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February 7, 2007

Armada Hoffler Construction Company
222 Central Park Avenue, Suite 1200
Virginia Beach, VA 23462

Attn: Mr. James McRoberts

Re: Water Leak Test of 6th Floor Slender-Wall Panel (Panel #SWP 15/28)
Virginia Beach Town Center – Westin Hotel Tower
Virginia Beach, Virginia
CTI Project No.: 00G-100

Dear Mr. McRoberts:

As requested, on February 2, 2007, CTI Consultants, Inc. conducted a fenestration water leak test of an exterior wall panel at the site of the above referenced project. These services were performed in accordance with our Proposal dated November 29, 2006, and the client's executed work order number 3-117-2-8900.

PURPOSE AND SCOPE

The purpose of this test was to determine if the method of installing the Slender Wall panels was sufficient to resist water infiltration as per the developer's criteria. In addition, the test was selected to determine if a repaired panel would also withstand water infiltration at the given condition. The testing was to be conducted at an initial vacuum load pressure of 9 Pounds Per Square Foot, PSF. If the subject panel passed at the initial load, the load was to be increased until water infiltration occurred.

PROJECT DESCRIPTION

The hotel and conference center tower is a 38 story, pile supported, cast-in-place concrete structure. The exterior walls consist of pre-cast "Slender Wall" curtain wall panels as manufactured by Smith – Midland of Midland, VA, and glass curtain walls.

The Slender Wall panel chosen for testing was located on the sixth floor on the south side of the southeast corner of the tower. The panel designation was (SWP 15)/28. The tested Slender Wall panel had been installed on the building structure and sealed along all adjacent sides to

accompanying panels. This panel required some patching and repair due to unspecified manufacturing / handling / installation difficulties, and the performance of the repaired area was to be evaluated through this current testing process. The tested area measured 84 inches wide by 72 inches high and encompassed the referenced major patched area in the bottom left corner of the test chamber, when looking at the panel from the inside of the room. Please see photo #1.

TEST DESCRIPTION

Testing of the subject panel was carried out in accordance with AAMA 503-03, "Voluntary Specification for Field Testing of Storefronts, Curtain Walls, and Sloped Glazing Systems", utilizing testing methodology per ASTM E1105-00, Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference.

A vacuum chamber was attached to the interior side of the panel. The vacuum chamber was constructed and sealed to the panel and building frame and a clear vinyl sheeting was applied to complete the test chamber. Please see Photo #1. CTI provided all instrumentation and testing equipment to conduct and monitor the test.

CTI's spray rack was attached to a swing stage on the exterior of the building wall. The spray rack was stationed to maintain a stand-off of twelve inches from the wall panel. The water spray consistently wetted an area of 48 inches by 140 inches at a rate of 4.67 gallons per minute per square foot at a pressure of 15 PSI delivery to the spray rack. The rack was positioned with its long axis in the horizontal plane. Please see Sketch #1. Employing this manner of positioning, the rack was moved vertically into three positions. The purpose of the three positions was to cover at least one-third of the test area of the panel at each position. The duration of the testing was fifteen minutes at each position. It is important to note that the lower one-third of the panel was exposed to residual cascading water flow from the above rack positions, resulting in 45 minutes of testing exposure. The middle third was subjected to 30 minutes of testing exposure.

The testing was conducted at three different vacuum pressures. The first setting was at 9 Pounds Per Square Foot, PSF. The total duration of testing at this pressure was 45 minutes, with each one-third section of the panel receiving 15 minutes spray each. As noted in the previous paragraph, the two lower thirds of the panel were exposed to 30 and 45 minutes of testing exposure due to the cascading of the water from the above spraying action and that the entire test area was continuously exposed to the vacuum pressure maintained in the chamber. The equivalent wind load at 9 PSF is 60 MPH.

The second vacuum pressure was set at 35 PSF. This equates to a wind load of 119 MPH. At Armada Hoffler's direction, the spray rack was positioned to spray the top third of the panel test area allowing the cascading water to flow down the wall to maintain a wetted exterior surface of the two lower thirds of the panel. The total exposure time was 15 minutes at this vacuum pressure.

The third and final vacuum pressure was set at 71 PSF. This equates to a wind load of 168 MPH. Again at Armada Hoffler's direction, the spray rack remained in position to spray the top third of the panel test area allowing the cascading water to flow down the wall to maintain a wetted exterior surface of the two lower thirds of the panel. The total exposure time at this vacuum pressure was 15 minutes.

The testing commenced at 11:45 AM and concluded at 1:00 PM. The ambient air temperature was 38° F. All testing was conducted in accordance with AAMA 503-03 and ASTM E1105-00.

TEST RESULTS

At a test load of 9 PSF, 60 MPH equivalent wind load, no leakage was observed.
At a test load of 35 PSF, 119 MPH equivalent wind load, no leakage was observed.
At a test load of 71 PSF, 168 MPH equivalent wind load, no leakage was observed.

SUMMARY AND CONCLUSIONS

At all testing pressures, no water leakage was observed. Therefore, under the prescribed conditions, the tested area of the panel met the initial criteria. Failure was not determined because the test was stopped when no water infiltration was detected after testing at a 71 PSF load.

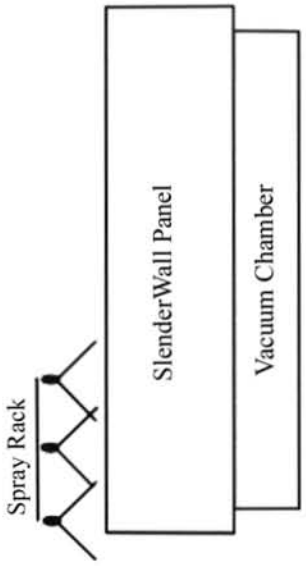
CLOSURE

We thank you for allowing us to perform the testing of your panel. If you have any questions, please do not hesitate to contact us. We look forward to being of service to you in the future.

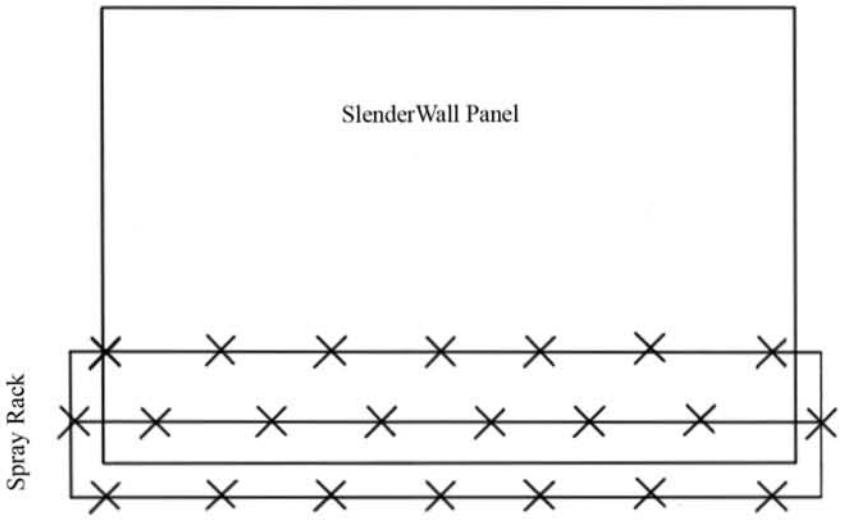
Sincerely,
CTI CONSULTANTS, INC.

Darrell L. Darrow
Special Projects Supervisor

Photo #1
Vacuum Chamber



Spray Rack Positioned at Bottom Third
of the Panel Test Area



Spray Rack Positioned at Bottom Third
of the Panel Test Area

Sketch #1