

STRUCTURAL SOLUTIONS, P.A.*

Structural Engineering ■ Investigations ■ Consulting

GARAGE DOOR STATIC PRESSURE TEST REPORT

Garage Door No.:	IRC-5316-110-24		Test Date:	3/7/2015		Project No.:	15-028			
Design Pressures:	+18.3 psf, -20.8 psf		Report Date:	10/26/2020		Model #	500			
Test Pressures:	+27.5 psf, -31.2 psf		Test Location:	Entrematic, Winston-Salem, NC						
ASCE 7-16 Criteria:	Up to 5 Feet of Door Width in Zone 5; Any Roof Slope; Enclosed Building									
	Exp. B, 30' MRH		Exp. C, 15' MRH		Exp. C, 25' MRH		Exp. D, 15' MRH		Exp. D, 25' MRH	
	143 mph		129 mph		123 mph		118 mph		113 mph	
Witnessed By:	Brandon Gentle - Entrematic / Amarr; Thomas L. Shelmerdine, PE - Structural Solutions, P.A.									

Description of Test Specimen:

A 16'-0" wide x 8'-0" high steel sectional garage door, one section wide by 3 sections high, each section being 2" thick by 32" high 24 gauge galvanized steel sheet. The sections were reinforced with 4-1/2" 20 gauge galvanized steel R-Trusses and/or 3" 20 gauge galvanized steel struts as follows: bottom section had two R-Trusses; middle section had one R-Truss and one strut; top section had two struts. The door sections were connected together with one 14 gauge galvanized steel end hinge at each end stile and one 14 gauge galvanized steel center hinge at 3 interior stiles as shown on the drawing. Amarr Model 500 manufactured by Entrematic was used in the test. The test unit is further described on Drawing IRC-5316-110-24.

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 108-05 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:

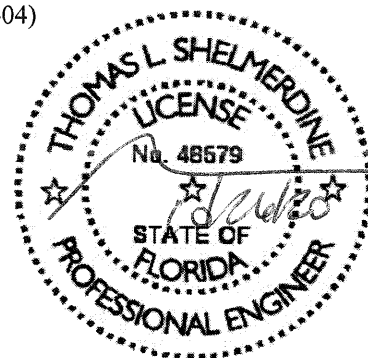
No failures occurred as a result of the noted loadings. The door remained operable after both positive and negative tests.

Summary:

The 16'-0"x8'-0" Amarr Model 500 as described on drawing IRC-5316-110-24 meets or exceeds the testing criteria as described above. By comparison to the construction of the 16'-0"x8'-0" Amarr Model 500, the following doors also meet or exceed the above testing criteria, when constructed in accordance with drawing IRC-5316-110-24:

- Classica 1000 doors (which is an alternate name for the Model 500)
- Classica 2000 doors (which is the Model 500 with drop-in insulation)
- Model 500, Classica 1000 and Classica 2000 doors with widths up to 16'-0" and heights up to 14'-0"
- 4 short panel windows (1/8" x 39" x 21-5/8" tempered glass minimum - meets ASTM E1300-04)
may be installed in 1 section

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 ■ Fax (336) 856-2687 ■ NC Firm #C-1096