

STRUCTURAL SOLUTIONS, P.A. *

Structural Engineering ■ Investigations ■ Consulting

GARAGE DOOR STATIC PRESSURE TEST REPORT

Garage Door No.:	IRC-6018-130-24		Test Date:	9/19/2007	Project No.:	07-064
Design Pressures:	+25.4 psf, -28.7 psf		Report Date:	11/10/2020		
Test Pressures:	+38.1 psf, -43.1 psf		Test Location:	Amarr Garage Doors Test Facility		
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	
	168 mph	152 mph	145 mph	138 mph	133 mph	
Witnessed By:	Brandon Gentle - Amarr Garage Doors; Thomas L. Shelmerdine, PE - Structural Solutions, P.A.					

Description of Test Specimen:

A 18'-0" wide x 7'-0" high residential steel sectional garage door, one (1) section wide by four (4) sections high, each section being 2" inches thick by 21" high 25 gauge galvanized steel sheet. Each section was reinforced with one (1) 4-1/2" x 20 gauge galvanized steel R-Truss, and the bottom section was also reinforced with one (1) 3" x 20 gauge galvanized steel strut. The door sections were connected together with one (1) 14 gauge galvanized steel end hinge at each end stile and one (1) 14 gauge galvanized steel center hinge at five (5) interior stiles as shown on the drawing. Garage door Model No. 600 manufactured by Amarr Garage Doors was used in the test. The test unit is further described on drawing IRC-6018-130-24.

Manner of Testing:

This test was conducted on the above date at the Amarr Garage Doors Test Facility. The specimen was tested for static pressure structural performance in substantial conformance with the procedures described in ASTM E330 "Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference". Both positive and negative pressures were tested. The specimen was installed in an enclosure measuring approximately 4' deep, 9' high, and 20' long. The enclosure was framed with shop welded steel angles and covered with 3/4" thick plywood. The door was covered with plastic sheeting to prevent leakage of air pressure. At one end of the enclosure, a "Dwyer" Series 477 Digital manometer was attached to measure pressure inside the enclosure. Two duct fans were attached in series to the enclosure with flexible ducting to provide the positive and negative pressures. Amarr has been accredited by the American Association for Laboratory Accreditation, Certificate #2595.01, since May 8, 2007.

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 18' x 7' Model 600 as described on Drawing IRC-6018-130-24 meets or exceeds the testing criteria as described above. By comparison to the construction of the 18' x 7' Model 600, the following doors also meet or exceed the above testing criteria, when constructed in accordance with Drawing IRC-6018-130-24:

- Model 650 doors (which have the "Oak Summit" embossment pattern)
- Model 950 doors (which have thicker 24 ga. exterior skin)
- Stratford 1000 doors (which are Model 600), Oak Summit 1000 doors (which are Model 650), Heritage 1000 doors (which are Model 950)
- Stratford 2000, Oak Summit 2000, and Heritage 2000 doors (which have drop-in insulation)
- Model 600, 650, 950, Stratford 1000 & 2000, Oak Summit 1000 & 2000, and Heritage 1000 & 2000 doors with widths of up to 18' and heights of up to 14'.
- Short, Long, Flush, and Oak Summit Panels, which are alternate embossment patterns in the skin

Submitted by:

STRUCTURAL SOLUTIONS, P.A.

Thomas L. Shelmerdine, PE (Florida PE #0048579)

