

Scott A. Brown, Professional Engineer

Evaluation reports are the opinion of the evaluation entity, based on the findings, and in no way constitute or imply approval by a local building authority. I, Scott A. Brown P.E. have reviewed the data submitted by Raynor Garage Doors and in my opinion, the product, material, system, or method of construction specifically identified in this report conforms to the requirements of the 7th Edition (2020) of the Florida Building Code, subject to the limitations in this report.

Report No.: 38-E

Submitted: 10/05/17

Revised: 04/02/19

Revised: 12/04/19

Revised: 09/30/20

Revised: 03/24/2021

Category: Exterior Doors

Submitted By:

Raynor Garage Doors
1101 East River Road
Dixon, IL 61021

Evaluation Entity:

Scott A. Brown P.E.
698 Timber Creek Road
Dixon, IL 61021

Evaluation Test Standards:

ANSI/DASMA 108-2017
ANSI/DASMA 115-2017

1. Product Trade Name

1.1 Sandwich Doors

- 1.1.1 TH160
- 1.1.2 TM175
- 1.1.3 TM200
- 1.1.4 TM220
- 1.1.5 TM200C / M200C
- 1.1.6 TM300

1.2 Aluminum Rail and Stile Doors

- 1.2.1 AV300

2. Scope of Evaluation

- 2.1 **Structural:** Transverse Wind, Impact and Cyclic Loads

3. Uses

3.1 Raynor garage doors are used as garage doors with specified allowable transverse wind pressures.

4. Models

4.1.1 TH160: Sandwich-style, 1.650" thick insulated door panels with .013-inch-thick galvanized steel roll-formed exterior skin and .013 thick interior skins. Exterior skins have a stucco texture with 1" wide x .125" deep horizontal grooves and the interior skins have a stucco texture with .04" deep horizontal grooves. The doors are insulated with a foamed in place polyurethane foam that is chemically bonded to the interior and exterior steel skins.

4.1.2 TM175: Sandwich-style, 1.75" thick insulated door panels with .017-inch-thick galvanized steel roll-formed exterior skin and .013 thick interior skins. Both skins have a stucco texture with .04" deep x .12" wide horizontal grooves. The doors are insulated with a foamed in place polyurethane foam that is chemically bonded to the interior and exterior steel skins.

4.1.3 TM200: Sandwich-style, 2.00" thick insulated door panels with .013-inch-thick galvanized steel roll-formed exterior skin and .013 thick interior skins. Both skins have a stucco texture with .04" deep x .12" wide horizontal grooves. The doors are insulated with a foamed in place polyurethane foam that is chemically bonded to the interior and exterior steel skins.

4.1.4 TM220: Sandwich-style, 2.00" thick insulated door panels with .033-inch-thick galvanized steel roll-formed exterior skin and .013 thick interior skins. Both skins have a stucco texture with .04" deep x .12" wide horizontal grooves. The doors are insulated with a foamed in place polyurethane foam that is chemically bonded to the interior and exterior steel skins.

4.1.5 TM200C also referred to as M200C: Sandwich-style, 2.00" thick insulated door panels with .014-inch-thick galvanized steel roll-formed exterior skin and .013 thick interior skins. Exterior skins have a stucco texture with .04" deep x .12" wide horizontal grooves and the interior skins have a woodgrain texture with .04" deep x .12" wide horizontal grooves. The doors are insulated with a foamed in place polyurethane foam that is chemically bonded to the interior and exterior steel skins.

4.1.6 TM300: Sandwich-style, 2.88" thick insulated door panels with .013-inch-thick galvanized steel roll-formed exterior skin and .013 thick interior skins. Both skins have a stucco texture with .04" deep x .12" wide horizontal grooves. The doors are insulated with a foamed in place polyurethane foam that is chemically bonded to the interior and exterior steel skins.

4.1.7 AV300: Sections shall be 2-7/8" thick 6063T6 aluminum alloy frame. Impact doors will have impact resistant panels or impact resistant glass. 3M 540 Polyurethane adhesive is used to attach the glazing channel to the panel and/or glass. An aluminum glazing retainer is screwed around the perimeter of the panel or glass securing it to the section. Non-impact doors will have a minimum of 1/8" DSB glass

held in place with a PVC glazing retainer snapped into the section. AV300 is a commercial type door.

5. Reinforcing

5.1 General: Raynor garage doors sections listed in this report shall be reinforced horizontally with roll-formed galvanized steel U-bars and/or box struts.

5.1.1 U-bar: Horizontal reinforcing U-shaped sections, 2-5/8" deep x 2" wide x 18 ga. (.049 inch minimum) or 20 ga. (.035 minimum) galvanized steel, 80 KSI minimum tensile.

5.1.2 Box Struts: Horizontal reinforcing U-shaped sections, 4-1/2" deep x 5.04" wide x 20 ga. (0.035 inch minimum) galvanized steel, 80 KSI minimum tensile.

6. Installation

6.1 General: Raynor garage doors are to be installed in accordance with the manufacturer's published installation instructions, engineering drawings and this report. The manufacturer's published installation instructions and this report shall be strictly adhered to and a copy of these instructions shall be available at all times on the job site during installation. The information within this report governs if there are any conflicts between the manufacturer's instructions and this report.

7. Allowable Wind Loads

7.1 General: The doors shown in Table 1 were tested to ANSI/DASMA 108 for static air pressure and doors shown in Table 2 were tested for ANSI/DASMA 108 for static air pressure and ANSI/DAMSA 115 for large missile impact resistance. In the TH and TM series of doors, the thinnest or weakest door section was tested to prove the entire series of doors. In addition, a validation test was done on a thicker section to further validate the test values.

Table 1

Door Model(s)	Maximum Door Width	Drawing Number	Design Loads		Large Missile Impact Resistant	Test Report Number	Test Date
TH160 TM175 TM200 TM220	10' - 2"	P-2421	+19.9	-22.5	No	1582	2/8/13
	10' - 2"	P-2422	+30.9	-34.6	No	1581	2/1/13
	16' - 2"		+15.5	-17.2		1982	10/27/20
	10' - 2"	P-2423	+39.3	-44.0	No	1576	1/30/13
	16' - 2"		+20.9	-23.2		1580	1/30/13
	18' - 2"	P-2424	+15.5	-17.2	No	1992	2/15/21
	16' - 2"	P-2425	+29.3	-32.6	No	1579	1/22/13
	18' - 2"		+23.3	-26.0		1583	2/19/13
TM200C	9' - 2"	P-2436	+21.4	-24.1	No	1578	4/5/13
	12' - 2"		+15.2	-17.2		1584	4/12/13
	9' - 2"	P-2437	+42.3	-47.9	No	1952	4/22/20
	12' - 2"		+23.7	-23.2		1973	9/10/20
	16' - 2"	P-2438	+15.5	-17.7	No	1965	9/8/20
	9' - 2"		+42.3	-47.9		1974	9/11/20
	12' - 2"		+28.0	-28.6		1951	4/9/20
	16' - 2"		+17.7	-19.7		1965	9/8/20
20'-2"	+10.9	-12.2	1975	9/23/20			
TM300	20' - 2"	P-2435	+26.6	-29.4	No	1976	9/25/20
AV300	10' - 2"	P-2434	+38.0	-43.0	No	1977	9/30/20
	16' - 2"		+20.4	-22.7		1858	11/15/18

Table 2

Door Model(s)	Maximum Door Width	Drawing Number	Design Loads		Large Missile Impact Resistant	Test Report Number	Test Date
TH160 TM175 TM200	16' - 2"	P-3328	+29.3	-32.6	Yes	1578 1586	4/5/13
	18' - 2"		+23.3	-26.0		1584 1642 1585 1643	4/12/13 6/20/14 4/16/13 6/23/14
AV300	14' - 2"	P-3330	+43.0	-48.0	Yes	1599 1600	4/29/13 4/30/13
	18' - 2"		+32.0	-36.0		1646 1647	7/30/14 7/31/14

8. Substantiating Data

8.1 Test Reports: Testing for doors shown in Table 1 and Table 2 were done at Raynor Garage Doors test lab in Dixon Illinois which was accredited by ANSI National Accreditation Board (ANAB) at the time of testing, scope of accreditation can be found at www.anab.org. Testing was witnessed by an independent third party Florida Registered Professional Engineer, Scott A. Brown P.E. Test reports were prepared by the test lab and signed and sealed by the witnessing Florida P.E. See Table 1 and Table 2 for report numbers and test dates.

8.2 Engineering Drawings: Drawings were prepared by Raynor Garage Doors under the direction of Scott A. Brown P.E. and then reviewed, signed, sealed and dated by Scott A. Brown, P.E. See Table 1 and Table 2 for drawing numbers.

8.3 Calculations: Calculations on jamb attachment, the results are shown on drawings listed in this report.

9. Limitations

9.1 The doors shall be installed in accordance with the manufacturer's published installation instructions in this report and the manufacturer's published installation instructions, engineering drawings and this report.

9.2 The structural elements supporting the door track brackets shall be designed by a registered professional engineer for the wind loads shown on the drawings listed in this evaluation.

9.3 The doors shall not be installed in areas where the transverse wind loads exceed the allowable loads shown in Table 1 and Table 2.

9.4 Doors listed in this report do not address the requirements of the High Velocity Hurricane Zone (HVHZ).

10. Identification

10.1 Each Raynor Garage Door covered by this report shall be labeled with the manufacturer's name, drawing number and Florida approval number for field identification.

11. Further Information

11.1 Scott A. Brown F.P.E. #65940 does not have, nor intend to acquire a financial interest in Raynor Mfg. or any other company manufacturing or distributing products for which this report is being issued; Scott A. Brown F.P.E. #65940 is not controlled by Raynor Mfg. or any other company manufacturing or distributing any portion of the product being tested, evaluated or approved by this report.

Scott A. Brown P.E.
F.P.E. No. 65940
698 Timber Creek Road
Dixon IL, 61021