

## **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 8<sup>th</sup> Edition (2023) of the Florida Building Code, subject to the limitations in this report.

**Report No.:** 40-E

**Submitted:** 05/24/22

Revised: 07/27/22

Revised: 10/11/2022

Revised: 09/22/23

Revised: 06/11/24

**Category:** Exterior Doors

**Submitted By:**

Raynor Garage Doors  
1101 East River Road  
Dixon, IL 61021

**Evaluation Entity:**

Scott Brown P.E.  
809 East 2nd St.  
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 Encore

1.1.2 Commercial Encore

1.1.3 Raynor EnergyCore (EC200)

1.1.4 Raynor EnergyCore (EC224)

## **2. Scope of Evaluation**

2.1 **Structural:** Transverse wind and impact/cyclic loads.

## **3. Uses**

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

## 4. Models

**4.1 Encore:** Sections shall be sandwich-style, 2" inch thick insulated door panels with tongue-and-groove section joint made from minimum 0.015-inch-thick galvanized steel roll-formed exterior skins and .015-inch-thick interior skins with a texture. The doors are insulated with expanded polystyrene foam that is bonded to the interior and exterior steel skins. Available with 19-5/16" x 14-7/16" Colonial windows or 42-1/2" x 14-7/16" Ranch windows. Maximum door height is 10'-0".

**4.2 Commercial Encore:** Same as Encore with a maximum door height of 18'-0".

**4.3 Raynor EnergyCore (EC200):** Sections shall be sandwich-style, 2" inch thick insulated door panels with tongue-and-groove section joint made from minimum 0.015-inch-thick galvanized steel roll-formed exterior skins and .015-inch-thick interior skins with a texture. The doors are insulated with expanded polystyrene foam that is bonded to the interior and exterior steel skins. Available with 24" x 8", 24" x 12" or 34" x 16" windows. Maximum door height is 18'-0".

**4.4 Raynor EnergyCore (EC224):** Same as EC200 except for the exterior skin is 0.022-inch-thick galvanized roll-formed steel.

## 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 minimum) or 20 ga. (.035 minimum) galvanized steel, 80 KSI minimum tensile.

**5.1.2 Box Strut:** Horizontal reinforcing U-shaped sections, 4-1/2" deep x 5.04" wide x 18 ga. (.049 minimum) or 20 ga. (.035 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 to ANSI/DASMA 108 for static air pressure and ANSI/DASMA 115 for large missile impact and cyclic resistance.

**Table 1**

Door Model(s)	Tested Door Width	Center Hinges per Sect. (min)	Drawing Number(s)	Design Loads (psf)		Large Missile Impact Resistant	Test Report Number	Test Date
				+	-			
Encore / Commercial Encore	9' - 0"	1	P-2384-A P-2400-A	+10.8	-12.2	No	2025	10/6/21
	9' - 0"	1	P-2385-A P-2402-A	+27.7	-32.8	No	2026	10/6/21
	12' - 0"	2		+17.5	-19.8		2033	10/26/21
	15' - 2"			+12.9	-16.8		2057	3/1/22
	16' - 0"	3		+10.4	-11.6		2039	11/16/21
				+9.6	-10.5		2047	12/14/21
	9' - 0"	1	P-2386-A P-2433-A	+39.3	-44.4	No	2027	10/8/21
	12' - 0"	2		+20.1	-22.8		2032	10/22/21
	15' - 2"			+15.1	-17.1		2054	2/18/22
	16' - 0"	3		+12.9	-17.1		2036	11/3/21
	19' - 7"			+10.4	-11.6		2048	12/15/21
	20' - 2"	4	+7.2	-9.6	2060	3/9/22		
	9' - 0"	1	P-2387-A P-2447-A	+52.5	-61.8	No	2030	10/15/21
	12' - 0"	2		+41.1	-46.4		2034	10/27/21
	15' - 2"			+29.0	-32.8		2056	2/25/22
	16' - 0"	3		+27.8	-33.1		2037	11/4/21
	19' - 7"			+18.6	-22.8		2049	12/16/21
	20' - 2"	4	+19.3	-21.5	2062	3/9/22		
	9' - 0"	1	P-2388-A P-2448-A	+51.1	-59.3	No	2031	10/19/21
	12' - 0"	2		+41.1	-49.8		2035	10/29/21
	15' - 2"			+29.0	-32.8		2055	2/24/22
	16' - 0"	3		+27.8	-33.1		2038	11/9/21
	19' - 7"			+18.6	-23.3		2050	1/3/22
	20' - 2"	4	+16.8	-18.7	2061	3/10/22		
	9' - 0"	1	P-2389-A P-2449-A	+48.9	-55.3	No	2058	3/3/22
	12' - 0"	2		+41.4	-46.4		2043	12/1/21
	15' - 2"			+27.4	-31.0		2042	11/29/21
	16' - 0"	3		+23.3	-26.0		2065	3/17/22
19' - 7"		+16.8		-18.7	2041		11/23/21	
20' - 0"	4	+12.3	-13.8	2051	1/4/22			
Raynor EnergyCore	9' - 2"	1	P-2443-A	+10.8	-12.2	No	2045	12/6/21
	9' - 0"	1	P-2450-A	+27.7	-32.8	No	2096	7/21/22
	12' - 0"	2		+17.5	-19.8		2026	10/6/21
	16' - 2"	3		+10.4	-11.6		2033	10/26/21
	9' - 0"	1	P-2452-A	+39.3	-44.4	No	2097	7/22/22
	12' - 0"	2		+20.1	-22.8		2027	10/8/21
	16' - 0"	3		+12.9	-17.1		2032	10/22/21
	20' - 2"	4		+7.2	-9.6		2036	11/3/21
	9' - 0"	1	P-2480-A	+52.5	-61.8	No	2046	3/2/22
	12' - 0"	2		+41.1	-46.4		2030	10/15/21
	16' - 0"	3		+27.8	-33.1		2034	10/27/21
	20' - 2"	4		+19.3	-21.5		2037	11/4/21
	9' - 0"	1	P-2483-A	+51.1	-59.3	No	2059	3/4/22
	12' - 0"	2		+41.1	-46.4		2031	10/19/21
	16' - 0"	3		+27.8	-33.1		2035	10/29/21
	20' - 2"	4		+16.8	-18.7		2038	11/9/21
20' - 2"	4	P-2606-A	+26.3	-29.3	No	2058	3/3/22	
						2180	2/20/2024	

**Table 2**

Door Model(s)	Tested Door Width	Center Hinges per Sect. (min)	Drawing Number(s)	Design Loads (psf)		Large Missile Impact Resistant	Test Report Number	Test Date		
Encore / Commercial Encore	9' - 0"	1	P-3300-A P-3400-A	+39.3	-44.4	Yes	2027	10/8/21		
	12' - 0"	2		+20.1	-22.8		2064	3/22/22		
					2032		10/22/21			
					2069		4/7/22			
	9' - 0"	1	P-3306-A P-3401-A	+52.5	-61.8	Yes	2030	10/15/21		
	12' - 0"	2		+41.1	-46.4		2068	4/1/22		
	15' - 2"			+29.0	-32.8		2034	10/27/21		
	16' - 0"	3		+27.8	-33.1		2072	4/19/22		
	19' - 7"			+18.6	-22.8		2056	2/25/22		
	20' - 2"			4	+19.3		-21.5	2075	5/2/22	
	9' - 0"	1		P-3326-A P-3402-A	+51.1		-59.3	Yes	2037	11/4/21
	12' - 0"	2			+41.1		-49.8		2078	5/17/22
	15' - 2"				+29.0		-32.8		2049	12/16/21
	16' - 0"	3			+27.8		-33.1		2083	6/6/22
	19' - 7"		+18.6		-23.3	2062	3/9/22			
	20' - 2"		4		+16.8	-18.7	2086		6/17/22	
	9' - 0"	1	P-3329-A P-3403-A		+48.9	-55.3	Yes		2059	3/4/22
	12' - 0"	2			+41.4	-46.4			2092	7/7/22
	15' - 2"			+27.4	-31.0	2031		10/19/21		
	16' - 0"	3		+23.3	-26.0	2066		3/24/22		
	19' - 7"			+16.8	-18.7	2035		10/29/21		
	20' - 0"			4	+12.3	-13.8		2073	4/22/22	
						2055		2/24/22		
						2076		5/4/22		
						2038		11/9/21		
						2079		5/19/22		
					2050	1/3/22				
					2084	6/9/22				
					2061	3/10/22				
					2087	6/22/22				
				2058	3/3/22					
				2091	7/1/22					
				2043	12/1/21					
				2067	3/29/22					
				2042	11/29/21					
				2074	4/28/22					
				2065	3/17/22					
				2077	5/9/22					
				2041	11/23/21					
				2080	5/24/22					
				2051	1/4/22					
				2081	6/1/22					
				2063	3/11/22					
				2088	6/24/22					
				2045	12/6/21					
				2090	6/29/22					

Raynor EnergyCore	9' - 0"	1	P-3404-A	+39.3	-44.4	Yes	2027	10/8/21		
	9' - 2"						2099	8/10/22		
	12' - 0"	2		+20.1	-22.8		2032	10/22/21		
	12' - 2"						2101	8/17/22		
	9' - 0"	1	P-3405-A	+52.5	-61.8	Yes	2030	10/15/21		
	12' - 0"	2					2068	4/1/22		
	16' - 0"	3					2034	10/27/21		
	20' - 2"	4					2072	4/19/22		
							2037	11/4/21		
							2078	5/17/22		
							2059	3/4/22		
	9' - 0"	1	P-3406-A	+51.1	-59.3	Yes	2092	7/7/22		
	9' - 2"						2031	10/19/21		
	12' - 0"	2					+41.1	-46.4	2100	8/12/22
	12' - 2"								2035	10/29/21
	16' - 0"	3					+27.8	-33.1	2102	8/19/22
	16' - 2"								2038	11/9/21
	20' - 2"	4					2098	8/5/22		
							2058	3/3/22		
			2103	8/24/22						
20' - 2"	4	P-3407-A	+26.3	-29.3	Yes	2180	2/20/24			
						2191	5/1/24			

## 8. Substantiating Data

**8.1 Test Reports:** Testing for doors shown in Table 1 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 <http://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 Tables 1 and 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 Tables 1 and 2 for drawing numbers.

**8.3 Calculations:** Calculations on jamb attachment, the results are shown on drawings listed in this report. Calculations were used to establish load ratings for door widths not tested. Section bending was evaluated using the bending moment equation  $M = w * L^2 / 8$  where "w" is wind load and "L" is door width. Also, total load on the door edge hardware was evaluated so that no load on a calculated door component exceeded the load of a tested door component.

## 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 Tables 1 and 2.

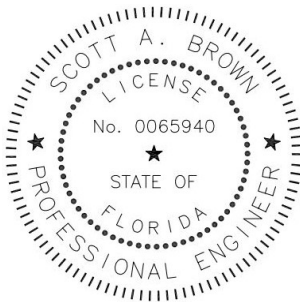
**9.4** Doors listed in this report do not address the requirements of the High Velocity Hurricane Zone (HVHZ).

## **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.



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Structural Adequacy for Wind Load

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