

**AAMA 501-05 AND  
ASTM E 1886 and ASTM E 1996  
TEST REPORT**

**Rendered to:**

**CORAL ARCHITECTURAL PRODUCTS**

**SERIES/MODEL: PW256  
PRODUCT TYPE: Aluminum Curtain Wall System**

<b>Title</b>	<b>Summary of Results</b>
Air Infiltration	0.10 L/s/m <sup>2</sup> (0.02 cfm/ft <sup>2</sup> )
Water Resistance Test Pressure	575 Pa (12.02 psf)
Uniform Load Deflection Test Pressure	3110 Pa (±65.0 psf)
Uniform Load Structural Test Pressure	4665 Pa (± 97.5 psf)

This report contains in its entirety:

Cover Page: 1 page  
Report Body: 10 pages  
Test Equipment: 1 page  
Photographs: 7 pages  
Sketches: 2 pages  
Drawings: 16 pages

Reference should be made to Architectural Testing, Inc. Report No. 87460.01-401-44 for complete test specimen description and data.

## **PERFORMANCE TEST REPORT**

Rendered to:

CORAL ARCHITECTURAL PRODUCTS  
3010 Rice Mine Road  
Tuscaloosa, Alabama 35406

Report No.: 87460.01-401-44  
Test Dates: 12/16/08  
Through: 03/13/09  
Report Date: 06/11/09  
Expiration Date: 03/13/13

**Project Summary:** Architectural Testing, Inc. was contracted by Coral Architectural Products to perform testing on a Series/Model PW256, aluminum curtain wall system. The samples tested met the performance requirements set forth in the referenced test procedures for a  $\pm 3110$  Pa ( $\pm 65.0$  psf) Design Pressure with missile impacts corresponding to Missile Level D and Wind Zone 4. Test specimen description and results are reported herein. The sample was provided by the client.

**Test Methods:** The test specimen was evaluated in accordance with the following:

*AAMA 501-05, Methods of Tests for Exterior Walls*

*ASTM E 283-04, Test Method for Determining Rate of Airflow Through Exterior Windows, Curtain Walls and Doors Under Specified Pressure Differences Across the Specimen.*

*ASTM E 330-02, Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.*

*ASTM E 331-00, Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.*

*ASTM E 1886-05, Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors and Storm Shutters Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.*

*ASTM E 1996-05, Standard Specification for Performance of Exterior Windows, Glazed Curtain Walls, Doors and Storm Shutters Impacted by Wind Borne Debris in Hurricanes.*

**Test Specimen Description:**

**Series/Model:** PW256

**Product Type:** Aluminum Curtain Wall System

**Overall Size:** 4667 mm (183-3/4") wide by 3683 mm (145") high

**Top Fixed Daylight Opening Size (3):** 1448 mm (57") wide by 1016 mm (40") high

**Bottom Fixed Daylight Opening Size (3):** 1448 mm (57") wide by 2413 mm (95") high

**Overall Area:** 17.19 m<sup>2</sup> (185 ft<sup>2</sup>)

**Finish:** Anodized aluminum

**Frame Construction:** The frame was constructed of extruded aluminum. The vertical members were continuous from head to sill. The corners were coped, butted, sealed and secured with three #14 x 1" hex head screws through the jambs into the head and sill members. The head, horizontal mullion and sill were secured with three #14 x 1" hex head screws through the jambs and vertical mullions into screw bosses of the horizontal members.

**Weatherstripping:**

<u>Description</u>	<u>Quantity</u>	<u>Location</u>
1/4" high by 3/4" wide custom vinyl seal	1 Row	Each side of pressure plates against glass perimeter.
5/16" high by 5/8" wide custom vinyl seal	1 Row	Each center of pressure plates against the glass.

**Glazing Details:** The lower openings utilized a single sheet of nominal 14.3 mm (9/16") thick laminated glass fabricated from two sheets of 6 mm (1/4") thick heat strengthened glass separated by a 0.090" thick SentryGlas Plus interlayer. The upper openings utilized a single sheet of nominal 14.3 mm (9/16") thick laminated glass fabricated from two sheets of 6 mm (1/4") thick heat strengthened glass separated by a 0.120" thick Uvekool Type S interlayer. The lights were set from the exterior onto a 7/8" wide by 1/4" high custom rubber gasket. The glass utilized molded plastic end dams at each horizontal and vertical intersection that were sealed in place. The glass was secured with exterior aluminum pressure plates utilizing #12 x 1" self-tapping screws located 2" from the ends and 9" on center. An aluminum trim cap was applied to the pressure plates. The test unit utilized a 3/4" glazing bite.

**Test Specimen Description:** (Continued)

**Drainage:**

<u>Description</u>	<u>Quantity</u>	<u>Location</u>
1/4" round weep holes	12	6" from each end of the horizontal pressure plates, at the horizontal mullion and sill, draining the glazing pockets.
1/4" round weep holes	12	6" in from each end of the horizontal mullion snap trim cap, at the horizontal mullion and sill, on the bottom return leg.

**Hardware:** No hardware was utilized.

**Reinforcement:** The intermediate vertical mullions utilized a steel "C" channel 4-1/2" by 1-7/8" by 1/4" thick. Each end of the reinforcement was secured to the mullion with one #1/4 x 20 x 2" bolt with nut and washer. A 3-3/4" by 1/2" flat stock steel was also utilized in the intermediate vertical mullions inside the steel "C" channel.

**Installation:** The test buck was constructed from 2-1/2" x 8" x 3/16" steel C-channel. Each corner was butted and secured with two 1/2" x 2" bolts with nuts and washers. The sill and head framing members were secured to the steel channel with six 1/2"-13 x 2" bolts with nuts and washers located 4" from each corner and one 4" from each side of the vertical mullions. The exterior and interior perimeters were sealed with silicone.

**Test Results:** The temperature during testing was 23.3°C (74°F). The results are tabulated as follows:

<u>Paragraph</u>	<u>Title of Test - Test Method</u>	<u>Results</u>	<u>Allowed</u>
2.2	Preload of 50% of design Pressure per ASTM E 330-02 1556 Pa (32.5 psf) (Positive)	NA	NA
2.3	Air Leakage Resistance per ASTM E 283 75 Pa (1.6 psf)  300 Pa (6.24 psf)	0.025 L/s/m <sup>2</sup> (0.01 cfm/ft <sup>2</sup> )  0.10 L/s/m <sup>2</sup> (0.02 cfm/ft <sup>2</sup> )	0.5 L/s/m <sup>2</sup> (0.06 cfm/ft <sup>2</sup> ) max.  0.5 L/s/m <sup>2</sup> (0.06 cfm/ft <sup>2</sup> ) max.
<i><b>Note #1:</b> The tested specimen meets (or exceeds) the performance levels specified in AAMA 501-05 for air leakage resistance.</i>			
2.4	Water Penetration Resistance per ASTM E 331 574.2 Pa (12.0 psf)	No leakage	No leakage
2.9	Uniform Load Deflection per ASTM E 330 (Deflections were taken on the horizontal mullion) (Loads were held for 30 seconds) 2333 Pa (48.75 psf) (positive) 3110 Pa (65.0 psf) (positive) 2333 Pa (48.75 psf) (negative) 3110 Pa (65.0 psf) (negative)	15.0 mm (0.59") 15.5 mm (0.61") 14.7 mm (0.63") 16.5 mm (0.65")	25.9 mm (1.02") max. 25.9 mm (1.02") max. 25.9 mm (1.02") max. 25.9 mm (1.02") max.
2.9	Uniform Load Deflection per ASTM E 330 (Deflections were taken on the vertical mullion) (Loads were held for 30 seconds) 2333 Pa (48.75 psf) (positive) 3110 Pa (65.0 psf) (positive) 2333 Pa (48.75 psf) (negative) 3110 Pa (65.0 psf) (negative)	6.6 mm (0.26") 7.9 mm (0.31") 6.6 mm (0.26") 7.4 mm (0.29")	20.3 mm (0.80") max. 20.3 mm (0.80") max. 20.3 mm (0.80") max. 20.3 mm (0.80") max.
2.10	Water Penetration Resistance per ASTM E 331 574.2 Pa (12.0 psf)	No leakage	No leakage

**Test Results:** (Continued)

<u>Paragraph</u>	<u>Title of Test - Test Method</u>	<u>Results</u>	<u>Allowed</u>
2.11	Uniform Load Structural per ASTM E 330 (Permanent sets were taken on the horizontal mullion) (Loads were held for 30 seconds)		
	4665 Pa (97.5 psf) (positive)	3.05 mm (0.12")	9.4 mm (0.37") max.
	4665 Pa (97.5 psf) (negative)	5.8 mm (0.23")	9.4 mm (0.37") max.
2.11	Uniform Load Structural per ASTM E 330 (Permanent sets were taken on the vertical mullion) (Loads were held for 30 seconds)		
	4665 Pa (97.5 psf) (positive)	<0.25 mm (<0.01")	7.4 mm (0.29") max.
	4665 Pa (97.5 psf) (negative)	0.51 mm (0.02")	7.4 mm (0.29") max.

**Test Results:** The following results have been recorded:

**ASTM E 1886, *Large Missile Impact***

**Conditioning Temperature:** 23.3°C (74°F)

**Missile Weight:** 3433.8 g (9.2 lbs)

**Missile Length:** 2.44 m (8' 0")

**Muzzle Distance from Test Specimen:** 5.2 m (17' 0")

**Impact #1:** Missile Velocity: 15.24 m/s (50.0 fps); orientation within  $\pm 5^\circ$  of vertical

**Impact Area:** Bottom, left lite of glass, center of glazing

**Observations:** Missile hit target area, no penetration

**Results:** Pass

**Impact #2:** Missile Velocity: 15.18 m/s (49.8 fps); orientation within  $\pm 5^\circ$  of vertical

**Impact Area:** Bottom, left lite of glass, upper right corner of the glazing

**Observations:** Missile hit target area, no penetration

**Results:** Pass

**Impact #3:** Missile Velocity: 15.33 m/s (50.3 fps); orientation within  $\pm 5^\circ$  of vertical

**Impact Area:** Bottom, center lite of glass, lower left corner of the glazing

**Observations:** Missile hit target area, no penetration

**Results:** Pass

**Impact #4:** Missile Velocity: 15.42 m/s (50.6 fps); orientation within  $\pm 5^\circ$  of vertical

**Impact Area:** Bottom, center lite of glass, center of the glazing

**Observations:** Missile hit target area, no penetration

**Results:** Pass

**Impact #5:** Missile Velocity: 15.18 m/s (49.8 fps); orientation within  $\pm 5^\circ$  of vertical

**Impact Area:** Bottom, right side lite of glass, upper right corner of the glazing

**Observations:** Missile hit target area, no penetration

**Results:** Pass

**Test Results:** (Continued)

**ASTM E 1886, *Large Missile Impact (Continued)***

**Impact #6:** Missile Velocity: 15.27 m/s (50.1 fps); orientation within  $\pm 5^\circ$  of vertical

**Impact Area:** Bottom, right side lite of glass, center of the glazing

**Observations:** Missile hit target area, no penetration

**Results:** Pass

**Impact #7:** Missile Velocity: 15.42 m/s (50.6 fps); orientation within  $\pm 5^\circ$  of vertical

**Impact Area:** Left intermediate vertical mullion, center of mullion

**Observations:** Missile hit target area, dented the aluminum cap

**Results:** Pass

**Impact #8:** Missile Velocity: 15.39 m/s (50.5 fps); orientation within  $\pm 5^\circ$  of vertical

**Impact Area:** Horizontal mullion, center of mullion

**Observations:** Missile hit target area, dented the aluminum cap

**Results:** Pass

***Note:*** See Architectural Testing Sketch #2 for impact locations.



**Test Results:** (Continued)

**ASTM E 1886, Air Pressure Cycling**

**Design Pressure:**  $\pm 3110$  Pa ( $\pm 65.0$  psf)

**POSITIVE PRESSURE**

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inch)					
			#1	#2	#3	#4	#5	#6
622 to 1555 (13.0 to 32.5)	3500	2.63	1.27 (0.05)	13.21 (0.52)	1.52 (0.06)	2.03 (0.08)	13.97 (0.55)	2.03 (0.08)
0 to 1866 (0 to 39.0)	300	6.08	1.52 (0.06)	15.75 (0.62)	1.52 (0.06)	2.54 (0.10)	16.76 (0.66)	2.28 (0.09)
1555 to 2488 (32.5 to 52.0)	600	3.00	1.78 (0.07)	21.08 (0.83)	1.78 (0.07)	3.30 (0.13)	22.35 (0.88)	2.28 (0.09)
933 to 3110 (19.5 to 65.0)	100	5.34	2.28 (0.09)	22.61 (0.89)	2.54 (0.10)	3.81 (0.15)	23.62 (0.93)	2.54 (0.10)
			<b>Permanent Set</b>					
			1.02 (0.04)	7.36 (0.29)	0.51 (0.02)	2.03 (0.08)	7.11 (0.28)	0.25 (0.01)

**NEGATIVE PRESSURE**

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inch)					
			#1	#2	#3	#4	#5	#6
933 to 3110 (19.5 to 65.0)	50	5.29	4.06 (0.16)	25.4 (1.00)	4.31 (0.17)	4.82 (0.19)	24.38 (0.96)	5.08 (0.20)
1555 to 2488 (32.5 to 52.0)	1050	2.69	3.30 (0.13)	22.86 (0.90)	3.04 (0.12)	5.08 (0.20)	20.82 (0.82)	4.57 (0.18)
0 to 1866 (0 to 39.0)	50	6.53	2.54 (0.10)	18.54 (0.73)	2.54 (0.10)	4.82 (0.19)	16.51 (0.65)	2.28 (0.09)
622 to 1555 (13.0 to 32.5)	3350	2.86	2.28 (0.09)	17.01 (0.67)	2.03 (0.08)	4.57 (0.18)	15.24 (0.60)	2.28 (0.09)
			<b>Permanent Set</b>					
			1.27 (0.05)	7.62 (0.30)	1.52 (0.06)	2.54 (0.10)	5.58 (0.22)	1.77 (0.07)

**Observations:** No additional damage or deglazing was observed.

**Result:** Pass

**Note:** See Architectural Testing Sketch #1 for indicator locations.

**General Note:** All testing was performed in accordance with the referenced standards.

Tape and film were not used to seal against air leakage during structural testing.

**Drawing Reference:** The test specimen drawings have been reviewed by Architectural Testing and are representative of the test specimen reported herein.

#### List of Official Observers

<u>Name</u>	<u>Company</u>
Bill Smith	Coral Architectural Products
Bill Smith, Jr.	Coral Architectural Products
Jack Hook	Architectural Testing, Inc.
Don Beltz	Architectural Testing, Inc.
John McClane	Architectural Testing, Inc.

Detailed drawings, data sheets, representative samples of test specimens, a copy of this report, or other pertinent project documentation will be retained by Architectural Testing, Inc. for a period of four years from the original test date. At the end of this retention period, such materials shall be discarded without notice and the service life of this report will expire.

Results obtained are tested values and were secured by using the designated test methods. If test specimen contains glazing, no conclusions of any kind regarding the adequacy or inadequacy of the glass in the test specimen can be made. This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimen tested. This report may not be reproduced, except in full, without the written approval of Architectural Testing, Inc.

For ARCHITECTURAL TESTING, INC:

---

John C. McClane  
Laboratory Manager

---

Joseph A. Reed, P.E.  
Director - Engineering and Product Testing

JCM:ck/cmd

Attachments (pages): This report is complete only when all attachments listed are included.

- Appendix-A: Test Equipment (1)
- Appendix-B: Photographs (7)
- Appendix-C: Sketches (2)
- Appendix-D: Drawings (16)

### Revision Log

<b><u>Rev. #</u></b>	<b><u>Date</u></b>	<b><u>Page(s)</u></b>	<b><u>Revision(s)</u></b>
0	06/11/09	N/A	Original report issue

**Appendix A**

**Test Equipment**

<b>Instrument</b>	<b>Manufacturer</b>	<b>Asset #</b>
Control panel	Architectural Testing, Inc.	004821
1" Dial indicator	Starrett	004266
1" Dial indicator	Starrett	004270
1" Dial indicator	Starrett	004271
Water spray rack	Architectural Testing, Inc.	004492
Temperature/ Barometer	Davis	004330

## **Appendix B**

### **Photographs**



**Photo No. 1**  
**Test Specimen**



**Photo No. 2**  
**Impact #1**



**Photo No. 3**  
**Impact #2**



**Photo No. 4**  
**Impact #3**





**Photo No. 5**  
**Impact #4**



**Photo No. 6**  
**Impact #5**



**Photo No. 7**  
**Impact #6**



**Photo No. 8**  
**Impact #7**

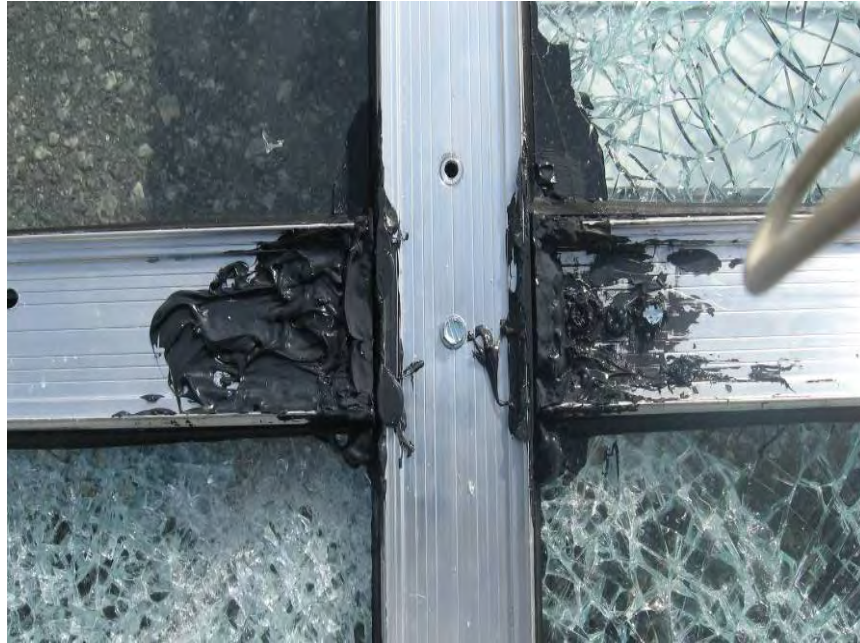




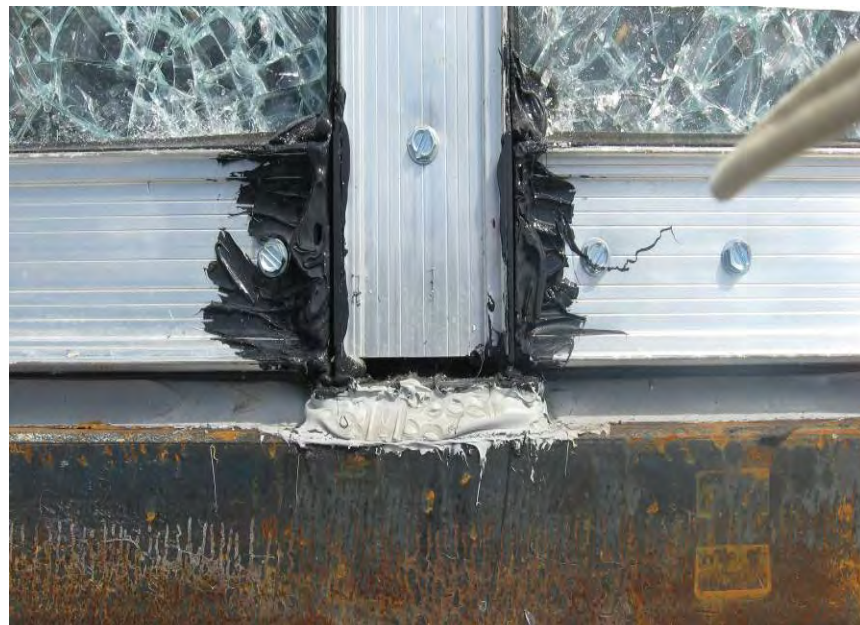
**Photo No. 9**  
**Impact #8**



**Photo No. 10**  
**Horizontal and vertical corner connection**



**Photo No. 11**  
**Horizontal and vertical connection between glass**



**Photo No. 12**  
**Horizontal and vertical connection at sill**



**Photo No. 13**  
**Fastener spacing on all pressure plates**

## **Appendix C**

### **Sketches**





Architectural  
Testing

DATE: 5/11/09

BY: JCM

PROJECT NO. 8746.01 SHEET 1 OF 2

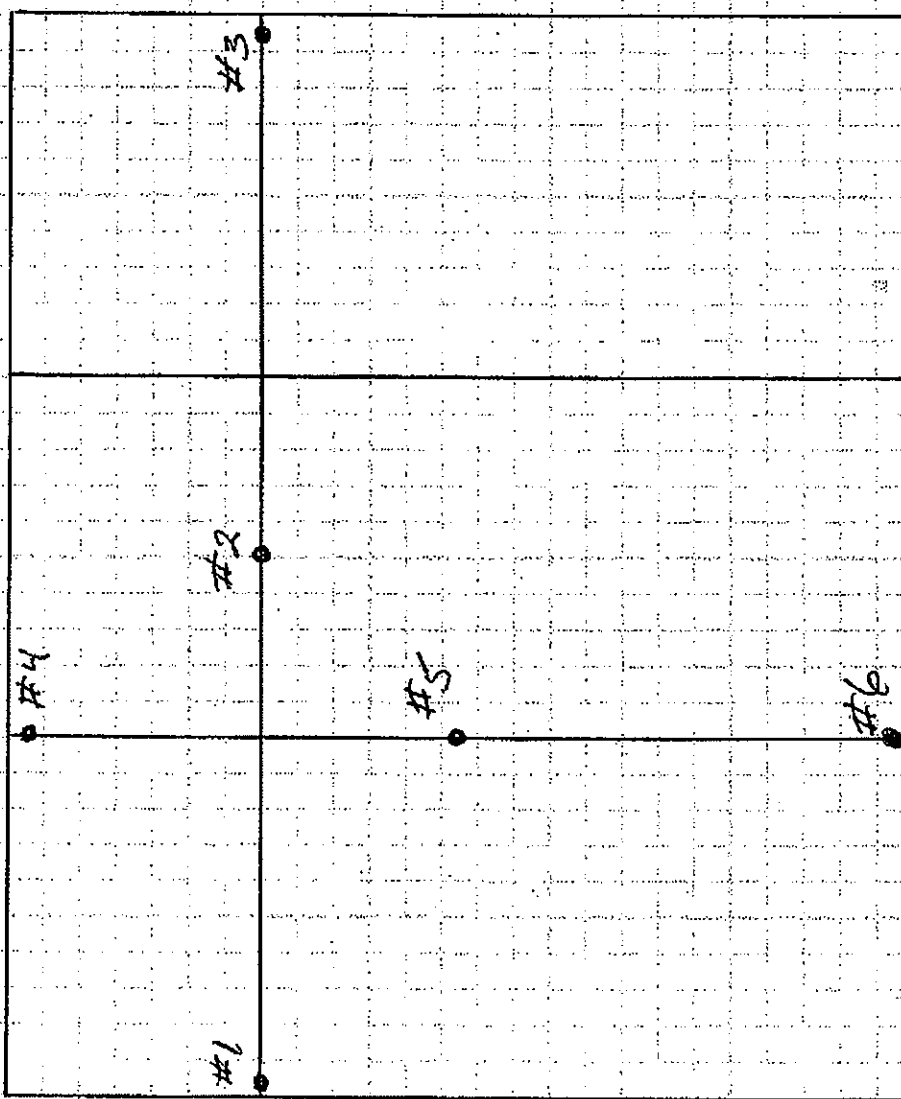
PROJECT NAME: Coral Architectural Prod

AAMA 501-05 STRUCTURAL / ASME 1886

LOAD TESTING, CYCLIC PRESSURE.

INDICATOR LOCATION

SPECIMEN # 1





Architectural  
Testing

DATE: 5/11/09

BY: JCM

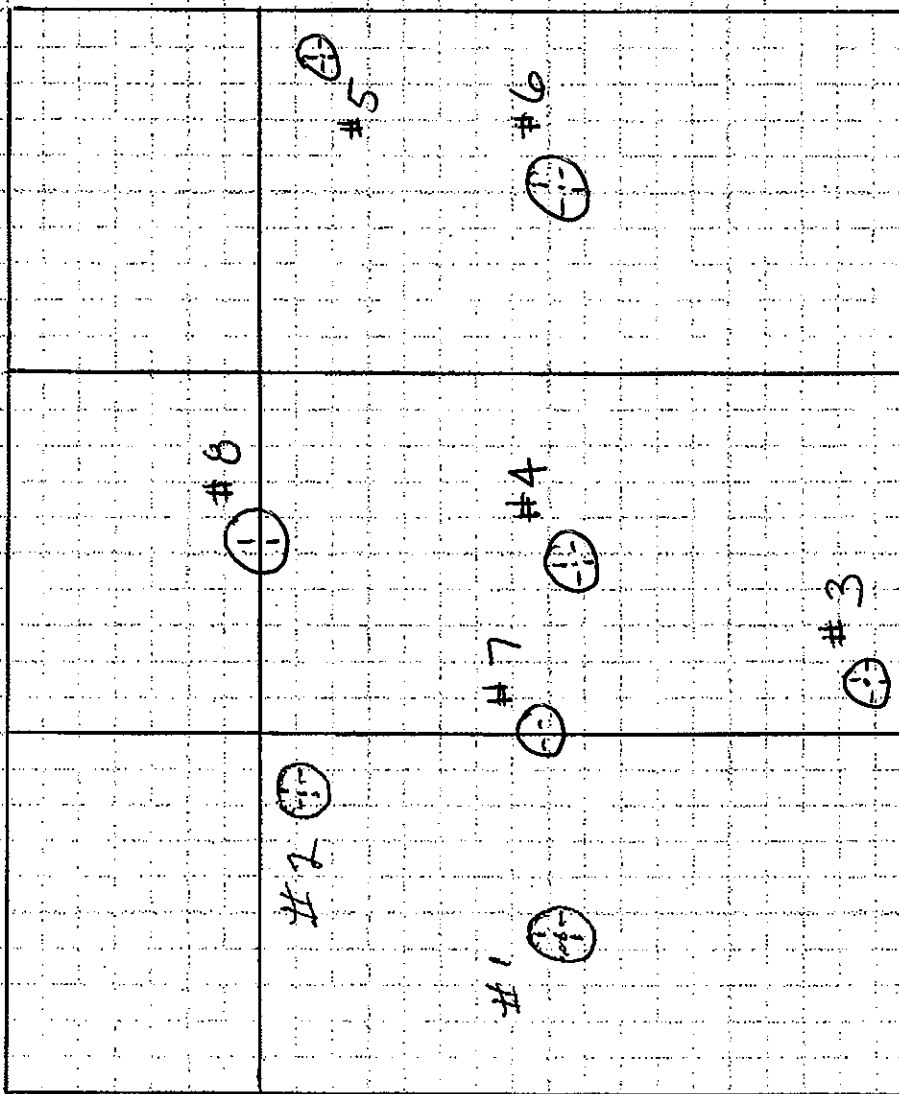
PROJECT NO. 87460.01 SHEET 2 OF 2

PROJECT NAME: CORAL ARCHITECTURAL PROJ

ASTM E 1886/1896

IMPACT LOCATIONS

SPECIMEN #2



## **Appendix D**

### **Drawings**

# TEST REPORT DRAWINGS

## PW256 IMPACT-RESISTANT CURTAIN WALL SYSTEM

### FOR USE IN HURRICANE ZONES REQUIRING LARGE MISSILE IMPACT PROTECTION

INDEX TO DRAWINGS	
1	INDEX TO DRAWINGS AND NOTES
2	FRAMING ELEVATION - E1 CAPTURED AND B.G. MULLIONS WITH STEEL -LONG SPAN-
3	FRAMING ELEVATION - E2 CAPTURED MULLION WITHOUT STEEL -SHORT SPAN-
4	FRAMING ELEVATION - E3 B.G. MULLION WITHOUT STEEL -SHORT SPAN-
5	FRAMING ELEVATION - E4 CAPTURED MULLION WITH STEEL -LONG SPAN- SMALL MISSILE
6	FRAMING ELEVATION FOR DOORS - E5 CAPTURED MULLION WITH STEEL -LONG SPAN-
7	FRAMING ELEVATION - E6 CAPTURED MULLION WITH STEEL - LONG SPAN- LARGE MISSILE
8	FRAMING DETAILS
9	FRAMING DETAILS
10	FRAMING DETAILS
11	DOOR AND FRAMING DETAILS
12	DOOR AND FRAMING DETAILS
13	FRAMING DETAILS
14	BILL OF MATERIALS
15	BILL OF MATERIALS AND GLAZING SCHEDULE
16	DIE DRAWINGS

#### ABBREVIATIONS:

D.L.O. = DAY LIGHT OPENING  
 D.O.H. = DOOR OPENING HEIGHT  
 D.O.W. = DOOR OPENING WIDTH  
 ELEVS = ELEVATIONS  
 EXT. = EXTERIOR  
 INT. = INTERIOR  
 MAX. = MAXIMUM  
 MIN. = MINIMUM  
 OPP. = OPPOSITE  
 TYP. = TYPICAL



Test sample complies with these details.  
Deviations are noted.

Report# 87460.01  
 Date 5/12/09 Tech JCM

REV	BY	DATE	DESCRIPTION

**Coral**  
 Architectural Products  
 10000 N. 15TH AVE., SUITE 100  
 DALLAS, TEXAS 75244  
 PHONE 972-251-1131 FAX 972-251-1132

TEST REPORT DRAWINGS  
 PW256 IMPACT-RESISTANT  
 CURTAIN WALL SYSTEM  
 INDEX TO DRAWINGS AND NOTES

DATE	4/14/2009
DRAWN	CHECKED
DCW	DCW
APPROVED	DCW
PROJECT NO.	TEST
DRAWING NO.	PW256_01
SHEET	1 OF 16



## BILL OF MATERIALS

ITEM NO.	P/N	DESCRIPTION	DIMENSIONS	MATERIAL	MANUFACTURER	3NOTES
1	NG5	BULB GASKET - DOORFRAME STOP	0.165 SPACE	EPDM	VARIES	
2	NG10	EXTERIOR GLAZING GASKET	0.250 SPACE	EPDM	VARIES	
3	NG11	EXTERIOR PERIMETER GASKET	0.300 SPACE	EPDM	VARIES	
4	NG12	PRESSURE BAR GASKET (ISOLATOR)	0.140 SPACE	EPDM	VARIES	
5	NG14	INTERIOR SPACER GASKET	0.250 SPACE	EPDM	VARIES	
6	SM5601	JOINT SEALANT TAPE	0.500 X 0.125 X VARIES	BUTYL	SCHNEE-MOOREHEAD	
7	795	SILICONE - PERIMETER SEALANT	FILL SPACE	SILICONE	DOW CORNING	USED @ PERIMETER
8	995	SILICONE - GLASS TO METAL	FILL SPACE	SILICONE	DOW CORNING	GLASS TO METAL AND INTERNAL
9	SB14	SETTING BLOCK @ SILL & HORIZONTAL	0.875 X 0.188 X 4.000	EPDM	VARIES	2 PER LITE
10	SP202	END DAM @ CAPTURED MULLION	1.287 X 1.068 X 0.745	INJECTION MOLDED PLASTIC	CORAL INDUSTRIES, INC.	LOCATE 1 @ EACH END OF HORIZONTAL
11	SP206	BRIDGE DAM @ B.G. MULLION	3.123 X 0.843 X 0.745	INJECTION MOLDED PLASTIC	CORAL INDUSTRIES, INC.	LOCATE 1 @ HORIZONTAL AND B.G. MULLION
12	SP210	MULLION CAP	3.000 X 1.925 X 0.048	6063-T6 ALUMINUM	CORAL INDUSTRIES, INC.	LOCATE @ TOP AND BOTTOM OF VERTICAL
13	2086	JACKSON 2086 PANIC	36.000 X 7.3125 X 3.000	ALUMINUM	JACKSON	
14	PW151	B.G. MULLION	2.500 X 5.000 X 0.094	6063-T6 ALUMINUM	CORAL INDUSTRIES, INC.	
15	PW202	OPEN BACK MULLION FILLER	0.681 X 4.484 X 0.094	6063-T6 ALUMINUM	CORAL INDUSTRIES, INC.	
16	PW203	HEAD/ SILL/ HORIZONTAL TRIM	2.500 X 4.980 X 0.078	6063-T6 ALUMINUM	CORAL INDUSTRIES, INC.	
17	PW204	PRESSURE BAR	2.443 X 0.433 X 0.125	6063-T6 ALUMINUM	CORAL INDUSTRIES, INC.	
18	PW205	FACE COVER	2.500 X 0.500 X 0.062	6063-T6 ALUMINUM	CORAL INDUSTRIES, INC.	
19	PW208	FEMALE HALF 90° CORNER	1.625 X 6.110 X 0.094	6063-T6 ALUMINUM	CORAL INDUSTRIES, INC.	
20	PW209	MALE HALF 90° CORNER	1.875 X 6.110 X 0.094	6063-T6 ALUMINUM	CORAL INDUSTRIES, INC.	
21	PW210	INTERIOR CORNER TRIM	2.500 X 1.288 X 0.078	6063-T6 ALUMINUM	CORAL INDUSTRIES, INC.	
22	PW214	SUB DOORFRAME	1.000 X 4.500 X 0.080	6063-T6 ALUMINUM	CORAL INDUSTRIES, INC.	
23	PW513	POCKET FILLER FOR PW550	0.937 X 1.193 X 0.078	6063-T6 ALUMINUM	CORAL INDUSTRIES, INC.	
24	PW550	VERTICAL MULLION	2.500 X 5.843 X 0.094	6063-T6 ALUMINUM	CORAL INDUSTRIES, INC.	
25	PW552	HEAD/SILL	2.390 X 5.637 X 0.094	6063-T6 ALUMINUM	CORAL INDUSTRIES, INC.	
26	PW555	INTERMEDIATE HORIZONTAL	2.390 X 5.730 X 0.094	6063-T6 ALUMINUM	CORAL INDUSTRIES, INC.	
27	PW556	GLAZING TEE - 90° CORNER	2.584 X 2.584 X 0.094	6063-T6 ALUMINUM	CORAL INDUSTRIES, INC.	
28	DS200	DOORFRAME STOP	0.882 X 1.149 X 0.050	6063-T6 ALUMINUM	CORAL INDUSTRIES, INC.	
29	TH4	THRESHOLD	0.500 X 4.000 X 0.125	6063-T6 ALUMINUM	CORAL INDUSTRIES, INC.	
30	TH403	THRESHOLD CLIP	1.390 X 1.516 X 1.909	STEEL	VARIES	

(CONTINUED ON SHEET 15)



**Architectural Testing**

Test sample complies with these details.  
Deviations are noted.

Report# 87460.01  
Date 5/12/09 Tech JCM

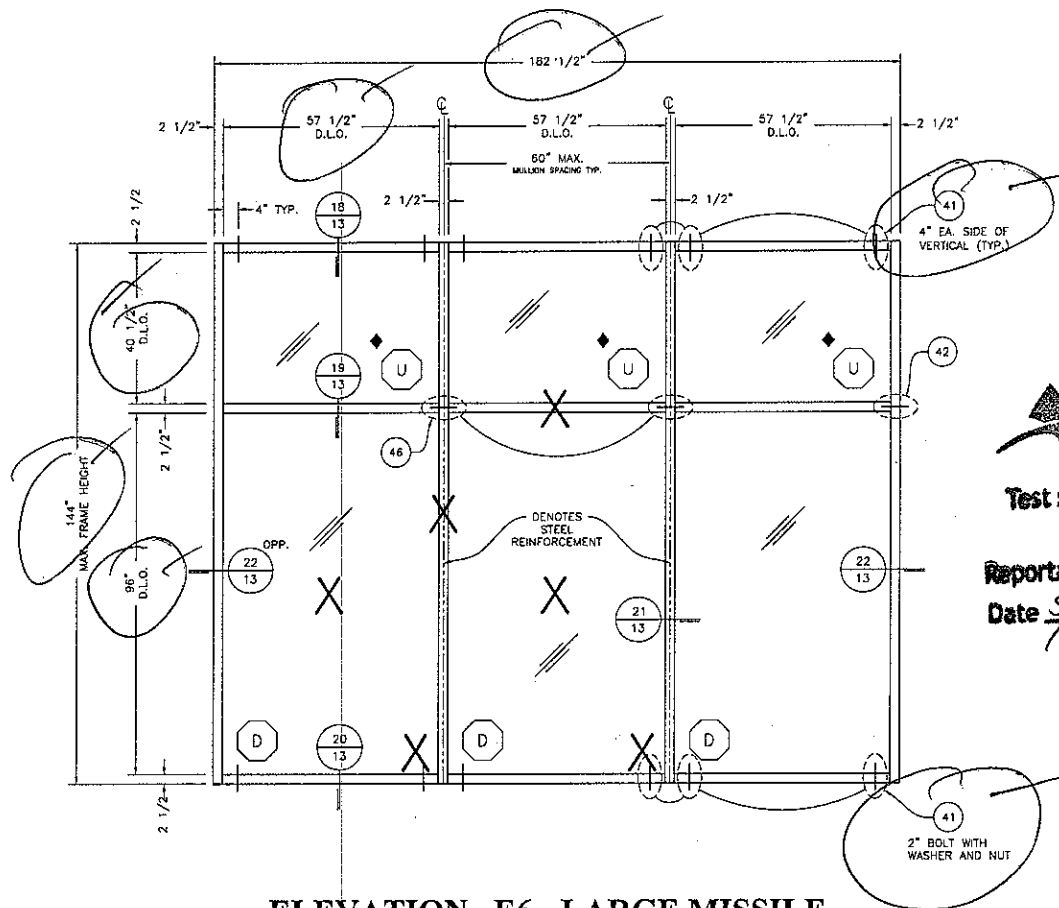
**Coral**  
Architectural Products  
3010 WEST MAIN ROAD, TUSCALOOSA, AL 35408  
PHONE 205-773-7727 FAX 205-443-4561

TEST REPORT DRAWINGS  
PW256 IMPACT-RESISTANT  
CURTAIN WALL SYSTEM

BILL OF MATERIALS

DATE 4/14/2009			
DRAWN DCW	CHECKED DCW	APPROVED DCW	
PROJECT NO.			
DRAWING NO.			
PW256_01			
SHEET 14 OF 16			

SPECIMEN #E6	
TEST METHOD	TEST CONDITIONS
LARGE MISSILE IMPACT TEST (ASTM E1886/E1996 AND TAS 201)	9-LB 40Z, 2x4 @ 50FT/SEC
CYCLIC LOAD TEST (ASTM E1996 AND TAS 201)	+/- 65 PSF DESIGN PRESSURE
WATER TEST	12 PSF



**ELEVATION E6 - LARGE MISSILE  
CAPTURED MULLION -LONG SPAN-  
WITH SR150 & 1/2"X 3-3/4" BAR  
STEEL REINFORCEMENT**

STEEL BUCK FRAME

TESTING:  
IMPACT, WATER AND CYCLE

MAX. ALLOWABLE DEFLECTION  $(L/180) = 0.833$

DESIGN PRESSURE = +/- 65 PSF

X = LARGE MISSILE IMPACT LOCATIONS

◆ = INFILL ONLY (DO NOT IMPACT)

0 1'-4" 2'-8" 5'-4"  
SCALE: 3/8"=1'-0"

**Architectural Testing**  
Test sample complies with these details.  
Deviations are noted.

Report# 87460.01  
Date 5/12/09 Tech JCM

TEST REPORT DRAWINGS  
PW256 IMPACT-RESISTANT  
CURTAIN WALL SYSTEM

FRAMING ELEVATION

DATE 4/14/2008  
DRAWN DCW CHECKED DCW APPROVED DCW  
PROJECT NO.  
DRAWING NO. PW256\_01  
SHEET 7 OF 16

**Coral**  
Architectural Products  
3010 RICE AVE. SUITE 100, TUCUMAN, AZ 85705  
PHONE: 800-725-7337 FAX: 800-443-4261

## BILL OF MATERIALS

ITEM NO.	P/N	DESCRIPTION	DIMENSIONS	MATERIAL	MANUFACTURER	NOTES
31	SR150	REINFORCEMENT CHANNEL	4.500 X 1.875 X 0.250	A36 STEEL	VARIES	STEEL REINFORCEMENT FOR (14) AND (24)
32	SR504	REINFORCEMENT CHANNEL	4.562 X 1.250 X 0.250	A36 STEEL	VARIES	STEEL REINFORCEMENT FOR (14) AND (24)
33		SR150 WITH REINFORCEMENT BAR	3.750 X 0.500	A36 STEEL	VARIES	STEEL REINFORCEMENT FOR (14) AND (24)
34		SR150 WITH REINFORCEMENT BAR	3.750 X 0.750	A36 STEEL	VARIES	STEEL REINFORCEMENT FOR (14) AND (24)
35	FL207	DOOR HEADER	1.750 X 4.500 X 0.085	6063-T6 ALUMINUM	CORAL INDUSTRIES, INC.	
36	AS13	SQUARE NUT	1.475 X 1.475 X .180	STEEL	VARIES	
37	AS16	FASTENER	#14 X 1" HHSTS	STEEL	VARIES	TYP. SPLINE SCREW
38	AS19	FASTENER	#12 X 1" HWH SELF DRILL	STEEL	VARIES	
39	AS25	FASTENER	#12 X 3/4" HWH SELF DRILL	STEEL	VARIES	
40	AS37	FASTENER	#12 X 2" HWH SELF DRILL	STEEL	VARIES	
41	FASTENER	PERIMETER ANCHOR TO STEEL SUBSTRATE	1/2"-13 X 2" BOLT WITH WASHER AND NUT	STEEL	VARIES	
42	FASTENER	PERIMETER ANCHOR TO STEEL SUBSTRATE	1/2"-13 X 4-1/2" BOLT WITH WASHER AND NUT	STEEL	VARIES	
43	FASTENER	PERIMETER ANCHOR TO CONCRETE SUBSTRATE	1/2" LDT OR WEDGE ANCHOR	STEEL	VARIES	
44	FASTENER	PERIMETER ANCHOR TO STEEL SUBSTRATE	#12 X 1-1/2" PFH SELF DRILL	STEEL	VARIES	
45	FASTENER	STEEL REINFORCEMENT ATTACHMENT	1/4-20 X 2" BOLT WITH WASHER AND NUT	STEEL	VARIES	
46	FASTENER	THROUGH BOLT	1/4-20 X 3" BOLT WITH WASHER AND NUT	STEEL	VARIES	USED @ HORIZONTALS
47	NG16	DRY GLAZE INTERIOR SPACER GASKET	0.260 SPACE	EPDM	VARIES	
48	PW158	CORNER FACE COVER	3.752 X .500 X .062	6063-T6 ALUM	CORAL INDUSTRIES, INC.	
49	PW154	CORNER PRESSURE BAR	3.637 X 3.637 X .125	6063-T6 ALUM	CORAL INDUSTRIES, INC.	

## GLAZING SCHEDULE

GLASS MARK	GLASS DESCRIPTION	MANUFACTURER	MAXIMUM D.L.O. SIZE (INCHES)	SQUARE FEET	MAXIMUM DESIGN PRESSURE (PSF)
A	9/16" OVERALL THICKNESS LAMINATED GLASS CONSISTING OF TWO 1/4" H.S. GLASS AND A 0.075 VENCEVA INTERLAYER	SOLUTIA	57-1/2" X 96"	38.3	± 80
B	9/16" OVERALL THICKNESS LAMINATED GLASS CONSISTING OF TWO 1/4" H.S. GLASS AND A 0.090 SOLUTIA SAFLEX PVB INTERLAYER	SOLUTIA	45-1/2" X 96"	30.3	± 65
B6	9/16" OVERALL THICKNESS LAMINATED GLASS CONSISTING OF TWO 1/4" H.S. GLASS AND A 0.060 SOLUTIA SAFLEX PVB INTERLAYER	SOLUTIA	57-1/2" X 96"	38.3	± 80
D	9/16" OVERALL THICKNESS LAMINATED GLASS CONSISTING OF TWO 1/4" H.S. GLASS AND A SGP (SENTRY GLASS PLUS) INTERLAYER	DUPONT	57-1/2" X 96"	38.3	± 65
U	9/16" OVERALL THICKNESS LAMINATED GLASS CONSISTING OF TWO 1/4" H.S. GLASS AND A 0.120 UVEKOL TYPE "S" INTERLAYER	CORAL INDUSTRIES, INC.	45-1/2" X 96"	30.3	± 65
U6	9/16" OVERALL THICKNESS LAMINATED GLASS CONSISTING OF TWO 1/4" H.S. GLASS AND A 0.060 UVEKOL TYPE "S" INTERLAYER	CORAL INDUSTRIES, INC.	57-1/2" X 96"	38.3	± 80



**Architectural Testing**

Test sample complies with these details  
Deviations are noted.

Report# 87460.01

Date 5/12/09 Tech DCM

TEST REPORT DRAWINGS  
 PW256 IMPACT-RESISTANT  
 CURTAIN WALL SYSTEM  
 BILL OF MATERIALS AND GLAZING  
 SCHEDULE

DATE 4/14/2009  
 DRAWN DCW CHECKED DCW APPROVED DCW  
 PROJECT NO.  
 DRAWING NO. PW256\_01  
 SHEET 15 OF 16

**Coral**  
 Architectural Products  
 3010 BICE MAIN ROAD, TUSCALOOSA, AL 35406  
 PHONE: 205-773-7727 FAX: 205-773-4261



# Architectural Testing

Test sample complies with these details.  
Deviations are noted.

Report# 87460.01

Date 5/12/09

Tech JCM

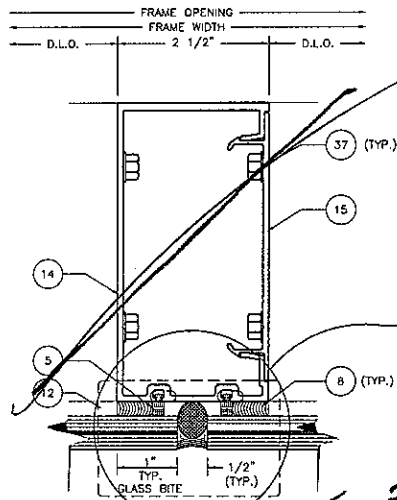
Architectural Testing

Test sample complies with these details.  
Deviations are noted.

Report# 87460.01

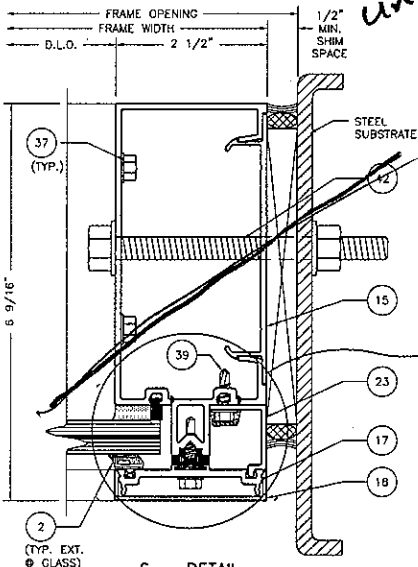
Date 5/12/09

Tech JCM



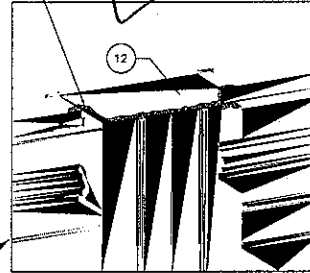
5 - DETAIL 1:2

NOT used on this unit



6 - DETAIL 1:2

SEAL CONTACT SURFACE W/ DOW 795 BEFORE INSTALLING TOP AND BOTTOM CLOSURE CAP



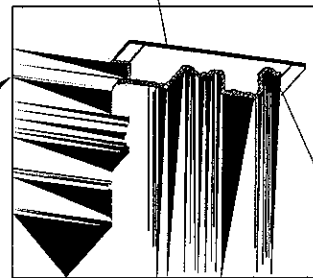
TOP SHOWN CLOSURE CAP (BOTTOM SIMILAR)

CRITICAL SEAL  
FILL GASKET REGLET BEHIND END DAM W/ DOW 795

CRITICAL SEAL  
APPLY DOW 795 SEALANT TO ALL THREE CONTACT SURFACES PRIOR TO INSTALLATION AT HORIZONTALS AND SILL.

used on this unit

FIELD MODIFY @ JAMB IF REQUIRED



TOP SHOWN CLOSURE CAP (BOTTOM SIMILAR)

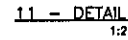
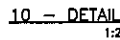
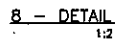
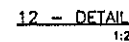
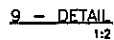
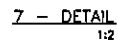
SEAL CONTACT SURFACE W/ DOW 795 BEFORE INSTALLING TOP AND BOTTOM CLOSURE CAP

CRITICAL SEAL  
APPLY DOW 795 SEALANT TO ALL THREE CONTACT SURFACES PRIOR TO INSTALLATION AT HORIZONTALS AND SILL.

**Coral**  
Architectural Products  
3010 NINE MILE ROAD, TUSCALOOSA, AL 35406  
PHONE 800-772-7277 FAX 205-344-4261

TEST REPORT DRAWINGS  
PW256 IMPACT-RESISTANT CURTAIN WALL SYSTEM  
FRAMING DETAILS

DATE 4/14/2009  
DRAWN DCW CHECKED DCW APPROVED DCW  
PROJECT NO.  
DRAWING NO. PW256\_01  
SHEET 9 OF 16



NOT used  
85731.01

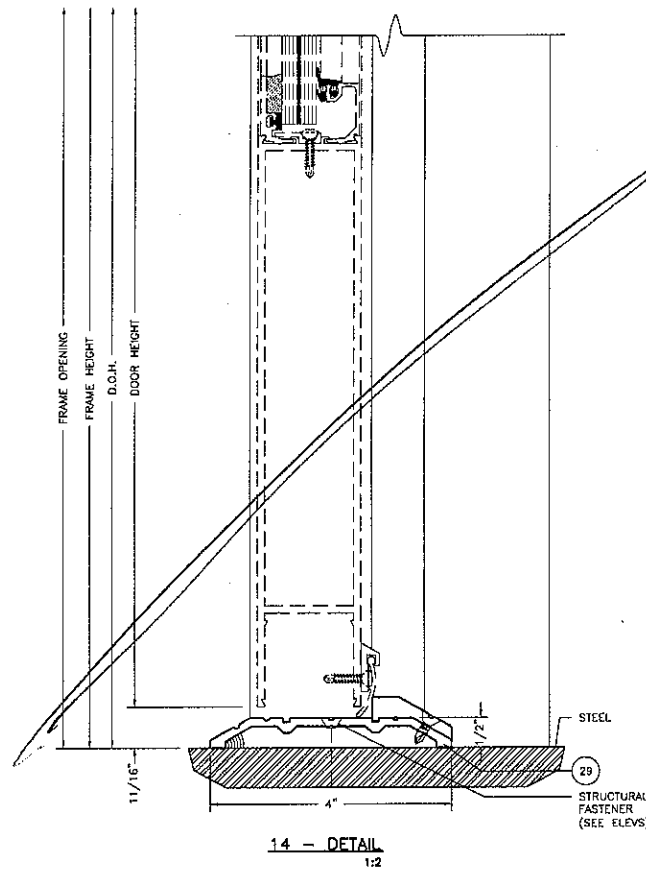
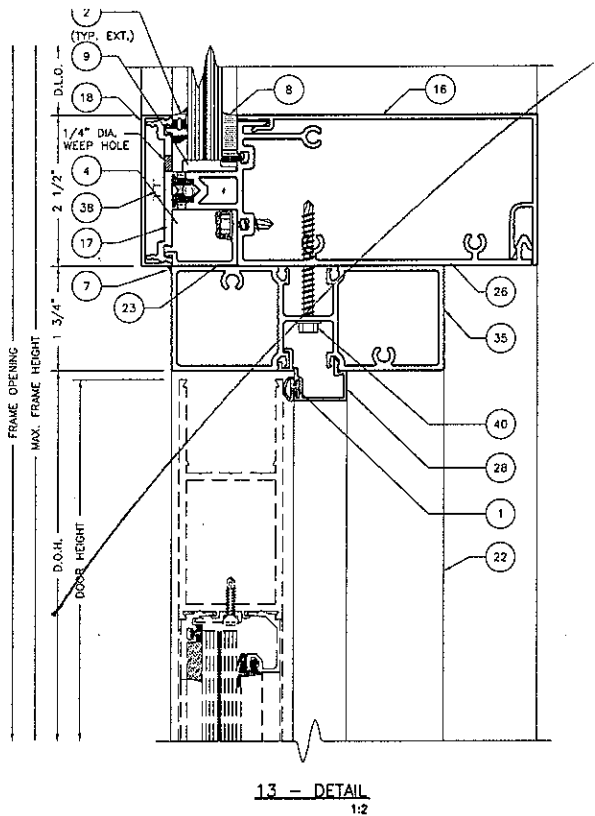
*Coral*

■ Architectural Products ■  
80710 INCE, NINE ROAD, TUSCALOOSA, AL 35408  
PHONE: 800-772-7737 FAX: 800-443-6261

**TEST REPORT DRAWINGS  
PW256 IMPACT-RESISTANT  
CURTAIN WALL SYSTEM**

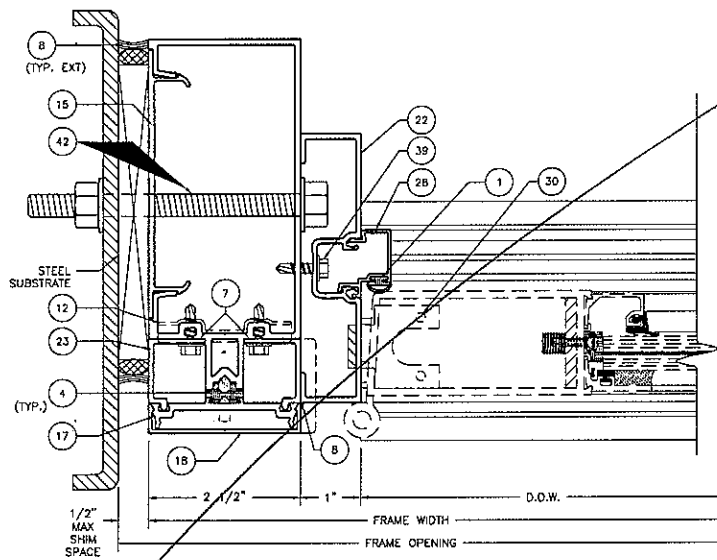
## FRAMING DETAILS

DATE 4/14/2009		
DRAWN DCW	CHECKED DCW	APPROVED DCW
PROJECT NO.		
DRAWING NO. PW256_01		
SHEET 10 OF 16		

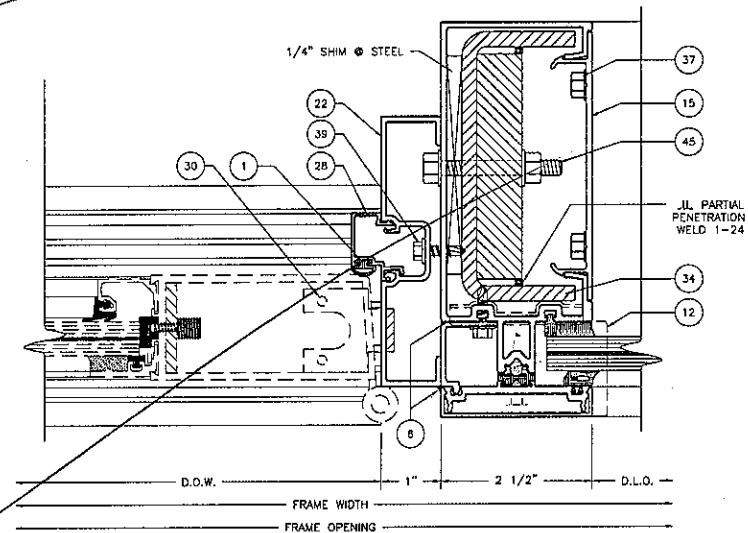


# 85743.01

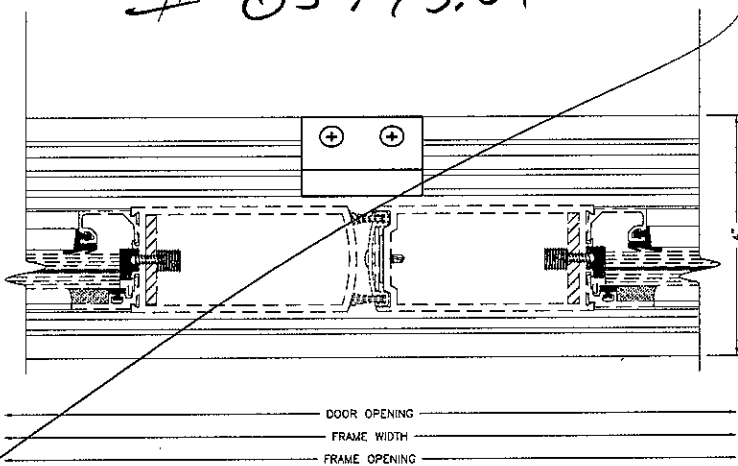
<p>TEST REPORT DRAWINGS PW256 IMPACT-RESISTANT CURTAIN WALL SYSTEM</p>			<p>DOOR AND FRAMING DETAILS</p>		
<p>DATE 4/14/2009</p>					
<p>DRAWN DCW</p>	<p>CHECKED DCW</p>	<p>APPROVED DCW</p>	<p>PROJECT NO.</p>		
<p>DRAWING NO. PW256_01</p>			<p>SHEET 11 OF 16</p>		
<p>Coral Architectural Products 3010 WILSON ROAD, TULSA, OK 74115 PHONE: 918-722-7237 FAX: 918-443-8281</p>					



15 - DETAIL  
1/2



17 - DETAIL  
1/2



16 - DETAIL  
1/2

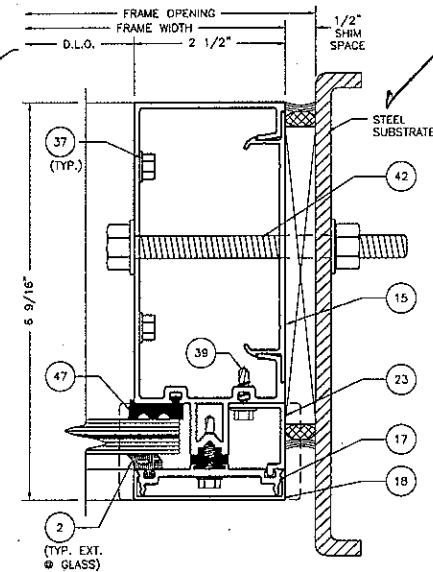
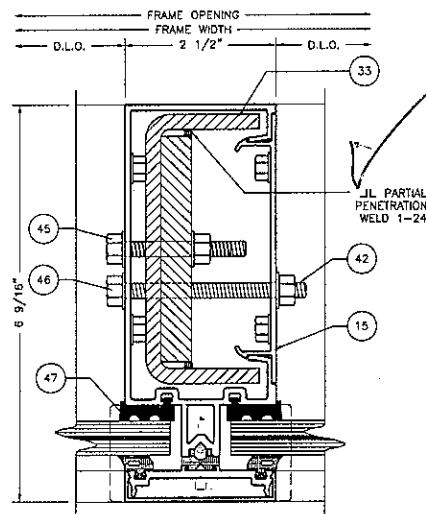
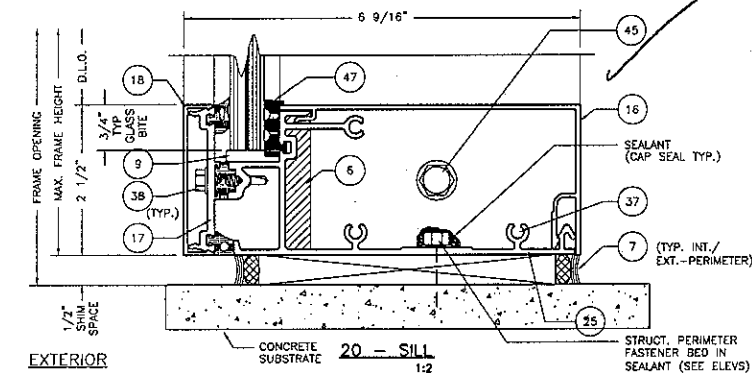
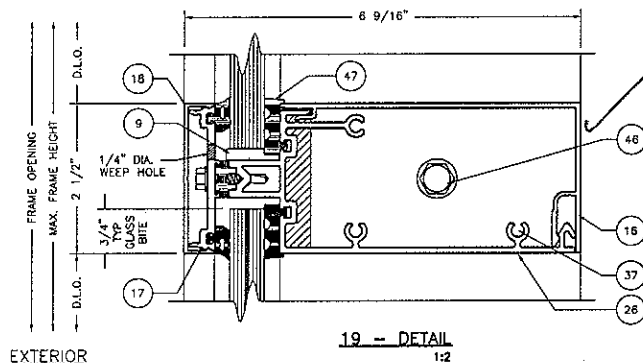
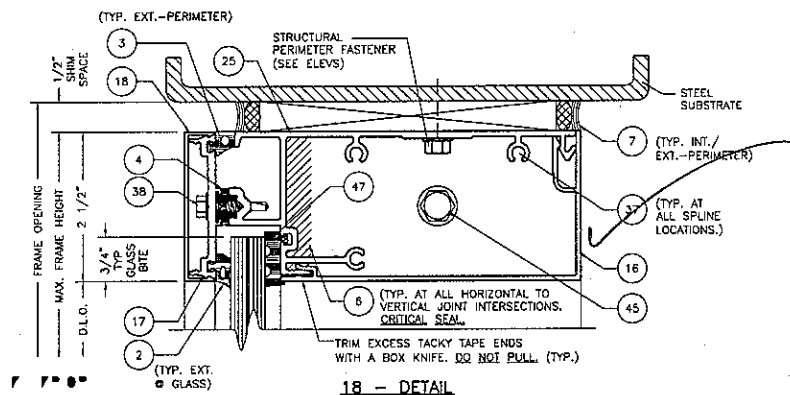
# 85743.01

**Coral**  
Architectural Products  
3010 RICE AVE. WALKER, AL 35408  
PHONE: 205-772-7727 FAX: 205-443-0261

TEST REPORT DRAWINGS  
PW256 IMPACT-RESISTANT  
CURTAIN WALL SYSTEM  
DOOR AND FRAMING DETAILS

DATE	4/14/2009
DRAWN	DCW
CHECKED	DCW
APPROVED	DCW
PROJECT NO.	
DRAWING NO.	PW256_01
SHEET	12 OF 16





**Architectural Testing**

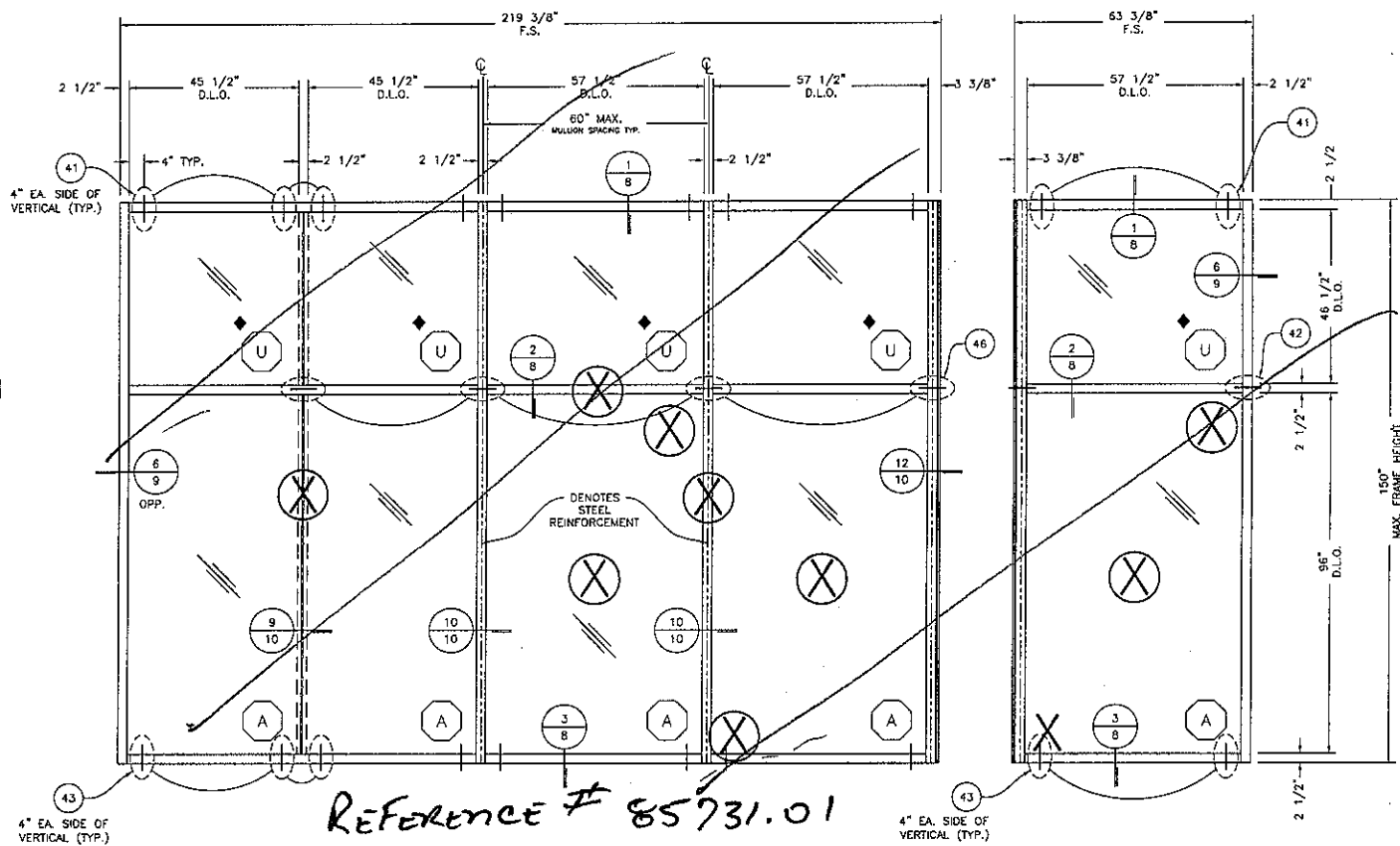
Test sample complies with these details.  
Deviations are noted.

Report# 87460.01  
Date 5/12/09 Tech JCR

DRAWINGS FOR  
FLORIDA  
PRODUCT APPROVAL

DATE		4/14/2009
DRAWN	DCH	CHECKED
DCH	DCH	APPROVED
DCH	DCH	DCH
PROJECT NO.		
DRAWING NO.		PW256_01
SHEET		13 OF 16
TEST REPORT DRAWINGS		PW256 IMPACT-RESISTANT CURTAIN WALL SYSTEM
FRAMING DETAILS		
Coral		Architectural Products
		3000 W. W. ROAD, TUCULUMSA, AL 36864
		PHONE 904-772-7727 FAX 904-772-7727

SPECIMEN #E1	
TEST METHOD	TEST CONDITIONS
AIR INFILTRATION TEST (ASTM E283 AND TAS 202)	1.57 PSF & 6.24 PSF
WATER INFILTRATION TEST (ASTM E331 AND TAS 202)	20.00 PSF
UNIFORM STATIC LOAD TEST (ASTM E330 AND TAS 202)	+/- 80 PSF DESIGN PRESSURE
LARGE MISSILE IMPACT TEST (ASTM E1863/1996 AND TAS 201)	4-LB 402, 2x4 @ 50FT/SEC
CYCLIC LOAD TEST (ASTM E1996 AND TAS 203)	+/- 80 PSF DESIGN PRESSURE



**ELEVATION E1**  
**CAPTURED & B.G. MULLIONS -LONG SPAN-**  
**WITH SR150 & 1/2\"x 3-3/4\" BAR**  
**STEEL REINFORCEMENT**

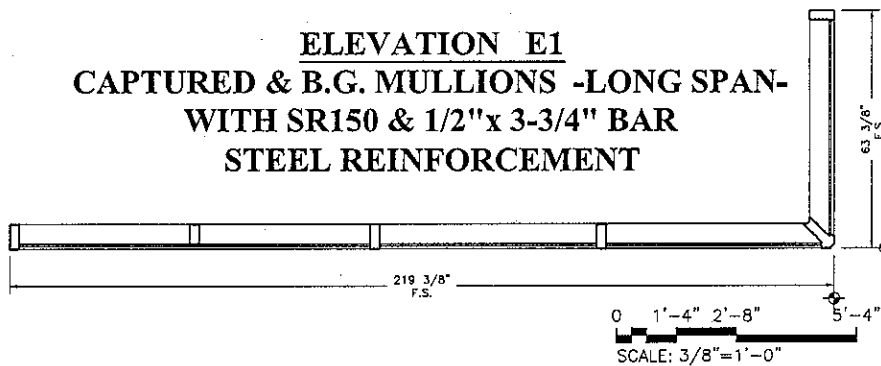
STEEL BUCK FRAME

TESTING:  
 AIR, WATER, STATIC, IMPACT, AND CYCLE

MAX. ALLOWABLE DEFLECTION (L/180)= 0.833

DESIGN PRESSURE = +/-80 PSF

- (X) = LARGE MISSILE IMPACT LOCATIONS  
 ♦ = INFILL ONLY (DO NOT IMPACT)



0 1'-4\" 2'-8\" 5'-4\"  
 SCALE: 3/8\"=1'-0\"

**Coral**  
 Architectural Products

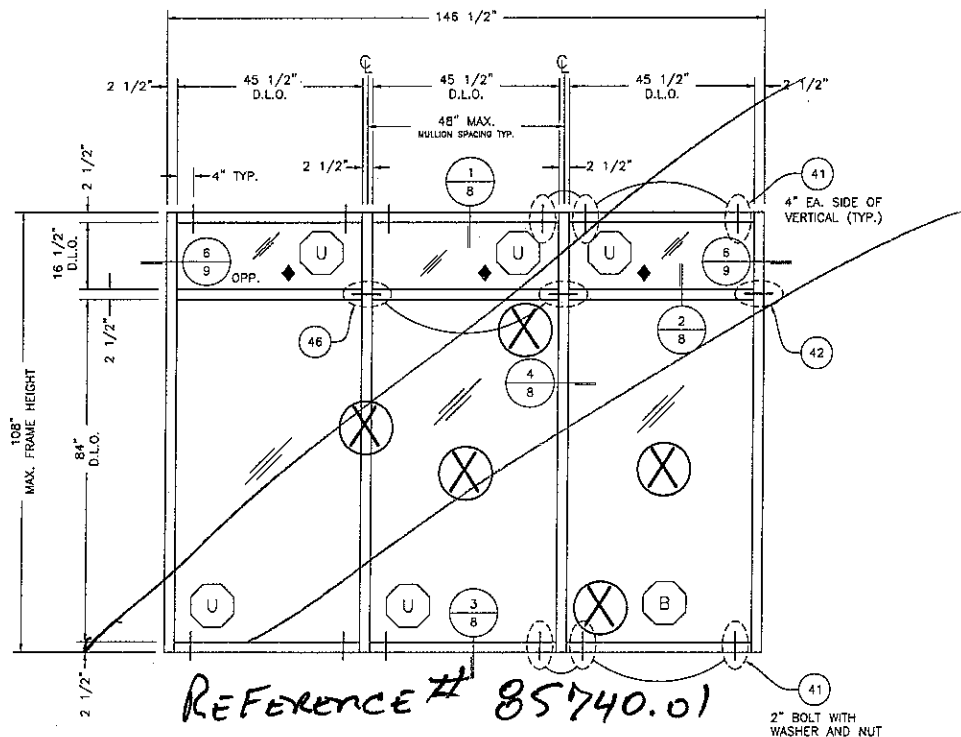
3010 SURE AVE. #200, THE DALY CITY, CA 94015  
 PHONE: 800-723-7137 FAX: 800-555-1238

TEST REPORT DRAWINGS  
 PW256 IMPACT-RESISTANT  
 CURTAIN WALL SYSTEM

FRAMING ELEVATION

DATE 4/14/2009  
 DRAWN DCW CHECKED DCW APPROVED DCW  
 PROJECT NO. TEST  
 DRAWING NO. PW256 01  
 SHEET 2 OF 16

SPECIMEN #E2	
TEST METHOD	TEST CONDITIONS
UNIFORM STATIC LOAD TEST (ASTM E330 AND TAS 202)	+/- 65 PSF DESIGN PRESSURE
LARGE MISSILE IMPACT TEST (ASTM E1886/E1996 AND TAS 201)	9-LB 4OZ. 2x4 @ 50FT/SEC
CYCLIC LOAD TEST (ASTM E1996 AND TAS 203)	+/- 65 PSF DESIGN PRESSURE



**ELEVATION E2**  
**CAPTURED MULLION -SHORT SPAN-**  
**WITHOUT REINFORCEMENT**

STEEL BUCK FRAME

TESTING:  
STATIC, IMPACT, AND CYCLE

MAX. ALLOWABLE DEFLECTION  $(L/180) = 0.600$

DESIGN PRESSURE = +/- 65 PSF

(X) = LARGE MISSILE IMPACT LOCATIONS  
◆ = INFILL ONLY (DO NOT IMPACT)

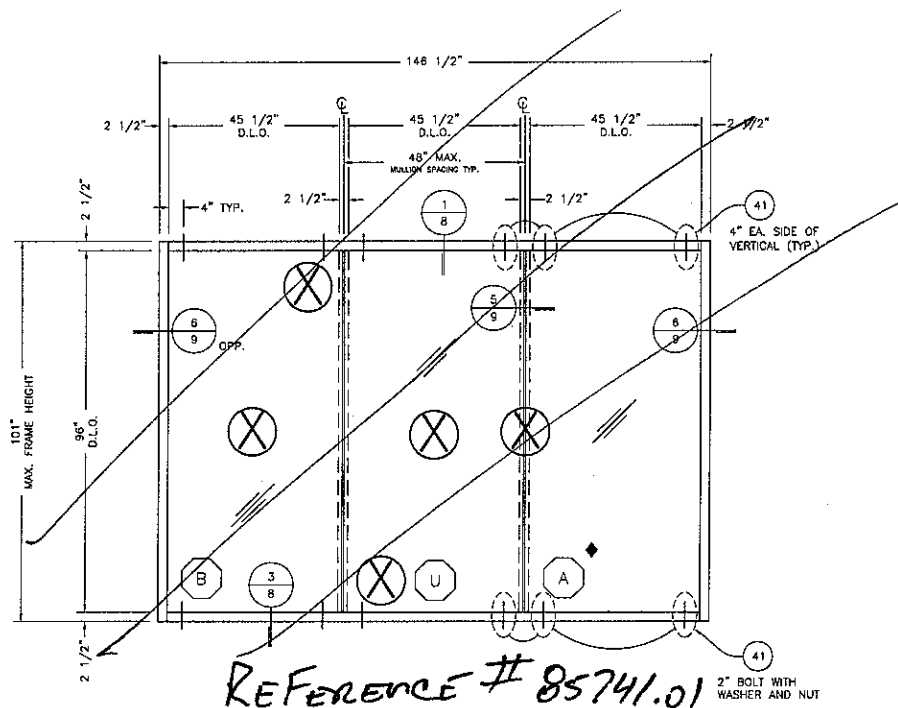
0 1'-4" 2'-8" 5'-4"  
SCALE: 3/8"=1'-0"

**Coral**  
Architectural Products  
300 66th Ave. S.W. #1000 AL 9648  
PHONE: 404-722-1237 FAX: 404-355-1200

TEST REPORT DRAWINGS  
PW256 IMPACT-RESISTANT  
CURTAIN WALL SYSTEM  
FRAMING ELEVATION

DATE 4/14/2009  
DRAWN DCW CHECKED DCW APPROVED DCW  
PROJECT NO. TEST  
DRAWING NO. PW256\_01  
SHEET 3 OF 16

SPECIMEN #E3	
TEST METHOD	TEST CONDITIONS
UNIFORM STATIC LOAD TEST (ASTM E1330 AND TAS 202)	+/- 65 PSF DESIGN PRESSURE
LARGE MISSILE IMPACT TEST (ASTM E1866/E1996 AND TAS 201)	9-LB 402, 2x4 @ 50FT/SEC
CYCLIC LOAD TEST (ASTM E1996 AND TAS 203)	+/- 65 PSF DESIGN PRESSURE



REFERENCE # 85741.01

**ELEVATION E3**

**B.G. MULLION -SHORT SPAN-**

**WITHOUT REINFORCEMENT**

STEEL BUCK FRAME

TESTING:  
STATIC, IMPACT, AND CYCLE

MAX. ALLOWABLE DEFLECTION (L/180)= 0.561

DESIGN PRESSURE = +/- 65 PSF

⊗ = LARGE MISSILE IMPACT LOCATIONS

◆ = INFILL ONLY (DO NOT IMPACT)

0 1'-4" 2'-8" 5'-4"

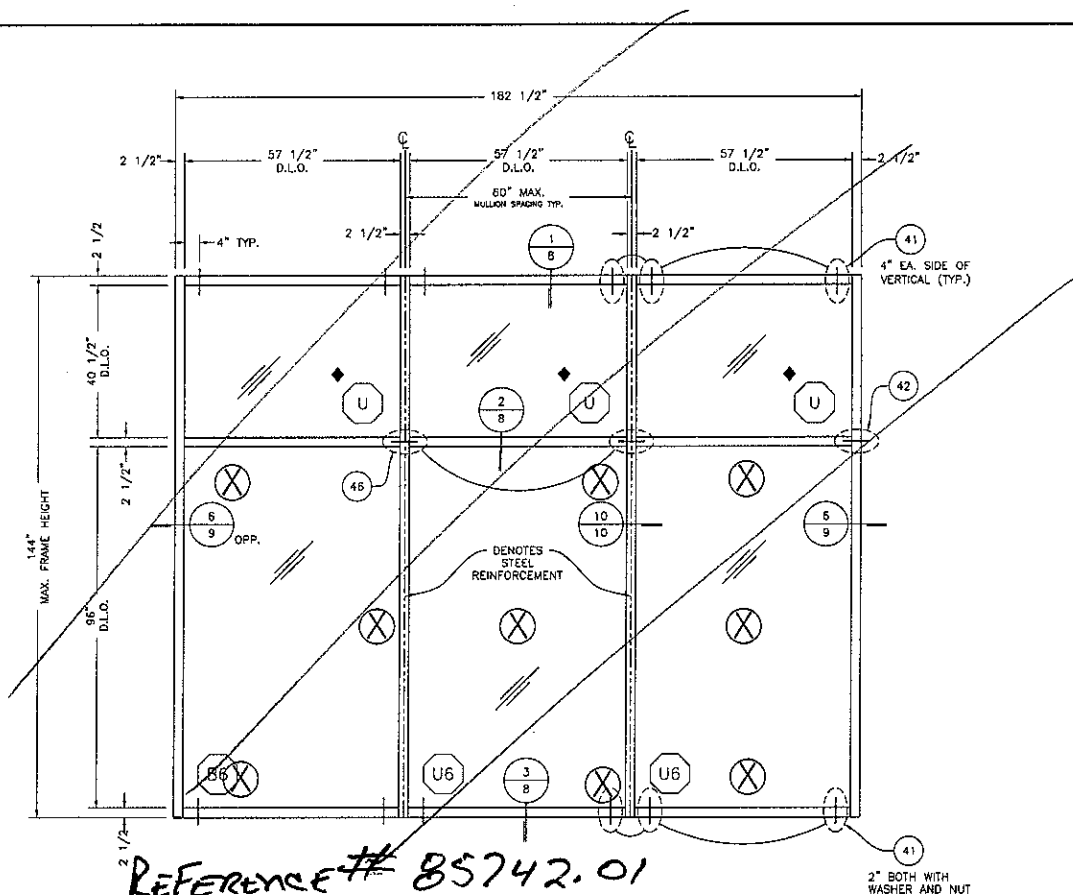
SCALE: 3/8"=1'-0"

Coral Architectural Products		3109 BEECH HARBOR ROAD, THE WOODS, AL 35506	PHONE: 205-722-7777 FAX: 205-335-1208
DATE	4/14/2009		
DRAWN	DCW	CHECKED	DCW
APPROVED	DCW		
PROJECT NO.			
TEST			
DRAWING NO.	PW256 01		
SHEET	4 OF 16		

TEST REPORT DRAWINGS  
PW256 IMPACT-RESISTANT  
CURTAIN WALL SYSTEM

FRAMING ELEVATION

SPECIMEN #E4	
TEST METHOD	TEST CONDITIONS
SMALL MISSILE IMPACT TEST (ASTM E1886/E1996 AND TAS 201)	10 BALL BEARINGS @ 130 FT/SEC
CYCLIC LOAD TEST (ASTM E1996 AND TAS 203)	±1-80 PSF DESIGN PRESSURE



**ELEVATION E4 - SMALL MISSILE  
CAPTURED MULLION -LONG SPAN-  
WITH SR150 & 1/2"X 3-3/4" BAR  
STEEL REINFORCEMENT**

STEEL BUCK FRAME

TESTING:  
IMPACT, AND CYCLE

MAX. ALLOWABLE DEFLECTION (L/180)= 0.833

DESIGN PRESSURE = +/-80 PSF

⊗ = SMALL MISSILE IMPACT LOCATIONS

◆ = INFILL ONLY (DO NOT IMPACT)

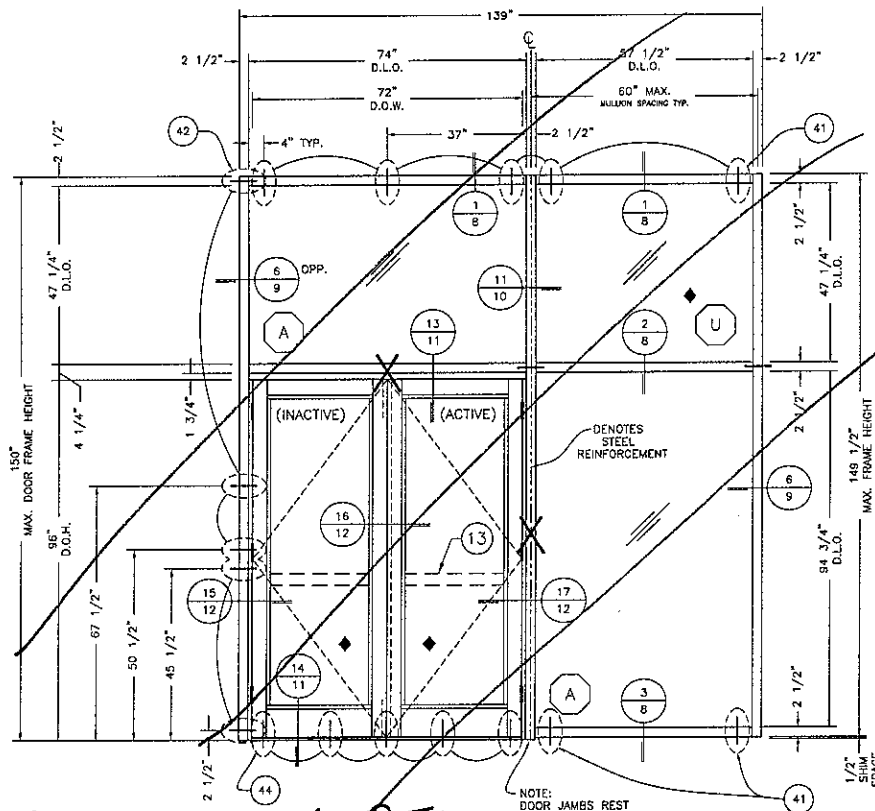
0 1'-4" 2'-8" 5'-4"  
SCALE: 3/8"=1'-0"

**Coral**  
Architectural Products  
3010 KENNEBEC ROAD, TUCKER, GA 30084  
PHONE 800-772-7727 FAX 800-443-6283

TEST REPORT DRAWINGS  
PW256 IMPACT-RESISTANT  
CURTAIN WALL SYSTEM  
FRAMING ELEVATION

DATE 4/14/2009  
DRAWN DCW CHECKED DCW APPROVED DCW  
PROJECT NO.  
DRAWING NO.  
PW256\_01  
SHEET 5 OF 16

SPECIMEN #E5	
TEST METHOD	TEST CONDITIONS
LARGE MISSILE IMPACT TEST (ASTM E1863/E1996 AND TAS 301)	9-LB 40Z, 2x4 @ 50FT/SEC
CYCLIC LOAD TEST (ASTM E1996 AND TAS 203)	+/- 80 PSF DESIGN PRESSURE



REFERENCE # 85743.01

**ELEVATION E5**  
**CAPTURED MULLION -LONG SPAN-**  
**WITH SR150 & 3/4"x 3-3/4" BAR STEEL REINFORCEMENT**  
**FOR SERIES 381 ENTRANCE DOORS**

STEEL BUCK FRAME

TESTING:  
IMPACT, AND CYCLE

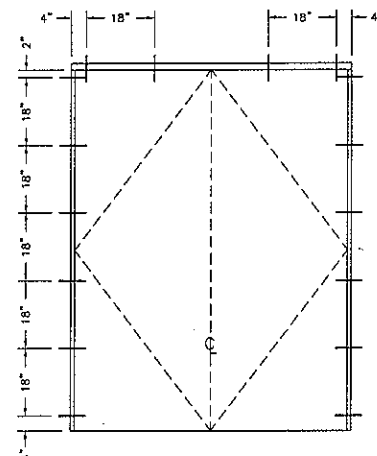
MAX. ALLOWABLE DEFLECTION (L/180) = 0.833

DESIGN PRESSURE = +/- 80 PSF

X = LARGE MISSILE IMPACT LOCATIONS

♦ = INFILL ONLY (DO NOT IMPACT)

0 1'-4" 2'-8" 5'-4"  
 SCALE: 3/8" = 1'-0"



**LOCATIONS FOR**  
**DOOR SUB-FRAME ATTACHMENT**  
**TO CURTAIN WALL ALUMINUM**

DATE		4/14/2009	
DRAWN	CHECKED	APPROVED	
DCW	DCW	DCW	
PROJECT NO.			
TEST			
DRAWING NO.			
PW256_01			
SHEET			
6 OF 16			

TEST REPORT DRAWINGS  
 PW256 IMPACT-RESISTANT  
 CURTAIN WALL SYSTEM

FRAMING ELEVATION FOR DOORS

**Coral**  
 Architectural Products  
 3510 WIDE WING ROAD, TUCKALOOSA, AL 36688  
 PHONE 205-725-7272 FAX 205-355-1200

