

HURRICANE TEST LABORATORY, LLC

Testing & Evaluation Solutions



CORAL ARCHITECTURAL PRODUCTS **"NS-213 Doors"**

HTL Report # G402-1203-05



January 16, 2006

J.D Williams
Coral Architectural Products
3010 Rice Mine Road
Tuscaloosa, Alabama 35406

Re: NS-13 Doors

Dear Mr. Williams:

Enclosed you will find the test report package for the NS-13 Doors tests that were performed at Hurricane Test Laboratory, LLC (HTL).

This test report package includes the following items:

- NOT APPLICABLE* Bill.D6
- HTL test report # G402-1203-05 (4 pages) for Out-Swing Doors with butt hinges
 - ~~HTL test report # G402-1203-05 (1 pages) for Out-Swing Doors with offset pivots~~
 - Coral drawing # NS213-HTL (5 sheets)

If you have any questions, please contact our office.

Sincerely,

HURRICANE TEST LABORATORY, LLC

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

**HURRICANE TEST
LABORATORY, LLC**

FLORIDA OFFICE

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Riviera Beach, FL 33404

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GEORGIA OFFICE

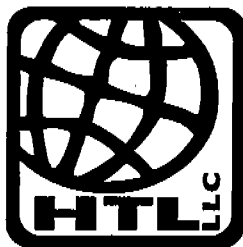
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Report #: G402-1203-05
Specimen # 1
Test Date: 12/21/05
Report expires on: 1/16/11
Page 1 of 4

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 TEST NOTIFICATION #:** N/A
- 4.0 HTL LAB CERTIFICATION:** Miami-Dade County (04-0806.02)
Florida Building Code #TST3892

PRODUCT IDENTIFICATION

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

PRODUCT DESCRIPTION

13.0 MATERIAL CHARACTERISTICS:

- 13.1 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 1/2" FHMS.

Frame Corner Sealant: Each frame corner was sealed using Dow Corning 795 silicone sealant.

- 13.2 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" 1.750" x 0.120"	6063-T6

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



Description	Part #	Overall Cross Section	Alloy
Door Active Meeting Stile	D105	1.989" x 1.750" x 0.120"	6063-T6
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 3/4" PFH Type "B" Zinc fasteners were used to attach the rails to the corner blocks. The door panel corners were not welded.

14.0 Glazing:

14.1 Glass Type: 1/4" tempered glass

14.2 Glazing Method: Each glass lite used in this sample was glazed using the following (typical) procedure:

Interior/Exterior Side: Using continuous strips of an extruded EPDM gasket (Part #NG4). The glass stops (Part # DG100) are then snapped in place.

15.0 Daylight Opening:

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

16.0 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)

17.0 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)

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Vape

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18.0 Sealant's Used:

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

INSTALLATION

19.0 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 Jamb	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 1/4" shim space used around the perimeter of each test sample at the head, sill and jamb locations.

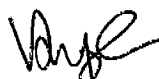
TEST RESULTS

20.0 SUMMARY OF RESULTS:

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	
	- 60 psf	1.27"	n/a
		Geometric Center of Doors	
Uniform Load Structural Test (ASTM E330)	+ 90 psf	1.22"	n/a
		Permanent Set	
	- 90 psf	Geometric Center of Doors	
		0.18"	0.33"
Forced Entry Resistance Test (AAMA 1304-02)	300-lb.	0.25"	0.33"
		PASS	

• **THESE TESTS WERE COMPLETED ON 12/21/05**

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1/16/06



MISCELLANEOUS INFORMATION

21.0 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.

22.0 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.

23.0 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 ARCHITECTURAL PRODUCTS

ENGINEER OF RECORD

1/16/06

HTL PRODUCT APPROVAL FOR NS213 PAIR OF DOORS

- INDEX TO DRAWINGS
- 1 INDEX TO DRAWINGS AND NOTES
 - 2 FRAMING & DOOR ELEVATIONS
 - 3 FRAMING & DOOR DETAILS
 - 4 BILL OF MATERIALS
 - 5 HARDWARE & GLASS SCHEDULES

Hurricane Test Laboratory, LLC



AS TESTED UNLESS
OTHERWISE NOTED

Date 1/13/06
Job#

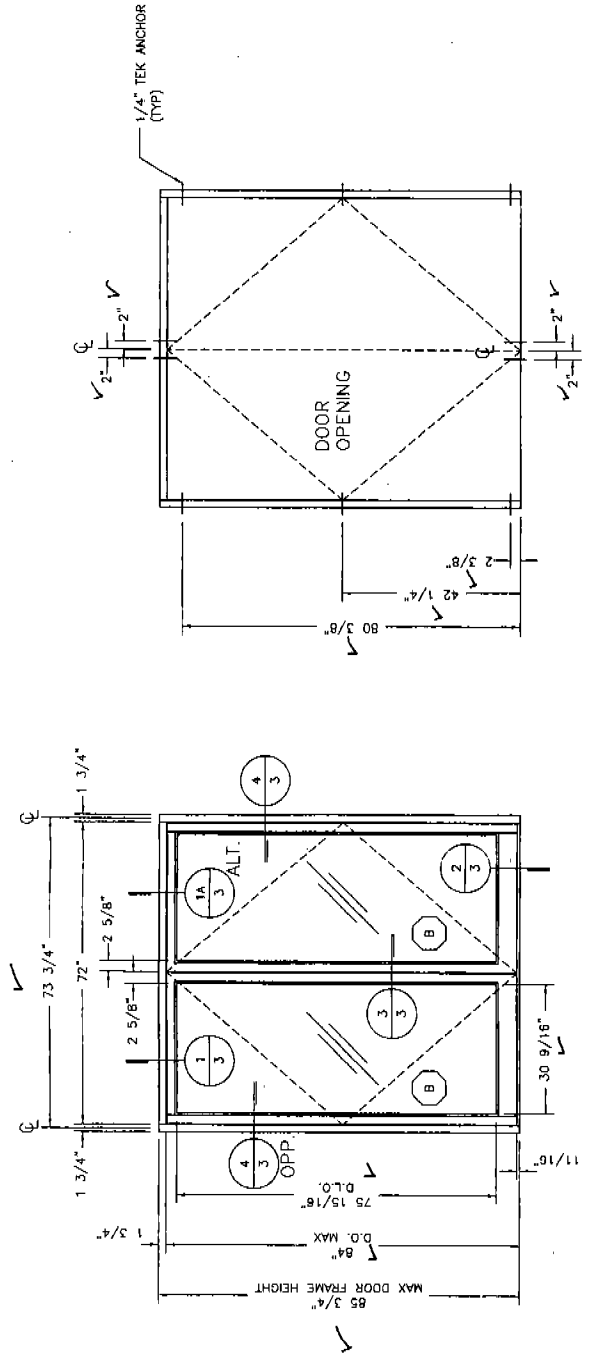
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HTL PRODUCT APPROVAL FOR
NS213 PAIR OF DOORS
INDEX TO DRAWINGS AND NOTES

DATE	1/8/2006	DRAWN	CSC	CHECKED	JOH	APPROVED	JOH
PROJECT NO.	HTL	DRAWING NO.	NS213-HTL	SHEET	1	OF	5

Architectural Products
3010 RICE MIKE ROAD, TUSCALOOSA, AL 35406
PHONE: 800-772-1797 FAX: 800-255-7320

Corral



FRAME ANCHOR LOCATIONS

FRAMING & DOOR ELEVATIONS

~~THIS INFORMATION CONTAINS NEITHER RECOMMENDATIONS NOR~~
~~DISAPPROVALS OF THE UNITED STATES GOVERNMENT. IT IS THE PROPERTY OF THE~~
~~GOVERNMENT AND IS LOANED TO YOUR AGENCY; IT AND ITS CONTENTS ARE NOT TO BE~~
~~DISTRIBUTED OUTSIDE YOUR AGENCY.~~ ~~1~~ ~~WEATHERING REF. ITEMS~~ ~~NOT APPLICABLE~~ ~~ON 8.11.06~~

NOTES:
1. D.L.O. = DAYLIGHT OPENING
2. GLASS SIZE = D.L.O.
3. STEEL BUCK

1 THUS WITH 1 1/2 PAIR BUTT HINGES WITH $\left(\frac{1A}{3}\right)$ WEATHERING - REF. ITEM 4

TEST PARAMETERS FOR OFFSET PIVOTS DOORS:	TEST PARAMETERS FOR BUTT HINGE DOORS:
1. AIR TEST AT 1.57 PSF	1. AIR TEST AT 1.57 PSF AND 6.24 PSF
3. STATIC TEST AT ± 30 PSF	3. STATIC TEST AT ± 60 PSF
3. FORCED ENTRY	3. FORCED ENTRY


AS TESTED UNLESS OTHERWISE NOTED
 Date 9/13/96



Kluane Test Laboratory, LLC

6402-1203-05

SHEET 2 OF 5

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BILL OF MATERIALS

ITEM	P/N	DESCRIPTION	DIMENSIONS	MATERIAL	MANUFACTURE	NOTES
1	NOT USED					
2	SB1	DOOR SETTING BLOCK FOR 1/4" GLASS	.188 X .375 X 1.00	INJECTION MOLDED PLASTIC	CORAL	
3	NOT USED					
4	NG5	DOOR STOP WEATHERING	.125 SPACE	EPDM	VARIES	
5	WP106	ADJUSTABLE ASTRAGAL WEATHERING	VARIABLE SPACE	WOOL PILE	SCHLEGEL	
6	WP200	DOOR STOP WEATHERING	VARIABLE SPACE	WOOL PILE	SCHLEGEL	
7	CS104	DOOR JAMB ANCHOR PLATE	.375 X 4.00 X .094	6063-T6 ALUM.	CORAL	FULL LENGTH
8	VG1	DOOR WEATHERING STRIP	VARIABLE SPACE	VINYL	CORAL	
9	FL207	DOOR HEADER/TRANSOM BAR	1.750 X 4.500 X .085	6063-T6 ALUM.	CORAL	
10	AS1	ATTACH D101/102 TO CB101/102	#10 X 3/4" PFH TYPE "B" ZINC PLT.	STEEL	VARIES	
11	DS200	DOOR STOP	.500 X 1.019 X .050	6063-T6 ALUM.	CORAL	
12	D103	DOOR STYLE	2.125 X 1.75 X .120	6063-T6 ALUM.	CORAL	
13	D105	DOOR ACTIVE MEETING STYLE	1.989 X 1.75 X .120	6063-T6 ALUM.	CORAL	
14	D104	DOOR INACTIVE MEETING STYLE	2.125 X 1.75 X .120	6063-T6 ALUM.	CORAL	
15	D106	ADJUSTABLE ASTRAGAL	.331 X 1.562 X .062	6063-T6 ALUM.	CORAL	
16	AS7	FOR D106 & DP200-1	#8 X 3/4" POH A PT	STAINLESS STEEL	VARIES	
17	D102	DOOR BOTTOM RAIL	4.00 X 1.75 X .120	6063-T6 ALUM.	CORAL	
18	CB101	DOOR CORNER BLOCK	1.540 X 2.130 X .250	6063-T6 ALUM.	CORAL	FABRICATED LENGTH = 1.350"
19	CB102	DOOR CORNER BLOCK	1.540 X 2.130 X .250	6063-T6 ALUM.	CORAL	FABRICATED LENGTH = 2.032"
20	DG100	DOOR GLASS STOP	.500 X .625 X .055	6063-T6 ALUM.	CORAL	
21	WS100	DOOR BOTTOM RAIL SWEEP	.812 X .302 X .125	6063-T6 ALUM.	CORAL	
22	TH4	THRESHOLD	.50 X 4.00 X .125	6063-T6 ALUM.	CORAL	
23	FL209	STANDARD VERTICAL MULLION/JAMB	1.75 X 4.5 X .080	6063-T6 ALUM.	CORAL	
24	D101	DOOR TOP RAIL	2.250 X 1.710 X .120	6063-T6 ALUM.	CORAL	
25	785	JOINT/ PERIMETER SEALANT	VARIABLE SPACE	SILICONE	TREMCO	
26	NG4	DOOR GLASS STOP WEATHERING	.125 SPACE	EPDM	VARIES	
27	DP200-1	PANIC STOP	1.323 X .402 X .188	6063-T6 ALUM.	CORAL	FABRICATED LENGTH = 2.00"
28	AS5	ATTACH DP200-1 TO TH4	#10 X 1/2" PFH TYPE "B" ZINC PLT.	STEEL	VARIES	
29	AS4	ATTACH CB102 TO D102	3/8-16 X 1" HWH ZINC PLT. CAP BOLT	STEEL	VARIES	
30	AS13	CORNER BLOCK SQUARE NUT	1.475 X 1.475 X .180	ZINC PLT. STEEL	VARIES	

Hurricane Test Laboratory, LLC



AS TESTED UNLESS OTHERWISE NOTED

Date 1/19/06
Job# G402-1203-05

DATE	1/9/2006
DRAWN	SCC
CHECKED	JDW
APPROVED	JDW
PROJECT NO.	HTL
DRAWING NO.	NS213-HTL
SHEET	4 OF 5

HTL PRODUCT APPROVAL FOR
NS213 PAIR OF DOORS
BILL OF MATERIALS

Architectural Products
3010 RICE MINE ROAD, TUSCALOOSA, AL 35406
PHONE: 800-772-7737 FAX: 800-266-7370

Coral

S:\SSS\MBL\SS & AB\NS213\CA\JCM\A.F\...OC\...UP...HTL\NS213\B H...RDY\ARE A GLASS SCHEDULE.dwg, 1/6/2006 10:48:03 AM, phuwel, huppl\12210092\CA\ _Prt, copy10

HARDWARE SCHEDULE ✓

HARDWARE DESCRIPTION	P/N	QTY	MANUFACTURER
PULL HANDLE	PH1-10	2	CORAL
PUSH BAR	PB1-36	2	CORAL
CYLINDER (ACTIVE)	DH078	1	ABC
LOCK (ACTIVE)	DH070	1	ABC
FLUSH BOLT (INACTIVE)	DH078	2	INTERNATIONAL
DOOR BOTTOM SWEEP	WS136	2	CORAL
TOP PIVOTS	DH101 & DH102	2	ABC
BOTTOM PIVOTS	DH103 & DH104	2	ABC

NOT
APPLICABLE
8.11.06

HARDWARE SCHEDULE ✓

FOR 6'-0" X 7'-0" PAIR OF BUTT HINGE DOORS (1 1/2" PAIR HINGES)

HARDWARE DESCRIPTION	P/N	QTY	MANUFACTURER
PULL HANDLE	PH1-10	2	CORAL
PUSH BAR	PB1-36	2	CORAL
CYLINDER (ACTIVE)	DH078	1	ABC
3 PT. LOCK (ACTIVE)	DH067	1	INTERNATIONAL
STL. TIP FLUSH BOLT (INACTIVE)	DH176	2	INTERNATIONAL
DOOR BOTTOM SWEEP	WS136	2	CORAL
BUTT HINGES (4 1/2" X 4")	DH109	6	ABC

GLASS SCHEDULE ✓

GLASS MARK SYMBOL	GLASS TYPE	MANUFACTURER	MAXIMUM DLO SIZE	MAXIMUM SQUARE FEET
(B)	1/4" TEMPERED GLASS	VARIES	30 9/16" x 75 15/16"	16.1

American Test Laboratory, LLC



AS TESTED UNLESS OTHERWISE NOTED

Date 11/13/06
Job# G402-1203-05

DATE	1/6/2006
DRAWN	SCC
CHECKED	JDM
APPROVED	JDM
PROJECT NO.	HTL
DRAWING NO.	NS213-HTL
SHEET	5 OF 5

HTL PRODUCT APPROVAL FOR
NS213 PAIR OF DOORS
HARDWARE & GLASS SCHEDULES

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Coral