

# STRUCTURAL SOLUTIONS, P.A.\*

Structural Engineering ■ Investigations ■ Consulting

## GARAGE DOOR STATIC PRESSURE TEST REPORT

|                        |                                                                                                |  |                 |                               |                 |              |                 |  |                 |  |
|------------------------|------------------------------------------------------------------------------------------------|--|-----------------|-------------------------------|-----------------|--------------|-----------------|--|-----------------|--|
| Garage Door No.:       | IBC-2709-130-11-I                                                                              |  | Test Date:      | 11/28/2018                    |                 | Project No.: | 18-142          |  |                 |  |
| Design Pressures:      | +24.2 psf, -28.4 psf                                                                           |  | Report Date:    | 10/14/2020                    |                 | Model #      | 2700            |  |                 |  |
| Test Pressures:        | +36.3 psf, -42.6 psf                                                                           |  | Test Location:  | Entrematic, Winston-Salem, NC |                 |              |                 |  |                 |  |
| ASCE 7-16<br>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 27ga galvanized steel sheet. The bottom and 3rd sections were reinforced with one 2" 20ga galvanized steel strut. The door sections were connected together with one 14ga galvanized steel end hinge at each end stile and one 14ga galvanized steel center hinge at 1 interior stile as shown on the drawing. Model 2700 manufactured by Entrematic was used in the test. The test unit is further described on Drawing IBC-2709-130-11-I.

### 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:

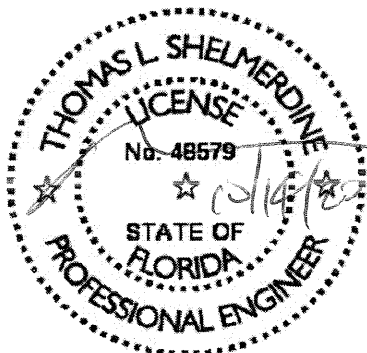
No failures occurred as a result of the noted loadings. The door remained operable after both positive and negative tests.

### Summary:

The 9'-4"x8'-0" Model 2700 as described on drawing IBC-2709-130-11-I meets or exceeds the testing criteria as described above. By comparison to the construction of the 9'-4"x8'-0" Model 2700, the following doors also meet or exceed the above testing criteria, when constructed in accordance with drawing IBC-2709-130-11-I:

- 9'-4" x 8'-0" Model 2720 doors (which are constructed of thicker 20 ga exterior steel in lieu of 27 ga steel)
- Amarr # 2742 and 2042 which are alternate model numbers for Model 2700 and 2742 respectively
- Model 2700, 2720, Amarr # 2742 and 2042 doors with widths up to 9'-4" and heights up to 24'-0"

Submitted By:



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