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ATLNC 0814.01-06

Report Date: 11/08/06

Test Dates: 08/14/06 - 08/17/06

ATLNC Certification # 05-0810.05

Test Requested By: Mike Martin
Carriage House Door Company
1571 E. Main St.
Old Fort, N.C. 28762
Phone: 828-668-1600 Fax: 828-668-1805

Test Standards: FBC TAS 201, 202, 203, 1707.4.3.2.1
ASTM E, 330-00, E1996-02, ANSI / DASHA 108-2002
ANSI / DASHA 115-2005

Test Conditions: 75-80 degrees F

Design Pressures: +40 psf, -43 psf

Description of product tested: Carriage House Door, 16' x 8' Model 202 Wood Garage door as shown in Drawing # Carriage -16-8-40-43. Drawing is an integral part of the test report and must accompany the test report.

Description of Unit:

Component	Number	Description	Location
Sections	4	193" x 24" Wood section consisting of 1-3/8" thick wood frame sheathed on the interior by 1/4" exterior plywood and exterior by 1/2" exterior ply wood attached with 1/14" corrugated box nails. The space between the plywood sheathing was filled with foam insulation. Exterior faced with 1" x 6" Tongue and grooved cedar boards glued (expanding urethane	

		glue) and nailed (2" gal finish nails) to 1/2" plywood. Trim was 1" x 6" cedar boards	
End stiles	2 per section	5-1/2" wide x 19-1/2" high x 1-3/8" thick wood style	End of each section
Intermediate Stiles	7 per section	2-1/4" wide x 19-1/2" high x 1-3/8" thick wood style	2' OC from section end
Rails	2 per section	Bottom rail on bottom section and top rail on top section 5-1/2" wide x 1-3/8" thick x 192" long. All other rails 2-3/4" wide x 1-3/8" thick x 192" long	Top and bottom of each section.
End Hinges	4 per section joint	Double 11 gauge galvanized steel hinges with outer hinge attached with (4) 1/4" x 2-1/4" carriage bolts and inner hinge attached with (4) 1/4" x 1-3/8" lag screws.	Each end stile
Center Hinges	7 per section joint	11 gauge steel hinge attached with (4) 1/4" x 2-1/4" carriage bolts and nuts.	Each intermediate stile
3" Struts	2 each section	3" 20 gauge 50 KSI strut attached with (18) 1/4" x 1/3/8" lag screw per stile	Each section 1/2" from hinges
3" 10 ball Steel Rollers	5 per side	2-13/16" diameter steel rollers with 7/16" x 9" steel stem with a 7/16" push nut	One side of door in bottom and top brackets and double end hinges corresponding with 3" track
2" 10 ball steel rollers	5 per side	1-13/16" diameter steel rollers with 7/16" x 9" stem with a 7/16" push nut	One side of door in bottom and top brackets and double end hinges corresponding with 2" track
Bottom Brackets	2	11ga x 3" x 8" attached with (3) 1/4" x 2-1/4" carriage bolts and nuts.	Bottom left and right corners of bottom section
Top Fixtures	4	12 ga (.101") fixtures, outer attached with (2) 1/4 x 2-1/4" carriage bolt and nuts, inner attached with (2) 1/4" x 1-3/8" lag screws.	2 each top corner of door
2" Vertical Track with track brackets	1	2" x .075" thick track attached to (7) 2-1/2" x 12ga (.101") track brackets with (2) 1/4" rivet per bracket. Bracket attached to jamb with (1) 5/16" x 3" lag screw per bracket. Brackets located 2" from bottom of door then 6" above and below each section joint, Flag Bracket 87-1/2", 96", 101-1/2" from floor.	Side of door

3" Vertical track with continuous angle	1	3" x .090" thick vertical track attached tapered continuous angle (.080" x 4" to 3-1/2" x 3"). Angle attached to track with (8) 1/4" x 3/4" track bolts and nuts as shown in drawing. Continuous angle attached to frame with (13) 5/16" x 1-5/8" lag screws located 3-1/2", 10", 16", 22", 28", 34", 40", 46", 58", 70", 82", 96", 102-1/2" as shown in drawing.	Side of door
2" Horizontal track	1	Attached to 2" vertical track with (2) 1/4" x 3/4" track bolts and nuts and to flag bracket with (1) 1/4" x 3/4" carriage bolt.	Attached to top of 2" vertical track.
3" Horizontal track	1	Attached to 3" vertical track with (2) 1/4" x 3/4" track bolts and nuts and to the vertical continuous angle with (1) 3/8" x 3/4" carriage bolt.	Attached to top of 3" track.
Counter balance System	1	Each side of the door balanced with a 1/8" metal cable. Each cable was attached to the bottom bracket and a drum on each side. Drums attached to a shaft and springs	Above the door

STATIC AIR PRESSURE
TAS 202, ASTM E 330-02

Specimen A
Design Loads +40psf, -43psf

Range of tests

Positive loads

1/2 Test
Test

Time Seconds	Load psf	Max.	Perm.	Recovery
30	30	1-15/16"	1/8"	94%
30	60	4-3/4"	13/16"	83%

Range of tests

Negative loads

1/2 Test
Test

Time Seconds	Load psf	Max.	Perm.	Recovery
30	32.3	1-13/16"	1/4"	88%
30	64.5	5-1/8"	15/16"	82%

Impact
Large Missile
TAS 201, ASTM E1996-02

Type and weight of missile: Missile level D - #2 Southern Pine 2 x 4, Length 96" and 9lbs. All corner shots were impacted away from structural supports.

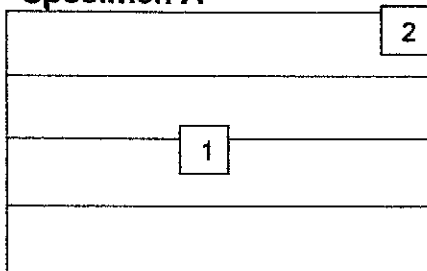
Note:

X measurement from left edge of specimen.

Y measurement from bottom edge of specimen

Note: Window shots measurements from window frame.

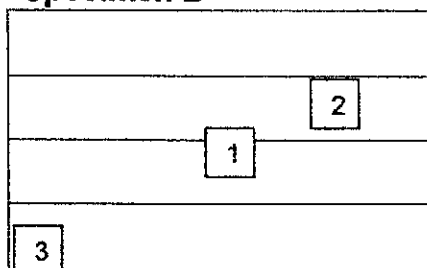
Specimen A



Impact No.	Speed FT. / Sec.	X Meas.	Y Measure
1	50	96"	48"
2	50	184"	89"

Note: No penetration or ruptures occurred

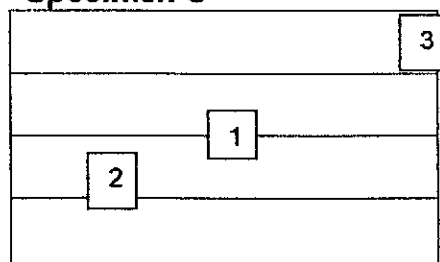
Specimen B



Impact No.	Speed FT. / Sec.	X Meas.	Y Meas.
1	50	97"	48"
2	50	133"	60"
3	50	7"	7-1/2"

Note: No penetration or ruptures occurred.

Specimen C



Impact No.	Speed FT. / Sec.	X Meas.	Y Meas.
1	50	95-1/2"	47-1/2"
2	50	60"	34-1/2"
3	50	184-1/2"	89-1/2"

Note: No penetration or ruptures occurred.

Cyclical Test
FBC TAS 203, ASTM E1996-02

Specimens: A, B, C
Design Loads: + 40 - 43psf

Range of test Positive loads	Actual Load psf	# of cycles	Cycles per minutes	A		B		C	
				max def	perm set	max def	perm set	max def	perm set
.2 - .5	8 - 20	3500	40	1-3/8"		1-5/16"		1"	
0 - .6	0 - 24	300	42	1-13/16"		1-13/16"		1-3/16"	
.5 - .8	20 - 32	600	42	2-1/2"		2-5/8"		1-13/16"	
.3 - 1.0	12 - 40	100	42	3-1/4"	1/2"	3-1/8"	7/16"	2-3/16"	1/4"

Range of test Negative loads	Actual Load psf	# of cycles	Cycles per minutes	A		B		C	
				Max def	perm set	max def	perm set	max def	perm set
.3 - 1.0	13 - 43	50	43	2-5/8"		2-3/4"		1-7/8"	
.5 - .8	22 - 34	1050	43	2-1/4"		2-1/4"		1-5/8"	
0 - .6	0 - 26	50	42	2-1/16"		1-13/16"		1-5/16"	
.2 - .5	9 - 22	3350	41	1-7/8"	3/8"	1-11/16"	3/8"	1-3/16"	5/16"

Cycles Completed 9000

Description of specimens after test:

Specimens showed no resultant failure or distress after cyclical test. All doors were operable before and after all tests.

Note: 2 mil polyethylene film was used for the Static Air Pressure Test. it is the opinion of the undersigned that it had no influence on the results of the test.

Observers-

Tony Sivore / ATL
Eddie Ashe, Keith Owen / ATL
Jim Cox, Brian Koontz / ATL
David W. Johnson, P.E.
Mike Martin, Shawn Guthrie, / Carriage House Doors

Keith Owen, Lab Manager
American Test Lab, Inc.

Keith Owen
11/08/06

All Tests Witnessed and Certified by:

David Johnson P. E.
1656 Calvert Rd.
Brevard, NC 28712
Florida P.E. # 00061915

Engineer Seal And Signature

David Wesley Johnson
11/8/06

Disclaimer:

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