



NATIONAL CERTIFIED TESTING LABORATORIES

8350 PARKLINE BLVD SUITE 12 • ORLANDO, FLORIDA 32809 • TELEPHONE (407) 240-1356
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NCTL Report No: 210- 3580-1A

Date: 03/10/09

NCTL Certification No: 06-0119-04

Test Dates: 01/20/09

Test Requested By: *Ingersoll-Rand/Steelcraft*
9017 Blue Ash Road
Cincinnati, OH 45242

Tests Conducted: ASTM E330-00, "Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference." ASTM E1996-02/05, "Performance of Exterior Windows, Glazed Curtain Walls, Doors and Storm Shutters Impacted by Windborne Debris in Hurricanes." ASTM E1886-02/05, "Performance of Exterior Windows, Curtain Walls, Doors and Storm Shutters Impacted by Missiles and Exposed to Cyclic Pressure Differentials." SBCCI/SSTD-12-99 Standard for Determining Impact Resistance From Windborne Debris.

Design Pressures:

Specimen 1 (In-swing)	ASTM E 330	+150.0 psf Positive -150.0 psf Negative
Specimen 2 (Out-swing)	ASTM E 1886/1996 & SSTD12-99	+150.0 psf Positive -150.0 psf Negative
Specimen 3 (Out-swing)	ASTM E 1886/1996 & SSTD12-99	+150.0 psf Positive -150.0 psf Negative
Specimen 4 (In-swing)	ASTM E 1886/1996 & SSTD12-99	+150.0 psf Positive -150.0 psf Negative

LARGE MISSILE DATA: 2 x 4 Southern Yellow Pine (S4S)
 Length: 13.5"
 Weight: 15 lbs.
 Velocity: 50 mph - 73 ft. per second

DESCRIPTION OF SERIES:

Model Designation- H-Series Flush Double Steel Doors with Von-Duprin (WS9927) Exit Device.

Overall Size- 100.0" x 98.0" overall.

Configuration -

No. Size of Doors-

All Specimens (2) Active Panel 47.75" wide x 95.5" high

(2) MATERIAL CHARACTERISTICS:

Frame Material: Cold Rolled 16ga Steel

Frame Construction: Cold rolled 16ga steel measuring 2" wide face x 5.75" deep x 4.875" throat opening. Miter corner tab and slot construction. Extruded aluminum threshold with bumper gasket series 950 by NGP measuring 5.75" wide x 0.5" high coped to fit into the main frame and secured with eight (8) #10 x 1.75" wood screws located 4" from each end 11" on center thereafter.

Door Panel Construction: The slab was honeycomb reinforced. Phenolic resin impregnated kraft paper (1.2" cell full honeycomb core) was laminated to both inside faces. The vertical edges were beveled with a continuous mechanical seam and a continuous bead of structural epoxy applied to the interlocking seam connection. The top and bottom rails contained 16ga inverted steel channels measuring 0.688" x 1.660" x 47.66" that were spot welded to the face sheets, nominally 2" from each end and 6" on center.

Weatherseals:


<u>QTY</u>	<u>DESCRIPTION</u>	<u>LOCATION</u>
One (1) Strip	PS-074 Self-Adhesive Weatherstrip	Frame Head
One (1) Strip	PS-074 Self-Adhesive Weatherstrip	Each Frame Jamb
One (1) Strip	Bulb Vinyl Gasket	Length of Threshold
One (1) Piece	Two (2) Fin Fas-seal Door Sweep	Slab Bottoms

Hardware:

<u>QTY</u>	<u>DESCRIPTION</u>	<u>LOCATION</u>
Eight (8)	Ives 5BB1/3CB1 Butt Hinges 4.5" x 4.5" x 0.134" thick, secured with four (4) 0.210" diameter x 0.525" self threading Phillips head counter sunk screws to the frame and four (4) in the slab.	Four (4) in each Frame Jamb measuring 9.5" -35.04", 60.33" and 85.62" from the Rabbet in the Head to the Center of the Hinge
Eight (8)	Wire Hinge Spacer's	One (1) behind each Hinge on the Door Slab
One (1)	Von-Duprin WS9927 (F) Exit Device Touch Bar height from finished floor 39.687"	One (1) on each Door Slab
One (1)	Series 950 Threshold by NGP	Frame Sill
One (1)	Vertical Lock Rail Reinforcement Channels measuring 3.5" wide x 93.5" long x 0.099" thick.	Each Door Slab Lock Stiles
Eight (8)	Hinge Reinforcements measuring 1.28" wide x 9.19" long x 0.171" thick	Frame Hinge Stile
Eight (8)	Hinge Reinforcements measuring 1.23" wide x 9.19" long x 0.171" thick	Door Slab Hinge Stile
One (1)	Hinge Stile Reinforcement measuring Stile 4" wide x 10" long x 0.067" thick	Each Door Slab Hinge

Sealant:

Latex caulking as needed to seal unit into wood test buck.


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Installation:

All Specimens: The specimens were installed into the wooden test buck with Sixteen (16) 0.375" x 5" long lag bolts. Six (6) in the head located at 8", 23" and 38" from each end to the centerline. Five (5) in each jamb located at 8", from each end 26.5" on center thereafter measuring from sill to head.

TEST RESULTS

STATIC AIR PRESSURE TESTS

Static Tests were was conducted in accordance with ASTM E330

Specimen # 1

Design Loads + 150.0 psf -150.0 psf.

Range of test	Time	Actual Load	Measured	Allowed
<u>Positive Loads</u>	<u>(seconds)</u>	<u>psf</u>	<u>Def.</u>	<u>Perm. Set</u>
½ Test	30	112.5		
Design	30	150.0 Loc # 1	0.849"	
Test	30	225.0 Loc # 1		0.382"

Range of test	Time	Actual Load	Measured	Allowed
<u>Negative Loads</u>	<u>(seconds)</u>	<u>psf</u>	<u>Def.</u>	<u>Perm. Set</u>
½ Test	30	112.5		
Design	30	150.0 Loc # 1	0.600"	
Test	30	225.0 Loc # 1		0.382"

Loc # 1: Mid-Span of Active Door Panel

Loc # 1: Maximum Allowable Permanent Set. (.04% of 95.625" (Length of Span)) = 0.382"


LARGE MISSILE IMPACT TEST

The appropriate missile to be used for impact tests was selected in accordance with section 6 of ASTM E1996 & SSTD12-99 based on the following criteria:

Level of Protection:	<u>Basic Protection</u>
Wind Zone:	Wind Zone 4 - Greater than 140 mph
Assembly Height Above Ground:	Less than or Equal to 30 feet

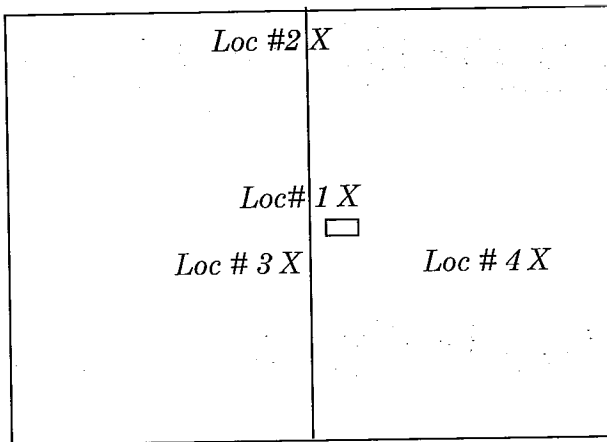
IMPACT TEST RESULTS

For pass/fail criteria, no penetration is defined as no tear longer than 5 inches in length and 1/16" wide or no opening through which a 3" diameter solid sphere can freely pass per section 7 of ASTM E 1996. All specimens were conditioned at 70° F ± 15° F prior to testing. Missile orientation at impact complies with section 11.2.2 of ASTM E1886.


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IMPACT TEST RESULTS CONT.

Specimens 2-4:



- Specimens 2-4:** Loc#1: Mid-span 6"above Hardware
 Loc#2: Mid-Span of Panels at Lockstile
 Loc#3: Top Left Corner of Right Active Panel
 Loc#4: Above Hinges on Right Active Door

NOTES: All impacts rejected without penetration. Upon completion of testing the specimen met the requirements for ASTM E 1996-02/05 & SSTD-12-99.

The conditioning temperature of the specimens were 72.2°.
 Missile orientation at impact complies with Section 11.2.2 of ASTM E1886-02/05.

PRESSURE CYCLING TEST RESULTS

After completion of the impact tests, the specimens were pressure cycled in accordance with Table 1 of ASTM E1996. The duration of each air pressure cycle was between 1 and 5 seconds. Where required, two- (2) mil plastic film was used to obtain cycle loads. The film did not affect the performance of the specimen or influence the results of the test. For pass/fail criteria, no opening is defined as no tear longer than 5 inches in length and 1/16" wide or no opening through which a 3" diameter solid sphere can freely pass per section 7 of ASTM E 1996.

Specimen # 2

Design Load psf + 150.0 psf - 150.0 psf

Range of Test

<u>Positive Load</u>	<u>Actual</u>	<u># of Cycles</u>	<u>Results</u>
-0.2 - +0.5	30.0 psf - 75.0 psf	3,500	1.5 Seconds/Passed
-0.0 - +0.6	0.00 psf - 90.0 psf	300	1.5 Seconds/Passed
-0.5 - +0.8	75.0 psf - 120.0 psf	600	1.5 Seconds/Passed
-0.3 - +1.0	45.0 psf - 150.0 psf	100	1.5 Seconds/Passed

<u>Negative Loads</u>	<u>Actual</u>	<u># of Cycles</u>	<u>Results</u>
-0.3 - -1.0	45.0 psf - 150.0 psf	50	1.5 Seconds/Passed
-0.5 - -0.8	75.0 psf - 120.0 psf	1,050	1.5 Seconds/Passed
-0.0 - -0.6	0.00 psf - 90.0 psf	50	1.5 Seconds/Passed
-0.2 - -0.5	30.0 psf - 75.0 psf	3,350	1.5 Seconds/Passed

Description of specimen after cycle test: Specimen showed no resultant failure or duress after cycle test. No failure of fasteners or separation from the frame.

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 3/25/09

CYCLE TEST (Con't)**Specimen # 3**

Design Load psf + 150.0 psf - 150.0 psf

Range of Test

<u>Positive Load</u>	<u>Actual</u>	<u># of Cycles</u>	<u>Results</u>
-0.2 - +0.5	30.0 psf - 75.0 psf	3,500	1.5 Seconds/Passed
-0.0 - +0.6	0.00 psf - 90.0 psf	300	1.5 Seconds/Passed
-0.5 - +0.8	75.0 psf - 120.0 psf	600	1.5 Seconds/Passed
-0.3 - +1.0	45.0 psf - 150.0 psf	100	1.5 Seconds/Passed

Negative Loads

<u>Negative Loads</u>	<u>Actual</u>	<u># of Cycles</u>	<u>Results</u>
-0.3 - -1.0	45.0 psf - 150.0 psf	50	1.5 Seconds/Passed
-0.5 - -0.8	75.0 psf - 120.0 psf	1,050	1.5 Seconds/Passed
-0.0 - -0.6	0.00 psf - 90.0 psf	50	1.5 Seconds/Passed
-0.2 - -0.5	30.0 psf - 75.0 psf	3,350	1.5 Seconds/Passed

Description of specimen after cycle test: Specimen showed no resultant failure or duress after cycle test. No failure of fasteners or separation from the frame.

Specimen # 4

Design Load psf + 150.0 psf - 150.0 psf

Range of Test

<u>Positive Load</u>	<u>Actual</u>	<u># of Cycles</u>	<u>Results</u>
-0.2 - +0.5	30.0 psf - 75.0 psf	3,500	1.5 Seconds/Passed
-0.0 - +0.6	0.00 psf - 90.0 psf	300	1.5 Seconds/Passed
-0.5 - +0.8	75.0 psf - 120.0 psf	600	1.5 Seconds/Passed
-0.3 - +1.0	45.0 psf - 150.0 psf	100	1.5 Seconds/Passed

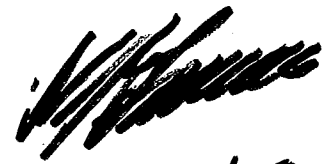
Negative Loads

<u>Negative Loads</u>	<u>Actual</u>	<u># of Cycles</u>	<u>Results</u>
-0.3 - -1.0	45.0 psf - 150.0 psf	50	1.5 Seconds/Passed
-0.5 - -0.8	75.0 psf - 120.0 psf	1,050	1.5 Seconds/Passed
-0.0 - -0.6	0.00 psf - 90.0 psf	50	1.5 Seconds/Passed
-0.2 - -0.5	30.0 psf - 75.0 psf	3,350	1.5 Seconds/Passed

Description of specimen after cycle test: Specimen showed no resultant failure or duress after cycle test. No failure of fasteners or separation from the frame.

Note: A 1.5 polyethylene film was used on the structural tests and it is the opinion of the undersigned that it had no influence on the results of these tests.

Disclaimer: This test report was prepared by National Certified Testing Laboratory (NCTL), for the exclusive use of the above named client; it does not constitute certification of this product. The results are for the particular specimen tested and does not imply the quality of similar or identical products manufactured or installed from specifications identical to the tested product. NCTL is a testing lab and assumes that all information provided by the client is accurate and does not guarantee or warranty any product tested or installed.


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Detailed drawings were available for laboratory records and compared to the test specimen at the time of this report. A copy of this report along with representative sections of the test specimen will be retained by NCTL for a period of four (4) years. The results obtained apply only to the specimen tested. No conclusions of any kind regarding the adequacy or inadequacy of the glass in the test specimen may be drawn from this test. This report does not constitute certification of the product, which may only be granted by a certification program validator.

- Observers: Mr. Miguel Nieves (NCTL)
Mr. Mark Bennett (NCTL)
Mr. Ricky Moffett (NCTL)
Mr. Yuriy Farber (Ingersoll-Rand)
Mr. Karen Bishop (Ingersoll-Rand)
Mr. Gerry Ferrara (P.E.)

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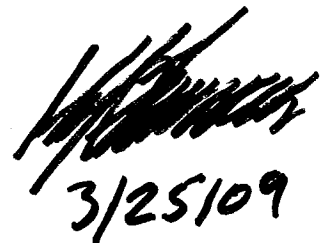


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ASTM E1996 COMPLIANCE STATEMENT

On Jan 20th, 2009, Ingersoll Rand/SteelCraft, completed impact testing at National Certified Testing Laboratories in Orlando, FL. All tests were performed in full accordance with ASTM E1886 and ASTM E1996 with no deviations.

Manufacturer: *Ingersoll Rand/SteelCraft.*
 Product Series: *H-Series Flush Double Steel Doors with Von- Duprin (WS9927) Exit Device.*
 Product Configuration Tested: *XX*
 Tested Size: *100.0" x 98.0" overall.*
 Glazing Configuration: *N/A*

Level of Protection: *Basic Protection*
 Wind Zone: *Wind Zone 4 - Greater than 140 mph*
 Assembly Height Above Ground: *Less than or Equal to 30 feet*

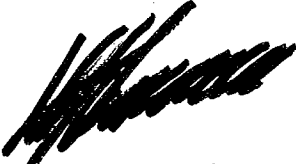
Impact Missile Used: *13.5ft/ 15lb # 2 Yellow Pine 2" x 4"*
 Positive Design Pressure: *Specimens # 2, 3 & 4 + 150 psf*
 Negative Design Pressure: *- 150 psf*

See NCTL Report 210-3580-1A for complete specimen description and test results.

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 Mark Bennett
 Manager of Testing Services


 Christopher Bennett
 Division Manager


 3/25/09



Ingersoll Rand/Steelcraft

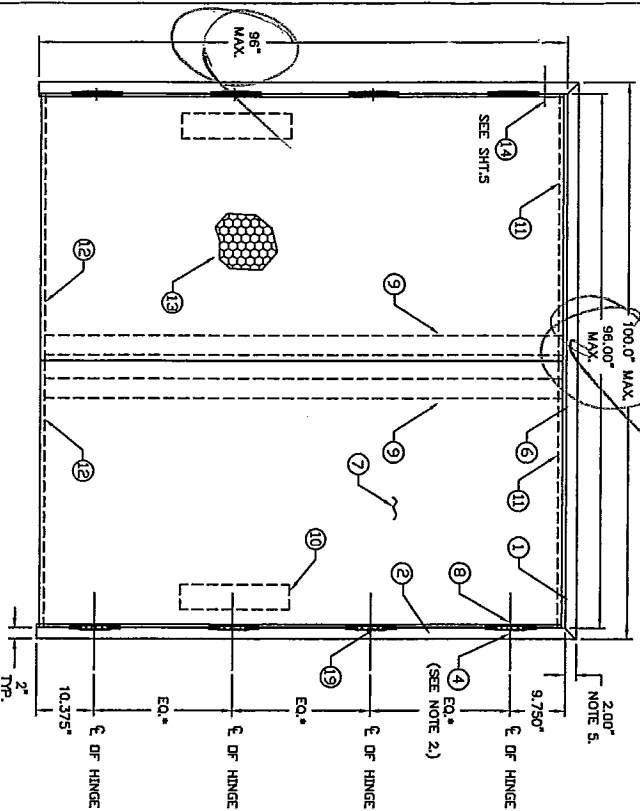
NCTL -210-3580-1A

Test Drawings

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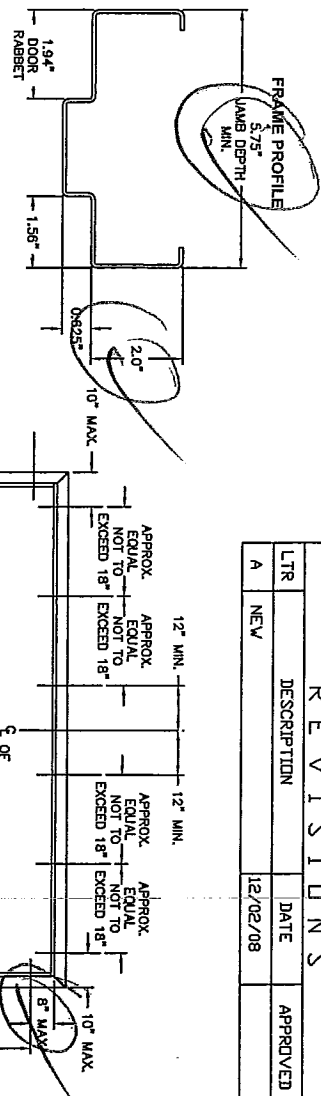
OUTSWING DOORS (INTERIOR VIEW)



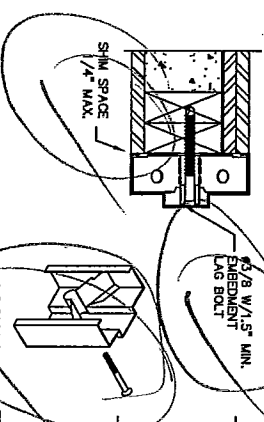
ITEM QUANTITY	DESCRIPTION	MATERIAL	REF.
1	HEAD SECTION	.053" MIN. STL. ASTM A396	
2	HINGE JAMB	.053" MIN. STL. ASTM A386	
0	STRIKE JAMB	.053" MIN. STL. ASTM A386	
8	FRAME HINGE REINFORCEMENT	.171" MIN. STL. ASTM A621	
8	HINGE	.134" MIN. STL. SHT. 1	
1	HEAD REINFORCEMENT	.067" MIN. STL. SHT. 1	
2	DOOR SLAB	.053" MIN. STL. SHT. 2	
8	DOOR HINGE REINFORCEMENT	.171" MIN. STL. ASTM A621	
2	DOOR LOCKSIDE REINFORCEMENT CHANNEL	.099" MIN. STL. SHT. 1	
2	DOOR HINGE SIDE REINFORCEMENT BOX	.067" MIN. STL. SHT. 2	
2	TOP CHANNEL	.099" MIN. STL.	
2	BOTTOM CHANNEL	.067" MIN. STL.	
2	CORE CONSTRUCTION: KRAFT PAPER HONEYCOMB	PAPER	
16	FRAME ANCHOR	ASTM A924	
2	LOCKING HARDWARE: 989927(F) EXIT DEVICE BY VON DUPRIN		
1	THRESHOLD 950 BY NGP	.078" ALUM. 6063 T5	

LTR	DESCRIPTION	DATE	APPROVED
A	NEW	12/02/08	

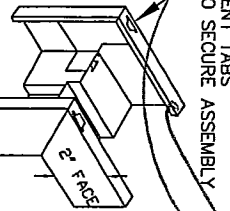
REVISIONS



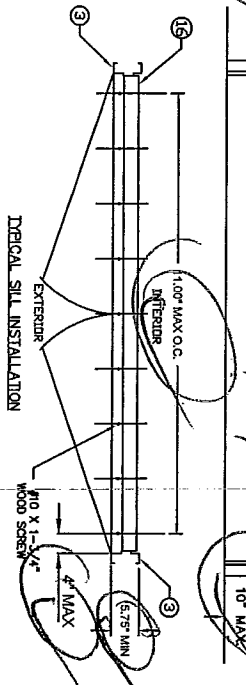
WOOD STUD WALLS



CORNER CONNECTION DETAILS



TEST SPECIMEN COMPLIES WITH THESE DETAILS. ANY DEVIATION IS NOTED. REPORT NO. NCTL - 210 - 3580-11A TEST DATE: 01/20/09



<p>THIRD ANGLE PROJECTION</p> <p>DATE: 12/02/08</p> <p>BY: YMP</p> <p>CHECKED: [Signature]</p> <p>APPROVED: [Signature]</p> <p>ENG. APPROV. [Signature]</p>	<p>TITLE: UNUSUAL IR SECURITY TECHNOLOGIES H-SERIES DOORS BY SELLERACT WITH DUPRIN EXIT DEVICE TESTED TO TMS 2017/202/203, EHPA, ASTM E1886/E1996, ICC 500</p> <p>111 Congressional Blvd., Suite 200 IR Ingersoll Rand Security Technologies Carmel, Indiana 46032</p>
<p>SCALE: NTS</p> <p>SIZE: FLAT</p> <p>DWG. NO.: 3580-1</p> <p>SHEET: 1 OF 2</p>	<p>3580-11A</p> <p>APPROX. EQUAL NOT TO EXCEED 30"</p> <p>APPROX. EQUAL NOT TO EXCEED 30"</p> <p>APPROX. EQUAL NOT TO EXCEED 18"</p> <p>APPROX. EQUAL NOT TO EXCEED 18"</p> <p>APPROX. EQUAL NOT TO EXCEED 18"</p> <p>APPROX. EQUAL NOT TO EXCEED 18"</p>