### air barrier association of america CONFERENCE & TRADE SHOW MAY TIAKE

AIR BARRIER EDUCATION TRACKS FOR THE CONSTRUCTION INDUSTRY

# UNDERSTANDING DIFFICULT CRITICAL TRANSITIONS OF AVB SYSTEMS

#### COREY S ZUSSMAN AIA, NCARB, ALA, REWC, RWC, RRO, CDT, CQM,

LEED® AP BD+C

PEPPER CONSTRUCTION



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#### **Course Description**

This presentation will identify the many difficult critical transitions on complex building types and will give the tools to better understand the reasoning and sequencing needed to complete the installation in order to prevent constructability issues and potential rework in the field through drawing detailing and correlating construction photos of actual installations and explanations of each conditions.

#### Learning Objectives

air barrier

america

- 1. Identify locations of difficult critical transitions regarding the installation of the air, vapor, and moisture barrier through construction drawings and correlating photos of correct and incorrect installations.
- 2. Confidently review drawings and in-place work through an understanding of the detailing needed to be located on the drawings and in the field.
- 3. Learn how to prevent constructability issues during design development and create an action plan for each condition for construction regarding the installation of the air, vapor, and moisture barriers.

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#### 4. Apply the understanding of the installation of the air, vapor, and moisture barriers concerns to the field during the site observation review.



Review the job specific details



Among the most significant challenges for designers and installers today, is the use of unlike materials with questionable compatibility and lack of proper installation execution to form a continuous o air barrier



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#### CONTINUAL STRUCTURAL SUPPORT

PREVENTS THE VIBRATION OF THE MEMBRANE, WHICH

WILL LEAD TO FAILURE.

**REQUIREMENT OF AN AIR BARRIER** 

#### 

**SIX SIDES OF INSTALLATION** 

COMPATIBILITY WITH ADJACENT MATERIALS

A PRODUCT THAT THE MANUFACTURE DECLARES AND HAS INSTALLATION INSTRUCTIONS AS AN AIR AND/OR VAPOR BARRIER



# WHAT IS WRONG HERE?

## **CURTAINWALL INSTALLATION**



### JAMB / ETA INSTALLATION

CHARLES STATES









#### LOCATION OF AIR BARRIER & THERMAL BREAK IS EXTREMELY IMPORTANT

**—THERMAL BREAK LOCATION** 

#### WRONG SIDE OF INSULATION COULD CREATE CONDENSATION

IN COLD CLIMATES...WARM INTERIOR AIR BYPASSES THE INSULATION AND COOLS, CONDENSING ON THE AIR BARRIER...LEAVING MOISTURE ON THE INTERIOR SIDE OF THE AIR BARRIER AND POTENTIALLY GETTING INTO THE BUILDING

LOCATION OF THE THERMAL BREAK MUST BE WITH-IN THE WARM SIDE OF THE WALL...IF ON THE COLD SIDE, THE ALUMINUM WILL BE COLD ON BOTH SIDES OF THE THERMAL BREAK.





#### ENGINEERED TRANSITION ASSEMBLY (ETA)



**AVB MEMBRANE** 

**PRIMARY SEALANT** 

SPRAY POLYURETHANE FOAM



### WINDOW/METAL PANEL DETAILING

4. Astrice

### WINDOW/METAL PANEL DETAILING



### WINDOW/METAL PANEL DETAILING



# METAL PANEL / CURTAINWALL DETAILING

### METAL PANEL/CURTAINWALL DETAILING





### METAL PANEL/CURTAINWALL DETAILING



### **ROOFING/WINDOW DETAILING**





## CURTAINWALL RAILING DETAILING





### SHELF ANGLE DETAILING






**RIGID INSULATION** 

**OPEN ENDS!** 



AVB MEMBRANE AND BRIDGING, WITH MEMBRANE OVER BRIDGING

**MEMBRANE BRIDGING** 

CONDENSATION POPENTIAL INTO BUILDING

MASONRY FLASHING, BRIDGING, & SEALANT



AVB MEMBRANE DOWN TO LINTEL

SPF INSULATION UNDER BRIDGING – FILLING GAP













# SHELF ANGLE DETAILING & WALL EJ





## SHELF ANGLE DETAILING & WALL EJ



#### **PRECURED SILICONE ETA**



#### **AVB MEMBRANE**

### SPF INSULATION OR MINERAL WOOL

CUT THE STEEL SHORT OF THE EJ LOCATION

RIGID INSULATION WILL NEED TO BE RABBETED FOR PROPER MOVEMENT

**AVB MEMBRAN** 

# SHELF ANGLE DETAILING & WALL EJ

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# SHELF ANGLE CONCERNS

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# **<u>CLEARANCE CHALLENGES</u>**



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# **FIREPROOFING SOFFIT CONCERNS**

## FIREPROOFING SOFFIT CONCERNS







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# FIREPROOFING SOFFIT CONCERNS

### **CURTAINWALL SOFFIT DETAILING**

NO CLEAR AVB LINE OF CONTINUITY

NO CONTROL OF COLD IN VERTICAL TUBES

WET/DRY SIDE OF CURTAINWALL ISSUE – COLD BOTTOM HORIZONTAL MULLION



ADD RIGID INSULATION AT BOTTOM, RUN MINERAL OR SPF IN VERTICAL, CLOSE OFF VERTICAL AT BOTTOM

GLAZE IN BOTTOM TRIM AROUND INSULATION, INSTALL ETA AT ALL JOINTS IN TRIM; AS METAL TRIM BECOMES AVB MEMBRANE

### **CURTAINWALL SOFFIT DETAILING**



INSTALL SEALANT JOINT OR ETA AT AVB LINES FOR WINDOW AND SOFFIT



### **SOFFIT DETAILING**





### **SOFFIT DETAILING**

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#### **ROOFING, TURNED DOWN**

TRANSITION MEMBRANE – UNDER ROOFING AND UNDER AVB 4"-6"

**AVB MEMBRANE** 

**ADDED FRAMING AND SHEATHING** 

ADDED WOOD BLOCKING AND METAL TRIM

















# AIR BARRIER HORIZONTAL ISSUES

# **AIR BARRIER HORIZONTAL ISSUES**







# **SLOPED ROOF TO WALL TRANSITION**

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## **SLOPED ROOF TO WALL TRANSITION**

AVB TRANSITION MEMBRANE

**MASONRY FLASHING** 

ROOF & WALL AVB MEMBRANE

POTENTIAL AVB MEMBRANE LOCATION

GROUT SOLID UNDER THE AVB MEMBRANE



ROOFING MEMBRANE OVERLAPPED THE AVB TRANSITION MEMBRANE

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ROOFING VAPOR BARRIER

# METAL PANEL /ROOFING DETAILING

# METAL PANEL /ROOFING DETAILING





### METAL PANEL /ROOFING DETAILING



ROOFING

AVB TRANSITION MEMBRANE

METAL PANEL FRONT FACE AVB PLANE

METAL PANEL BACK FACE AVB PLANE


## ROOF TO WALL TRANSITION





## **ROOF TO WALL TRANSITION**







## **ROOF TO WALL TRANSITION**

#### **SEALANT**



# **ROOF & SKYLIGHT DETAILING**





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## **ROOF & SKYLIGHT DETAILING**

#### ROOFING MEMBRANE OVERLAPPING THE AVB TRANSITION 4"-6"



#### **AVB TRANSITION MEMBRANE**

#### **WOOD BLOCKING**

#### **ROOF VAPOR BARRIER**

## **SLOPED ROOF TO WALL DETAILING**

### <u>SLOPED ROOF TO WALL DETAILING</u>



### <u>SLOPED ROOF TO WALL DETAILING</u>



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## SCUPPER DETAILING

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#### TRANSITION MEMBRANE

#### ROOFING FLASHING ONTO SCUPPER METAL

#### ROOFING FLASHED ONTO SCUPPER METAL

#### ROOFING ONTO AVB MEMBRANE 4"-6"



#### AVB MEMBRANE INTO OPENING AND UP BACK OF PARAPET 6"-8" FOR PROPER ROOFING OVERLAP

#### **SCUPPER METAL**

**AVB MEMBRANE** 

**SCUPPER DETAILING** 

**TRANSITION MEMBRANE** 



## DETAILS AT EXISTING BUILDINGS



## COMPATIBILITY AT TRANSITIONS

SOUTH

STREET

THOR

atsitab



### **COMPATIBILITY AT TRANSITIONS**

#### AVB MEMBRANE UNDER METAL ROOF

TRANSITION AVB MEMBRANE (BUTYL BASED OR COMPATIBLE MEMBRANE UNDER AND OVER ROOF MEMBRANE

**ROOF MEMBRANE** 

## CURTAINWALL / STOREFRONT ATTACHMENT



## Curtainwall / Storefront Attachment



## Curtainwall / Storefront Attachment





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### **GUTTER / FASCIA CONCERNS**














Problems/ concerns might initially appear very large in the beginning of the conversation...

At the end of the meeting, the concerns are typically small and manageable

It's all about perspective, openness to conversation, and mutual problem solving...



This concludes The American Institute of Architects Continuing Education Systems Course

## COREY S ZUSSMAN AIA, NCARB, ALA, REWC, RWC, **RRO, CDT, CQM, LEED® AP BD+C** 411 LAKE ZURICH ROAD, BARRINGTON, IL 60010

CZUSSMAN@PEPPERCONSTRUCTION.COM







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