



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



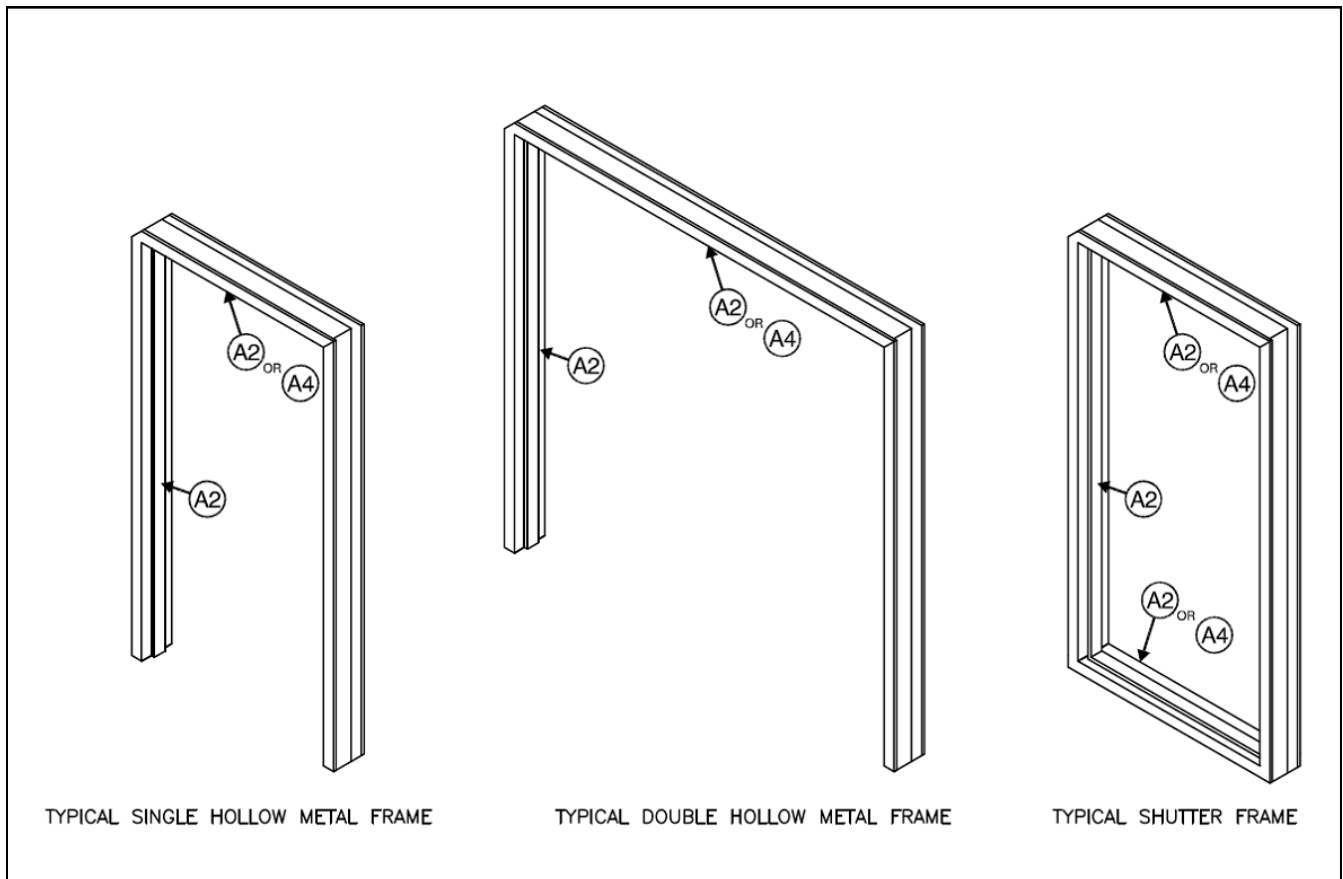
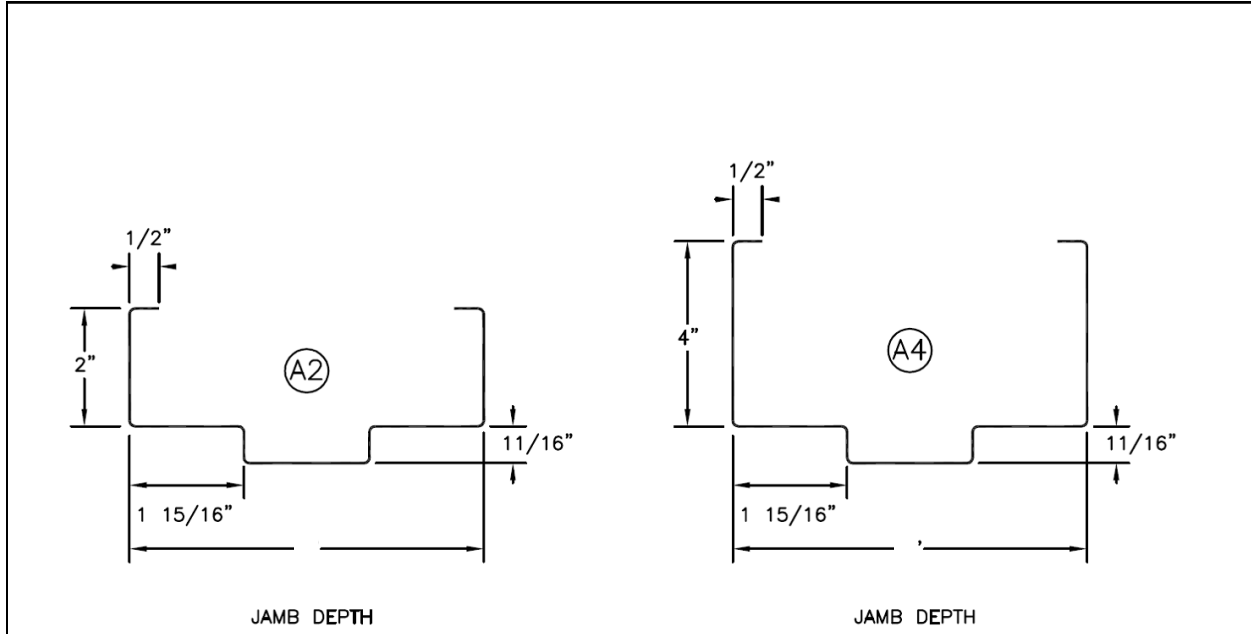
1400 FEMA Frame and Shutter Frame Details for Tornado Resistant Openings

| | |
|---------------------|---|
| 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 | 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 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 meeting requirements as per ANSI/SDI A250 10 |
| Options | UL labeling requirements as specified |
| Shutter Frame Sizes | Min: 2' 6" x 4' 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 14 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 |

