

Pos-I-Tie® Air and Water Penetration Test Brick Veneer to Steel Studs

**Air Infiltration and Water Penetration Testing of a Mock-Up Air Barrier Back-Up Wall Assembly for Compliance with Chapter 13, "Energy Conservation" in the Commonwealth of Massachusetts State Building Code, Effective July 1, 2001.**

Test Performed By:

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We report herewith the results of air infiltration and water penetration of a mock-up air barrier back-up wall assembly. The tests were conducted on April 3, 2001 and were witnessed in whole or in part by:

David Lite - Carlisle Coatings and Waterproofing Inc.

Keith Sportack - Pace Representatives, Inc.

Paul Curtis - Heckmann Building Products Inc.

## **I. BACKGROUND**

### **A. Air Barrier Back-Up Wall Assembly**

The mock-up air barrier back-up wall assembly was constructed in the laboratory test chamber in the following manner:

1. A back-up wall of 1/2" thick Georgia Pacific Dens Glass was installed over 16 gage 2" x 6" steel studs set at 17" on center. The Dens-Glass sheathing contained one horizontal and one vertical joint.
2. The Dens-Glass back-up wall was primed with two coats of Carlisle 702 primer and allowed to dry. Carlisle 705 cavity wall membrane was installed over the primed Dens-Glass. The wall membrane was pressed into place on the sheathing and at vertical and horizontal joints in the membrane.
3. Dow Z-Mate 2" thick extruded polystyrene insulation boards were placed over the Carlisle membrane.
4. 2-1/2" long Pos-I-Tie® wall tie anchors were screwed into the insulation, air barrier, Dens-Glass, and steel studs of the wall assembly in three horizontal rows spaced at 17" and three vertical columns spaced at 16", for a total of nine wall tie

anchors.

The completed mock-up air barrier back-up wall assembly measured 62" wide x 78" high.

#### **B. Air Barrier Air Leakage Requirements**

In Chapter 13, 'Energy Conservation.' in the Commonwealth of Massachusetts State Building Code, which took effect on July 1, 2001, Paragraph 13.04.3, 'Air Leakage,' contains the following requirements:

1. The air barrier is to be continuous, with all joints made airtight.
2. The air barrier shall have an air permeability not to exceed 0.004 cfm per square foot under a pressure differential of 0.3 inches of water (1.57 psf).
3. All penetrations in the air barrier shall be made airtight.

### **II. TEST PROCEDURES**

The mock-up air barrier back-up wall assembly was tested for air infiltration in the laboratory chamber for conformance with the requirements contained with the revisions to Paragraph 13.04 in Chapter 13 of the Commonwealth of Massachusetts State Building Code, as described in item 1B, above.

Testing was performed in accordance with applicable provisions of ASTM: E 283, "Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtainwalls, and Doors Under Specified Pressure Difference Across the Specimen," and ASTM E 331, "Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference."

### **III. TEST RESULTS**

The following test results were obtained

#### **A. Air Infiltration @ 1.57 PSF**

Measured Air Leakage	0.0 cft
Calculated Air Infiltration	0.0 cfm per square foot
Allowable Air Infiltration	0.004 cfm per square foot

**The mock-up air barrier back-up wall assembly met the State Code requirements for measurement of air infiltration through the air barrier back-up wall.**

#### **B. Water Penetration @ 6.24 PSF**

Water was applied to the exterior side of the mock-up air barrier back-up wall assembly at the standard rate of 5.0 gallons per hour per square foot while a negative chamber pressure of 6.24 was maintained on the interior side of the mock-up.

**No leakage was observed on the interior surface of the steel-framed back-up wall assembly during the 15 minute test period.**

#### **IV. COMMENTS**

The mock-up air barrier back-up wall assembly met the requirements in Chapter 13, 'Energy Conservation,' in the Commonwealth of Massachusetts State Building Code, relative to air leakage through air barrier seams, air barrier membrane, and penetrations in the air barrier made by the Heckmann Pos-I-Tie® wall tie anchors.

#### **Photos From Test**



