



Heitmann & Associates, Inc.

Site Observation Visit# 04

Report #04-Mockup

Project Name:	Webster University- ISB
Project Location:	Webster Groves
Project Number:	2014061.20
Client:	Webster University
Report Prepared By:	Ryan Fennewald - Heitmann & Associates, Inc.
Date of Report:	November 16, 2016

A. Introduction

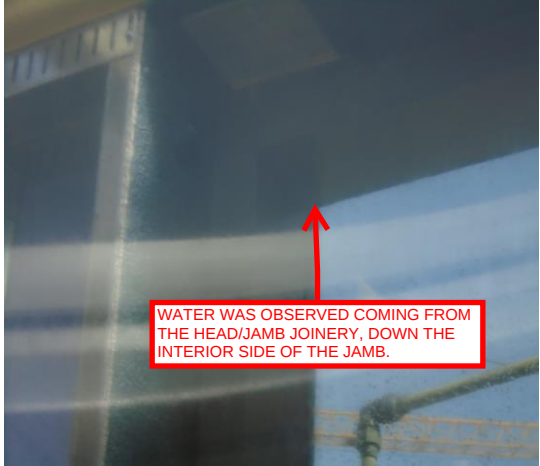
1. Heitmann & Associates, Inc. (HAI) representative Ryan Fennewald arrived at the project site on October 28, 2016 and November 2, 2016 to observe the Mockup testing conducted by Mid America Testing Laboratory and investigation of areas where leaks occurred from the latter date.

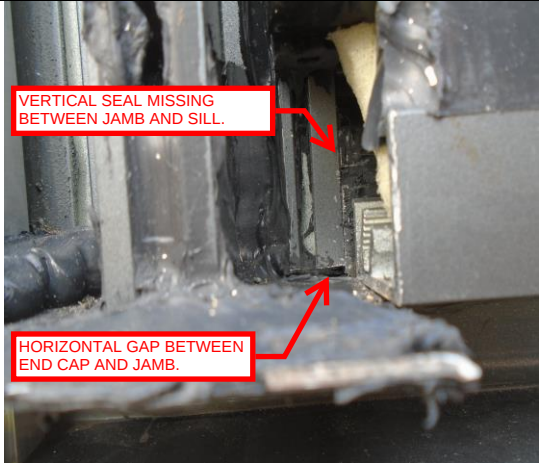
B. General Status

1. On October 28, 2016, air and static water testing was conducted by Mid America Testing Laboratory on the mock up. The testing lab concluded that an air reading could not be determined because there were too many open cavities in the system and the AVB did not continue over the top of the mock up and down the interior side of the parapet. The testing lab proceeded to the static water test. Differential pressure was difficult to obtain and hold, therefore, the testing lab left the plastic on the exterior face of the mock up and only opened the plastic at the window that was being tested. A failure occurred at the middle window unit that leaked at the sill/jamb condition as well as the head/jamb condition (reference photographs 4.2, 4.4, and 4.5).
2. Before our arrival on November 2, 2016, Paric/NGG began to disassemble exterior components for investigating the leaks and remediations to be made. They observed that a vertical joinery seal was not installed at the face of the sill/jamb condition and used a spray nozzle to recreate the leak (reference photograph 4.9). NGG confirmed that this seal will be installed, although they will not remove the glass, on the mockup, therefore the entire length of the joint will not be sealed. Although a vertical seal was missing, the mullion end cap was not properly sealed to the bottom of the jamb. This left a hole that also may have contributed to the water intrusion. Both of these seals are critical to prevent water intrusion and checked throughout installation that they are adequately installed.
3. During our observation on Wednesday, HAI noted that the head/jamb condition should be hose tested by isolating the components below the head flashing to recreate the leak the head/jamb joinery. After isolating this area water was introduced and began leaking into the vertical and out below the sill. It was determined that the joinery seal that was missing at the sill was also missing at the head. NGG confirmed that this seal will be installed, although they will not remove the glass therefore the entire length of the joint will not be sealed.

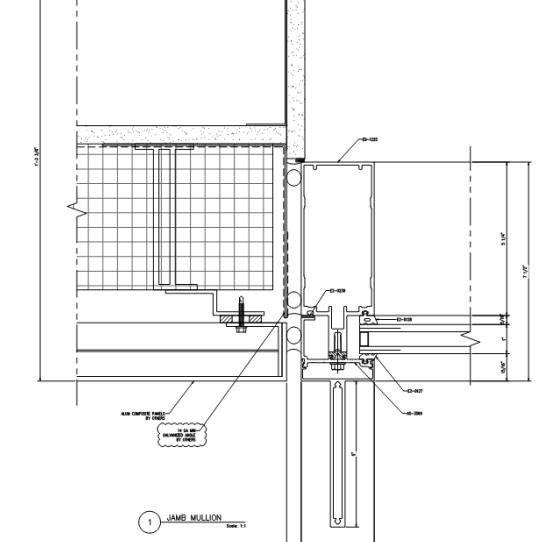
C. Observations & Comments

DATE	DESCRIPTION		COMMENTS/ RESOLUTION	STATUS
4.1	View of mockup exterior of the far left window unit under a static test of 10 PSF.		Static pressure water testing.	Mockup testing in progress
4.2	View of mockup exterior of the middle window unit under a static test of 10 PSF. Refer to photographs 4.4 and 4.5 for view of leaks.		Static pressure water testing.	Mockup testing in progress
4.3	View of mockup exterior of the far right window unit under a static test of 9 PSF.		Static pressure water testing.	Mockup testing in progress

4.4	Leak that occurred at 4 minutes into the static test. The leak appeared to come from the jamb/sill joinery condition.		The leak appeared to come from the jamb/sill joinery condition.	NGG investigated and concluded that a joinery seal between the sill and jamb was missing.
4.5	Leak that occurred at approximately 13 minutes into the static test. The leak appeared to come from the jamb/head joinery condition.		The leak appeared to come from the jamb/head joinery condition.	During investigation and hose testing, it appeared the leak was caused by a joinery seal between the head and the jamb.
4.6	Vertical pressure bar that is sealed at the bottom to the mullion end cap.		HAI did not agree with sealing the bottom of the pressure bar to the mullion end cap. This will trap water in the system.	A half inch slot is to be cut into the sealant to allow any water in the glazing cavity to weep properly.

4.7	Mullion end cap appeared to be bent/deformed. These mullion end caps extend under the mullion and over the primary perimeter seal.		If this part is deformed then there may be an issue with sealing the perimeter seal in this area.	These items need to be checked under a quality control before additional sealant is added in areas around it.
4.8	Investigating jamb/sill joinery where leak occurred. NGG removed the pressure bar for inspection. Refer to following photograph for a closer look.		Pressure bar was removed to investigate further.	Mockup development in progress
4.9	Mullion end cap not fully sealed to jamb as well as sill horizontal not sealed to jamb.		NGG noted that a vertical seal was missing at the sill/jamb joinery. Also note that a horizontal gap is between the end cap and the jamb. This will allow water to infiltrate.	Both of these seals are critical in preventing water infiltration and needs to be installed properly.

4.10	Jamb appeared to not be sealed to head horizontal.		It appeared that the head horizontal was also missing a vertical seal where it joins the jamb. This is similar to photograph 4.9 above.	These seals are critical in preventing water infiltration and needs to be installed properly.
4.11	Secondary seal appeared to stop at jamb.		The outer line of sealant appears to stop as it reaches the jamb. This seal needs to be continuous and marry to the outer seal in the jamb.	The outer seal needs to be installed per the drawings.
4.12	Parapet cap removed to install more sheathing and extend AVB back to the interior side.		The parapet cap was not installed to performance requirements.	Paric added sheathing and AVB to make the parapet cap as close to job condition as possible.

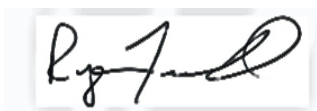
4.13	Jamb mullion at metal panel transition does not match mock up shop drawings. No perimeter seal is visible nor the stainless steel flashing.		Panel to glazing transition does not appear to match the shop drawings.	Coordinate location of metal joint filler and perimeter seals so this doesn't conflict with two lines of sealant on the project.
4.14	Detail 1/M15 for the above condition.		Panel to glazing transition does not appear to match the shop drawings.	Coordinate location of metal joint filler and perimeter seals so this doesn't conflict with two lines of sealant on the project.

Summary

Installation of framing members need to be installed per installation instructions. Critical seals must be installed and a quality control check needs to occur before components are installed on the building. All changes made on the mockup need to be implemented on the As-Built shop drawings for use in the field.

END OF REPORT

Respectfully submitted,
HEITMANN & ASSOCIATES, INC.



Ryan Fennewald
Engineering Consultant