GEORGIA OFFICE
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Lithia Springs, GA 30122
HTLTEST.COM
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October 31, 2011

William Smith, Sr.
Coral Architectural Products
3010 Rice Mine Rd.
Tuscaloosa, Alabama 35406

Re: NS-213 Out-Swing Door System

Dear Mr. Smith;

All testing conducted for the above mentioned product, reported in HTL test report # G402-1203-05 was performed in strict accordance with the current editions of ASTM E283, E330, and AAMA 1304. The results are valid per the latest editions of said standards.

If you have any further questions regarding the attached reports, please contact our office.

Sincerely,

HURRICANE TEST LABORATORY, LLC

VINU S. ABRAHAM LICENSE No. 53820 STATE OF FLORIDA PROFESSIONAL ENGINEER

Vinu S. Abraham, P.E.
FL Reg. # 53820

HURRICANE TEST LABORATORY, LLC
TESTING AND EVALUATION SOLUTIONS
1701 WESTFORK DRIVE, SUITE 106
LITHIA SPRINGS, GEORGIA 30122
(770) 941-6916
Fax (770) 941-2930
www.htltest.com

MANUFACTURER'S IDENTIFICATION

1.0 NAME OF APPLICANT: CORAL ARCHITECTURAL PRODUCTS
3010 Rice Mine Road
Tuscaloosa, Alabama 35406
(800) 772-7737

2.0 CONTACT PERSON: J.D. Williams

3.0 HTL LAB CERTIFICATION: Miami-Dade County (04-0806.02)
Florida Building Code #TST3892

PRODUCT IDENTIFICATION

4.0 Product Types: Out-Swing Doors
5.0 Model Number: NS-213
6.0 Performance Class: +/- 60 psf
7.0 Overall Size: 73-3/4" (w) x 85-3/4" (h)
8.0 Door Panel Sizes: Two (2) @ 36" (w) x 84" (h)
9.0 Configuration: XX - Pair of Operable Doors
10.0 Drawing: This test report is incomplete without the attached CORAL ARCHITECTURAL PRODUCTS Drawing "NS213-HTL" bearing the raised seal of Hurricane Test Laboratory, LLC.
11.0 Sample Source: Samples provided by Coral Architectural Products

PRODUCT DESCRIPTION

12.0 MATERIAL CHARACTERISTICS:

12.1 Frame Construction: All of the main members of the frame were fabricated using the aluminum extrusions with the following cross-sectional properties:

Description	Part #	Overall Cross Section	Alloy
Head	FL207	1.750" x 4.500" x 0.085"	6063-T6
Jambs	FL209	1.750" x 4.500" x 0.080"	6063-T6
Jamb Anchor Plate	CS104	0.375" x 4.000" x 0.094"	6063-T6
Threshold	TH4	0.500" x 4.000" x 0.125"	6063-T6
Panic Stop	DP200-1	1.323" x 0.402" x 0.188"	6063-T6
Door Stop	DS200	0.500" x 1.019" x 0.050"	6063-T6

The following construction procedures (typical) were utilized in the assembly of the frame:
Typical Frame Corner Construction: At each top corner, the frame jamb ran through while the frame head member was square cut, butted, and mechanically fastened to the frame jamb using two (2) #14 x 1" HH STS. At each bottom corner, the frame jamb member ran through while the threshold was square cut, butted and mechanically fastened to the frame jamb using 1-1/2" x 1-1/8" zinc plated angle with four (4) each # 12-24 x ½" FHMS.
Frame Corner Sealant: Each frame corner was sealed using Dow Corning 795 silicone sealant.

12.2 Door Construction: Each of the door leaves were fabricated using the following aluminum extrusions:

Description	Part #	Overall Cross Section	Alloy
Door Stiles	D103	2.125" x 1.750" x 0.120"	6063-T6
Door Active Meeting Stile	D105	1.989" x 1.750" x 0.120"	6063-T6

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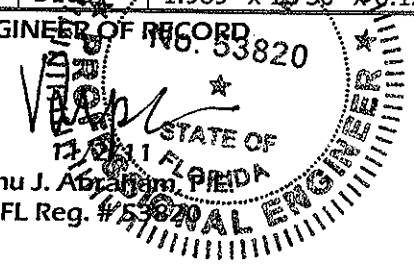

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FL Reg. #53820

Description	Part #	Overall Cross Section	Alloy
Door Inactive Meeting Stile	D104	2.125" x 1.750"x 0.120"	6063-T6
Door Bottom Rail	D102	4.000" x 1.750" x 0.120"	6063-T6
Door Top Rail	D101	2.250" x 1.710" x 0.120"	6063-T6
Adjustable Astragal	D106	0.331" x 1.562" x 0.062"	6063-T6
Door Bottom Rail Sweep	WS100	0.812" x 0.302" x 0.125"	6063-T6
Glass Stops	DG100	0.500" x 0.625" x 0.055"	6063-T6

The following construction procedures (typical) were utilized when assembling each door leaf: Door Panel Corner Construction: At each door panel corner, both member ends were square cut, butted, and attached together using door corner block (Part # CB101 for the top rail and Part # CB102 for the bottom rail). At each door panel corner, the horizontal rail was mechanically fastened to the stile with the corner blocks using one (1) 3/8"-16 x 1" HWH Zinc plated cap bolt into a 1.475" x 1.475" x 0.180" Zinc plated steel square nut (Part # AS13) positioned inside the stile. Additionally, four (4) #10 x ¾" PFH Type "B" Zinc fasteners were used to attach the rails to the corner blocks. The door panel corners were not welded.

12.3 Glazing:

12.3.1 Glass Type: ¼" tempered glass

12.3.2 Daylight Opening:

Qty.	Location	Daylight Opening	Glass Bite
2	Door Panels	30-9/16" x 75-15/16"	9/32"

12.4 Weather-stripping:

Qty.	Location	Description
20-lf.	Frame head and jambs	Schlegel wool pile (Part # WP200)
14-lf.	Two rows along adjustable astragal.	Schlegel wool pile (Part # WP106)
6-lf.	Along back of bottom of door panels	Coral vinyl weathering strip (Part # VG1)

12.5 Hardware:

Qty.	Location	Description
6	Three (3) per door panel, located on door panel hinge stile, 10" away from each end of the stile and 42-1/2" on center thereafter	Butt Hinge (Part #DH109). Each hinge was attached to the frame jamb using four (4) #12-24 x 1/2 (Part # AS-3), and to the door stile using four (4) #12-24 x 1/2 (Part # AS-3).
2	Exterior of doors	Coral pull handle (Part # PH1-10)
2	Interior of doors	Coral push bars (Part # PB1-36)
1	Active door	ABC cylinder (Part # DH078)
1	Active door	International 3-point lock (Part # DH067)
1	Inactive door	International steel tip flush bolt (Part # DH176)
2	Bottom of doors	Coral door bottom sweep (Part # WS136)

12.6 Sealant's Used:

Location	Sealant
Perimeter Sealant	Dow Corning 795 Silicone Sealant
Frame Joint Sealant	

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INSTALLATION

13.0 Following is a description of how this sample was installed in the steel test buck when viewed from the exterior:

Location	Anchor Schedule
Frame Head	The frame head was attached to the steel opening using two (2) #1/4" x 1-1/2" HH Tek self drilling fastener, located 2" away from the geometric center of the head member, one on each side.
Threshold	The threshold was attached to the steel opening using two (2) #1/4"-20 x 1-1/4" FHP (drilled and tapped) fasteners, located 2" away from the geometric center of the head member, one on each side.
Frame Jambs	The frame jambs were attached to the steel opening using three(3) #1/4" – 1-1/2" HH Tek self drilling fasteners, located 2-3/8", 42-1/4" and 80-3/8" from the bottom of the frame.

NOTE: There was a ¼" shim space used around the perimeter of each test sample at the head, sill and jamb locations.

TEST RESULTS

14.0 SUMMARY OF RESULTS:

Test Method	Test Conditions	Measured	Allowed
Air Infiltration Test (ASTM E283)	1.57 psf	0.56 cfm/ft^2	1.00 cfm/ft^2
	6.24 psf	1.35 cfm/ft^2	n/a
Uniform Load Deflection Test (ASTM E330)	+ 60 psf	**Deflection**	
		Geometric Center of Doors	
		1.27"	n/a
	- 60 psf	Geometric Center of Doors	
		1.22"	n/a
Uniform Load Structural Test (ASTM E330)	+ 90 psf	**Permanent Set**	
		Geometric Center of Doors	
		0.18"	0.33"
	- 90 psf	Geometric Center of Doors	
		0.25"	0.33"
Forced Entry Resistance Test (AAMA 1304-02)	300-lb.	PASS	

- **PLEASE NOTE THAT NO OTHER MEMBERS DEFLECTED MORE THAN THE ALLOWABLE DEFLECTIONS AT OTHER LOCATIONS ON THE TEST UNIT.**
- **THESE TESTS WERE COMPLETED ON 12/21/05**

ENGINEER OF RECORD

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MISCELLANEOUS INFORMATION

15.0 CERTIFICATION & DISCLAIMER STATEMENT:

All tests performed on this test specimen were conducted in accordance with the specifications of the applicable codes, standards & test methods listed below by the Hurricane Test Laboratory, LLC located at 1701 Westfork Drive, Suite 106, Lithia Springs, Georgia 30122. HTL does not have, nor does it intend to acquire or will it acquire, a financial interest in any company manufacturing or distributing products tested at HTL. HTL is not owned, operated or controlled by any company manufacturing or distributing products it tests. This report is only intended for the use of the entity named in section 1.0 of this report. Detailed assembly drawings showing wall thickness of all members, corner construction and hardware applications are on file and have been compared to the test specimen submitted. A copy of this test report along with representative sections of the test specimen will be retained at HTL for a period of four (4) years. All results obtained apply only to the specimen tested and they do indicate compliance with the performance requirements of the test methods and specifications listed in the following section. Please note that a copy of this report will be forwarded to the AAMA Validator if requested and that this report does not constitute AAMA certification of this product, which may only be granted by the AAMA Validator.

16.0 APPLICABLE CODES, STANDARDS & TEST METHODS:

ASTM E283-04 - Standard Test Method For Determining The Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences.
ASTM E330-02 - Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
AAMA 1304-02 – Voluntary Specification for Forced Entry Resistance of Side Hinged Door Systems.

17.0 LIST OF OFFICIAL OBSERVERS:

Vinu J. Abraham, P.E. – HTL, Managing Partner
José E. Colón, E.I. – HTL, Operations Manager
Ian McKenzie – HTL
Al Fite - HTL
J.D. Williams – CORAL ARICHITECTURAL PRODUCTS

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2.0 CONTACT PERSON: J.D. Williams

3.0 HTL LAB CERTIFICATION: Miami-Dade County (04-0806.02)
Florida Building Code #TST3892

PRODUCT IDENTIFICATION

4.0 Product Types: Out-Swing Doors
5.0 Model Number: NS-213
6.0 Performance Class: +/- 25 psf
7.0 Overall Size: 73-3/4" (w) x 85-3/4" (h)
8.0 Door Panel Sizes: Two (2) @ 36" (w) x 84" (h)
9.0 Configuration: XX - Pair of Operable Doors
10.0 Drawing: This test report is incomplete without the attached CORAL ARCHITECTURAL PRODUCTS Drawing "NS213-HTL" bearing the raised seal of Hurricane Test Laboratory, LLC.
11.0 Sample Source: Sample provided by Coral Architectural Products

PRODUCT DESCRIPTION

12.0 MATERIAL CHARACTERISTICS:

12.1 Frame Construction: All of the main members of the frame were fabricated using the aluminum extrusions with the following cross-sectional properties:

Description	Part #	Overall Cross Section	Alloy
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Jamb Anchor Plate	CS104	0.375" x 4.000" x 0.094"	6063-T6
Threshold	TH4	0.500" x 4.000" x 0.125"	6063-T6
Panic Stop	DP200-1	1.323" x 0.402" x 0.188"	6063-T6
Door Stop	DS200	0.500" x 1.019" x 0.050"	6063-T6

The following construction procedures (typical) were utilized in the assembly of the frame:
Typical Frame Corner Construction: At each top corner, the frame jamb ran through while the frame head member was square cut, butted, and mechanically fastened to the frame jamb using two (2) #14 x 1" HH STS. At each bottom corner, the frame jamb member ran through while the threshold was square cut, butted and mechanically fastened to the frame jamb using 1-1/2" x 1-1/8" zinc plated angle with four (4) each # 12-24 x ½" FHMS.
Frame Corner Sealant: Each frame corner was sealed using Dow Corning 795 silicone sealant.

12.2 Door Construction: Each of the door leaves were fabricated using the following aluminum extrusions:

Description	Part #	Overall Cross Section	Alloy
Door Stiles	D103	1.625" x 4.750" x 0.120"	6063-T6
Door Active Meeting Stile	D105	1.989" x 4.750" x 0.120"	6063-T6

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No. 53820
STATE OF FLORIDA
PROFESSIONAL ENGINEER
12/21/05
Vinu J. Abraham, P.E.
FL Reg. # 53820

Description	Part #	Overall Cross Section	Alloy
Door Inactive Meeting Stile	D104	2.125" x 1.750"x 0.120"	6063-T6
Door Bottom Rail	D102	4.000" x 1.750" x 0.120"	6063-T6
Door Top Rail	D101	2.250" x 1.710" x 0.120"	6063-T6
Adjustable Astragal	D106	0.331" x 1.562" x 0.062"	6063-T6
Door Bottom Rail Sweep	WS100	0.812" x 0.302" x 0.125"	6063-T6
Glass Stops	DG100	0.500" x 0.625" x 0.055"	6063-T6

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12.3 Glazing:

12.3.1 Glass Type: ¼" tempered glass

12.3.2 Daylight Opening:

Qty.	Location	Daylight Opening	Glass Bite
2	Door Panels	30-9/16" x 75-15/16"	9/32"

12.4 Weather-stripping:

Qty.	Location	Description
20-lf.	Frame head and jambs	Schlegel wool pile (Part # WP200)
14-lf.	Two rows along adjustable astragal.	Schlegel wool pile (Part # WP106)
6-lf.	Along back of bottom of door panels	Coral vinyl weathering strip (Part # VG1)

12.5 Hardware:

Qty.	Location	Description
2	Top of hinge jambs and stiles of doors.	ABC top pivots (Part #'s DH101 and DH102)
2	Bottom of hinge jambs and stiles of doors.	ABC bottom pivots (Part #'s DH103 and DH104)
2	Exterior of doors	Coral pull handles (Part # PH1-10)
2	Interior of doors	Coral push bars (Part # PB1-36)
1	Active door	ABC cylinder (Part # DH078)
1	Active door	ABC lock (Part # DH070)
2	Inactive door	International flush bolt (Part # DH076)
2	Bottom of doors	Coral door bottom sweeps (Part # WS136)

12.6 Sealant's Used:

Location	Sealant
Perimeter Sealant	Dow Corning 795 Silicone Sealant
Frame Joint Sealant	

ENGINEER OF RECORD

11/2/11

INSTALLATION

13.0 Following is a description of how this sample was installed in the steel test buck when viewed from the exterior:

Location	Anchor Schedule
Frame Head	The frame head was attached to the steel opening using two (2) #1/4" x 1-1/2" HH Tek self drilling fastener, located 2" away from the geometric center of the head member, one on each side.
Threshold	The threshold was attached to the steel opening using two (2) #1/4"-20 x 1-1/4" FHP (drilled and tapped) fasteners, located 2" away from the geometric center of the head member, one on each side.
Frame Jambs	The frame jambs were attached to the steel opening using three(3) #1/4" – 1-1/2" HH Tek self drilling fasteners, located 2-3/8", 42-1/4" and 80-3/8" from the bottom of the frame.

NOTE: There was a ¼" shim space used around the perimeter of each test sample at the head, sill and jamb locations.

TEST RESULTS

14.0 SUMMARY OF RESULTS:

Test Method	Test Conditions	Measured	Allowed
Air Infiltration Test (ASTM E283)	1.57 psf	1.28 cfm/ft^2	1.00 cfm/ft^2
Uniform Load Deflection Test (ASTM E330)	+ 25 psf	**Deflection**	
		Geometric Center of Doors	
		0.66"	n/a
	- 25 psf	Geometric Center of Doors	
		1.25"	n/a
Uniform Load Structural Test (ASTM E330)	+ 37.5 psf	**Permanent Set**	
		Geometric Center of Doors	
		0.07"	0.33"
	- 37.5 psf	Geometric Center of Doors	
		0.13"	0.33"
Forced Entry Resistance Test (AAMA 1304-02)	300-lb.	PASS	

- **PLEASE NOTE THAT NO OTHER MEMBERS DEFLECTED MORE THAN THE ALLOWABLE DEFLECTIONS AT OTHER LOCATIONS ON THE TEST UNIT.**
- **THESE TESTS WERE COMPLETED ON 12/21/05**

ENGINEER OF RECORD

11/2/11

MISCELLANEOUS INFORMATION

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