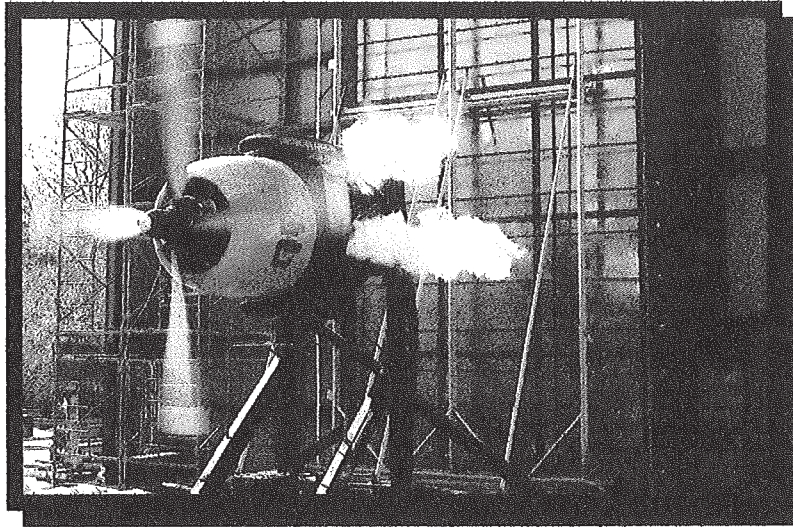


All performance values shown on this report are for products of a standard configuration, tested in accordance with AAMA specifications, in a laboratory environment under optimum conditions. They are provided for purposes of comparison only. Performance values will vary according to project specifications, such as but not limited to, quality installation workmanship, product size, configuration, hardware, glass type, and accessories. When field testing is required, it is recommended that all EFCO products be tested in accordance with AAMA 502-02 unless otherwise specified.



CONSTRUCTION CONSULTING LABORATORY, *INTERNATIONAL*



TEST REPORT:

**AAMA 501-05 Curtain Wall Mock-Up Testing
EFCO Corporation, a Pella Company
SERIES 5600 System Curtain Wall
Exterior/Interior Glazed Mock-Up
REPORT #CCLI 12-051**

March 29, 2012

Prepared for:

**EFCO Corporation, a Pella Company
1000 County Road
Monett, MO 65708**

1601 Luna Road
Carrollton, Texas 75006

S-UNITED, INC.
A Quality Control Company

Office: (972) 242-0556
FAX: (972) 245-6047



AAMA 501-05 CURTAIN WALL MOCK-UP TESTING
EFCO CORPORATION, A PELLA COMPANY
SERIES 5600 SYSTEM CURTAIN WALL
EXTERIOR/INTERIOR GLAZED MOCK UP
REPORT CCLI #12-051

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APPENDIXES

APPENDIX A: EFCO CORPORATION, A PELLA COMPANY SERIES 5600 SYSTEM CURTAIN WALL EXTERIOR/INTERIOR GLAZED MOCK-UP DRAWINGS

This report is not complete unless these drawings are stamped and initialed by **CCLI** as illustrated below.

Sheet	Detail	Date	Stamped as Illustrated
1	Title	3/24/11	 CONSULTING LABORATORY, INTERNATIONAL 1601 Luna Road Carrollton, Texas 75006 Phone (972) 242-0556 Report# <u>12-051</u> Date <u>3-29-12</u> Reviewed BY <u>GW</u>
2	Elevation	3/24/11	
3	Horizontals	3/24/11	
4	Splice and Head	3/24/11	
5	1/4" Verticals	3/24/11	
6	1" Verticals	3/24/11	
7-9	Anchor	3/24/11	

APPENDIX B: PHOTOGRAPHS

S-UNITED, INC.

A Quality Control Company



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1. PROJECT DATA

Project: AAMA 501 Curtain Wall Mock-Up Performance Testing
EFCO Corporation, A Pella Company Series 5600 System
Curtain Wall Exterior/Interior Glazed Mock Up

Date Started: June 6, 2011

Date Completed: June 7, 2011

Tested By: Construction Consulting Laboratory, *International* in Carrollton, TX

Tested For: EFCO Corporation, A Pella Company
1000 County Road
Monett, Mo 65708

Witnessed By: (All or Partial Viewing)

EFCO Corporation, A Pella Company	Shannon Keeler	Brad Wells	
Construction Consulting Laboratory, <i>International</i>	Jeffrey Crump	Andy Wilson	Chevis Wilson
	Juvenal Azua	Edsson Alarcon	

2. MOCK-UP DESCRIPTION

PRODUCT TYPE: Aluminum Curtain Wall

SERIES/MODEL: 5600 System Curtain Wall Exterior/Interior Glazed Mock Up

CURTAIN WALL OVERALL: 12'-2¼" x 24'-0"

CONFIGURATION: Plan View, **Sheet 2, Appendix A**

GENERAL DESCRIPTION: The test specimen is identified as an EFCO Corporation, A Pella Company Series 5600 System Curtain Wall Exterior/Interior Glazed Mock Up with a tested overall dimension of 12'-2¼" x 24'-0". The vertical elements of the mock-up were span mullions with splices at appropriate locations. The glazing included 1" and ¼" exterior and interior glazed lites. The curtain wall system was designed and manufactured by EFCO Corporation, A Pella Company.

CURTAIN WALL WEEP ARRANGEMENT: 1" x ³⁄₁₆" weep slots located 3½" from each end of horizontal pressure plates. Face caps are weeped on the underside with a ⁵⁄₁₆" diameter weep hole located 2" from each end.

GLASS: Visions are 1" sealed insulating glass constructed of (2) pcs ¼" tempered with ½" airspace. Spandrel lites are ¼" monolithic tempered.



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REINFORCEMENT: None.

CURTAIN WALL GLAZING: Perimeter pressure plate (part #5977) with thermal isolator (part #WV80) located at exterior of frame sill, jamb, and head with pre-set gasket (part #WEP7) and (part #WNEO) between pressure plate and main frame, mechanically fastened with #13-16 x $\frac{5}{8}$ " HW-SMS spaced on 9" centers. Pressure plate (part #5959) and thermal isolator (part #WV80) with pre-set gasket (part #WNEO and W150), mechanically fastened to the vertical and horizontal intermediate mullions with #13-16 x $\frac{5}{8}$ " HW-SMS spaced on 9" centers. 1" 2-pc bead (part #3656) located at interior of 1" horizontal intermediate glazing below splice. $\frac{1}{4}$ " 2-pc bead (part #4591) located at interior of $\frac{1}{4}$ " horizontal intermediate glazing below splice. Glazing adaptors (part #EP80) located at frame head and sill interior of monolithic glass sealed to frame with silicone sealant. Glazing adaptors (part #5756) located at frame horizontal intermediate interior of monolithic glass sealed to frame with silicone sealant. Glazing adaptors (part #5755) located at frame jambs interior of monolithic glass sealed to frame with silicone sealant. Glazing adaptors (part #5756 and 5755) located at frame vertical intermediate interior of monolithic glass sealed to frame with silicone sealant. Anti-walk blocks (part #HN52, HN79 and HN52) at frame jamb and vertical intermediate mullion glazing pockets. Setting block (part #HN61) at frame monolithic and (part #HN60 and HN61) at insulating glazing pocket.

SEALANT: Curtain wall was perimeter sealed at the head and sill with backer rod and Bondaflex silicone and the frame jambs were sealed with perimeter gasket bedded in Bondaflex silicone at chamber jamb steel and lateral edge of frame jambs. Exterior perimeter seal is set behind frame perimeter pressure plate on the main frame. Silicone sealant is applied to glazing gasket ends and all frame member ends are buttered with silicone. Glazing adaptors are sealed at the interior with Bondaflex silicone. Bondaflex silicone applied at the ends of the horizontal-to-vertical connections. Vertical glazing adapters sealed to horizontal glazing adapters.

CURTAIN WALL ANCHORAGE: Vertical mullions are anchored at frame head and sill with aluminum M and F clips which are attached to chamber steel with two (2) $\frac{3}{8}$ "-16 x $1\frac{1}{2}$ " HX-MS through bolts with flat washers and nut per clip at each vertical mull. 5" x 3" x $\frac{1}{4}$ " thick channel which is welded to chamber and anchored to intermediate vertical mullions with two (2) $\frac{3}{8}$ "-16 x $3\frac{1}{2}$ " HX-MS through bolts with flat washers and nut per clip at each vertical mull. Frame jambs are attached to 5" x 3" x $\frac{1}{4}$ " thick angle which is welded to chamber with two (2) $\frac{3}{8}$ "-16 x $3\frac{1}{2}$ " HX-MS through bolts with flat washers and nut per clip at each vertical mull.

SPLICES: Vertical members are slipped onto $4\frac{1}{2}$ " aluminum splices attached with two (2) #12-14 x 1" HW SMS on each side of vertical members at splice.

OTHER FEATURES: Head and sill shear block (part #KY49 and KY50) attached to frame vertical intermediate mullion (part #5027) with #14-10 x $\frac{1}{2}$ " HW-SMS screws.



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Horizontal intermediate mullion shear blocks (part #KZ69) below splice, attached to frame vertical intermediate mullion (part #5027) with $\frac{1}{4}$ " - 14 x 1 $\frac{1}{2}$ " HW-SMS screws. Horizontal intermediate mullion shear blocks (part #KW03) above splice, attached to frame vertical intermediate mullion (part #5027) with #14 - 10 x $\frac{1}{2}$ " HW-SMS screws. Intermediate horizontals attached to shear block below splice with #10-16 x $\frac{5}{8}$ " HW-SMS. Intermediate horizontals attached to shear block above splice with #8-18 x $\frac{3}{4}$ " HW-SMS.

3. TEST EQUIPMENT

- 3.1 Test chamber consisted of structural steel beams, columns, and bulkheads and were accessible through bulkhead doors.
- 3.2 Pressure differentials were created with reversible pumps for positive/negative loading.
- 3.3 Pressure differentials between the specimen interior and the atmosphere were measured with manometers.
- 3.4 Air infiltration was measured with a Meriam laminar flow element and inclined manometers. Chamber pressure was measured with a Dwyer inclined manometer.
- 3.5 Water was applied to the specimen from a spray rack equipped with swirl-type nozzles spaced two feet on center in vertical and horizontal directions, which under controlled pressure delivered a minimum of five gallons per square foot per hour on the specimen.
- 3.6 Dynamic winds were generated by a Curtiss Wright 3350 Radial Aircraft Engine with a four (4) bladed propeller, 13'-6" diameter, which generates typical and atypical wind conditions.
- 3.7 Structural variations were measured with dial indicator gauges with maximum movement hands located throughout the test specimen.



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4. TESTING ALLOWABLES

- 4.1 **AIR INFILTRATION:** Total amount of air infiltration shall not exceed **.06 CFM** per square foot (psf) of the exterior wall tested.

MAXIMUM ALLOWABLE

Mock-Up System #1: $12'-2\frac{1}{4}" \times 24'-0" = 292.5 \text{ ft}^2 \times .06 = 17.55 \text{ total CFM}$.

- 4.2 **STATIC WATER PENETRATION:** There shall be no uncontrolled water penetration during or at the conclusion of this test at the static pressure of 15 psf.

Note: "Uncontrolled water" is defined as any water that appears on any normally exposed interior surfaces, that is not contained or drained back to the exterior, or that can cause damage to adjacent materials or finishes. Water contained within drained flashings, gutters, and sills is not considered water leakage. The collection of up to one half ($\frac{1}{2}$) ounce of water (14.8 cc) in a fifteen (15) minute test period on top of any interior stop or stool integral with the wall system shall not be considered water leakage.

- 4.3 **DYNAMIC WATER PENETRATION:** There shall be no uncontrolled water penetration during or at the conclusion of this test at the slipstream velocity of 76 mph.

- 4.4 **DESIGN LOAD DEFLECTIONS:** There shall be no system failure and deflection of aluminum members at 100% of design load and shall not exceed L/175.

Vertical Span (L): $11'-11\frac{7}{8}"$ or 143.85
Vertical Span Allowable = 0.822"

Horizontal Span (L): $45.75"/175$
Horizontal Span Allowable = 0.261"

- 4.5 **Intermediate Lateral Displacement:** Design Displacement, shift intermediate support beam $0.010 \times$ longest vertical anchor spacing. $0.010 \times 12'-0" = 1.44"$. Specimen must pass air infiltration and static water resistance testing with the same allowable noted in 4.1 and 4.2.

- 4.6 **PROOF LOAD RESIDUAL:** The permanent deformation of the aluminum members shall not exceed 2% of span at 150% of design load.

Vertical Span (L): $143.85 / 500"$
Vertical Span Allowable = .288"

Horizontal Span (L): $45.75 / 500"$
Horizontal Span Allowable = 0.091"

- 4.7 **Intermediate Lateral Displacement:** Proof Displacement, shift Intermediate support beam $0.015 \times$ longest vertical anchor spacing. $0.015 \times 12'-0" = 2.16"$. Report any damage to the specimen and/or any glass breakage.

- 4.8 **Intermediate Lateral Displacement:** Fall-out, shift Intermediate support beam $0.025 \times$ longest vertical anchor spacing. $0.025 \times 12'-0" = 3.6"$. Report any damage to the specimen and/or any glass breakage.



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5. TESTING SEQUENCE

As used throughout this report, positive pressure applied to the test specimen is considered to be **inward** acting and negative pressure is considered to be **outward** acting. All location references or comments are as viewing the test specimen from the interior (room side) of the test chamber and wall system.

Positive Design Load = +80 psf Negative Design Load = -80 psf

	Series 5600 System Curtain Wall Exterior/Interior Glazed	TEST STANDARD
1	Pre Load Positive 40 psf	ASTM E 330-02
2	Static Pressure Air Infiltration Test @ 6.24 psf	ASTM E 283-04
3	Static Pressure Water Penetration Test @ 15 psf	ASTM E 331-00
4	Dynamic Water Penetration @ 76 mph (approximate 15.0 psf)	AAMA 501.1-05
5	Structural Load by Static Pressure Test @ 50% & 100% of Design Loads	ASTM E 330-02
6	Static Pressure Air Infiltration Test @ 6.24 psf	ASTM E 283-04
7	Static Pressure Water Penetration Test @ 15 psf	ASTM E 331-00
8	Intermediate Lateral Design Displacement (0.010 x 144 = 1.44")	AAMA 501.4-00
9	Static Pressure Air Infiltration Test @ 6.24 psf	ASTM E 283-04
10	Static Pressure Water Penetration Test @ 15 psf	ASTM E 331-00
11	Structural Load by Static Pressure Test @ 150% of Design Load	ASTM E 330-02
12	Intermediate Lateral Proof Displacement (0.015 x 144 = 2.16")	AAMA 501.4-00
13	Intermediate Lateral Fall Out Displacement (0.025 x 144 = 3.60")	AAMA 501.4-00

6. TESTING and RESULTS

6.1 Preload Positive Pressure in accordance with ASTM E 330-02 and job specifications.

Subject the test specimen to a static pressure differential of **40 psf**. This load was maintained for 10 seconds and released. An inspection was made to determine if any failure occurred.

Results: No visible differences were observed within the specimen or test chamber.

6.2 Static Pressure Air Infiltration Test @ 6.24 psf per ASTM E 283-04

The specimen and perimeter sealant joints were completely covered with an impervious 4 mm plastic material and duct tape, thus allowing no movement of air through the specimen. The exterior face of the specimen was subjected to a positive pressure differential of 6.24 psf to obtain a leakage rate for the test chamber. The plastic bag was removed and the chamber infiltration was subtracted from the total air infiltration resulting in the infiltration rate of the test specimen, **Photograph 1, Appendix B.**



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MAXIMUM ALLOWABLE

Mock-Up System #1: $12'-2\frac{1}{4}" \times 24'-0" = 292.5 \text{ ft}^2 \times .06 = 17.55 \text{ total CFM}$.

Results: Passed

Chamber	Specimen+Chamber	Cfm/Ft ²	Total Infiltration	Total CFM Allowable
28.06 Cfm ²	29.56 Cfm	.005 Cfm/Ft ²	1.50 Cfm	17.55 Cfm ²

6.3 Static Pressure Water Penetration Test @ 15 psf per ASTM E 331-00

Water was applied to the exterior face of the specimen at a minimum rate of five (5) gallons per square foot per hour of wall area, in such a way as to continuously and completely cover the exterior face of the specimen. Simultaneously, a positive **inward** differential static pressure of **15 psf** was applied against the face. The application of pressure and water was maintained for a period of fifteen (15) minutes, with observers inside the chamber checking for water penetration.

Results: Passed with no water penetration observed.

Dynamic Water Penetration @ 76 mph Slipstream Velocity per AAMA 501.1-05

Water was applied to the exterior face of the specimen at a minimum rate of five (5) gallons per square foot per hour of wall area, in such a way as to completely and continuously covers the face of the specimen. Simultaneously, the wall was subjected to sufficient airflow from an aircraft engine with a four-bladed propeller, approximately 13'-6" in diameter, approximately 20' in front of the specimen. The application of airflow and water was maintained for a period of fifteen (15) minutes, with observers inside the chamber checking for water penetration, **Photograph 2, Appendix B**.

Results: Passed with no water penetration observed.

6.4 Uniform Structural Load @ 50% & 100% of Design Loads per ASTM E 330-02

Dial indicators were installed to measure deflection and residuals at ends and midspan of typical horizontal and vertical members.

Test: With the specimen set in a positive mode, all indicators were set on zero. A positive pressure of **40 psf (inward)** equal to 50% of the design load was applied and held for ten (10) seconds, then released. The indicators were read and the data was recorded. At the conclusion of the 50% test load, a positive pressure of **80 psf (inward)** equal to 100% of the design load was applied and held for ten (10) seconds, then released.

Allowable: Vertical Span Allowable = 0.822" Horizontal Span Allowable = .261"

Indicator Location	Bottom or Right	Midspan	Top or Left
Vertical Mullion	Ind. No 1	Ind. No 4	Ind. No 5
Splice	Ind. No 2		Ind. No 3
Horizontal Vision	Ind. No 6	Ind. No 7	Ind. No 8



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Results: Passed with all net deflections below the allowable.

POSITIVE STRUCTURAL DEFLECTION TABLE							
Indicator #	50% Design Load 40 Psf			100% Design Load 80 Psf			Allowable
	Total	Residual	Deflection	Total	Residual	Deflection	
1	.025	.00		.04	.00		
2	.04	.00		.16	.01		
3	.15	.00		.30	.00		
4	.725	.08	.19	.725	.02	.610	.822
5	.34	.01		.19	.005		
6	.00	.00		.01	.00		
7	.02	.00	.02	.02	.00	.01	.261
8	.00	.00		.01	.00		

The vacuum/blower pumps were reversed and set to perform in a negative mode. The test specimen was subjected to a negative pressure of **-40 psf (outward)** equal to 50% of design load to set the specimen in a negative mode. The pressure was held for ten (10) seconds and released.

Test: With the specimen set in a negative mode, all indicators were set on zero. A negative pressure of **-40 psf (outward)** equal to 50% of the design load was applied and held for ten (10) seconds, then released. The indicators were read and the data was recorded. At the conclusion of the 50% test load, a negative pressure of **-80 psf (outward)** equal to 100% of the design load was applied and held for ten (10) seconds, then released.

Results: Passed with all net deflections below the allowable.

NEGATIVE STRUCTURAL DEFLECTION TABLE							
Indicator #	50% Design Load 40 Psf			100% Design Load 80 Psf			Allowable
	Total	Residual	Deflection	Total	Residual	Deflection	
1	.01	.00		.03	.00		
2	.04	.01		.11	.01		
3	.12	.00		.25	.02		
4	.38	.03	.2675	.73	.02	.5725	.822
5	.215	.00		.285	.01		
6	.00	.00		.01	.00		
7	.00	.00	.000	.02	.00	.01	.261
8	.00	.00		.01	.00		

6.6 Static Pressure Air Infiltration Test @ 6.24 psf per ASTM E 283-04

The exterior face of the specimen was again subjected to a positive pressure differential of 6.24 psf to obtain a total leakage rate for the test chamber and the specimen.



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Mock-Up System #1: $12'-2\frac{1}{4}" \times 24'-0" = 292.5 \text{ ft}^2 \times .06 = 17.55 \text{ total CFM}$.

Results: Passed

Chamber	Specimen+Chamber	Cfm/Ft ²	Total Infiltration	Total CFM Allowable
28.06 Cfm ²	28.56 Cfm	.002 Cfm/Ft ²	.50 Cfm	17.55 Cfm ²

Note: Reduction of total CFM attributed to wet chamber closures reducing overall chamber air infiltration.

6.6 Static Pressure Water Penetration Test @ 15.0 psf per ASTM E 331-00

Water was applied to the exterior face of the specimen at a minimum rate of five (5) gallons per square foot per hour of wall area, in such a way as to completely and continuously cover the face of the specimen. Simultaneously, a positive **inward** differential static pressure of **15 psf** was applied against the face. The application of pressure and water was maintained for a period of fifteen (15) minutes, with observers inside the chamber checking for water penetration.

Results: Passed with no water penetration observed.

6.7 Seismic Induced Interstory Drift Test Design Displacement @ 0.010 x Story Height per AAMA 501.4-00

The intermediate chamber beam was subjected three (3) shifting cycles. One (1) cycle consist of a lateral shift from start point 0" to 1.44" towards the left back to start point 0" and towards the right to 1.44". Shift duration was 60 seconds with the specimen left in the full shifted position for a minimum of 10 seconds before being returned to the start point.

Results: Passed with no glass breakage.

6.8 Static Pressure Air Infiltration Test @ 6.24 psf per ASTM E 283-04

The exterior face of the specimen was again subjected to a positive pressure differential of 6.24 psf to obtain a total leakage rate for the test chamber and the specimen.

MAXIMUM ALLOWABLE

Mock-Up System #1: $12'-2\frac{1}{4}" \times 24'-0" = 292.5 \text{ ft}^2 \times .06 = 17.55 \text{ total CFM}$.

Results: Passed

Chamber	Specimen+Chamber	Cfm/Ft ²	Total Infiltration	Total CFM Allowable
28.06 Cfm ²	31.07 Cfm	.01 Cfm/Ft ²	3.00 Cfm	17.55 Cfm ²



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6.10 Static Pressure Water Penetration Test @ 15 psf per ASTM E 331-00

A positive **inward** differential static pressure of **15 psf** was applied against the face. The application of pressure and water was maintained for a period of fifteen (15) minutes, with observers inside the chamber checking for water penetration.

Results: Passed with no water penetration observed.

6.11 Uniform Structural Load @ 150% of Design Loads per ASTM E 330-02

Vertical Span Allowable = .822" Horizontal Span Allowable = .261"

Test: With the specimen set in a positive mode, midspan indicators were set on zero. A positive pressure of **120 psf (inward)** equal to 150% of the design load was applied and held for ten (10) seconds, then released.

Test: With the specimen set in a negative mode, midspan indicators were set on zero. A negative pressure of **120 psf (outward)** equal to 150% of the design load was applied and held for ten (10) seconds, then released. The indicators were read and the data was recorded.

Maximum permanent set recorded during positive loading

Results: Center Vertical Mullion Permanent set: .0165 **Allowable:** .288"

Results: Spandrel Horizontal Permanent set: 0.00 **Allowable:** .091"

Maximum permanent set recorded during negative loading

Results: Center Vertical Mullion Permanent set: .190 **Allowable:** .288"

Results: Spandrel Horizontal Permanent set: 0.04 **Allowable:** .091"

6.12 Seismic Induced Interstory Drift Test Proof Displacement @ 0.015 x Story Height per AAMA 501.4-00

The intermediate chamber beam was subjected three (3) shifting cycles. One (1) cycle consist of a lateral shift from start point 0" to 2.16" towards the left back to start point 0" and towards the right to 2.16". Shift duration was 60 seconds with the specimen left in the full shifted position for a minimum of 10 seconds before being returned to the start point, **Photograph 3, Appendix B.**

Results: Passed with no glass breakage.



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The intermediate chamber beam was subjected three (3) shifting cycles. One (1) cycle consist of a lateral shift from start point 0" to 3.60" towards the left back to start point 0" and towards the right to 3.60". Shift duration was 60 seconds with the specimen left in the full shifted position for a minimum of 10 seconds before being returned to the start point.

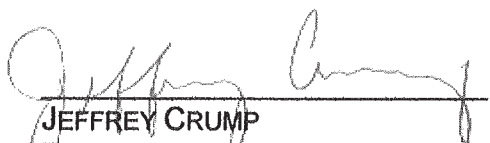
Results: Passed with no glass breakage.

7. CONCLUSION

The tested specimen EFCO Corporation, A Pella Company Series 5600 System Curtain Wall Exterior/Interior Glazed Wall Mock Up performed within the specified criteria.

Respectfully submitted,

CONSTRUCTION CONSULTING LABORATORY, *INTERNATIONAL*


JEFFREY CRUMP
TESTING MANAGER


WESLEY WILSON
LABORATORY MANAGER



AAMA 501-05 CURTAIN WALL MOCK-UP TESTING

EFCO CORPORATION, A PELLA COMPANY

SERIES 5600 SYSTEM CURTAIN WALL

EXTERIOR/INTERIOR GLAZED MOCK UP

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APPENDIX A

EFCO CORPORATION, A PELLA COMPANY SERIES 5600 SYSTEM CURTAIN WALL EXTERIOR/INTERIOR GLAZED MOCK-UP DRAWINGS

Sheet	Detail	Date
1	Title	3/24/11
2	Elevation	3/24/11
3	Horizontals	3/24/11
4	Splice and Head	3/24/11
5	1/4" Verticals	3/24/11
6	1" Verticals	3/24/11
7-9	Anchor	3/24/11

SERIES 5600 SYSTEM

CURTAIN WALL

EXT./INT. GLAZED

MOCK-UP

**CONSTRUCTION CONSULTING
& LABORATORY INTERNATIONAL**
1601 Lurie Road
Carrollton, Texas 75006
Phone (972) 242-0556

TEST NO: XX-XXXX

ERASE NOTE FOR
LAB COPY

DESIGN TEST CRITERIA

D.P. = 60 PSF / INCREASE BY 5 PSF UNTILL MAXED OUT
DEFLECTION = L/175
ALLOWABLE = 32 INCHES
WATER = 15 LB
MAX. DP = 70 PSF

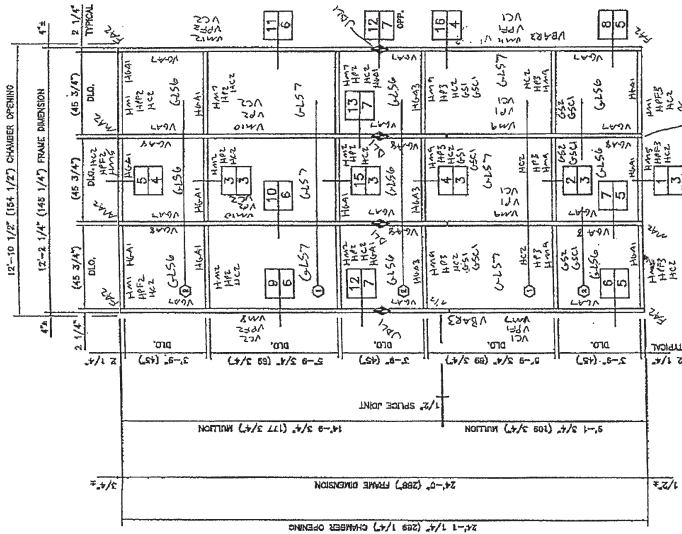
DRAWN BY	TK	CHECKED BY	SCALE	REV
DATE	3-24-2011	DATE	FULL	



EFCC CORPORATION
1000 County Road, Alameda, Missouri 67008

5600 CAPTURED A.W.S.

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REPORT# XXXX-XXX-XX
SHEET 1 of 7



SERIES 5600 SYSTEM
MOCK-UP ELEVATION
ONE-THUS REQUIRED

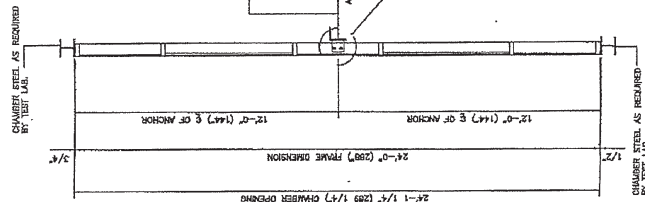
CWB

NOTE:
 FABRICATOR AND/OR ERECTOR, THIS MOCK-UP IS TO BE FABRICATED AND SEALED AS NOTED FOR TEST LAB. THE FABRICATOR SHALL PROVIDE FOR SISO EXTERIOR GLAZED CURTAIN WALL, AS NOTED IN PART 5-1022 & 304.

GLAZING SCHEDULE
 ① = 1" MINIMUM 1/4" TIE - 1/2" TIE - 1/4" TIE
 ② = 1/4" TIE

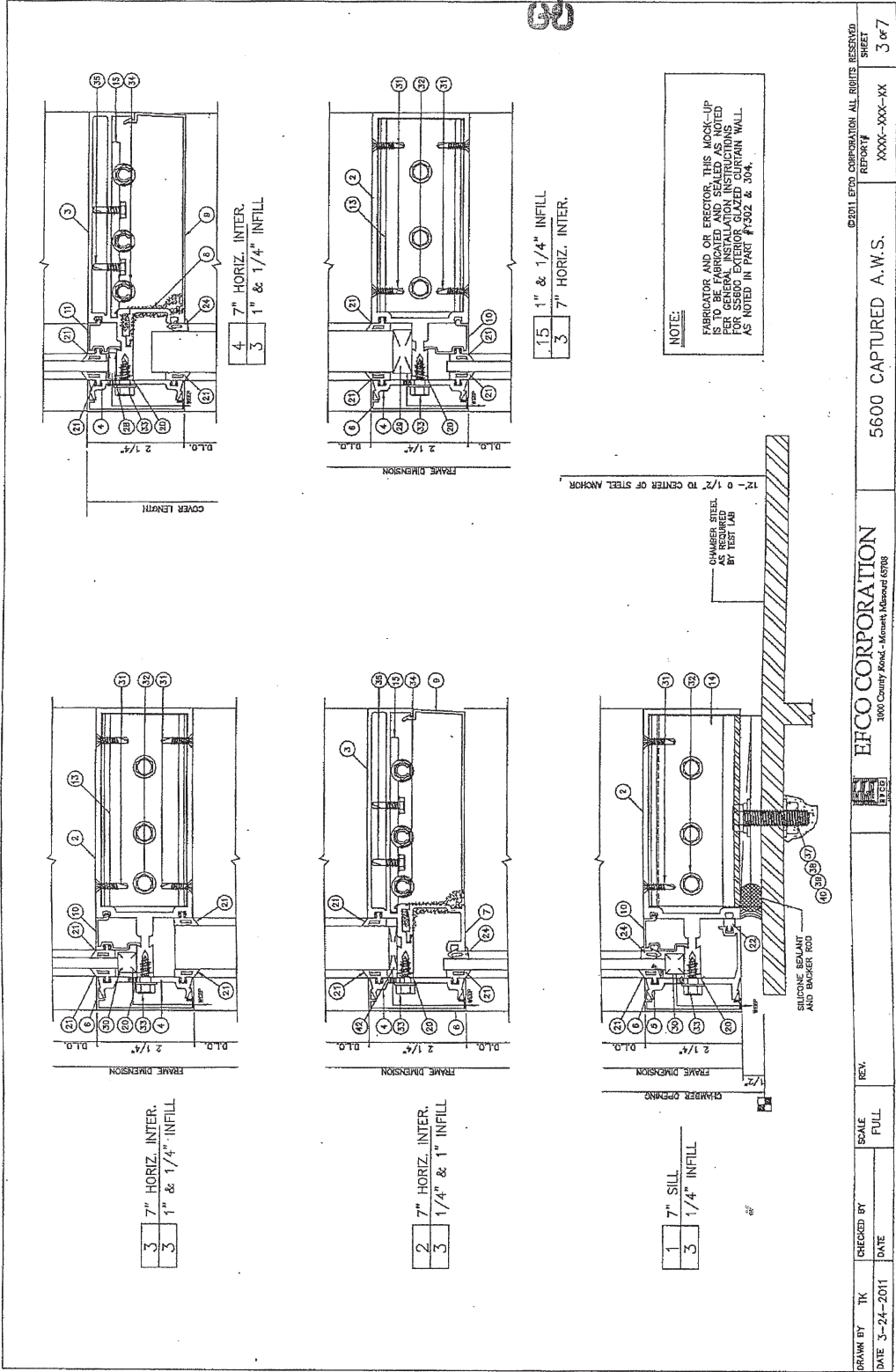
NOTE: CONVENTIONAL SPACER IS REQUIRED
 PROVIDE (2) ADDITIONAL LITE OF EACH GLASS TYPE

STEEL AS REQUIRED TO SIMULATE FLOOR SLAB. FABRICATOR AS REQUIRED TO PROVIDE (2) ADDITIONAL LITE OF EACH GLASS TYPE.

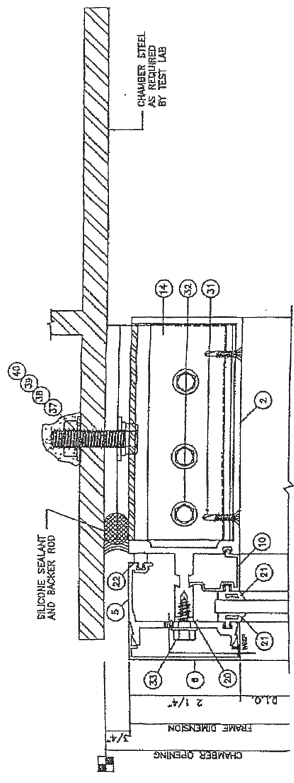


SECTION THRU MOCK-UP

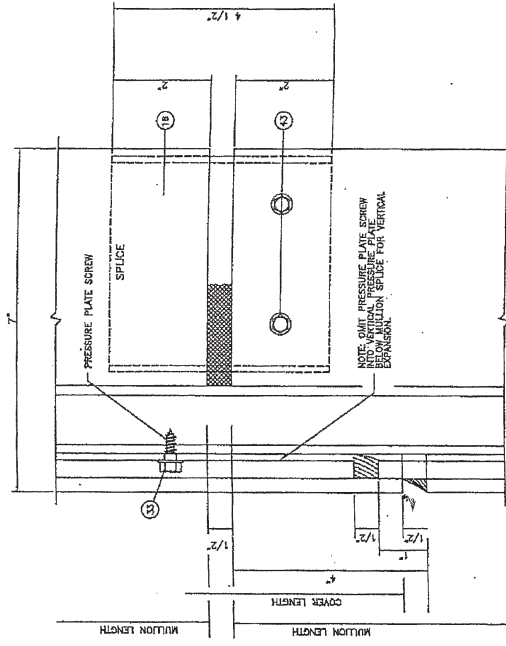
CONSTRUCTION CONSULTING
LABORATORY & CONSULTING
 1000 LUMBER BLVD
 CARROLLTON, TX 75006
 PHONE (972) 442-0556



CONSTRUCTION CONSULTANTS
LABORATORY, INC., A L.P.A.
1601 Luffa Road
Carrollton, TX 75006
Phone (972) 242-9556



5 7" HEAD HORIZ.
4 1/4" INFILL

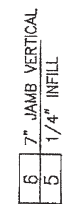
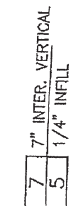


16 SPICE
4 1" INFILL

NOTE:
FABRICATOR AND/OR ERECTOR THIS MUCK-UP
FOR GENERAL INFORMATION. NOT TO BE
USED FOR INSTALLATION. NOT TO BE
USED FOR 55000 EXTERIOR GLAZED CURTAIN WALL
AS NOTED IN PART #3002 & 3004.

ITEM	#	REQD	PART #	DESCRIPTION	MFG.
1	4		4027	MULLION	EPD
2	12		4094	HORIZONTAL MULL	EPD
3	6		4605	HORIZONTAL MULL	EPD
4	2		3939	PRESSURE PLATE	EPD
5	8		3777	PERIMETER PRESSURE PLATE	EPD
6	22		3882	COVER	EPD
7	3		4391	1/4" 2 PC. BEAD	EPD
8	3		3059	1" 2 PC. BEAD	EPD
9	6		4553	GLAZING STOP COVER	EPD
10	8		4553	GLAZING STOP COVER	EPD
11	8		4553	GLAZING STOP COVER	EPD
12	12		5218	1/4" ADAPTER	EPD
13	12		5218	1/4" ADAPTER	EPD
14	12		4094	GLAZING STOP COVER	EPD
15	12		4094	GLAZING STOP COVER	EPD
16	12		4094	GLAZING STOP COVER	EPD
17	4		4094	GLAZING STOP COVER	EPD
18	4		4094	GLAZING STOP COVER	EPD
19	4		4094	GLAZING STOP COVER	EPD
20	4		4094	GLAZING STOP COVER	EPD
21	4		4094	GLAZING STOP COVER	EPD
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39	4		4094	GLAZING STOP COVER	EPD
40	4		4094	GLAZING STOP COVER	EPD
41	4		4094	GLAZING STOP COVER	EPD
42	4		4094	GLAZING STOP COVER	EPD
43	4		4094	GLAZING STOP COVER	EPD
44	4		4094	GLAZING STOP COVER	EPD

FABRICATOR AND OR ERECTOR, THIS MOCK-UP IS TO BE FABRICATED AND SEALED AS NOTED PER GENERAL INSTALLATION INSTRUCTIONS FOR S5600 EXTERIOR GLAZED CURTAIN WALL. AS NOTED IN PART #Y302 & 304.



F.O. NOTE:
PERIMETER GASKET
TO BE 6" X .062"

F.O. NOTE:
ORDER ENOUGH WEP7
TO REPLACE WEP02
IN FIELD IF NECESSARY.

DRAWN BY		TK	CHECKED BY	SCALE	FULL	REV.	 EFCO CORPORATION 100 Conroy Road - Waretz, Missouri 65758	5600 CAPTURED A.W.S. REPORT # XXXX-XXX-XX	©2011 EFCO CORPORATION ALL RIGHTS RESERVED SHEET 5 of 7
DATE		3-24-2011	DATE						

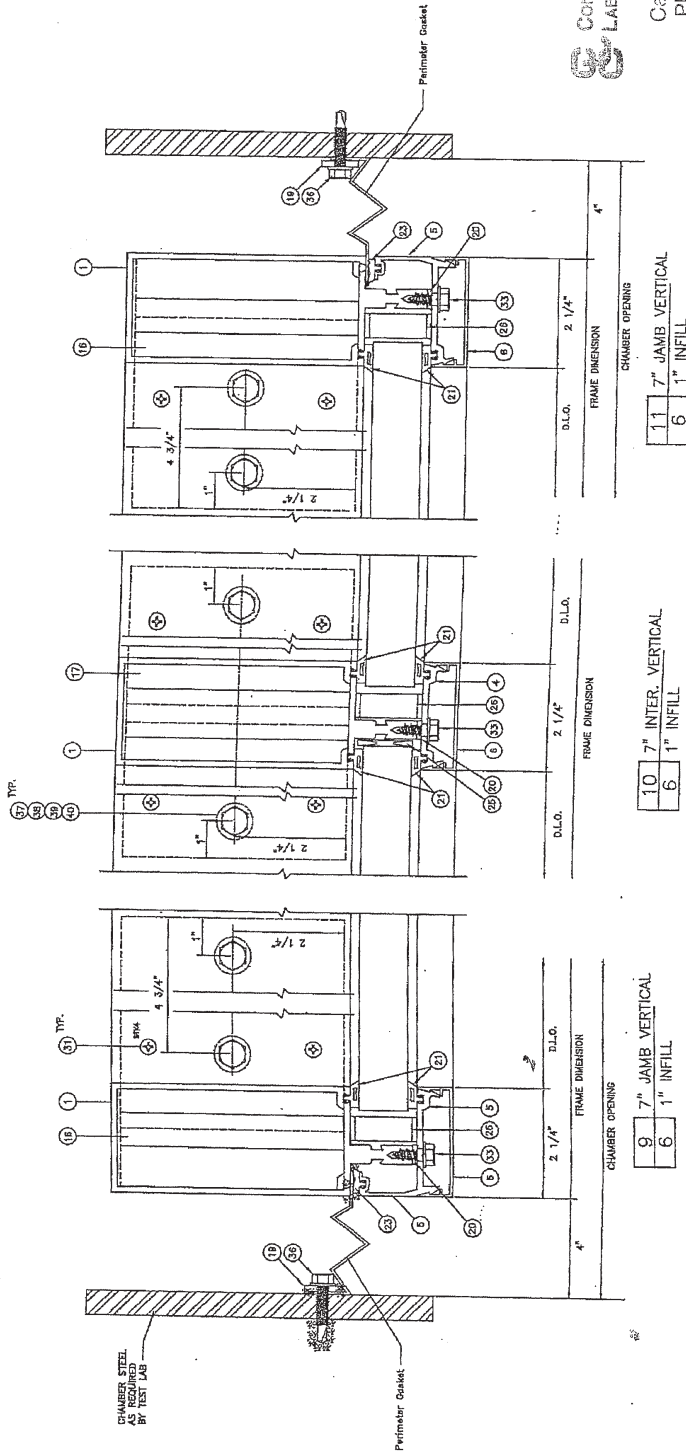
GG LABORATORY CONSULTING
1601 Carrollton Road
Carrollton, Georgia 30006
Phone (404) 462-3556

NOTE:

FABRICATOR AND OR ERECTOR, THIS MOCK-UP IS TO BE FABRICATED AND SEALED AS NOTED FOR SEISMIC RETENTION INSTRUCTIONS FOR SEISMIC RETENTION IN EXISTING WALL. AS NOTED IN PART #332 & 304.

F.O. NOTE:
TO ORDER ENOUGH MEET TO REPLACE MEET IN FIELD IF NECESSARY.

F.O. NOTE:
PERIMETER GASKET TO BE 8" X .002"

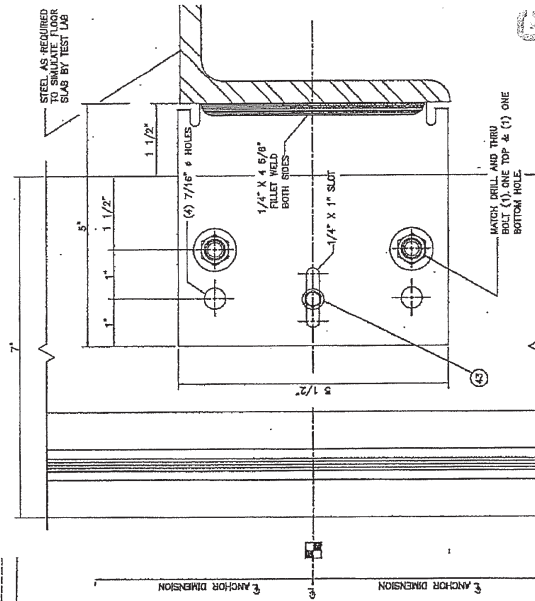


CONSTRUCTION CONSULTING
LABORATORY INTERNATIONAL
1601 L Street, N.W.
Carrollton, Texas 75006
Phone (972) 242-0556

DRAWN BY TK	CHECKED BY DATE 3-24-2011	SCALE FULL	REV.	5600 CAPTURED A.W.S.	REPORT # XXXX-XXX-XX	SHEET 6 of 7
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EFCO CORPORATION
1000 County Road - Kinross, Missouri 65708

FABRICATOR AND OR ERECTOR, THIS MOCK-UP IS TO BE FABRICATED AND SEALED AS NOTED PER GENERAL INSTALLATION INSTRUCTIONS. FOR S5600 EXTERIOR GLAZED CURTAIN WALL AS NOTED IN PART #Y302 & 304,



14-	SPANDREL ANCHOR
7	DEAD LOAD (FIXED)

Carrollton, Texas 75006
Phone (972) 242-0556

DRAWN BY DATE 3-24-2011	CHECKED BY DATE	SCALE FULL	REV.	 EFSCO CORPORATION 1000 County Road - Menard, Missouri 65058	REPORT # 5600 CAPTURED A.W.S.	SHEET 7 of 7
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AAMA 501-05 CURTAIN WALL MOCK-UP TESTING
EFCO CORPORATION, A PELLA COMPANY
SERIES 5600 SYSTEM CURTAIN WALL
EXTERIOR/INTERIOR GLAZED MOCK UP
REPORT CCLI #12-051

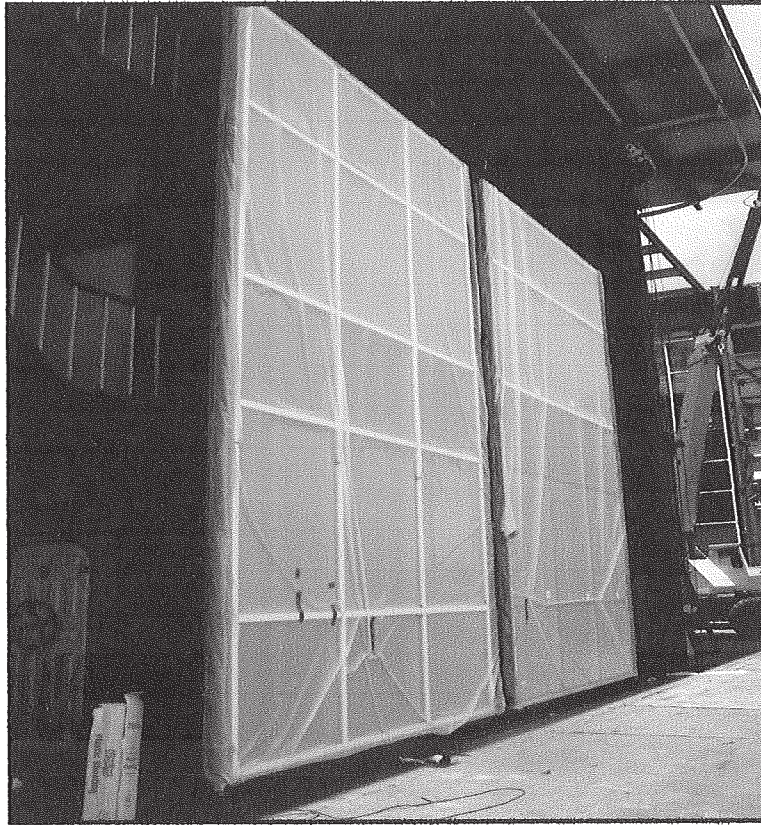
March 29, 2012

APPENDIX B
PHOTOGRAPHS



AAMA 501-05 CURTAIN WALL MOCK-UP TESTING
EFCO CORPORATION, A PELLA COMPANY
SERIES 5600 SYSTEM CURTAIN WALL
EXTERIOR/INTERIOR GLAZED MOCK UP
REPORT CCLI #12-051

March 29, 2012



PHOTOGRAPH 1

Static Pressure Air Infiltration Test @ 6.24 psf per ASTM E 283-04

The specimen and perimeter sealant joints were completely covered with an impervious 4 mm plastic material and duct tape, thus allowing no movement of air through the specimen. The exterior face of the specimen was subjected to a positive pressure differential of 6.24 psf to obtain a leakage rate for the test chamber. The plastic bag was removed and the chamber infiltration was subtracted from the total air infiltration resulting in the infiltration rate of the test specimen.

MAXIMUM ALLOWABLE

Mock-Up System #1: $12'-2\frac{1}{4}" \times 24'-0" = 292.5 \text{ ft}^2 \times .06 = 17.55 \text{ total CFM}$.

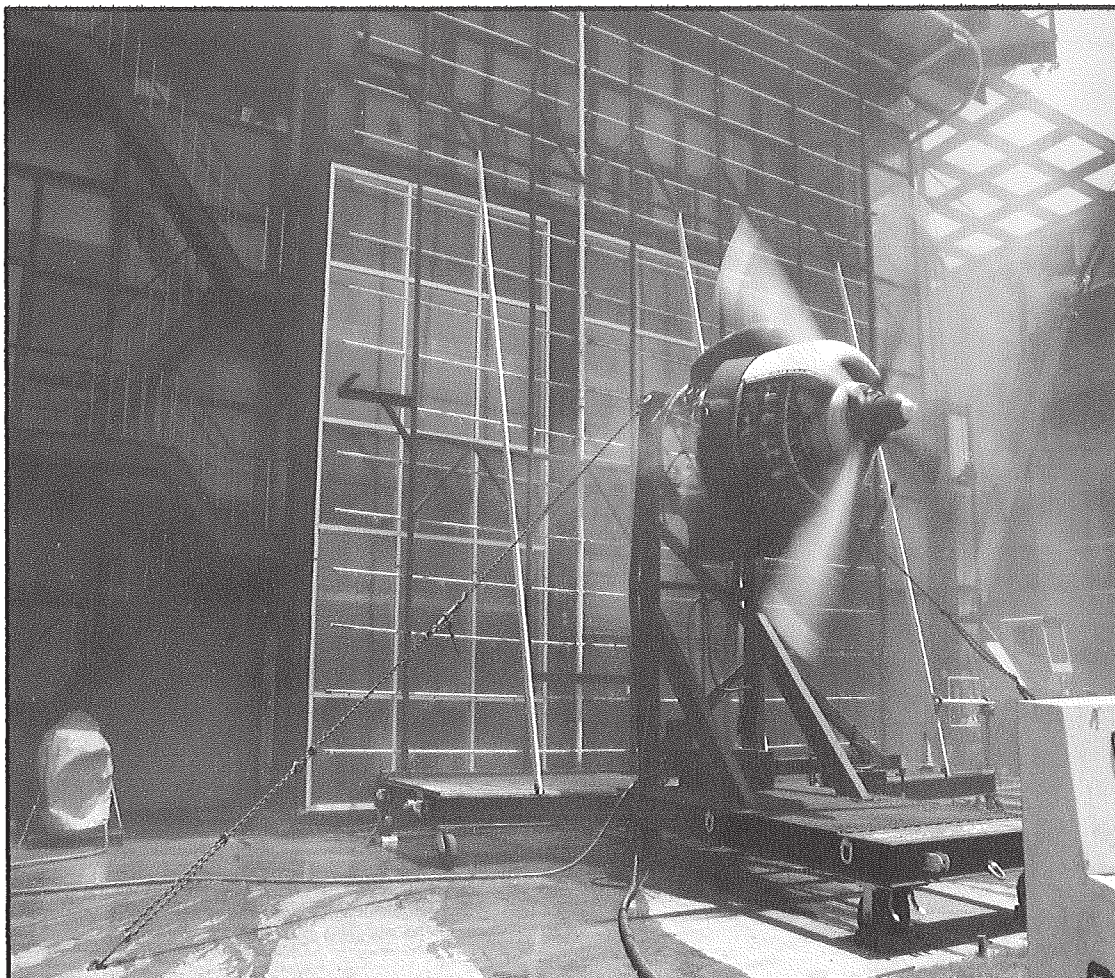
Results: Passed

Chamber	Specimen+Chamber	Cfm/Ft ²	Total Infiltration	Total CFM Allowable
28.06 Cfm ²	29.56 Cfm	.005 Cfm/Ft ²	1.50 Cfm	17.55 Cfm ²



AAMA 501-05 CURTAIN WALL MOCK-UP TESTING
EFCO CORPORATION, A PELLA COMPANY
SERIES 5600 SYSTEM CURTAIN WALL
EXTERIOR/INTERIOR GLAZED MOCK UP
REPORT CCLI #12-051

March 29, 2012



PHOTOGRAPH 2

Dynamic Water Penetration @ 76 mph Slipstream Velocity per AAMA 501.1-05

Water was applied to the exterior face of the specimen at a minimum rate of five (5) gallons per square foot per hour of wall area, in such a way as to completely and continuously cover the face of the specimen. Simultaneously, the wall was subjected to sufficient airflow from an aircraft engine with a four-bladed propeller, approximately 13'-6" in diameter, approximately 20' in front of the specimen. The application of airflow and water was maintained for a period of fifteen (15) minutes, with observers inside the chamber checking for water penetration.

Results: Passed with no water penetration observed.



AAMA 501-05 CURTAIN WALL MOCK-UP TESTING
EFCO CORPORATION, A PELLA COMPANY
SERIES 5600 SYSTEM CURTAIN WALL
EXTERIOR/INTERIOR GLAZED MOCK UP
REPORT CCLI #12-051

March 29, 2012



PHOTOGRAPH 3

Seismic Induced Interstory Drift Test Design Displacement @ 0.015 x Story Height per AAMA 501.4-00

The intermediate chamber beam was subjected three (3) shifting cycles. One (1) cycle consisted of a lateral shift from start point 0" to 2.16" towards the left back to start point 0" and towards the right to 2.16". Shift duration was 60 seconds with the specimen left in the full shifted position for a minimum of 10 seconds before being returned to the start point.

Results: Passed with no glass breakage.

- END OF REPORT -