



**DASMA**  
Door & Access Systems  
Manufacturers Association  
International

COMMERCIAL & RESIDENTIAL GARAGE DOOR DIVISION

# TECHNICAL DATA SHEET

## #178

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## Garage Door Wind Load Determination - Effective Wind Area

### Introduction

Determination of wind load on a garage door involves a number of factors. One of these factors is the effective wind area on the door. This Technical Data Sheet will give recommended effective wind areas in terms of door width (“span length” in ASCE 7) and door height (“width” in ASCE 7.)

[Note: Refer to either ASCE 7-05 or ASCE 7-10 for specific language.]

### ASCE 7 Definition

The definition of effective wind area is “the area used to determine  $GC_p$ ”, where  $GC_p$  is a coefficient used in the calculation of wind pressure. In that definition, the calculation for effective wind area is described as “the span length multiplied by an effective width that need not be less than one third the span length”. As applied to garage doors, this language implies that the effective wind area can vary.

### Factors Affecting Garage Door Effective Wind Area

Three prominent factors influence the determination of garage door effective wind area.

#### Door Size

This is a general statement that is further qualified by certain width and height limitations.

#### Width-to-Height

This is a consideration when a door exceeds certain width and/or height limitations.

#### Door Construction

The main influence is a concept known as “two-way load sharing”. For sectional garage doors, this means that wind loads are distributed both horizontally and vertically such that the door acts like a one-piece door. This would be regardless of the number of sides of door support, which actually is similar to entrance doors in that it is three sides in one wind direction, and two sides in the opposite wind direction.

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**Note: Technical Data Sheets are information tools only and should not be used as substitutes for instructions from individual manufacturers. Always consult with individual manufacturers for specific recommendations for their products and check the applicable local regulations.**

This Technical Data Sheet was prepared by the members of DASMA's Commercial & Residential Garage Door Division Technical Committee. DASMA is a trade association comprising manufacturers of rolling doors, fire doors, grilles, counter shutters, sheet doors, and related products; upward-acting residential and commercial garage doors; operating devices for garage doors and gates, sensing devices, and electronic remote controls for garage doors and gate operators; as well as companies that manufacture or supply either raw materials or significant components used in the manufacture and installation of the Active Members' products.

For vertical load sharing, this involves a method of interconnecting door sections such that loads can be vertically distributed throughout the entire door height. “Two-way load sharing” must be proven via full-scale testing to a nationally recognized standard such as ANSI/DASMA 108. Testing confirms that reinforcement at certain specific vertical locations (See Photo #1) provides a balanced performance against wind load.

For garage doors designed for two-way load sharing, the following guidelines apply for door areas up to 200 square feet: *(Note: 20’ width and 10’ height limitations are based on maximum test laboratory capabilities currently within the industry).*

- Garage doors up to 20’ width by 10’ height. The effective wind area is the area of the door.
- Garage doors greater than a 20’ width by up to a 10’ height. The effective wind area is the height of the door multiplied by 20’.
- Garage doors up to a 20’ width by greater than a 10’ height. The effective wind area is the width of the door multiplied by 10’.

For door areas greater than 200 square feet:

- The effective wind area should be the greatest of 200 square feet or the door width multiplied by a height equal to one-third the door width (not to exceed the area of the door), which is the maximum effective wind area permitted per the ASCE 7 definition.

## **Conclusion**

Since 2001, the Florida Building Code has included a table showing effective wind areas for certain common garage door sizes as the area of the door itself. Investigations of door performance in the wake of hurricanes since that time have shown superior performance for garage doors installed 2002 and later, where all doors were also required to be traced to testing in order to obtain required product approval throughout the state. This evidence supports determining effective wind area by that means as one aspect of successful wind resistance.

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Photo #1

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