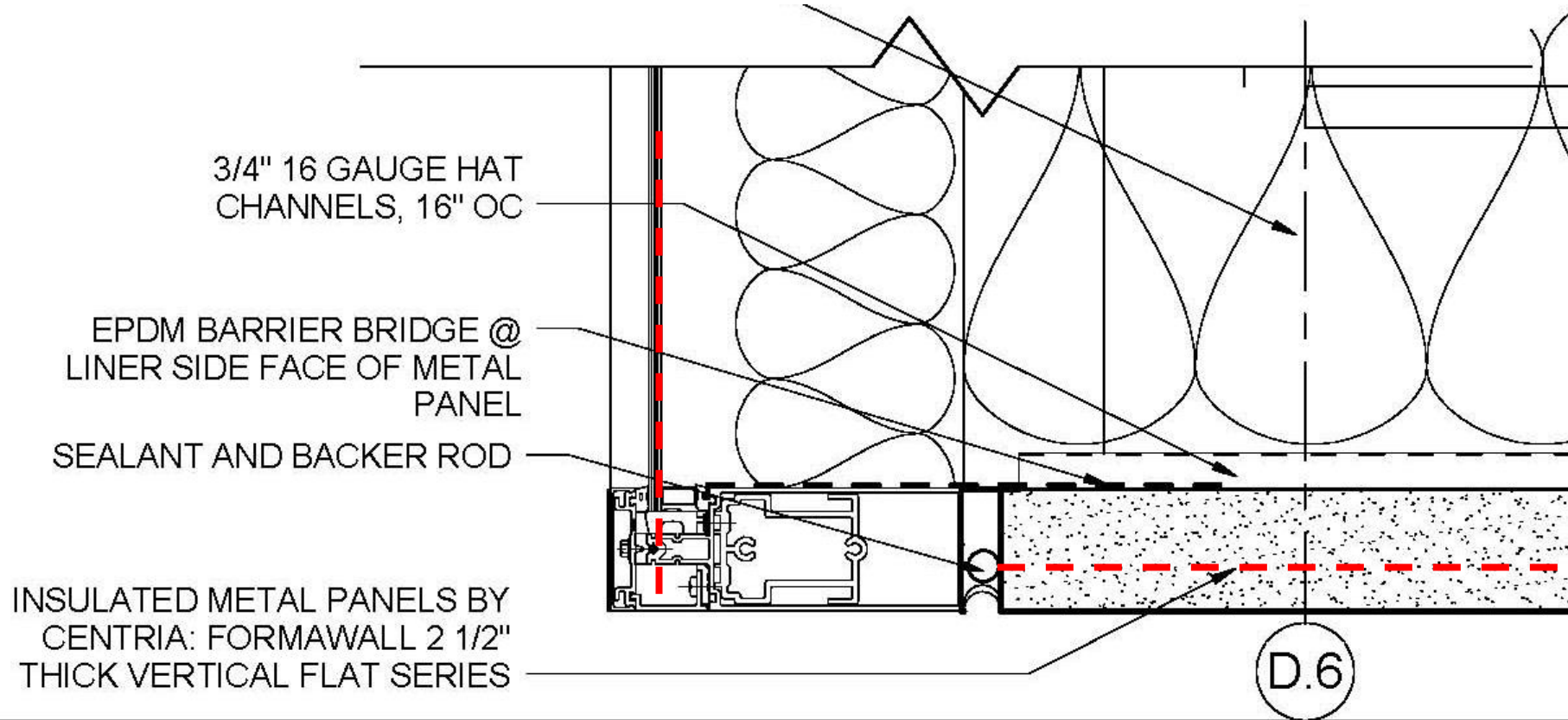
SCALE: 3"=1'-0"



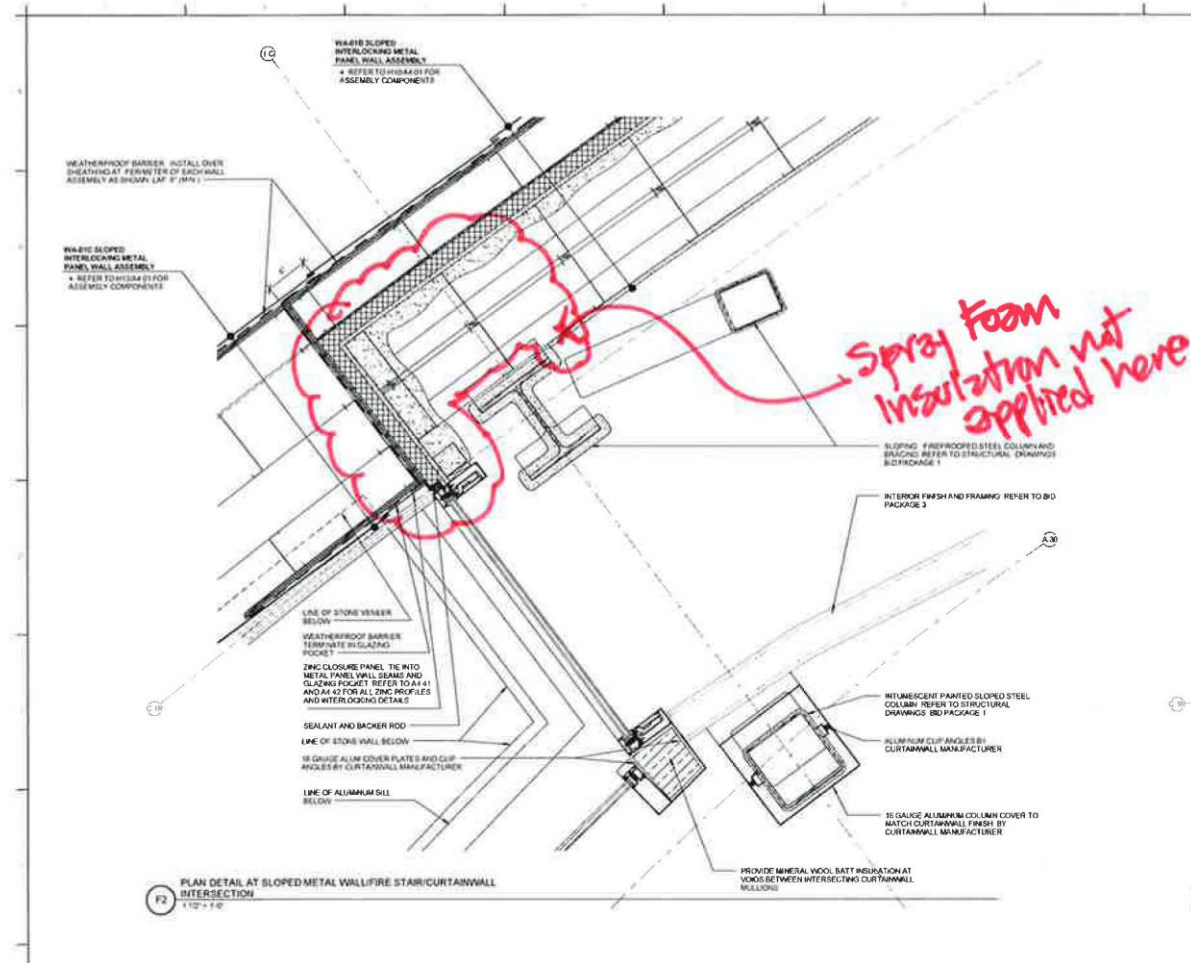
Redundancy



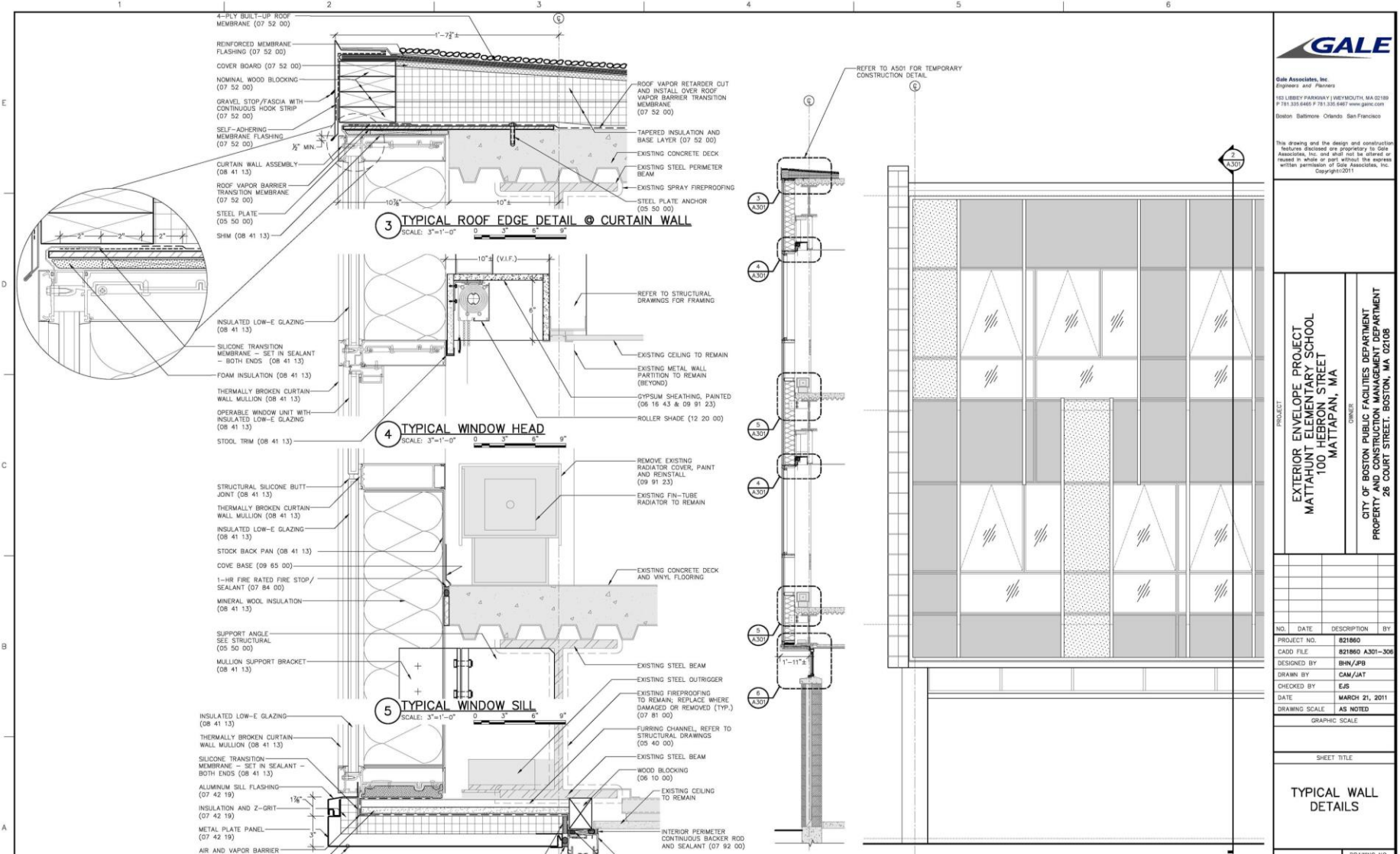
Constructability



Constructability

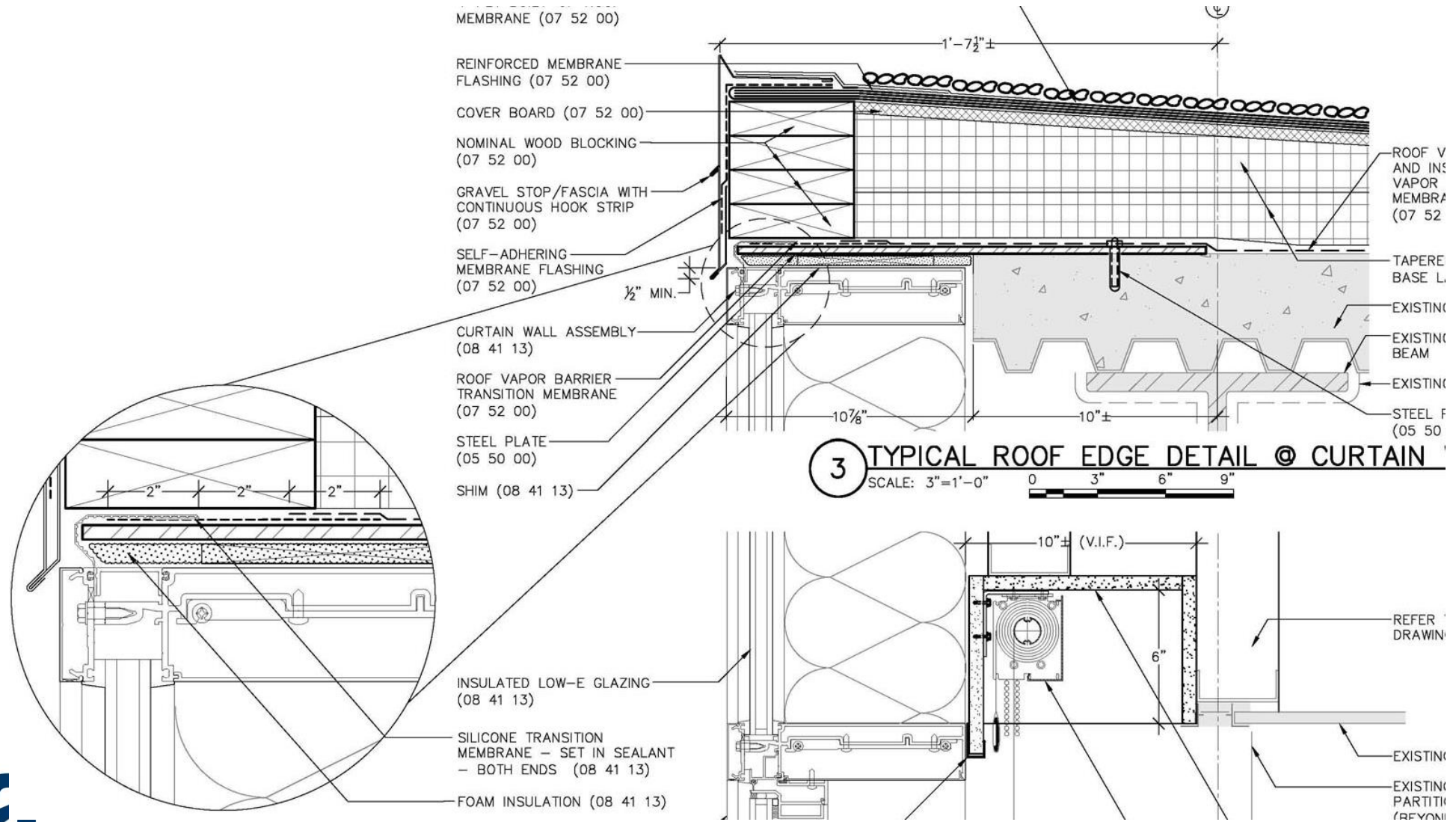


Level of Detail



air barrier
abaa
association of
america

Level of Detail

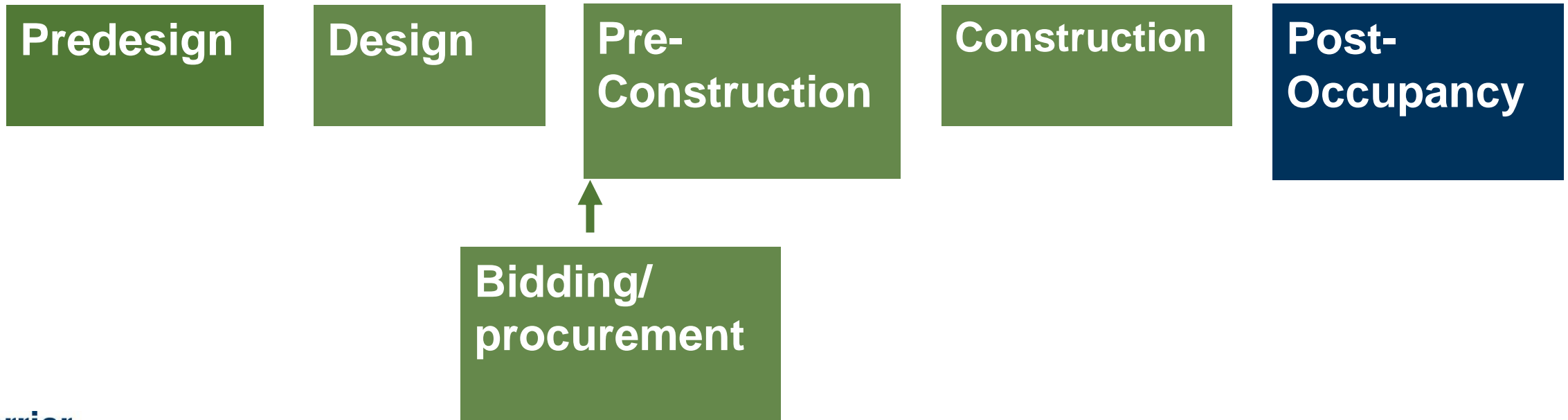


What is Building Enclosure Commissioning?

BECx Standards and Resources

- ASHRAE Guideline 0
- National Institute for Building Science (NIBS) Guideline 3
- ASTM 2813 - Standard Practice for Building Enclosure Commissioning
- ASTM E2947 - Standard Guide for Building Enclosure Commissioning
- ASHRAE 202 - Commissioning Process for Buildings and Systems
- LEED V4
- International Green Construction Code (IGCC)
- AIA Best Practices: Building Enclosure Commissioning: An Introduction

The Building Enclosure Commissioning Process





Pre-Construction Phase

**Review Shop
Drawings and
Submittals**

**Mock-Up Review and
Testing**

**Conduct Enclosure
coordination
meetings**

**Update Testing
Matrix and
Commissioning Plan**

**Implementation of
the BECx Plan**

**Review Construction
Sequencing and
Scheduling**

GC – PM, QC Manager, Superintendent

Architect – PM

Subcontractor – PM, Superintendent/Foreman for each sub (Glazing, Air Barrier, Roofing, Waterproofing, Cladding)

BEC/BECxA

Meeting Agenda

1. Introductions

2. Page turn -

- Review drawings for constructability, confirm product selection is appropriate
- Review sequencing of trades
- Review by-others

3. Mockups

4. Testing

Drawing Review – Areas of Interest

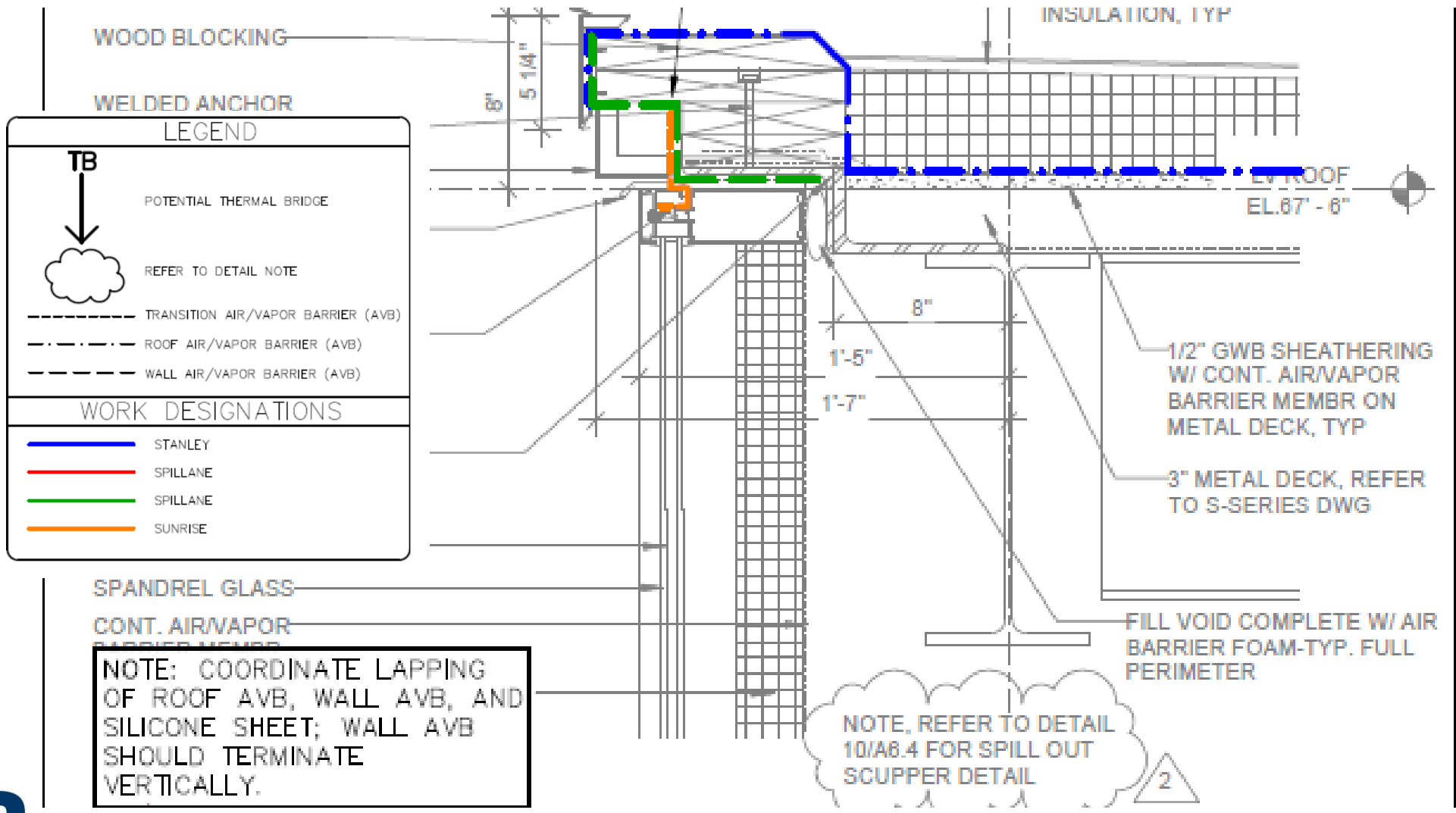
- Roof to AVB tie-in (parapets and roof to wall interfaces)
- Windows/Storefronts/Curtainwall tie-in to AVB particularly jamb flashing and covers
- Through wall flashing
- Cladding attachments
- Expansion Joints

Material Selection

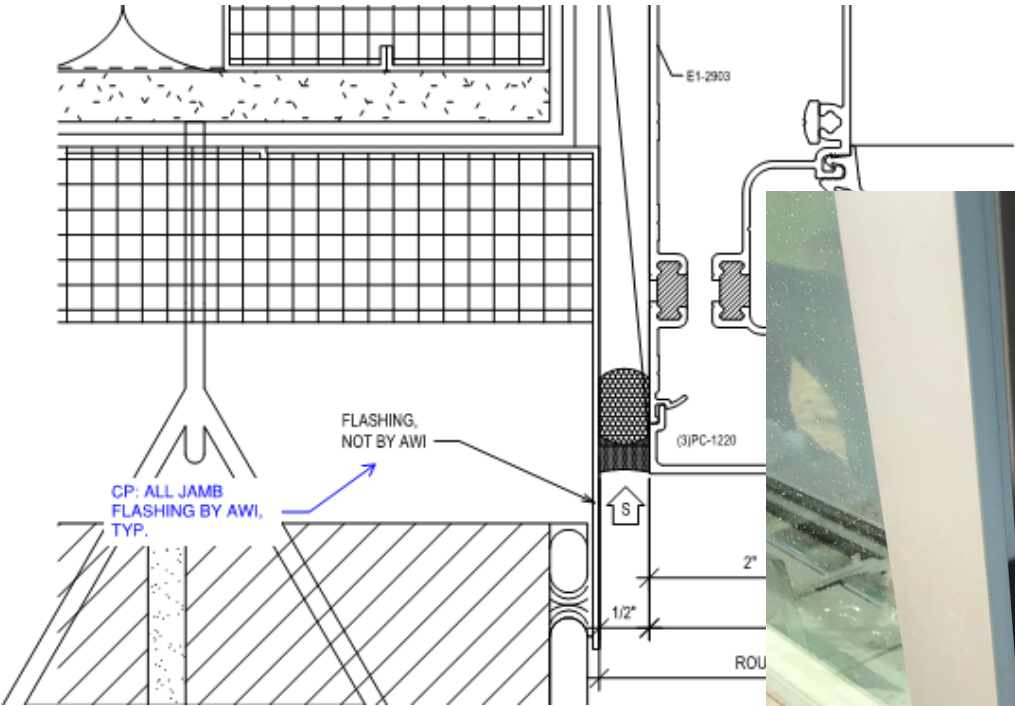
air barrier
abaa
association of
america



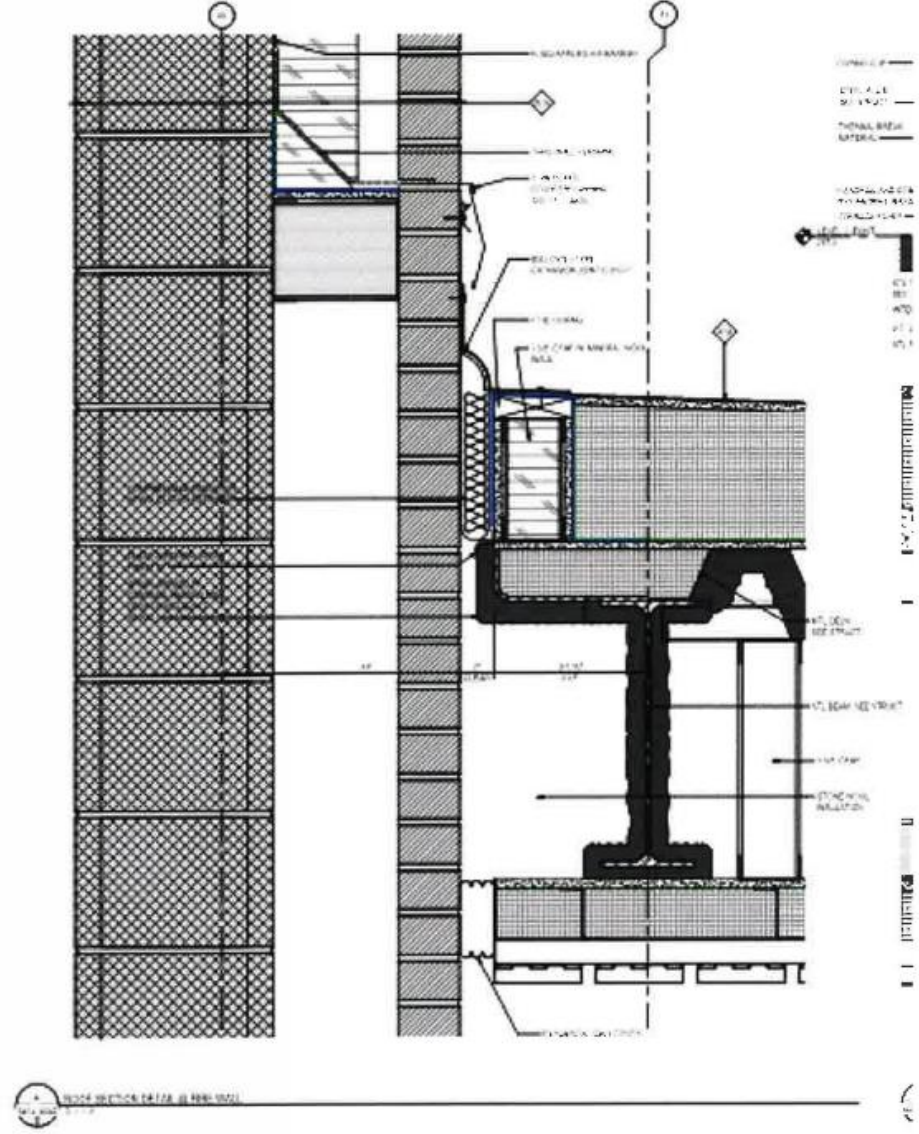
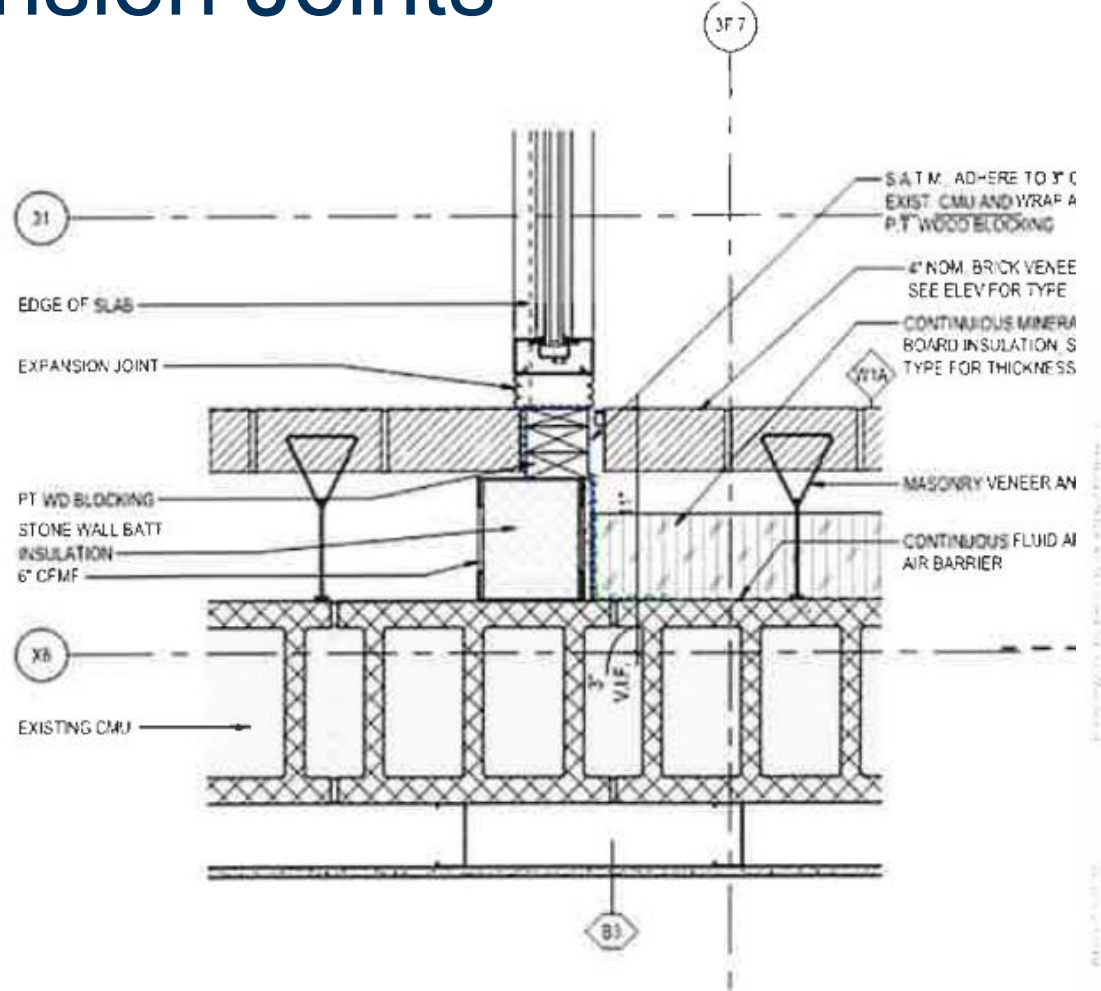
Roof Tie-In



Jamb Flashing

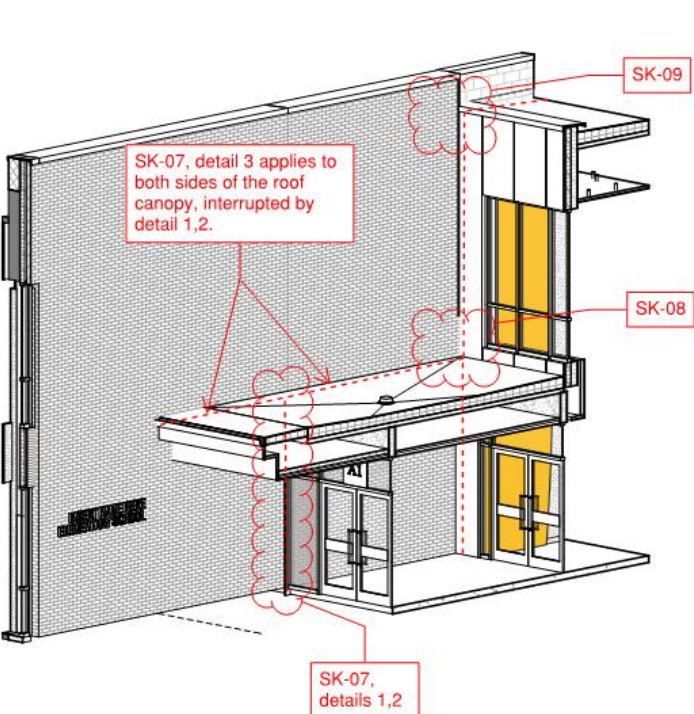


Expansion Joints



air barrier
abaa

Expansion Joints



Location 1: Storefront expansion joint

EM SEAL TO EXTEND FROM 1st LEVEL TO UNDERSIDE OF ROOF BELLOWS. SEE SK-07



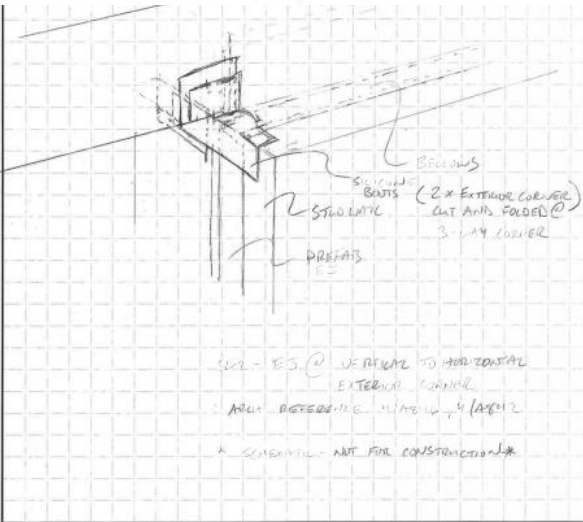
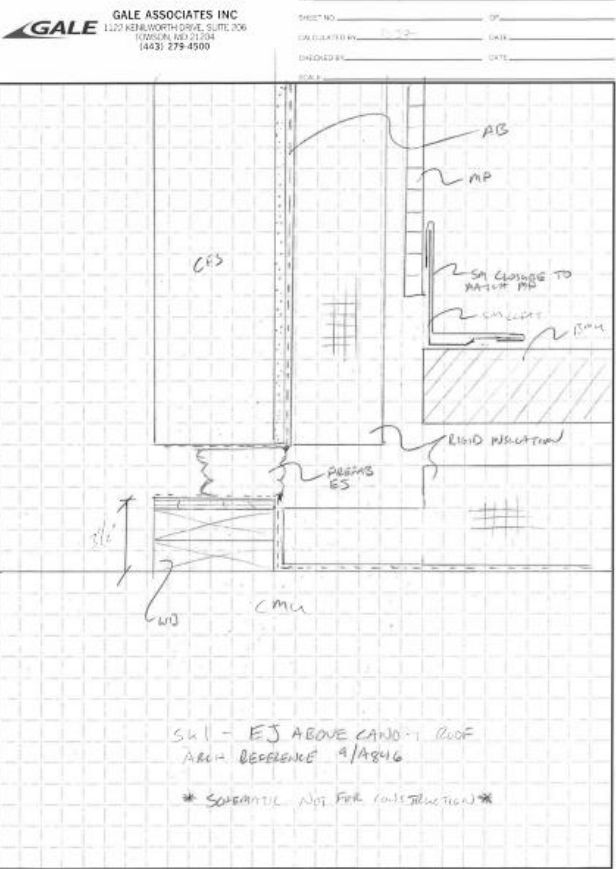
Location 2: Expansion joint at canopy

BELLOWS JOINT AT ROOF CANOPY TO TIE-IN LATERALLY TO VERTICAL EM SEAL ON 2ND LEVEL. SEE SK-08



Location 3: Vertical expansion joint

EM SEAL TO RUN VERTICALLY IN WALL TO UNDERSIDE OF ROOF BELLOWS JOINT. SEE SK-08 AND SK-09



air barrier
abaa

Mock-Up

To include as many typical details as possible

To be tested for compliance with established standards

Access for modifications to address potential problems

Troubleshoot potential problems

Establishes standard of care for trades

Mock-Up



air barrier
abaa
association of
america

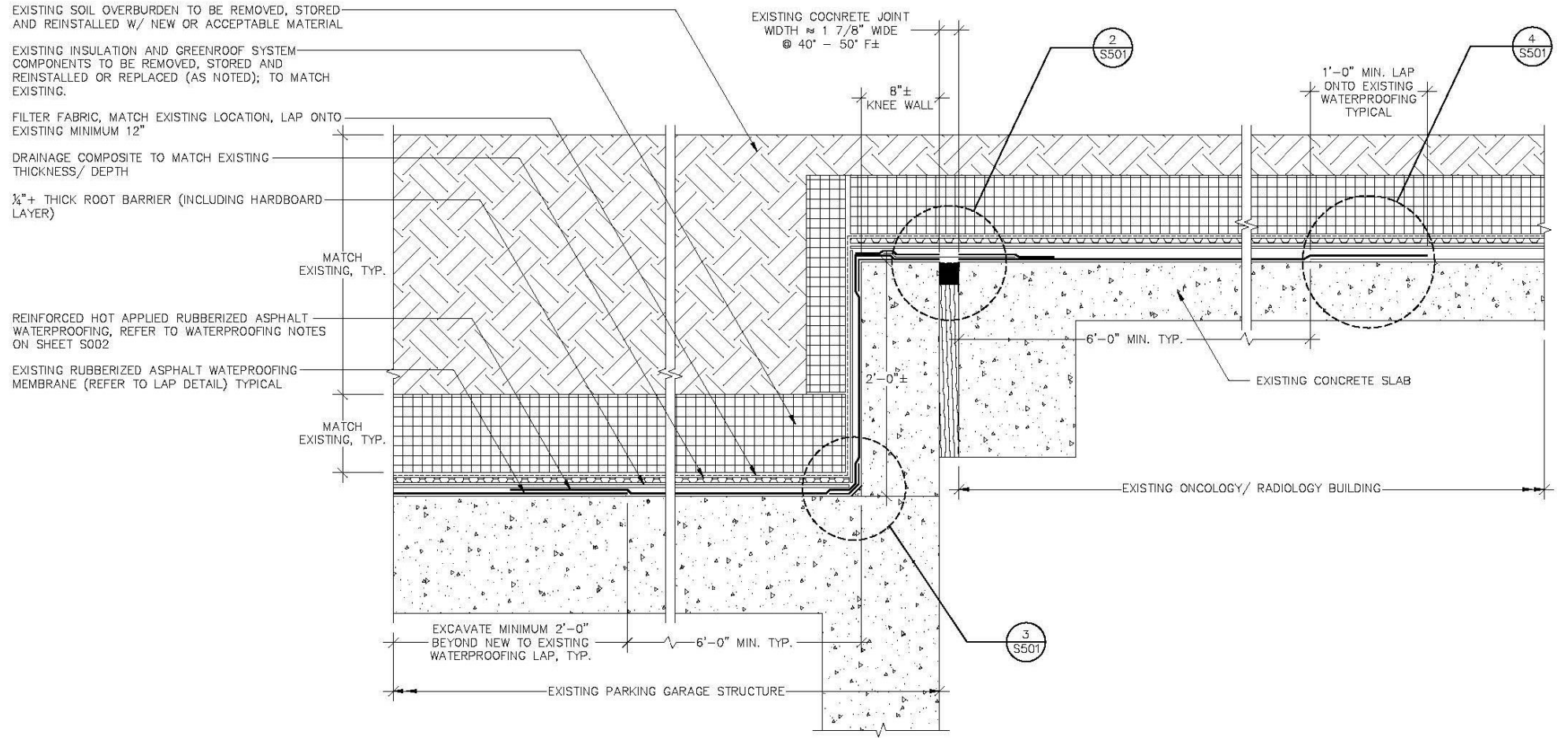
Mock-Up Testing



Case Studies

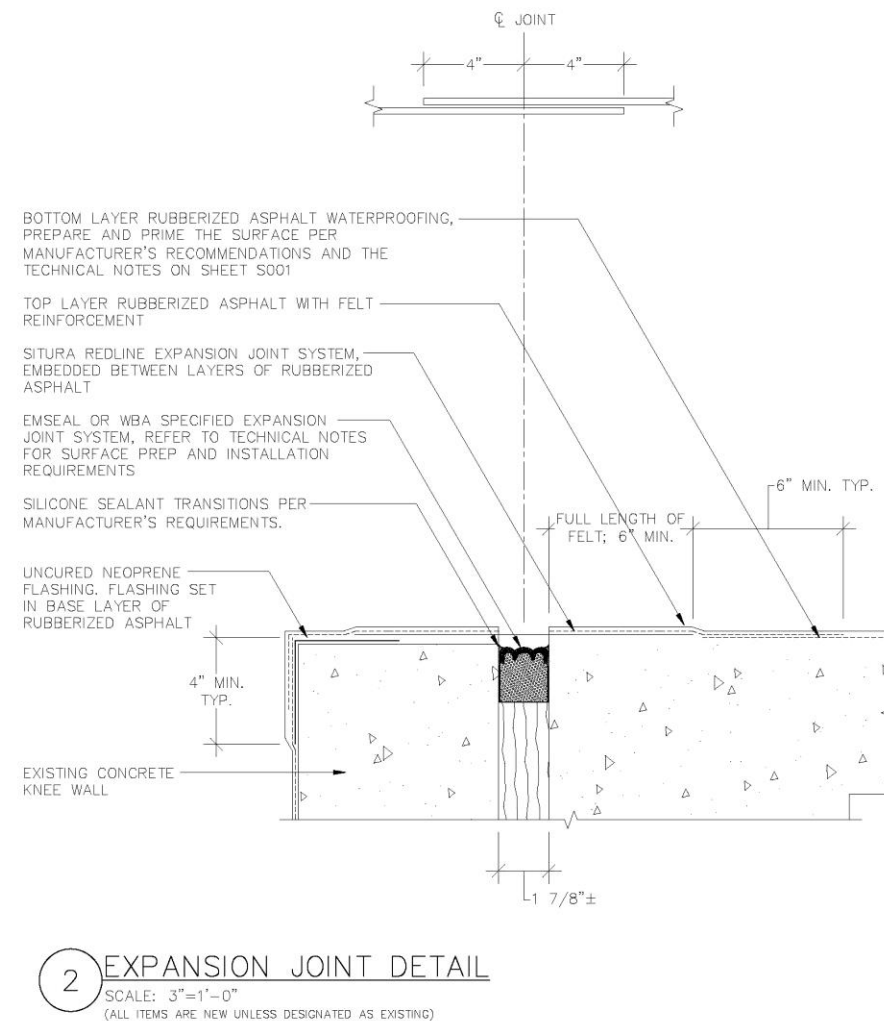
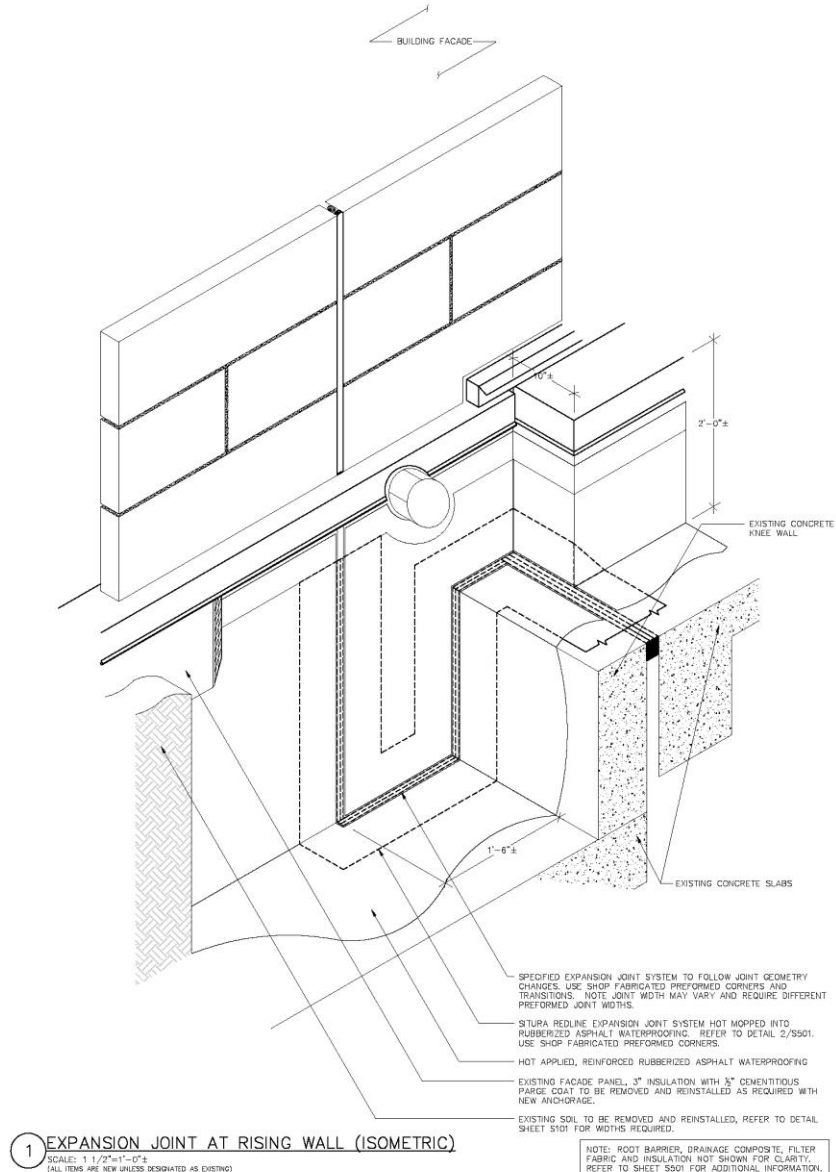
NOT COORDINATED

Case Study 1 – Expansion Joints



1 EXPANSION JOINT WATERPROOFING
 SCALE: 1 1/2"=1'-0"
 (ALL ITEMS ARE NEW UNLESS DESIGNATED AS EXISTING)





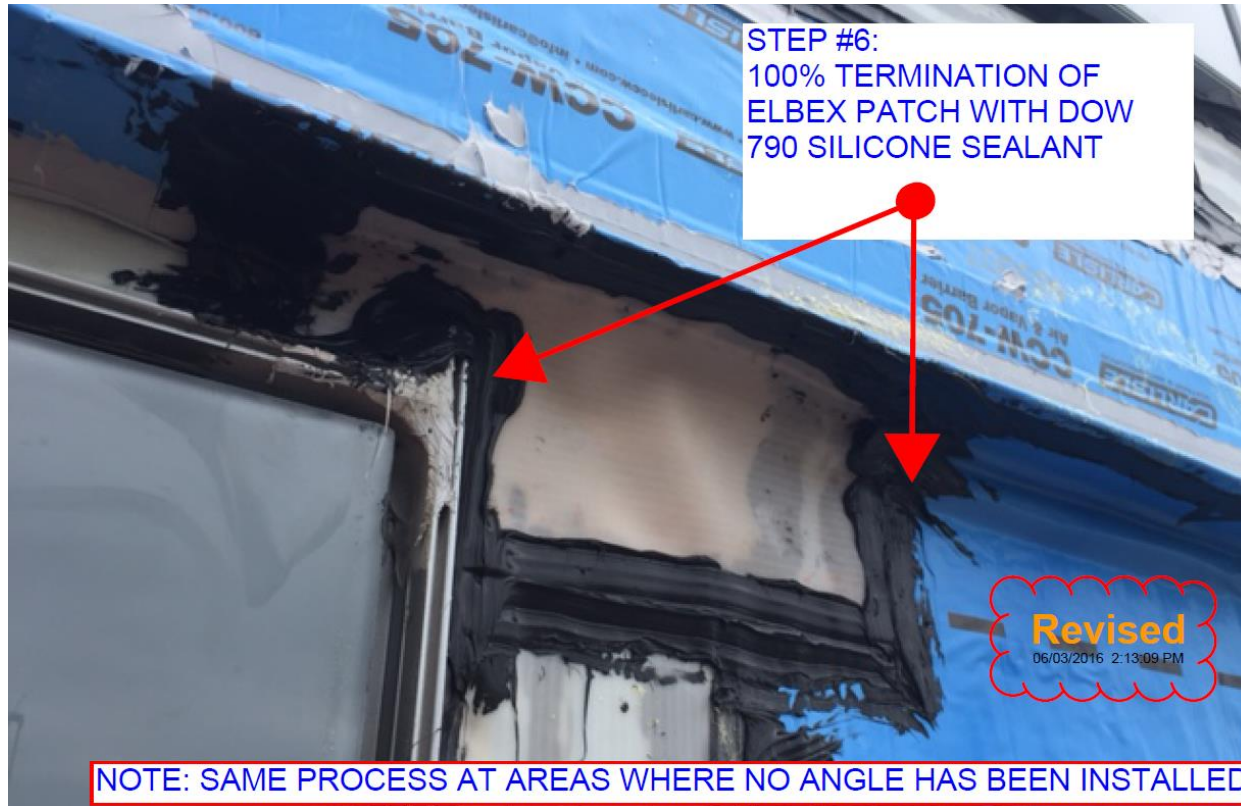
As-Built Detail

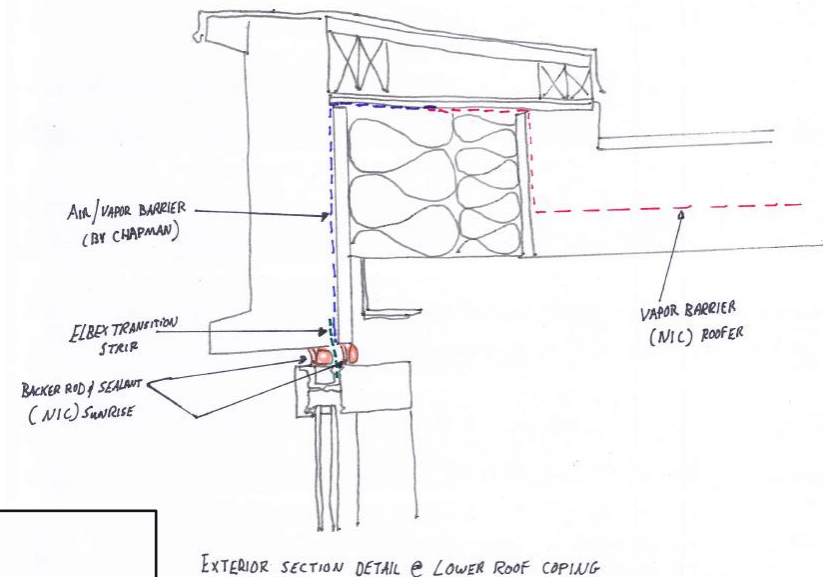
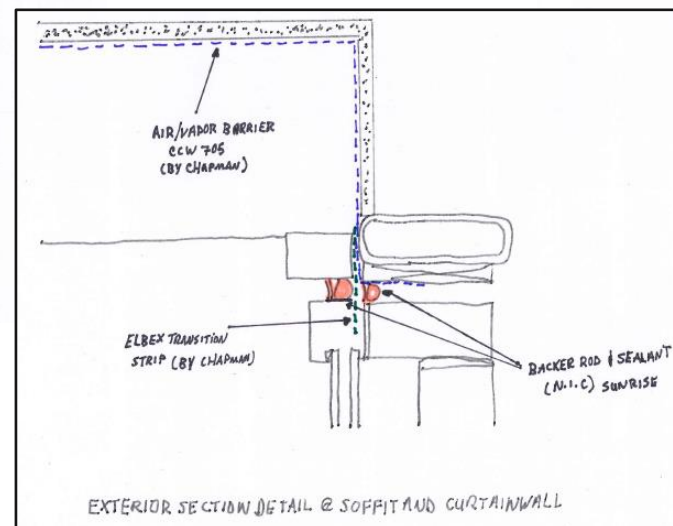
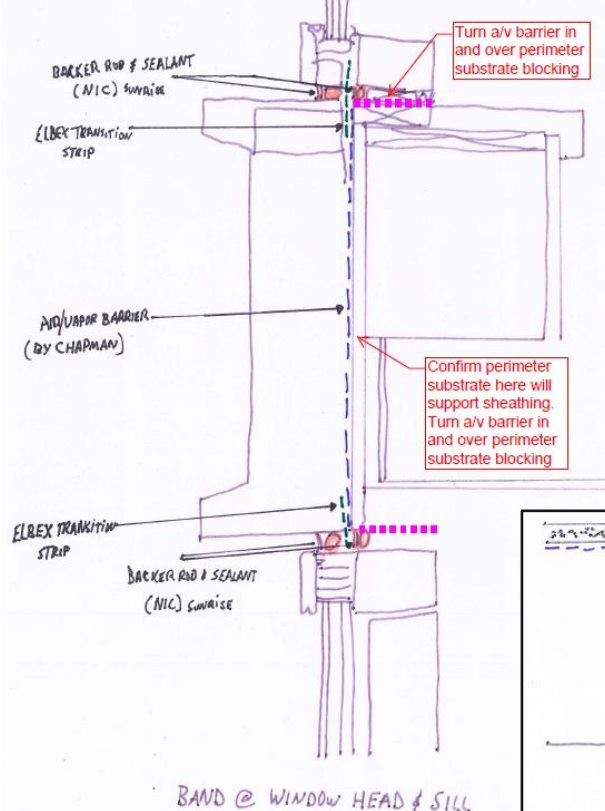


Case Study 2 – Sequencing









General Comments for all proposed details are as follows:

1. Per the Membrane Air Barrier Product Data Submittal Review, dated Oct. 28, 2015, the proposed Elbex transition strip was returned as "not acceptable". Recommend contractor confirms acceptance of this product. If not, recommend a product conforming to the specifications be submitted for review by the Architect.
2. Recommend that the a/v barrier be turned in and extend over the perimeter substrate (eg. blocking, sheathing, etc.), prior to installing the transition strip.
3. Confirm transition strip is to be set into the CW glazing pocket by indicating this on all applicable details.
4. Confirm the method of sealing the a/v barrier to the transition strip. Confirm that the sealant used is compatible with both the a/v barrier and transition strip.
5. Confirm the locations of both the permeable and non-permeable a/v barriers. Note: The design intent was that all a/v barriers will be non-permeable types, with the only exception being the entry vestibule canopy soffits which are to receive a permeable type a/v barrier. Therefore, details should indicate which type is to be provided.

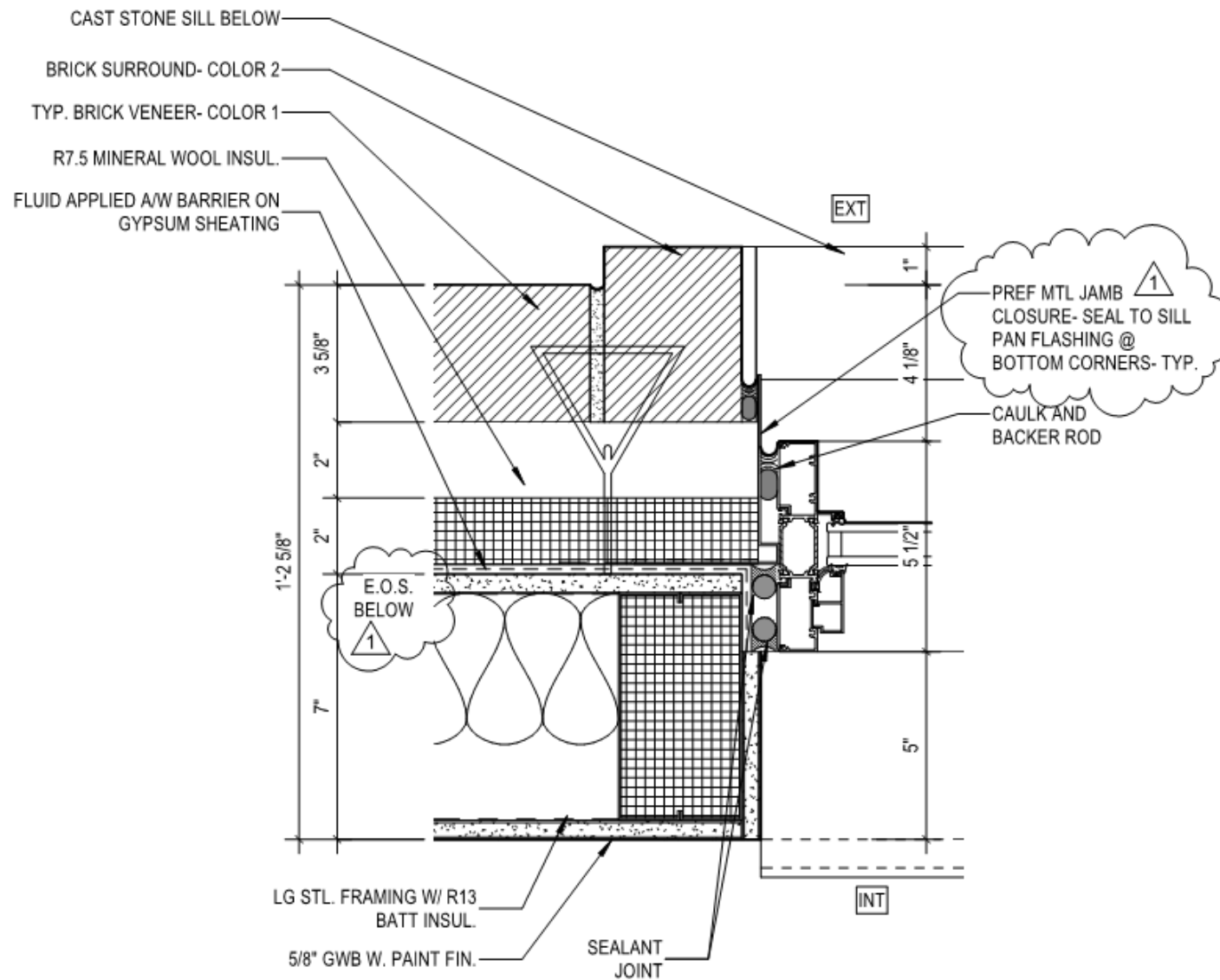
GALE

PEER REVIEW COMMENTS

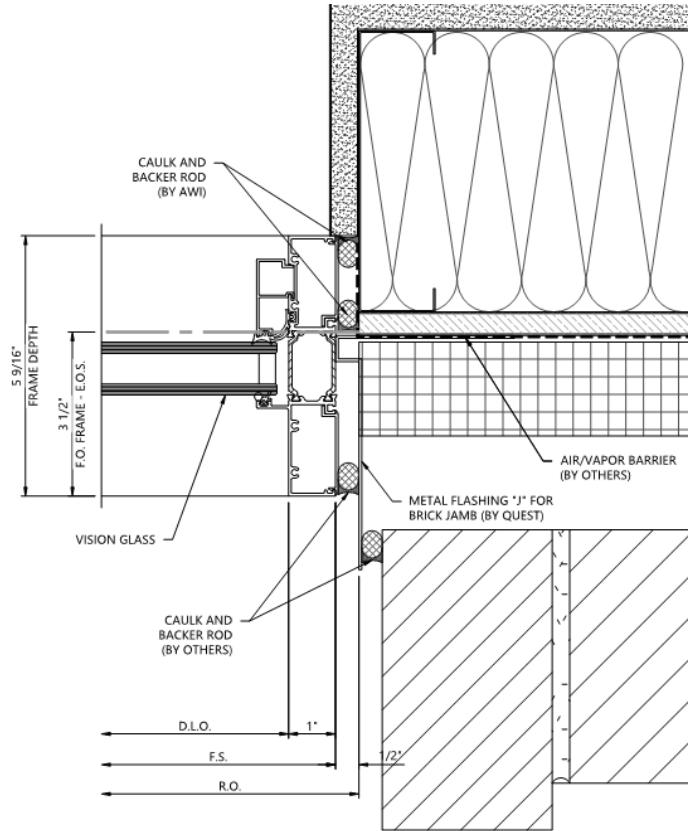
By Jason Wagner Jan 05, 2016

Note: Gale's services are limited to provide commentary on design and construction documents prepared by others. The Architect of Record is solely responsible for all aspects of the design, including drawings, details, specifications, and product selection. Our services do not include preparation of plans, details, and specifications or approval of submittals.

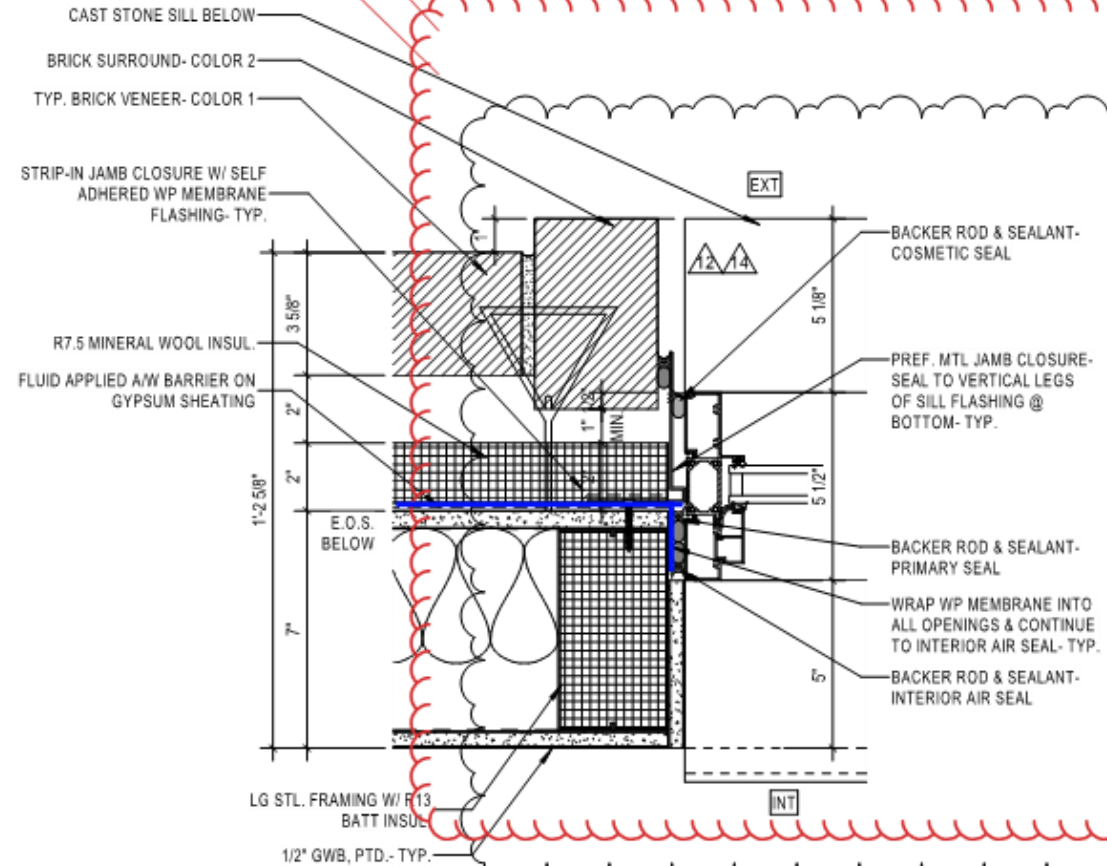
Case Study 3 – Sequencing (Access)



Design Detail



Window Wall Shops



Air Barrier Shops

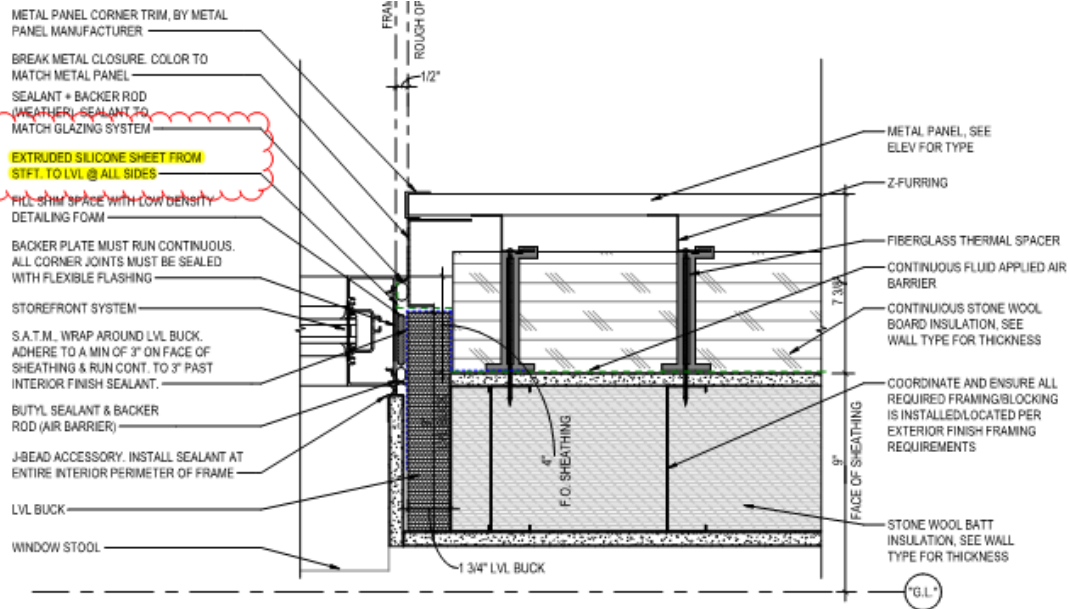


As-built Conditions

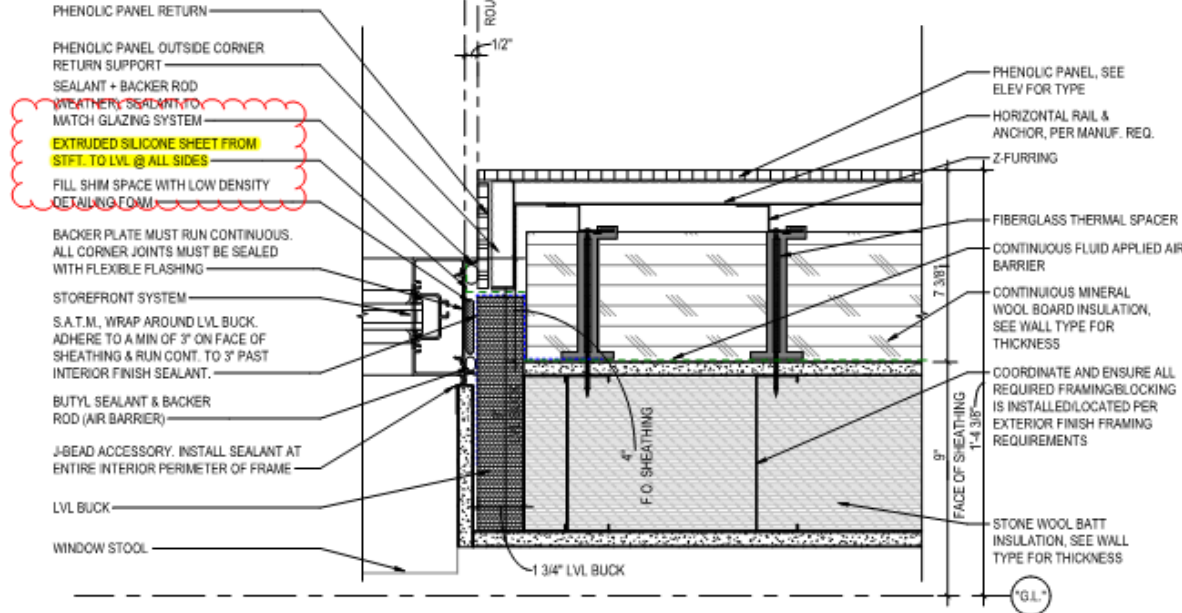
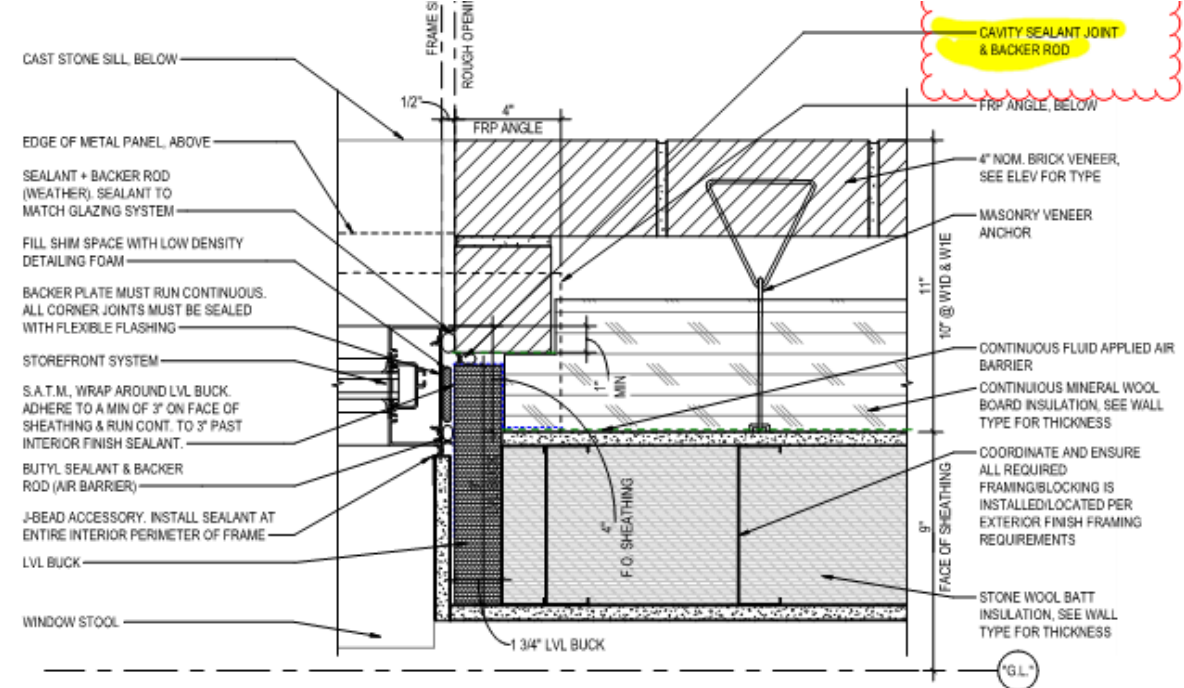
Case Study 4 – Atypical Details



Case Study 5 - Closures

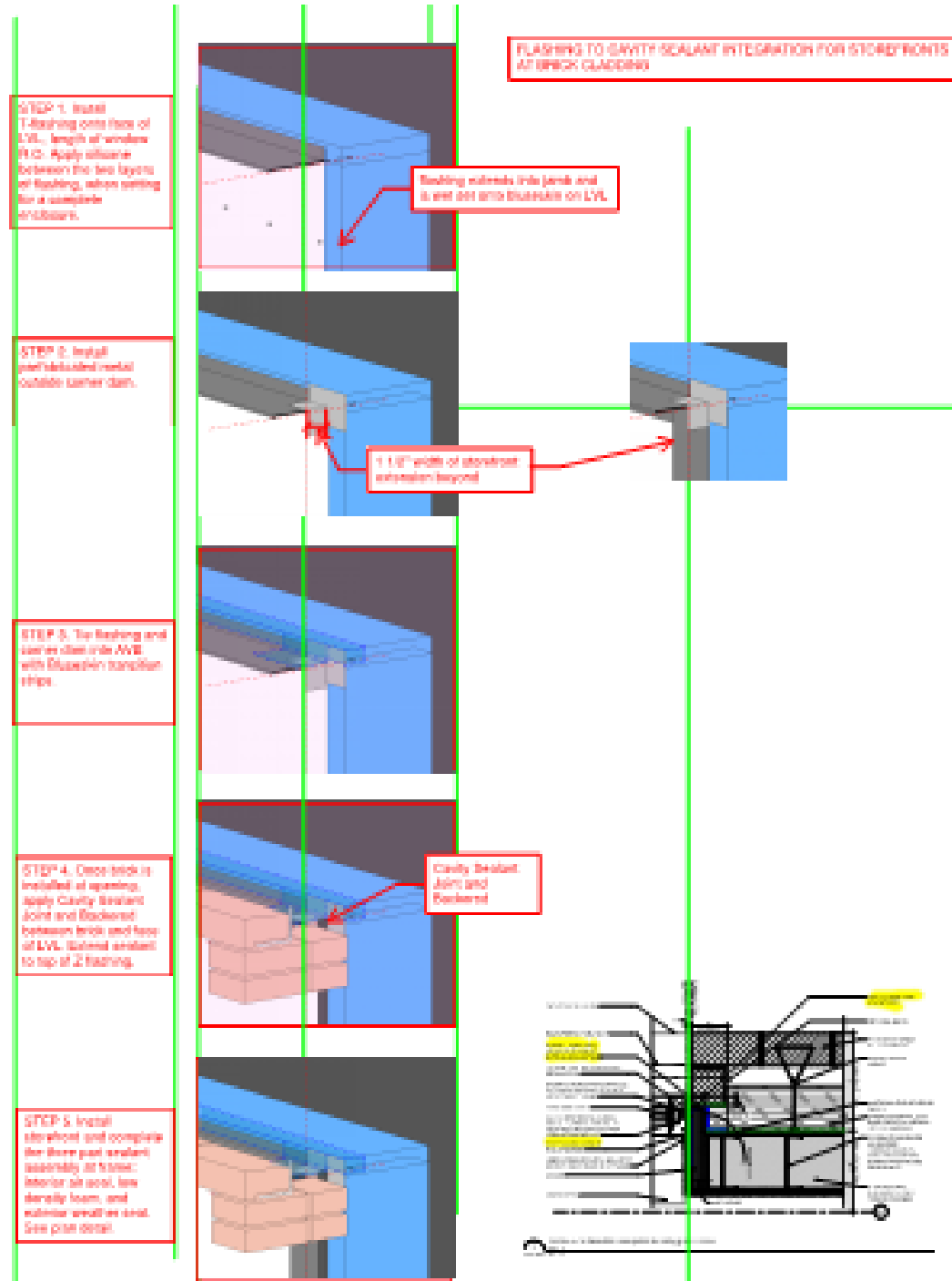


TYPICAL 4.5" STOREFRONT JAMB @ METAL PANEL @ WALL TYPES



TYPICAL 4.5" STOREFRONT JAMB @ PHENOLIC PANEL @ WALL

TYPES "W3" "



Jamb Flashing



Questions?



Derek J. Ziese, PE

Project Manager

djz@gainc.com

443-279-4500

air barrier
abaa
association of
america
**BUILDING
ENCLOSURE
CONFERENCE**

2022
RESTON
VA

Thank You Sponsors!

 **DÖRKEN**

DELTA®

HIGH PERFORMANCE AIR & MOISTURE BARRIERS

TMI[®]
AIR BARRIER TESTING

NCFI
POLYURETHANES


We finish strong.
Master Wall Inc.
Building a Culture of Excellence

Henry[®]
A **CARLISLE** COMPANY


HOHMANN & BARNARD, INC

CARLISLE
COATINGS & WATERPROOFING

 **PROSOCO**

 **TREMCO**
Construction Products Group

BE BUILDING
ENCLOSURE

air barrier
abaa
association of
america


XCELUS

 **Telligent**
Masonry Construction

**Architect's
Newspaper**