

STRUCTURAL SOLUTIONS, P.A.*

Structural Engineering ■ Investigations ■ Consulting

GARAGE DOOR STATIC PRESSURE TEST REPORT

Garage Door No.:	IBC-2009-130-11-R		Test Date:	5/2/2018		Project No.:	18-046			
Design Pressures:	+24.2 psf, -28.4 psf		Report Date:	10/21/2020		Model #	2000			
Test Pressures:	+36.3 psf, -42.6 psf		Test Location:	Entrematic, Winston-Salem, NC						
ASCE 7-16 Criteria:	Up to 5 Feet of Door Width in Zone 5; Roof Slope ≤ 10°; Enclosed Building									
	Exp. B, 30' MRH		Exp. C, 15' MRH		Exp. C, 25' MRH		Exp. D, 15' MRH		Exp. D, 25' MRH	
	168 mph		152 mph		145 mph		138 mph		133 mph	
Witnessed By:	Robert Richardson - Entrematic / Amarr; Thomas L. Shelmerdine, PE - Structural Solutions, P.A.									

Description of Test Specimen:

A 9'-4" wide x 8'-0" high sectional garage door, one section wide by four sections high, each section being 2" thick by 24" high 20 gauge galvanized steel sheet. Each section was reinforced with one 2" 20 gauge galvanized steel strut. The door sections were connected together with one 18 gauge galvanized steel end hinge at each end stile and one 18 gauge galvanized steel center hinge at one interior stile as shown on the drawing. Model 2000 manufactured by Entrematic was used in the test. The test unit is further described on Drawing IBC-2009-130-11-R.

Manner of Testing:

This test was conducted at Entrematic, 165 Carriage Ct., Winston-Salem, NC, which is accredited by the American Association for Laboratory Accreditation, Certificate #2595.01. The specimen was tested for static pressure structural performance in substantial conformance with the procedures described in DASMA 108-12 and ASTM E330-14. Both positive and negative pressures were tested. The specimen was installed in an enclosure framed with welded structural steel and covered with 3/4" thick plywood. The door was covered with 2 mil plastic sheeting to prevent leakage of air pressure. One pressure blower was attached to the enclosure with flexible ducting to provide the positive and negative pressures. Pressure transducers connected to a computer were used to measure and record the pressures in the enclosure.

Test Procedure:

The specimen was subjected to the above pressures for the following durations. Positive pressure was applied on the exterior face of the door first, and then negative pressure was applied.

- Step 1: Preload the door to 50% of the Design Pressure and hold for 10 seconds. Step 2: Unload the door for 1 to 5 minutes.
Step 3: Load the door to 100% of the Design Pressure and hold for 60 seconds. Step 4: Unload the door for 1 to 5 minutes.
Step 5: Load the door to 150% of the Design Pressure (which equals 100% of the Test Pressure) and hold for 10 seconds.
Step 6: Repeat 1 through 5 above for negative pressure.

Observations:

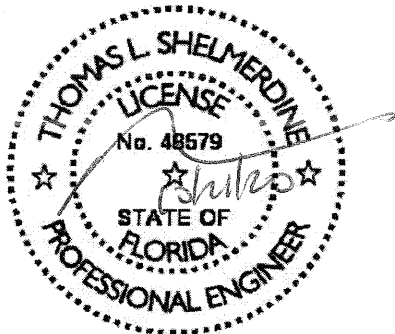
No failures occurred as a result of the noted loadings. The door remained operable after both positive and negative tests.

Summary:

The 9'-4"x8'-0" Model 2000 as described on drawing IBC-2009-130-11-R meets or exceeds the testing criteria as described above. By comparison to the construction of the 9'-4"x8'-0" Model 2000, the following doors also meet or exceed the above testing criteria, when constructed in accordance with drawing IBC-2009-130-11-R:

- 9'-4"x8'-0" Amarr # 2002 doors, which is an alternate model number for Model 2000
- 9'-4"x8'-0" Amarr # 2012 doors, which is Model 2000 with drop-in insulation
- 9'-4"x8'-0" Amarr # 2022 doors, which is Model 2000 with drop-in insulation and backer panels
- Model 2000 doors, and Amarr # 2002, 2012, and 2022 doors, with widths up to 9'-4" and heights up to 24'-0"
- 2 windows may be installed in 1 section (21 5/8" x 9 5/8" x 0.080" Plexiglas, or 21 3/8" x 3 1/4" x 0.080" Plexiglas)

Submitted By:



STRUCTURAL SOLUTIONS, P.A.* (*Florida: dba Structural Solutions of North Carolina, Inc., Firm #29412)

Thomas L. Shelmerdine, PE (NC PE #14654; Florida PE #0048579)

5921-G West Friendly Avenue ■ Greensboro, North Carolina 27410 ■ (336) 856-2686 ■ www.sspa.biz ■ NC Firm #C-1096