

SOIL AND MATERIALS ENGINEERS, INC.
MASONRY FLEXURAL BOND STRENGTH TESTING

SME PROJECT No. PM31660

DATE: Prisms Constructed - September 24, 1998
Tested - October 23, 1998

PROJECT: BLOK-FLASH™ - Water Penetration Performance Program

TEST LOCATION: SME Laboratory, Plymouth MI.

PANEL MATERIALS: Concrete Masonry Units (CMU) - 8" Flanged Units
Mortar Type S - Masonry Cement
Blok-Flash - 8" Type pans with Bridge Units
Flashing - Through-wall - 40 mil EPDM

PANEL CONSTRUCTION:
Two Block Prisms - ASTM C-1314-95
Size - 16" length x 16" height

PROCEDURE:

A. VISUAL AND DIMENSIONAL VERIFICATION

Visual review of the construction of the test prisms was performed to verify compliance with the manufacturer's recommended flashing installation details.

B. FLEXURAL BOND

Testing was in accordance with ASTM C 1072-94, Standard Test Method for Measurement of Masonry Flexural Bond Strength. The material used in the construction of the prisms was from the same run and allowed to stabilize prior to use. The client provided one mason to construct the three sets of prisms as follows.

Set 1 - No Flashing - Used as a Base Line

Set 2 - Installed Blok-Flash system per manufacturer's Installation Instructions and Details for non-insulated 8" CMU.

Set 3 - Installed 40 mil - EPDM Through-wall flashing system per the recommended MIM generic details for non-insulated 8" CMU.

The prisms were allowed to cure for 28 days prior to testing. The prisms were tested in a Bond Wrench Test Jig meeting the requirements of ASTM C 1072-94, Section 7, Procedures.

TEST FINDINGS:

A. VISUAL AND DIMENSIONAL VERIFICATION

Review of the flashing system installation and verification of the unit's condition was performed prior to the bond testing. The construction and installation of the flashing systems were in substantial compliance with the manufacturer's specifications or details. No visual deficiencies or variances from the installation instructions or design were observed.

AMBIENT LABORATORY - TEST CONDITIONS:

Temperature - Interior 71.2°F	Barometer 29.70	Rel. Humidity - Interior 34%
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B. BOND STRENGTH

The testing was performed in accordance with the referenced ASTM test procedures for each of the three sets of prism samples. The results of the testing is presented in Table No. 1

MASONRY FLEXURAL BOND STRENGTH TESTING
SME PROJECT No. PM31660
Page 2

TABLE No.1
FLEXURAL BOND STRENGTH

SAMPLE No.	TYPE OF FLASHING	BOND STRENGTH (psi)
A - 1	None	106.1 psi
A - 2	None	101.6 psi
A - 3	None	92.8 psi
A - 4	None	90.5 psi
A - 5	None	95.1 psi
AVERAGE SET A	None - Base Line	97.2 psi
B - 1	BLOK-FLASH	57.5 psi
B - 2	BLOK-FLASH	55.3 psi
B - 3	BLOK-FLASH	56.5 psi
B - 4	BLOK-FLASH	58.4 psi
B - 5	BLOK-FLASH	55.3 psi
AVERAGE SET B	BLOK-FLASH	56.6 psi
C - 1	Through-Wall	6.5 psi
C - 2	Through-Wall	5.7 psi
C - 3	Through-Wall	3.9 psi
C - 4	Through-Wall	5.2 psi
C - 5	Through-Wall	5.7 psi
AVERAGE SET C	Through-Wall	5.4 psi

CONCLUSION:

The three sets of prisms represent typical masonry construction. The testing indicated the prisms constructed with the Blok-Flash system provided 10 times greater bond at the exterior bed joint, than the membrane through-wall flashing system. The Blok-Flash system produced a bond reduction of 41.7% from the base line (no flashing) set of prisms.

Testing of a wall sample which included a 100% wall separation with membrane flashing was not performed. This type of flashing has no bond by design and therefore, the test criteria used (ASTM C1072-94) in this evaluation would not apply to these systems.

Reported By: 
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