

## FLOOD RESISTANT DOORS & FRAMES

Flooding has increased in frequency and intensity in this millenium. Proactive solutions are available from AMBICO.

- AMBICO flood resistant door and frame assemblies withstand hydrostatic pressure and include robust seal systems capable of minimizing water leakage. Assemblies are supplied in galvanized steel or stainless steel which offers extended life in corrosive environments
- Custom engineered solutions are available for debris impact resistance based on project specific requirements
- Common applications include exterior outswing doors where water seats the door into the frame. Solutions are also available for unseated applications
- Assemblies include customized anchor solutions to ensure the integrity of the frame installation
- Solutions are available that include 4-sided frames or ADA-compliant bumper or saddle thresholds
- In applications where doors are seated into the frame, standard builder's hardware can be used. Where doors are unseated, special hinges and latching hardware will be supplied by AMBICO

## TORNADO RESISTANT DOORS & FRAMES

States within tornado alley have adopted building codes that demand the use of tornado products. AMBICO door and frame assemblies have been tested to resist tornadoes and provide proven life-safety protection.

- In the U.S., tornadoes are the most destructive windstorm and are responsible for the greatest number of wind related deaths annually. Insurance claims losses from a single tornadic event of \$1 billion and greater are becoming more frequent

# RESILIENT DESIGN IN DOORS, FRAMES & WINDOWS



Extensive flooding from Tropical Storm Harvey in southeast Texas on Aug. 31, 2017. Air National Guard



- FEMA P-361 is a national standard currently supported by the USA Department of Homeland Security. FEMA P-361 Design and Construction Guidance for Community Safe Rooms provides criteria for the construction of these rooms offering life-safety protection from tornadoes
- AMBICO tornado openings are tested to ICC-500 for wind load resistance and debris impact
- A range of wood veneers is readily available

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## BLAST RESISTANT DOORS, FRAMES & WINDOWS

While the threat of terrorism exists in today's world in many capacities, AMBICO offers blast resistant solutions as part of our resilient design portfolio.

- AMBICO blast resistant door and frame assemblies meet ATEP, petrochemical and industrial applications, with testing in accordance with ASTM F2927 and F1642. Products are engineered to meet the most demanding blast requirements with the lightest construction possible
- AMBICO works with industry leaders BakerRisk, ABS Consulting and the University of Ottawa to conduct tests on our blast resistant assemblies. Additionally, AMBICO has conducted many static pressure tests, all witnessed by Intertek Testing Services
- Where project requirements are outside the scope of tests, our engineering department has years of experience performing blast door and frame analysis providing cost effective solutions

## BULLET RESISTANT DOORS, FRAMES & WINDOWS

With the threat of active shooter situations, AMBICO offers bullet resistant solutions to protect against this risk.

- AMBICO bullet resistant doors and frames can be used for protection against a wide range of hand, rifle and military attack weapons. Applications include courthouses, banks, casinos, police stations, emergency rooms and government or military facilities

# RESILIENT DESIGN IN DOORS, FRAMES & WINDOWS



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## ATTACK RESISTANT DOOR, FRAMES, & WINDOWS

- AMBICO attack resistant steel door and frame assemblies are a low cost solution designed to prevent an active shooter from entering the building during a ballistic and forced entry attack
- The door solutions are primarily built to protect students and the teaching faculty in K-12 and university environments, as well as businesses and other public buildings. The doors can be equipped with vision lite kits and glazing that are resilient enough to withstand the ballistic and physical attack
- The Shooter/Attack test method is based on two test standards: UL 752 Level 7 and ASTM F476. These have been modified and combined per recommendations from law enforcement, Homeland Security, and active shooter subject matter experts. Note:
  - The modified UL 752 Level 7 uses 10 rounds of AR15 .223 at a velocity of 3240 ft./sec with 8 rounds around an 18 circle and two shots around a 3 circle centered on the glass panel, 5 rounds around the door lock area in a 5 diameter circle. Note: the door/frame assembly is designed to slow an attacker. The assembly is not designed to stop the penetration of ballistic materials
  - The modified ASTM F476 uses high potential energy levels, impacting door glass and hardware at each potential energy level twice
- AMBICO attack resistant steel door and frame assemblies are independently tested and certified to resist attack ranging from small arms handguns to military assault rifles