



ATLNC 0409.01-18

Report Date: 06/12/18

Dade Certification # 18-0213.12
FBC Organizational # TST 1555
IAS Certification # TL-423

Test Date: 04/05/18 – 04/11/18

Test Requested By: 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 201-94, 202-94, 203-94, HVHZ
ASTM E, 330-02, ANSI / DASMA 108-2012
ANSI / DASMA 115-2012

Note: All tests were conducted without deviation. Being wood the samples did not require Salt Spray Test.

Test Conditions: 75-80 degrees F

Design Pressures: +48 psf, -55 psf

Description of product tested: Carriage House Door 10' x 8' Model 101 Wood Garage door as shown in drawing # Carriage-10-8-48-55. Drawing is an integral part of the test report and must accompany the report.

Description of Unit:

Component	Number	Description	Location
Sections	4	120" x 27" x 21" x 21" x 27" Wood sections consisting of 1-3/8" thick wood frame sheathed on the interior by 1/4" exterior plywood and exterior by 1/4" exterior ply wood attached with 18 ga 1/4" x 3/4" Crown Staples. The space between the plywood sheathing was filled with foam insulation. Exterior faced with 1/2" x 6" Tongue	

		and grooved boards glued (expanding urethane glue) and blind nailed 18 ga 1/4" x 3/4" Crown Staples to 1/4" plywood. Trim was 5/8" x 6" boards. Face nailed (2" 18 ga pin nail)	
Windows	2	DO 47" x 16-5/8" 9/16" thick laminated glass with 1/4" annealed glass, 0.090" vinyl interlayer, 1/4" annealed glass, Glass bite – 7/8" Sealed all 4 sides with Dow 995 sealant.	Top section or 3 rd section
End stiles	2 per section	5" wide x 1-3/8" thick x section height wood style	End of each section
Rails	2 per section	Bottom rail on bottom section and top rail on top section 5" wide x 1-3/8" thick x 216" long. All other rails 2-1/4" wide x 1-3/8" thick x 120" long	Top and bottom of each section
Intermediate Stiles	4 per section	2-1/4" wide x 1-3/8" thick x section height wood style	2' OC from section end
Steel Roller Hinges	4 per section joint	Double 11 ga galvanized steel hinges with left side of door 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. Right side of door both hinges attached with (4) 1/4" x 1-3/8" lag screws.	Each end stile
Intermediate Hinges	4 per section joint	11 ga steel hinge (2) attached with (4) 1/4" x 2-1/4" carriage bolts and nuts. (2) attached with (4) 1/4" x 1-1/4" lag screws.	Each intermediate stile
1/2 hinges	4 or 8	11 ga steel 1/2 hinge attached with (4) 1-1/4" lags	Section joint on window section as shown in drawing.
3" Struts	2 each section	3" 20 ga 50 KSI hat strut attached with (2) 1/4" x 1-3/8" lag screw per stile	Each section 1/2" from hinges as shown in drawing
2" 10 ball nylon rollers	5 per side	1-13/16" diameter steel rollers with 7/16" x 9" stem with a 7/16" push nut. No push nut on bottom roller.	One side of door in bottom and top brackets and double end hinges
Bottom Brackets	2	11 ga x 3" x 8" One side attached with (3) 1/4" x 2-1/4" carriage bolts and nuts. Other side attached with (3) 1-1/4" lags	Bottom left and right corners of bottom section
Top Fixtures	4	12 ga (.101") fixtures, attached with (6) 1/4" x 1-3/8" lag screws each fixture.	2 each top corner of door
2" Vertical Track with track brackets	1	2" x .083" thick track attached to (7) 2-1/2" x 12ga (.101") track brackets with (1) 1/4" x 20 x 5/8" track bolt and nut per bracket. Bracket attached to jamb	Side of door

		with (1) 5/16" x 1-5/8" 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.	
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) 3/8" x 3/4" carriage bolt.	Attached to top of 2" vertical 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 202-94, ASTM E 330-02

Specimen A
Design Loads +48 psf, -55 psf

Range of tests

Positive loads

½ Test
Design
Test

Time Seconds	Load psf	Max.	Perm.	Recovery
30	36	9/16"	0"	100%
30	48	13/16"	1/16"	92%
30	72	1-1/4"	3/16"	85%

Range of tests

Negative loads

½ Test
Design
Test

Time Seconds	Load psf	Max.	Perm.	Recovery
30	41.8	5/8"	0"	100%
30	55	7/8"	1/16"	93%
30	82.5	1-7/16"	1/8"	92%

Forced Entry Test

Forced entry test was conducted in accordance with TAS 202-94 and ASTM F588-07 with no deviation. Specimen Passed.

Impact
Large Missile
TAS 201-94, DASMA 115-12

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.

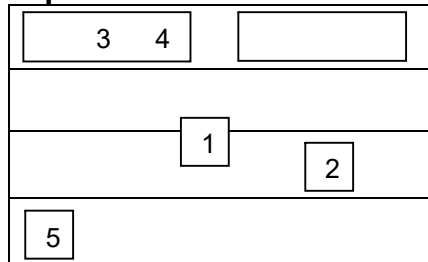
Note:

X measurement from left edge of specimen.

Y measurement from bottom edge of specimen

* Note: Window shots measurements from window frame.

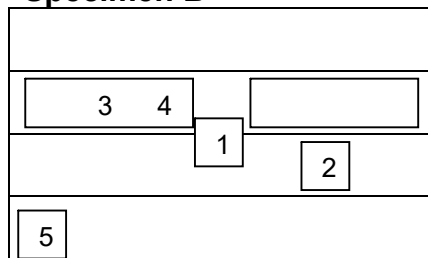
Specimen A



Impact No.	Speed Ft. / Sec.	X Meas.	Y Meas.	Degree of Orientation
1	49.7	50-1/4"	49"	355
2	50	51-1/4"	37-1/2"	350
3	50	30-3/4"	80-1/2"	355
4	49.7	44-3/4"	81-3/4"	0
5	49.5	9-1/2"	16"	345

Note: No penetration or ruptures occurred.

Specimen B



Impact No.	Speed Ft. / Sec.	X Meas.	Y Meas.	Degree of Orientation
1	49.5	59"	47-3/4"	345
2	49.5	87-3/4"	36-1/2"	0
3	50	30-1/4"	59-1/4"	355
4	49.9	44-1/4"	60-1/4"	0
5	49.6	9-1/2"	18"	5

Note: No penetration or ruptures occurred.

Specimen C

4	3	5	6
1			
2			
7			

Impact No.	Speed Ft. / Sec.	X Meas.	Y Meas.	Degree of Orientation
1	49.8	59-3/4"	49-1/4"	0
2	50	89-1/4"	35-3/4"	350
3	50	30-1/4"	81-3/4"	350
4	49.8	15-1/4"	81-1/2"	0
5	49.5	56-3/4"	81-1/2"	355
6	50	115"	81-3/4"	0
7	50	8-1/2"	15-1/2"	358

Note: No penetration or ruptures occurred.

Cyclical Test

FBC TAS 203-94, DASMA 115-12

Specimens: A, B, C

Design Loads: + 48 psf, - 55 psf

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	10 - 24	3500	43	3/8"		9/16"		5/16"	
0 - .6	0 - 29	300	43	7/16"		11/16"		5/8"	
.5 - .8	24 - 38	600	40	9/16"		15/16"		9/16"	
.3 - 1.0	14 - 48	100	33	3/4"	1/8"	1-3/16"	1/8"	3/4"	1/16"

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	17 - 55	50	50	13/16"		1-1/8"		15/16"	
.5 - .8	28 - 44	1050	48	11/16"		15/16"		13/16"	
0 - .6	0 - 33	50	50	7/16"		3/4"		11/16"	
.2 - .5	11 - 28	3350	51	5/16"	1/16"	5/8"	1/8"	5/8"	1/16"

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.

Technicians: Keith Owen
Samuel Poplin
Keith Owen Jr.

Observers-

Keith Owen, Ashley Poplin / ATL
Keith Owen Jr., Samuel Poplin/ ATL
David W. Johnson, P.E.
Shawn Guthrie / Carriage House Doors

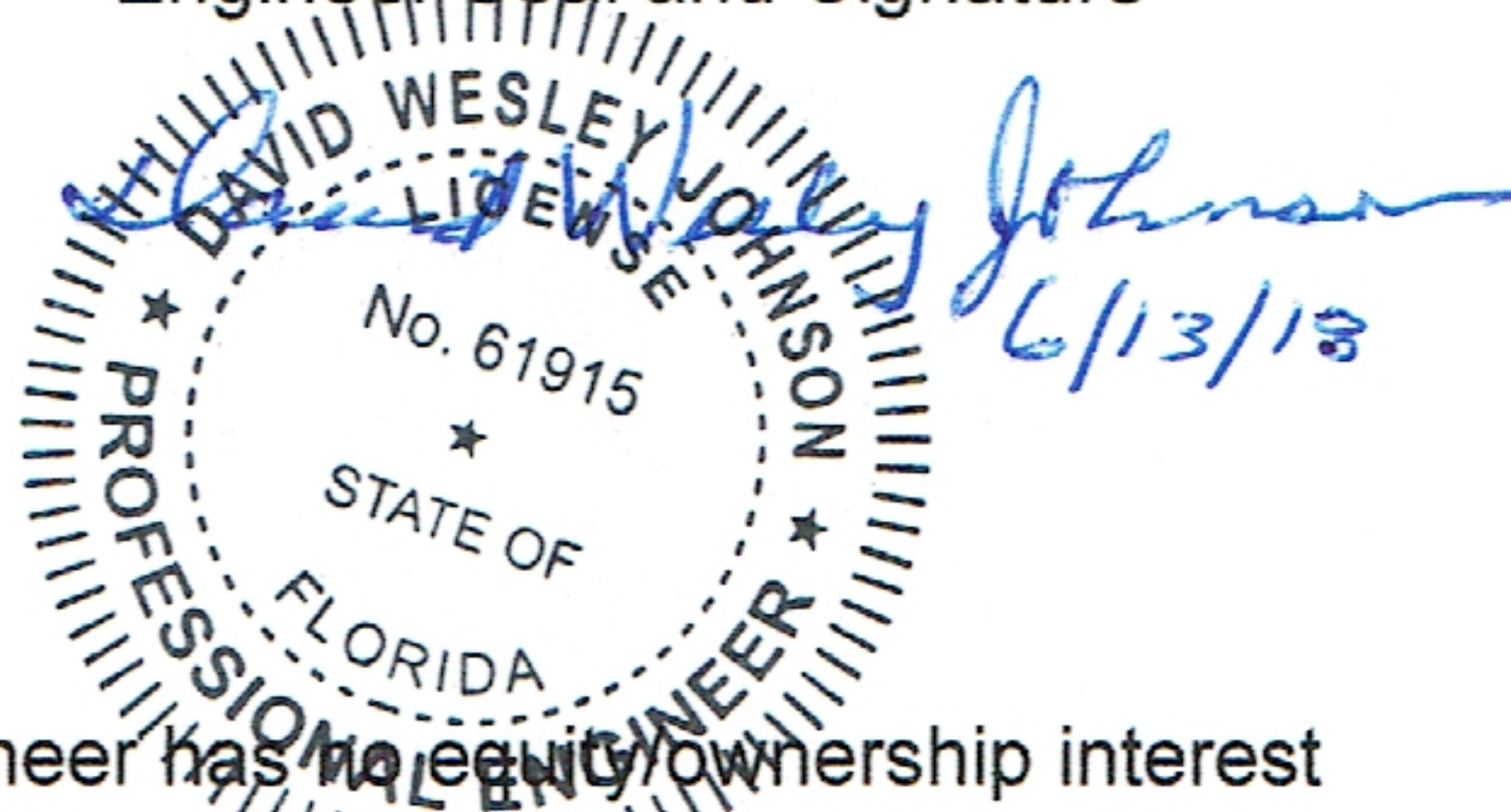
Keith Owen, Lab Director
American Test Lab, Inc.

Keith Owen
6/13/18

All Tests Witnessed and Certified by:

David Johnson P. E.
1122 Calvert Rd.
Brevard, NC 28712
Florida P.E. # 61915

Engineer Seal and Signature



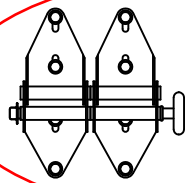
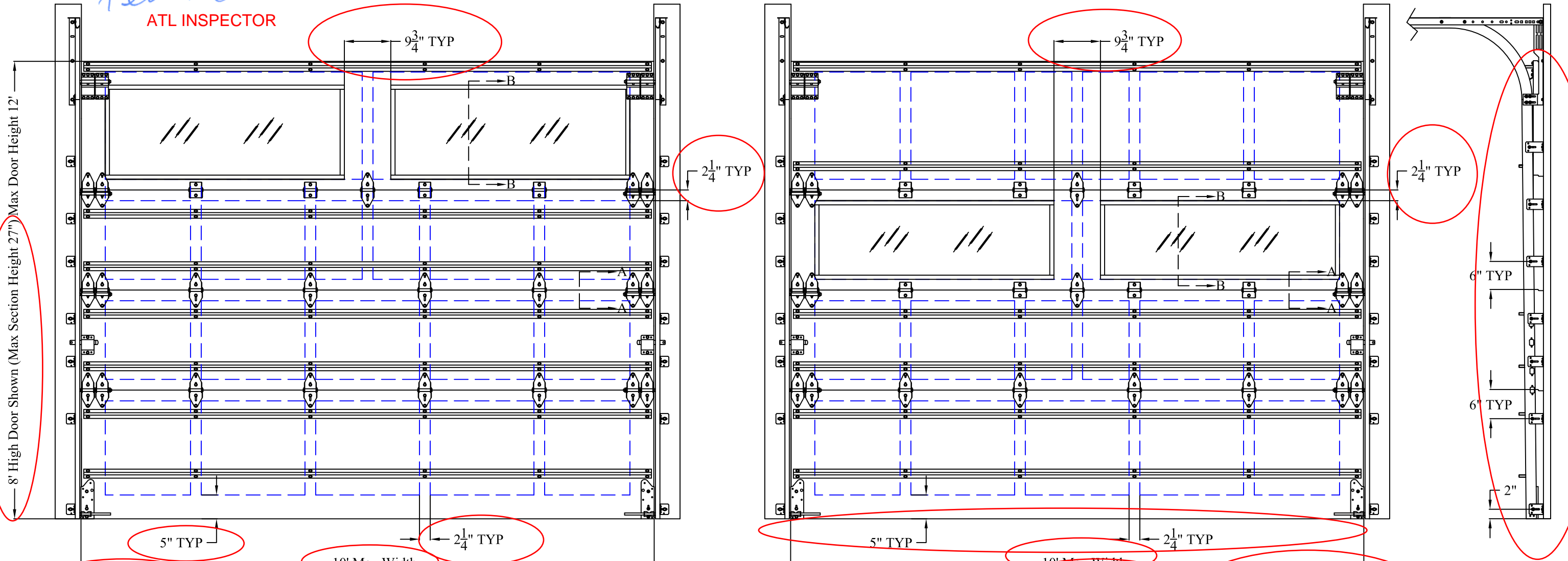
Certificate of Independence: The witnessing engineer has no equity/ownership interest in American Test Lab of North Carolina, Carriage House Doors or their parts vendors. Witnessing engineer is in complete compliance of Florida Statue 9B-72, Section 72.110

Disclaimer:

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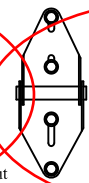
Keith Owen

ATL INSPECTOR



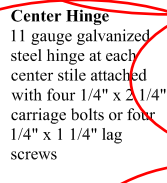
End Hinge

11 gauge galvanized steel double end hinges attached with four 1/4" x 2 1/4" carriage bolts or four 1/4" x 1 1/4" lag screws



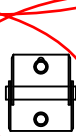
Roller

2" steel or nylon roller with a hardened 7" stem and push nut installed (hurricane roller)



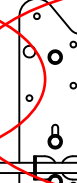
Center Hinge

11 gauge galvanized steel hinge at each center stile attached with four 1/4" x 2 1/4" carriage bolts or four 1/4" x 1 1/4" lag screws



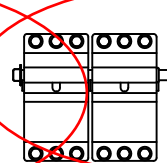
Short Center Hinge

11 gauge galvanized steel hinge at each center stile attached with two 1/4" x 2 1/4" carriage bolts or two 1/4" x 1 1/4" lag screws (for use on glass section)



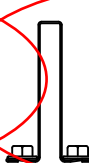
Bottom Bracket

11 gauge galvanized steel bottom bracket attached to bottom section with three 1/4" x 2 1/4" carriage bolts or three 1/4" x 1 1/4" lag screws (no push nut required on bottom roller)



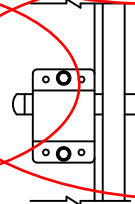
Top Fixture

12 gauge galvanized steel double top fixture attached with six 1/4" x 1 1/4" lag screws each (push nut is required on top roller)



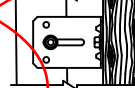
Struts

3" 20 gauge 50 ksi hat strut attached with two 1/4" x 1 1/4" lag screws per stile and located as shown on the sections



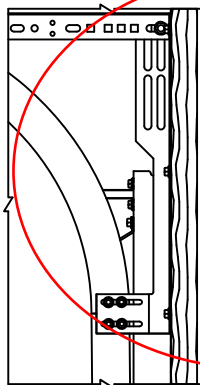
Locking Mechanism

Doors must have either an electronic operator or locking device installed (inside slide lock shown, other lock types permitted)



Track Brackets

12 gauge galvanized steel track bracket attached to wood jamb with one 5/16" x 1 5/8" wood lag screw and to vertical track with one 1/4" x 5/8" track bolt and nut



Flag Bracket

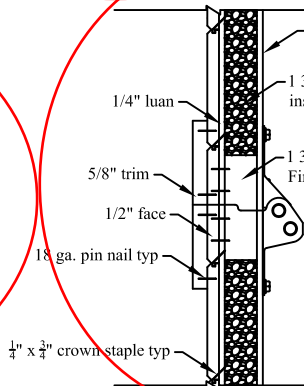
12 gauge galvanized steel flag bracket attached to wood jamb with three 5/16" x 1 5/8" wood lag screws and to the horizontal and vertical tracks with two 1/4" x 5/8" track bolts and nuts each

Horizontal Track and Angle

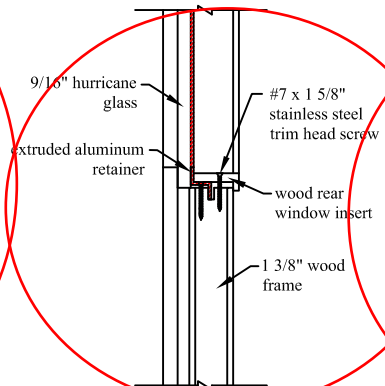
Horizontal track and angle to suit

Vertical Track

2" galvanized steel track with a minimum thickness of .083"



Section A - A



Section B - B

Windows (optional)


9/16" hurricane glass windows with a maximum opening of 47" x 16 5/8" on the front and 48 3/4" x 18 3/8" on the back, retained on all four sides by an extruded aluminum retainer and wood rear window insert attached with #7 x 1 5/8" stainless steel trim head screws (overlap on all four sides is 7/8"), and sealed on all four edges with Dow Corning 995 sealant

Note: The design of the supporting structural elements shall be the responsibility of the professional of record for the structure and in accordance with current building codes for the loads listed on this document

Models: Design 101 thru 108
Tested in accordance with ANSI/DASMA 108 and ANSI/DASMA 115
Design Pressure: +48/-55 PSF
Test Pressure: +72/-82.5 PSF

DRAWN BY:
John M. Stroede 6/5/18

APPROVED BY:
John M. Stroede 6/5/18

 15411 MAIN ST HWY 79 OLD FORT, NC 28762 PHONE 828-668-1600 FAX 828-668-1805			
TITLE 10x8 Carriage House Door +48/-55 PSF			
DRAWING NUMBER Carriage-10-8-48-55		REVISION A	
SIZE B	SCALE N/A	SHEET 1 of 1	