



Garage Door Requirements

Technical Bulletin FH 2021-01

First Release:

May 12, 2021

Prepared by:

Julie Lowrey, FORTIFIED Engineering
Director

Applicable Standards:

2020 FORTIFIED Home™–Hurricane
2020 FORTIFIED Home™–High Wind

Applicable Designation Level:



Garage Door Requirements in the 2020 FORTIFIED Home Standard

Introduction

The garage door is typically the largest opening in the exterior walls of a home. As such, a breach in the garage door opening during a hurricane or high-wind event is often a significant damage amplifier. When the garage door is breached, the door is opened (literally) allowing internal pressurization of the garage, which the home was not designed for. This can and often does ultimately lead to structural failure of the roof system, potentially compromising the entire structural integrity of the building. Garage door failures leading to major roof and other structural failures have been observed time and time again in post-disaster field investigations and have led IBHS to devote much previous and ongoing research and attention to investigating garage door failures and identifying ways that garage door openings can be strengthened and protected. This Technical Bulletin provides an overview of garage door requirements in the 2020 FORTIFIED Home Standard and how to properly document them.

What does “pressure-rated” mean?

In reference to garage doors, “pressure-rated” indicates that the garage door is strong enough to resist damage/breach due to wind pressure. Section 2.8.2 of the 2020 FORTIFIED Home Standard provides this definition of acceptable design pressure ratings for FORTIFIED:

Openings described as “pressure-rated” in this FORTIFIED Standard must be tested and approved at minimum, in accordance with one of the following International Residential Code (IRC) accepted pressure test standards (or with locally adopted standards if they are more restrictive), have DP ratings that meet or exceed site-specific required design pressures, corresponding to a minimum of $V_{ult} = 130$ mph and Exposure C, and must be installed in accordance with the manufacturer’s instructions:



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For windows, skylights, glass blocks, glass doors, and entry doors:

- AAMA/WDMA/CSA 101/I.S.2/A440, ASTM E330 (products tested to 1.5 times design pressure)
- The Florida Building Code Testing Application Standard TAS 202

For garage doors:

- ANSI/DASMA 108 or ASTM E330 (products tested to 1.5 times design pressure)
- The Florida Building Code Testing Application Standard TAS 202

FORTIFIED will not accept engineering rational analysis in lieu of testing to determine design pressure ratings. Additionally, the installed product must match the tested assembly in the certified report.

At the FORTIFIED Silver™ level, all garage doors are required to be “pressure-rated” and must have design pressure ratings that correspond to a minimum $V_{ult} = 130$ mph and Exposure C (or greater depending on site conditions). Table B2.3 from Appendix B of the 2020 FORTIFIED Home Standard provides the minimum required design pressures for both single car and two car garage doors, and design pressure ratings shown on the garage door labels must meet or exceed these pressures.

Table B2.3. ASD Wind Design Pressures (psf) for Components with Roof Heights 30 ft or less

ASD Wind Design Pressures (psf) for Components; (Windows, Entry Doors, Patio Doors, Garage Doors and Opening Protection Products for Roof Heights 30 ft or less)																									
Exposure B&C																									
Area of Opening (ft ²) (height x width)	ASCE Edition	Ultimate Wind Speed, V_{ult} (mph)																							
		130		140		150		160		170		180													
		Zone 4	Zone 5	Zone 4	Zone 5	Zone 4	Zone 5	Zone 4	Zone 5	Zone 4	Zone 5	Zone 4	Zone 5												
10	7-10	25	-27	25	-34	30	-31	30	-39	34	-36	34	-45	39	-42	39	-52	44	-46	44	-57	49	-53	49	-66
	7-16	26	-28	26	-34	30	-32	30	-40	34	-32	34	-40	39	-42	39	-52	44	-47	44	-59	49	-53	49	-66
20	7-10	24	-27	24	-31	28	-31	28	-36	32	-35	32	-42	37	-39	37	-48	42	-45	42	-55	47	-51	47	-61
	7-16	24	-27	24	-32	28	-31	28	-37	33	-31	33	-37	37	-40	37	-48	42	-45	42	-55	47	-51	47	-61
50 (Single Car Garage)	7-10	23	-24	23	-28	27	-28	27	-32	30	-32	30	-38	35	-38	35	-43	39	-42	39	-49	44	-48	44	-55
	7-16	23	-25	23	-29	27	-29	27	-33	30	-29	30	-33	35	-38	35	-44	39	-43	39	-49	44	-48	44	-55
100 (Two Car Garage)	7-10	22	-24	22	-27	25	-27	25	-31	29	-31	29	-35	33	-35	33	-39	37	-41	37	-45	42	-46	42	-51
	7-16	22	-24	22	-27	25	-28	25	-31	29	-28	29	-31	33	-36	33	-40	37	-41	37	-45	42	-46	42	-51
Exposure D																									
Area of Opening (ft ²) (height x width)	ASCE Edition	Ultimate Wind Speed, V_{ult} (mph)																							
		130		140		150		160		170		180													
		Zone 4	Zone 5	Zone 4	Zone 5	Zone 4	Zone 5	Zone 4	Zone 5	Zone 4	Zone 5	Zone 4	Zone 5												
10	7-10	30	-32	30	-40	35	-37	35	-46	40	-43	40	-53	46	-50	46	-61	52	-55	52	-68	58	-63	58	-78
	7-16	30	-33	30	-41	35	-38	35	-47	40	-38	40	-47	46	-50	46	-62	52	-56	52	-69	58	-63	58	-78
20	7-10	29	-32	29	-37	34	-37	34	-43	39	-42	39	-50	44	-46	44	-56	49	-53	49	-65	55	-60	55	-73
	7-16	29	-32	29	-38	34	-37	34	-44	39	-37	39	-44	44	-48	44	-57	49	-54	49	-65	56	-60	56	-73
50 (Single Car Garage)	7-10	27	-28	27	-33	32	-33	32	-38	36	-38	36	-45	41	-45	41	-51	46	-50	46	-58	52	-57	52	-66
	7-16	27	-30	27	-34	32	-35	32	-40	36	-35	36	-40	41	-45	41	-52	46	-51	46	-59	52	-57	52	-66
100 (Two Car Garage)	7-10	26	-28	26	-32	30	-32	30	-37	34	-37	34	-42	39	-42	39	-46	44	-48	44	-53	49	-54	49	-60
	7-16	26	-28	26	-32	30	-33	30	-37	34	-33	34	-37	39	-43	39	-48	44	-48	44	-54	49	-54	49	-60

Notes:

1. Design pressures provided are intended to be preliminary guidance for use with the FORTIFIED Home program per ASCE 7. Refer to FORTIFIED Standard Detail F-G-2 for identification of Zones 4 and 5. Design pressures must meet or exceed local code requirements.



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What does “impact-rated” mean?

In reference to garage doors, “impact-rated” indicates that the garage door is protected from impact damage/breach due to windborne debris. Section 2.7 of the 2020 FORTIFIED Home Standard provides the definition of acceptable debris impact ratings for FORTIFIED:

Openings and opening covers described as “impact-rated” for debris in this FORTIFIED Standard for FORTIFIED Roof, FORTIFIED Silver, and/or FORTIFIED Gold levels must be tested and approved at minimum in accordance with one of the following International Residential Code (IRC) accepted test standards for impact resistance (or with locally adopted standards if they are more restrictive) and installed in accordance with manufacturer’s instructions:

- *Large Missile D (9 lb 2x4 impacting end on at 50 ft/sec) as defined in ASTM E1996 and ASTM E1886 and AAMA 506*
- *The Florida Building Code Testing Application Standards TAS 201 and TAS 203*

For Hurricane designations only, at the FORTIFIED Silver level: garage doors with glazing (windows) are required to be impact-rated or protected by an impact-rated cover.

Minimum Garage Door Requirements for FORTIFIED Silver Designations

Per the 2020 FORTIFIED Home Standard for both **High Wind and Hurricane – FORTIFIED Silver designations**, ALL garage doors must be pressure-rated as defined above.

For **Hurricane only – FORTIFIED Silver Designations**: garage doors with glazing (windows) must also be protected from debris impact by being either impact-rated or protected by an impact-rated cover.

Tables 5.1 and 5.2 below illustrate the minimum garage door requirements for FORTIFIED Silver designations for Hurricane and High Wind, respectively.



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Table 5.1. Minimum Garage Door Requirements for FORTIFIED Home–Hurricane / FORTIFIED Silver Designations

Garage Door Type	Requirement Option 1	Requirement Option 2
Garage Doors <u>with</u> Glazed Openings (Windows):	Pressure-rated ^{1,2} and impact-rated ¹	Pressure-rated ^{1,2} and protected by impact-rated ¹ cover
Garage Doors <u>without</u> Glazed Openings (No Windows):	Pressure-rated ^{1,2}	N/A

Table 5.2. Minimum Garage Door Requirements for FORTIFIED Home–High Wind / FORTIFIED Silver Designations

Garage Door Type	Requirement
Garage Doors <u>with OR without</u> Glazed openings (Windows or No Windows):	Pressure-rated ^{1,2}

Notes:

1. Refer to sections 2.7 and 2.8.2 for definitions of “impact-rated” and “pressure-rated”, respectively.
2. Pressure ratings must meet or exceed the design pressures provided in Table B2.3 in Appendix B2 for the exposure category, (Exp. C minimum), design wind speed ($V_{ult} = 130$ mph minimum), garage door size and location on the building. Refer to section 2.10 for “ultimate” vs. “nominal” wind speed.

Compliance Verification and Documentation Requirements

Garage Doors

The preferred way to document the design pressure rating of a garage door is to provide photos of the label on the garage door showing the DP rating and testing standard. Figure 1 shows a garage door label that provides the design pressure rating of the door and specifies that the design pressure rating is per the ANSI/DASMA 108 testing standard (which is an acceptable test standard per FORTIFIED as described above). The photos submitted to IBHS should verify that that the label is applied to



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the garage door installed onsite and close-up, legible photos of the label wording must be captured and submitted.

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Figure 1. Photo of garage door label showing design pressure rating and test standard.

The preferred way to document the impact rating of a garage door is to provide photos of the label on the garage door showing the impact rating and testing standard. Figure 2 shows a garage door label that verifies the door is both impact-rated and design pressure rated and specifies the impact and design pressure test standards used; both of which are acceptable test standards for FORTIFIED as described above. The photos submitted to IBHS should verify that that the label is applied to the garage door installed onsite and close-up, legible photos of the label wording must be captured and submitted.



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Installation is in accordance with referenced installation drawing.

Installed Design (Mark ONE)	Manufacturing Product Code	Drawing Reference	Design Pressure (PSF)	Impact & Cyclic Rated	State / Local Approval Number
<input type="checkbox"/> W1	DSE-IF171	102094	+13.0 / -15.0	NO	
<input type="checkbox"/> W4	DSE-IF171	10152-A	+26.0 / -29.0	YES	FL15279.23
<input type="checkbox"/> W4	DSE-IF171	10152-B	+26.0 / -29.0	NO	FL15279.A, TX GDR-02
<input type="checkbox"/> W4	DSE-IF171	10152	+26.0 / -29.0	NO	TX GDR-02
<input type="checkbox"/> W6	DSE-IF171	101526-A	+37.0 / -40.0	YES	FL15279.73
<input type="checkbox"/> W6	DSE-IF171	101526-B	+37.0 / -40.0	NO	FL15279.74
<input checked="" type="checkbox"/> W6	DSE-IF171	101526-A	+38.0 / -44.0	YES	FL10107.22

ANSI/DASMA 108 or TAS 202 (NOA) LABEL ID: DSE-IF171-00-S
ANSI/DASMA 115 or TAS 201/203 (NOA) Label 1 of 2

Figure 2. Photo of garage door label (showing design pressure rating, impact rating, and test standards).

Overall elevation photos of all garage doors are also required. Photos should be in focus and taken with the door closed from the inside of the garage. The following photos are required as shown in Figure 3:

- A minimum of 1 photo showing the entire garage door and number of horizontal members
- A minimum of 1 photo showing track and number of supporting brackets on each side
- Pictures should have the following clearly visible: Date, Address or FORTIFIED ID, Door ID (i.e., Garage Door 1, Garage Door 2, etc.)

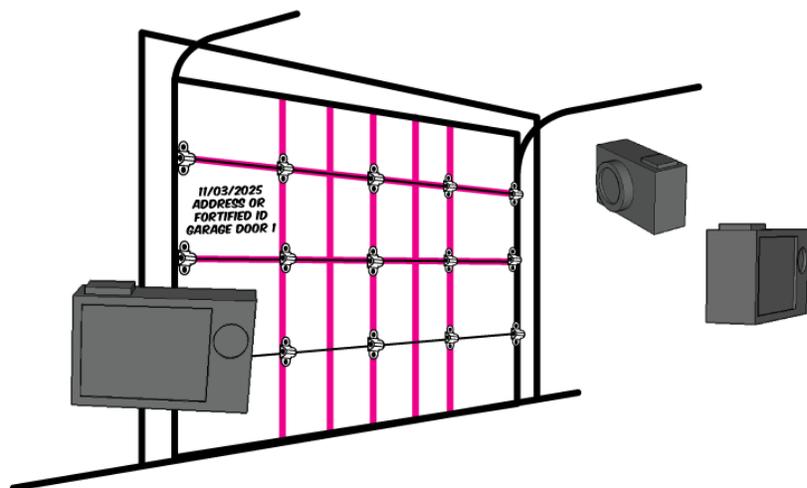


Figure 3. Minimum overall garage door photo requirements.



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Opening Protection Systems

If an impact-rated opening cover (such as a shutter/screen) is used, the preferred way to document the impact rating for the cover is to provide the following:

- At least one photo of each opening cover with the label showing impact rating. The photos submitted to IBHS should verify that the label is applied to the opening cover installed onsite, and should include close-up, legible photos of the labels so impact rating and testing standards can be deciphered.
- At least one photo showing permanent anchor installation for each temporary opening cover installed onsite (to verify that the system is ready to be installed when storm threat approaches).

Additional Information

Any garage door or opening protection system that is not labeled must at least have documentation provided linking it to the site and verifying impact and/or design pressure rating, such as the following:

- Invoices with date, address and/or product packaging photographed onsite identifying garage door product name and manufacturer
- Certified testing report (such as Miami-Dade NOA, FBC or TDI product approval, or ICC-ES Report) that verifies impact and/or design pressure rating

Documentation must be provided to confirm that the garage door or opening protection system is large missile D impact rated and/or design pressure rated to meet or exceed the FORTIFIED Home requirements. If the documentation outlined above is not provided, it will be deemed to NOT meet FORTIFIED Home requirements.