CMU99027

MOCK-UP TEST REPORT

CONSTRUCTION WORK OF YONG-GWANG NUCLEAR POWER PLANT UNITS #5 & #6

CNC

TESTING LABORATORY

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369-1, CNC B/D 3F
YANGJAE-DONG, SOCHO-KU, SEOUL, KOREA
TEL : (02) 579-3282~3
FAX : (02) 579-3284
LAB. TEL:(031) 656-6761 /FAX:656-6785

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1. GENERAL

1-1. PROJECT	:	YONG-GWANG NUCLEAR POWER PLANT UNITS #5 & #6
1-2. PROJECT NUMBER	:	CMU-99027
1-2. PLACE OF TEST	:	CNC TESTING LABORATORY
1-3. DATE OF TEST	:	1999. 6. 19
1-4. DATE OF REPORT	:	1999. 6. 22.
1-5. CLIENT	:	SAMHOON MACHINERY

2. WEATHER CONDITION

2-1. WEATHER	:	CLEAR
2-2. TEMPERATURE	:	29 ℃
2-3. RELATIVE HUMIDITY	:	44 %
2-4. ATMOSPHERIC PRESSURE	:	998mb

3. PARTICIPANTS

SEO, WANG-JOONG	(ENGINEER	)	: KOREA ELETRIC POWER CORPORATION
KWOUN, TAE-YONG	(ASSISTMENT MANAGER	)	: HYUNDAI E&C CO., LTD
MO, JONG-SAM	(PRESIDENT	)	: SAMHOON MACHINERY
KIM, JAE-SIL	(PRODUCTION GENERAL MANAGER)		: SAMHOON MACHINERY
KIM, YOUNG-KYU	(ASSISTMENT MANAGER	)	: CNC
JUNG, JIN-DO	(PROJECT MANAGER	)	: CNC
JUNG, JIN-SE	(PRESIDENT	)	: CNC

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4. INSTALLATION SCHEDULE OF SPECIMEN

4-1. INSTALLATION OF CHAMBER BEAM	:	1999. 6. 10.
4-2. INSTALLATION OF HOLLOW METAL DOOR	:	1999. 6. 11.
4-3. CHAMBER CLOSING	:	1999. 6. 11.

5. SPECIMEN DESCRIPTION

5-1. SPECIMEN DIMENSION	:	1065 MM(W) × 2263 MM(H)
5-2. 4BB BUTT HINGE	:	HAGER BB 1168 USP (5′ * 4.5′)
5-3. DOOR ROCK	:	SCHLAGE L9080-42B-US26D
5-4. AUTOMATIC DOOR BOTTOMS	:	NGP - 320N / PEMKO
5-5. DOOR SEAL	:	NGP 125DKB

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6. MOTHOD & RESULT OF TEST

6-1. PRELOAD TEST (50% OF DESIGN WIND PRESSURE : ASTM E-330)

AT +40KG/M² (+8.203 PSF) STATIC PRESSURE UNDER
50% OF POSITIVE DESIGN LOADS FOR 10 SECONDS

SPECIFICATION : NO FAILURE

6-2. STATIC AIR INFILTRATION TEST (ASTM E-283)

AT +7.6KG/M² (+1.567 PSF)
THE MEASURED AIR LEAKAGE AS FOLLOWS

DOOR AREA INFILTRATION

INSTALLATION OF PLASTIC TAPE	:	44.0 cfm
REMOVING OF PLASTIC TAPE	:	51.0 cfm
=> AIR LEAKAGE OF SPECIMEN CRACK	:	7.0 cfm

SPECIFICATION : DOOR AREA IS BELOW 1.25 cfm/ft ($0.116\ m^3/min/m^2$)
ALLOWABLE LEAKAGE : 19.948 ft × 1.25 cfm/ft = 24.9 cfm > 7 cfm

THE RESULTS ARE SATISFACTORY.

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7. SUMMARY

HOLLOW METAL DOOR FOR YONG-GWANG NUCLEAR POWER PLANT, RESULT OF AIR LEAKAGE TEST IS ACCEPTABLE TO THE SPECIFICATION.

SHOULD YOU REQUIRE FURTHER INFORMATION OR QUESTION ON THIS REPORT, PLEASE ASK US SO THAT WE WILL IMMEDIATELY WORK ON YOUR QUESTION AND REPLY TO YOU.

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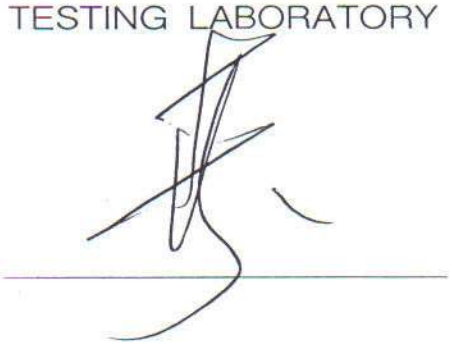

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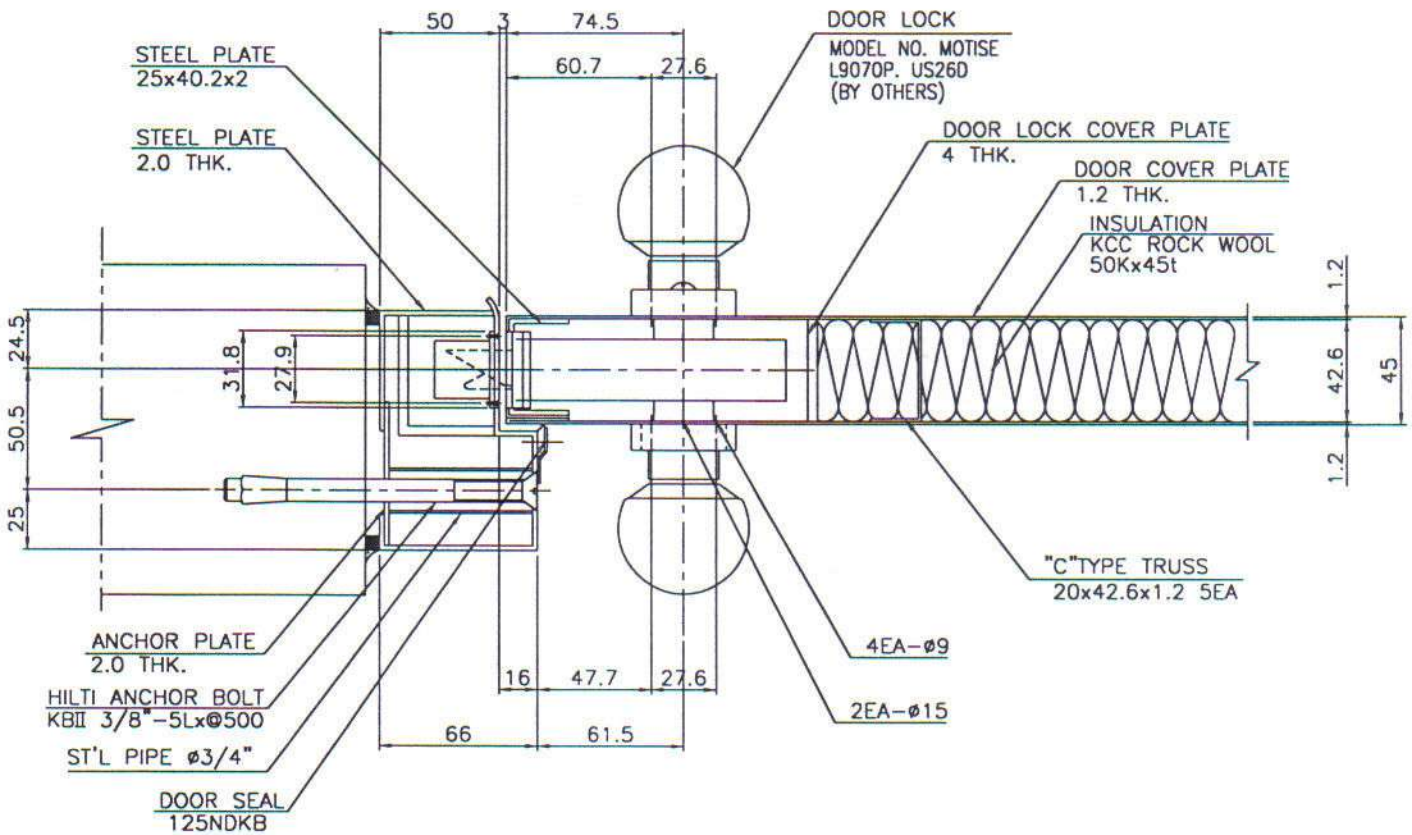
8. DETAIL DRAWING OF SPECIMEN

8-1. JAMB BAR @ CHAMBER



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8-2. HEAD BAR @ CHAMBER

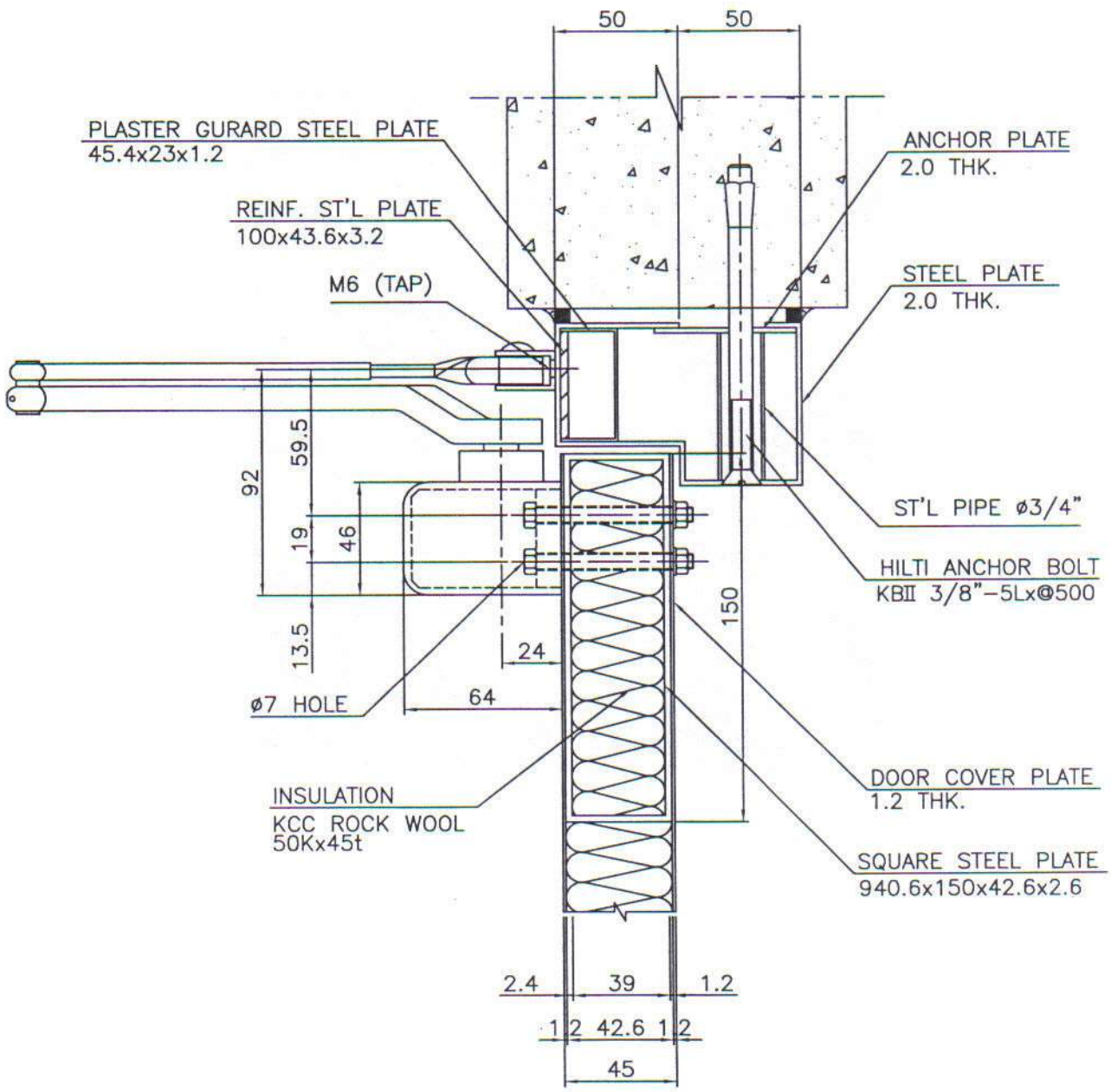

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PHOTO OF MOCK-UP TEST

1. VIEW OF INSTALLED SPECIMEN

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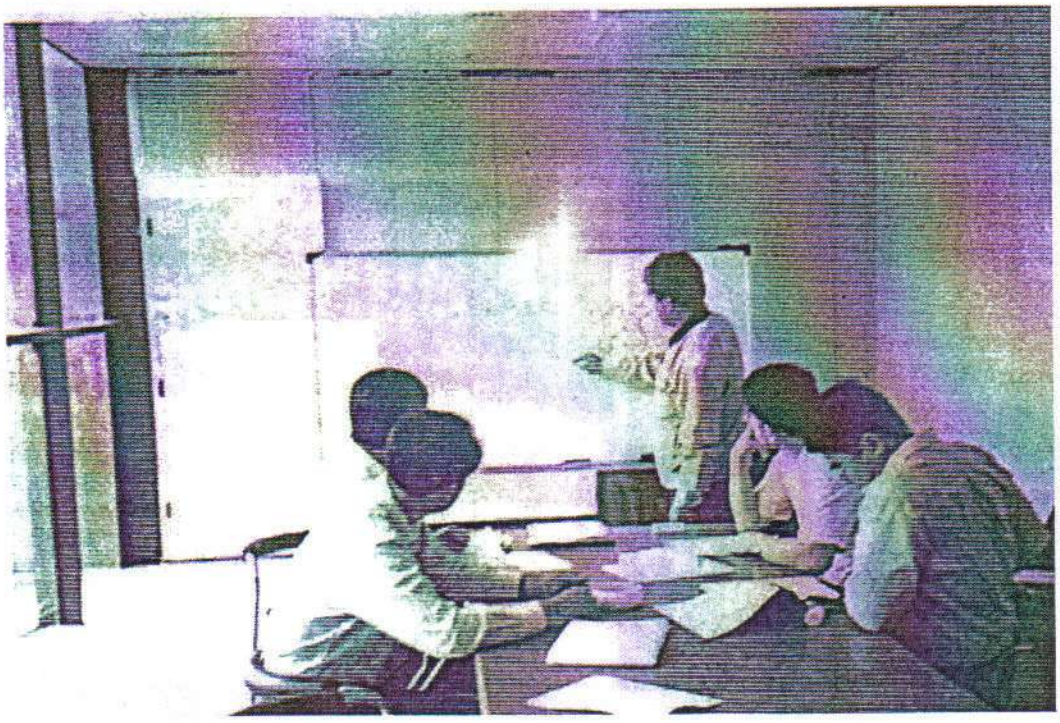
2. EXPLANATION OF MOCK-UP TEST SPEC



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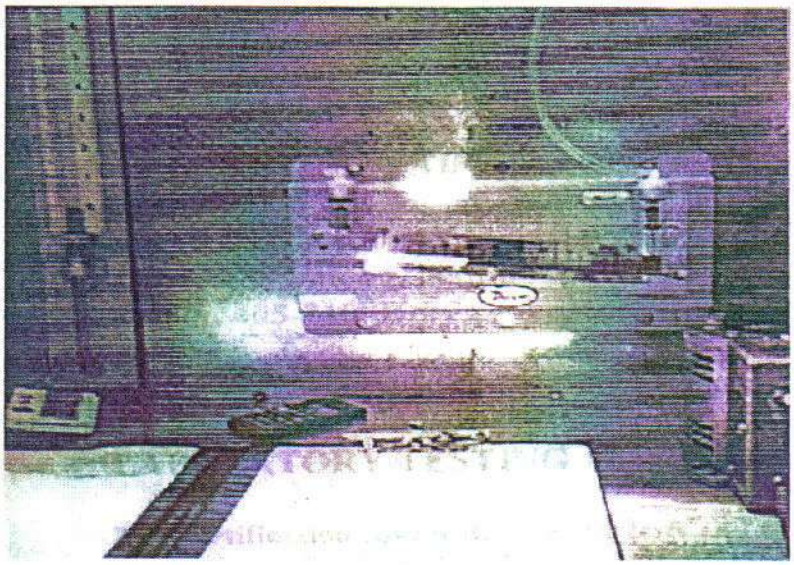
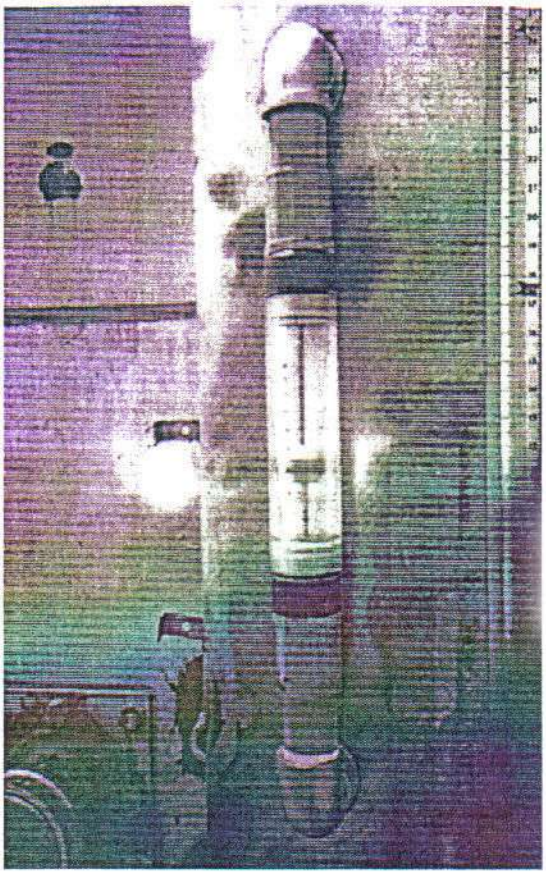
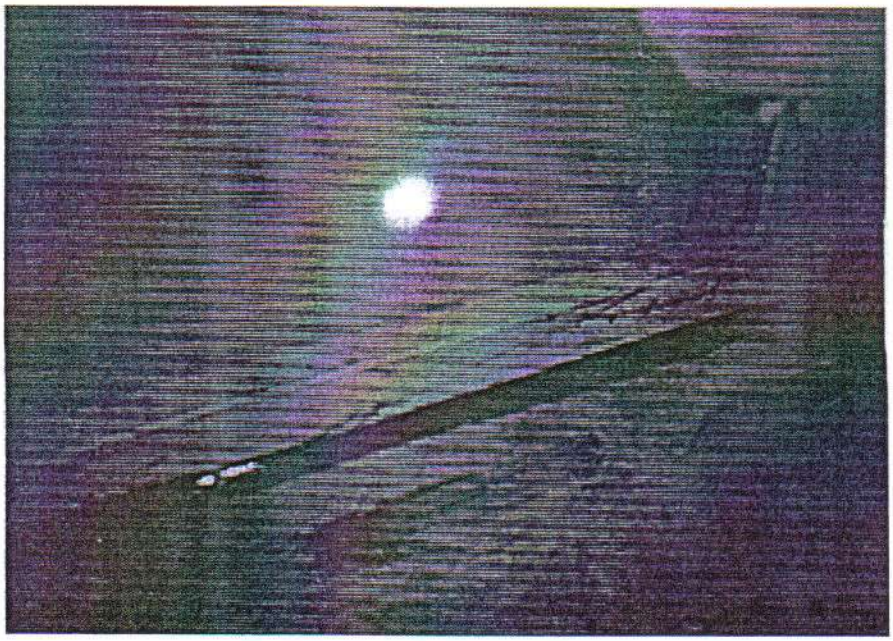
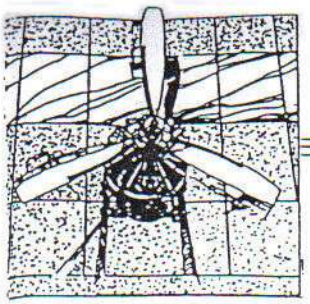
3. STATIC AIR INFILTRATION TEST : ASTM E 283









MID AMERICA TESTING LABORATORY, INC.

10525 SIGNAL HILL DRIVE CATAWISSA, MISSOURI 63015
(314) 257-4722 FAX (314) 257-5425

CERTIFIED LABORATORY

MATL has certified that

CNC TESTING LABORATORY
129 Block 6 Lot
#2 Site of Namdong Industrial Area
696-5, Kojandong, Namdong Ku
Inchon 405-310, Korea

has had their equipment technically certified in the field of

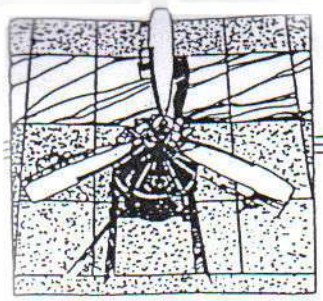
LABORATORY TESTING

This certification covers the specific tests and types of tests listed on the agreed scope of certification. This laboratory meets the requirements of ASTM E 699-79 (1991), "Practice for Criteria for evaluation of Agencies Involved in Testing, Quality Assurance and Evaluating Building Components in Accordance with Test Methods Promulgated by ASTM Committee E-6."

Presented this 5th day of December, 1995.

MID AMERICA TESTING LABORATORY

Rick A. Heitmann, President



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SCOPE OF CERTIFICATION

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129 Block 6 Lot
#2 Site of Namdong Industrial Area
696-5, Kojandong, Namdong Ku
Inchon 405-310, Korea
Jin Se Chung Phone 82 032 816-6782

LABORATORY TESTING

In recognition of the successful completion of the MATL evaluation process, certification is granted to this laboratory to perform the following tests based on the calibration recorded during the period of December 4-5, 1995.

ASTM E 283 Standard Test Method for
Determining the Rate of Air Leakage through Exterior Windows, Curtain Walls and Doors Under Specified Pressure Differences Across the Specimen

ASTM E 783 Standard Test Method for
Field Measurement of Air Leakage through Installed Exterior Windows and Doors

ASTM E 331 Standard Test Method for
Water Penetration of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference

ASTM E 547 Standard Test Method for
Water Penetration of Exterior Windows, Curtain Walls and Doors by Cyclic Static Air Pressure Differential

ASTM E 1105 Standard Test Method for
Field Determination of Water Penetration of Installed Exterior Windows, Curtain Walls and Doors by Uniform or Cyclic Static Air Pressure Difference

AAMA 501.1 Standard Test Method for
Metal Curtain Walls for Water Penetration Using Dynamic Pressure

ASTM E 330 Standard Test Method for
Structural Performance of Exterior Windows, Curtain Walls and
Doors by Uniform Static Air Pressure Difference

In addition to the above referenced tests, the facility has the equipment and ability to perform seismic racking, interstory differential movement and concentrated load testing.

AAMA GRANTS TO:

MID AMERICA TESTING LABORATORY, INC.
10525 Signal Hill Drive
Catawissa, MO 63015

Accreditation in accordance to the rules and procedures described in the "AAMA Laboratory Accreditation Program Operations Manual" for the following test methods:

AAMA 103.3-93 (Section 5)	ASTM E 283-91
AAMA 501.1-94	ASTM E 330-90
AAMA 501.2-94	ASTM E 331-93
AAMA 1302.5-1976	ASTM E 547-93
AAMA 1303.5-1976	ASTM E 783-93
	ASTM E 987-88
	ASTM E 1105-93
SMA/SMT 31-1990	ASTM F 588-85
	ASTM F 842-83

Maintenance of this accreditation is subject to the conditions and regulations contained in the Laboratory Accreditation Program Operations Manual.

Jeffrey F. Lowinski
Technical Director

November 22, 1994

Inspection Date: 11/2/94

NON-INSPECTION YEAR CERTIFICATE
for the
AAMA LABORATORY ACCREDITATION PROGRAM

MID AMERICA TESTING LABORATORY, INC.
10525 Signal Hill Drive
Catawissa, MO 63015

Phone: 314/257-4722 Fax: 314/257-4725

A thorough review was made of the application and related documents sumitted by Mid America Testing, Laboratory Inc., for continued accreditation in the AAMA Laboratory Accreditation Program.

Based on this review, AAMA grants Mid America Testing Laboratory, Inc. continued accreditation in accordance with the rules and procedures described in the AAMA "Laboratory Accreditation Program Operations Manual," to conduct tests in accordance with the following specification(s) and procedure(s):

AAMA 103.3-93 (Section 5)	ASTM E 283-91
AAMA 501.1-94	ASTM E 330-90
AAMA 501.2-94	ASTM E 331-93
AAMA 1302.5-1976	ASTM E 547-93
AAMA 1303.5-1976	ASTM E 783-93
	ASTM E 987-88
SMA/SMT 31-1990	ASTM E 1105-93
	ASTM F 588-85
	ASTM F 842-83

Maintenance of this accreditation is subject to the conditions and regulations contained in the "AAMA Certification Program Component Verification Manual." Accreditation is granted only for the tests specifically described above.

Accreditation of this laboratory under AAMA's Laboratory Accreditation Program is not an endorsement or recommendation of that laboratory or manufacturer's component by AAMA. AAMA disclaims all liability whatever with regard to all tests performed by this laboratory.

C. R. Wagus
Technical Director

November 17, 1995

Date of Last Inspection: 11/2/94
Date of Last Accreditation: 11/22/94