

PERFORMANCE TEST REPORT

Rendered to:

CORAL ARCHITECTURAL PRODUCTS

SERIES/MODEL: PW256

PRODUCT TYPE: Aluminum Curtain Wall with Transoms

Title	Summary of Results
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: 8 pages
Test Equipment: 1 page
Sketches: 2 pages
Drawings: 16 pages

Reference should be made to Architectural Testing, Inc. Report No. 85740.01-401-44 for complete test specimen description and data.

PERFORMANCE TEST REPORT

Rendered to:

CORAL ARCHITECTURAL PRODUCTS
3010 Rice Mine Road
Tuscaloosa, Alabama 35406

Report No.: 85740.01-401-44
Test Dates: 11/10/08
And: 11/11/08
Report Date: 06/24/09
Expiration Date: 11/11/12

Project Summary: Architectural Testing, Inc. was contracted by Coral Architectural Products to perform testing on a Series/Model PW256, aluminum curtain wall with transoms at the Architectural Testing Inc. test facility in Tampa, Florida. 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:

ASTM E 330-02, Test Method for Structural Performance 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.

Series/Model: PW256

Product Type: Aluminum Curtain Wall with Transoms

Overall Size: 3721 mm (146-1/2") wide by 2743 mm (108") high

Bottom Fixed Daylight Opening Size (3): 1143 mm (45") wide by 2426 mm (95-1/2") high

Top Fixed Daylight Opening Size (3): 1143 mm (45") wide by 419 mm (16-1/2") high

Overall Area: 10.3 m² (111.0 ft²)

Test Specimen Description: (Continued)

Finish: All aluminum was anodized.

Glazing Details: The bottom left lite, bottom center lite and three transom lites utilized a 9/16" overall thickness laminated glass consisting of two sheets of 1/4" heat strengthened glass and a 0.120" Uvekol Type "S" interlayer. The bottom right lite utilized a 9/16" overall thickness laminated glass consisting of two sheets of 1/4" heat strengthened glass and a 0.090" Solutia Saflex PVB interlayer. All the lites were exterior glazed onto a custom vinyl strip and secured with aluminum pressure plates. The pressure plates were secured with #12 x 1" self-drilling screws located 3" from ends and 14" on center. The lites utilized a 3/4" glazing bite.

Weatherstripping:

<u>Description</u>	<u>Quantity</u>	<u>Location</u>
3/4" wide by 1/4" high custom dry glazed vinyl gasket	1 Row	Behind all glass
5/8" wide by 1/4" high custom vinyl exterior glazing gasket	2 Row	Each side of exterior pressure plates
5/8" wide by 1/4" high custom vinyl pressure plate setting gasket	1 Row	Center of all pressure plates

Frame Construction: The frame was constructed of extruded aluminum. The corners and vertical mullions were straight cut and secured with three #14 x 1" square head screws located through jambs into the head and sill screw bosses. The horizontal mullions were secured with the same screws located through the jambs and vertical mullions into the horizontal mullion screw bosses. Aluminum 2-1/2" wide pressure plates were applied to secure the exterior of the glass and were secured with #12 x 1" self-drilling screws located 3" from ends and 14" on center.

Hardware: No hardware was utilized.

Reinforcement: No reinforcement was utilized.

Installation: The specimen was installed into a 10" wide by 2-1/2" thick steel "C" channel buck and secured with 1/2"-13 x 2" bolts with washer and nut. The bolts were located 4" from head and sill ends and 4" from vertical mullions through the head and sill into the steel buck. A bolt was also added at the vertical mullion through the jambs into the steel buck. Silicone was utilized around the exterior perimeter.

Test Results: The temperature during testing was 77°F. The results are tabulated as follows:

<u>Test Method</u>	<u>Title of Test</u>	<u>Results</u>
ASTM E 330	Uniform Load Deflections	
	Loads were held for 10 seconds	
	Deflections reported were taken on the vertical mullion	
	3110 Pa (65.0 psf) (positive)	11.4 mm (0.45")
	3110 Pa (65.0 psf) (negative)	11.4 mm (0.45")
	Deflection reported were taken on the center horizontal mullion	
3110 Pa (65.0 psf) (positive)	5.08 mm (0.20")	
3110 Pa (65.0 psf) (negative)	4.06 mm (0.16")	
ASTM E 330	Uniform Load Structural	
	Loads were held for 10 seconds	
	Permanent set reported were taken on the vertical mullion	
	4665 Pa (97.5 psf) (positive)	1.02 mm (0.04")
	4665 Pa (97.5 psf) (negative)	0.51 mm (0.02")
	Permanent set reported were taken on center horizontal mullion	
4665 Pa (97.5 psf) (positive)	1.78 mm (0.07")	
4665 Pa (97.5 psf) (negative)	0.25 mm (0.01")	

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

Test Results: (Continued)

ASTM E 1886, *Large Missile Impact*

Conditioning Temperature: 24.4°C (76°F)

Missile Weight: 4082 g (9.0 lbs)

Missile Length: 2.4 m (7' 11-1/4")

Muzzle Distance from Test Specimen: 5.18 m (17' 0")

Test Unit #1

Impact #1: Missile Velocity: 15.4 m/s (50.4 fps); orientation within $\pm 5^\circ$ of vertical

Impact Area: Bottom right lite, lower left corner of glass.

Observations: Missile hit target area, fractured lite.

Results: Pass

Impact #2: Missile Velocity: 15.2 m/s (49.8 fps); orientation within $\pm 5^\circ$ of vertical

Impact Area: Bottom right fixed lite, center of glass.

Observations: Missile hit target area, fractured lite.

Results: Pass

Impact #3: Missile Velocity: 15.4 m/s (50.5 fps); orientation within $\pm 5^\circ$ of vertical

Impact Area: Bottom center lite, center of glass.

Observations: Missile hit target area, fractured lite.

Results: Pass

Impact #4: Missile Velocity: 14.9 m/s (49.0 fps); orientation within $\pm 5^\circ$ of vertical

Impact Area: Bottom center lite, upper right corner of glass.

Observations: Missile hit target area, fractured lite

Results: Pass

Impact #5: Missile Velocity: 15.4 m/s (50.5 fps); orientation within $\pm 5^\circ$ of vertical

Impact Area: Vertical mullion at midspan.

Observations: Missile hit target area, dented aluminum mullion.

Results: Pass

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

Test Results: (Continued)

ASTM E 1886, Air Pressure Cycling

Test Unit #1

Design Pressure: ± 3110 Pa (± 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 1556 (13.0 to 32.5)	3500	1.89	0.25 (0.01)	9.65 (0.38)	2.29 (0.09)	1.52 (0.06)	5.59 (0.22)	1.52 (0.06)
0 to 1867 (0 to 39.0)	300	3.92	0.25 (0.01)	13.7 (0.54)	2.54 (0.10)	1.52 (0.06)	7.87 (0.31)	1.78 (0.07)
1556 to 2490 (32.5 to 52.0)	600	2.00	0.25 (0.01)	16.0 (0.63)	2.79 (0.11)	1.78 (0.07)	8.89 (0.35)	2.29 (0.09)
934 to 3110 (19.5 to 65.0)	100	3.04	0.25 (0.01)	19.1 (0.75)	3.30 (0.13)	2.03 (0.08)	10.7 (0.42)	2.54 (0.10)
			Permanent Set					
			<0.01 (<0.01)	2.79 (0.11)	1.02 (0.04)	0.25 (0.01)	2.29 (0.09)	0.50 (0.02)

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
934 to 3110 (19.5 to 65.0)	50	3.49	2.79 (0.11)	18.0 (0.71)	8.89 (0.35)	5.59 (0.22)	13.0 (0.51)	3.81 (0.15)
1556 to 2490 (32.5 to 52.0)	1050	2.03	2.29 (0.09)	15.2 (0.60)	6.60 (0.26)	4.06 (0.16)	10.2 (0.40)	3.30 (0.13)
0 to 1867 (0 to 39.0)	50	3.89	1.78 (0.07)	11.7 (0.46)	6.35 (0.25)	3.30 (0.13)	9.14 (0.36)	3.05 (0.12)
622 to 1556 (13.0 to 32.5)	3350	1.64	1.02 (0.04)	9.91 (0.39)	5.59 (0.22)	3.05 (0.12)	7.11 (0.28)	2.79 (0.11)
			Permanent Set					
			0.51 (0.02)	4.32 (0.17)	4.83 (0.19)	2.54 (0.10)	3.81 (0.15)	0.25 (0.01)

Result: Pass

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

General Note: *Upon completion of testing, the specimens met the requirements of Section 7 of ASTM E 1996.*

Test Equipment: (See Appendix A)

Cannon: Constructed from steel piping utilizing compressed air to propel the missile

Missile: 2x4 Southern Pine

Timing Device: Electronic Beam Type

Cycling Mechanism: Computer controlled centrifugal blower with electronic pressure measuring device

Deflection Measuring Device: Linear transducers

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>
Scott Parker	Architectural Testing, Inc.
Mark A. Hess	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:

Mark A. Hess
Technician

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

MAH:ck/cmd

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

Appendix-A: Test Equipment (1)

Appendix-B: Sketches (2)

Appendix-C: Drawings (16)

Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
0	06/24/09	N/A	Original report issue

Appendix A
Test Equipment

Instrument	Manufacturer	Asset #
Compressed Air Cannon	Architectural Testing, Inc.	004273
Control Panel	Architectural Testing, Inc.	004180
20" Linear Transducer	Celesco	004281
20" Linear Transducer	Celesco	004280
20" Linear Transducer	Celesco	005428
20" Linear Transducer	Celesco	005429
20" Linear Transducer	Celesco	004282
20" Linear Transducer	Celesco	005427
Mini Mule	Architectural Testing, Inc.	004784
6" Dial Calipers	N/A	330-1

Appendix B
Sketches



Architectural
Testing

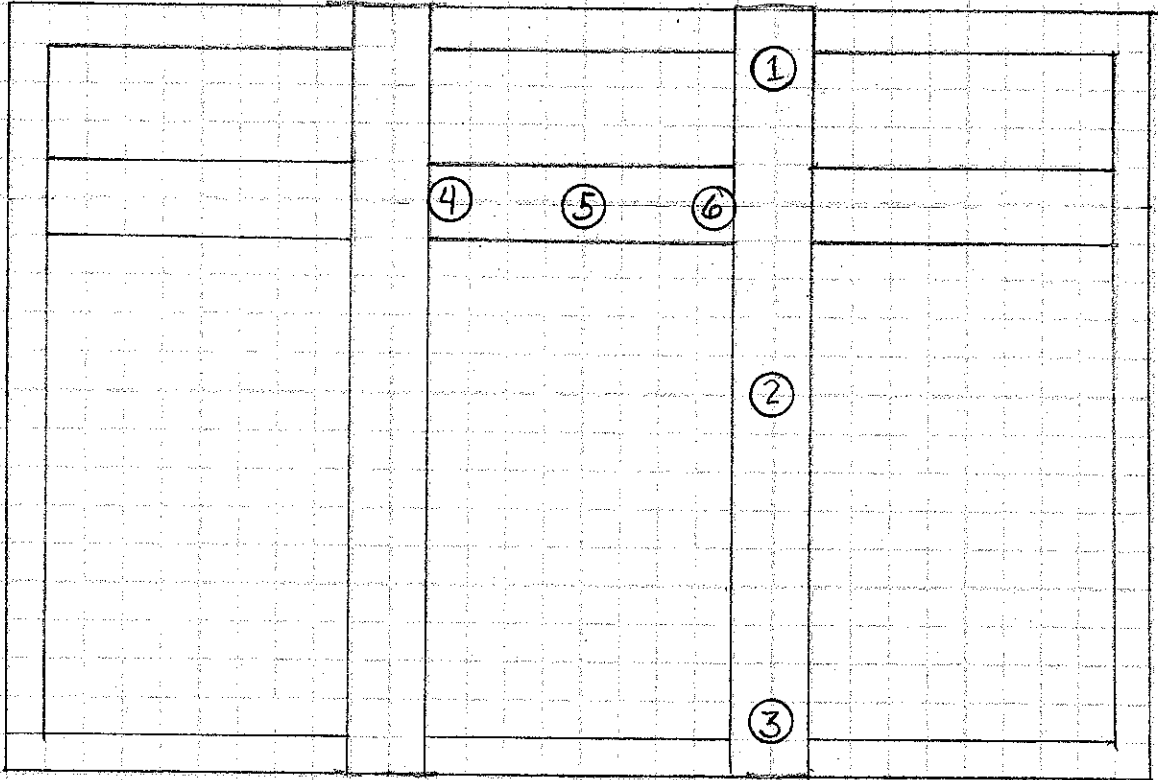
DATE: May 11, 2009

BY: Mark A. Hess

PROJECT NO. 85740.01-401-44 SHEET 1 OF 2

PROJECT NAME: Coral Architectural Products

INDICATOR LOCATIONS





Architectural
Testing

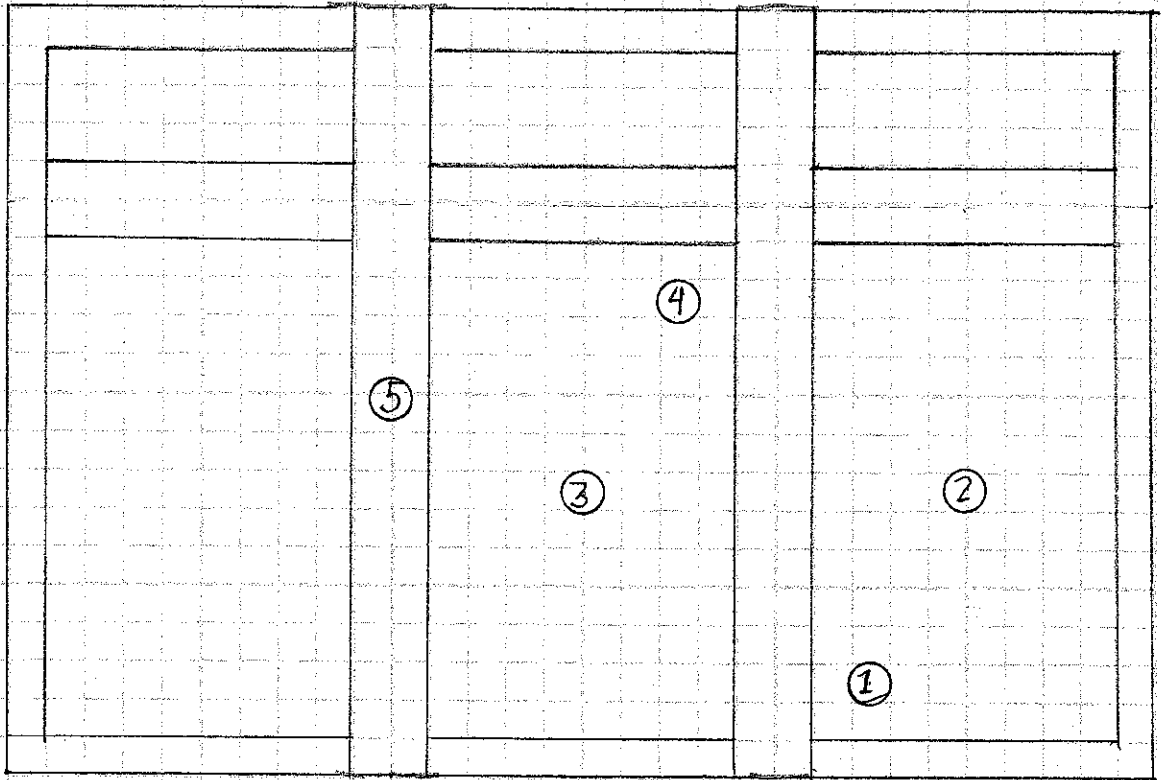
DATE: May 11, 2009

BY: Mark A. Hess

PROJECT NO. 85740.01-401-44 SHEET 2 OF 2

PROJECT NAME Coral Architectural Products

IMPACT LOCATIONS



Appendix C

Drawings

BILL OF MATERIALS

ITEM NO.	P/N	DESCRIPTION	DIMENSIONS	MATERIAL	MANUFACTURER	NOTES
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



Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report# 85740.01-401-44

Date 5/11/09 Tech MAN

DATE	BY	DATE	BY

Coral

Architectural Products
 500 RICE WALK ROAD, TUSCALOOSA, AL 35406
 PHONE: 205-775-7272

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

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

used in this unit 5/11/09 MAH

BILL OF MATERIALS

ITEM NO.	P/N	DESCRIPTION	DIMENSIONS	MATERIAL	MANUFACTURER	3NOTES
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	± 85
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



Test sample complies with these details. Deviations are noted.

Report # 8 5740.01-401-44
Date 5/11/09 Tech MAH

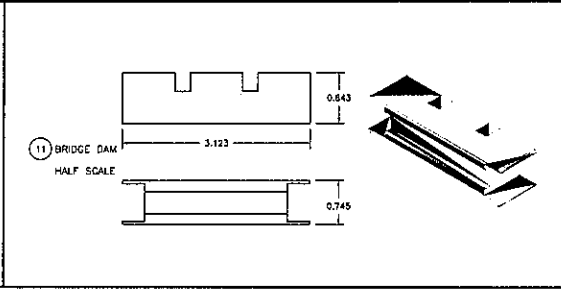
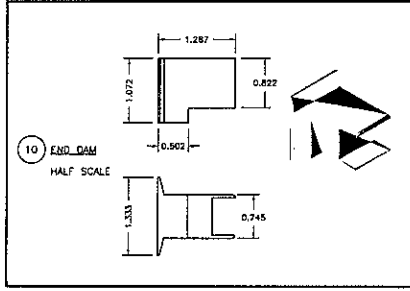
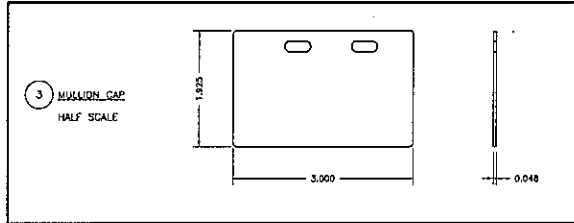
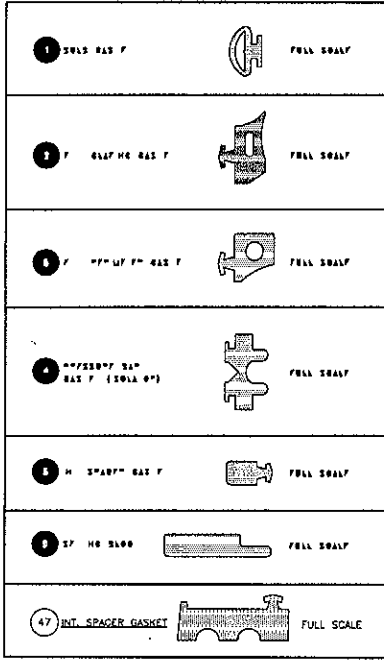
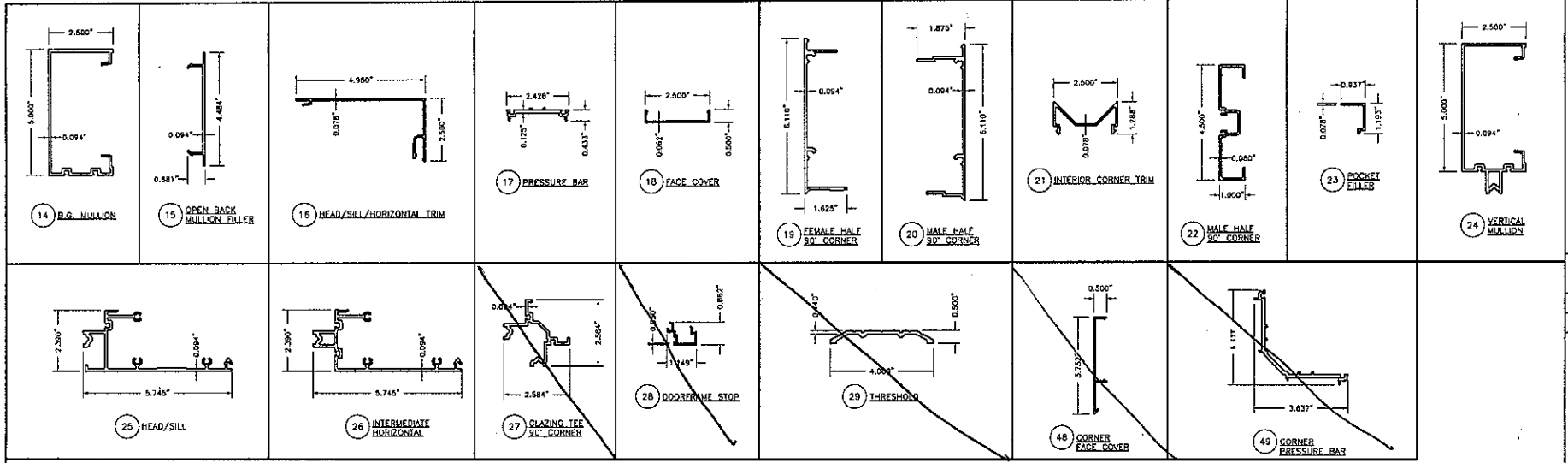
DATE	REV	BY	DATE

Coral

Architectural Products
3000 WILMINGTON BLVD. WILMINGTON, DE 19804-1144
PHONE: 302-773-7777 FAX: 302-484-8201

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

DATE	4/14/2009	
DRAWN BY	CHECKED BY	APPROVED BY
PROJECT NO.		
DRAWING NO.	PW256.01	
SHEET	15 OF 16	



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

Report# 85740:01-401-44
Date MAH Tech MAH

 Coral Architectural Products 300 N. W. 110th Ave. Suite 100 Pompano Beach, FL 33062 Phone: 954-777-7777 Fax: 954-443-6285	
TEST REPORT DRAWINGS PW256 IMPACT-RESISTANT CURTAIN WALL SYSTEM DIE DRAWINGS	
DATE	4/14/2009
DRAWN BY	DGW
CHECKED BY	DGW
APPROVED BY	DGW
PROJECT NO.	
DRAWING NO.	PW256_01
SHEET	16 OF 16

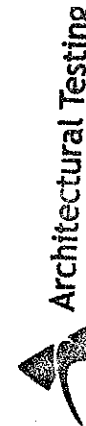
TEST REPORT DRAWINGS PW256 IMPACT-RESISTANT CURTAIN WALL SYSTEM

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
ELEV. = ELEVATIONS
EXT. = EXTERIOR
INT. = INTERIOR
MAX. = MAXIMUM
MIN. = MINIMUM
OPP. = OPPOSITE
TYP. = TYPICAL



Test sample complies with these details.
Deviations are noted.

Report# 5740.01-401-44
Date 5/11/09 Tech MAH

REV	BY	DATE	DESCRIPTION

Coral
Architectural Products
3750 RICE LAKE ROAD, TALLAHASSEE, FL 32308
PHONE: 904-722-7237 FAX: 904-255-7230

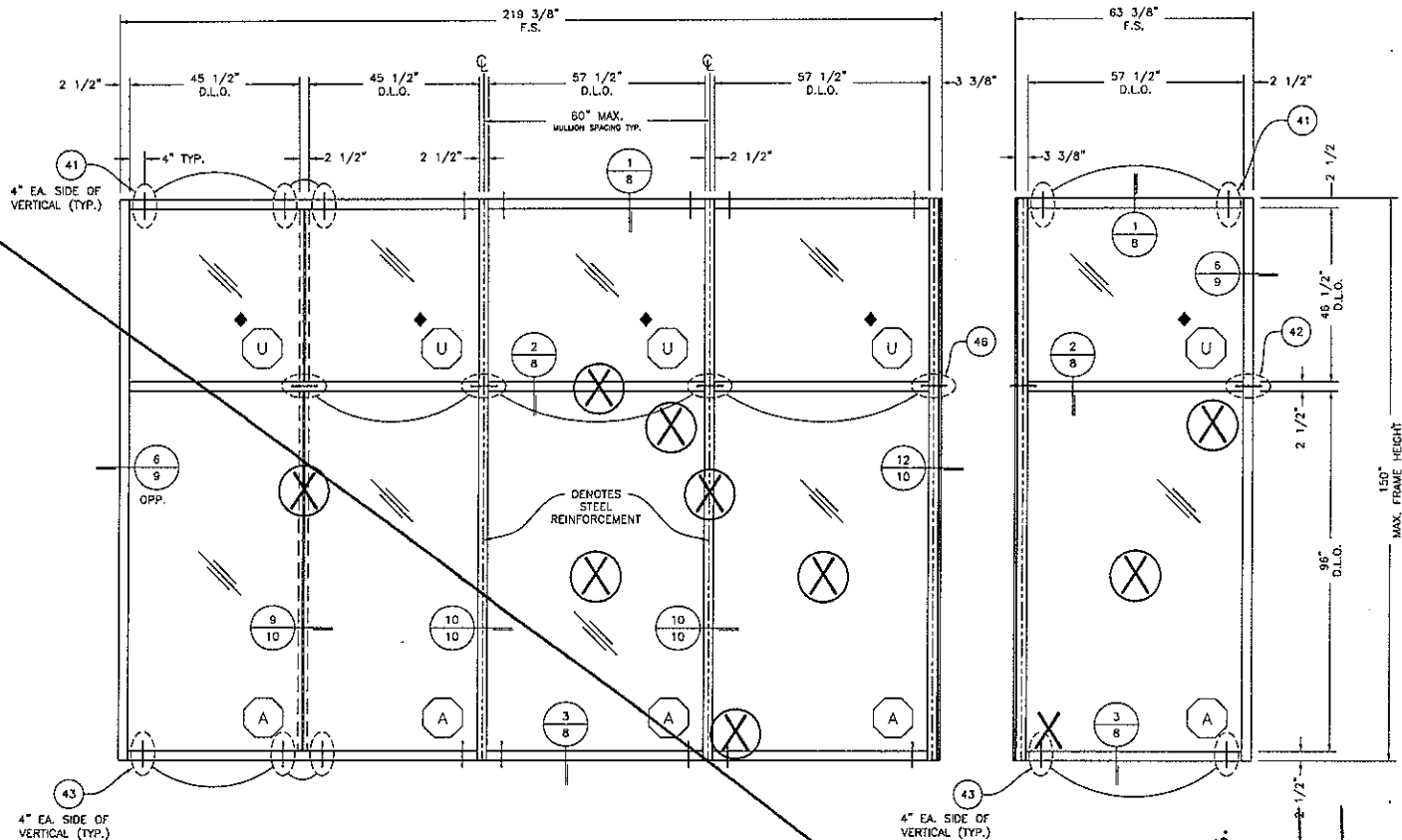
TEST REPORT DRAWINGS
PW256 IMPACT-RESISTANT
CURTAIN WALL SYSTEM

INDEX TO DRAWINGS AND NOTES

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

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 E639 AND TAS 202)	+/- 80 PSF DESIGN PRESSURE
LARGE MISSILE IMPACT TEST (ASTM E186/E199 AND TAS 201)	9-LB 40Z 2x4 (@ 50FT/SEC)
CYCLIC LOAD TEST (ASTM E199 AND TAS 202)	+/- 80 PSF DESIGN PRESSURE

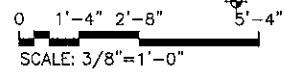
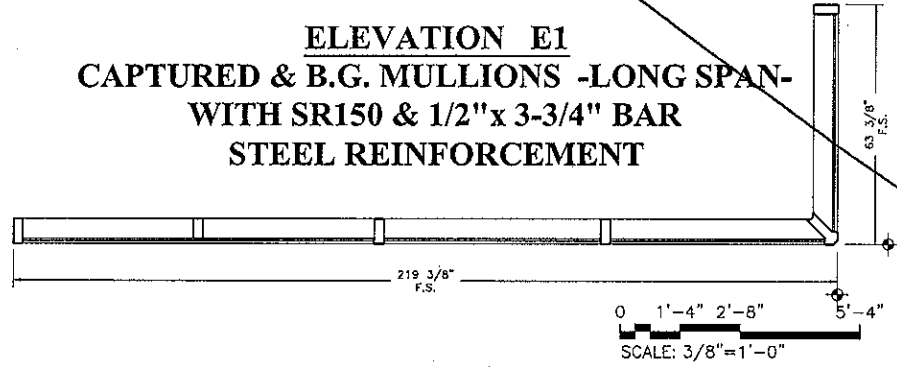
Not utilized
in this test +
see ATI report #44
#85731.01-401-44



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)

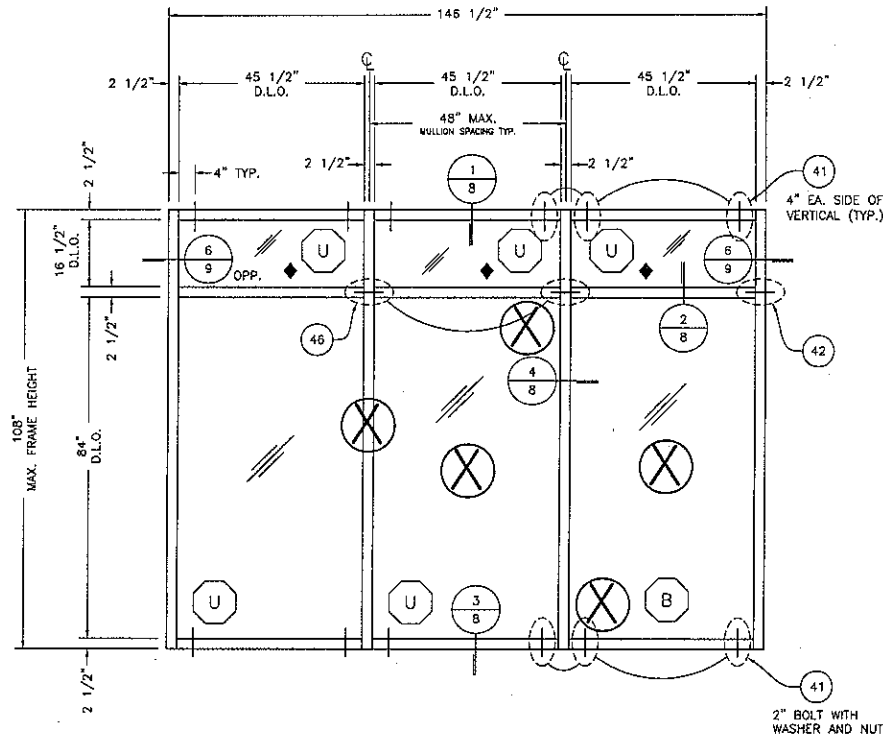


Architectural Testing
 Test sample complies with these details.
 Deviations are noted.

Report # 85740.01-401-44
 Date 5/11/09 Tech #1819

 Architectural Products 3010 RIDGE HAVEN ROAD, THE COLONIA, AL 36828 PHONE: 800-773-7737 FAX: 900-555-7200	
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	REV. NO. DATE 1 4/14/09 2 4/14/09 3 4/14/09 4 4/14/09 5 4/14/09 6 4/14/09 7 4/14/09 8 4/14/09 9 4/14/09 10 4/14/09 11 4/14/09 12 4/14/09 13 4/14/09 14 4/14/09 15 4/14/09 16 4/14/09 17 4/14/09 18 4/14/09 19 4/14/09 20 4/14/09

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

- = 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# 85740.01-401-44
Date 5/11/09 Tech MAA

REV	DATE	DESCRIPTION

Coral

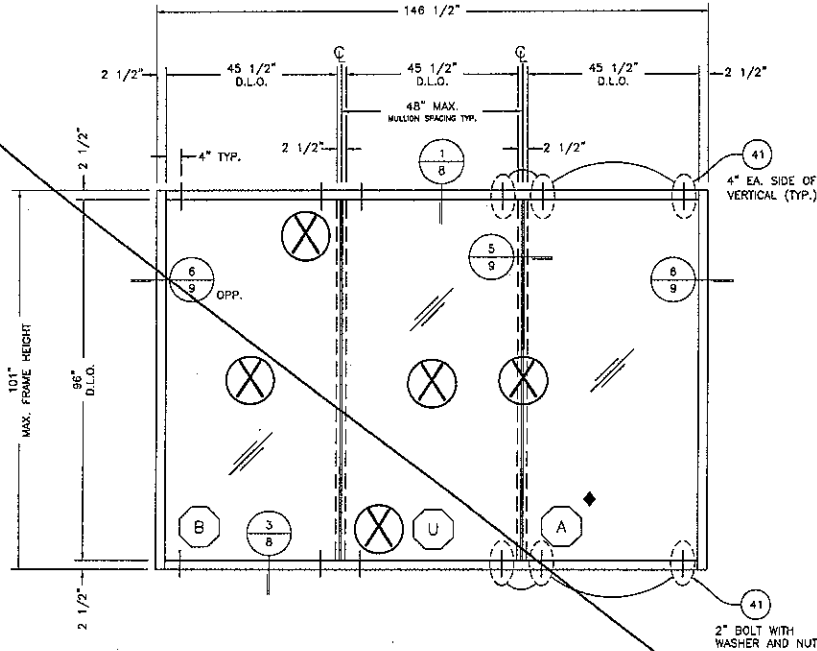
Architectural Products
1000 N. W. 10th Ave., Ft. Lauderdale, FL 33309
PHONE: 954-772-7272 FAX: 954-555-7200

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 E130 AND TAS 202)	+/- 65 PSF DESIGN PRESSURE
LARGE MISSILE IMPACT TEST (ASTM E186/E1596 AND TAS 201)	9-LB 40Z, 2x4 @ 50FT/SEC
CYCLIC LOAD TEST (ASTM E1996 AND TAS 203)	+/- 65 PSF DESIGN PRESSURE

not utilized
in this test
see ATTI report
85741.01-401-44



ELEVATION E3
B.G. MULLION -SHORT SPAN-
WITHOUT REINFORCEMENT

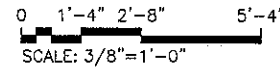
STEEL BUCK FRAME

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)



Architectural Testing
Test sample complies with these details.
Deviations are noted.
Report# 85740.01-401-44
Date 5/11/09 Tech MAA

REV	BY	DATE	DESCRIPTION

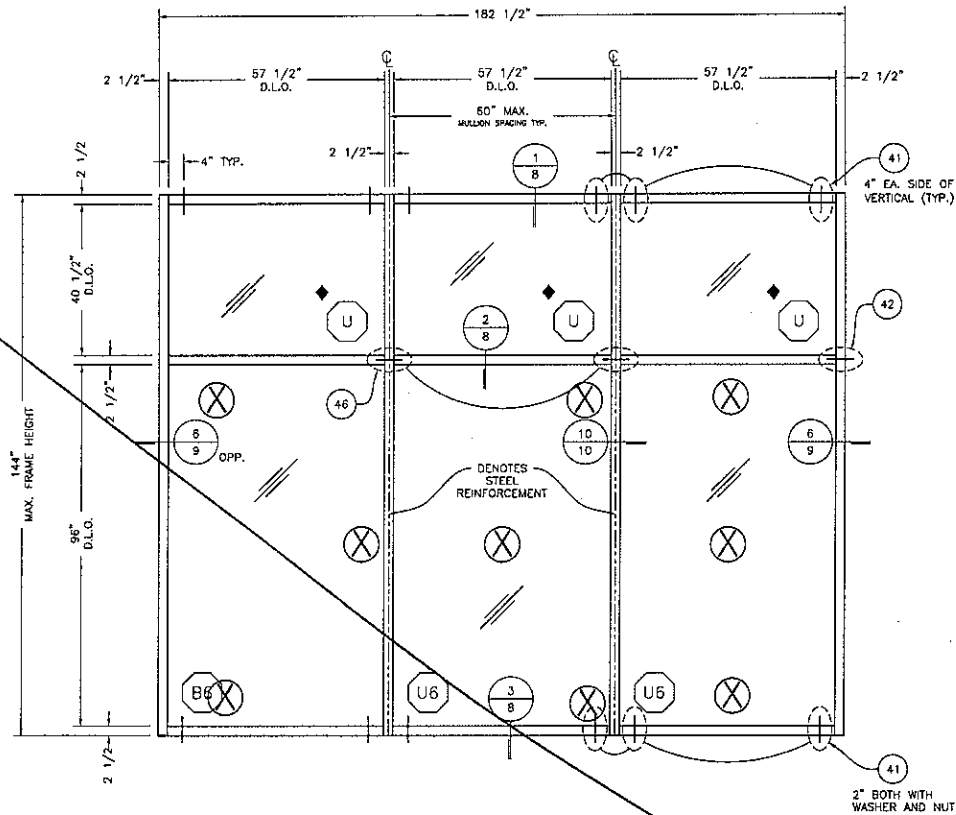
Coral
Architectural Products
3700 STATE AVE. SUITE 1000, THUNDERBOLT, ALABAMA 36864
PHONE: 205-724-7272 FAX: 205-259-7500

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	4 OF 16

SPECIMEN #E4	
TEST METHOD	TEST CONDITIONS
SMALL MISSILE IMPACT TEST (ASTM E186/E199 AND TAS 201)	10 BALL BEARINGS @ 130 FT/SEC
CYCLIC LOAD TEST (ASTM E1996 AND TAS 203)	+/- 80 PSF DESIGN PRESSURE

Not utilized
in this test
See ATI report #
85742.01-401-44



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

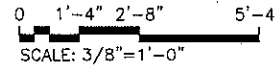
STEEL BUCK FRAME

TESTING:
IMPACT, AND CYCLE

MAX. ALLOWABLE DEFLECTION (L/180) = 0.833

DESIGN PRESSURE = +/- 80 PSF

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



Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report# 85742.01-401-44
Date 5/1/04 Tech MAN

REV	DATE	DESCRIPTION

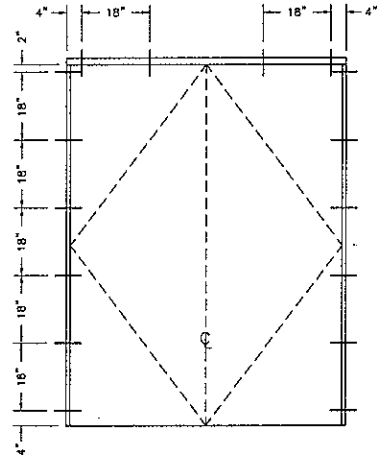
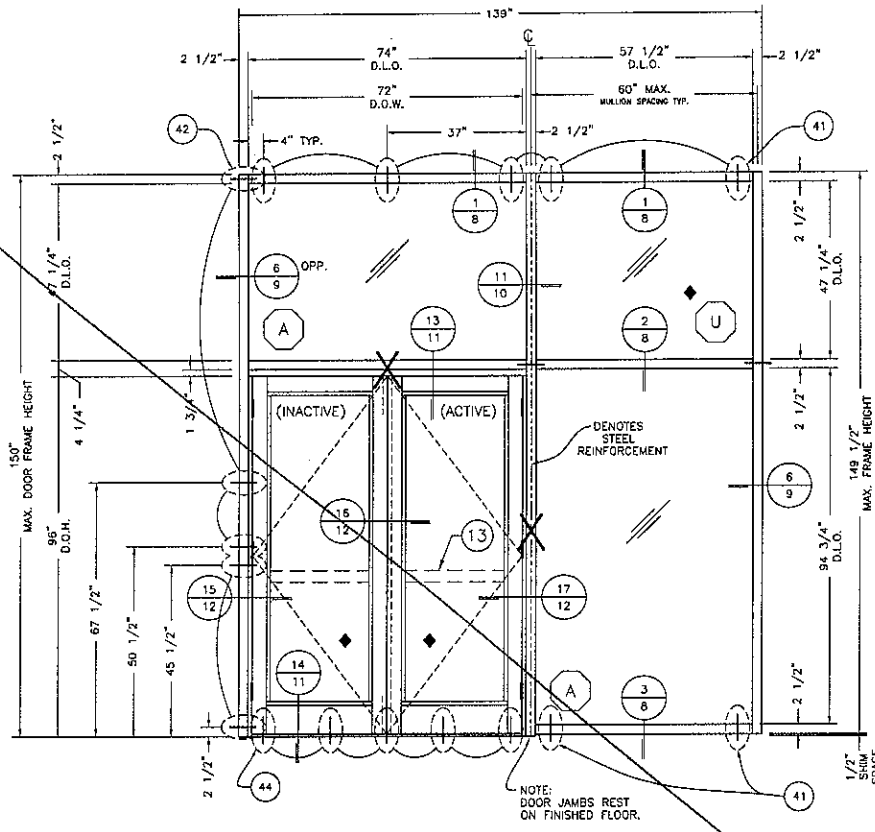
Coral
Architectural Products
3000 ACACIA BLVD. SUITE 400
PHOENIX, AZ 85044
PHONE: 602-775-7757 FAX: 602-443-6781

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

DATE	4/14/2009	
DRAWN	CHECKED	APPROVED
DCW	DCW	DCW
PROJECT NO.		
DRAWING NO.	PW256_01	
SHEET	5 OF 16	

SPECIMEN #E5	
TEST METHOD	TEST CONDITIONS
LARGE MISSILE IMPACT TEST (ASTM E1886/1996 AND TAS 201)	9-LB 40Z, 2x4 @ 50FT/SEC
CYCLIC LOAD TEST (ASTM E1996 AND TAS 201)	+/- 80 PSF DESIGN PRESSURE

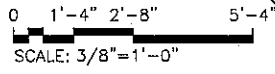
not utilized in
this test see
ATI report # 85743.01-401-44



**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)

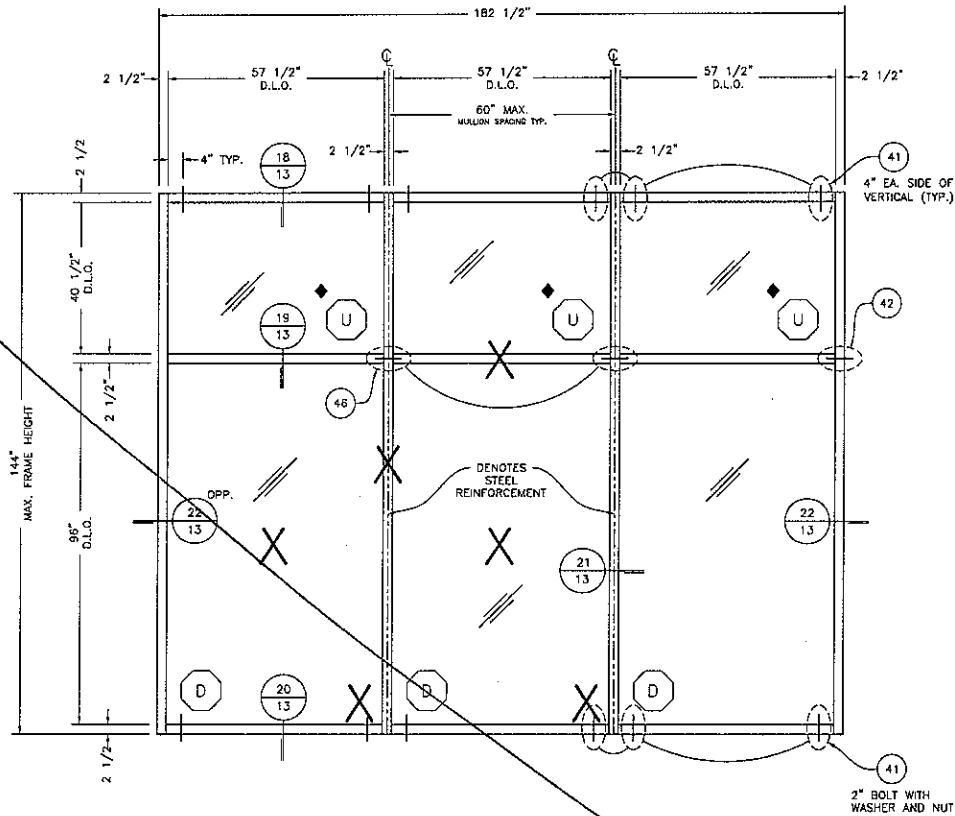


Architectural Testing
 Test sample complies with these details.
 Deviations are noted.
 Report# 85740.01-401-44
 Date 5/1/04 Tech MAN

TEST REPORT DRAWINGS PW256 IMPACT-RESISTANT CURTAIN WALL SYSTEM	
FRAMING ELEVATION FOR DOORS	
DATE	4/14/2009
DRAWN	DCW
CHECKED	DCW
APPROVED	DCW
PROJECT NO.	TEST
DRAWING NO.	PW256_01
SHEET	6 OF 16

SPECIMEN #E6	
TEST METHOD	TEST CONDITIONS
LARGE MISSILE IMPACT TEST (ASTM E1866/E1996 AND TAS 201)	9-LB 4OZ, 2x4 @ 50FT/SEC
CYCLIC LOAD TEST (ASTM E1996 AND TAS 201)	+/- 65 PSF DESIGN PRESSURE
WATER TEST	12 PSF

not utilized in
this test see
ATTI report #87460.01-401-44



**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# 85740.01-401-44
Date 3/11/09 Tech MAM

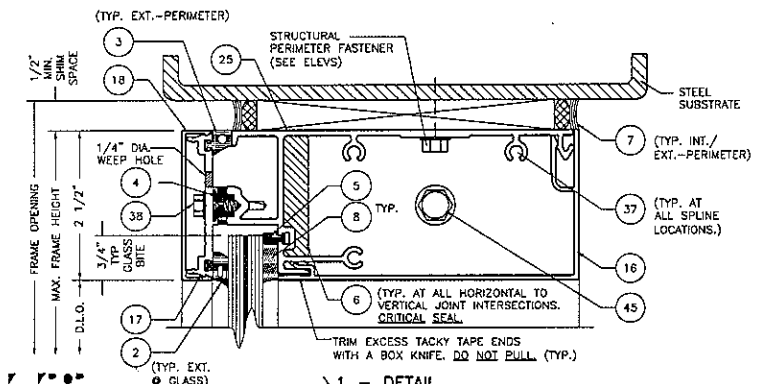
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DCW			DCW			DCW		
PROJECT NO:								
DRAWING NO:								
PW256_01								
SHEET 7 OF 16								

TEST REPORT DRAWINGS
PW256 IMPACT-RESISTANT
CURTAIN WALL SYSTEM

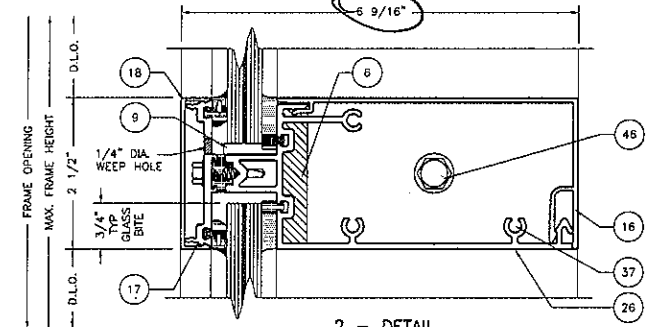
FRAMING ELEVATION

Coral
Architectural Products
SOURCE: INTERIOR CURTAIN WALLS
PHONE: 800-725-7273 FAX: 800-745-0251

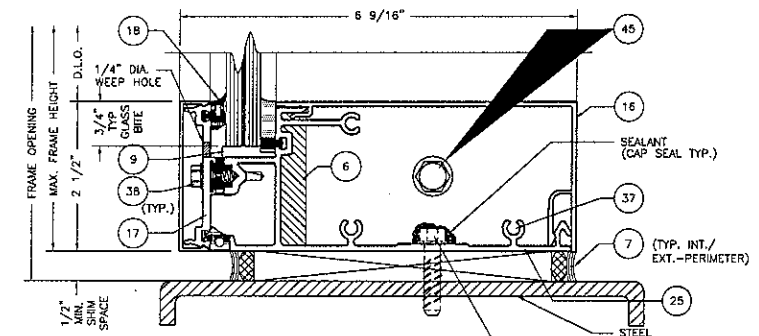
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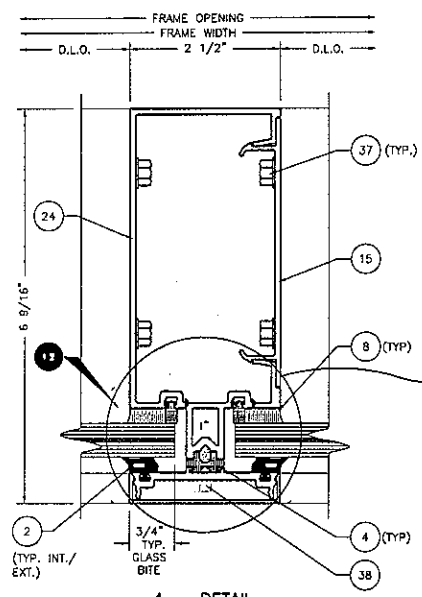
1 - DETAIL
1:2



2 - DETAIL
1:2

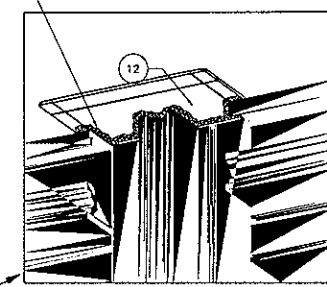


3 - DETAIL
1:2

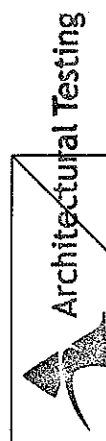


4 - DETAIL
1:2

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



TOP SHOWN CLOSURE CAP (BOTTOM SIMILAR)



Test sample complies with these details. Deviations are noted.

Report# 85740.01-401-44
Date 5/1/09 Tech MAN

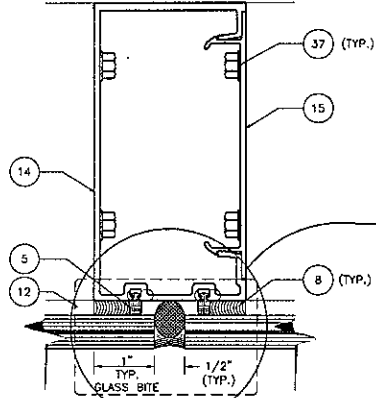
NO.	DATE	BY	DESCRIPTION

Coral
Architectural Products
3010 RICE MIKE ROAD, TULALOSA, AL 36465
PHONE 904-772-7727 FAX 904-493-9261

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

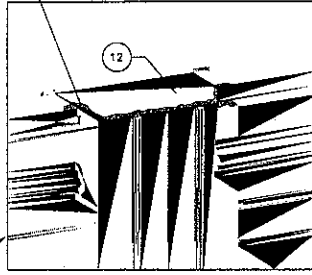
DATE	4/14/2009		
DRAWN	CHECKED	APPROVED	
DCW	DCW	DCW	
PROJECT NO.			
DRAWING NO.	PW256 01		
SHEET	8 OF 16		

FRAME OPENING
 FRAME WIDTH
 2 1/2" D.L.O. D.L.O.



5 - DETAIL
 1/2

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



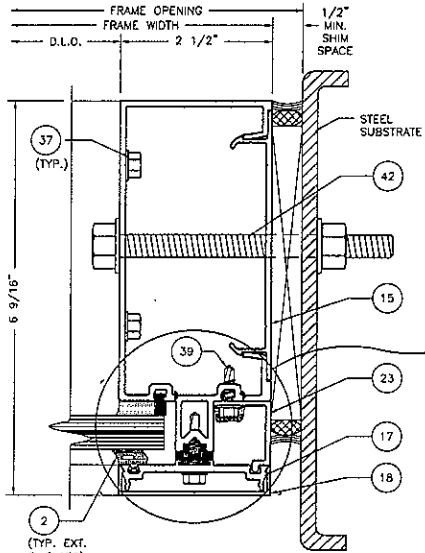
TOP SHOWN
 CLOSURE CAP
 (BOTTOM SIMILAR)

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

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

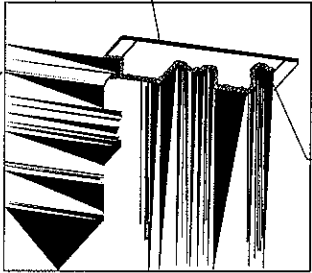
8 CRITICAL SEAL
 APPLY DOW 795
 SEALANT TO ALL THREE
 CONTACT SURFACES
 PRIOR TO INSTALLATION
 AT HORIZONTALS AND
 SILL.

FRAME OPENING
 FRAME WIDTH
 2 1/2" D.L.O. D.L.O.



6 - DETAIL
 1/2

12 FIELD MODIFY @
 JAMB IF REQUIRED



TOP SHOWN
 CLOSURE CAP
 (BOTTOM SIMILAR)

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

Architectural Testing

Test sample complies with these details.
 Deviations are noted.

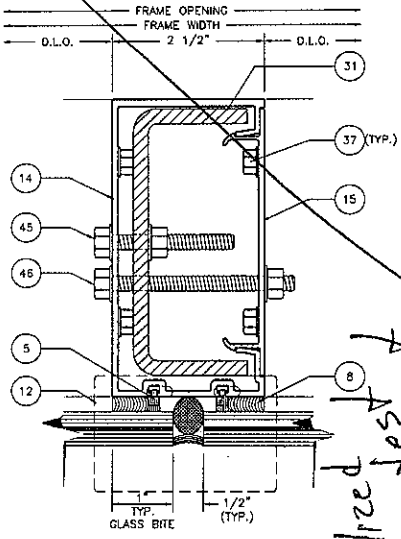
Report# 85749.01-401-04
 Date 5/11/04 Tech MAIN

NO.	DESCRIPTION	REV. BY	DATE

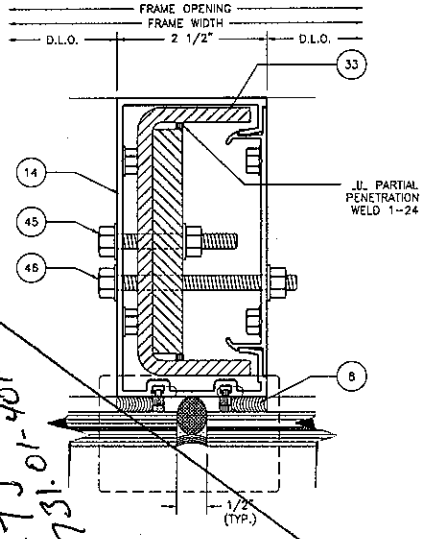
Coral
 Architectural Products
 3000 S. UNIVERSITY BLVD. #404
 PHOENIX, AZ 85028
 FAX: 602-998-6261

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

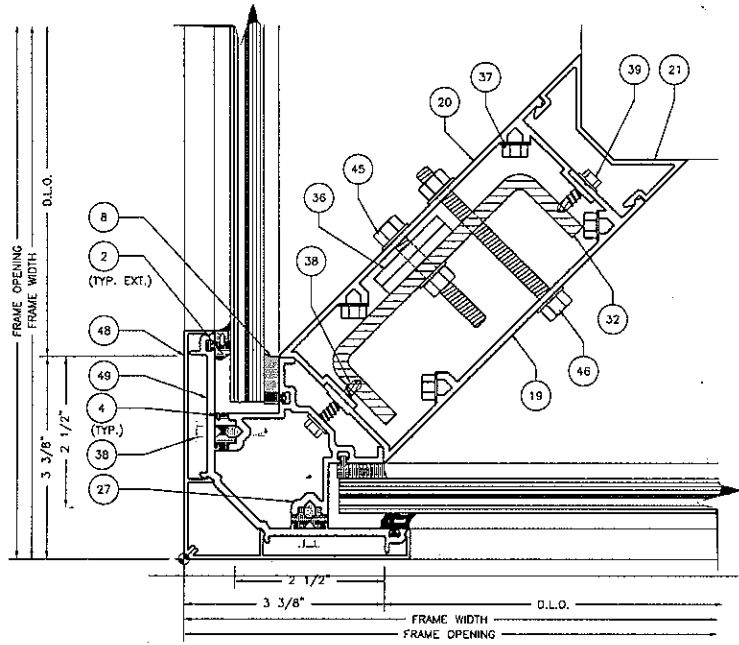
DATE	4/14/2009
DRAWN	DCW
CHECKED	DCW
APPROVED	DCW
PROJECT NO.	
DRAWING NO.	PW256_01
SHEET	9 OF 16



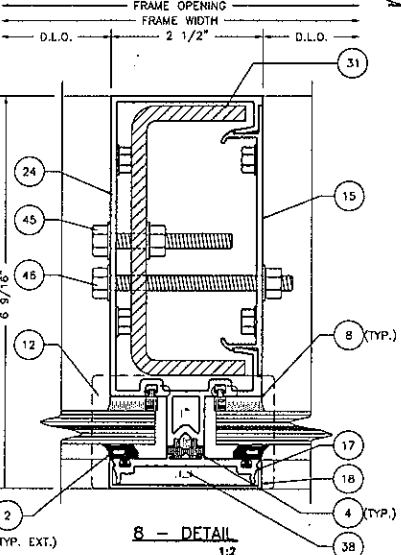
7 - DETAIL
1:2



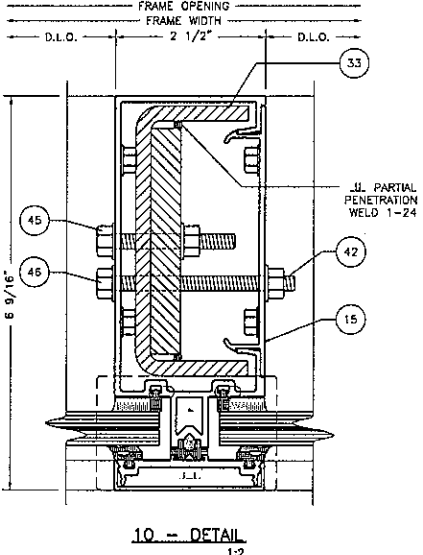
9 - DETAIL
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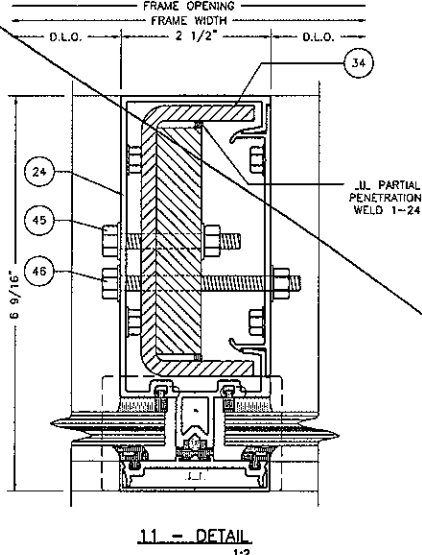
12 - DETAIL
1:2



8 - DETAIL
1:2



10 - DETAIL
1:2



11 - DETAIL
1:2

*Not utilized test A
in this report
see ATJ 01-201-44
#85731.*

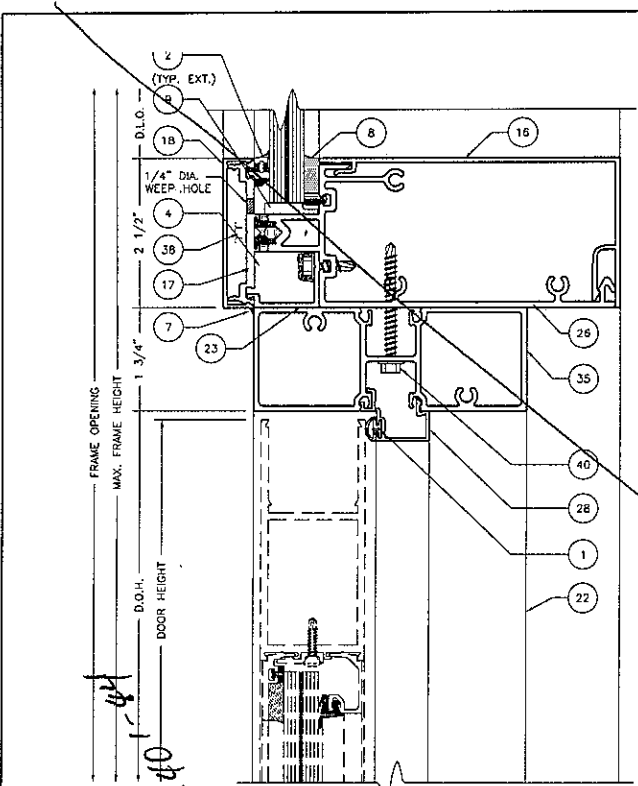
Architectural Testing
 Test sample complies with these details.
 Deviations are noted.
 Report# 85740101-401-44
 Date 5/11/09 Tech M&H

REV	BY	DATE	DESCRIPTION

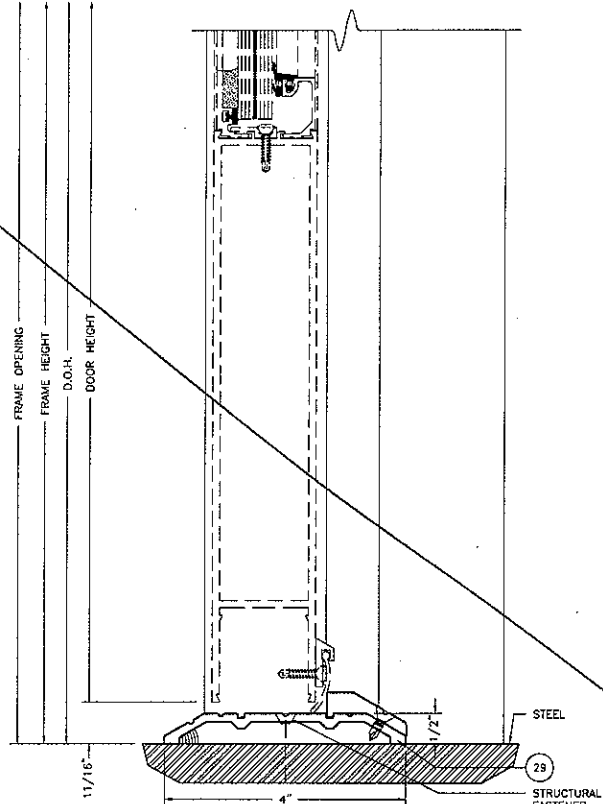
Coral
 Architectural Products
 8000 W. 110th Street
 Overland Park, MO 66204
 PHONE: 866-723-7237 FAX: 866-443-6201

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

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



13 - DETAIL
1:2



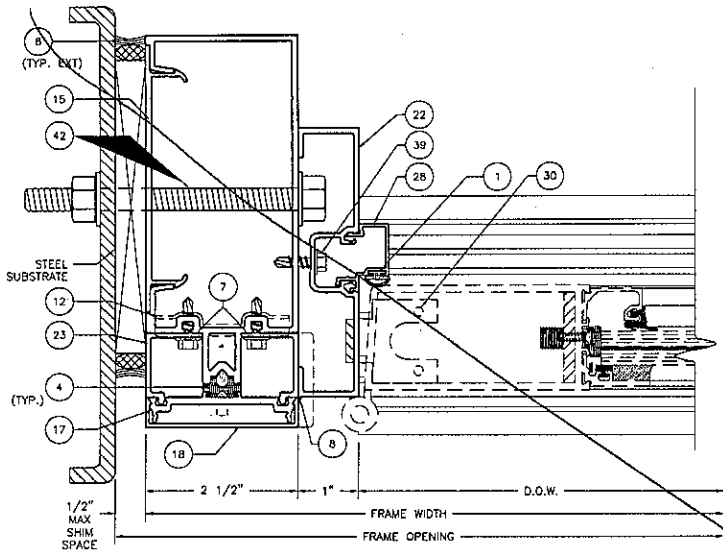
14 - DETAIL
1:2

*Not for ATTI
This report # 85740:01-101-44
will be see report # 85740:01-101-44*

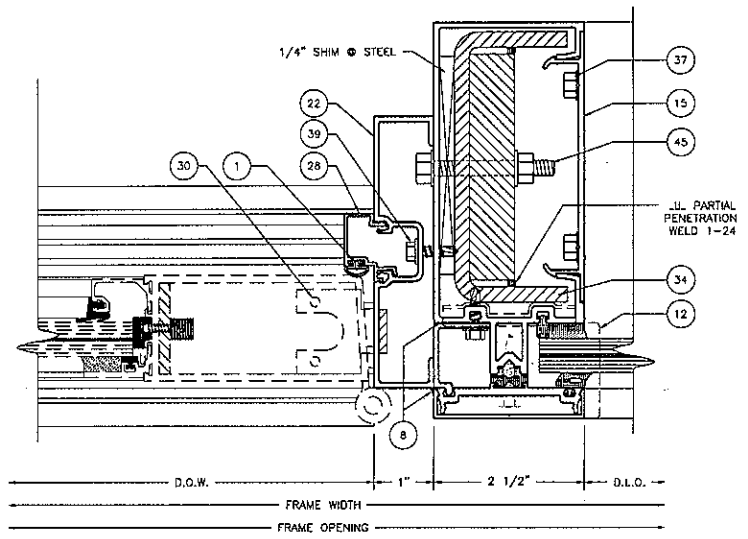
Architectural Testing
 Test sample complies with these details.
 Deviations are noted.
 Report# 85740:01-101-44
 Date 5/11/09 Tech MAM

DATE 4/14/2009		
DRAWN DCW	CHECKED DCW	APPROVED DCW
PROJECT #P		
DRAWING NO. PW256_01		
SHEET 11 OF 16		
<p>TEST REPORT DRAWINGS PW256 IMPACT-RESISTANT CURTAIN WALL SYSTEM</p> <p>DOOR AND FRAMING DETAILS</p>		
 Architectural Products Inc. 3101 MIDLAND ROAD, SUITE 100 ROCKHILL, SC 29730-1000 PHONE 803 772 7157 FAX 803 772 7159		

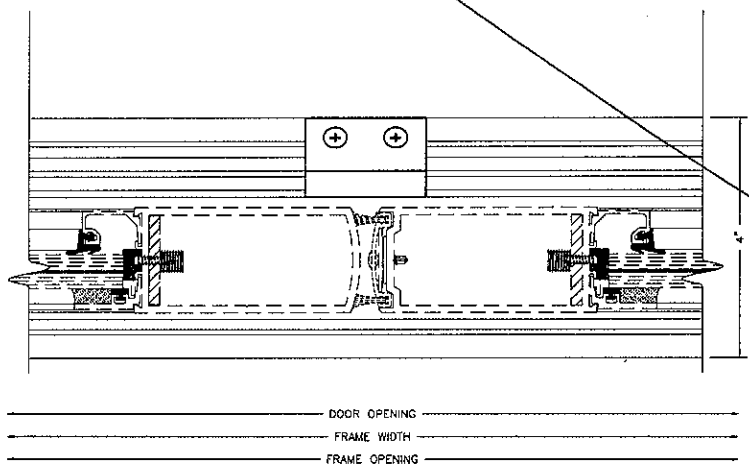
not children in
 ATT report # AS5A
 AS5A report # AS5A
 AS5A report # AS5A
 AS5A report # AS5A



15 - DETAIL
1:2



17 - DETAIL
1:2



16 - DETAIL
1:2

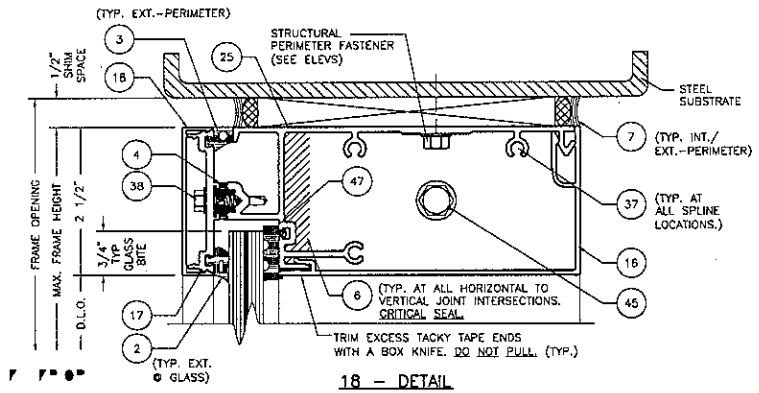
Architectural Testing
 Test sample complies with these details.
 Deviations are noted.
 Report # 95740.01-401-44
 Date 5/11/09 Tech MAH

REV	BY	DATE	DESCRIPTION

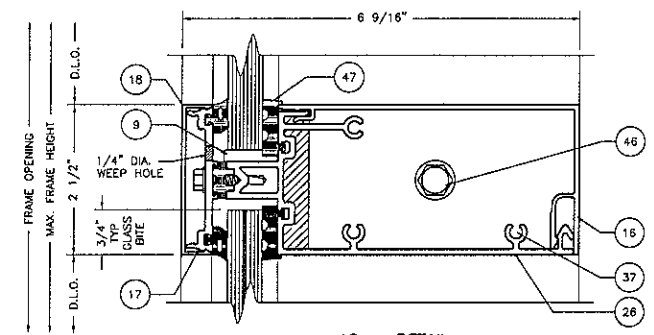
Coral
 Architectural Products
 3000 W. UNIVERSITY BLVD
 FRISCO, TEXAS 75034
 PHONE 972-773-7737 FAX 972-773-6261

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

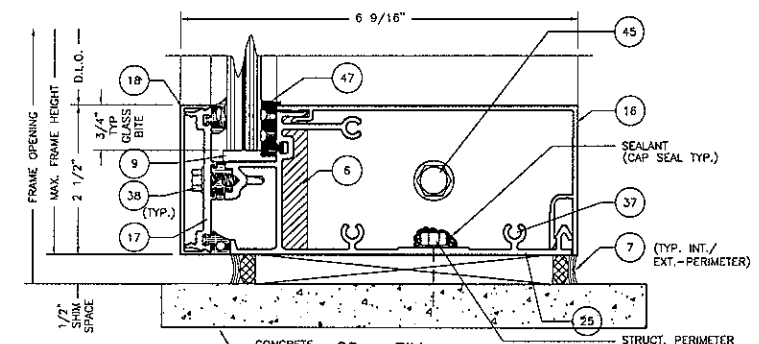
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DRAWN	CHECKED	APPROVED	
DCW	DCW	DCW	
PROJECT #:			
DRAWING NO.	PW256_01		
SHEET	12 OF 16		



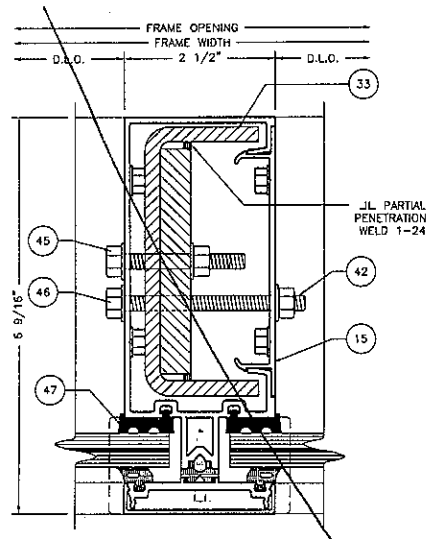
18 - DETAIL
1:2



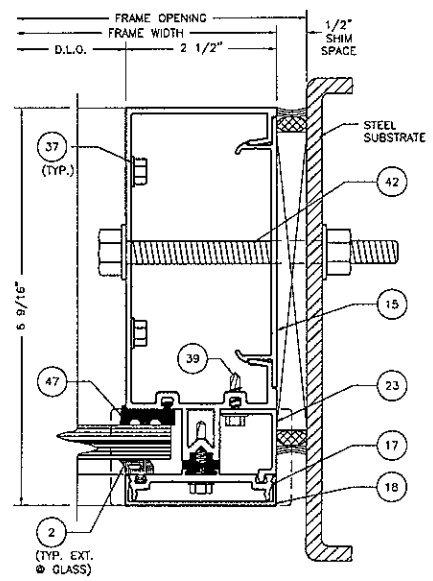
19 - DETAIL
1:2



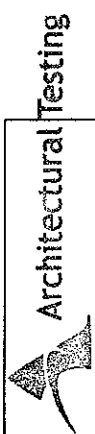
20 - SILL
1:2



21 - DETAIL
1:2



22 - DETAIL
1:2



Test sample complies with these details.
Deviations are noted.

Report# 85740.01-401-441

Date 5/11/09 Tech MAN

DRAWINGS FOR
FLORIDA
PRODUCT APPROVAL

NO.	DATE	BY	REV.	DESCRIPTION

Coral
Architectural Products
5901 W. UNIVERSITY BLVD., SUITE 100
MIRAGE, FLORIDA 33149
PHONE: 800-772-7127 FAX: 800-448-6881

TEST REPORT DRAWINGS
PW256 IMPACT-RESISTANT
CURTAIN WALL SYSTEM

DATE	4/14/2009
DRAWN DCW	CHECKED DCW
APPROVED DCW	
PROJECT NO.	

DRAWING NO.
PW256 01
SHEET
13 OF 16

FRAMING DETAILS