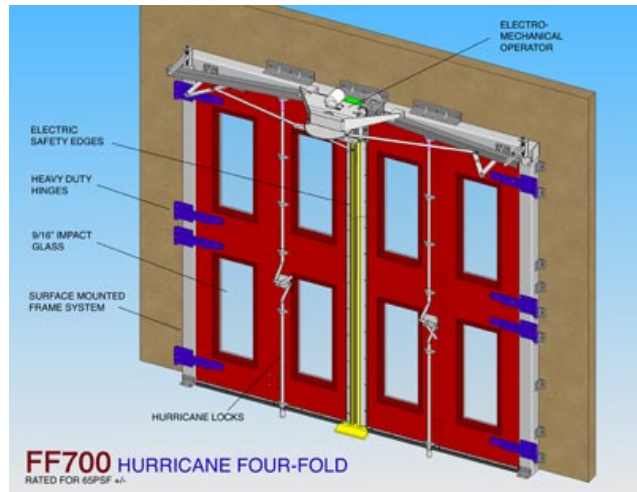


METAL CONSTRUCTION NEWS - ARTICLE

Engineering a Door that Provides both Protection and Aesthetics

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Contractors know the need for strength and protection when selecting a vehicle access door for a hurricane zone. In these zones architects must take into consideration protection as well as aesthetics and function. It is the contractor's responsibility to find a door that fulfills the architect's specifications and the customer's needs, and wants.



Protection can be ensured by selecting a door system that has been approved for hurricane zones. There are different requirements in every area, Miami-Dade and Broward counties in Florida have the highest standards. These counties make up the High Velocity Hurricane Zone (HVHZ). Wind speeds in this zone can reach, and exceed, 146 mph. The HVHZ section of the Florida Building Code requires that openings in commercial and residential building, in these areas, be covered with approved windows, doors or shutters. For a company to receive an HVHZ rating for a particular product, their product must undergo a series of strenuous tests.

The doors must pass both positive and negative loading of 150% of the design load for which the manufacturer is applying. Next, there are two categories of impact tests: small-missile resistant and large-missile resistant. Doors installed less than 30 feet above the ground level must be large-missile resistant. The doors, and glazing, are impacted with pieces of wood weighing 9 pounds, traveling at 50 feet per second. Afterward the door and glazing must resist 9,000 cycles of positive and negative

pressures. In order for the product to pass, no penetration through the door or glazing can occur. If a door passes these tests it complies with the Florida building code, as well as the Miami-Dade and Broward standards. These strict standards are not required in all hurricane zones along the Gulf and East Coast. However, they are taken into consideration when building in these areas.



Engineering and manufacturing a door that is able to meet these requirements presents a challenge to any manufacturer. Door Engineering, Kasota, MN, has over 40 years of experience in engineering and manufacturing door systems. This experience lends itself to designing hurricane rated doors. In addition to heavier gage construction and impact resistant 9/16" laminated glass, hurricane locking mechanisms were added to Door Engineering's four-fold door in order to meet the requirements. The doors are rated for 65 psf, which corresponds to wind speeds of approximately 160 mph. To ensure the Door would pass the tests, Door



Engineering worked closely with Florida Certified Professional Engineers along with utilizing SolidWorks Design Software. This software package allowed engineers to design a 3-D model of the system and apply loads to determine how the structure and components will react under stress.

The recent harsh hurricane seasons and increased building code regulations have raised awareness of the need for hurricane rated products. For this reason, Door Engineering expanded its product line to include a hurricane rated door system. There is a need in this market for a door that offers glazing and color options. According to Blair Novy of Door Systems, Inc. in Florida, "Many contractors are concerned about how the doors look in relationship to the rest of the building in terms of color and glazing."

Aesthetics have also become more important to municipalities. Because fire stations are being built in the middle of high-traffic urban areas, the demand for attractive doors increases. Contractors are looking for doors that offer more glazing to allow natural light into the facilities they are building. This is not always an option as most manufacturers offer limited glazing and color options. In some cases, contractors have had to use two doors for one opening to meet hurricane requirements. A full glass sectional door is used to offer the aesthetic experience while a coiling hurricane door is mounted over the sectional door to offer protection during storms. Door Engineering's hurricane rated four-fold door system provides a one-door solution that offers protection without compromising on aesthetics. Other available aesthetic features include, raised panel finishes, powder coating and finish painting, which allows contractors to choose from a virtually unlimited number of colors.



It is important to know what is available for hurricane resistant doors. In most commercial and residential buildings the vehicle door systems cover the largest and most visible openings on the building. In many cases this fact is overlooked. "As a dealer it is our job to inform and educate contractors about the available options so they can make the wisest choice," said Novy. Talking with a knowledgeable dealer will help a contractor learn more about the options so they can find both protection and aesthetics in a hurricane door.