

# **Tornado Resistant Openings**



Rocky Mountain Metals, Inc. introduces Openings Solutions classified to FEMA P-361 (2015) and certified to ICC 500 (2014). These openings are tested as complete assemblies including doors, frames and hardware as required by the International Building Code for use in tornado shelters in Group E occupancies. This includes among other applications new construction at K-12 schools and extends to critical emergency operation facilities.

The offerings consists of openings of up to 8 ft. in width and 9 ft. in height for double doors and 4 ft. in width and 9 ft. in height for single doors and is also extended to shutters (openings with four sided frames).

### **Single Doors and Shutters**

Min dimensions width 2 ft 6 inches

height 4 ft

Max dimensions width 4 ft

height 9 ft

In and out swing

#### **Double doors**

Min dimensions width 6 ft

height 6 ft 8 inches

Max dimensions width 8 ft

height 9 ft

Out swing only



# 1400 FEMA Frame and Shutter Frame Details for Tornado Resistant Openings

Material Galvannealed A40

ASTM-A-653

Thickness 14 Ga. Galvannealed

Dimensions 2" jambs and 2" or 4" heads as specified

Construction Mitered and welded face and back

Appearance Square, true and free of defects, warp and buckle

Reinforcements 4 pcs 7 Ga. 1 1/4" x 10" joggled hinge reinforcement, drilled and

tapped.

Back welded for additional strength

Strike and bolt preps 12 Ga. x 12" long, spot and MIG welded Strike jambs prepared for three rubber silencers, unless otherwise

specified

Hardware Locations Any specified locations

Guards Dust covers on all frames. Mortar guards on frames for masonry

walls

Wall Anchors Below 7' in Height - 4 anchors

7' and above in Height - 5 anchors

Head Anchors 5' and above in Width - 2 anchors

Bolts As per specified by RMMI

Spreaders Temporary spreader bars welded to the bottom of all three sided

frames. To be removed before installation

Marking Embossed with opening numbers above the middle hinge. In the

jamb for continuous hinge frames

Finish Thoroughly cleaned and coated with a rust inhibiting primer meet-

ing requirements as per ANSI/SDI A250 10

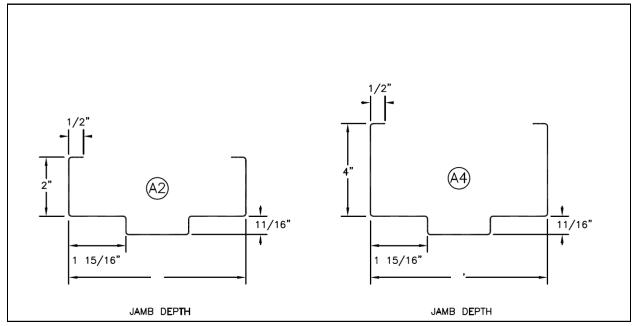
Options UL labeling requirements as specified

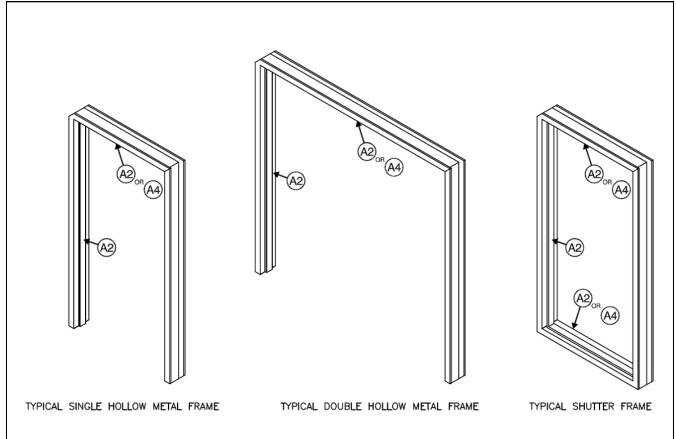
Shutter Frame Sizes Min: 2' 6" x4' Max: 4' x 9' Door Frame Sizes Min: 2' 6" x 4' Max: 8' x 9'

Shutter Frames are manufactured as four sided frames



# 1400 FEMA Frames for Tornado Resistant Openings







## 1400 FEMA Door/Shutter for Tornado Resistant Openings

Face Material Galvannealed A40 or ASTM-A-653

Face thickness 14 Ga.

Construction Hollow metal with 18 Ga. vertical steel stiffeners (ribs). Space

insulated with glass wool insulation between ribs. Flush construction

Door thickness 1 3/4" Standard

Hardware Locations Per Project Requirements

Reinforcements 7 Ga. 1 1/4" x 10" joggled hinge reinforcement, drilled and tapped

12 Ga. mortise hardware tabs, drilled and tapped 12 Ga. surface hardware and trim reinforcement

Edge reinforcement Horizontal and vertical edges reinforced with 12 Ga. (min) full

length channels spot welded to the face sheets

Vertical edges Fully welded with no visible seam

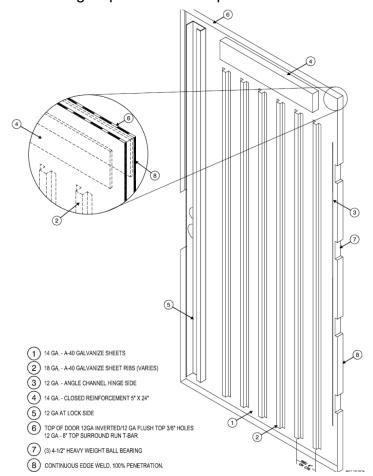
Handing Doors are handed

Appearance Faces and edges free of defects, warp and buckle

Finish Thoroughly cleaned and coated with a rust inhibiting primer meeting

requirements as per ANSI/SDI A250.10

Options UL Labeling requirements as specified



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