

Republic

Doors and frames

Technical data manual • rev. 4/2020



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Introduction

After more than seven decades of quality, craftsmanship and service leadership, Republic continues to be recognized as the world's leading manufacturer of steel doors and frames.

Republic manufactures the most complete line of steel doors and frames. These products are produced from the highest quality of commercial carbon steel or galvanized steel as specified.

Republic frames are designed for virtually all types of wall construction.

The Republic Architectural Stick System consists of standard frame components that are pre-engineered. This allows for unlimited opportunities to meet the architectural and aesthetic needs of extensive window wall, store front and entrance units.

This Technical Manual is designed to assist Architects, Engineers, Specification Writers, End Users and Distributors with the necessary information to specify the correct Republic product to meet the application and functional needs of the project. In addition to providing the industry with the highest quality of steel doors, frames and components.

Standards and SDI Certified



Republic products are SDI Certified (<https://www.steeldoor.org/sdi-certified/>).

Republic is one of the founding members and is very involved with training and industry organizations, which are also dedicated to the continual improvement of the Commercial Door and Frame markets. Some of the major trade associations of which Republic is an active member include:

SDI	Steel Door Institute
HMMA	Hollow Metal Manufacturers' Association

Dimensioning

All dimensions shown in this manual are based on the imperial (feet and inches) dimensions system, with the equivalent metric (millimeters) shown in parentheses. It is the responsibility of the architect, specifier and purchaser of the doors and frames to clearly indicate the dimensional system required to be met. With the multitude of building components interfacing with the door and frame installations, this is extremely critical and requires a clearly stated and understood dimensioning policy.

Terminology

The terms covered in this manual are in accordance with those published by:

SDI	ANSI A250.8 Specifications for: <i>Standard Steel Doors and Steel Frames</i>
HMMA	HMMA 801.12 Glossary of: <i>Terms for Hollow Metal Doors and Frames</i>

Literature

Literature or standards referenced in this manual can be obtained directly from the publisher of that literature. To obtain any standard referenced in this manual, refer to the organizations listed. Downloadable documents may be obtained by connecting to the organization's website.

Organization		Website
ANSI	American National Standards Institute	www.ansi.org
ASTM	American Society for Testing and Materials	www.astm.org
CSI	Construction Specifications Institute	www.csiresources.org
DHI	Door and Hardware Institute	www.dhi.org
HMMA	Hollow Metal Manufacturers' Association, Division of NAAMM	www.naamm.org
NAAMM	National Association of Architectural Metal Manufacturers	www.naamm.org
NFPA	National Fire Protection Association	www.nfpa.org
SDI	Steel Door Institute	www.steeldoor.org
UL	Underwriters Laboratories, Inc.	www.ul.com
WH	Warnock Hersey (Intertek ETL SEMKO)	www.intertek.com

Errors and omissions

Every effort has been made to ensure the accuracy and completeness of this Republic Technical Manual. This manual is for use by qualified persons only. The information herein is subject to some interpretation, and from time to time, the data sheets will be updated whenever it is deemed necessary as new tests are conducted, new products and technologies are introduced and as specifications are revised.

Similarly, there may be recommendations provided in this manual concerning hardware or construction procedures. Specific hardware, code, and specific industry standards and instructions should always be followed. Any differences should be fully understood by the architect and contractors. For these reasons, and because of the nature and scope of the subject, Republic and its employees can assume no responsibility or liability for the absolute accuracy of the material contained herein or its use. The information in this Technical Manual is subject to change without notice and does not represent a commitment on the part of Republic.

Please contact the Republic Technical Service Department if you identify an error or omissions.

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Doors • DP Series

DP Series

DP Series Doors as manufactured or furnished by Republic Doors and Frames, McKenzie, Tennessee 38201.

Thickness: 1 ¾"

Actual Door Size: Door undersized from nominal by ¼" in width and ⅞" in height. Standard undercut is ¾".

Hinge Rail & Reinforcement: Hinge edge is non-beveled with ¼" standard hinge backset. 7 gauge Universal standard/heavy weight reinforcements.

Lock Rail: Lock edge is non-beveled. 14 gauge reinforcement for mortise lock, 16 gauge for cylindrical locks in accordance with ANSI A115 Standards.

Edge Seams: Visible seam

Top Channel: Flush, 16 gauge channel, projection welded at a maximum 2 ½" on center

Bottom Channel: Inverted 16 gauge channel, projection welded at a maximum 2 ½" on center.

Cores Available: Honeycomb or Polystyrene.

Face Skins: 20 gauge or 18 gauge, Cold Rolled, Hot Rolled or Galvannealed Steel

Closer Reinforcement (Option): 14 gauge standard. (18" x 6")

Size Availability: Limited/2668 min/4080 max

SDI 100 Level/Model:

- Level 1 Model 1 (Standard Duty, minimum 20 gauge, hollow steel composite)
- Level 2 Model 1 or 2 (Heavy Duty, minimum 18 gauge, hollow steel composite)

Handing Design: Non-handed

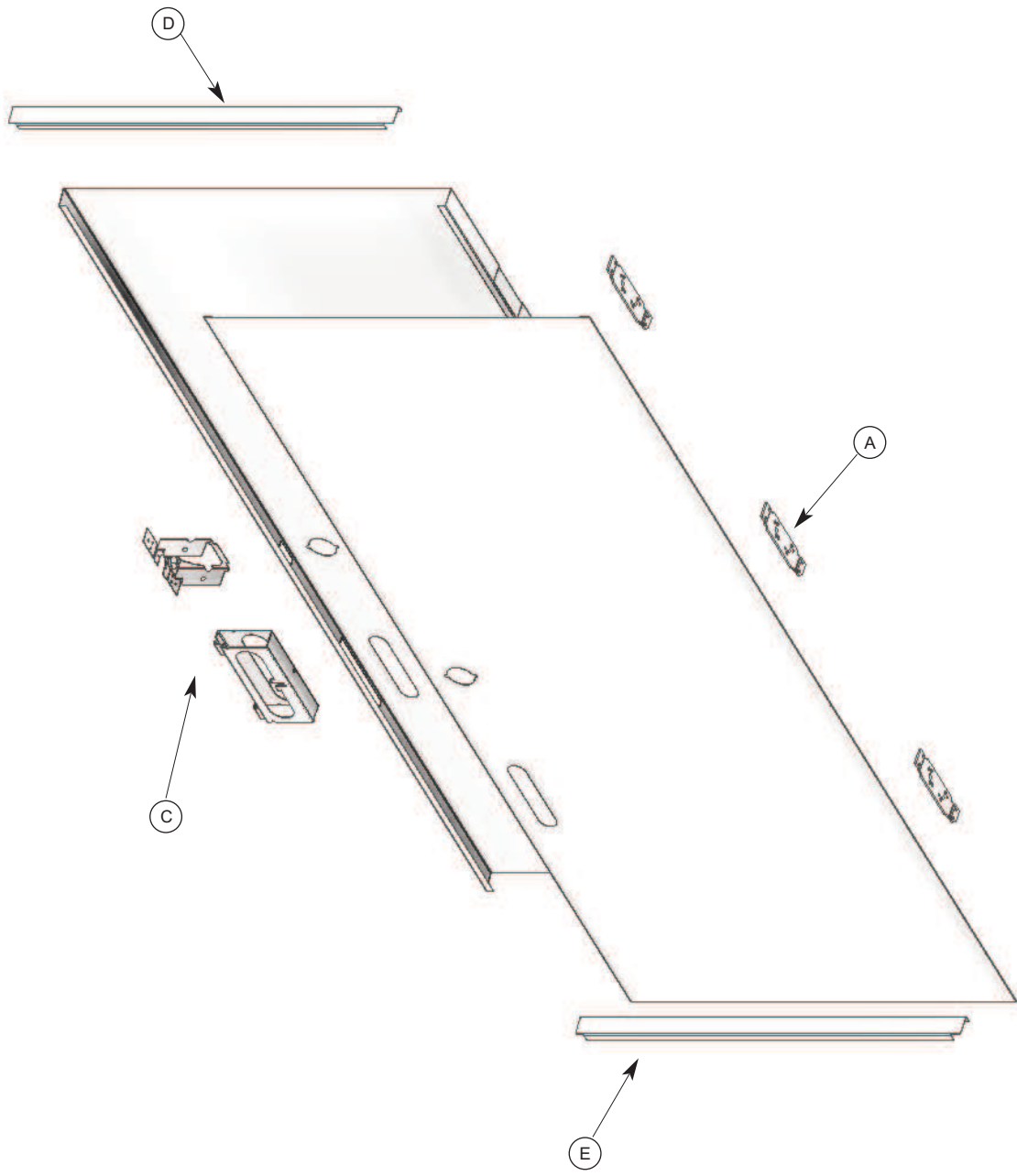
Specifications

- I. DP Series Doors as manufactured by Republic Doors and Frames, McKenzie, TN 38201 have been tested and adhere to the criteria set forth by the following published standards:
 - A. A250.8 Specifications-Standard Steel Doors & Frames Steel Door Institute.
 - B. ANSI A250.4 - Test Procedure & Acceptance Criteria for Physical Endurance for Steel Doors & Hardware Reinforcings.
 - C. SDI 111 – Recommended Details Standard Steel Doors & Frames, Accessories and Related Components.
 - D. SDI 112 - Zinc Coated Standard Steel Doors and Frames.
 - E. SDI 113 – Standard Practice for Determining the Steady State Thermal Transmittance of Steel Door and Frame Assemblies.
 - F. ASTM A366/A366M - Standard Specification for Steel, Sheet, Carbon, and High Strength, Low Alloy, Hot Rolled and Cold Rolled, General Requirements.
 - G. ASTM A568/A568M - Standard Specification for Steel, Sheet, Carbon and High Strength, Low-Alloy, Hot Rolled and Cold Rolled, General Requirements For.
 - H. ASTM A569/A569M - Standard Steel Specification for Steel, Carbon (0.15 Maximum Percent), Hot Rolled Sheet and Strip Commercial Quality.
 - I. ASTM A591/A591M - Standard Steel Specification for Steel Sheet, Electrolytic Zinc-Coated, for Light Coating Mass Applications.
 - J. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by Hot Dipped Process.
 - II. Door Construction
 - A. Doors are either 20 or 18 gauge steel. Door design is a pan and lid construction. The lid has a flattened hemmed edge that is projection welded to the pan.
 - B. Top Channel will be 16 gauge, flush with the top of the door and projection welded on maximum 2 ½" centers to each face sheet.
 - C. Bottom Channel will be 16 gauge, inverted and projection welded on maximum 2 ½" centers to each face sheet.
 - D. Hinge Side - Square edge design with cutouts in pan. 7 gauge hinge reinforcements welded in at each cutout.
 - E. Lock Side - Square edge design. Mortise lock reinforcements are 14 gauge. Cylindrical lock reinforcements are 16 gauge.
 - F. Cores: (Per ASTM C1363)
 1. Standard - Honeycomb with a "U" factor of .59.
 2. Optional Core - 1 lb. density expanded Polystyrene per with a "U" factor of .41.
 - III. Door Finish

Doors will be cleaned and phosphatized with one coat of force-cured beige primer applied in accordance with ANSI A250.10-2011 or ASTM specification B117 for finishes capable of passing 120 hour salt spray test and a 240 hour humidity test in compliance with ASTM D1735.
- SDI Classifications:**
- Level 1 Model 1 (Standard Duty, minimum 20 gauge, hollow steel composite)
 - Level 2 Model 1 or 2 (Heavy Duty, minimum 18 gauge, hollow steel composite)

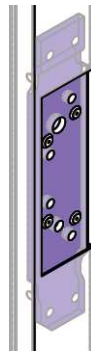
Construction details

Note: See details on next page



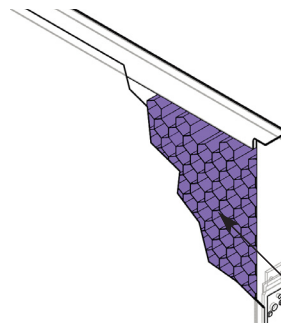
Construction details

A Hinge edge of pan



7 gauge reinforcement at hinge locations
Shown: 4 1/2" hinges on 1 3/4" doors

B



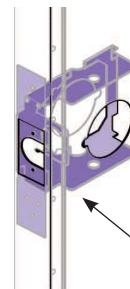
3/4" Cell
Honeycomb Core
U Factor of .59
(Per ASTM C1363)

Other cores available. Please specify.

C Lock edge of pan



14 gauge mortise lock reinforcement with provisions for Gov't Series 86 mortise lockset and ANSI A115.1 lock front (1 1/4" x 8")



16 gauge steel cylindrical lock reinforcement with provisions for Gov't Series 160 or 161 cylindrical lock sets (2 3/4" backset) and ANSI A115.2 lock front (1 1/8" x 2 1/4")

D Top channel

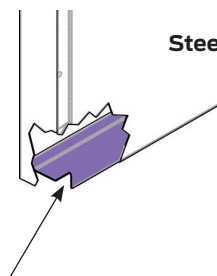
Continuous 16 gauge steel channel (standard flush)



Steel panel

14 gauge closer reinforcement when requested

E Bottom channel



Steel panel

Continuous 16 gauge steel channel (standard inverted)

Approximate depth 9/16"

Doors • DL Series

DL Series

DL Series Doors shall be as manufactured or furnished by Republic Doors and Frames, McKenzie, Tennessee 38201. (Standard components are bold.)

Thickness: 1 ¾" Nominal

Actual Door Size: Door undersized from nominal by ¼" in width and ⅞" in height. Standard undercut is ¾".

Hinge Rail & Reinforcement: Hinge edge is non-beveled and reinforced with a continuous 16 gauge steel channel projection welded at a maximum 5" on center. Additional reinforcement plates provided at hinge locations. (Backset ¼")

Lock Rail: Lock edge is non-beveled and reinforced with a continuous 16 gauge channel. 16 gauge reinforcements for mortise or cylindrical locks are of an integral type in accordance with ANSI A115 Standards.

Edge Seams: Overlapping visible seam (standard), continuously welded seamless or intermittently welded seamless - options.

Top Channel: Flush, 16 gauge channel, projection welded at a maximum 2 ½" on center. (Optional: Inverted)

Bottom Channel: Inverted 16 gauge channel, projection welded at a maximum 2 ½" on center.

Cores Available: Honeycomb, Polystyrene, Polyurethane, 250o Temp Rise or Steel Stiffened.

Face Skins: 20, 18 or 16 gauge, cold rolled or galvanized steel.

Closer Reinforcement (Option): 14 gauge standard. (18" x 6")

Size Availability: Minimum 1'0" x 1'0", Maximum 5'0" x 10'0" (over 4' in width must be steel stiffened)

SDI 100 Level/Model:

- Level 1 Model 1 (Standard Duty, minimum 20 gauge, hollow steel composite)
- Level 2 Model 1 or 2 (Heavy Duty, minimum 18 gauge, hollow steel composite)
- Level 3 Model 1 or 2 (Extra Heavy duty minimum 16 gauge, hollow steel composite)

Universal Standard/Heavy Weight Hinge: Hinge clips used to change from standard to heavy weight hinge prep.

Handing Design: Non-Handed (Handed optional)

Doors • DL Series

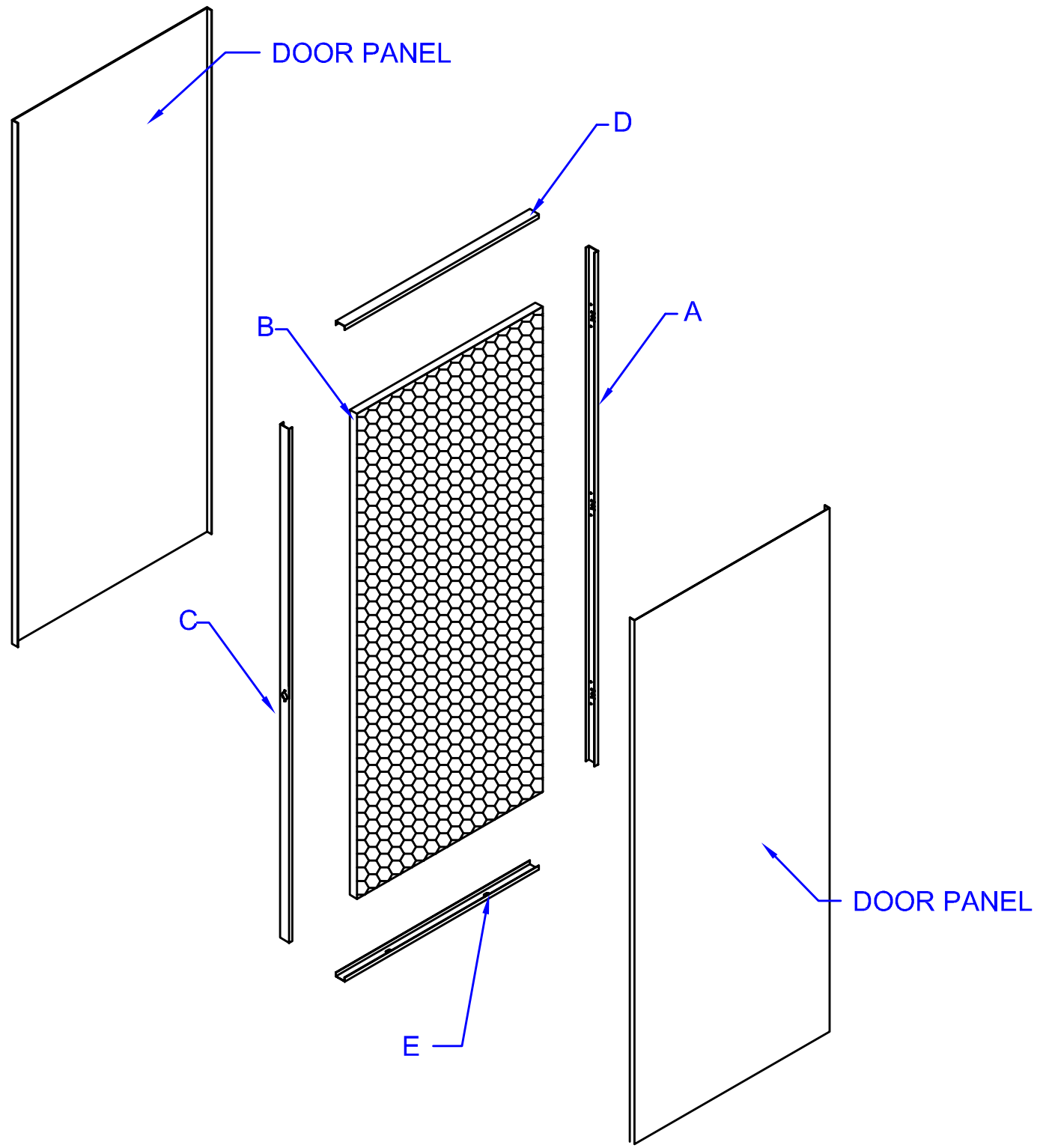
Specifications

- I. DL Series Doors as manufactured by Republic Doors and Frames, McKenzie, TN 38201 have been tested and adhere to the criteria set forth by the following published standards:
 - A. ANSI A250.8-2017 (SDI 100) - Recommended Specifications - Standard Steel Doors & Frames; Steel Door Institute.
 - B. ANSI A250.4 - Test Procedure & Acceptance Criteria for Physical Endurance for Steel Doors & Hardware Reinforcings.
 - C. SDI 111 – Recommended Details Standard Steel Doors & Frames, Accessories and Related Components.
 - D. SDI 112 - Zinc Coated Standard Steel Doors and Frames.
 - E. SDI 113 – Standard Practice for Determining the Steady State Thermal Transmittance of Steel Door and Frame Assemblies.
 - F. ASTM A366/A366M - Standard Specification for Steel, Sheet, Carbon, and High Strength, Low Alloy, Hot Rolled and Cold Rolled, General Requirements.
 - G. ASTM A568/A568M - Standard Specification for Steel, Sheet, Carbon and High Strength, Low-Alloy, Hot Rolled and Cold Rolled, General Requirements For.
 - H. ASTM A569/A569M-Standard Steel Specification for Steel, Carbon(0.15MaximumPercent), Hot Rolled Sheet and Strip Commercial Quality.
 - I. ASTM A591/A591M - Standard Steel Specification for Steel Sheet, Electrolytic Zinc-Coated, for Light Coating Mass Applications.
 - J. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by Hot Dipped Process.
 - K. NFPA 80 - Standard for Fire Doors and Windows.
 - II. Door Construction
 - A. Doors will be constructed of 20, 18 or 16 gauge steel.
 - B. Top Channel will be 16 gauge, flush with the top of the door and will be projection welded on maximum 2 ½" centers to each face sheet.
 - C. Bottom Channel will be 16 gauge, inverted and will be projection welded on maximum 2 ½" centers to each face sheet.
 - D. Hinge reinforcing will be a full height 16 gauge channel with additional 9 gauge reinforcing at hinge locations projection welded to both face sheets with a maximum of 5" on center.
 - E. Lock edge is non beveled with a continuous 16 gauge channel welded to both face sheets with a maximum of 5" on center. Cylindrical and mortise lock preps are extruded to 14 gauge as specified in ANSI A250.8.
 - F. Cores (Per ASTM C1363)
 1. Standard - Honeycomb core with a "U" factor of .59.
 2. Optional Cores:
 - a. 1 lb density expanded Polystyrene with a "U" factor of .41
 - b. 2 lb Polyurethane with a "U" factor of .39
 - c. 250° Temperature Rise Mineral Fiberboard capable of withstanding a maximum of 250° temperature rise in 30 minutes with a "U" factor of .56.
 - d. Steel Stiffened (20 gauge standard) with fiberglass batting with a "U" factor of .61
 - III. Door Finish

Doors will be cleaned and phosphatized with one coat of force-cured beige primer applied in accordance with ANSI A250.10-2011 or ASTM specification B117 for finishes capable of passing 120 hour salt spray test and a 240 hour humidity test in compliance with ASTM D1735.
- SDI Classifications:**
- Level 1 Model 1 (Standard Duty, minimum 20 gauge, hollow steel composite)
 - Level 2 Model 1 or 2 (Heavy Duty, minimum 18 gauge, hollow steel composite)
 - Level 3 Model 1 or 2 (Extra Heavy Duty minimum 16 gauge, hollow steel composite)

Construction details

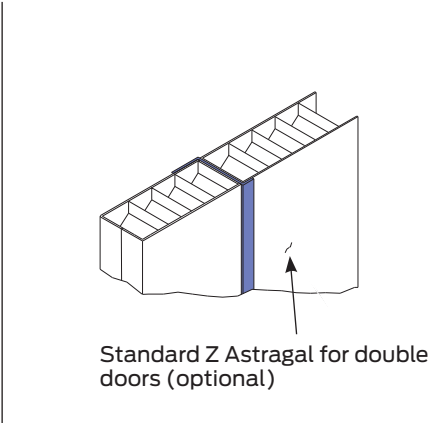
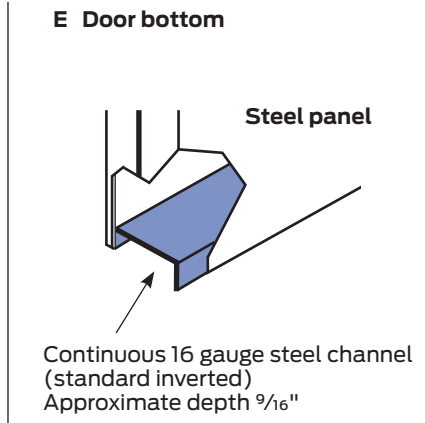
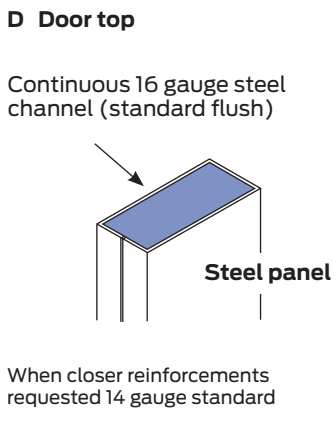
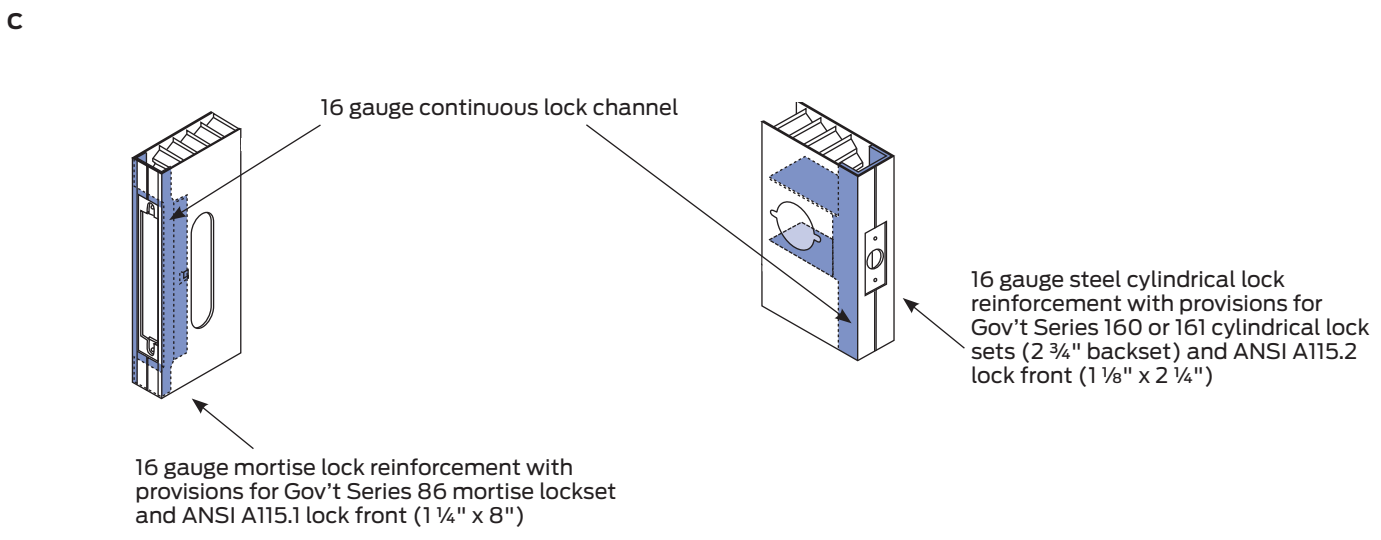
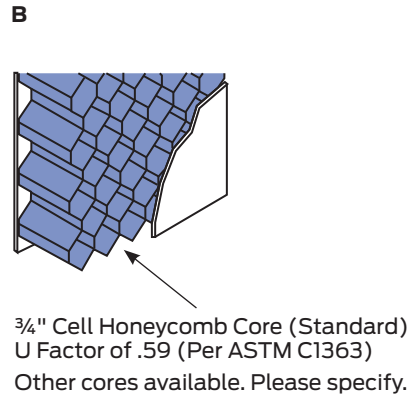
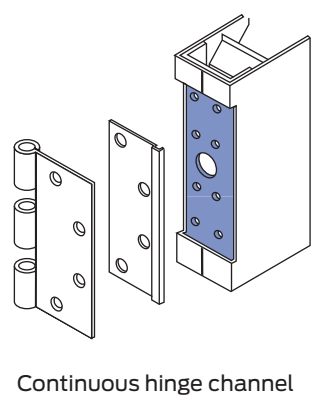
Note: See details on next page



Doors • DL Series

Construction details

A
 Continuous 16 gauge channel with additional reinforcement at hinge locations
 Shown: 4 1/2" or 5" full mortise template hinges on 1 3/4" doors



Doors • DE Series

DE Series

DE Series Doors shall be as manufactured or furnished by Republic Doors and Frames, McKenzie, Tennessee 38201.

Thickness: 1 ¾" or 1 ⅜" Nominal (14 gauge door thickness = 1 13/16" Nominal (+/- 1/16").

Actual Door Size: Door undersized from nominal by ¼" in width and 7/8" in height. Standard undercut is ¾".

Hinge Rail & Reinforcement: Hinge edge is non-beveled and reinforced with a continuous 10 gauge steel channel (14 gauge steel channel on 1 ⅜" door thickness) projection welded at a maximum 5" on center. (Backset ¼")

Lock Rail: Lock edge is non-beveled and reinforced with a continuous 14 gauge steel channel, projection welded at a maximum 5" on center. 16 gauge reinforcements for mortise or cylindrical locks are of an integral type in accordance with ANSI A115 Standards. (Bevel lock edge unavailable on 14 gauge doors)

Top Channel: Top Channel is a flush 16 gauge channel, projection welded at a maximum 2 ½" on center.

Bottom Channel: Bottom Channel is an inverted 16 gauge steel channel, projection welded at a maximum 2 ½" on center.

Cores Available: Honeycomb, Polystyrene, Urethane, Steel Stiffened (20 gauge stiffeners standard) or 250 degree Temperature Rise

Face Skins: Cold Rolled, Hot Rolled or Galvanized Steel, 18, 16 or 14 gauge.

Closer Reinforcement (Option): 14 gauge standard. (18" x 6")

Size Availability: Minimum 1'0" x 1'0", Maximum 5'0" x 10'0"

SDI 100 Level/Model:

- Level 2 Model 1 or 2 (Heavy Duty, minimum 18 gauge, hollow steel composite)
- Level 3 Model 1 or 2 (Extra Heavy Duty, minimum 16 gauge, hollow steel composite)
- Level 4 Model 1 or 2 (Maximum Duty, minimum 14 gauge, hollow steel composite)

Continuous Welded Seam: Option: (Maximum Size 5'0" x 10'0"; Minimum Size 2'0" x 2'0"; Gauges: 18, 16 & 14)

Universal Standard/Heavy Weight Hinge: Hinge clips are used allowing for an easy modification from standard to heavy weight hinge prep.

Handing Design: Non-Handed (Handed optional)

Specifications

- I. DE Series Doors as manufactured by Republic Doors and Frames, McKenzie, TN 38201 have been tested and adhere to the criteria set forth by the following published standards:
 - A. ANSI A250.8 (SDI 100) - Recommended Specifications - Standard Steel Doors & Frames; Steel Door Institute.
 - B. ANSI A250.4 - Test Procedure & Acceptance Criteria for Physical Endurance for Steel Doors & Hardware Reinforcings.
 - C. SDI 111 – Recommended Details Standard Steel Doors & Frames, Accessories and Related Components.
 - D. SDI 112 - Zinc Coated Standard Steel Doors and Frames.
 - E. SDI 113 – Standard Practice for Determining the Steady State Thermal Transmittance of Steel Door and Frame Assemblies.
 - F. ASTM A366/A366M - Standard Specification for Steel, Sheet, Carbon, and High Strength, Low Alloy, Hot Rolled and Cold Rolled, General Requirements.
 - G. ASTM A568/A568M - Standard Specification for Steel, Sheet, Carbon and High Strength, Low Alloy, Hot Rolled and Cold Rolled, General Requirements For.
 - H. ASTM A569/A569M - Standard Steel Specification for Steel, Carbon (0.15 Maximum Percent), Hot Rolled Sheet and Strip Commercial Quality.
 - I. ASTM A591/A591M - Standard Steel Specification for Steel Sheet, Electrolytic Zinc-Coated, for Light Coating Mass Applications.
 - J. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by Hot Dipped Process.
 - K. NFPA 80 - Standard for Fire Doors and Windows.
- II. Door Construction
 - A. Doors will be constructed of 18, 16 or 14 gauge steel.
 - B. Top Channel is 16 gauge and will be flush with the top of the door. Channel will be projection welded on 2 ½" centers to each face sheet.
 - C. Bottom Channel is 16 gauge and will be inverted. Channel will be projection welded on 2 ½" centers to each face sheet.
 - D. Hinge reinforcing will be a full height 10 gauge channel (14 gauge steel channel on 1 ⅜" door thickness), projection welded to both face sheets with a maximum of 5" on center.
 - E. Lock edge is non-beveled and reinforced with a continuous 14 gauge steel channel, projection welded 5" max OC. 16 gauge reinforcements for government series 86 mortise lockset, or standard cylindrical lockset, complying with ANSI A115.
 - F. Cores (Per ASTM C1363)
 1. Standard - Honeycomb core with a "U" factor of .59.
 2. Optional Cores:
 - a. 1 lb density expanded Polystyrene with a "U" factor of .41
 - b. 2 lb Polyurethane with a "U" factor of .39
 - c. 250 ° Temperature Rise Mineral Fiberboard capable of withstanding a maximum of 250 ° temperature rise in 30 minutes with a "U" factor of .56.
 - d. Steel Stiffened Core (20 gauge stiffeners-standard) with mineral wool or fiber glass batting between stiffeners with a "U" factor of .61.
- III. Door Finish

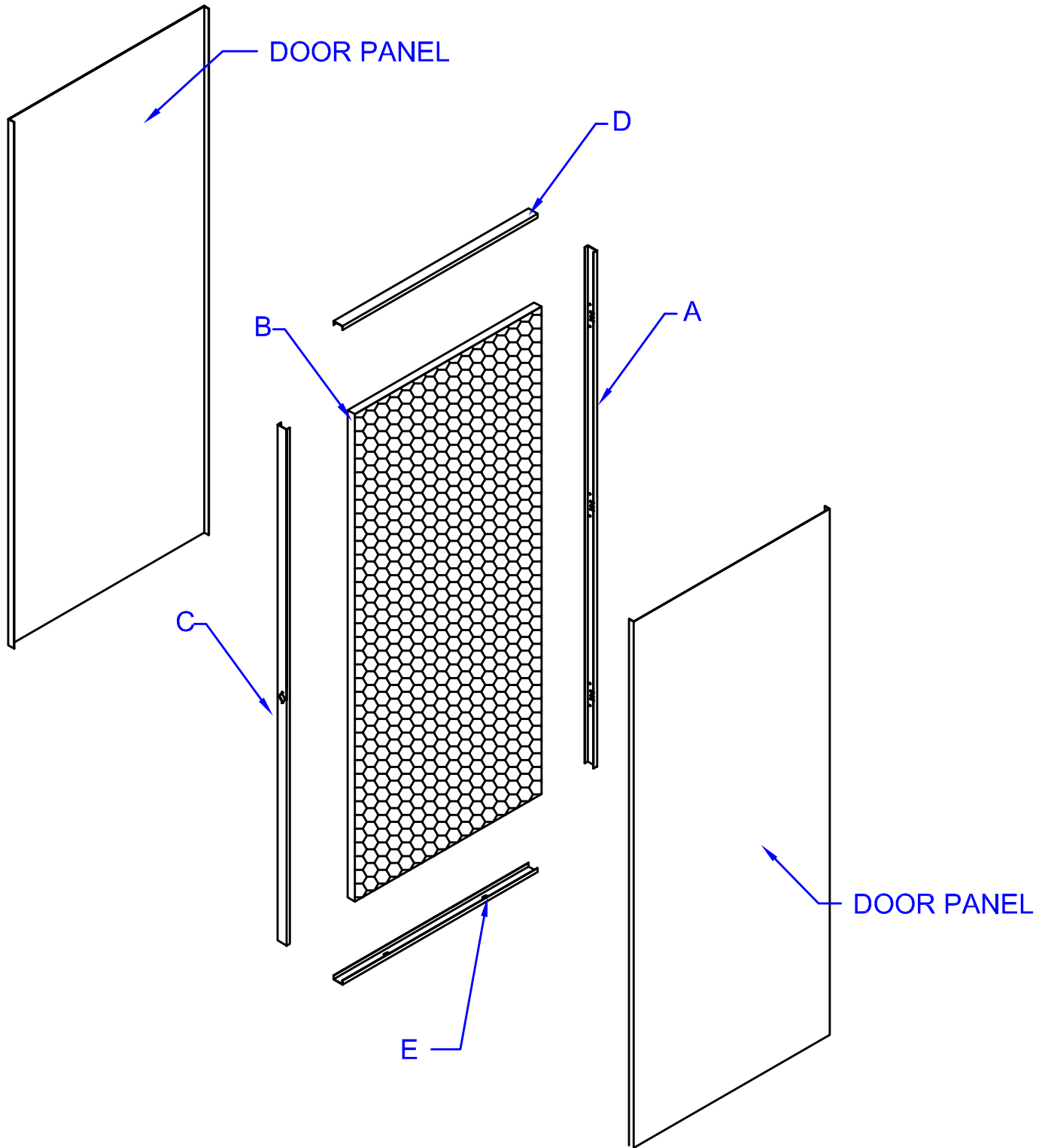
Doors will be cleaned and phosphatized with one coat of force-cured beige primer applied in accordance with ANSI A250.10-2011 or ASTM specification B117 for finishes capable of passing 120 hour salt spray test and a 240 hour humidity test in compliance with ASTM D1735.

SDI Classifications:

- Level 2 Model 1 or 2 (Heavy Duty, minimum 18 gauge, hollow steel composite)
- Level 3 Model 1 or 2 (Extra Heavy Duty, minimum 16 gauge, hollow steel composite)
- Level 4 Model 1 or 2 (Maximum Duty, minimum 14 gauge, hollow steel composite)

Construction details

Note: See details on next page



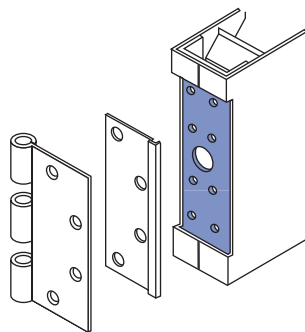
Doors • DE Series

Construction details

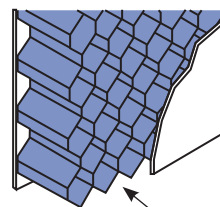
A

Continuous 10 gauge steel channel compatible with 4 1/2" or 5" full mortise template hinges on 1 3/4" doors or

Continuous 14 gauge steel channel compatible with 3 1/2" x 3 1/2" full mortise template hinges on 1 3/8" doors

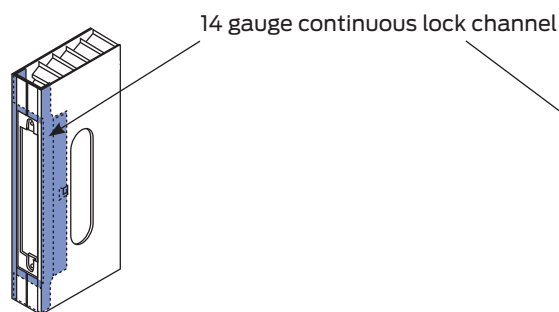


B

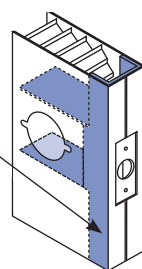


Honeycomb Core (Standard)
U Factor of .59
Optional cores available

C



16 gauge mortise lock reinforcement with provisions for Gov't Series 86 mortise lockset and ANSI A115.1 lock front (1 1/4" x 8")



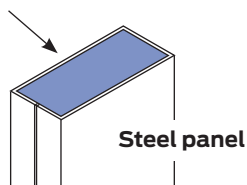
16 gauge steel cylindrical lock reinforcement with provisions for Gov't Series 160 or 161 cylindrical lock sets (2 3/4" backset) and ANSI A115.2 lock front (1 1/8" x 2 1/4")

Lever Lock Prep -161 DT (Modified 161 Prep)
Conforms with the ANSI 115.18 161 lever lock specifications.

Warning: Use rose trim with a minimum diameter of 3 5/16" to cover prep.

D Door top

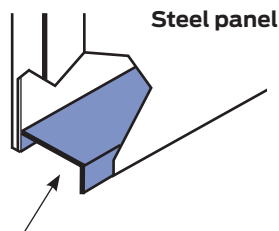
Continuous 16 gauge steel channel (standard flush)



Steel panel

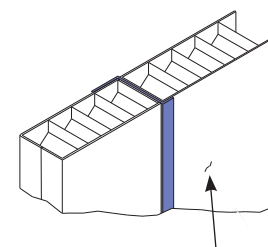
When closer reinforcement requested
14 gauge standard

E Door bottom



Steel panel

Continuous 16 gauge steel channel
(standard inverted)
Approximate depth 9/16"



Standard Z Astragal for double doors (optional)

Doors • Embossed

Embossed

Embossed Doors shall be as manufactured or furnished by Republic Doors and Frames, McKenzie, Tennessee 38201. (Standard components are bold.)

Thickness: 1 ¾" Nominal

Actual Door Size: Door undersized from nominal by ¼" in width and ⅞" in height. Standard undercut is ¾".

Hinge Rail & Reinforcement: Hinge edge is non-beveled and reinforced with a continuous 16 gauge steel channel projection welded at a maximum 5" on center. Additional reinforcement plates provided at hinge locations.

Lock Rail: Lock edge is non-beveled and reinforced with a continuous 16 gauge channel. 16 gauge reinforcements for mortise or cylindrical locks are of an integral type in accordance with ANSI A115 Standards.

Edge Seams: Overlapping.

Top Channel: Flush, 16 gauge channel, projection welded at a maximum 2 ½" on center.

Bottom Channel: Inverted 16 gauge channel, projection welded at a maximum 2 ½" on center.

Cores Available: Polystyrene Core - Doors shall be reinforced by laminating face skins to a foam core slab of expanded polystyrene. Core shall have 1 lb to 1.25 lb per cubic foot density.

Insulation: Polystyrene Core (R value of 2.18 per ASTM C1363) (Optional: Sound Transmission Control (STC) 40- 6-panel only)

Face Skins: 18 or 16 gauge (limited) - Faces shall be deep drawn embossed raised panels, both inside and out.

Closer Reinforcement (Option): 14 gauge standard. (18" x 6")

Size Availability: Minimum 2'6" x 6'8", Maximum 3'6" x 7'0" (Optional: 3'0" x 8'0", 6-panel design with elongated panel embossments). Note: 2'6" wide embossed panel doors will have special lock height - not ADA compliant.

SDI100Level/Model:

- Level 2 Model 1 or 2 (Heavy Duty, minimum 18 gauge, hollow steel composite)
- Level 3 Models 1 or 2 (Extra Heavy Duty, minimum 16 gauge, hollow steel composite)

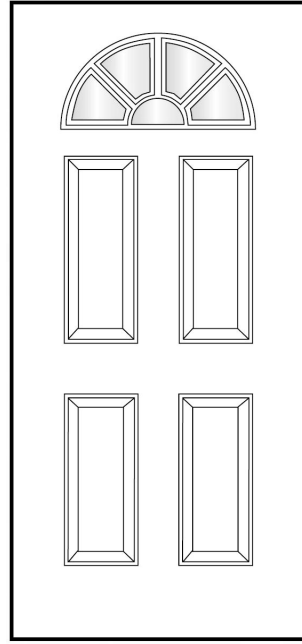
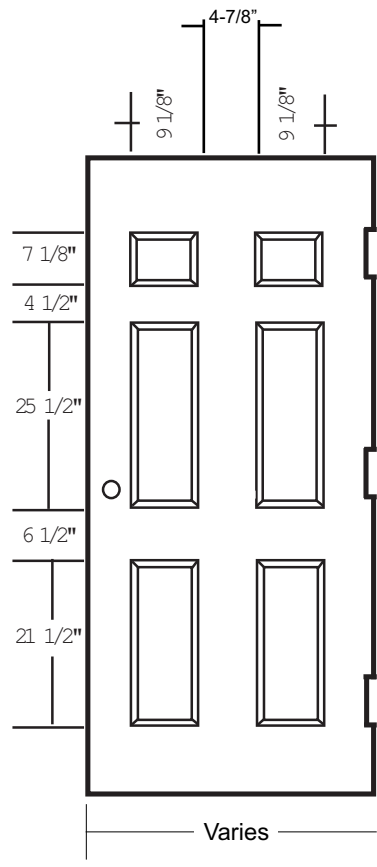
Edge Seam Construction: Visible seam is standard. (Optional: Continuously welded seamless or intermittently welded seamless available)

Universal Standard/Heavy Weight Hinge: Hinge clips used to change from standard to heavy weight hinge prep.

Handing Design: Non-Handed standard (Handed optional)

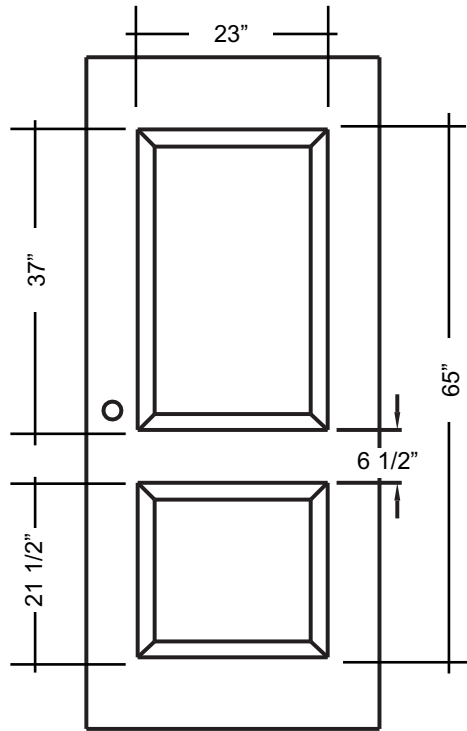
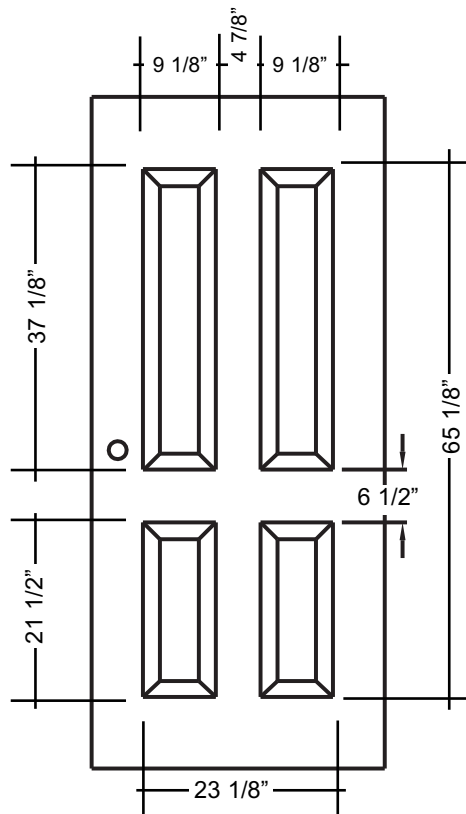
Doors • Embossed

Embossed



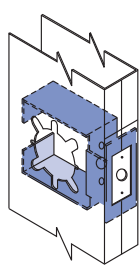
Sunburst (Includes Glass)

NOTE: Maximum lock trim diameter is 3-1/8" on 2'8" doors.



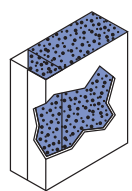
Doors - Embossed

Construction details



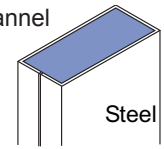
Lever Lock Prep - 161 DT (Modified 161 Prep) Conforms with the ANSI 115.18 161 lever lock specifications.

WARNING: Use rose trim with a minimum diameter of 3-5/16" to cover prep.

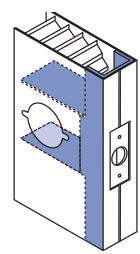


1lb to 1.25 lb density PCF regular grade expanded Polystyrene core

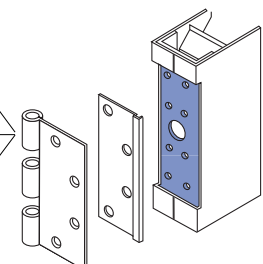
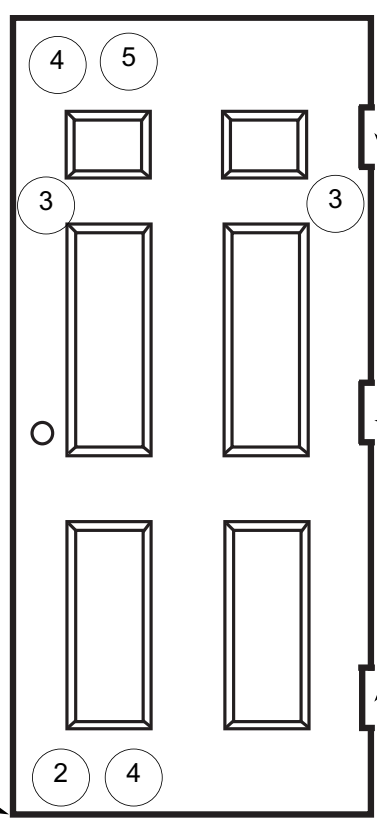
16 gauge flush top continuous steel channel



Steel Panel

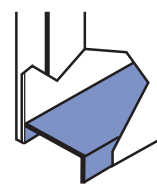


16 gauge steel cylindrical lock reinforcement with provisions for Gov't Series 160 or 161 cylindrical lock sets (2-3/4" backset) and ANSI A115.2 lock front (1-1/8" x 2-1/4")



Continuous Hinge Channel

Shown: 4-1/2" or 5" full mortise template hinges



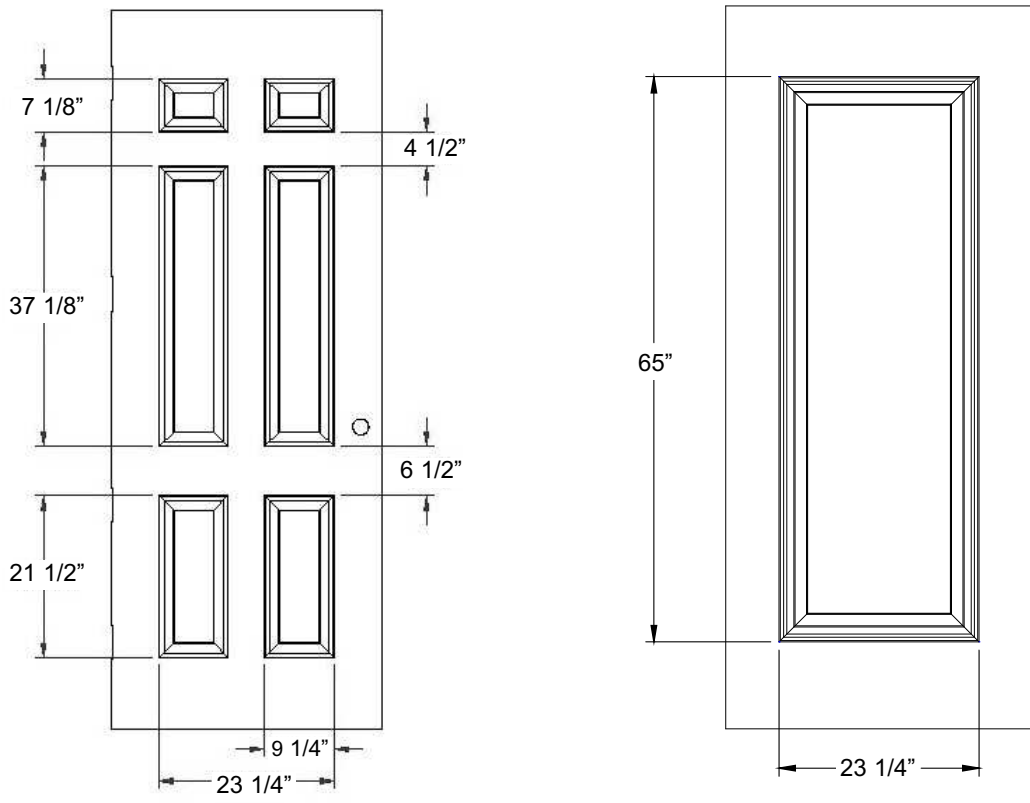
Continuous bottom channel (standard inverted) Approximate 9/16" depth

1
34" AFF

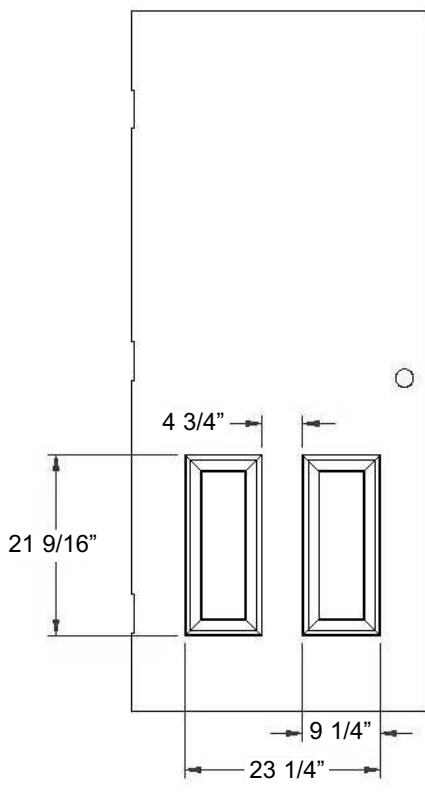
1. Doors smaller than 2'8" width - lock height moved to 34" AFF (not ADA compliant)
2. ADA compliance or 10" mop/kick plate requires a full 10" bottom rail
3. Minimum hinge and/or lock rail 3 1/8"
4. Minimum top and/or bottom rail 3 7/8"
5. Minimum top rail with standard RBP closer reinforcement 6 1/4"

Doors • Embossed

Construction details



8'0" 6 Panel Elongated Panels



PB2 (as shown)
Must specify Cutout with reinforcement or insert installed

Doors - DP, DE & DL Series

DP, DE & DL Series

Thermal & sound values

R and U values relate to insulating performance characteristics. The higher the R value and the lower the U value, the higher the insulating properties of the product. Polystyrene and polyurethane cores have higher insulating qualities than honeycomb and steel-stiffened core doors.

The R and U values have been updated as a result of a change to the testing method of SDI 113 (Standard Practice for Determining the Steady State Thermal Transmittance of Steel Door and Frame Assemblies). In the previous standard, only a portion of the door was tested. This method does not reflect operable conditions of the entire door hung in the frame with hardware. The new version of the standard tests the entire assembly, which represents real-world conditions.

SOUND TRANSMISSION CLASS (STC)

Was derived graphically from the transmission loss measurement over a nine frequency range by an independent testing laboratory. The higher the class rating, the better the sound deadening properties of the door.

The results shown below for Republic doors are the results of actual tests conducted by independent testing laboratories.

Republic standard hollow metal doors

Description	Sound Transmission Class (ASTM E90, ASTM E415)	"U" Factor Calculated (ASTM C518)	"R" Factor Calculated (ASTM C518)	"U" Factor Operable (ASTM C1363)	"R" Factor Operable (ASTM C1363)
Flush with Honeycomb Core	38	0.34	2.94	0.59	1.70
Flush with Polystyrene Core	35	0.13	7.61	0.41	2.43
Flush with Polyurethane Core	33	0.10	10.11	0.39	2.56
Flush with Gypsum Fiberboard Core	38	0.26	3.85	0.56	1.80
Flush with Steel Stiffened Core	n/a	0.15	6.80	0.61	1.65
Embossed with Styrene Core	30	n/a	n/a	0.46	2.18

Doors • Sound Transmission Control (STC)

Sound Transmission Control (STC)

48 (DL Series)

Sound Transmission Control (STC) Doors shall be as manufactured or furnished by Republic Doors and Frames, McKenzie, Tennessee 38201.

Thickness: 1 ¾" (+/- 1/16") Nominal

Actual Door Size: Door undersized from nominal by ¼" in width. Undercut is contingent on threshold.

Hinge Rail & Reinforcement: Hinge edge is non-beveled and reinforced with a continuous 16 gauge steel channel, projection welded at a maximum 5" on center. Additional reinforcement plates at each hinge location. (Backset ¼")

Lock Rail: Lock edge is non-beveled and reinforced with a continuous 16 gauge steel channel, projection welded at a maximum 5" on center. 16 gauge reinforcements for mortised or cylindrical locks are of an integral type in accordance with ANSI A115 standards. (Beveled lock edge 1/8" in 2" optional)

Top Channel: Top Channel is a flush 16 gauge channel, projection welded at a maximum 2 ½" on center.

Bottom Channel: Bottom Channel is a flush 16 gauge channel, projection welded at a maximum 2 ½" on center.

Cores Available: Proprietary sound core only.

Face Skins: 16 gauge (Cold Rolled, Hot Rolled A60 Galvannealed or G90 Galvanized Steel)

Closer Reinforcement (Required): 14 gauge standard (18" x 6")

Size Availability: (Singles) Maximum 4'0" x 8'0"

SDI 100 Level/Model: Level 3 Model 2 (Extra Heavy Duty Performance Level A) (Standard)

Edge Seam Construction: Intermittently Welded seamless as standard. (Optional: continuous welded edge seam)

Universal Standard/Heavy Weight Hinge: Hinge clips are used allowing for an easy modification from standard to heavy weight hinge prep - 5" hinges standard. **ALL SOUND TRANSMISSION CONTROL (STC) 48 COME STANDARD WITH 5-10 & EQUAL HINGE LOCATIONS.**

Handing Design: Non-Handed standard (Handed optional)

Doors - Sound Transmission Control (STC)

50 & 52 (DE Series)

Sound Transmission Control (STC) Doors shall be as manufactured or furnished by Republic Doors and Frames, McKenzie, Tennessee 38201.

Thickness: 1 13/16" (+/- 1/16") Nominal

Actual Door Size: Door undersized from nominal by 1/4" in width. Undercut is contingent on threshold.

Hinge Rail & Reinforcement: Hinge edge is non-beveled and reinforced with a continuous 10 gauge steel channel, projection welded at a maximum 5" on center.

Lock Rail: Lock edge is non-beveled and reinforced with a continuous 14 gauge steel channel, projection welded at a maximum 5" on center.

Top Channel: Top Channel is a flush 16 gauge channel, projection welded at a maximum 2 1/2" on center.

Bottom Channel: Bottom Channel is a flush 16 gauge channel, projection welded at a maximum 2 1/2" on center.

Cores Available: Proprietary sound core only.

Face Skins: 14 gauge (Cold Rolled, Hot Rolled A60 Galvannealed or G90 Galvanized Steel)

Closer Reinforcement (Required): 14 gauge standard. (18" x 6")

Size Availability: (Singles) Maximum 4'0" x 8'0" (Pairs) Maximum 8'0" x 8'0" (Maximum STC rating 47 x Pairs)

SDI 100 Level/Model: Level 4 Model 2 (Maximum Duty Performance Level A) (Standard)

Edge Seam Construction: Intermittently Welded seamless as standard. (Optional: continuous welded edge seam)

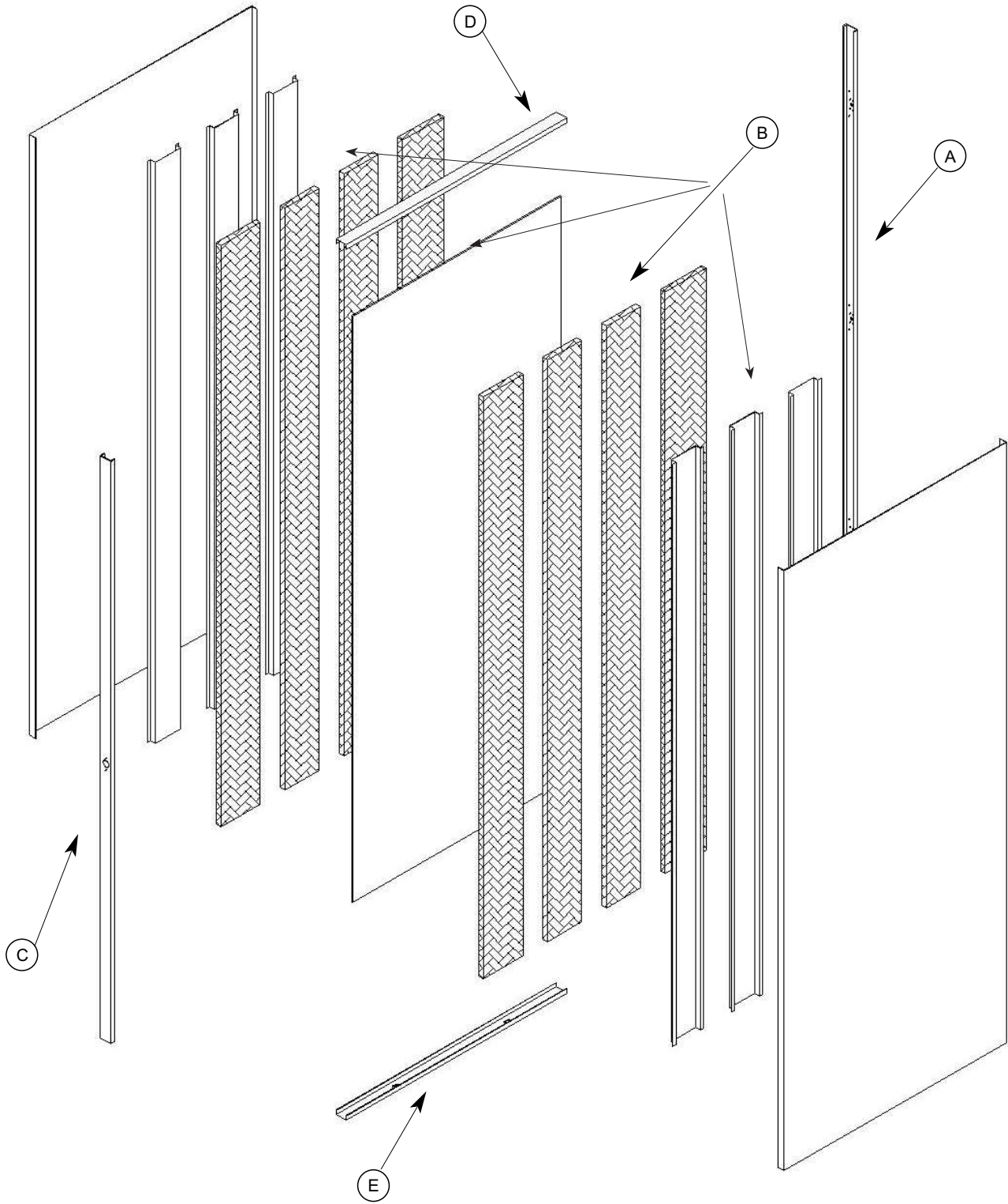
Universal Standard/Heavy Weight Hinge: Hinge fillers are used allowing for an easy modification from standard to heavy weight hinge prep - 5" hinges standard. **ALL SOUND TRANSMISSION CONTROL (STC) 50 & 52 COME STANDARD WITH 5-10 & EQUAL HINGE LOCATIONS.**

Handing Design: Non-Handed standard (Handed optional)

Doors • Sound Transmission Control (STC)

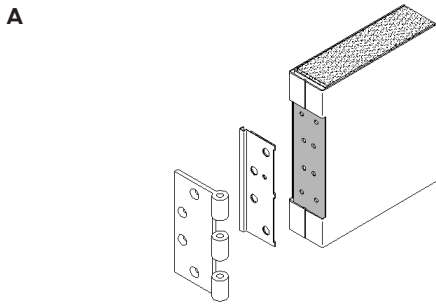
Construction level 48 thru 52

Note: See details on next page

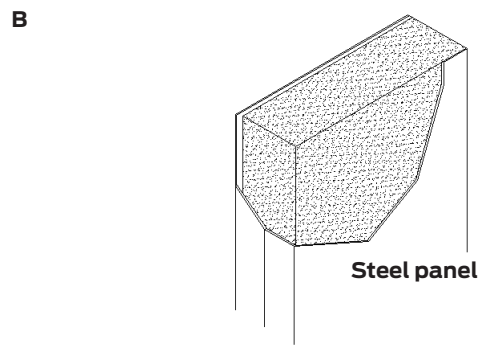


Doors • Sound Transmission Control (STC)

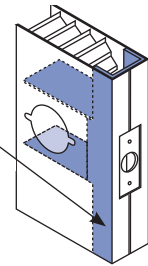
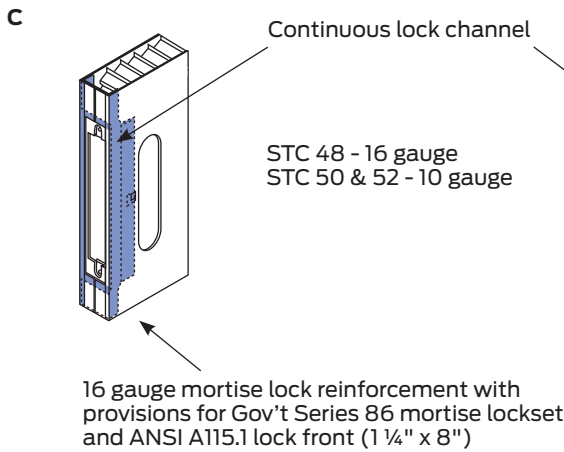
Construction details



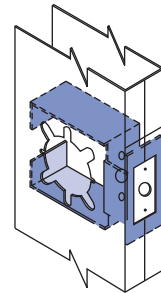
A
 5" full mortise camlift template hinges
 STC 48 - 16 gauge
 STC 50 & 52 - 10 gauge
 Continuous hinge channel



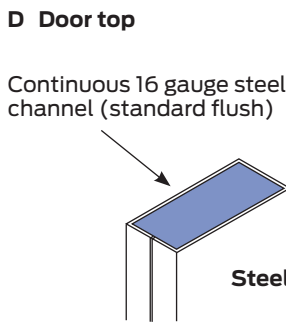
B
 Proprietary Sound Core by Republic



16 gauge steel cylindrical lock reinforcement with provisions for Gov't Series 160 or 161 cylindrical lock sets (2 3/4" backset) and ANSI A115.2 lock front (1 1/8" x 2 1/4")



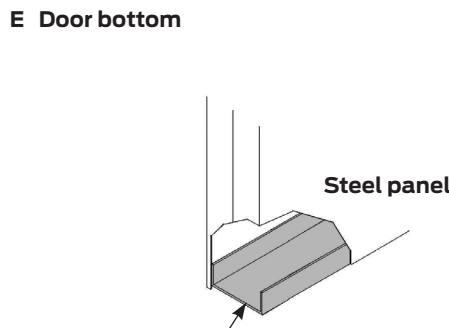
Lever Lock Prep -161 DT (Modified 161 Prep) Conforms with the ANSI 115.18 161 lever lock specifications.
Warning: Use rose trim with a minimum diameter of 3 5/16" to cover prep.



D Door top
 Continuous 16 gauge steel channel (standard flush)

Steel panel

Closer reinforcement 14 gauge standard



E Door bottom

Steel panel

Flush bottom continuous 16 gauge steel channel

Doors • Sound Transmission Control (STC)

ECO 42, 43 and 47 (DL Series)

Sound Transmission Control (STC) Doors shall be as manufactured or furnished by Republic Doors and Frames, McKenzie, Tennessee 38201.

Thickness: 1 ¾" Nominal

Actual Door Size: Door undersized from nominal by ¼" in width. Undercut is contingent on threshold.

Hinge Rail & Reinforcement: Hinge edge is non-beveled and reinforced with a continuous 16 gauge steel channel, projection welded at a maximum 5" on center. Hinge channels have an additional reinforcement at each hinge location. (Backset ¼")

Lock Rail: Lock edge is non-beveled and reinforced with a continuous 16 gauge steel channel, projection welded at a maximum 5" on center. 16 gauge reinforcements for mortised or cylindrical locks are of an integral type in accordance with ANSI A115 standards.

Top Channel: Top Channel is a flush 16 gauge channel, projection welded at a maximum 2 ½" on center.

Bottom Channel: Bottom Channel is flush 16 gauge channel, projection welded at a maximum 2 ½" on center.

Cores Available: Proprietary sound core only.

Face Skins: 16 gauge (Cold Rolled, Hot Rolled A60 Galvannealed or G90 Galvanized Steel)

Closer Reinforcement (Required): 14 gauge standard. (18" x 6")

Size Availability: (Singles) Maximum 4'0" x 8'0" (Pairs) 8'0" x 8'0" (Must have astragal)

SDI 100 Level/Model: Level 3 Model 1 or 2 (Extra Heavy Duty Performance Level A) (Standard)

Edge Seam Construction: Visible edge seam: standard. (Optional: intermittently welded or continuously welded edge seam)

Universal Standard/Heavy Weight Hinge: Hinge clips are used allowing for an easy modification from standard to heavy weight hinge prep - 4 ½" hinges standard.

Handing Design: Non-Handed standard (Handed optional)

Doors - Sound Transmission Control (STC)

ECO 40 6-panel embossed

Sound Transmission Control (STC) Doors shall be as manufactured or furnished by Republic Doors and Frames, McKenzie, Tennessee 38201.

Thickness: 1 ¾" Nominal

Actual Door Size: Door undersized from nominal by ¼" in width. Undercut is contingent on threshold.

Hinge Rail & Reinforcement: Hinge is non-beveled with a continuous 16 gauge steel channel projection welded at a maximum 5" on center. Additional reinforcement plates at each hinge location. (Backset ¼")

Lock Rail: Lock edge is non-beveled and reinforced with a continuous 16 gauge steel channel, projection welded at a maximum 5" on center. 16 gauge reinforcements for mortised or cylindrical locks are of an integral type in accordance with ANSI A115 standards.

Top Channel: Top Channel is a flush 16 gauge channel, projection welded at a maximum 2 ½" on center.

Bottom Channel: Bottom Channel is a flush 16 gauge channel, projection welded at a maximum 2 ½" on center.

Cores Available: Proprietary sound core only.

Face Skins: 16 gauge x A40 Galvannealed

Closer Reinforcement (Optional): 14 gauge standard. (18" x 6")

Size Availability: (Singles) Maximum 3'6" x 8'0"

SDI 100 Level/Model: Level 3 Model 1 or 2 (Extra Heavy Duty Performance Level A) (Standard)

Edge Seam Construction: Visible edge seam - standard. (Optional: intermittently welded or continuously welded edge seam)

Universal Standard/Heavy Weight Hinge: Hinge clips are used allowing for an easy modification from standard to heavy weight hinge prep - 4 ½" hinges standard.

Handing Design: Non-Handed standard (Handed optional)

Doors • Steel stiffened

Steel stiffened

Steel Stiffened Doors shall be as manufactured or furnished by Republic Doors and Frames, McKenzie, Tennessee 38201.

Thickness: 1 3/4" (14 gauge = 1 13/16" +/- 1/16") Nominal

Actual Door Size: Door undersized from nominal by 1/4" in width and 7/8" in height. Standard undercut is 3/4".

Hinge Rail & Reinforcement: Hinge edge is non-beveled and is reinforced with a continuous 16(DL) or 10(DE) gauge steel channel, projection welded at a maximum 5" on center.

Lock Rail: Lock edge is non-beveled and reinforced with a continuous 16(DL) or 14(DE) gauge steel channel, projection welded at a maximum 5" on center.

Top Channel: Top Channel is a flush 16 gauge channel, projection welded at a maximum 2 1/2" on center.

Bottom Channel: Bottom Channel is an inverted 16 gauge steel channel, projection welded at a maximum 2 1/2" on center.

Cores Available: Steel Stiffened, with fiberglass batting/mineral wool between each stiffener "U" Factor = 0.61 "R" Factor = 1.65 per ASTM C1363 (Optional: Polystyrene or polyurethane between stiffeners).

Stiffener Gauges & Size: 20 gauge standard (Optional: 18 or 16 gauge) - 4" wide

Stiffener Spacing: Maximum 6" (Varies according to door width)

Stiffener Welding: 5" maximum on centers. (Vertically)

Face Skins: 18, 16 or 14 gauge (Cold Rolled, Hot Rolled or A60 Galvannealed Steel) *G90 Galvanized available in 16 or 14 gauge only.

Closer Reinforcement (Option): 14 gauge standard. (18" x 6")

Size Availability: Minimum 2'0" x 2'0", Maximum 5'0" x 10'0" (Over 4'0" must be 16 or 14 gauge)

SDI100 Level/Model:

- Level 2 Models 1 or 2 (Heavy Duty, minimum 18 gauge, hollow steel)
- Level 3 Model 1 or 2 (Extra Heavy Duty, minimum 16 gauge, hollow steel)
- Level 4 Models 1 or 2 (Maximum Duty, minimum 14 gauge, hollow steel)

Edge Seam Construction: Visible seam (standard), continuously welded seamless or intermittently welded seamless available

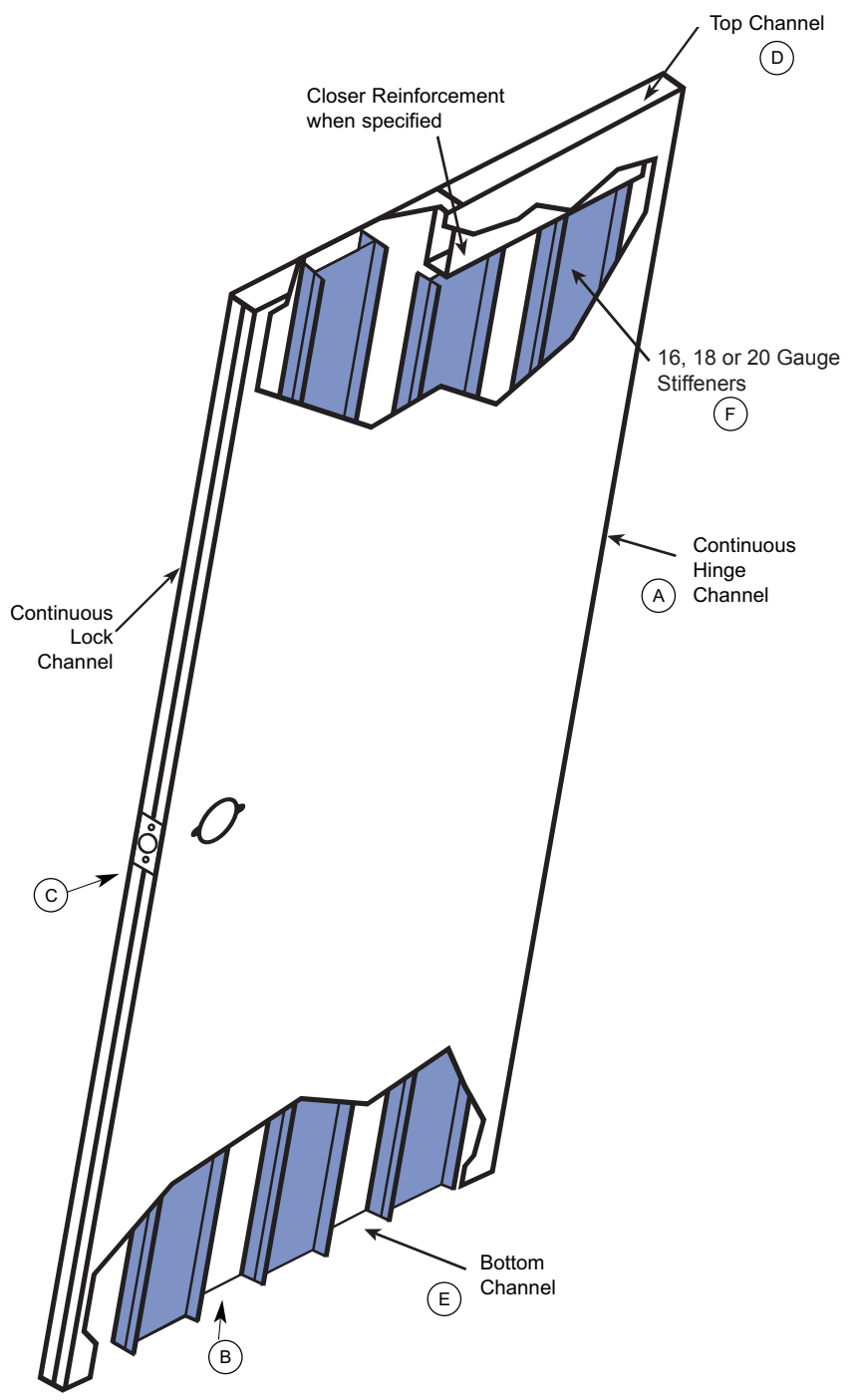
Universal Standard/Heavy Weight Hinge: Hinge clips are used, allowing for an easy modification from standard to heavy weight hinge prep.

Handing Design: Non-Handed standard (Handed optional)

Doors - Steel stiffened

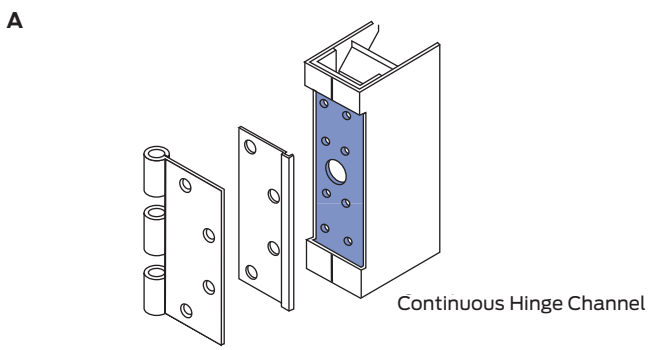
Construction details

Note: See details on next page

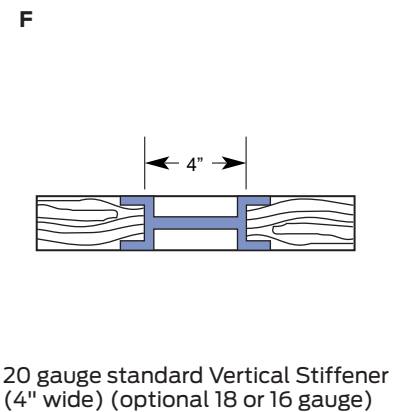
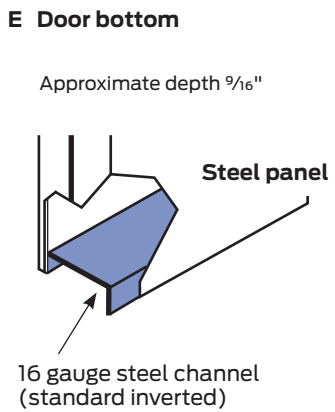
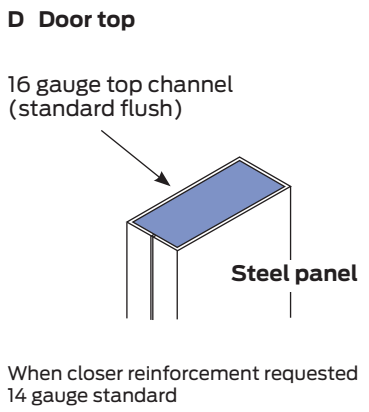
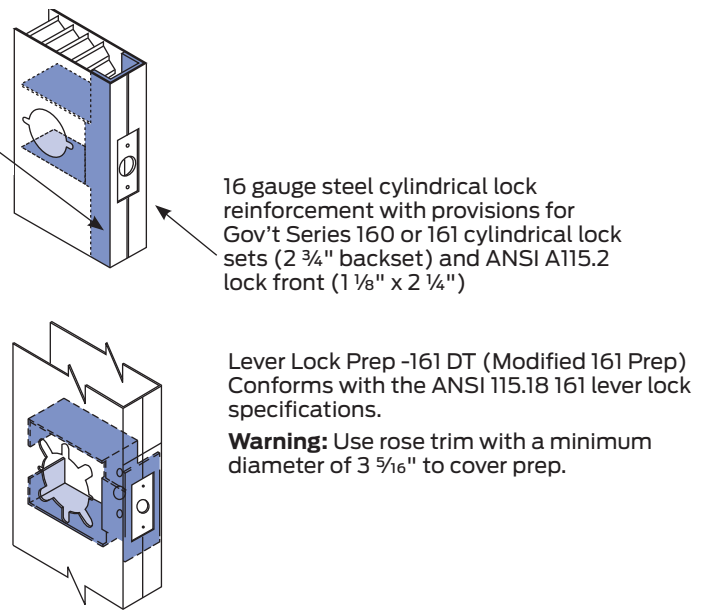
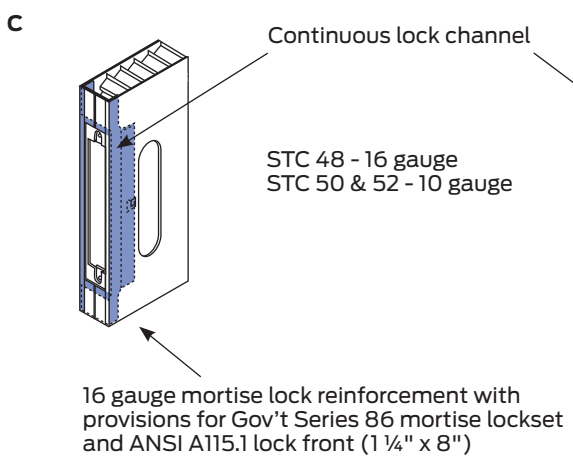
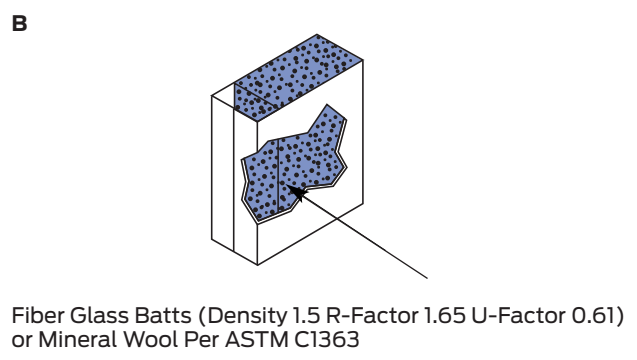


Doors - Steel stiffened

Construction details



Shown: 4 1/2" or 5" full mortise template hinges on 1 3/4" doors.



Doors - Lead lined

Lead lined

Doors shall be as manufactured or furnished by Republic Doors and Frames, McKenzie, Tennessee 38201.

Lead Thickness: 1/16" standard. For other thickness, consult factory.

Thickness: 1 3/4" (18 and 16 gauge); 1 13/16" (14 gauge +/- 1/16") Nominal

Actual Door Size: Door undersized from nominal by 1/4" in width and 7/8" in height. Standard undercut is 3/4".

Hinge Rail & Reinforcement: Hinge edge is non-beveled and reinforced with a continuous 16(DL) or 10(DE) gauge steel channel, projection welded at a maximum 5" on center.

Lock Rail: Lock edge is non-beveled and reinforced with a continuous 16(DL) or 14(DE) gauge steel channel, projection welded at a maximum 5" on center.

Top Channel: Top Channel is a flush 16 gauge steel channel, projection welded at a maximum 2 1/2" on center.

Bottom Channel: Bottom Channel is inverted 16 gauge steel channel, projection welded at a maximum 2 1/2" on center.

Cores Available: Insulated/Steel Stiffened core.

Face Skins: Cold Rolled, Hot Rolled or Galvannealed Steel, 18, 16 or 14 gauge.

Closer Reinforcement (Option): 14 gauge standard. (18" x 6")

Size Availability: (Singles) Maximum 5'0" x 10'0", (Pairs) Maximum 10'0" x 10'0"

SDI 100 Level/Model: Level 2-4 Model 1 or 2 (Heavy Duty to Maximum Duty Performance Level A and B)

Edge Seam Construction: Visible seam - standard, (Option) Continuously welded seamless and intermittently welded seamless available.

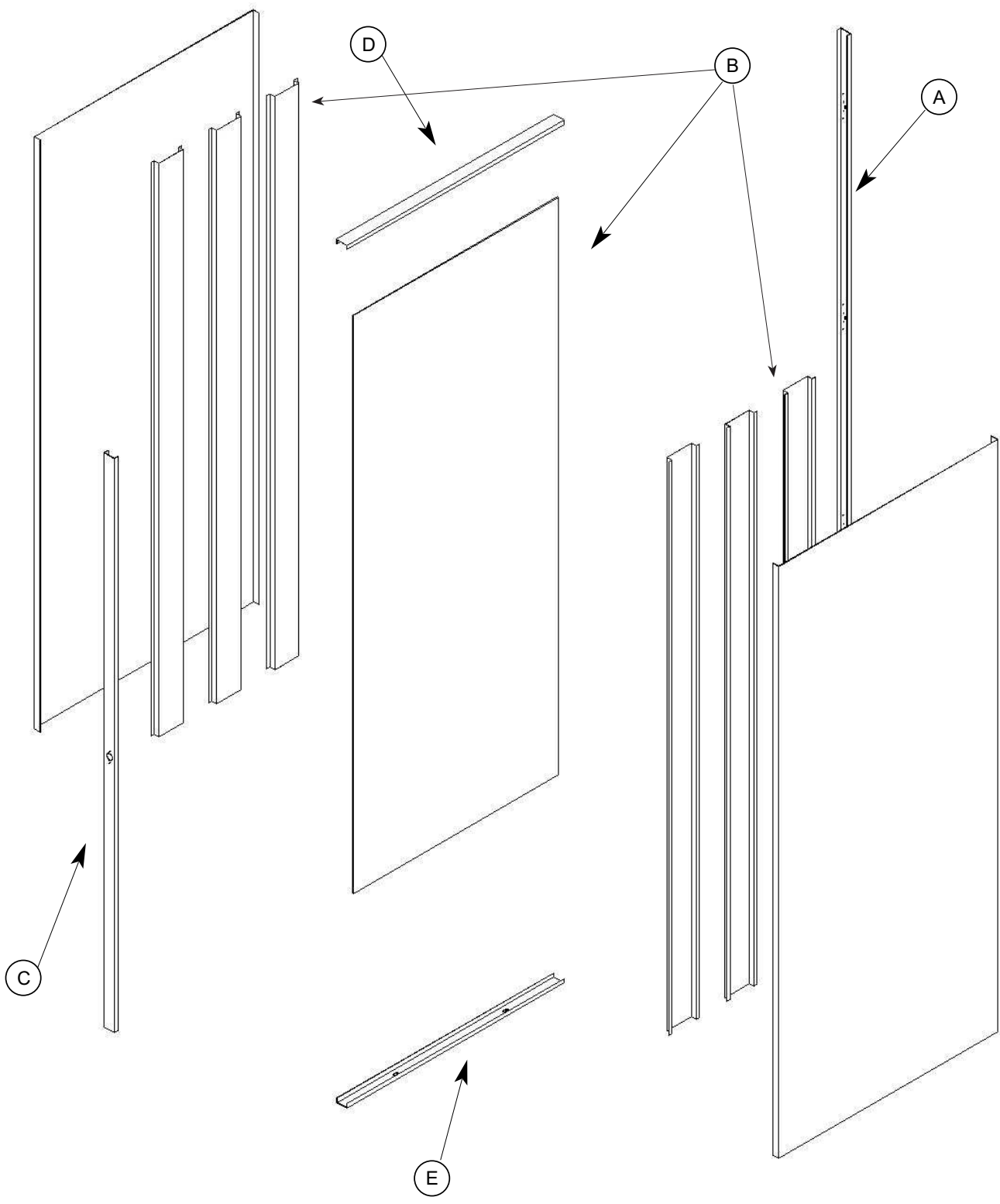
Universal Standard/Heavy Weight Hinge: Hinge clips are used allowing for an easy modification from standard to heavy weight hinge prep.

Handing Design: Non-Handed standard (Handed optional)

Doors • Lead lined

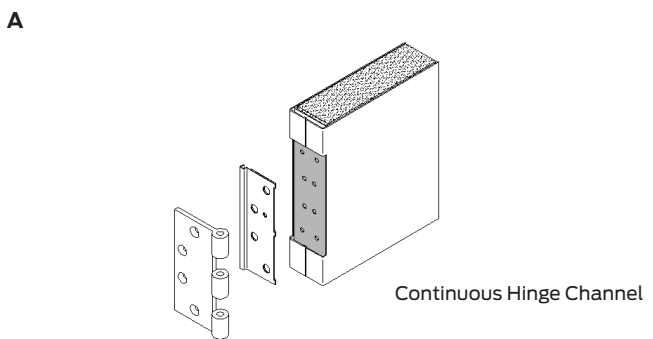
Construction details

Note: See details on next page

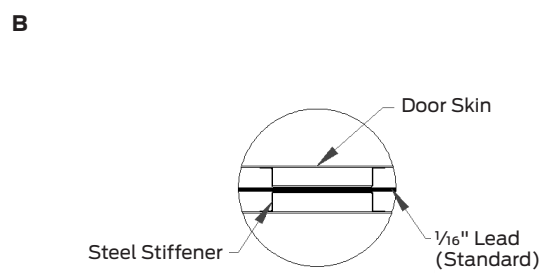


Doors • Lead lined

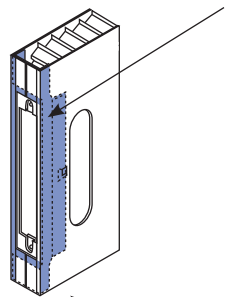
Construction details



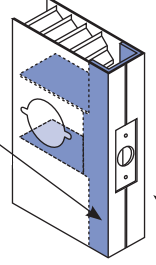
Template hinges on 1 3/4" doors.



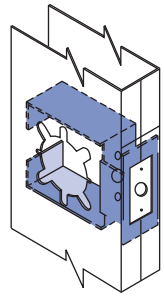
C 14 gauge continuous lock channel DL (16) or DE (14)



16 gauge mortise lock reinforcement with provisions for Gov't Series 86 mortise lockset and ANSI A115.1 lock front (1 1/4" x 8")



16 gauge steel cylindrical lock reinforcement with provisions for Gov't Series 160 or 161 cylindrical lock sets (2 3/4" backset) and ANSI A115.2 lock front (1 1/8" x 2 1/4")

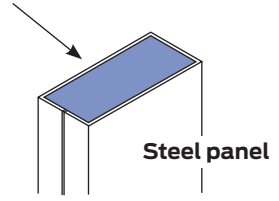


Lever Lock Prep -161 DT (Modified 161 Prep) Conforms with the ANSI 115.18 161 lever lock specifications.

Warning: Use rose trim with a minimum diameter of 3 5/16" to cover prep.

D Door top

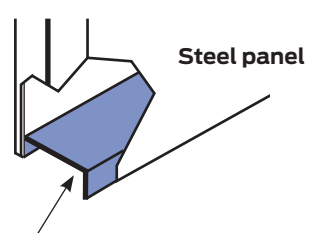
Continuous 16 gauge steel channel (standard flush)



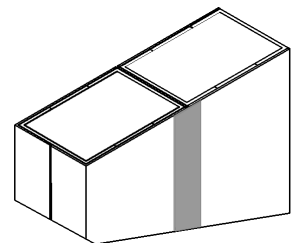
When closer reinforcement requested 14 gauge standard

E Door bottom

Approximate depth 9/16"



Continuous 16 gauge steel channel (standard inverted)



(2) Flat astragals for double doors (required on pairs)

Doors • Bullet resistant

Bullet resistant (DE Series)

Bullet Resistant Doors shall be as manufactured or furnished by Republic Doors and Frames, McKenzie, Tennessee 38201. Tested in accordance to UL752 Ballistics Standards.

Thickness: 1 ¹³/₁₆" (+/- ¹/₁₆") Nominal

Actual Door Size: Door undersized from nominal by ¹/₄" in width and ⁷/₈" in height. Standard undercut is ³/₄".

Hinge Rail & Reinforcement: Hinge edge is non-beveled and reinforced with a continuous 10 gauge steel channel, projection welded at a maximum 5" on center. (Backset ¹/₄")

Lock Rail: Lock edge is non-beveled and reinforced with a continuous 14 gauge steel channel, projection welded at a maximum 5" on center. 16 gauge reinforcements for mortise or cylindrical locks are of an integral type in accordance with ANSI A115 Standards.

Top Channel: Top Channel is a flush 16 gauge channel, projection welded at a maximum 2 ¹/₂" on center.

Bottom Channel: Bottom Channel is an inverted steel 16 gauge channel, projection welded at a maximum 2 ¹/₂" on center.

Cores Available: Bullet Resistant Core Only. Level 1 / Polystyrene, Levels 2-8 / Polystyrene with additional plating/reinforcing.

Face Skins: 14 gauge (Cold Rolled, Hot Rolled or A60 Galvannealed Steel)

Closer Reinforcement (Option): 14 gauge standard. (18" x 6") Only available on Level 1.

Size Availability: (Singles) Maximum 5'0" x 10'0" - (Pairs) (*Levels 1-3 only) Maximum 10'0" x 10'0" Note*(Astragal required on all paired openings)

SDI 100 Level/Model: Levels 4 Model 2 (Maximum Duty Performance Level A) (Standard)

Edge Seam Construction: Intermittently welded seamless standard. (Option: continuously welded seamless).

Universal Standard/Heavy Weight Hinge: Hinge clips are used allowing for an easy modification from standard to heavy weight hinge prep. Levels 1, 2, 3 and 6 come standard with 4 ¹/₂" hinge preps up to 3480 doors - Levels 4, 5, 7 and 8 are recommended to be prepped for continuous geared hinge.

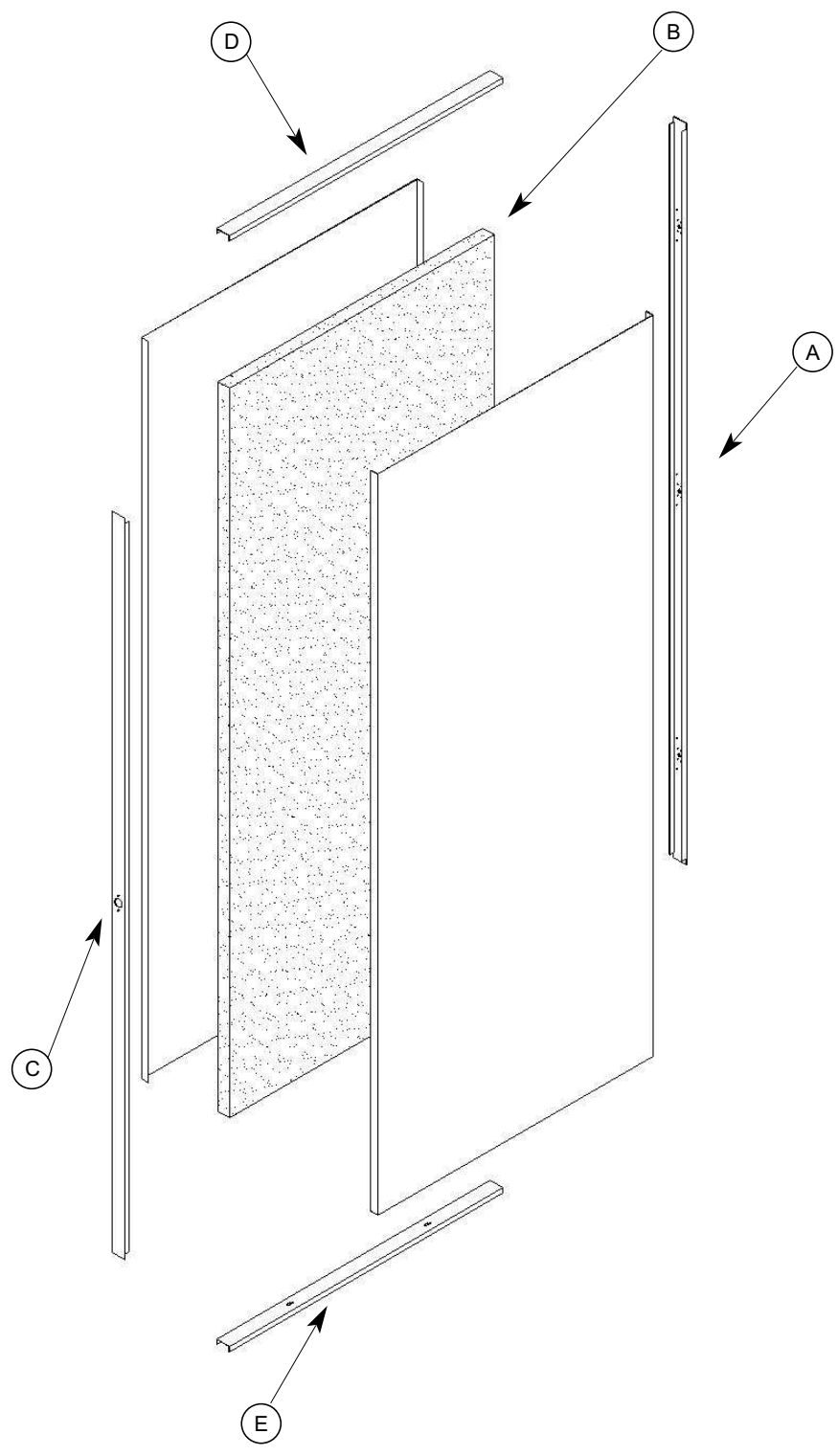
Handing Design: Non-Handed standard

Lite Kits: Available (Contact Factory)

Doors • Bullet resistant

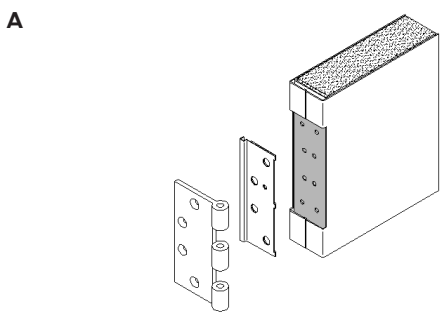
Construction level 1

Note: See details on next page

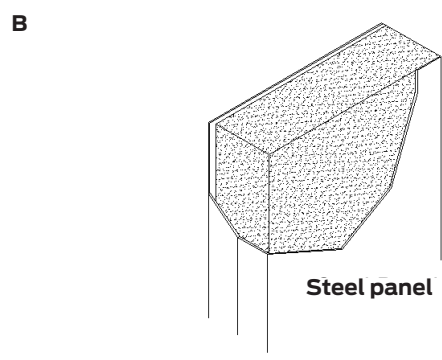


Doors • Bullet resistant

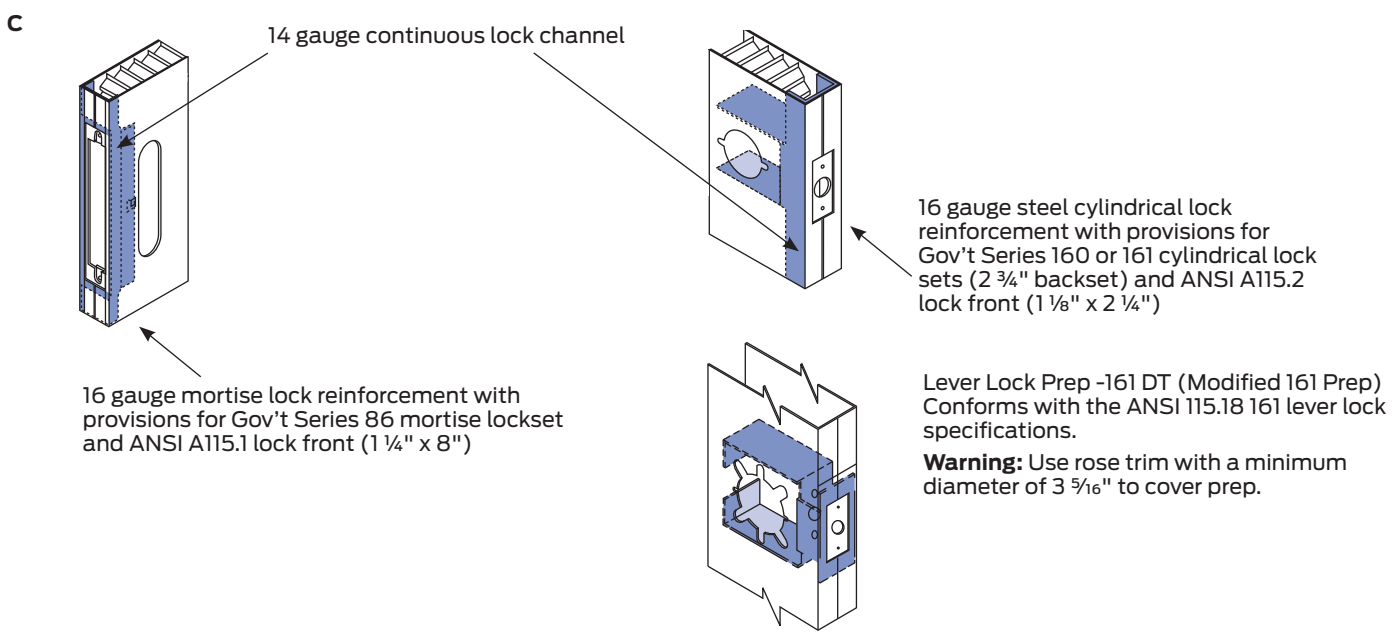
Construction level 1



Shown: 4 1/2" or 5" full mortise template hinges on 1 3/4" doors.
10 gauge continuous hinge channel



Polystyrene Level 1

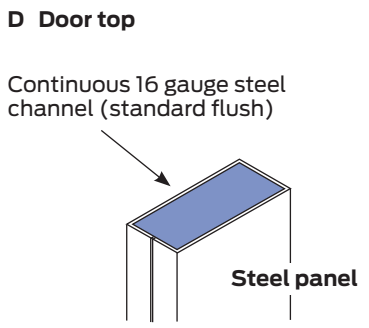


14 gauge continuous lock channel

16 gauge mortise lock reinforcement with provisions for Gov't Series 86 mortise lockset and ANSI A115.1 lock front (1 1/4" x 8")

16 gauge steel cylindrical lock reinforcement with provisions for Gov't Series 160 or 161 cylindrical lock sets (2 3/4" backset) and ANSI A115.2 lock front (1 1/8" x 2 1/4")

Lever Lock Prep -161 DT (Modified 161 Prep) Conforms with the ANSI 115.18 161 lever lock specifications.
Warning: Use rose trim with a minimum diameter of 3 5/16" to cover prep.

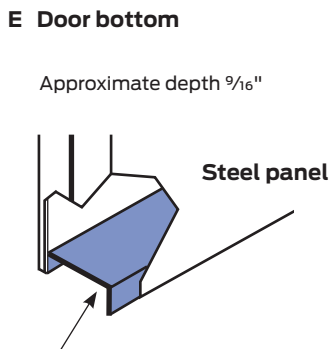


D Door top

Continuous 16 gauge steel channel (standard flush)

Steel panel

When closer reinforcement requested 14 gauge standard (Available on Level 1 only)

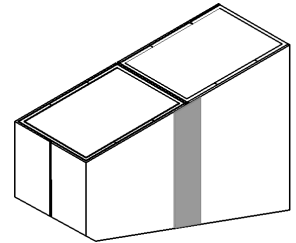


E Door bottom

Approximate depth 9/16"

Steel panel

Continuous 16 gauge steel channel (standard inverted)

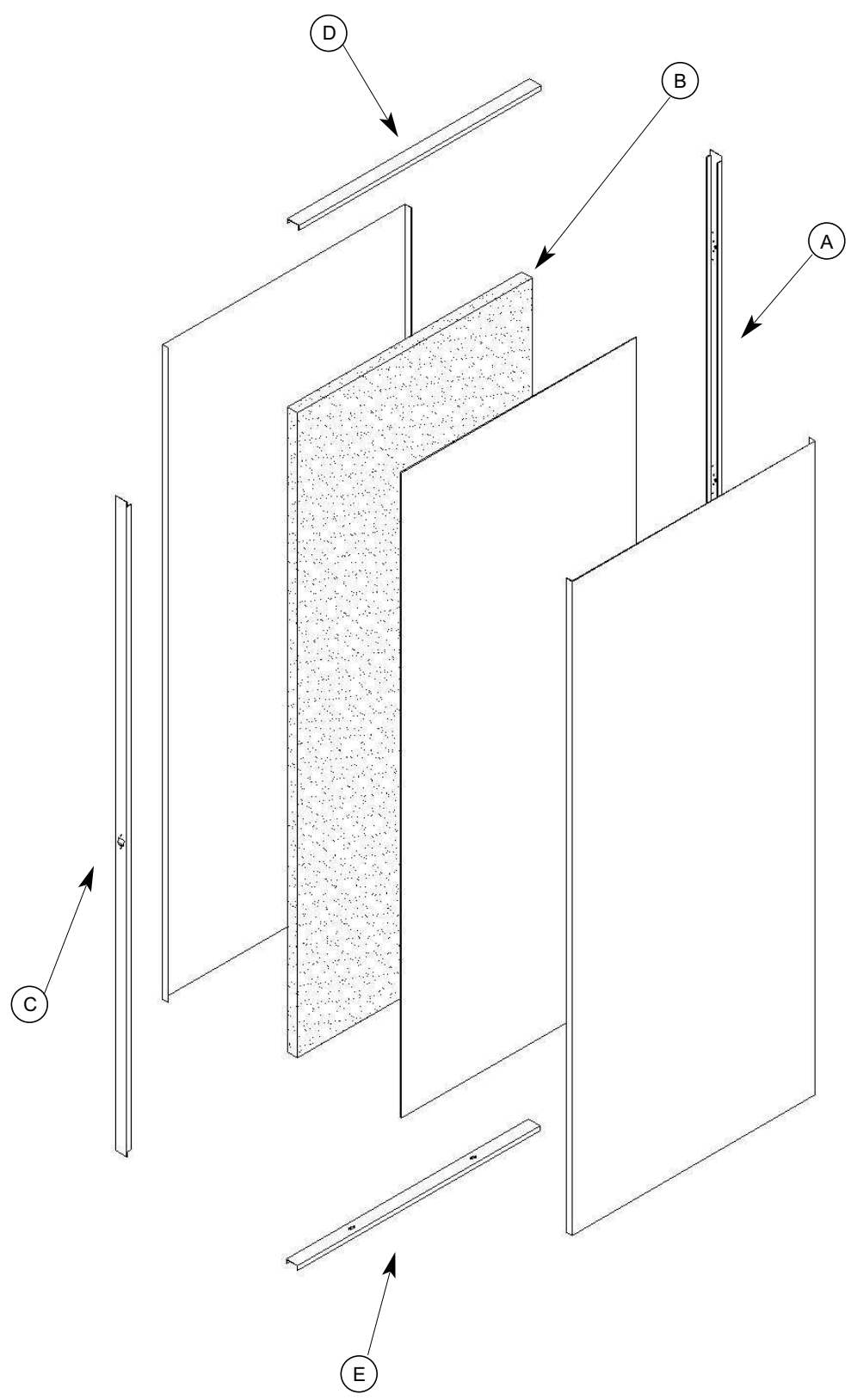


Flat astragal for double doors required (max Level 3)

Doors • Bullet resistant

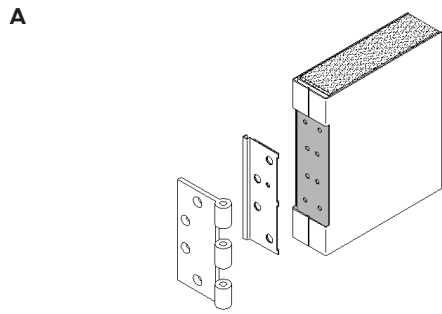
Construction level 2 & 3

Note: See details on next page

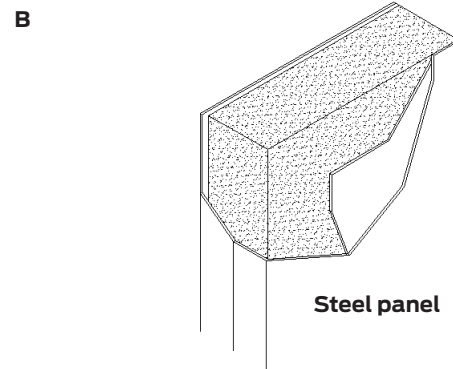


Doors • Bullet resistant

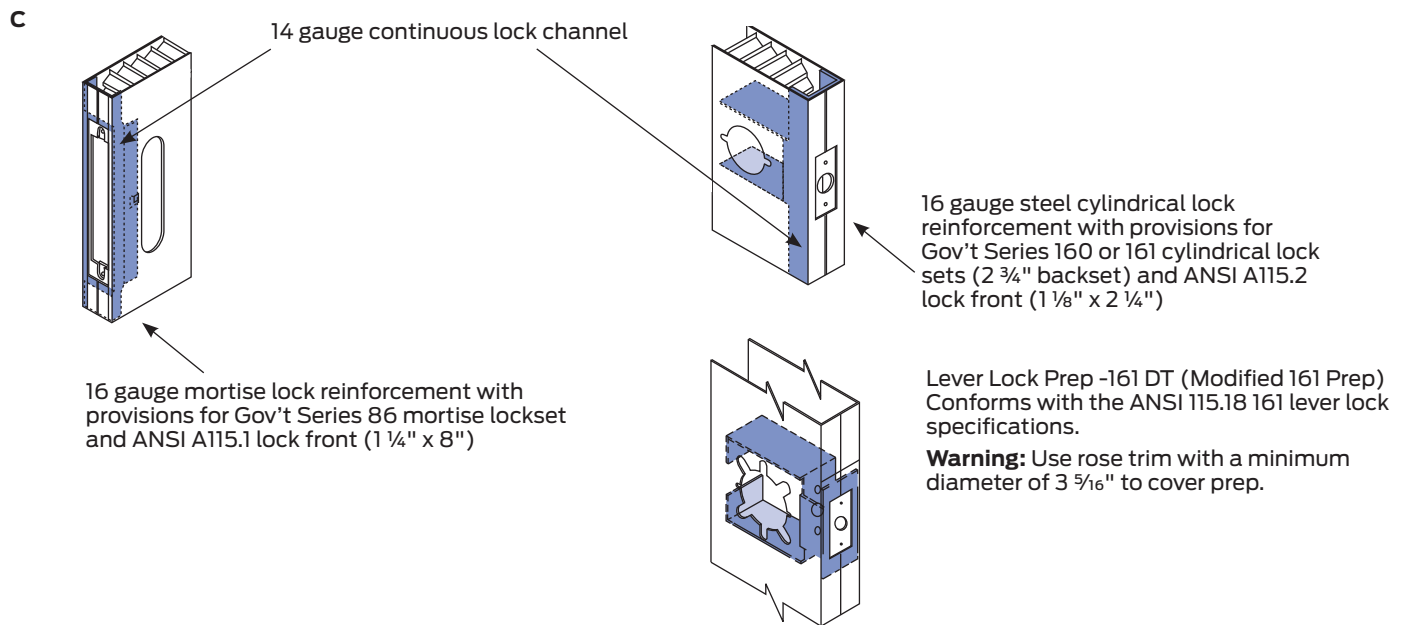
Construction level 2 & 3



Shown: 4 1/2" x 4 1/2" full mortise template hinges on 1 3/4" doors.
10 gauge continuous hinge channel

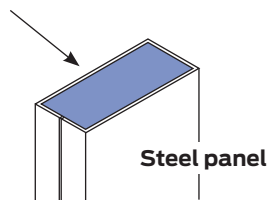


Polystyrene Armor Plate (Level 2 of 3)



D Door top

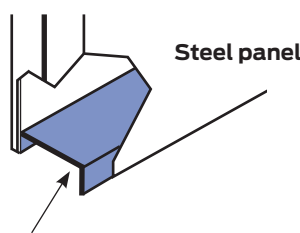
Continuous 16 gauge steel channel (standard flush)



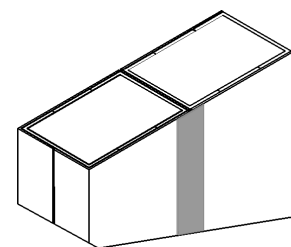
Closer reinforcement not available or necessary

E Door bottom

Approximate depth 9/16"



Continuous 16 gauge steel channel (standard inverted)

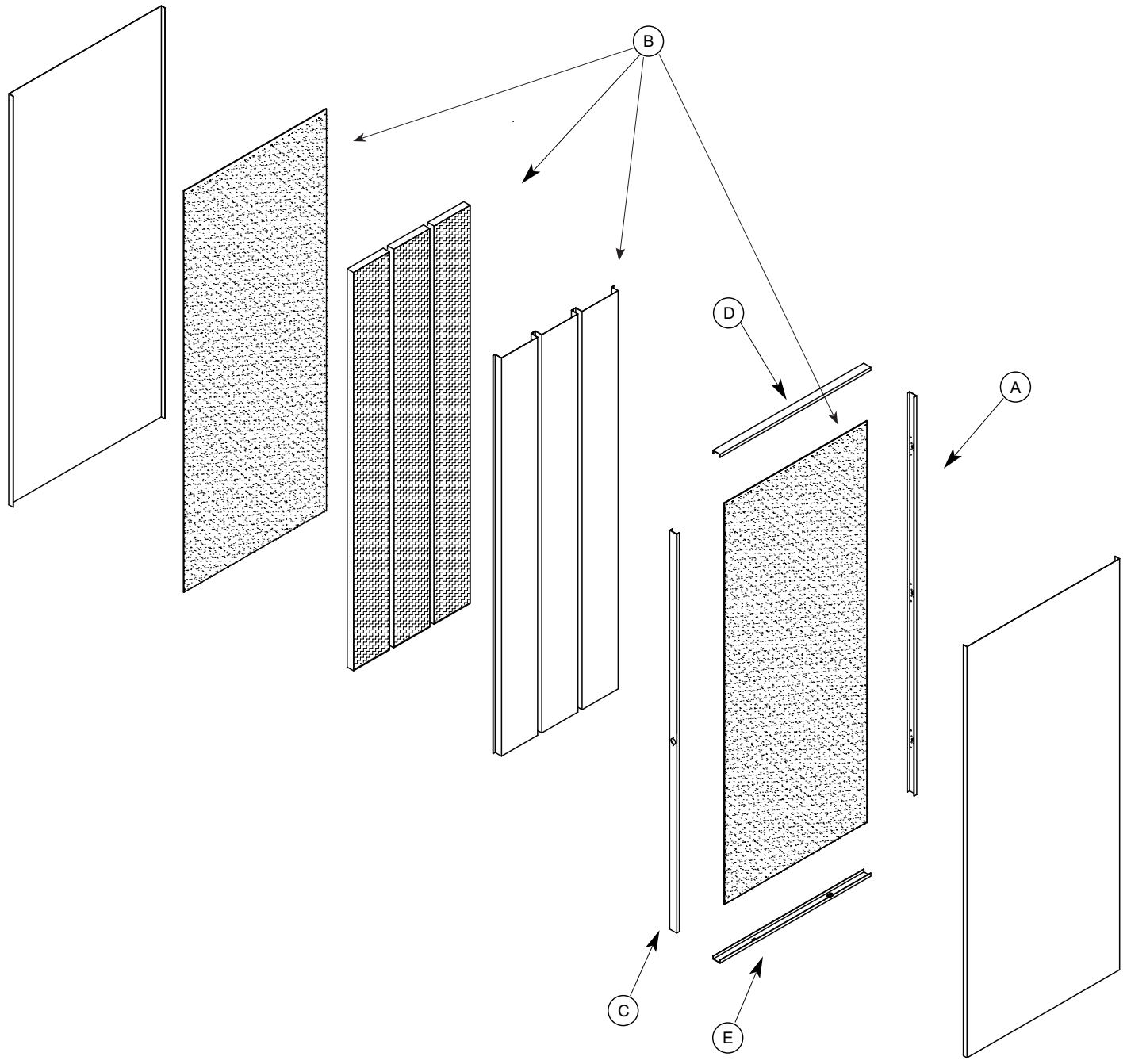


Flat astragal for double doors required (max Level 3)

Doors • Bullet resistant

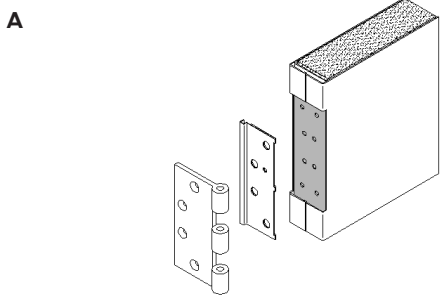
Construction level 4 thru 8

Note: See details on next page

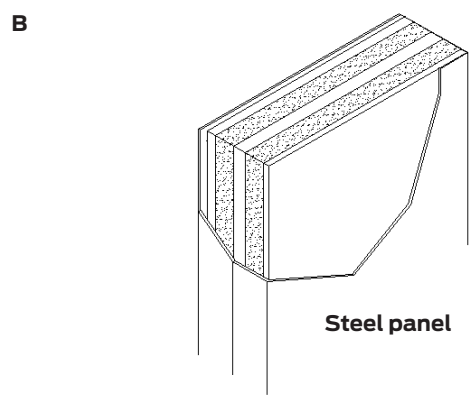


Doors • Bullet resistant

Construction level 4 thru 8



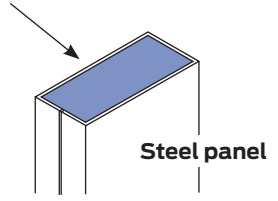
Shown: 4 1/2" or 5" full mortise template hinges on 1 3/4" doors.
 10 gauge continuous hinge channel.
 Continuous hinge application recommended for levels 4 thru 8 due to weight.



Republic proprietary Bullet Resistant Core

D Door top

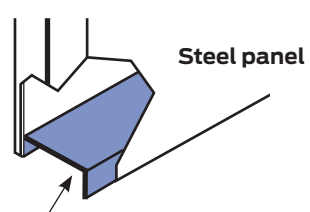
Continuous 16 gauge steel channel (standard flush)



Closer reinforcement not available or necessary

E Door bottom

Approximate depth 9/16"



Continuous 16 gauge steel channel (standard inverted)

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Doors and Frames: FEMA and Tornado

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FEMA and Tornado

Tornados form quickly giving people little time to prepare. Tornado prepared rooms and buildings can provide shelter. Republic's FEMA (Tornado) doors and frames are an important part of the areas of refuge equation. When structures are located in a 250 mph wind zone per ICC 500, the following structures must include an ICC500-2014 storm shelter: 911 call stations; emergency operations centers; fire, rescue, and ambulance stations; police stations, K-12 school buildings with 50 or more occupant capacity.

- Meets or Exceeds ANSI/SDI A250.8-2014; SDI Level 4, Model 2
- Meets or Exceeds FEMA 320 and 361
- Meets or Exceeds ICC 500-2014
- Passes Impact Projectile test (15 lb. 2x4 traveling at 100 mph)
- Passes Pressure test (greater than 302 PSF)
- Multiple hardware options (see below)
- Community Shelters, School Corridors, Home Shelters, Safe Rooms, and other protection areas

Approved Hardware Options:

- Approved hardware and accessories: <http://www.republicdoor.com/pdf/techdata/ICC500-2014FEMAHardware&AccessoryApprovals.pdf>
- Approved Allegion latching hardware
 - Lever: Schlage LM9300 Series (singles/pairs, 3068 thru 8080)
 - Panic Exit: Von Duprin WS 98/9927 and WS 98/9957 Series (singles/pairs, 3068 thru 8080)
 - Securitech options

Tech Data

Project Installation: <http://www.republicdoor.com/pdf/techdata/RepublicFEMAProductInstallationGuide.pdf>

Republic DF Tornado Product Technical Data

Compliance, Industry Standards, and Product Listing Approvals for Tornado:

SDI Certified: <https://www.steeldoor.org/sdicertified.php> Republic is a proud member of a distinguished group of companies that are regularly audited to ensure they meet SDI's rigorous manufacturing, performance and quality standards for the Hollow Metal Industry.

Doors and Frames • FEMA and Tornado

SDI Membership communicates compliance with industry standards including ANSI/SDI A250.8 (Specifications), ANSI/SDI A250.10 (Prime Paint), ANSI UL 10C (Fire), UL 1784 (Air Leakage), ANSI/SDI A250.4 (Physical endurance), ANSI/SDI A250.6 (Hardware reinforcing), ASTM A1008 (CRS), ANSI/SDI A250.3 (Finish coatings), ASTM A653 (Galv; All Tornado products are Galvannealed), and SDI 117 (Tolerances).

NAAMM <http://www.naamm.org> and **HMMA** <http://www.naamm.org/division/5> National Association of Architectural Metal Manufacturers and Hollow Metal Manufacturers Association (division 5).

NFPA 101 <http://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=101> Life Safety Code 2009.

IBC 2015: International Building Code.

ANSI 117.1 <https://codes.iccsafe.org/public/document/toc/559/> Accessible and Usable Building and Facilities.

ICC500-2014 <https://www.fema.gov/media-library/assets/documents/110209> Minimum criteria for life safety (tornado)

FEMA 320 <https://www.fema.gov/fema-p-320-taking-shelter-storm-building-safe-room-your-home-or-small-business> / **FEMA 361** <https://www.fema.gov/media-library/assets/documents/3140> Guidance for safe rooms (tornado).

WH https://whdirectory.intertek.com/Pages/DLP_Search.aspx Tornado product certification from Warnock Hersey.

Intertek: Tornado Assembly product listing.

UL <http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.html> Underwriters Laboratories, Inc. Codes & Standards.

NFPA <http://www.nfpa.org/codes-and-standards> National Fire Protection Association, Codes and Standards.

SDI Level / Model:

Level 4 and Model 2 (Maximum Duty Performance Level A, Seamless) (Standard).

Fire Label Range:

20 min thru 3 hours. 90 minutes with tornado glass factory installed. All Fire Rated doors must be installed in accordance with the National Fire Protection Association Pamphlet 80 (NFPA 80) and/or the local Authority Having Jurisdiction.

Installation:

Installers must be experienced and capable. See available Republic FEMA Product Installation Guide <http://www.republicdoor.com/pdf/techdata/RepublicFEMAProductInstallationGuide.pdf> as needed. Standards and code requirements must be followed. Installation of all Steelcraft frames and doors shall conform to the published Steelcraft installation instructions, ANSI A250.11-2012 (formerly SDI 105) Recommended Erection Instructions for Steel Frames, and HMMA 840. Installation of Republic DF Tornado System must conform to corresponding Intertek opening requirements, in compliance with FEMA 361 and ANSI ICC500-2014.

Frames <http://www.steeldoor.org/pdf/steeldoorinstallationinmasonryconstruction.pdf> PDF of steps with images: “Steel Door Frame Installation in Masonry”

Installation video <http://www.steeldoor.org/videos.php#videos> Select "how to Install Frames in Masonry Construction"

Doors <http://www.steeldoor.org/videos.php#videos> Door installation videos: Select “how to Install a Steel Door”. In addition to checking for fire labels as stated in this video, check also for ICC500-2014/FEMA 361/320 labels on doors and frames.

Troubleshooting <http://www.steeldoor.org/videos.php#videos> Troubleshooting videos: See Troubleshooting videos section

Approved Frame Anchors:

Anchoring is supplied from the factory and is specifically configured to you order based on communication of wall condition (e.g. concrete or CMU block). Anchoring is approved by Intertek Testing Services / Warnock Hersey (ITS/WHI), supported by testing or 3rd party PE reports. Further information is available to customers upon request.

(1) New Masonry - Frame must be grouted full. Jamb base anchor is used.

(2) Existing Masonry - Factory weld-in tube and strap with punch and dimple and bolts provided. Communicate your wall condition to receive appropriate anchoring from the factory.

Frame, Standard specifications:

Strong 14 Gauge A60 Galvannealed Steel: Superior strength and corrosion resistance on exterior openings.

Die-mitered Corner Connections: Head and Jamb tight/closed miters standard for an attractive, strong corner connection. Available KD or Welded from the factory.

Patented Universal Hinge Preparations: Allow for easy field conversion between standard and heavyweight hinges.

Doors and Frames • FEMA and Tornado

Hinge Reinforcement: Hinge edge is beveled with 7 gauge steel hinge reinforcements (alt full mortise continuous hinges use 14 gauge steel full length reinforcements on both the door and frame)

Strong, Reinforced Lock Rail: Lock edge is beveled and reinforced with a continuous 12 gauge steel channel (projection welded)

Durable Head Reinforcement: 12 gauge steel

Rugged Strike Reinforcement: 12 gauge steel center strike reinforcement with 14 gauge (alt 12 gauge) head/sill strike reinforcement.

Adjustable Base Anchors: Allow adjustment in installation when the floor is not perfect. Note that floors and walls in tornado openings should be level, plumb and square and held to a higher standard than typical construction for this critical life safety product functionality with approved hollow metal, hardware and accessories.

Factory Applied Baked-on Rust Inhibiting Primer: Durable frame protection with finish paint options available.

Closer Reinforcements: When specified shall be 14 gauge steel.

Opening Sizes: Shall not exceed the smallest and largest sizes tested and approved per ICC 500-2014. Available sizes shall be publicly available on Intertek or UL listing websites.

Size Availability: 3-sided (flush and glazed): Single 3068 thru 4080; Pair 6068 thru 8080.

Size Availability: 4-sided (shutters): Single 2843 thru 4080; Pair 5443 thru 8080.

Jamb Depth: 5-3/4" thru 10-3/4"

Frame Face: 2" Face with 4" Face head option (4" face head must be grouted full)

Supplied: KD or Welded

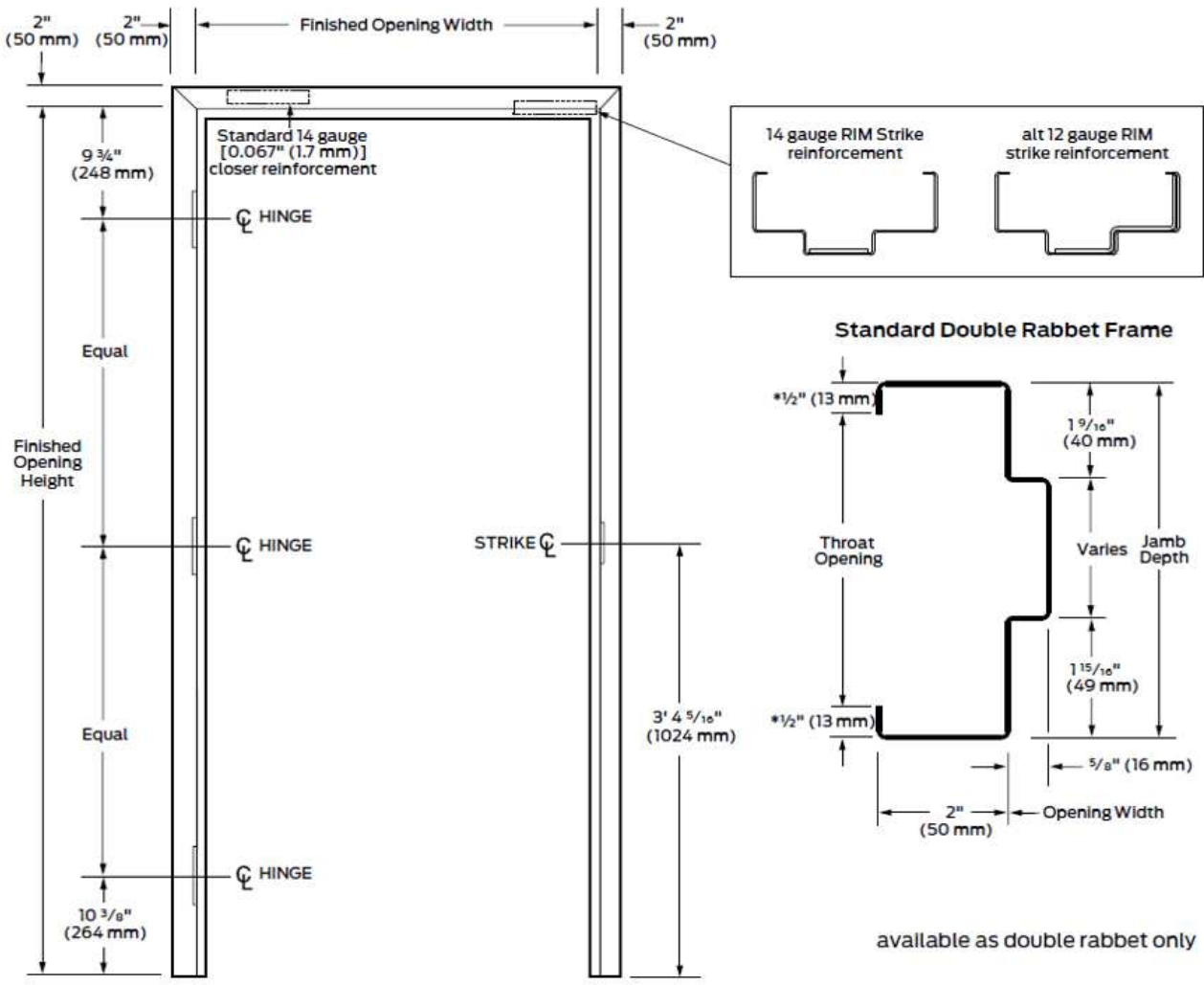
Profile: Double rabbet only (see detail image on next page)

Frames Supplied: KD or Welded

Adhesive stick-on type silencers: Recommended (3) per strike jamb on single and (2) per head for pairs, field installed (not provided from the factory)

Fire Rating: Where called for by the door and hardware schedules, Tornado Doors, Frames, Shutter, and Glass lights shall be identified by an official metal label or etching (for glass) to signify tested approval from ITS - Warnock Hersey or Underwriters' Laboratories, to UL 10C protocols.

Doors and Frames · FEMA and Tornado



Door, Standard specifications:

Steel Stiffened Core Construction: Stiffeners welded to one face sheet and attached with epoxy to the opposite face sheet

Seamless, Full Height, Mechanical Interlock Edges: Lock and hinge edges welded and filled smooth for structural support and stability the full height of the door

Full Height Lock Side Reinforcement Channel: Ensure structural stability under extreme pressure conditions with 12 Gauge Top and 14 Gauge bottom steel reinforcement

Top and Bottom Reinforcing: 14 Gauge Inverted Top and Bottom Channels

Beveled Hinge and Lock Edges: Create tight installation tolerances and ensure better operation, eliminating binding

Universal Hinge Preparations: Allow for easy field conversion between standard and heavyweight hinges

Hinge Reinforcement: Durable 7 gauge hinge reinforcement

Closer Reinforcement: 14 gauge steel, Standard

Factory Applied Baked-on Rust Inhibiting Primer: Durable protection in accordance with ANSI A250-10, with finish paint options available.

Corrosion Resistant Steel Construction: Standard A-60 Galvannealed Steel for resistance against corrosion on exterior openings.

Size Availability (3-sided flush and glazed): Single 3068 thru 4080; Pair 6068 thru 8080.

Face Skins: Maximum Duty 14 gauge galvannealed steel

Thickness: Hollow Metal Standard 1 3/4"(+/- 1/16")

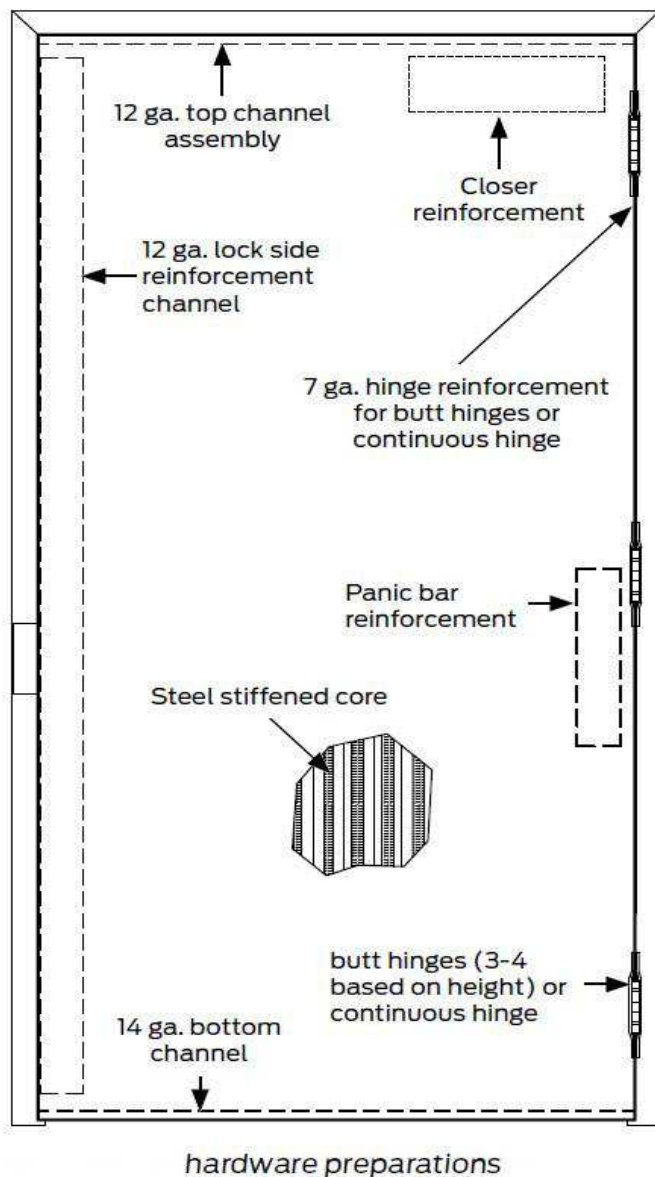
Replace “Actual Door Size” with Tight fit with Minimal air infiltration: Actual Door Size is undersized from nominal by 3/16" width and 1/8" height plus door undercut. Along with beveled edge construction, doors are built with a tight tolerance fit and minimal air filtration with 3/32" gaps at each jamb and 1/8" gap at the head.

Handing Design: Frames and Doors are handed

Custom Door Undercuts Available: Customizable based on threshold and hardware requirements. Standard 3/4" undercut based on using a 1/2" threshold and required latching gaps. Required gap from bottom of door to top of floor strikes is 1/8"-1/4" for Schlage LM9300; 1/8" for Von Duprin WS98/9927 & WS98/9957. Hardware installation instructions must be followed. The manufacturer's strike must always be used and cannot be unduly modified. Bottom strikes must be anchored (LM) or grouted (WS) into the foundation slab. When used, thresholds must be grouted full in the strike area with the strike protruding out of the top of the threshold and sitting flush on top of the threshold. When using a Zero 566A rabbeted threshold with a WS device, the bottom latch housing is mounted above the bottom door edge to achieve the required gap. See 566A/304L Strike Install Instructions <http://www.republicdoor.com/pdf/techdata/566aRabbetedandWSinstall.pdf>

Pair Meeting Edge: Inactive leaf with ASA strike may use astragal. Cutout only. No tabs on astragal. Can use astragal with LM9300, but not with panic exit unless surface bolts on inactive leaf are used. When not using astragal, gap can be filled with Zero gasketing.

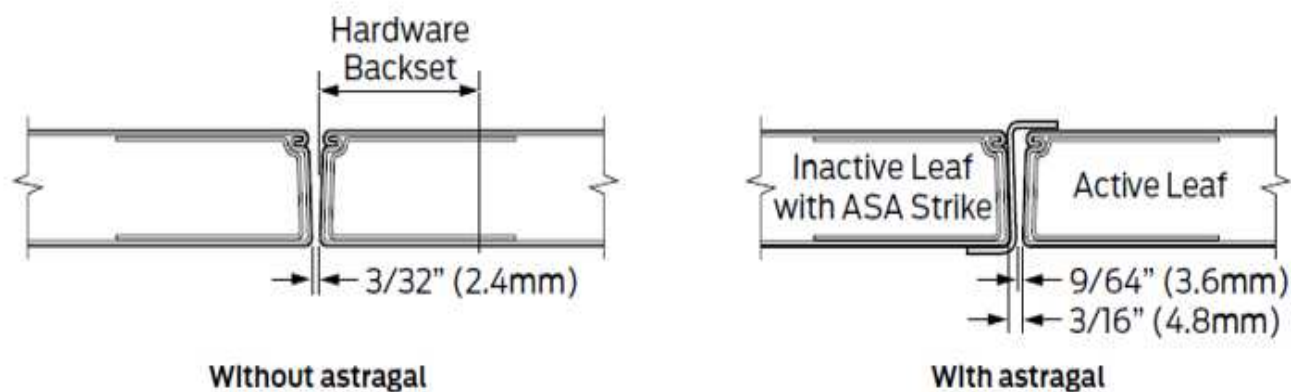
See hardware manufacturer installation instructions for more information.



Electrical Preps:

Options will be reviewed by engineering at the time of order and will not be available for electronic ordering. The following options are available:

- Power transfer units (EPT2, EPT10)
- Electric hinge
- Electric door closer utilizes the same preps shown in "closers"
- Magnetic hold opens utilize the same preps shown in "closers." Must be outswing and must be located away from hardware/rod locations to avoid interference.
- Door position switch (round) must be mortised into edge or top of door
- Magnetic switch (rectangle) must be mounted to exterior or storm side only
- Auto operator allowed on exterior, or storm side, only and must use high frequency hinge reinforcement and 5" heavyweight hinges.

Meeting edge details for pairs of doors:**Glass Lights:**

Tornado approved by Intertek per ICC500-2014 testing procedures. Available in 3-sided frames only. Fire Rated or non-rated. Glass light assembly including glass, steel trim and bolts are installed from the factory only. DF Tornado lights come fully installed from the factory, including glass, steel trim and bolts. The light assembly cannot be replaced or modified without nullifying tornado code labels.

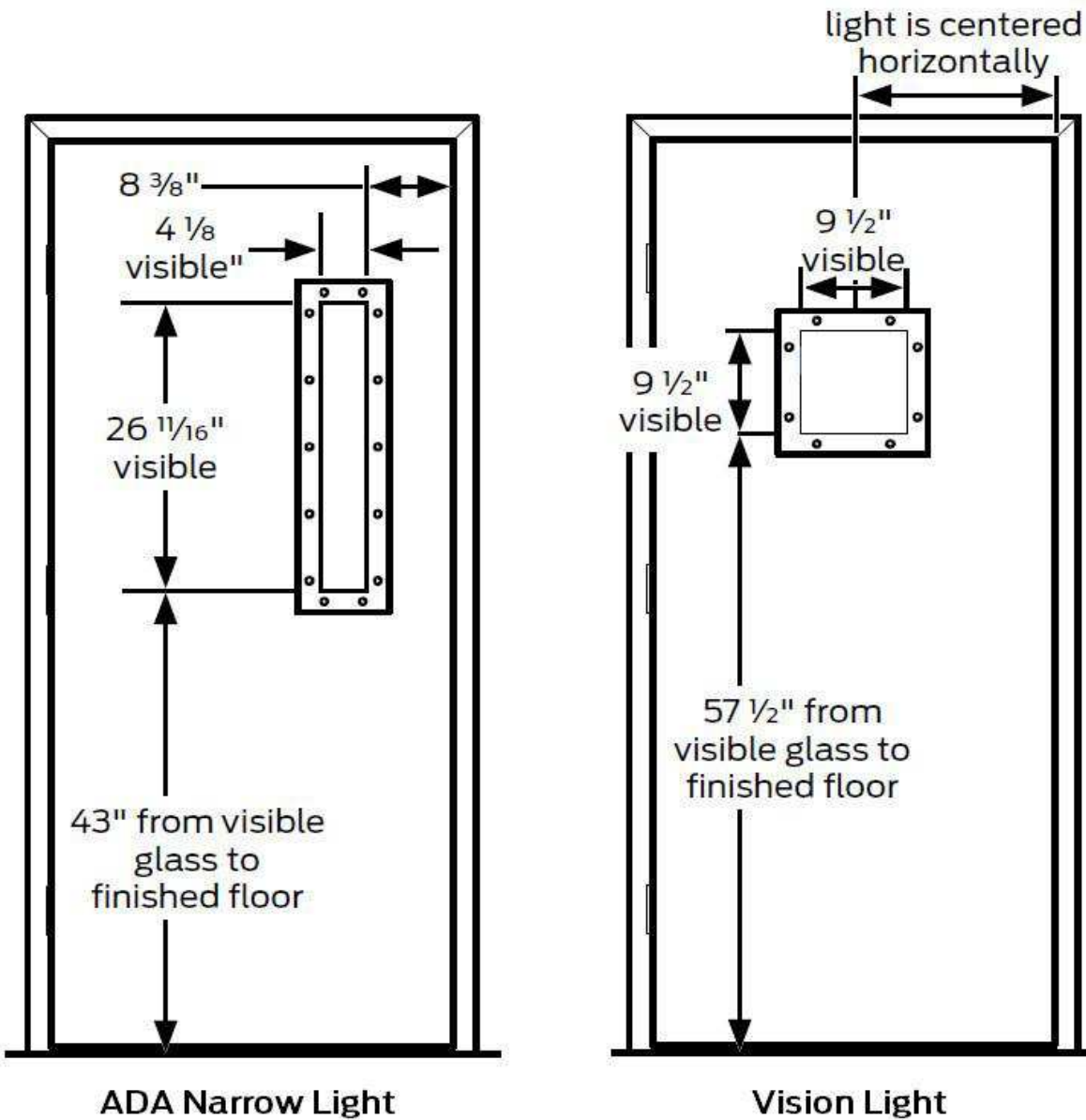
Options include PV (vision) and PN (narrow; ADA compliant/43" visible glass AFF) Labeled Light designs without modification. Lights can be added to any DF Tornado door available in a 3-sided frame. Lights are not available in variable sizes or locations. Fire rated versions (PVF and PNF) are available up to 90 minutes. Additional information is available to customers upon request.

Glass Light Care and Instructions:

When you receive your door, the glass will have a care instructions which include the below information:

1. Do not remove the label until after finish paint and ready to seal the glass trim
2. Painting: Do not powder coat your door to avoid exposing to extremely high temperatures that could damage components and affect performance.
3. Caulk/Sealant: A quality glass trim sealant must be applied to any weather-facing glass and trim to avoid water infiltration and corrosion over time. Apply sealant along full perimeter with no gaps between trim and glass, and between trim and door. Caulk may also be added to the non-storm side of the door as well for added protection and for visual preference.
 - For fire rated assemblies with glass, a UL classified fire rated sealant must be used
4. Do not cut on/take care not to damage: The outer layers of your DF Tornado glass are typical of other window glass that can be scratched and can break. Please take care. Broken glass will void your tornado label and must be replaced by replacing the entire tornado door with glass.
5. Film layer: The non-storm facing side of the glass has a protective coating. Take care not to damage or remove. Do not use masking tape and do not otherwise scratch, damage or pull this film off.
 - The coated side is on the non-storm side of the door, identified by the side of the glass trim with visible Phillips head trim bolts.

- 6. Cleaning: Do not use abrasive agents and/or bristle brushes when cleaning your glass surface. Use synthetic/soft cloths. Use common window cleaning solutions (ammonia solutions allowed 30 days after installation).
- 7. Replacement: If the film is damaged, call Steelcraft support at (877) 671-7011 to schedule replacement by an authorized representative. It is critical to door performance to resolve this condition as soon as possible.

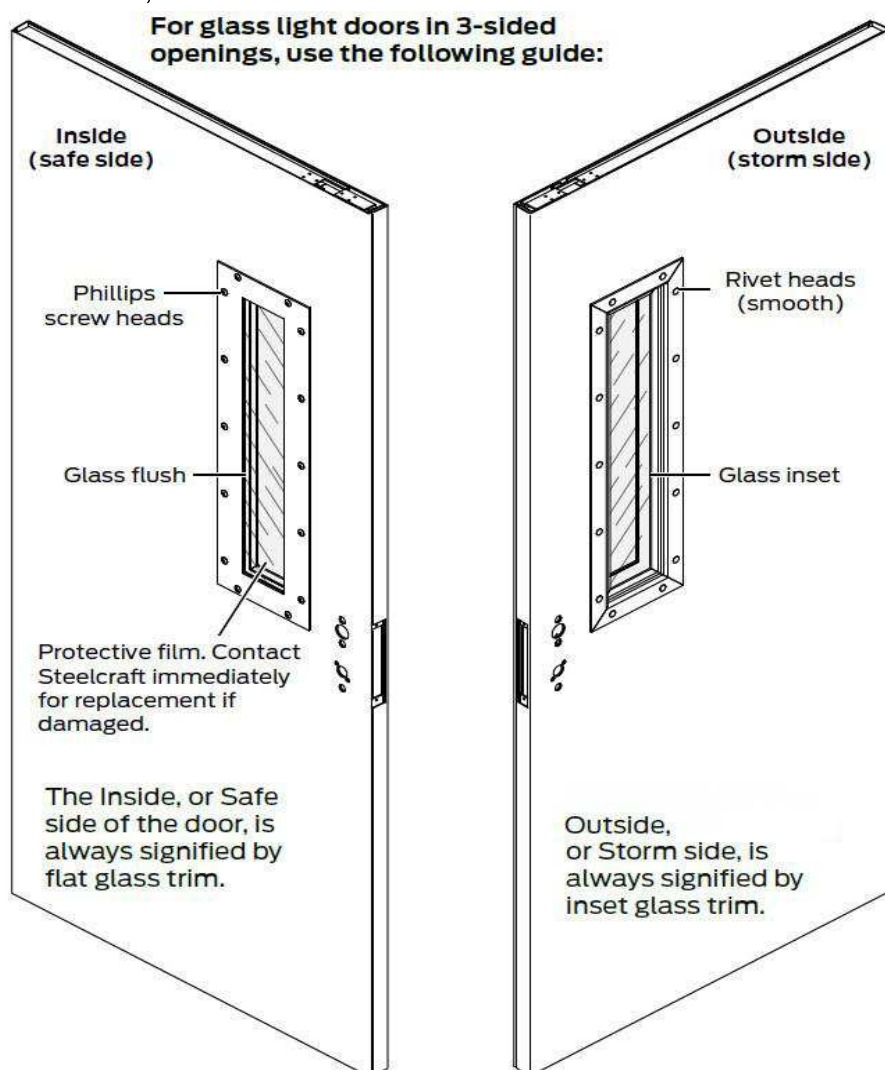


DF and Glass light handing:

Correctly understanding handing in ordering and installing tornado products is critical to life safety. In referencing typical Handing procedures diagrams (SDI Handing chart <https://www.steeldoor.org/T-DOC/SDI-111.php>), use the following IMPORTANT rules when considering Tornado openings.

Doors and Frames • FEMA and Tornado

- The Exterior, or Outside, is always the Storm side (the side of the door that faces a storm). Typically this is the Key Side, but not always (e.g. not typical, but if the shelter is the hallway and a connected classroom is outside of the shelter, the outside of your door would face the classroom since that is the side facing the outside, or storm side, of the shelter).
- The Interior, or Inside, is always the Safe side (the side on the inside of your shelter or safe room). Typically this is the non-Key Side, but not always (e.g. not typical, but if the shelter is the hallway and a connected classroom is outside of the shelter, the inside of your door would face the hall since that is the side facing the inside, or safe side, of the shelter).
- Note that DF doors may be inswing or outswing when using lever trim. But DF doors with panic exit hardware will always be outswing with the panic bar on the safe side and the door opening out towards the Outside, or Storm side.



Shutters (4-sided frames):

Size Availability: Single 2843 thru 4080; Pair 5443 thru 8080.

Glass: Non-impact resistant glass (provided by others) can be installed in exterior (storm side) rabbet of frame.

Shutter handing:

Most shutter applications should be ordered as straight handed.

Straight handed shutters (Figure 1: Straight handed shutters): Shutters with glass in a 4-sided frame are always straight handed. If the shutter opening does not have glass, but is still installed into the rabbet nearest to the inside/shelter/safe side of the opening, then the shutter is still straight handed.

Reverse handed shutters (Figure 2: Reverse handed shutters): Shutters without glass that are installed into the rabbet nearest to the storm side of the opening is reverse handed. This option would not have glass.

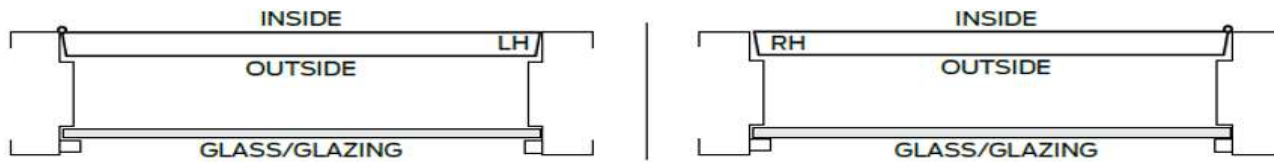


Figure 1: Straight handed shutters

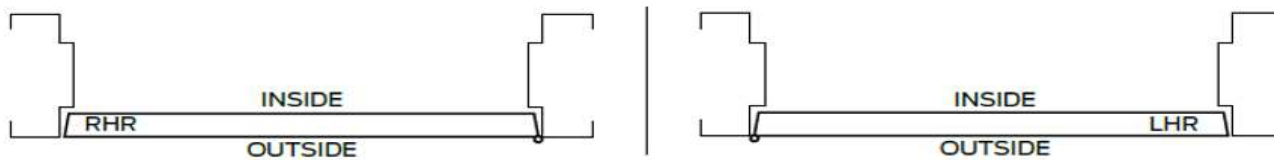


Figure 2: Reverse handed shutters

Gasketing:

1. Avoid special gasketing with tornado. Maintain proper latching and avoid potential binding or interference.
2. Avoid surface auto door bottoms since they can interfere with the bottom latch.
3. Door sweeps such as Zero 8192 or 8198 can be used.
4. Perimeter seals such as Zero 488 are less likely to bind versus other models.
5. Meeting edge on pairs could use Zero 8217 or 328.
6. Surface mounted seals (Zero 475AA) works well but needs to be cut short to fit around the closer mounting and sometimes the WS RIM strike mounting.
7. Use a continuous hinge to seal the jamb edge.
8. Do not use a top jamb and lock jamb seal to avoid cutting around latches in the field (point of frustration for installers and architects).
9. If a regular egress, jamb applied seals are used with a mortise device or strike plate mounting bracket by top jamb closer to complete the perimeter seal.

Zero Gasketing and Thresholds Recommendation for Tornado Applications

Type	Zero Models used with tornado	Most Recommended Zero models
Saddle	545, 546, 547, 548, 655, 656, 657, 670	655a w/ or w/o "V3" full body option
Rabbeted / Bumper	566A, 568, 65A	65A. For WS device use 566A only.
Perimeter head and jamb (self-adhesive)	188S, 488S, 8145S, 117S, 8042S, 8150S, 8144S	488
Perimeter head and jamb (screw-applied)	50, 139, 312, 314, 326, 328, 429, 8303, 485, 870, 475AA	475AA
Meeting edge (screw applied)	55/555, 55FS/555FS, 326, 328, 99, 100, 873	8217, 328
Sweeps and door bottoms & auto door bottom	39, 339, 328, 329, 50M, 539, 8191, 8197, 8198, 8192, 8193, 111, 153, 354A, 355 ^a	8192, 8198

ICC 500-2014 Approved Latching Hardware:

Latching hardware: Von Duprin® and Schlage® hardware in The Republic Series door system are available in compliance with FEMA 361 and ANSI ICC500-2014 with factory attached ITS/WHI Intertek listed or approved opening labels in the configurations shown below.

For complete Assembly Approvals, contact tech support. The Authority Having Jurisdiction is the final authority in issues related to the installation and use of any building products.

Republic Series door system is tested as a complete door frame and hardware system. Door, frame and anchors must be ordered from Republic. When specified, ITS/WHI fire door labels are factory attached stating listings in accordance with UL10C Fire Resistance Ratings in the configurations shown below.

Schlage and Von Duprin Latches				Single Outswing		Single Inswing		Double Outswing		Double Inswing	
Brand/Model	Vertical Rod	Latches	Exit	Tornado	Fire	Tornado	Fire	Tornado	Fire	Tornado	Fire
*Schlage LM9300	Concealed	3 point	Lever	Yes	3 hr	Yes	3 hr	Yes	3 hr	Yes	3 hr
Von Duprin WS98/9927	Surface	2 point	Panic exit	Yes	none	No	n/a	Yes	90 min	No	n/a
Von Duprin WS98/9957	Surface	3 point	Panic exit	Yes	3 hr	No	n/a	No	n/a	No	n/a

- 1) LM9300 Inactive leaf must use IVES SB360 surface bolts.
- 2) WS devices available with EO (exit only). NL (night latch not available. Electric options include LC, RX, RX-2, ALK, SS, QEL, E996L E-Trim.
- 3) See data sheets and installation instructions in the Allegion online library <https://us.allegion.com/en/home/document-library/all-documents.html> for more information.

ICC 500-2014 Approved DF Tornado Hardware and**Accessories:****[Print](#)**

Manufacturer	Model	Description	UL Fire listings	Notes
Latches -- Panic Exit hardware; ADA Narrow and Vision lights available with Von Duprin WS devices				
Von Duprin	WS98/9927 with or without (F)	2-point, Panic bar, SVR (no primary), electrified options	R4504 & SA163	Outswing applications only
Von Duprin	WS98/9957 with or without (F)	3-point, Panic bar, SVR, electrified options	R4504 & SA163	
Von Duprin	LGO-3, LGO-4	Latch Guards for ADA to cover bottom SVRs		
Ives	SB360	Top & bottom surface bolts for inactive leaf, any lever	R4942	
Securitech	7T Series	Securitech 3-point, Panic bar, CVR, elect options	R27798	
Securitech	83T Series	Securitech 3-point, Panic bar, SVR, elect options	R27798	
Latches -- Multi-point Lever hardware; ADA Narrow and Vision lights available with all Schlage LM93xx multi-point				
Schlage	LM/LMV93xx	Schlage 3-point lock, Lever	R27031	Outswing & inswing applications
Von Duprin		Von Duprin rods, CVR	R21149	
Securitech	52xx-V	2-point, Lever, CVR (no primary)	R27798	Outswing applications only
Securitech	53xx, 54xx	3 or 4-point, Lever, CVR	R27798	
Securitech	7L and 83L Series	Lever, CVR, HVL, electrified options	R27798	
Latches -- Latching hardware for FEMA 320 only (multi-action release for small business and residential applications <16 occupancy)				

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Securitech	*ATAR System RB-100 Series	ATAR multi-latch system with HVL in conjunction with cylindrical locks shown below		Outswing & inswing applications
Medeco	*Maxum	Medeco Maxum 3-deadbolts in conjunction with cylindrical locks shown below	R18248	
Schlage, Falcon	Cylindrical locks used with Medeco Maxum or Securitech ATAR System	Schlage ND Series, Falcon NT Series	Schlage R3515, Falcon GWVW	
Butt hinges				
Ives	3CB1, 3CB1HW, 3CB1NRP, 3CB1HWNRP, 3CB1SH, 3CB1HWSH, 5BB1, 5BB1HW, 5BB1WT, 5BB1NRP, 5BB1HWNRP, 5BB1SH, 5BB1HWSH, 5BB1HW WT	Ives butt hinges - 4.5 High (0.134 Min) or 5 high (0.146 Min)	R16697	
Ives	TW4, TW8	Ives electric hinge options	BP9752	
Continuous hinges				
Ives	112HD, 112XY, 224HD, 224XY	Ives aluminum geared continuous hinge - nominal leaf thickness 0.110	R16697	
Ives	600, 700, 700Cs, 705	Ives steel pin & barrel continuous hinge - nominal leaf thickness 14 gage	R16697	
Ives	TW8, TWP	Ives electric continuous hinge options	BP9752	
Electric power transfer				
Von Duprin	EPT-2, EPT-10	Von Duprin electric power transfer	SA163	
Closers				
LCN	4000T, 4010, 4010T, 4020, 4020T, 4030, 4030T, 4040XP, 4040XPT, 4050, 4110, 4110T	LCN surface mounted closer	R1943	All surface mounted closers must be attached to door with through bolts per manufacturer's installation instructions. Covers must be attached with steel screws. 4010, 4040XPT, 4000T & 4050 do not open to 180 degrees, so

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Falcon	FALCON SC70 (heavy duty), SC80A, SC60A	Falcon surface mounted closer	R1943	application should be confirmed.
Overhead holder/stop				
Glynn Johnson	70S, 79S, 81S, 90S	Glynn Johnson surface mount overhead holder/stop	R18895	79 Series does not open to 180 degrees, so application should be confirmed.
Electronic door closer				
LCN	4040SE, 4310ME	LCN-sentronic electronic door closer	R1943	4310ME May be mounted on interior or exterior side of storm shelter or safe room. 4040SE exterior side only.
Auto-door operator				
LCN	9542, 9553	LCN auto door operator	R7303	To be mounted only to the exterior side of storm shelter or safe room.
Magnetic holder				
LCN	SEM 7800	LCN magnetic holder	R8327	Extenders not permitted on inswing applications
Door position switch				
Schlage	679-05 (round), 7764 (rectangular)	Schlage door position switch		Must be mortised into the edge or top of the door, and into the door rabbet of the jamb or head of the frame.
Sentrol	1076, 1078 (round), 2757 (rectangular)	Sentrol door position switch	R13778	
Kick plates				
Ives	8400 (Metal or plastic), 8402 (metal)	Ives kick plate	R22142	Must be secured with steel screws. 48" Max height bottom of door only.
Thresholds & gasketing				
Zero			R18465	Must not impede or affect the function of the opening or latching hardware.
Floor & wall stops/holders				
Ives				Attached to exterior with steel screws per manufacturer's instructions. Interior application must be Ives FS495 through bolted to the door, at the bottom only, minimum 6" from lock or strike side of door.

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Frames

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Frames • Universal frames: ME Series/Mitered

Universal frames: ME Series/Mitered

ME Series Mitered Frames shall be as manufactured or furnished by Republic Doors and Frames, McKenzie, Tennessee 38201.

Profile: Made for two basic door thicknesses: 1 3/8" or 1 3/4" Nominal (Consult factory for optional profiles.)

Gauges: 16 or 14

Standard Face: 2"

Standard Rabbets: 1 3/8" (actual dimension 1 9/16"); 1 3/4" (actual dimension 1 5/16"). Rabbet dimension is 3/16" greater than the door thickness.

Standard Stop: 5/8"

Closer Reinforcement (Options): 1 3/8" x 14" x 14 gauge plate

Universal Standard/Heavy Weight Hinge: Frames for 1 3/4" doors shall have a 7 gauge hinge reinforcement plate, projection welded with provisions for 4 1/2" x 4 1/2" template hinges. Hinge plate is designed to be modified to accept a heavy weight hinge.

Frames for 1 3/8" doors shall have a 11 gauge steel hinge reinforcement plate, projection welded with provisions for 3 1/2" x 3 1/2" standard weight template hinges.

Strike Prep: Frames for 1 3/4" doors shall have a 14 gauge steel strike reinforcement plate, extruded and formed to the equivalent of 10 gauge, projection welded with provisions for Universal ANSI A115.1 or ANSI A115.2 strike (4 7/8").

Frames for 1 3/8" doors shall have a 14 gauge steel strike reinforcement plate, extruded and formed to the equivalent of 10 gauge projection welded with provision for Universal ANSI A115.3 strike (2 3/4").

Hinge Backset: 5/16"

Backbend: 7/16" (Single Return)

Anchors: Welded in Sill anchors are included with all ME frames. All other anchors must be ordered separately.

Silencer Prep: 9/32" dia. holes shall be provided as standard on strike jambs and double headers, (3 per strike jamb and 2 per double head). Mutes are not supplied and must be ordered separately.

Double Heads: Double heads are undersized 1/16" (except for cased open heads, which are nominal). Mortar Guards - Mortar guards of 26 gauge steel shall be welded to each hinge and strike reinforcement plate.

Profiles: Equal Rabbet, Unequal Rabbet, Single Rabbet, Double Egress, Cased Opening, Kerf. (Special profiles available, consult factory.)

Shipping: Frames are shipped as components, bundled as one pair of jambs (hinge & strike for single openings or 2 hinge jambs for double openings). Heads are packaged separately. (Option - Unit Bundle)

Handing: Frames are handed.

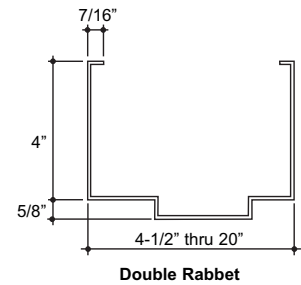
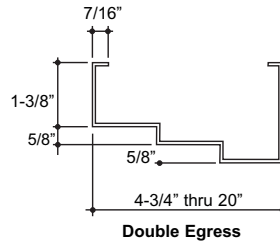
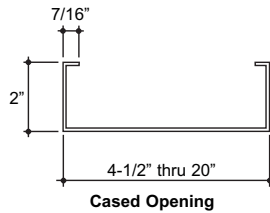
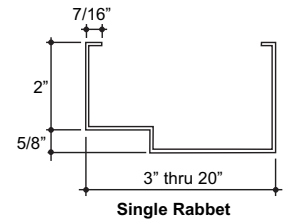
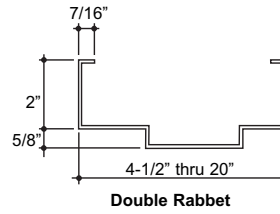
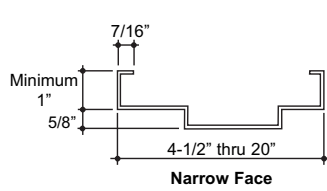
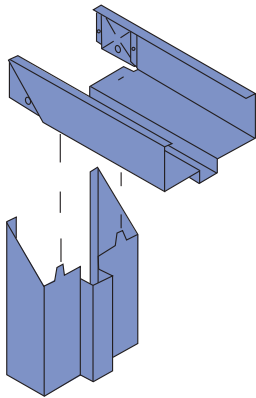
Specifications

- I. ME Series Mitered Frames as manufactured by Republic Doors and Frames, McKenzie, TN 38201 have been tested and adhere to the criteria set forth by the following published standards:
 - A. ANSI A250.8 - Recommended Specifications - Standard Steel Doors & Frames; Steel Door Institute.
 - B. SDI 111 – Recommended Details Standard Steel Doors & Frames, Accessories and Related Components.
 - C. SDI 112 - Zinc Coated Standard Steel Doors and Frames.
 - D. SDI-113 Standard Practice for Determining the Steady State Thermal Transmittance of Steel Door and Frame Assemblies.
 - E. ASTM A366/A 366M - Standard Specification for Steel, Sheet, Carbon, and High Strength, Low-Alloy, Hot Rolled and Cold Rolled, General Requirements.
 - F. ASTM A568/A 568M - Standard Specification for Steel, Sheet, Carbon and High Strength, Low-Alloy, Hot Rolled and Cold Rolled, General Requirements.
 - G. ASTM A569/A 569M - Standard Steel Specification for Steel, Carbon (0.15 Maximum Percent), Hot Rolled Sheet and Strip Commercial Quality.
 - H. ASTM A591/A 591M - Standard Steel Specification for Steel Sheet, Electrolytic Zinc-Coated, for Light Coating Mass Applications.
 - I. ASTM A653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by Hot Dipped Process.
 - J. NFPA 80 - Standard for Fire Doors and Windows.
 - K. A250.4 1994 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors and Hardware Reinforcings.
- II. Frame Construction
 - A. Frames shall be formed from 16 or 14 gauge Cold Rolled, Hot Rolled or Galvannealed Steel. (A60 galvannealed standard) (12 gauge available with notched ends for welding)
 - B. Frames shall be either knocked-down or have corners welded and ground smooth. Corners shall have aligning tabs and slots for secure and easy interlocking of jambs to head. (12 gauge frames shall have notched ends for welding.)
 - C. Frames shall be provided with $\frac{9}{32}$ " silencer preparation, (3) per strike jamb and (2) per head for double openings, for field application after finish painting.
 - D. Frames for 1 $\frac{3}{4}$ " doors shall have 7 gauge steel universal hinge tap plate, projection welded, with provisions for 4 $\frac{1}{2}$ " x 4 $\frac{1}{2}$ " template hinges, and 14 gauge steel strike reinforcement plate, extruded and formed to the equivalent of 10 gauge, projection welded, with provision for Universal ANSI A115.1 or ANSI A115.2 strike. Mortar guards of 26 gauge steel shall be welded to each hinge or strike reinforcing plate.
 - E. Frames for 1 $\frac{3}{8}$ " doors shall have 11 gauge steel hinge reinforcement plates, projection welded, with provisions for 3 $\frac{1}{2}$ " x 3 $\frac{1}{2}$ " template hinges, and 14 gauge steel strike reinforcement plate, projection welded, with provision for cylindrical ANSI A115.3 strike.
 - F. Reinforcement for surface closer shall be 14 gauge steel. Proper reinforcement shall be provided for other hardware when required.
- III. Frame Finish

Frames will be cleaned and phosphatized with one coat of force-cured beige primer, that meets or exceeds ANSI A250.10-2011 and ASTM specification B117 for finishes. (Capable of passing 120 hour salt spray test and a 240 hour humidity test in compliance with ASTM D1735.)

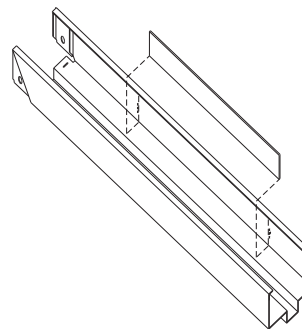
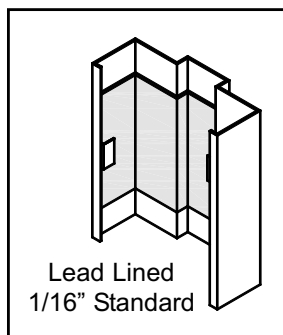
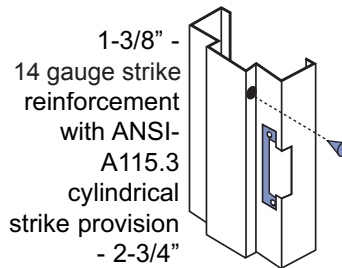
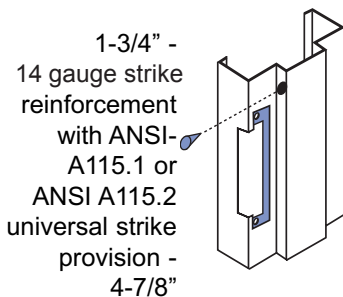
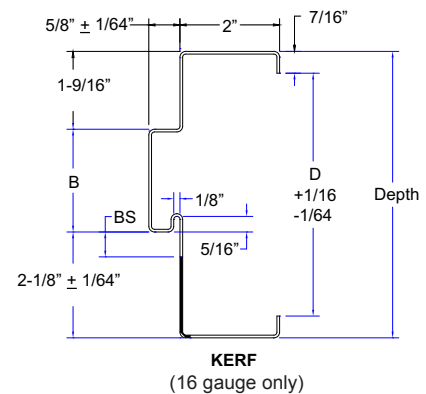
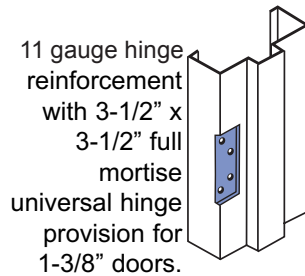
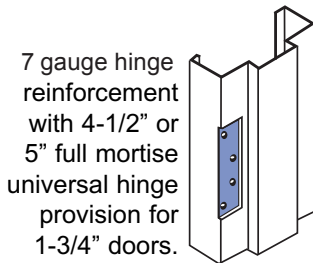
Frames • Universal frames: ME Series/Mitered

Construction details

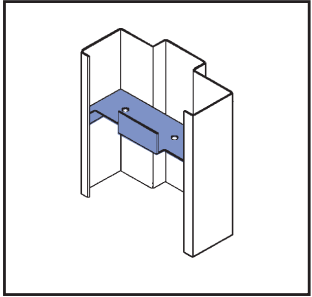


Rough Opening Required for Butted Application
 Door Width Opening + 2 Times Face Dimension + 1/2"
 Door Height Opening + Face Dimension + 1/4"

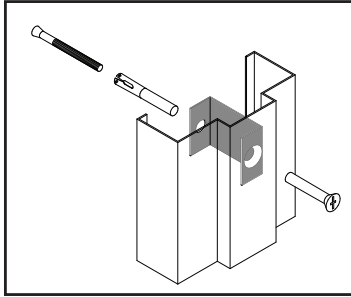
HARDWARE PREPARATION



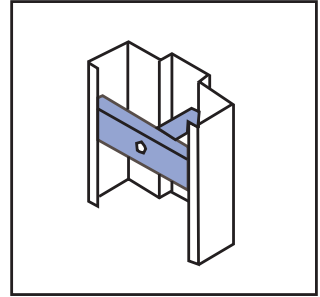
Anchor details



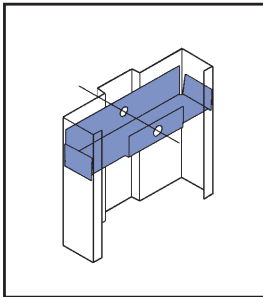
Steel Stud Anchor (stock depth only)



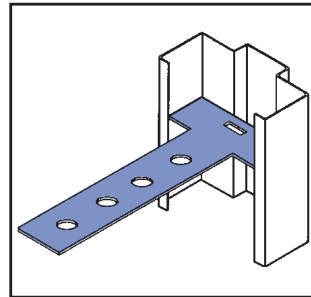
Prepared Opening Anchor (Bolt sold separately)



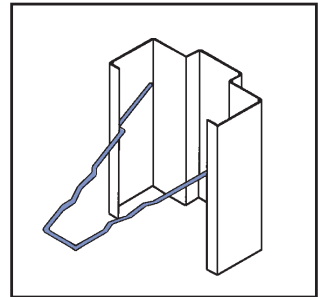
Twist in Prepared Opening Anchor (stock depth only)



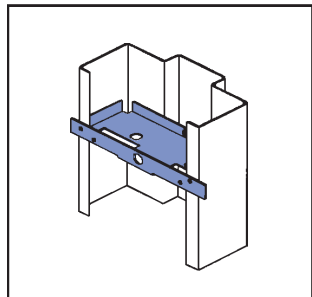
Snap-in Prepared Opening Anchor (stock depth only)



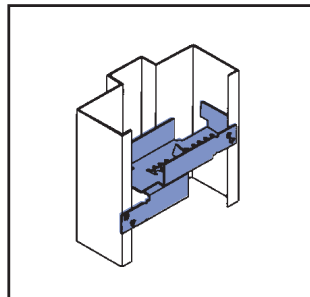
Tee Masonry Anchor



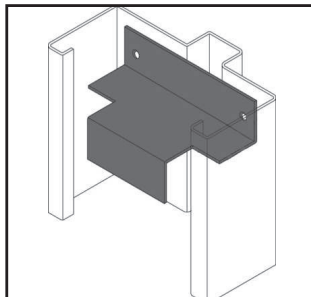
Wire Masonry Anchor



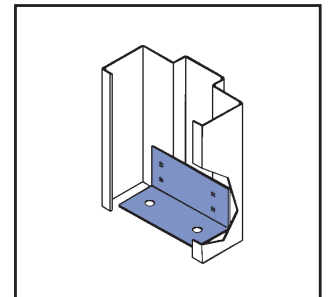
Wood Stud Anchor (stock depth only)



Adjustable Wood/Steel Stud Anchor (Assembled)



'Z' Anchor (standard for non-stock depth with steel stud anchors)



One Piece Sill Anchor Welded On

Frames · ME Series: Bullet resistant

ME Series: Bullet resistant

Levels 1 thru 8

ME Series Bullet Resistant Mitered Frames shall be as manufactured or furnished by Republic Doors and Frames, McKenzie, Tennessee 38201. Tested in accordance to UL752 Ballistic Standards.

Profile: To accommodate 14 gauge door - 2" rabbet (+/- 1/16") Nominal

Gauge: 14 gauge only

Standard Face: 2"

Standard Rabbets: Non-Door side 1 9/16"; Door side 2". Rabbet dimension is 3/16" greater than the door thickness.

Standard Stop: 5/8" standard

Closer Reinforcement (Options): 1 3/8" x 14" x 14 gauge plate. (Available on Level 1 only.)

Size Availability: Maximum Size 5'0" x 10'0" Single; Maximum Size 10'0" x 10'0" Double.

Universal Standard/Heavy Weight Hinge: Frames shall have 7 gauge hinge reinforcement plate, projection welded for provisions for 4 1/2" x 4 1/2" or 5" template hinges. Hinge plate is designed to be modified to accept a heavy weight hinge.

Strike Prep: Frames shall have a 14 gauge strike reinforcement plate, extruded and formed to the equivalent of 10 gauge, projection welded with provisions for Universal ANSI A115.1 or ANSI A115.2 strike (4 7/8").

Hinge Backset: 5/16"

Anchors: Masonry wire, tee and existing opening punch and dimple. Welded in sill anchors are included with all ME frames.

Silencer Prep: 9/32" dia. holes shall be provided as standard on strike jambs and double headers, (3 per strike jamb and 2 per double head). Mutes are not supplied and must be ordered separately.

Double Heads: Double heads are undersized 1/16".

Mortar Guards: Mortar guards of 26 gauge steel shall be welded to each hinge and strike reinforcement plate.

Profiles: Equal Rabbet, Unequal Rabbet, Single Rabbet.

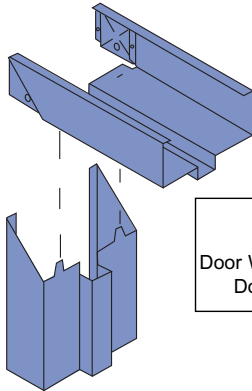
Handing: Frames are handed.

Special Requirements:

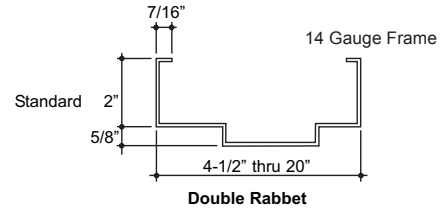
- Levels: 1 & 6 - Available knock down
- Levels: 2, 3, 4, 5, 7, 8 - Must be welded at factory.
- Levels: 4, 5, 7 & 8 - Limited to Prepared Opening Anchor only

NOTE: Doors over 3'6" in width, 7'6" in height or 250 lbs - Republic recommends additional hinge(s) or continuous hinge applications.

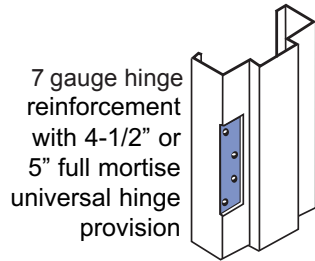
Level 1 & 6 construction



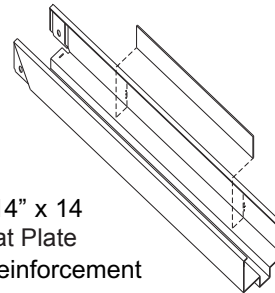
Rough Opening Required for Butted Application
 Door Width Opening + 2 Times Face Dimension + 1/2"
 Door Height Opening + Face Dimension + 1/4"



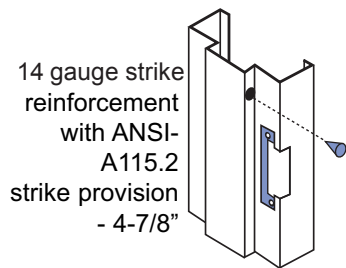
HARDWARE PREPARATION



7 gauge hinge reinforcement with 4-1/2" or 5" full mortise universal hinge provision



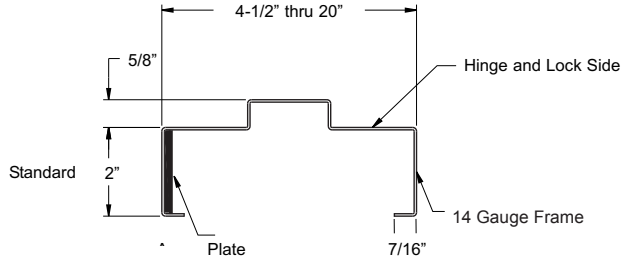
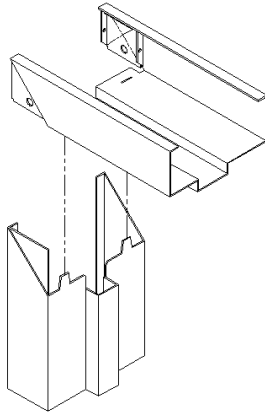
1 3/8" x 14" x 14 gauge Flat Plate Closer Reinforcement (Option)



14 gauge strike reinforcement with ANSI-A115.2 strike provision - 4-7/8"

Frames • ME Series: Bullet resistant

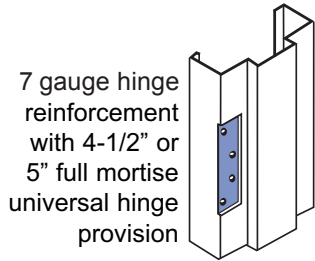
Level 2 & 3 construction



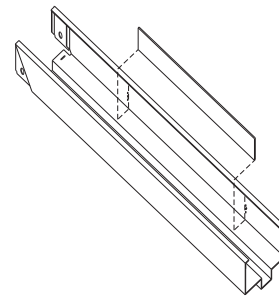
Double Rabbet

Rough Opening Required for Butted Application
 Door Width Opening + 2 Times Face Dimension + 1/2"
 Door Height Opening + Face Dimension + 1/4"

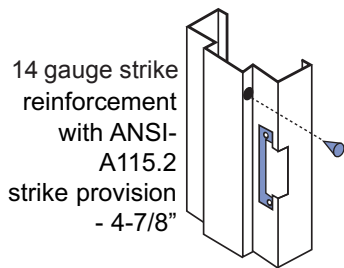
HARDWARE PREPARATION



7 gauge hinge reinforcement with 4-1/2" or 5" full mortise universal hinge provision



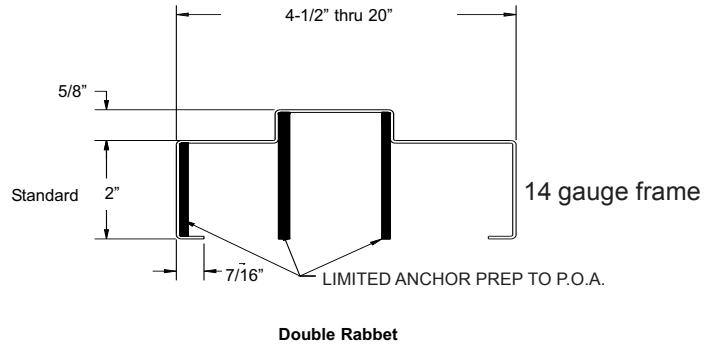
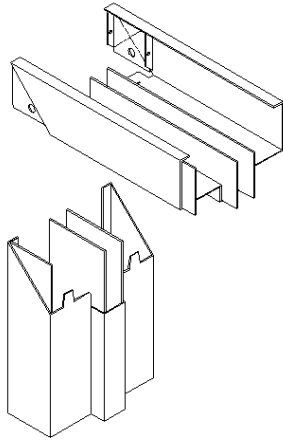
1-3/8" x 14" x 14 gauge Flat Plate Closer Reinforcement (Option)



14 gauge strike reinforcement with ANSI-A115.2 strike provision - 4-7/8"

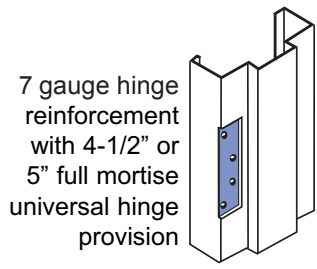
Frames • ME Series: Bullet resistant

Level 4, 5, 7 & 8 construction

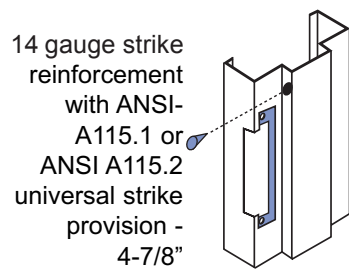


Rough Opening Required for Butted Application
 Door Width Opening + 2 Times Face Dimension + 1/2"
 Door Height Opening + Face Dimension + 1/4"

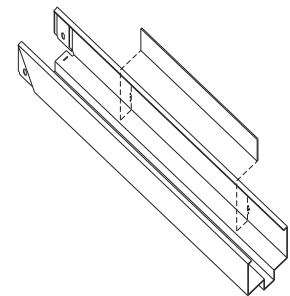
HARDWARE PREPARATION



7 gauge hinge reinforcement with 4-1/2" or 5" full mortise universal hinge provision



14 gauge strike reinforcement with ANSI-A115.1 or ANSI A115.2 universal strike provision - 4-7/8"



1-3/8" x 14" x 14 gauge Flat Plate Closer Reinforcement (Option)

Frames • Drywall frames: MH Series/Mitered

Drywall: MH Series/Mitered

MH Series Mitered Frames shall be as manufactured or furnished by Republic Doors and Frames, McKenzie, Tennessee 38201.

Profile: Made for two basic door thicknesses: 1 3/8" or 1 3/4" Nominal

Gauges: 16 or 14

Standard Face: 2"

Standard Rabbets: 1 3/8" (actual dimension 1 9/16"); 1 3/4" (actual dimension 1 5/16"). Rabbet dimension is 3/16" greater than the door thickness.

Standard Stop: 5/8"

Closer Reinforcement (Options): 1 3/8" x 14" x 14 gauge plate

Universal Standard/Heavy Weight Hinge: Frames for 1 3/4" doors shall have a 7 gauge steel hinge reinforcement plate, projection welded with provisions for 4 1/2" x 4 1/2" template hinges. Hinge plate is designed to be modified to accept a heavy weight hinge.

Frames for 1 3/8" doors shall have a 11 gauge hinge reinforcement plate, projection welded with provisions for 3 1/2" x 3 1/2" standard weight template hinges.

Strike Prep: Frames for 1 3/4" doors shall have a 14 gauge steel strike reinforcement plate, extruded and formed to the equivalent of 10 gauge, projection welded with provisions for Universal ANSI A115.1 or ANSI A115.2 strike (4 7/8").

Frames for 1 3/8" doors shall have a 14 gauge strike reinforcement plate, extruded and formed to the equivalent of 10 gauge projection welded with provision for Universal ANSI A115.3 strike (2 3/4")

Hinge Backset: 5/16"

Backbend: 1/2" with 3/8" backbend return (Double Return)

Anchors: Each jamb shall be equipped with a pressure anchor. Sill and intermediate anchors must be ordered separately.

Silencer Prep: 9/32" dia. holes shall be provided as standard on strike jambs and double headers, (3 per strike jamb and 2 per double head). Mutes are not supplied and must be ordered separately.

Double Heads: Double heads are undersized 1/16" (except for cased open heads, which are nominal). Mortar Guards - Mortar guards of 26 gauge steel shall be welded to each hinge and strike reinforcement plate.

Profiles: Equal Rabbet, Unequal Rabbet, Single Rabbet, Double Egress, Cased Opening, Kerf. (Special profiles available, consult factory.)

Shipping: Frames are shipped as components, bundled as one pair of jambs (hinge & strike for single openings or 2 hinge jambs for double openings). Heads are packaged separately. (Option: Unit Bundle)

Handing: Frames are handed.

Frames - Drywall frames: MH Series/Mitered

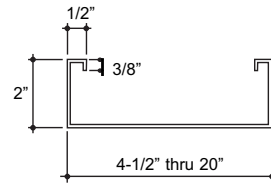
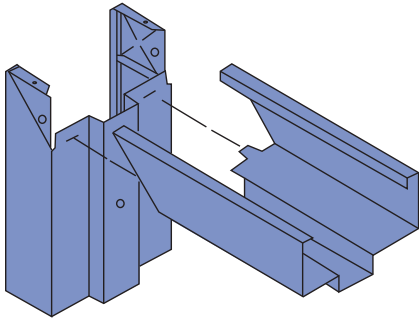
Specifications

- I. MH Series Mitered Frames as manufactured by Republic Doors and Frames, McKenzie, TN 38201 have been tested and adhere to the criteria set forth by the following published standards:
 - A. ANSI A250.8 - Recommended Specifications - Standard Steel Doors & Frames; Steel Door Institute.
 - B. SDI 111 – Recommended Details Standard Steel Doors & Frames, Accessories and Related Components.
 - C. SDI 112 - Zinc Coated Standard Steel Doors and Frames.
 - D. SDI-113 Standard Practice for Determining the Steady State Thermal Transmittance of Steel Door and Frame Assemblies.
 - E. ASTM A366/A 366M - Standard Specification for Steel, Sheet, Carbon, and High Strength, Low Alloy, Hot Rolled and Cold Rolled, General Requirements.
 - F. ASTM A568/A 568M - Standard Specification for Steel, Sheet, Carbon and High Strength, Low-Alloy, Hot Rolled and Cold Rolled, General Requirements For.
 - G. ASTM A569/A 569M - Standard Steel Specification for Steel, Carbon (0.15 Maximum Percent), Hot Rolled Sheet and Strip Commercial Quality.
 - H. ASTM A591/A 591M - Standard Steel Specification for Steel Sheet, Electrolytic Zinc-Coated, for Light Coating Mass Applications.
 - I. ASTM A653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by Hot Dipped Process.
 - J. NFPA 80 - Standard for Fire Doors and Windows.
 - K. A250.4 1994 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors and Hardware Reinforcings.
- II. Frame Construction
 - A. Frames shall be formed from 16 or 14 gauge Cold Rolled, Hot Rolled or Galvannealed Steel.
 - B. Frames shall be either knocked-down or have corners welded and ground smooth. Corners shall have aligning tabs and slots for secure and easy interlocking of jambs to head.
 - C. Frames shall be provided with 9/32" silencer preparation, (3) per strike jamb and (2) per head for double openings, for field application after finish painting.
 - D. Frames for 1-3/4" doors shall have 7 gauge steel universal hinge tap plate, projection welded, with provisions for 4-1/2" x 4-1/2" template hinges, and 14 gauge steel strike reinforcement plate, extruded and formed to the equivalent of 10 gauge, projection welded, with provision for Universal ANSI A115.1 or ANSI A115.2 strike.
 - E. Frames for 1-3/8" doors shall have 11 gauge steel hinge reinforcement plates, projection welded, with provisions for 3-1/2" x 3-1/2" template hinges, and 14 gauge steel strike reinforcement plate, projection welded, with provision for cylindrical ANSI A115.3 strike.
 - F. Reinforcement for surface closer shall be 14 gauge steel. Proper reinforcement shall be provided for other hardware when required.
- III. Frame Finish

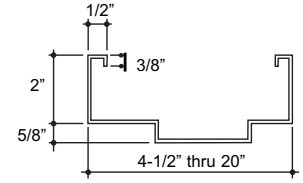
Frames will be cleaned and phosphatized with one coat of force-cured beige primer and meets or exceeds ANSI A250.10-2011 and ASTM specification B117 for finishes. (Capable of passing 120 hour salt spray test and a 240 hour humidity test in compliance with ASTM D1735.)

Frames • Drywall frames: MH Series/Mitered

Construction details

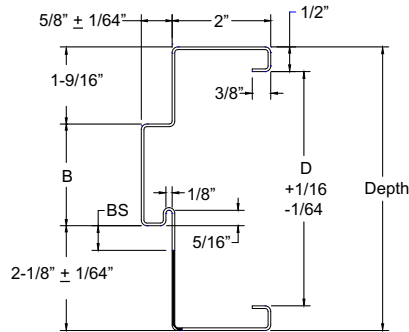


Cased Opening

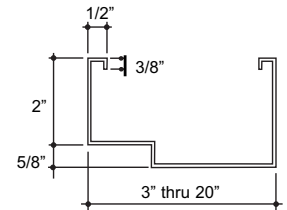


Double Rabbet

Rough Opening Required for
 Wrapped Application
 Door Width Opening + 2"
 Door Height Opening + 1"
 Assuming 2" Face Dimension
 For SGL-RBTD 4" and under or CASED OPG. - Door Width plus 3"
 Also refer to sheet 202d



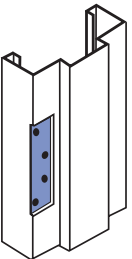
KERF
(16 gage only)



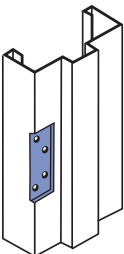
Single Rabbet

HARDWARE PREPARATION

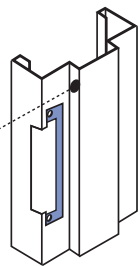
7 gauge hinge reinforcement with 4-1/2" or 5" full mortise universal hinge provision for 1-3/4" doors.



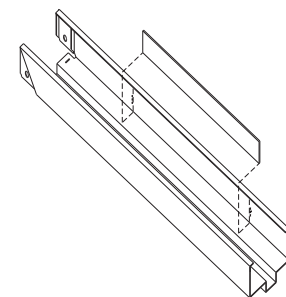
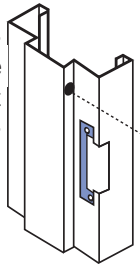
11 gauge hinge reinforcement with 3-1/2" x 3-1/2" full mortise universal hinge provision for 1-3/8" doors.



1-3/4" - 14 gauge strike reinforcement with ANSI-A115.1 or ANSI A115.2 universal strike provision - 4-7/8"



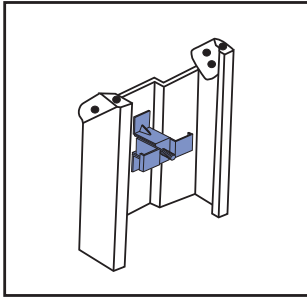
1-3/8" - 14 gauge strike reinforcement with ANSI-A115.3 cylindrical strike provision - 2-3/4"



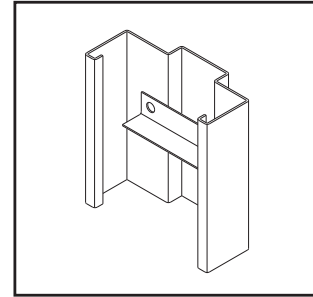
1-3/8" x 14" x 14 gauge Flat Plate Closer Reinforcement (Option)

Frames · Drywall frames: MH Series/Mitered

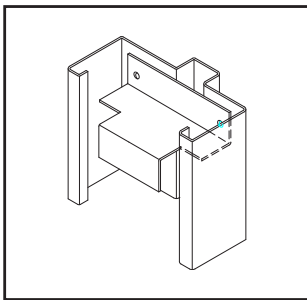
Anchor details



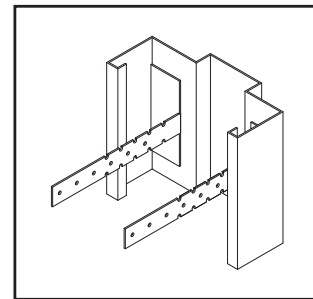
Adjustable Pressure Anchor (Standard Welded In)



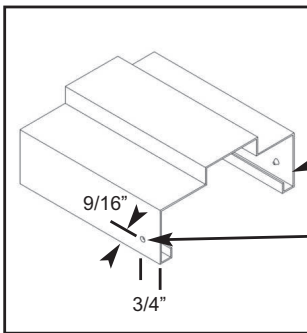
Intermediate Anchor (Option)



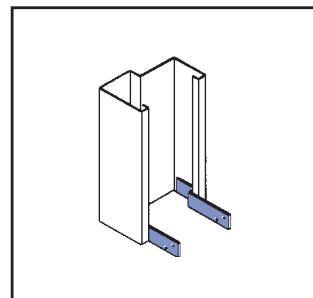
"Z" Anchor (Option)



L Strap Anchor (Option)



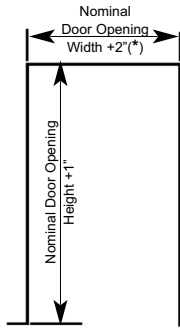
Punch and Dimple Location (Option)



Drywall Sill Anchor (Sold/Shipped Loose)

Frames • Drywall frames: MH Series/Mitered

Installation



1. Provide for rough opening as shown.

* Nominal Door opening width + 2"
Nominal Door opening height + 1"
(Assuming 2" face dimension)

Nominal Door opening width + 3" - For single rabbeted or cased opening frames.

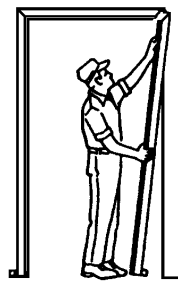


2. Drive sill anchors on to bottom of both jambs.

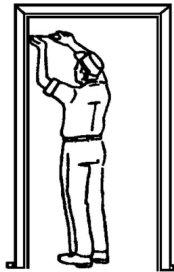
Slip hinge jamb over wall into position.



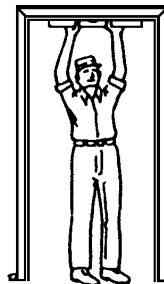
3. Slip head over wall and engage head aligning tab in slot of hinge jamb.



4. Slip strike jamb over wall and engage head aligning tab in slot of strike jamb.



5. Position adjustable pressure anchor by turning adjusting screw clockwise an equal amount for both anchors. After contact is made with studs, continue tightening until frame is wedged between studs. (Do not over-tighten.)



6. Level head.

Shim jambs at base if required.



7. Plumb hinge jamb.

Fasten hinge jamb sill anchors securely with nails or screws.



8. Size opening by inserting wood spreader cut to exact opening width and fasten sill anchor at strike jamb with nails or screws.

Remove spreader. Insert adjusting screw cover.

Attach (2) #8 x 1/2 STS to each corner for labeled single frames over 7'-2" in height and all double frames.

Frame is now ready for door and hardware.

Modular masonry

Construction details

The module

Definition: The size of some one part, taken as a unit of measure for regular proportion. A basic unit of measure adopted by the Building Industry as 4 inches.

Concept: Use of a standard multiple dimension common to dimensional building products improves finished structure by the following:

- A. Increased accuracy, legibility and simplicity of working drawings and contract documents.
- B. Reduced drafting time (up to 25%).
- C. Reduction of Architect/Contractor conflict caused by ambiguous details.
- D. Added aesthetic flexibility induced by small unit standardization, allowing freedom of architectural design.
- E. Increased flexibility of finished structure through lower modification, addition and renovation costs.
- F. Reduced overall material and labor costs by facilitating the use of standard practices and definable operating procedures.

Engineering:

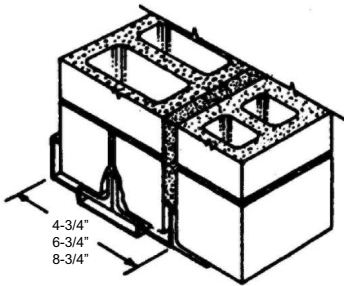
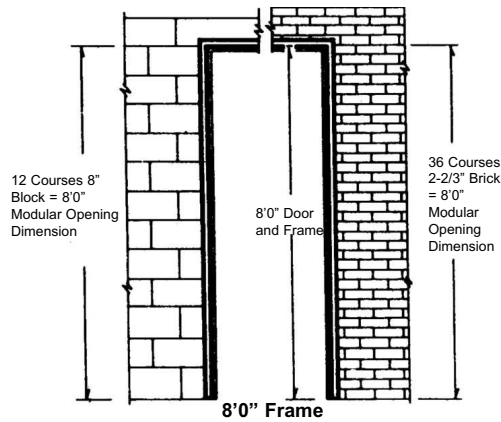
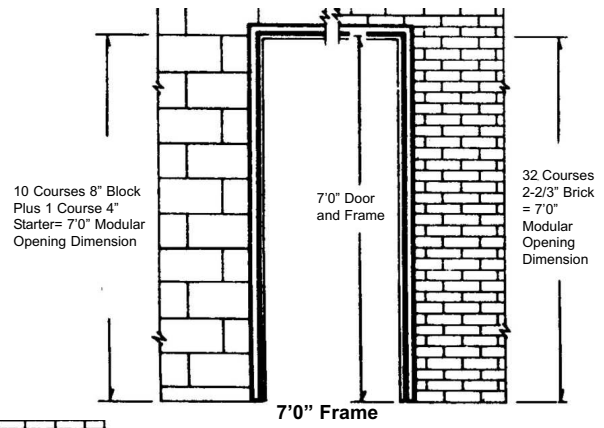
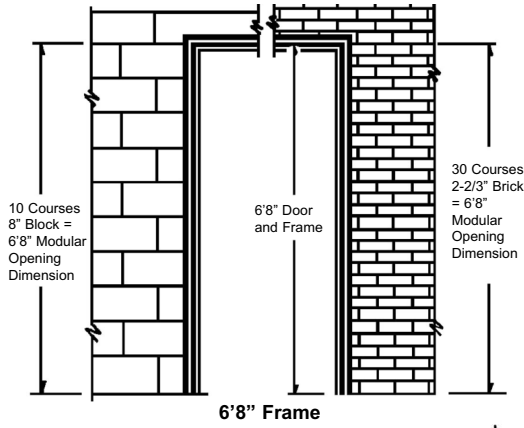
- A. Theory of modular construction reduces "field measurements". (Practical considerations do not allow complete elimination; however, a considerable reduction in job dimensioning requirements will result.)
- B. Interchangeability and substitution of materials is facilitated by the elimination of redimensioning when two modular components are switched.
- C. Estimating and Takeoff simplified.
- D. Detailing and drawing coordination between trades and specialties simplified by small size standard grid.

Aesthetics:

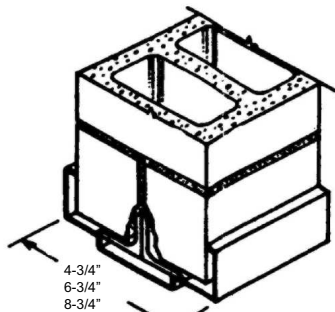
- A. Modular masonry construction meets the architectural need for blending and continuity of components. Non-modular units interrupt a geometric pattern or flow by virtue of the discontinuity of line necessary for their installation.
- B. As a specific case, the use of a butted frame (Modular) is extremely important in stack bonded masonry unit construction. Any interruptions such as cut units, unit lintels, wrap-arounds, etc. destroy the strong linear function of such details.

Frames • Modular masonry

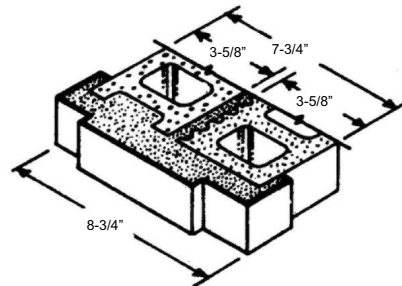
Wrap-around conditions



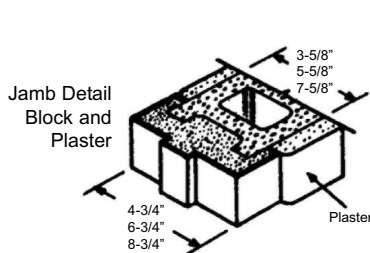
Head Detail
Steel Lintel and
Double Block



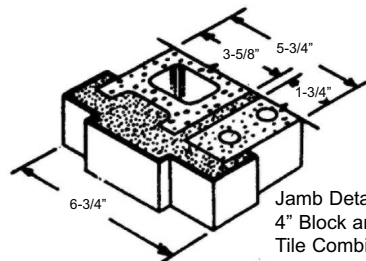
Head Detail
Steel Lintel and
Single Block



Jamb Detail
8" Block or Tile and Brick
Combination or 4" Double Tile



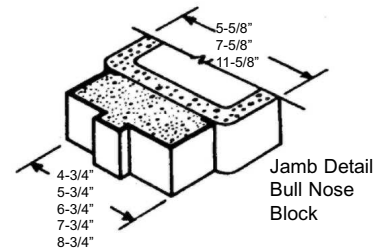
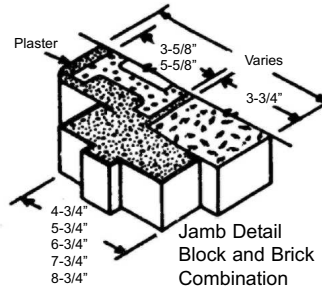
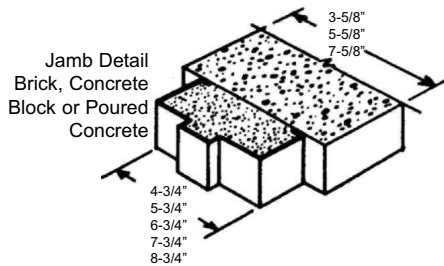
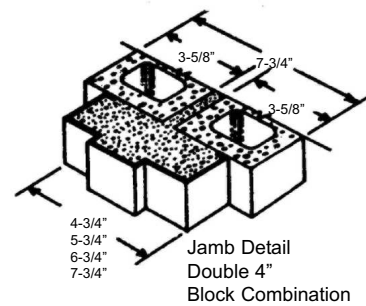
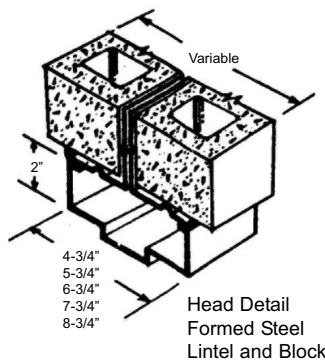
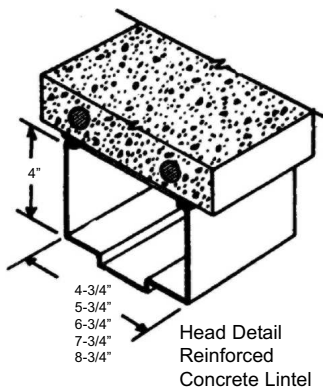
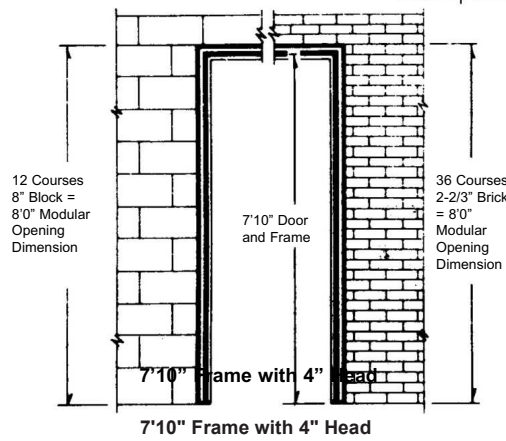
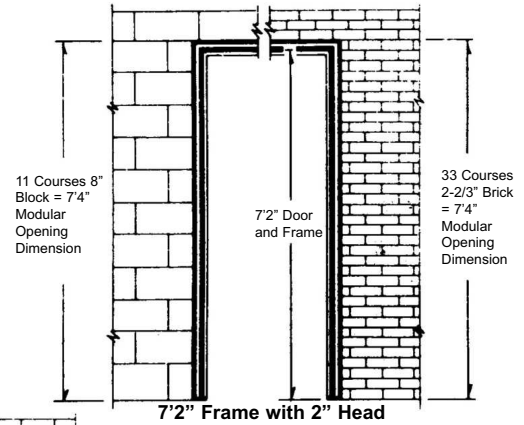
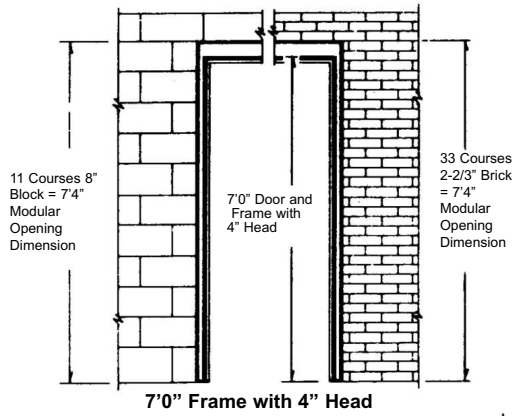
Jamb Detail
Block and
Plaster



Jamb Detail
4" Block and
Tile Combination

Frames • Modular masonry

Butted conditions



Frames - Lead lined

Lead lined

Frame

Lead Lined Frames shall be as manufactured or furnished by Republic Doors and Frames, McKenzie, Tennessee 38201.

Construction App: ME, SE applications available.

Profile: Equal Rabbet, Unequal Rabbet, Single Rabbet, Double Egress, Cased Open. Frame elevations also available. (Exclude mullions)

Gauges: 16, 14 or 12

Standard Face: 2"

Standard Rabbets: 1 $\frac{3}{8}$ " (actual dimension 1 $\frac{9}{16}$ "); 1 $\frac{3}{4}$ " (actual dimension 1 $\frac{5}{16}$ "). Rabbet dimension is $\frac{3}{16}$ " greater than the door thickness.

Standard Stop: $\frac{5}{8}$ "

Closer Reinforcement (Options): 1 $\frac{3}{8}$ " x 14" x 14 gauge plate.

Size Availability: Door: Maximum Size 5'0" x 10'0" Single; Maximum Size 10'0" x 10'0" Double.

Universal Standard/Heavy Weight Hinge: (Standard Application) Frames shall have 7 gauge steel hinge reinforcement plate, projection welded for 4 $\frac{1}{2}$ " x 4 $\frac{1}{2}$ " or 5" template hinges. Hinge plate is designed to be modified to accept a heavy weight hinge.

Strike Prep: Frames shall have a 14 gauge strike reinforcement plate, extruded and formed to the equivalent of 10 gauge projection welded with provision for Universal ANSI A115.1 or ANSI A115.2 strike (4 $\frac{7}{8}$ ").

Hinge Backset: $\frac{5}{16}$ " (Standard)

Backbend: $\frac{7}{16}$ " (Single Return)

Anchors: Anchors need to be welded in prior to lead installation.

Silencer Prep: $\frac{9}{32}$ " dia. holes shall be provided as standard on strike jambs and double headers, (3 per strike jamb and 2 per double head). Mutes are not supplied and must be ordered separately.

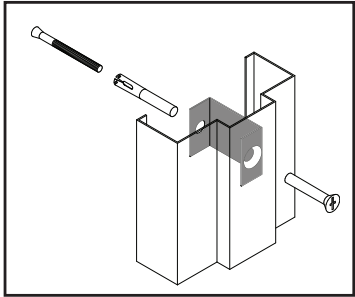
Double Heads: Double heads are undersized $\frac{1}{16}$ " (except for cased open heads, which are nominal). Mortar Guards - Mortar guards of 26 gauge steel shall be welded to each hinge and strike reinforcement plate. (ME, SE Series)

Handing: Frames are handed.

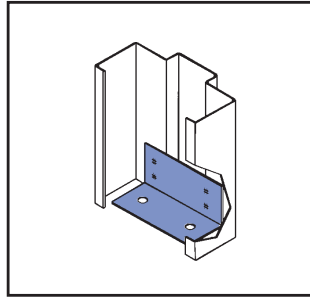
Special Requirements: Lead lining shall be 99.9% pure, (Standard) $\frac{1}{16}$ " thick and installed on hardware side of frame.

Frames - Lead lined

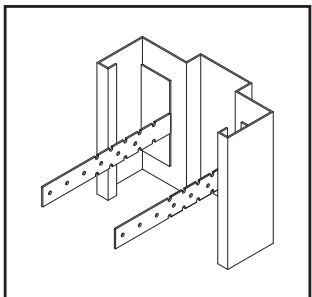
Anchor details



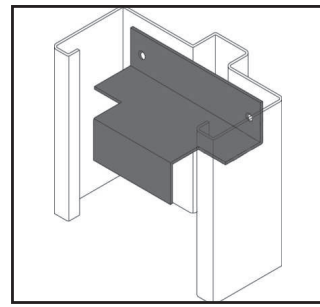
Prepared Opening Anchor (Bolt sold separately)



One Piece Sill Anchor Welded On



L Strap Anchor (Option)



"Z" Anchor (standard for non-stock depth with steel stud anchors)

Frames ·

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Sticks

SE/SH Series 86
 Jamb and Mullions profiles 87

Bases, corner post and field splice connection 88

Structural properties and load carrying capacities for SE Series..... 89

Table I and II properties: Open and closed sections..... 90

Table III: Wind loads: Closed sections 91

Design example 92

Sticks • SE/SH Series

SE/SH Series

SE Series Sticks shall be as manufactured or furnished by Republic Doors and Frames, McKenzie, Tennessee 38201. (SH profile also available)

Republic pre-engineered steel frame components called “sticks” provide unlimited flexibility for opening systems. Stick components are used to fabricate even the most complex entrance fronts, partitions and window wall designs. The variety of jamb depths and sizes permit greater design freedom. Because stick assemblies are normally welded, they offer strength without seams showing between vertical and horizontal members.

These openings can be designed for any job requirement, fabricated from factory components, and assembled and welded by factory trained Republic Distributors. Because sticks can be shipped as components and fabricated locally, shipping costs, job delays and design limitations are greatly reduced.

Frame assemblies shall be made of standard stick components, fabricated from prime quality 16, 14 or 12 gauge Cold Rolled, Hot Rolled or Galvannealed Steel, 18, 16 or 14 gauge. Where sticks are used at door openings in the frame assemblies, they shall be prepared for all hardware specified. Frame assemblies shall be fabricated from three basic components: Open sections (perimeter members), Mullion sections (intermediate members) and Sill sections (bottom members).

Mullion sections shall have identical jamb depths, face dimensions and stops as open sections. Mullion sections are only available in 16 and 14 gauges.

Sill sections shall be flush with both faces of adjacent vertical members. The individual sticks shall be cut to length and notched to ensure square joints and corners. All joints and corners of the frame assembly shall be welded and ground smooth at the face of the sections.

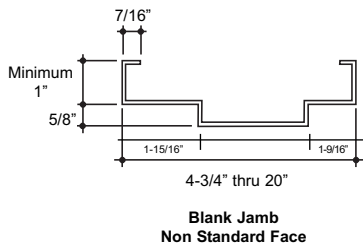
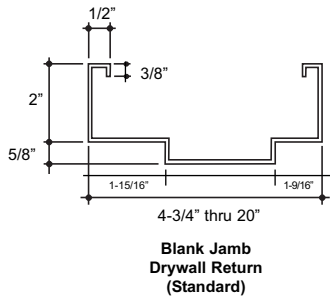
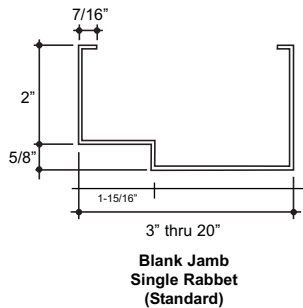
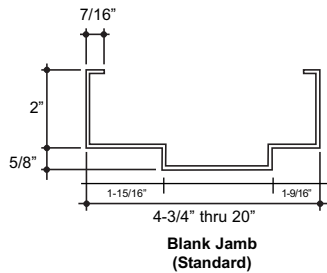
All stick components and frame assemblies shall be phosphatized and receive one coat of force-cured rust inhibiting prime paint. Steel channel glazing beads shall be provided with the assemblies for all areas in which glass is to be installed.

Frame assemblies may be shipped to jobsite completely welded. Field joints shall be permitted only when the size of the total assembly exceeds shipping limitations. When frame assemblies are subjected to windloads, vertical members shall be free of field splices.

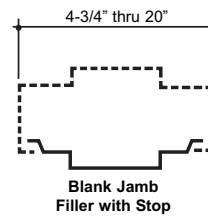
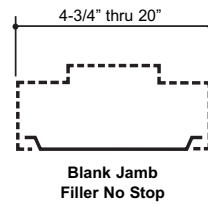
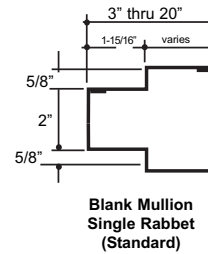
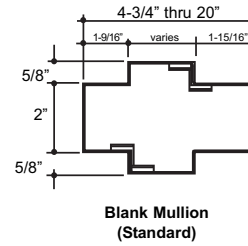
Sticks are manufactured in 10'3" maximum lengths. Other lengths are available. Consult factory. Other profiles are available upon request.

Jambs and Mullions profiles

JAMBS (Open Sections)



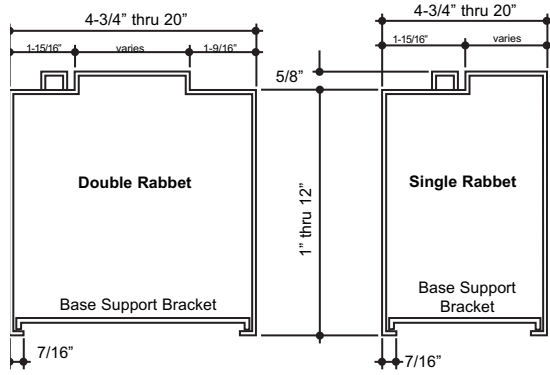
MULLIONS (Closed Sections)



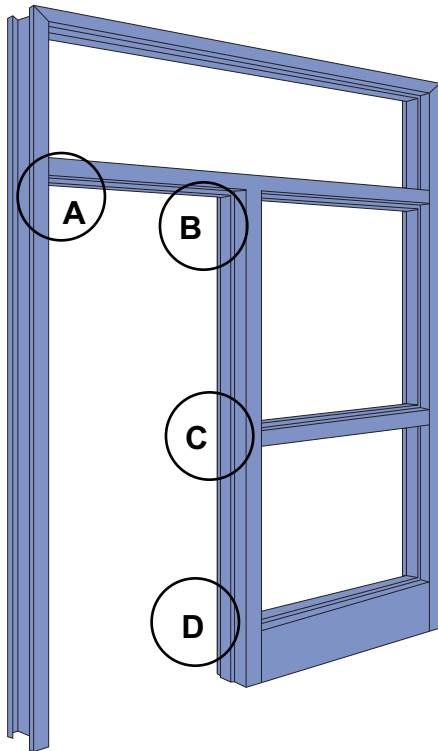
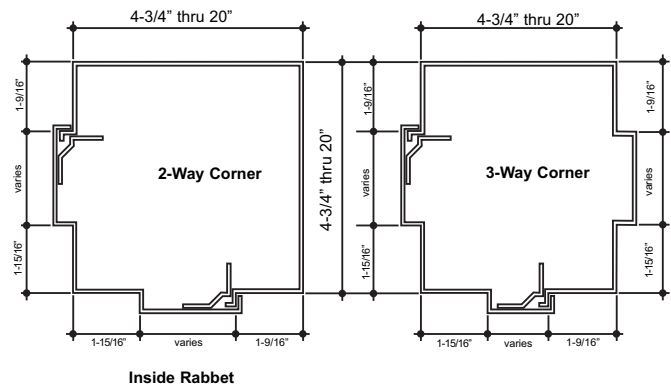
Sticks • Bases, corner post and field splice connection

Bases, corner post and field splice connection

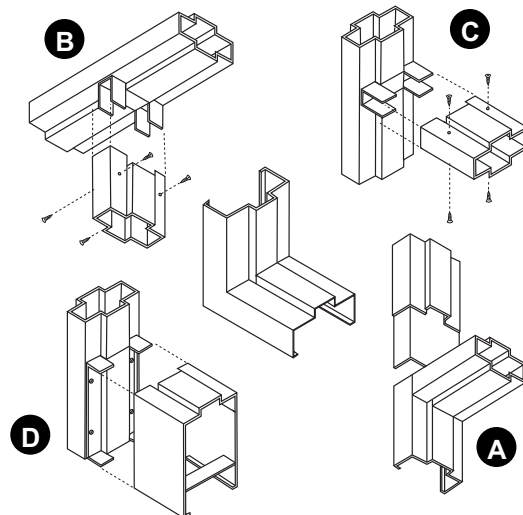
Bases (Sill Section)



Corner Posts



Section Details of Optional Field Splice connections



Structural properties and load carrying capacities for SE Series

The information contained herein has been prepared to permit architects, engineers and other qualified persons to design and select the proper Republic stick components for use in fabricated frame assemblies when subjected to structural or wind loads.

Physical properties and wind load tables were calculated by a registered engineer and are based on the "Specifications for the Design of Cold-Formed Steel Structural Members", 1969 Edition, published by the American Iron & Steel Institute.

Table I lists the physical properties of open sections. These sections are usually used as perimeter components in any frame assembly and are not critical components of that assembly because perimeter components must be securely anchored to building walls.

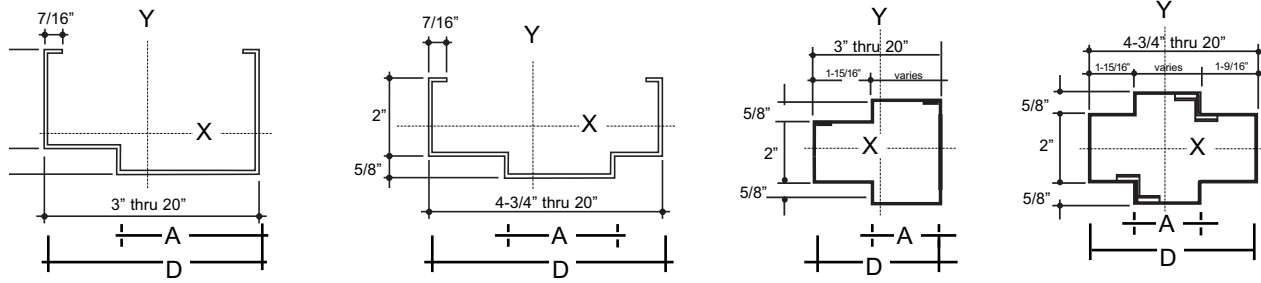
Table II lists the physical properties of the closed sections. These sections are usually used as the intermediate horizontal and vertical components and are usually found to be the critical sections in any frame assembly. The critical component in any frame assembly is usually the component having the longest unsupported length or supporting the largest frame area in wind loading.

The most frequently encountered problem is that of designing an intermediate component to resist wind load only. For this reason, Table III is included. This table allows the designer to calculate the wind load on the component in pounds per linear foot and then select the proper section directly from the table.

A design example is included for reference.

Sticks • Table I and II properties: Open and closed sections

Table I and II properties: Open and closed sections



OPEN SECTIONS

CLOSED SECTIONS

TABLE I PROPERTIES - OPEN SECTIONS

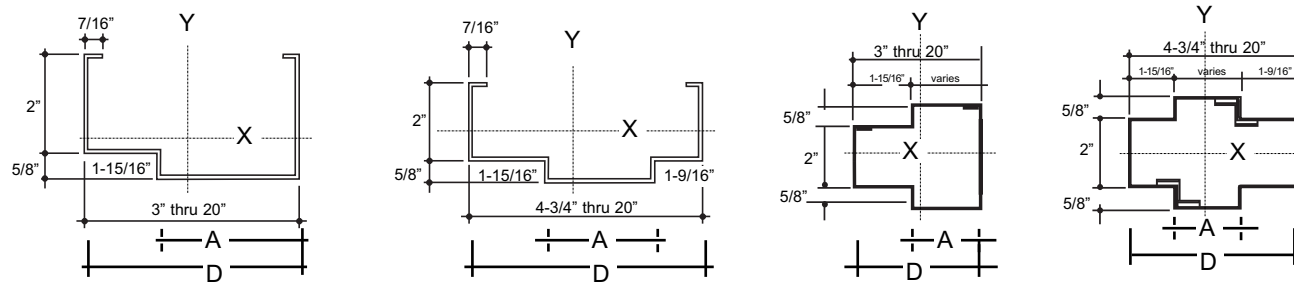
Jamb Depth "D"	"A"	Gage	Ix In. ⁴	Sx In. ³	Px In.	Iy In. ⁴	Sy In. ³	Py In.	Area In. ²
3"	1-1/16"	16	0.382	0.261	0.857	0.768	0.470	1.215	0.520
		14	0.469	0.321	0.853	0.942	0.576	1.208	0.645
3-3/4"	1-13/16"	16	0.438	0.283	0.881	1.263	0.632	1.496	0.564
		14	0.532	0.343	0.872	1.553	0.776	1.490	0.699
4-3/4"	1-1/4"	16	0.496	0.301	0.891	2.181	0.877	1.868	0.625
		14	0.604	0.367	0.885	2.674	1.075	1.862	0.771
5-3/4"	2-1/4"	16	0.545	0.316	0.893	3.406	1.143	2.233	0.683
		14	0.662	0.384	0.886	4.182	1.404	2.227	0.843
6-3/4"	3-1/4"	16	0.584	0.325	0.888	4.972	1.432	2.590	0.741
		14	0.712	0.397	0.882	6.111	1.760	2.584	0.915
8-3/4"	5-1/4"	16	0.648	0.340	0.870	9.246	2.074	3.285	0.857
		14	0.789	0.415	0.863	11.376	2.552	3.277	1.059

TABLE II PROPERTIES - CLOSED SECTIONS

3"	1-1/16"	16	0.815	0.501	1.073	0.876	0.515	1.112	0.708
		14	1.002	0.617	1.068	1.075	0.632	1.106	0.879
3-3/4"	1-13/16"	16	1.041	0.641	1.144	1.472	0.717	1.361	0.795
		14	1.271	0.782	1.135	1.811	0.882	1.355	0.987
4-3/4"	1-1/4"	16	1.046	0.644	1.071	2.291	0.952	1.586	0.911
		14	1.276	0.785	1.062	2.814	1.170	1.577	1.131
5-3/4"	2-1/4"	16	1.344	0.827	1.142	3.785	1.304	1.917	1.030
		14	1.640	1.009	1.135	4.650	1.602	1.910	1.275
6-3/4"	3-1/4"	16	1.640	1.009	1.196	5.791	1.703	2.248	1.146
		14	2.004	1.233	1.189	7.118	2.093	2.240	1.419
8-3/4"	5-1/4"	16	2.232	1.374	1.273	11.568	2.632	2.897	1.378
		14	2.730	1.680	1.264	14.266	3.246	2.892	1.707

Sticks • Table III: Wind loads: Closed sections

Table III: Wind loads: Closed sections



OPEN SECTIONS

CLOSED SECTIONS

Simply supported beam--no axial load-- wind bending about the Y-axis. Allowable uniform load on standard closed sections, in pounds per linear foot.

JAMB DEPTH	3"		3-3/4"		4-3/4"		5-3/4"		6-3/4"		8-3/4"		
	GAGE	16	14	16	14	16	14	16	14	16	14	16	14
LENGTH (FT.)	2	1486	2176	1910	2693	1850	2612	1850	2612	1850	2612	1850	2612
	3	991	1451	1273	1792	1233	1741	1233	1741	1233	1741	1233	1741
	4	588	722	955	1216	925	1306	925	1306	925	1306	925	1306
	5	301	369	506	623	740	967	740	1045	740	1045	740	1045
	6	174	214	293	360	456	560	617	870	617	870	617	870
	7	110	135	184	226	287	352	474	582	529	746	529	746
	8	74	91	124	153	192	236	317	390	463	597	463	653
	9	52	64	87	107	135	166	223	274	341	419	411	580
	10	38	47	63	78	99	121	162	200	248	306	370	522
	11	28	34	48	59	74	91	122	150	186	230	336	460
	12	22	27	37	46	57	70	94	116	143	177	308	355

F_v (shear) 14,670 psi - F_b (bending) 22,000 psi (increased 1/3 due to wind):

Loads above solid line are limited by maximum end reaction....loads below by deflection of 1/360 of span on inches.

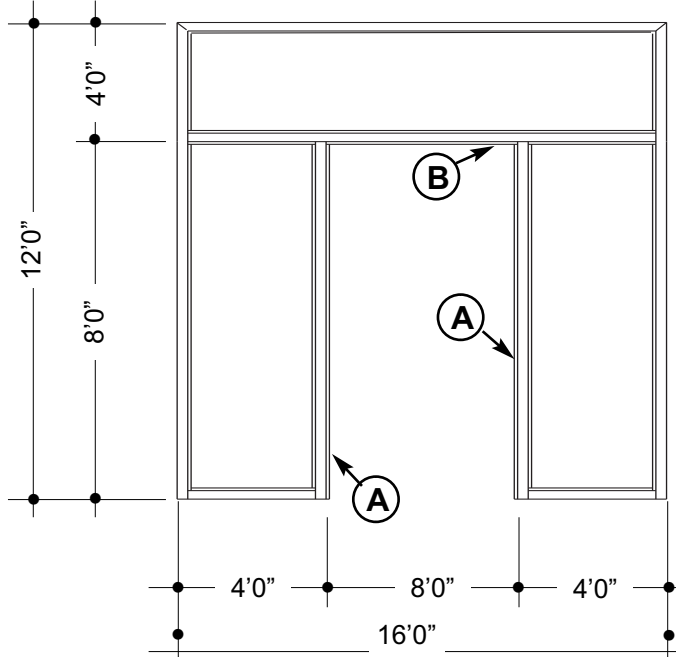
Maximum concentrated loads at supports: 1850 pounds 16 gage sections, 2610 pounds 14 gage sections based on N & $h = 1.563$ " except for 3" and 3-3/4" sections where N & $h = 0.9375$ & 1.688 respectively. See AISI Specifications for Design of Cold Formed Steel Structural Members, Section 3.5 for Web Crippling of Beams.

JAMB DEPTH "D"	Reference Nomenclature	
	*OPEN SECTION	*CLOSED SECTION
3"	16-300-BJ	16-300-BM
3-3/4"	16-334-BJ	16-334-BM
4-3/4"	16-434-BJ	16-434-BM
5-3/4"	16-534-BJ	16-534-BM
6-3/4"	16-634-BJ	16-634-BM
8-3/4"	16-834-BJ	16-834-BM

*Change prefix to 14 when 14 gage sections are required.

Design example

Given: 1/4" Plate Glass in all lites - 20 psf Wind Load
Find: Proper Depth of Members (A) and (B)



Solution:

Members (A) support a uniform load of $1/2 (4 + 8) \times 20 = 120$ plf on an 8'0" Span.

Using Table III:

Select a 3-3/4" depth 16 gauge closed section (16-334-BM) as the most economical section to support a minimum uniform wind load of 120 plf on an 8'0" span.

Member (B) has a 16'0" span and supports a uniform wind load of $1/2 (4) \times 20 = 40$ plf Plus:

Two concentrated loads at 4'0" from each end of $4 \times 120 = 480$ pounds (From members (A))

$$*M_{max} = \frac{WL^2}{8} + P_A = \frac{40 \times 16 \times 16 \times 12}{8} + (480 \times 4 \times 12) = 38,400 \text{ in Lbs.}$$

$$M = fs f = \frac{4}{3} (22,000) = 29,333 \text{ psi (Increase due to wind)}$$

$$S = \frac{38,400}{29,333} = 1.309 \text{ In.}^3$$

Using Table II: Select a 6-3/4" depth 16 gauge closed section (16-634-BM)
 $S_{yeff} = 1.703 \times 1.309$

Thus this section will govern: Use 16 gauge 6-3/4" depth sections throughout.

*Standard simple beam formula found in most engineering handbooks.

Labeled

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Labeled - Fire Doors

Fire doors

Basic fire door requirements

Fire door openings are classified by their locations in the building. The location determines the length of exposure protection required, based on the potential fire hazard of that particular area. The six opening classifications are shown below along with the six door ratings and the maximum amount of glass in square inches allowed for each door.

Label Classification	Location In Building	Maximum Glass Area
3 HOUR RATING	3 hour rated opening (Class A). Openings are in walls separating buildings or dividing a single building into fire areas. Doors for these openings require a fire protection rating of 3 hours.	100 square inches per leaf reference NFPA 80.
1-1/2 HOUR RATING	1 1/2 hour rated opening (Class B). Openings are in enclosures of vertical communication through buildings. These could be stairwells or elevator shafts. While not a means of vertical communication, boiler room doors are generally categorized as Class "B" openings.	Dependent upon glass type. Check with local AHJ.
3/4 HOUR RATING	3/4 hour rated opening (Class C). Openings are in corridors and room partitions. Doors for these areas require a fire protection rating of 3/4 hour.	Dependent on glass type. Check with local AHJ.
1-1/2 HOUR RATING	1 1/2 hour rated opening (Class D). Openings are in exterior walls which are subject to severe fire exposure from the outside of the building. Doors for these areas require a fire protection rating of 1 1/2 hours.	Dependent on glass type. Check with local AHJ
3/4 HOUR RATING	3/4 hour rated opening (Class E). Openings are in exterior walls which are subject to moderate or light fire exposure from the outside of the building. A typical example would be a door leading to an exterior fire escape. Doors for these openings require a fire protection rating of 3/4 hour.	Dependent on glass type. Check with local AHJ.
20 MINUTE	20 minute fire rated door frame assemblies are normally found in interior partitions and are intended for installation with 20 minutes fire rated doors of the single swing, swing in pairs, or double egress types.	Dependent on glass type. Check with local AHJ.
NOTE: Please reference glass manufacturer's Classifications / Listings		

Labeled • Fire doors

Types of fire door openings

Republic provides a comprehensive line of 1 3/8" and 1 3/4" thick labeled doors and frames to meet every requirement for fire protection. The construction conforms to fire door procedure whether the doors are furnished with labels or not. Since label requirements vary throughout the country, local authorities having jurisdiction regarding the use of label opening should be consulted during the design and planning stages.

Underwriters Laboratories (UL)

Doors and frames approved by the Underwriters Laboratories, Inc. have been investigated, fire tested in accordance with UL10B, UL10C, UBC7-2 and ASTM E-152 and produced under the Underwriters Laboratory factory inspection and labeling service program. The attachment of the Underwriters Laboratories Listing or Classification mark indicates that the material has been constructed to comply with the manufacturing specifications as described in the Underwriters Laboratories Follow-Up Service Procedures Program.

Warnock Hersey (WH)

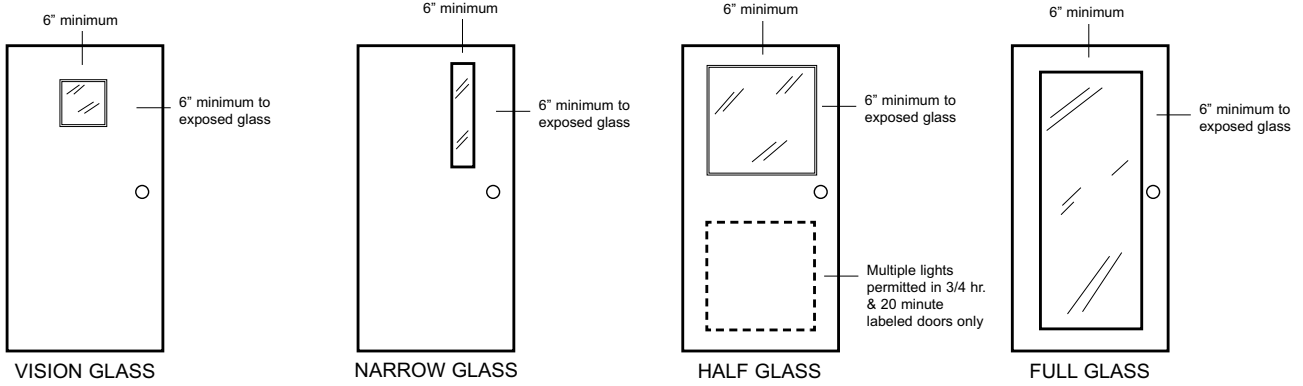
Doors and frames bearing the Intertek Testing Label have been successfully fire tested in accordance with UL10B, UL10C, UBC7-2 and ASTM E-152. The ITS Listing or Classification mark indicates that the material has been constructed to comply with the manufacturing specifications as described in ITS's Follow-Up Service Procedures Program.

Suggested procedures for the selection of fire doors & frames

- A. Determine the appropriate building code.
- B. Check and fulfill the fire insurance company's requirement for the specific buildings.
- C. Establish which label (UL or ITS) is acceptable to local authorities having jurisdiction (LAHJ).
- D. Basic Fire Door Requirements. Use this checklist:
 1. A fire door must have a Classification mark attached. (metal or mylar)
 2. A fire door frame may be embossed with a UL Listing Mark if acceptable with the LAHJ.
 3. A fire door must be self-closing and self-latching.
 4. Door closers or UL Listed spring hinges are required on all fire doors.
 5. An automatic closing door must have a separate, Listed, fail-safe-door-holder/release device or a hold-open mechanism which may be an integral part of the basic closing device, provided the hold-open mechanism is released by one or a combination of automatic fire detectors acceptable to the authority having jurisdiction.
 6. A fire door must be free of any obstructions which would prevent the door from operating properly, i.e. wedge door stops, chains, hook-backs, etc.
 7. Only listed fire door hardware shall be used.
 8. A fire door must have steel hinges.
 9. A pair of doors must have an overlapping steel astragal for 3 hour rated locations.
 10. A pair of doors may be furnished without an astragal for 1 ½ hour and ¾ hour locations providing the opening meets one of the following:
 - a. Each leaf is equipped with a vertical rod exit device or rim exit device (with hardware mullion).
 - b. The door leaves have one mortise and one vertical rod exit device with open or closed back strike.
 - c. The active door leaf has a mortise or cylindrical lock with open or closed back strike; inactive door has flush bolts.
 11. Fire doors with glass lites:
 - a. Glass frame and glazing bead must be steel.
 - b. Glass must be listed/approved (B.O.)
 - c. Maximum allowable glass area (subject to approval of LAHJ):
 - 3 hours, 100 sq. in. per door leaf (Firelite)
 12. Fire doors with fusible link louvers:
 - a. A Listed louver must be used. Door may be furnished with louver installed at door manufacturer's plant or cutout reinforced and labeled for field installation.
 - b. Louvers can be furnished in 1 ¾" thick door(s), 1 ½ hour and ¾ hour label flush doors only (no louver and glass lite combinations permitted).
 - c. Maximum door size with louver is 3'6" x 7'2".
 - d. Only one louver per door leaf. Maximum louver size is 24" x 24".
 - e. Louvers are not permitted to be installed in doors with Fire Exit Device Hardware.
- E. For maximum fire protection, NFPA-80 should be used as a guideline.

Labeled • Fire doors

Fire doors with glass



DOOR TYPE	MAXIMUM SIZE	VISION GLASS	NARROW GLASS	HALF GLASS	FULL GLASS
DE 820	3072	3 Hr., 1-1/2 Hr., 3/4 Hr., 20 Min.	3, 1-1/2 Hr., 3/4 Hr., 20 Min.	3/4 Hr., 20 Min.	20 Min Without Hose Stream
DE 818	3072	3 Hr., 1-1/2 Hr., 3/4 Hr., 20 Min.	3, 1-1/2 Hr., 3/4 Hr., 20 Min.	3/4 Hr., 20 Min.	20 Min Without Hose Stream
DL/DE 420	3072	3 Hr., 1-1/2 Hr., 3/4 Hr., 20 Min.	3, 1-1/2 Hr., 3/4 Hr., 20 Min.	3/4 Hr., 20 Min.	20 Min Without Hose Stream
DL/DE 418	40100	3 Hr., 1-1/2 Hr., 3/4 Hr., 20 Min.	3, 1-1/2 Hr., 3/4 Hr., 20 Min.	3/4 Hr., 20 Min.	20 Min Without Hose Stream
DL/DE 416	40100	3 Hr., 1-1/2 Hr., 3/4 Hr., 20 Min.	3, 1-1/2 Hr., 3/4 Hr., 20 Min.	3/4 Hr., 20 Min.	20 Min Without Hose Stream
DL/DE 420 (Polystyrene)	3072	3 Hr., 1-1/2 Hr., 3/4 Hr., 20 Min.	3, 1-1/2 Hr., 3/4 Hr., 20 Min.	3/4 Hr., 20 Min.	Not Available
DL/DE 418 (Polystyrene)	4080	3 Hr., 1-1/2 Hr., 3/4 Hr., 20 Min.	3, 1-1/2 Hr., 3/4 Hr., 20 Min.	3/4 Hr., 20 Min.	Not Available
DL/DE 416 (Polystyrene)	4080	3 Hr., 1-1/2 Hr., 3/4 Hr., 20 Min.	3, 1-1/2 Hr., 3/4 Hr., 20 Min.	3/4 Hr., 20 Min.	Not Available
DL/DE 420 (Temp. Rise)	3072	3 Hr., 1-1/2 Hr., 3/4 Hr., 20 Min.	3, 1-1/2 Hr., 3/4 Hr., 20 Min.	Not Available	Not Available
DL/DE 418 (Temp. Rise)	4080	3 Hr., 1-1/2 Hr., 3/4 Hr., 20 Min.	3, 1-1/2 Hr., 3/4 Hr., 20 Min.	Not Available	Not Available
DL/DS 418 (Steel Stiff)	50100	3 Hr., 1-1/2 Hr., 3/4 Hr., 20 Min.	3, 1-1/2 Hr., 3/4 Hr., 20 Min.	3/4 Hr., 20 Min.	Not Available
DL/DS 416 (Steel Stiff)	50100	3 Hr., 1-1/2 Hr., 3/4 Hr., 20 Min.	3, 1-1/2 Hr., 3/4 Hr., 20 Min.	3/4 Hr., 20 Min.	Not Available

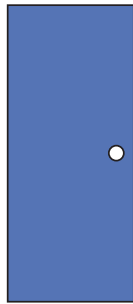
- Vision Glass - exposed glass area is not to exceed 100 square inches with no dimension exceeding 33".
- 3-hour doors with light must incorporate Certified Listed glass/glazing (by others).
- Doors may be provided for Listed glass kits to be installed at the job site. Reinforcing channels must be provided unless approved /listed light insert or hollow metal clips are used.

Labeled • Doors

Doors

Sizes and types

- Doors may be fabricated from Cold Rolled, Hot Rolled or galvanized steel.
- 20 gauge, 18 gauge or 16 gauge “Unifit” Doors can be labeled after the appropriate preparations are added by an authorized U.L. or W.H. warehouse or distributor. Maximum size 20 gauge “Unifit” Door is 3072.
- DE 418 and 420 Doors may be full flush or embossed design. (available as insulated only).

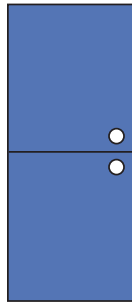


Single Doors

Door Type	Maximum Size	Rating Available
DL 820	3072 (914 x 2184)	1 1/2 Hr., 3/4 Hr., 20 Min.
DE 818	3072 (914 x 2184)	1 1/2 Hr., 3/4 Hr., 20 Min.
DL 420	4080 (1219 x 2438)	3 Hr., 1 1/2 Hr., 3/4 Hr., 20 Min.
DE & DL 418	40100 (1219 x 3048)	3 Hr., 1 1/2 Hr., 3/4 Hr., 20 Min.
DE & DL 416	40100 (1219 x 3048)	3 Hr., 1 1/2 Hr., 3/4 Hr., 20 Min.
DE 414	40100 (1219 x 3048)	3 Hr., 1 1/2 Hr., 3/4 Hr., 20 Min.
DL 420 (Polystyrene)	3072 (914 x 2184)	3 Hr., 1 1/2 Hr., 3/4 Hr., 20 Min.
DE & DL 418 (Polystyrene)	4080 (1219 x 2438)	3 Hr., 1 1/2 Hr., 3/4 Hr., 20 Min.
DE & DL 416 (Polystyrene)	4080 (1219 x 2438)	3 Hr., 1 1/2 Hr., 3/4 Hr., 20 Min.
DL 420 (Temp. Rise)	3072 (914 x 2184)	3 Hr., 1 1/2 Hr., 3/4 Hr.
DE & DL 418 (Temp. Rise)	4080 (1219 x 2438)	3 Hr., 1 1/2 Hr., 3/4 Hr.
DE & DL 418 (Steel Stiff)	4080 (1219 x 2438)	3 Hr., 1 1/2 Hr., 3/4 Hr., 20 Min.
DE & DL 416 (Steel Stiff)	50100 (1524 x 3048)	3 Hr., 1 1/2 Hr., 3/4 Hr., 20 Min.
DE 414 (Steel Stiff)	50100 (1224 x 3048)	3 Hr., 1 1/2 Hr., 3/4 Hr., 20 Min.
UNIFIT™	4080 (1219 x 2438)	3 Hr., 1 1/2 Hr., 3/4 Hr., 20 Min.

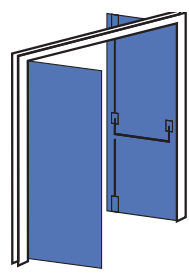
Dutch Doors

Door Type	Maximum Size	Rating Available
DL 420	3072 (914 x 2184)	3 Hr., 1 1/2 Hr., 3/4 Hr., 20 Min.
DL/DE 418	4072 (1219 x 2184)	3 Hr., 1 1/2 Hr., 3/4 Hr., 20 Min.



- Dutch Doors must have an astragal attached to the top leaf.
- A half shelf is optional.
- Lock provision may be for either cylindrical or mortise lock sets.
- Louvers are not permitted.
- Glass lights are permitted in 1-1/2 hr., 3/4 hr. and 20 min. rated doors.

Surface mounted or concealed vertical rod device hardware is required on each leaf. All series doors exceeding 1 1/2 hr. rating require an astragal. Glass lights are permitted up to 100 sq. in. of exposed glass per leaf in 1 1/2 hr. rated doors.

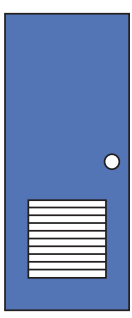


Double Egress Doors

Door Type	Maximum Size	Rating Available
DE & DL 418	8080 (2438 x 2438)	3 Hr., 1 1/2 Hr., 3/4 Hr., 20 Min.
DE & DL 416	8080 (2438 x 2438)	3 Hr., 1 1/2 Hr., 3/4 Hr., 20 Min.
DE 418 (Polystyrene)	8080 (2438 x 2438)	3 Hr., 1 1/2 Hr., 3/4 Hr., 20 Min.

Doors with Fusible Link Louvers

Door Type	Maximum Size	Label Available
DL 418	3672 (914 x 2184)	1 1/2 Hr., 3/4 Hr.
DE & DL 420	3072 (1067 x 2184)	1 1/2 Hr., 3/4 Hr.
DE & DL 418	3672 (1067 x 2184)	1 1/2 Hr., 3/4 Hr.
DE 416	3672 (1067 x 2184)	1 1/2 Hr., 3/4 Hr.



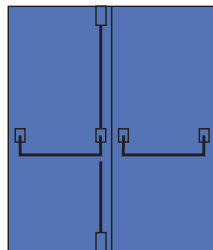
- Maximum louver size: one 24” (610) x 24” (610) per door leaf. Not available with glass lites or fire exit hardware.

Labeled • Doors

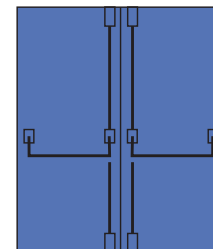
Sizes and types

Pairs of Doors without Astragal

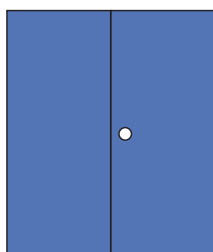
Mortise and vertical rod exit devices with open or closed back strike



Surface or concealed vertical rod exit device on each leaf (two active leaves) or rim exit device with hardware mullion (two active leaves).



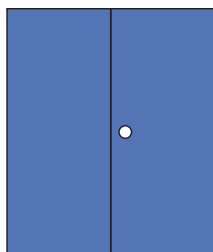
Mortise or cylindrical lock with open or closed back strike and flush bolts



Door Type	Maximum Size	Rating Available
DE & DL 418	80100 (2438 x 3048)	1 1/2 Hr., 3/4 Hr., 20 Min.
DE & DL 416	80100 (2438 x 3048)	1 1/2 Hr., 3/4 Hr., 20 Min.
DE & DL 418 (Steel Stiff)	80100 (2438 x 3048)	1 1/2 Hr., 3/4 Hr., 20 Min.
DE & DL 416 (Steel Stiff)	80100 (2438 x 3048)	1 1/2 Hr., 3/4 Hr., 20 Min.
DE 418 (Temp. Rise)	8072 (2438 x 2184)	1 1/2 Hr., 3/4 Hr.
DE & DL 418 (Polystyrene)	8080 (2438 x 2438)	1 1/2 Hr., 3/4 Hr., 20 Min.
DE & DL 416 (Polystyrene)	8080 (2438 x 2438)	1 1/2 Hr., 3/4 Hr., 20 Min.
UNIFIT™	8080 (2438 x 2438)	1 1/2 Hr., 3/4 Hr., 20 Min.

Pairs of Doors with Astragal

Mortise or cylindrical lock with open or closed back strike and flush bolts



Door Type	Maximum Size	Rating Available
DE 820	6072 (1829 x 2184)	1 1/2 Hr., 3/4 Hr., 20 Min.
DE 818	6072 (1829 x 2184)	1 1/2 Hr., 3/4 Hr., 20 Min.
DL 420	8080 (2438 x 2438)	3 Hr., 1 1/2 Hr., 3/4 Hr., 20 Min.
DE & DL 418	80100 (2438 x 3048)	3 Hr., 1 1/2 Hr., 3/4 Hr., 20 Min.
DE & DL 416	80100 (2438 x 3048)	3 Hr., 1 1/2 Hr., 3/4 Hr., 20 Min.
DE 414	80100 (2438 x 3048)	3 Hr., 1 1/2 Hr., 3/4 Hr., 20 Min.
DL 420 (Polystyrene)	6072 (1829 x 2184)	3 Hr., 1 1/2 Hr., 3/4 Hr., 20 Min.
DE & DL 418 (Polystyrene)	8080 (2438 x 2438)	3 Hr., 1 1/2 Hr., 3/4 Hr., 20 Min.
DE & DL 416 (Polystyrene)	8080 (2438 x 2438)	3 Hr., 1 1/2 Hr., 3/4 Hr., 20 Min.
DE 418 (Temp. Rise)	8080 (2438 x 2438)	3 Hr., 1 1/2 Hr., 3/4 Hr.
DE & DL 418 (Steel Stiff)	80100 (2438 x 3048)	3 Hr., 1 1/2 Hr., 3/4 Hr., 20 Min.
DE & DL 416 (Steel Stiff)	80100 (2438 x 3048)	3 Hr., 1 1/2 Hr., 3/4 Hr., 20 Min.
UNIFIT™	8080 (2438 x 2438)	3 Hr., 1 1/2 Hr., 3/4 Hr., 20 Min.

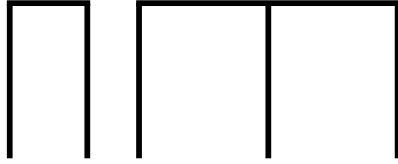
Note: See Technical Data Sheet 405 for Unifit™ door limitations.

Labeled • Frames

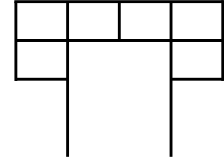
Frames

Sizes and types

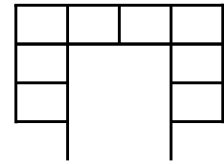
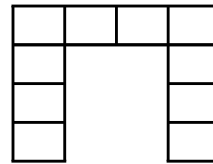
Three Sided Frames



Transom and Sidelight Frame



- Universal (ME/SE) Frame
- Labeled frames may be of 16 gauge, 14 gauge or 12 gauge steel. (12 gauge must be welded)
- Maximum door opening size: 40100 single, 80100 double.
- Maximum rating: 3 hours.
- Jamb Depths:
 - 3" (76) to 7" (178) Sgl. Rabbet
 - 4 3/4" (121) to 20" (508) Dbl. Rabbet
- Removable Fire Rated/UL approved hardware mullion permitted (up to three hour rating).
- Anchors may be shipped loose for up to 3 hr. frames, single or double opening.
- Based on welded construction.



- Labeled frames may be of 16 gauge, 14 gauge or 12 gauge steel.
- Maximum frame size: 12'0" (3658) x 10'0" (3048) or 10'0" (3048) x 12'0" (3658) for masonry installations and 12'0" (3658) x 10'0" (3048) for drywall installations.
- Maximum door opening size: 4080 single, 8080 double.
- Jamb Depth: 4 3/4" (121) to 20" (508). (Double Rabbet)
- Maximum exposed glass size: Contingent on glass type / listings.
- Maximum exposed panel size: 1296 sq. in. with a maximum transom width of 39" (991) and with a maximum height of 36" (914).
- Maximum rating: 1 1/2 hr. with panels, 3/4 hr. with glass for masonry or drywall installations.
- A minimum stop height of 5/8" (16) is required.
- Each jamb shall be provided with a sill anchor and (2) jamb anchors for heights up to and including 60" (1524) and an additional anchor for each additional 30" (762) of fraction thereof.
- Welded only

- Drywall (MH) Frame.
- Labeled frames shall be of 16 or 14 gauge steel.
- Maximum door opening size:
 - 4090 single, 8090 double.
- Maximum rating: 1 1/2 hours.
- Jamb Depths:
 - 3" (76) to 4 3/8" (111) Sg. Rabbet
 - 4 1/2" (114) to 15" (381) Dbl. Rabbet
- Compression Anchors.
- Based on knockdown construction.



Multiple Opening Frame



Double Egress Frames



- Labeled frames may be of 16 gauge, 14 gauge or 12 gauge steel.
- Jamb Depth: 4 3/4" (121) to 20" (508).
- Maximum door opening size: 4080.
- Maximum frame size:
 - 98" (2489) high x 152" (3861) wide.
- Maximum Rating: 1 1/2 hours.
- Welded only.

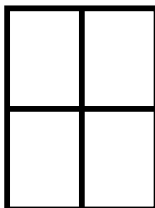
- Labeled frames may be of 16 gauge or 14 gauge steel.
- Maximum door opening size: 8090.
- Jamb Depth: 4 3/4" (121) to 12 3/4" (324)
- Maximum rating: 3 hours.

Sizes and types

Borrowed Light Frame

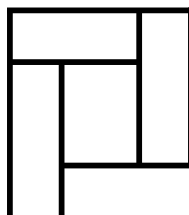
Typical Elevation

- Labeled frames may be of 16 gauge, 14 gauge or 12 gauge steel.
- Maximum size: 9'4" (2845) wide x 8'10" (2692) high.
- Jamb Depth: 4 3/4" (121) to 20" (508).
- Face Dimensions: 1" (25) minimum - 2" (51) maximum.
- Maximum Rating: Contingent on glass/glazing (by others).
- Maximum Exposed Glass: Contingent on glass/glazing (by others).
- A stop height of 5/8" (16) is required.
- Each jamb shall be provided with a sill anchor and a jamb anchor for each 30" (762) of height or fraction thereof. An intermediate base anchor is required for frames over 4'0" (1219) wide.
- Must be welded.



20 Minute Frame with Lights

- Twenty minute type door frame with lights, fire tested without hose stream, for walls at least 3 1/2" (89) thick.
- ME/SE Series profile may be 12 gauge, 14 gauge or 16 gauge steel.
- ME/SE Series profile may be 16 gauge, 14 gauge or 12 gauge steel.
- Mitered corner connections are standard. 12 gauge will be coped.
- Jamb Depth:
 - ME/SE profile - Sgl. Rbt. 3" (76) to 7" (178).
 - DbI. Rbt. 4 3/4" (121) to 20" (508).
- MH/SH profile - Sgl. Rbt. 3 1/2" (89) to 15" (381).
- DbI. Rbt. 4 1/2" (114) to 15" (381).
- The overall frame size shall not exceed 158 in. (4013) (13ft. 2 in.) in width and 139 in. (3531) (11 ft. 7 in.) in height.
- 5/8" (16) glazing bead.
- Also available for borrowed lights.
- *Must be welded.

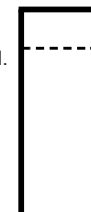


Transom Frames

Transom Frame Without Transom Bar

- Labeled frames may be of 16 gauge, 14 gauge or 12 gauge steel.
- Maximum frame opening size: 4'0" (1219) x 11'0" (3353).
- Maximum door size: 4080.
- Maximum panel height: 48 1/2" (1232)-
- Jamb Depth: 4 3/4" (121) thru 20" (508).
- Maximum rating: 1 1/2 hour.
- Requires a supplemental marking that specifies:
 - "FOR USE ONLY WITH A CLASSIFIED TRANSOM PANEL AND ANY CLASSIFIED FIRE DOOR HAVING A RATING UP TO 1 1/2 HOURS."

Wood Panel



Transom Frame With Transom Bar

- Labeled frames may be of 16 gauge, 14 gauge or 12 gauge steel.
- Maximum frame opening size: 4'0" (1219) x 11'0" (3353).
- Maximum door size: 4080.
- Maximum panel height: 4'0" (1219).
- Jamb Depth: 4 3/4" (121) thru 20" (508).
- Maximum rating: 3 hours.
- Maximum panel height: 34" (864)
- *Fixed mullion unit must be welded.

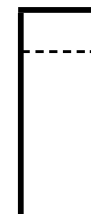
Hollow Metal Panel



Transom Frame Without Transom Bar

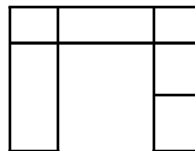
- Labeled frames may be of 16 gage, 14 gage or 12 gage steel.
- Labeled panels may be of 18 or 20 ga. steel.
- Maximum frame opening size: 4'0" (1219) x 11'0" (3353).
- Maximum door size: 4080 single.
- Jamb Depth: 4 3/4" (121) thru 20" (508).
- Maximum rating: 3 hours.
- Astragal required at bottom of panel for 3 hour rating.
- Maximum panel height: 34" (864).

Hollow Metal Panel



Sizes and types

1 1/2 Hour Transom Sidelite Frames With Firelite or Firelite Plus Glass

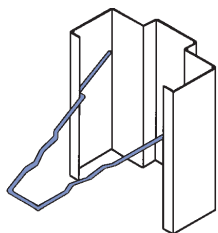
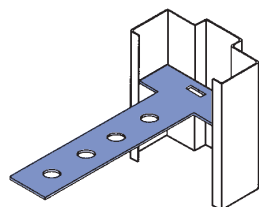
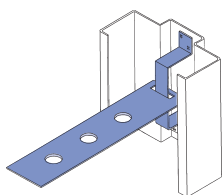
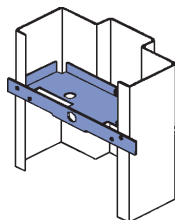
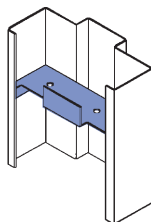
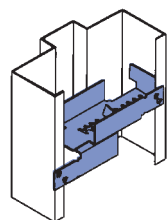
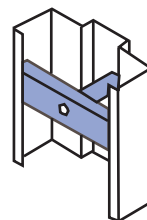
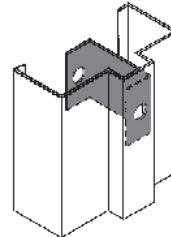
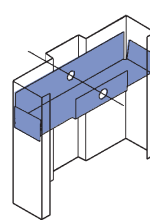
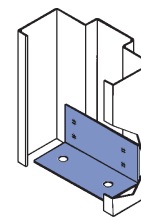
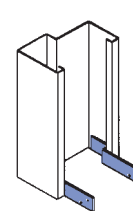
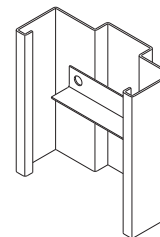


- Maximum door size 8080.
- ME/SE Series profile may be 16 gauge or 14 gauge steel.
- MH/SH Series profile may be 16 gauge steel.
- Jamb depth ME/SE profile single rabbet 3" to 20", double rabbet 5 3/4" to 20".
- Jamb depth MH/SH profile single rabbet 3" to 7", double rabbet 4 3/4" to 15".
- The overall frame size shall not exceed 122" (10'2") in width and 121" (10'1") in height.
- The maximum size opening for the individual transom lights or sidelights shall not exceed 2627 sq. in. and the maximum width and height of the individual lights shall not exceed 54" and 77 3/4" respectively.
- 5/8" high glazing bead.
- Welded construction only.
- Only labeled sealant or 100% silicone sealant may be used as a glazing compound for installing Firelite.
- Masonry anchors may be loose or welded. Drywall anchors must be welded. All frames exceeding 8' x 9' must have anchors welded in place.
- Also available for borrowed light frames.
- Face Dimensions: Refer to U.L. or W.H. procedure manual or contact factory.

Labeled • Frames

Anchor details

Masonry Type

Wire Masonry
AnchorTee Masonry
AnchorWelded On Masonry
AnchorWood/Steel
Stud TypeWood Steel/Stud
Anchor
(Shipped Loose)Steel Stud
Anchor
(Shipped Loose)Wood/Steel Stud
Adjustable AnchorPrepared
Opening TypeTwist in Prepared
Opening Anchor
(Shipped Loose)Welded On
Prepared Opening AnchorSnap-in Prepared
Opening Anchor
(Shipped Loose)Sill Anchor
TypeOne Piece Sill Anchor
Welded OnDrywall Sill Anchor
(Loose)MH
Intermediate
Anchor

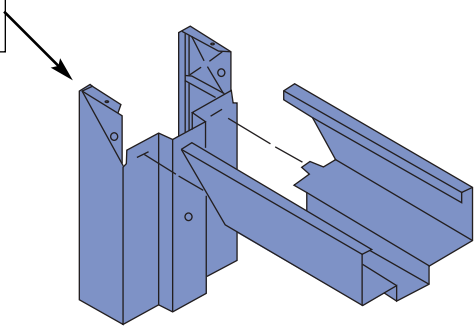
UL and WARNOCK HERSEY

1. ME Frames are not required to have welded anchors.
2. MH Frames over 7'2" must have a welded intermediate anchor.

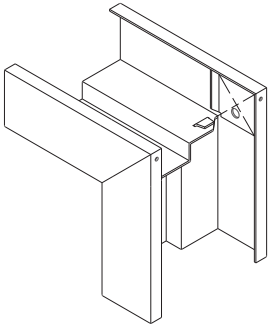
Labeled - Frames

Labeled frame corner construction

NOTE: Labeled frames over 7'2" and all double frames require 2 - #8 x 1/2 Self Tapping Screws to each corner.



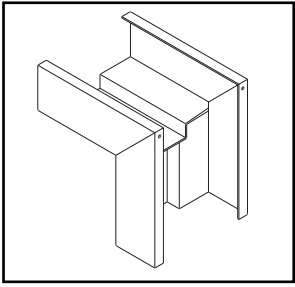
Drywall Frame Mitered



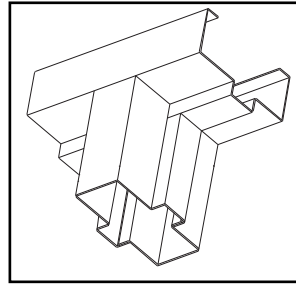
Welded Frame

Labeled • Frames

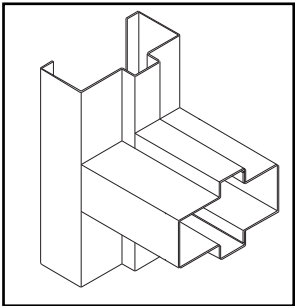
Transom frame & sidelight frame construction



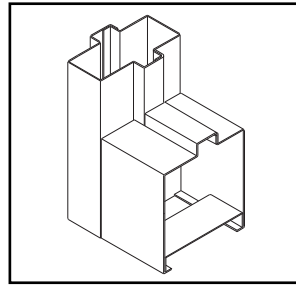
Transom Frame or Sidelight Frame Head Jamb Detail



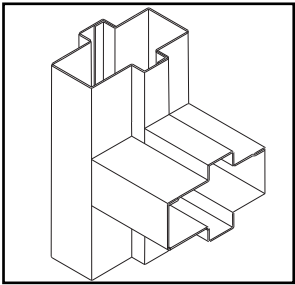
Mullion Head Detail



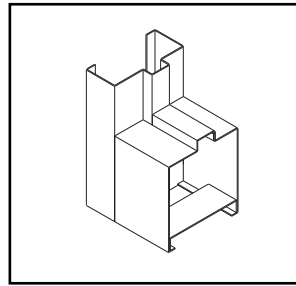
Transom Bar or Sidelight Bar Jamb Detail



Sidelight Base Mullion Detail



Mullion Sidelight Bar Detail



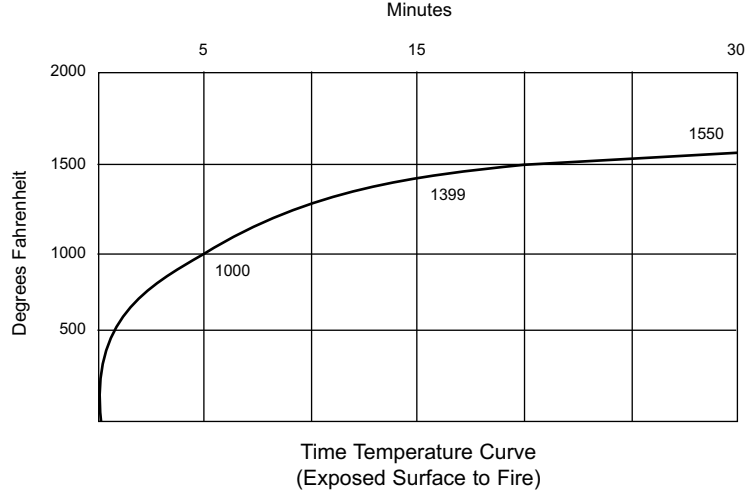
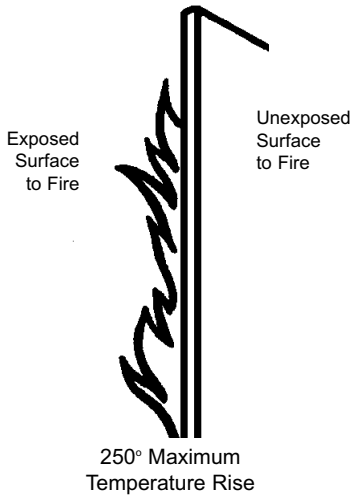
Sidelight Base Jamb Detail

Labeled • U.L. Labeled DE Series

U.L. Labeled DE Series

1 3/4" temperature rise door

Republic U.L. Labeled Temperature Rise Door is of steel-covered composite fire door construction and fabricated of 20 or 18 gauge steel panels bonded to a mineral fiber board core. The temperature developed on the unexposed face of the door after the first 30 minutes of a fire test did not exceed 250 Fahrenheit above the ambient temperature.



Doors are thoroughly cleaned, phosphatized and receive one coat of force-cured prime paint.

Doors are individually packaged, completely covering the door to prevent damage to door or finish. The doors should be stored in an upright position, under cover at the building site on wood sills, or in a manner that will prevent rust or damage.

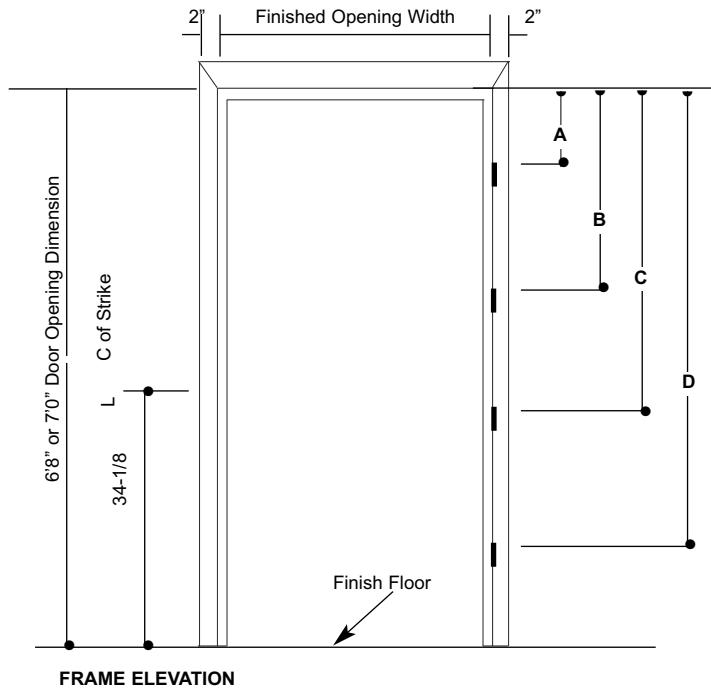
Glass lights are permitted in doors with up to a maximum of 100 square inches of glass area per leaf.

Miscellaneous

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Doors & Frames

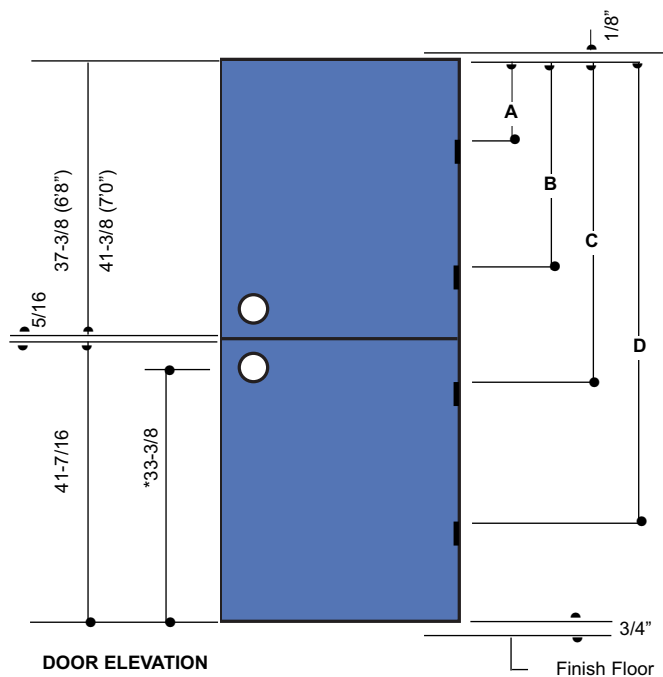
Dutch doors & frames



Top to Top Standard Hinge Locations 4-1/2" x 4-1/2" Hinges

NOTE: Provisions shown are for plant produced dutch doors and frames. Not to be used when modifying 8'0" doors.

Door Height	A	B	C	D
6'8"	7-1/2	25-11/16	45-3/16	67-3/8
7'0"	7-1/2	29-11/16	49-3/16	71-3/8

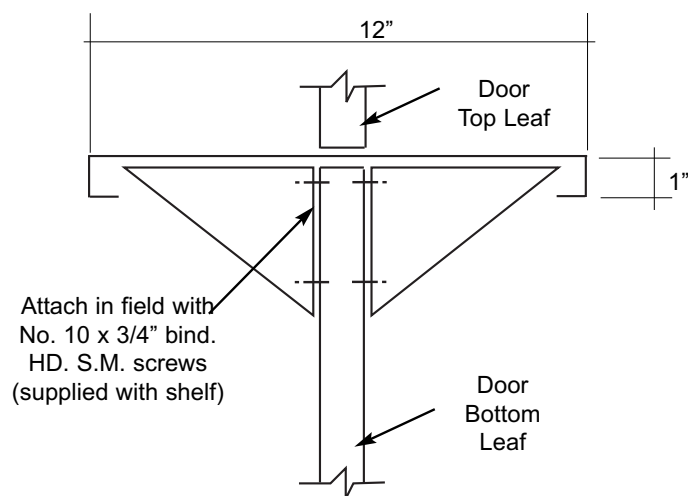


* When using 5" hinges subtract 1/4" from A, B, C, D dimensions shown above and below.

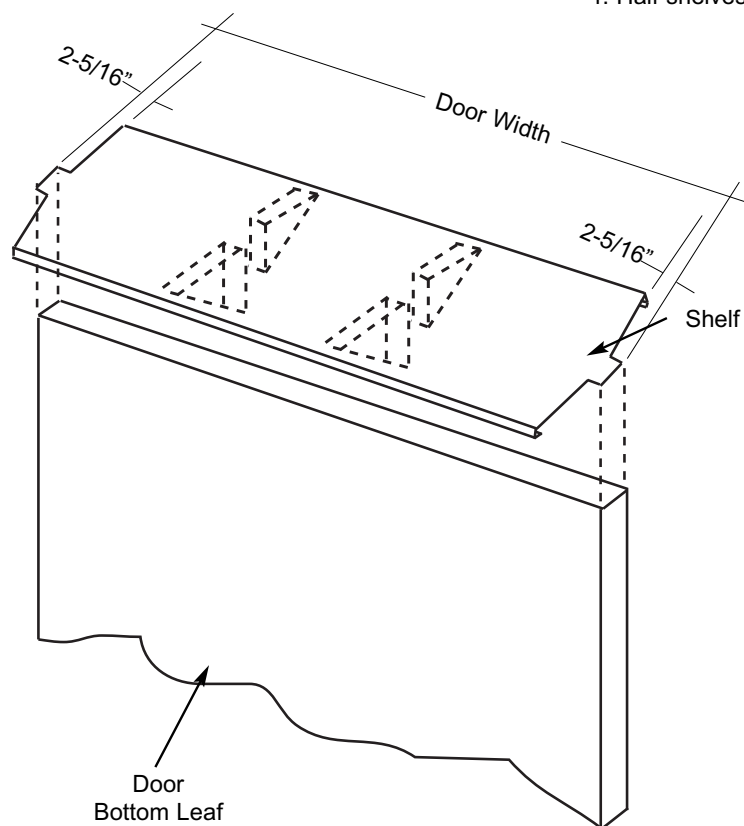
* When Government Series 86 Lock is used (ANSI A115.1) dimension to center of lock is 3/8" less than indicated.

Door Height	A	B	C	D
6'8"	7-3/8	25-9/16	45-1/16	67-1/4
7'0"	7-3/8	29-9/16	49-1/16	71-1/4

Dutch doors & frames

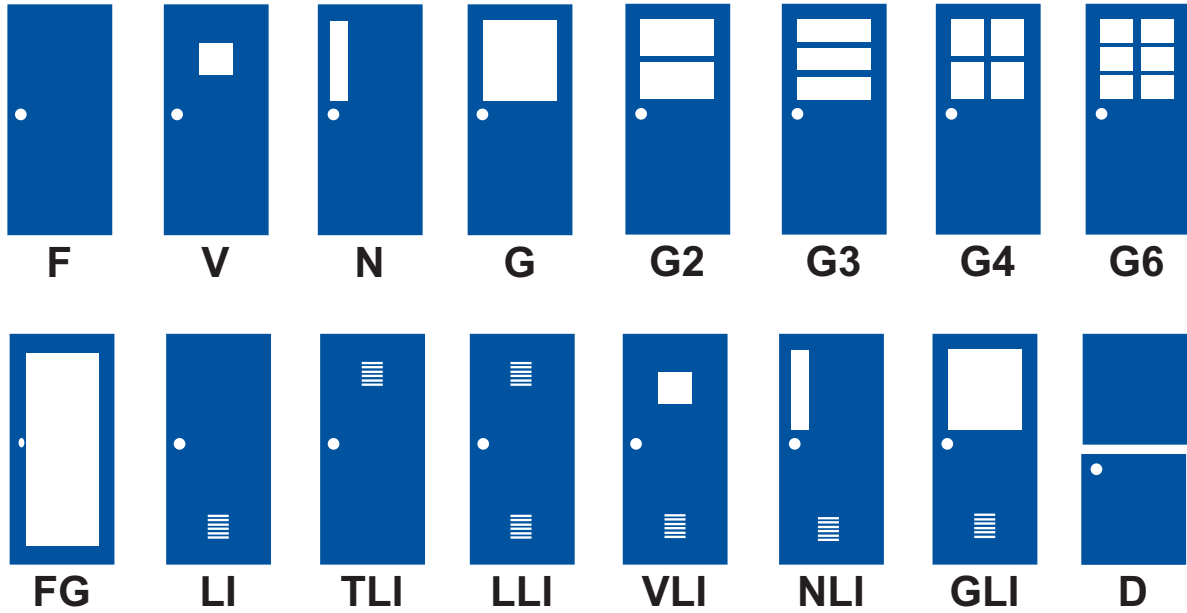


1. Dutch door shelves are not supplied with dutch doors unless specified. Shelves are shipped loose for installation by others.
2. Standard dutch door shelves shall be fabricated of 16 gage CRS phosphatized and finished with one coat of force-cured gray prime paint.
3. See standard door technical data sheets for door and hardware details.
4. Half shelves also available.



Miscellaneous • Doors & frames

Basic door designs



NOTE: We reserve the right, without notice, to make changes in specifications, construction, design, and details at any time in such manner as we may consider necessary or advisable. Corrections to reflect any such changes shall be included in subsequent printings of this publication.

Miscellaneous • Doors & frames

Door & Frame handing chart

How to determine hand of door and frame. Hand all doors by standing outside or key side - facing door.

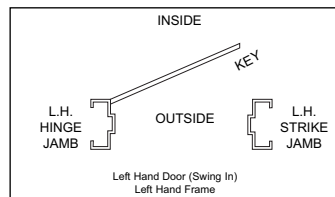
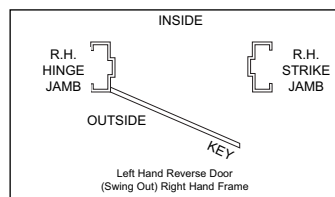
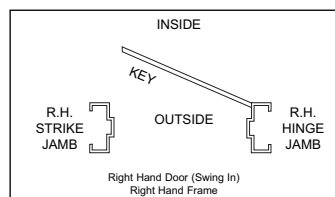
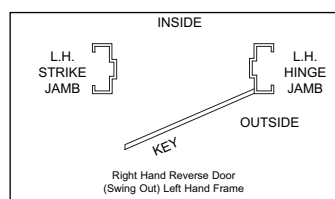
SINGLE DOORS

When door swings toward you and hinges are on right side of door:

Door is R.H.R.
Frame is L.H.

When door swings to inside and hinges are on right side of door:

Door is R.H.
Frame is R.H.



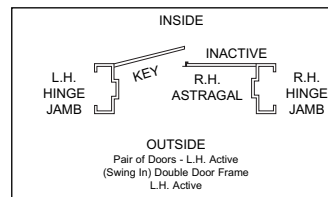
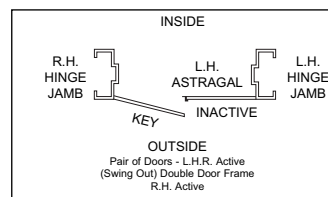
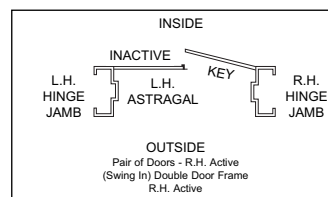
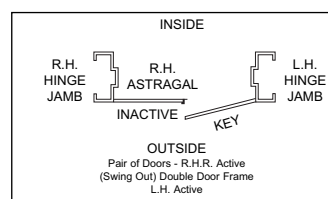
PAIRS OF DOORS

When door leaves swing toward you and hinges are on right side of active leaf:

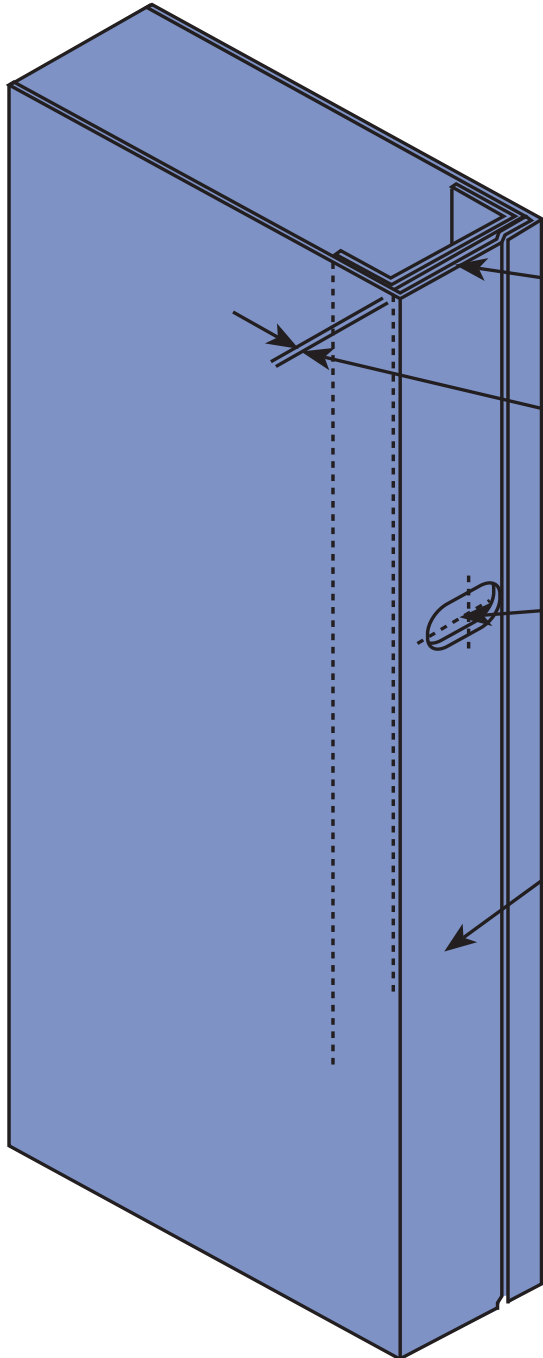
Door is R.H.R. Active
Frame is L.H. Active

When door leaves swing to inside and hinges are on right side of active leaf:

Door is R.H. Active
Frame is R. H. Active



Replacement Unfit™ Door continuous hinge reinforced



Continuous 10 Gauge Hinge Channel

Channel Depth - .190" (Heavyweight Hinge)
For use with heavy weight or standard weight hinges and hinge fillers.

Hinge Channel Locator Holes - 3-5 Required

No Cutouts or Holes for Hinges

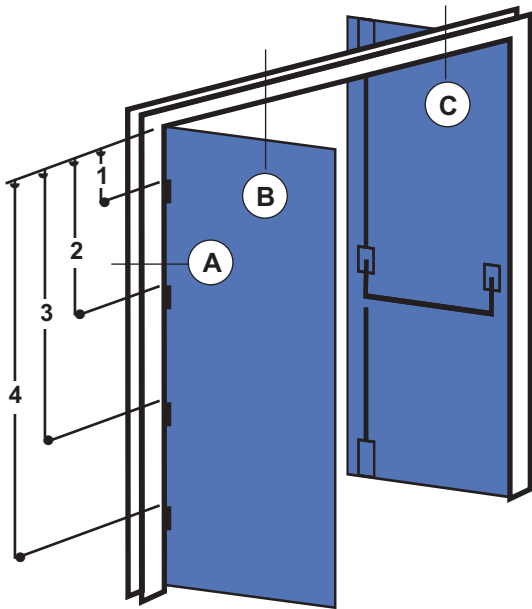
Lock Edge - No Cutouts in Edge or Faces

Gauge - 18, 16 or 14 Gauge Face Sheets

Miscellaneous • Doors & frames

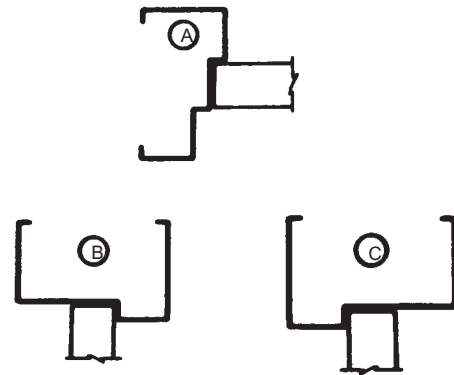
Double Egress ME Frames

Double Egress Openings are designed to permit the flow of traffic in two directions through the same opening.



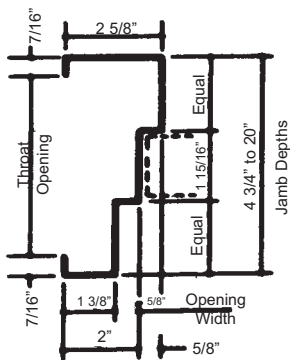
Typical elevation

OPG	Dimensions based on 4 1/2" prep			
	1	2	3	4
6' 8"	5"	35 1/4"	65 1/2"	N/A
7' 0"	5"	37 1/4"	69 3/8"	N/A
7' 2"	5"	38 1/4"	71 1/2"	N/A
7' 10"	5"	29 53/64"	54 21/32"	79 1/2"
8' 0"	5"	30 1/2"	56"	81 1/2"
10' 0"	5"	38 1/2"	72"	105 1/2"

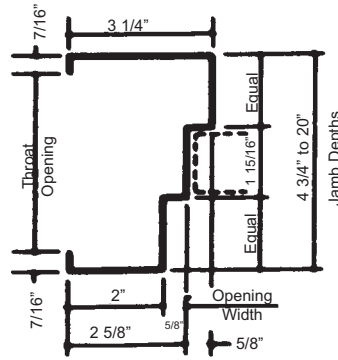


Header

Rough Opening Required for Butted Frame	
Door Width Opening + 2x Smaller Face Dimension + 1 3/4"	
Door Height Opening + Smaller Face Dimension + 1/4"	



1 3/8" Face Standard



2" Face Optional

Miscellaneous • Doors & frames

Double Egress ME Frames

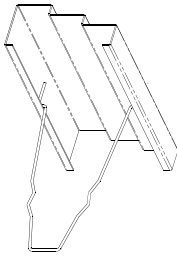
A. Fire Labeled - Underwriters or ITS

Series	Gauge	THK	Hardware	Jamb Depths		Label Rating	DL Only	DE Only
				ITS 4-3/4" Min.	14" Max.		3Hr. 1-1/2Hr. 3/4Hr. 20 Min.	3Hr. 1-1/2Hr. 3/4Hr. 20 Min.
DOOR DL/DE	20, 18, 16, 14	1-3/4	Two UL approved vertical rods	ITS 4-3/4" Min.	14" Max.	Max Door Size	8080-16 Ga.	6070 14 Ga. 8080 18 Ga. 8080 16 Ga.
FRAME ME	16 or 14			4-3/4"	12-3/4"	Max. Size		

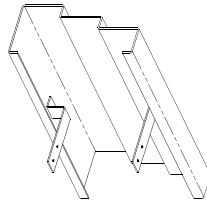
B. Non-Label

Series	Gauge	THK	Hardware	Jamb Depths		Construction
DOOR DL/DE	20, 18, 16, 14	1-3/4	Optional	4-3/4 Min.	20" Max	Frames to have welded or K.D. corners
FRAME ME	16 or 14					

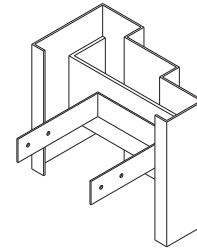
ANCHOR DETAILS



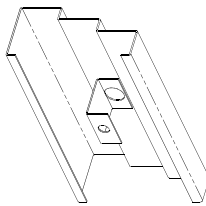
Wire Masonry Anchor



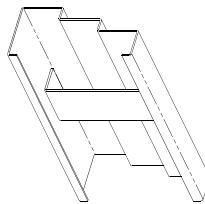
Wood Stud Anchor



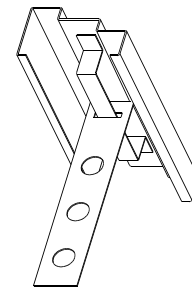
Wood Stud Anchor
Single Piece



Prepared Opening Anchor

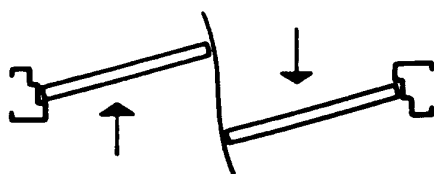


Steel Stud Anchor

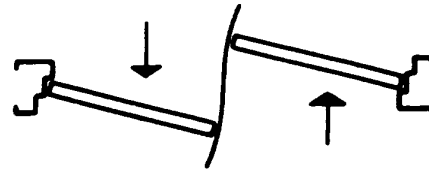


Adjustable Masonry Anchor

DOOR AND FRAME HANDING CHART



Left Hand Swing



Right Hand Swing (Standard)

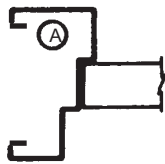
Miscellaneous • Doors & frames

Double Egress MH Frames

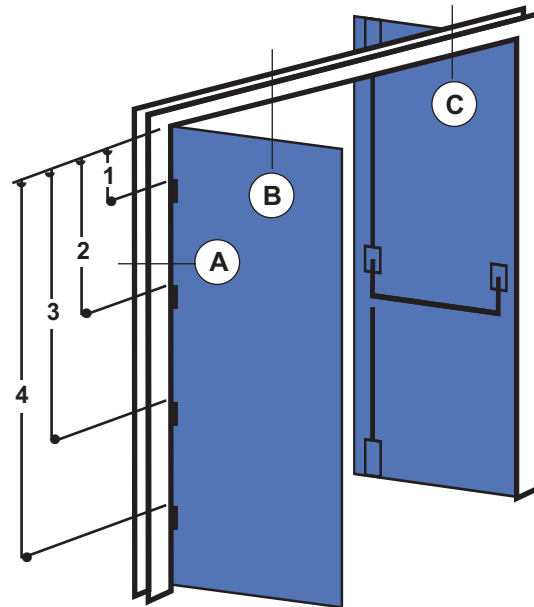
Double Egress Openings are designed to permit the flow of traffic in two directions through the same opening.

DIMENSIONS (4-1/2" Hinge)				
OPG	1	2	3	4
6'8"	5"	35-1/4"	65-1/2"	N/A
7'0"	5"	37-1/4"	69-1/2"	N/A
7'2"	5"	38-1/4"	71-1/2"	N/A
7'10"	5"	29-53/64"	54-21/32"	79-1/2"
8'0"	5"	30-1/2"	56"	81-1/2"
10'0"	5"	38-1/2"	72"	105-1/2"

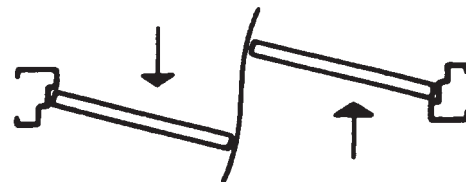
Top of Hinge



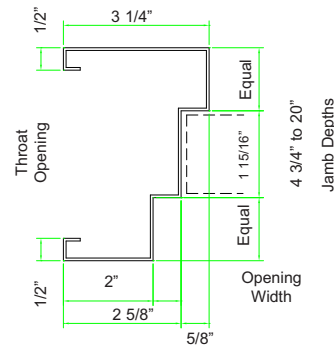
Header



Typical Elevation



Rough Opening Required for Drywall Double Egress Frame Based on (1) Compression Anchor located on Door Rabbit (per jamb)
Door Width Opening + 3"
Door Height Opening + 1"



2" Face (Standard)

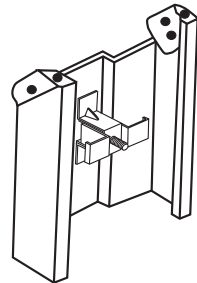
Miscellaneous • Doors & frames

Double Egress MH Frames

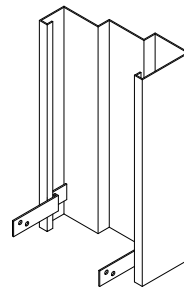
Non-Label

Series	Gauge	THK	Hardware	Jamb Depths		Construction
DOOR DL/DE	20, 18, 16, 14	1-3/4	Optional	4-3/4 Min.	20 Max.	Frames to have welded or K.D. corners
FRAME MH	16 or 14					

ANCHOR DETAILS

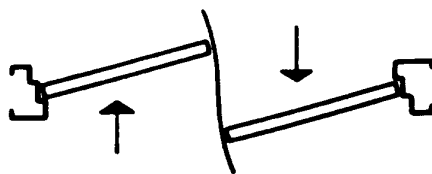


Compression Anchor (Standard)

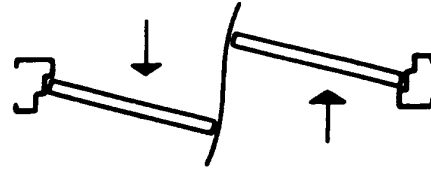


Double Egress Sill Anchor (Loose)

DOOR AND FRAME HANDING CHART



Left Hand Swing



Right Hand Swing (Standard)

Paint specifications

Waterborne acrylic

All Republic's doors and frames are thoroughly cleaned and phosphatized prior to painting. The prime paint used on Republic's doors is a waterborne acrylic. Cure after painting is a forced drying via gas fired convection heating. This process assures maximum adhesion, hardness and strength. Republic's primers are capable of meeting the requirements as specified by ANSI A250.10, which, include

but are not limited to the following:

- **ASTM B117:** Method of Salt Spray (Fog) Testing (120 continuous hour exposure)
- **ASTM D4585:** Standard Practice for Testing Water Resistance of Coating Using Controlled Condensation (240 continuous hour exposure)
- **ASTM D2794:** Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact) (20 in/ lbs direct impact)
- **ASTM D3359:** Standard Test Method for Measuring Adhesion by Tape Test

The gloss for Republic's primer is less than 18% reflectance measured using a 60° gloss meter.

Waterborne acrylic modified enamel

All Republic's doors and frames requiring finish paint are primed as specified above then coated with a finish paint. The cure is a combination of Infra-red and gas fired convection heat sources. Republic's finish painted product is capable of meeting the requirements as specified by ANSI A250.3, which include but are not limited to the following:

- **ASTM B117:** Method of Salt Spray (Fog) Testing (120 continuous hour exposure)
- **ASTM D458:** Standard Practice for Testing Water Resistance of Coating Using Controlled Condensation (480 continuous hour exposure)
- **ASTM D2794:** Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact) (20 in/ lbs direct impact)
- **ASTM D3359:** Standard Test Method for Measuring Adhesion by Tape Test

The gloss for Republic's finish paint is 20%, + - 5% reflectance, measured using a 60° gloss meter.

Republic's prime paint and finish paint comply with Public Law 91-695, Lead Based Paint.

The spray application is electrostatic by ITW Ransburg's Rotary Bells with feedback loops and digital process control. Automated alarms stop the line if the feedback system provides a low or high signal. The finished product is consistently coated with a uniform film build, free of voids or light spots to assure superior performance. This approach assures the most uniform coating available.

Miscellaneous • Paint specifications

Paint specifications



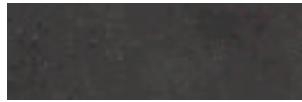
Beige



No. FP-3 Midnite Bronze



No. FP-4 Cream Buff



No. FP-3 Black



No. FP-7 Stone White



No. FP-9 White

Other colors are available on request.

Field painting recommendations

Republic uses an industrial grade primer which is a modified; water alkyd type product. The primer is intended to protect the surface for a reasonable time -until a finish paint can be applied. The primer also serves as a matrix for subsequent applications of finish paint.

When painting, always clean the product to be free of dirt, rust, debris and oil. A suitable and readily available cleaning product is "simple green" or similar that wipes on. Be sure to wipe dry. Do not let any product remain on the surface. Clean and dry is the basic requirement for paint adhesion.

Do not use lacquer thinner or any solvent that may react on the primer. Never use gasoline, kerosene, a strong base or an acid.

If there is any question about using a particular finish coat over the primed doors or frames, a small section of primed metal should be tested before painting the entire area.

For superior paint adhesion we recommend cleaning and lightly scuff sanding the door or frame to remove any foreign matter that may have accumulated onto the surfaces during construction. Often, scratches and dents will require sanding to metal and recoating with primer. Always use products made for metal substrates with rust inhibitive qualities and direct-to-metal application.

Sprayed, rolled or brushed most paint will adhere to the prime surface if properly cleaned and roughen by scuff sanding. The Direct to Metal products are recommended to avoid rust blooms from the microscopic areas of bare metal that may result during the sanding/cleaning process.

Phosphatizing

A superior prime paint or finish paint process must initiate with a superior pretreat of the surface to be coated.

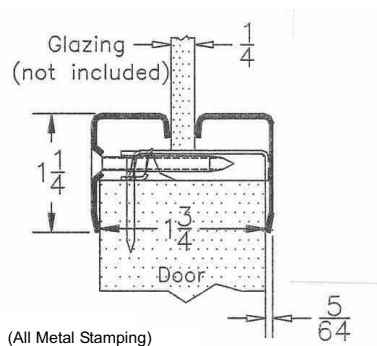
Republic doors and frames has such a superior pretreat system. During this phosphatizing process, the door or frame is thoroughly cleaned before the phosphatizing agent is applied to the surface.

Phosphatizing is a method of chemically producing a phosphate coating on steel that is composed of millions of microscopic crystals integrated with the metal.

Insoluble in water, this coating effectively retards corrosion resulting from moisture that may penetrate the paint film. It provides a foothold for the paint and prevents flaking or peeling. The phosphatized coating is softer than the base metal and is adherently etched into the metal surface.

NOTE: We reserve the right, without notice, to make changes in specifications, construction, design and details at any time, in such manner as we may consider necessary or advisable. Corrections to reflect any such changes shall be included in subsequent printing of this publication.

Vision kits



No Glazing Compound, Tape or Intumescent
is required for most label applications.

- reduces cost
- simplifies installation
- improves appearance

MATERIAL:
18 gauge CRS frame standard
-33% thicker than 20 gauge frames
-maintains flat appearance

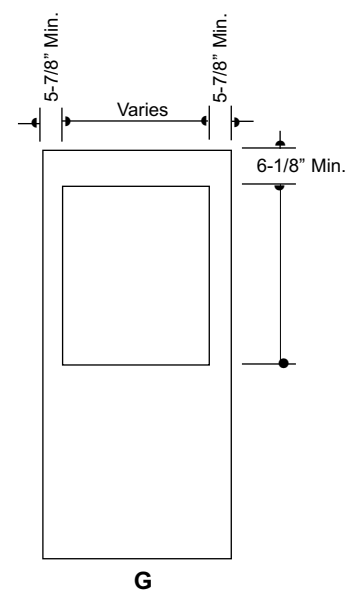
DIMENSIONS:
Standard frame fits 1/4" glass and 1-3/4" door.

NARROW FACE FRAME:
-better proportioned
-visually appealing
-suitable for wood, metal or mineral core doors

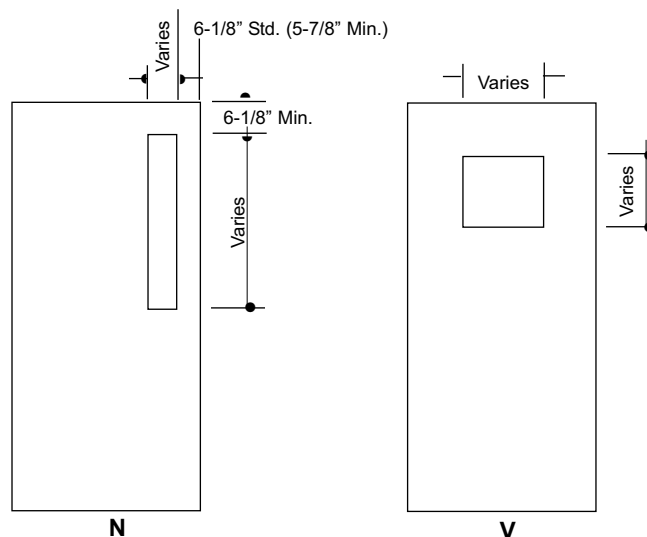
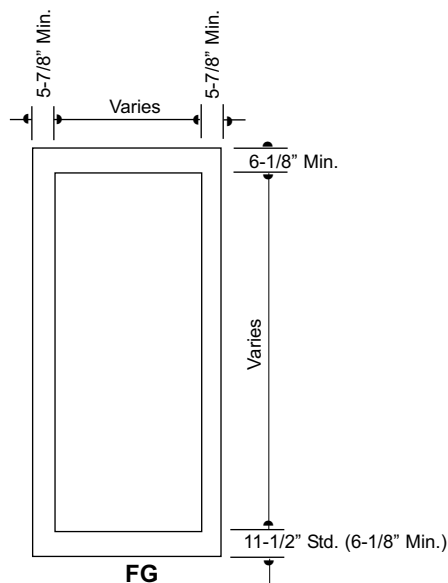
LOW PROFILE:
-provides less interference for exit hardware

NAIL-IN FASTENING METHOD:
-requires only one person to install
-significantly reduces installation time
-corridor side is fastener free, secure and attractive

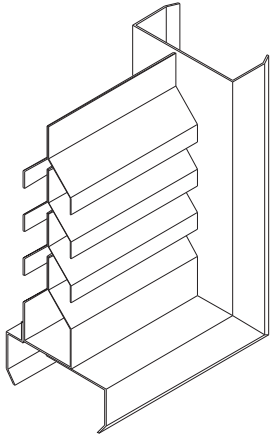
ORDER INFORMATION
ORDER SIZE - Inside dimension of frame (H+W)
CUTOUT SIZE - Order Size + 1-1/2"
GLASS SIZE - Order Size + 3/4"



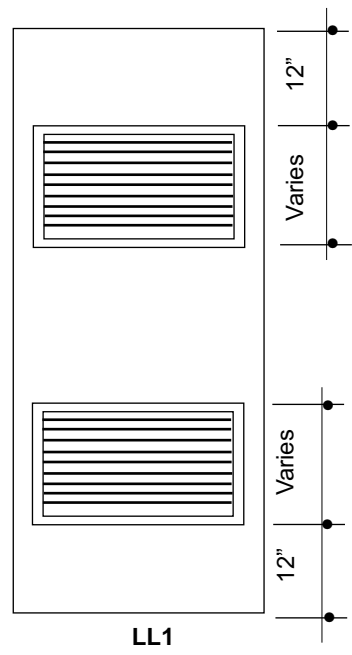
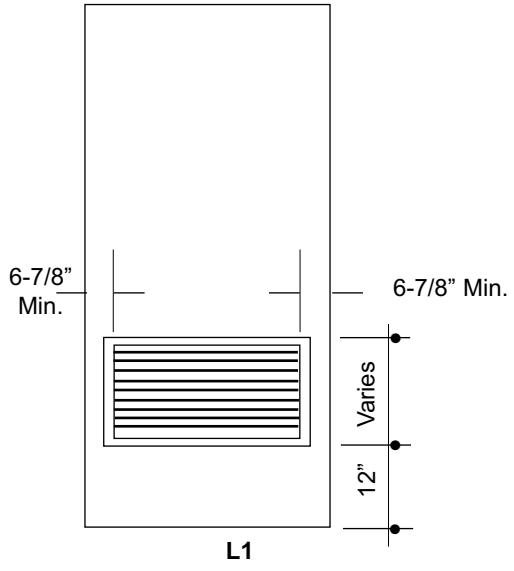
These dimensions are the actual cutout size, and the locations are figured using Republic's standard 3/4" undercut (floor clearance). Republic will position the glass kit cutouts in the same location from the finished floor regardless of the undercut unless otherwise specified.



Louvers



Inverted "Y" Blade Louver
30% Free Air
(Air Louver)

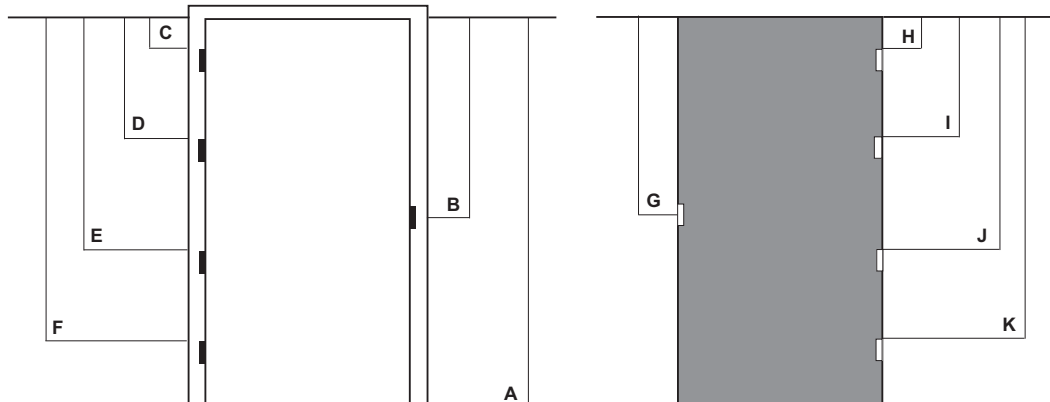


Dimension's shown are actual dimension's to cutouts on door.

Miscellaneous • Standard hardware locations

Standard hardware locations

Top-to-top



ALL DIMENSIONS ARE TOP DOWN

4 - 1/2" HINGES ONLY!

Nom Size		Top-Down Lock CL	Frame Dims Top-Top Down to Hinge				Top-Down Lock CL	Door Dims Top-Top Down to Hinge			
A	# Hinges	B	C	D	E	F	G	H	I	J	K
6'6"	3	37-11/16	5	34-1/4	63-1/2		37 9/16	4 7/8	34-1/8	63-3/8	
6'8"	3	39-11/16	5	35-1/4	65-1/2		39 9/16	4 7/8	35-1/8	65-3/8	
6'10"	3	41-11/16	5	36-1/4	67-1/2		41 9/16	4 7/8	36-1/8	67-3/8	
7'0"	3	43-11/16	5	37-1/4	69-1/2		43 9/16	4 7/8	37-1/8	69-3/8	
7'2"	3	45-11/16	5	38-1/4	71-1/2		45 9/16	4 7/8	38-1/8	71-3/8	
7'4"	3	47-11/16	5	39-1/4	73-1/2		47 9/16	4 7/8	39-1/8	73-3/8	
7'6"	3	49-11/16	5	40-1/4	75-1/2		49 9/16	4 7/8	40-1/8	75-3/8	
7'8"	4	51-11/16	5	29-5/32	53-21/64	77-1/2	51 9/16	4 7/8	29-1/32	53-13/64	77-3/8
7'10"	4	53-11/16	5	29-53/64	54-21/32	79-1/2	53 9/16	4 7/8	29-45/64	54-17/32	79-3/8
8'0"	4	55-11/16	5	30-1/2	56	81-1/2	55 9/16	4 7/8	30-3/8	55-7/8	81-3/8

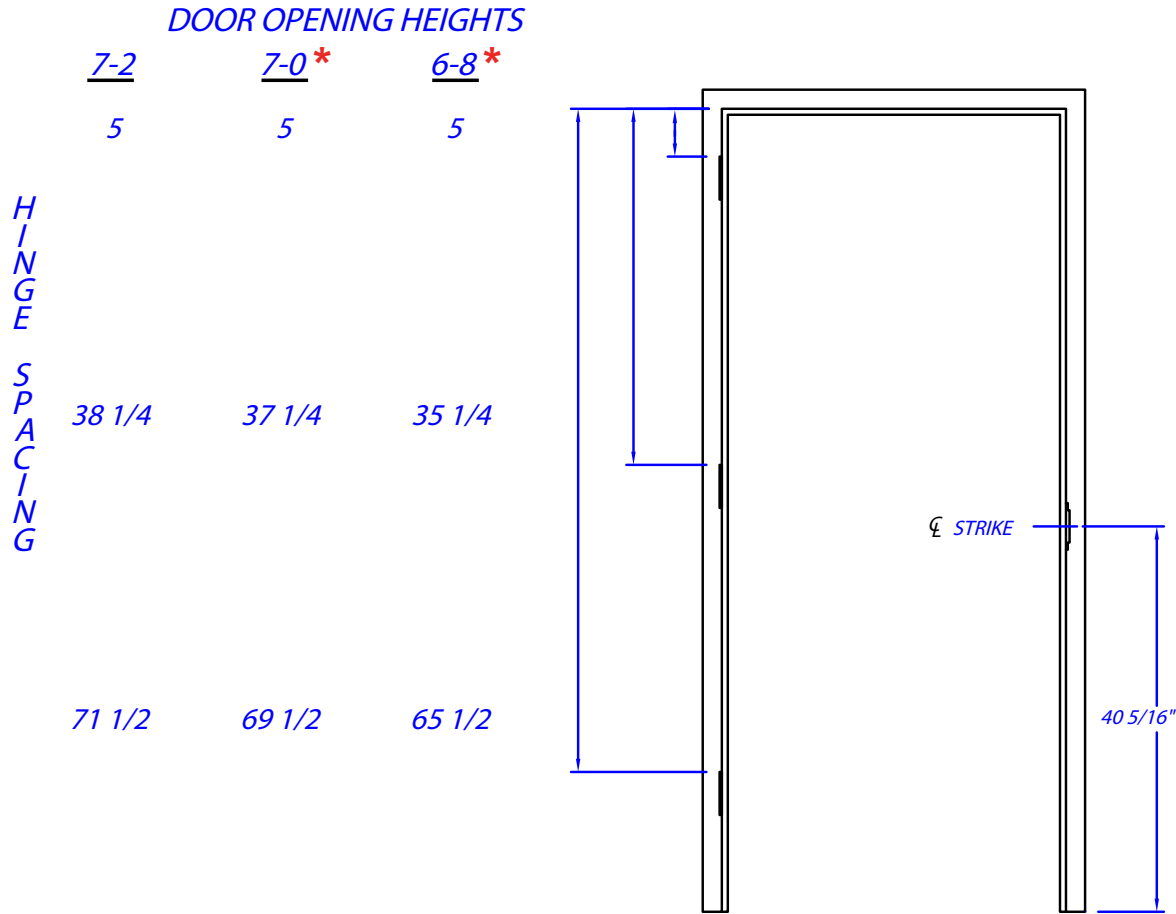
6' 8" & 7' 0" Hinge Spacing

Nom Size		Top-Down Lock CL	Frame Dims Top-Top Down to Hinge				Top-Down Lock CL	Door Dims Top-Top Down to Hinge			
A	# Hinges	B	C	D	E	F	G	H	I	J	K
6'8" **	3	39-11/16	7.5	37-7/16	67-3/8		39 9/16	7 3/8	37-5/16	67-1/4	
7'0" **	3	43-11/16	9.5	39-7/16	69-3/8		43 9/16	9 3/8	39-5/16	69-1/4	

Miscellaneous • Standard hardware locations

6-8, 7-0 & 7-2 Heights with 4 1/2" hinges

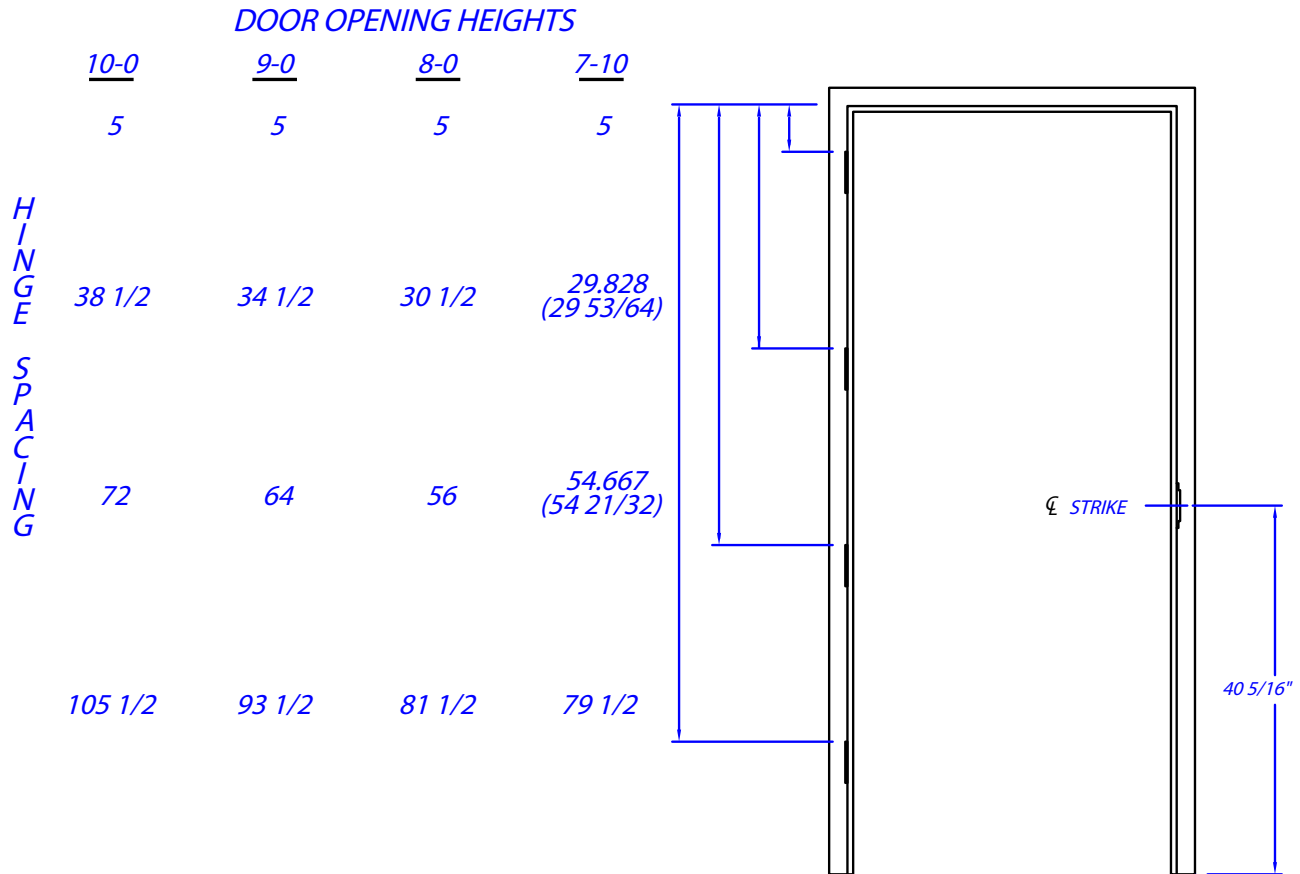
**Hinge locations effective 7/15/15.*



The hardware locations shown are for 1-3/4" door frames, for heights shown with 4-1/2" hinges, and will be furnished unless otherwise agreed to.

Miscellaneous • Standard hardware locations

7-10, 8-0, 9-0 & 10-0 Heights with 4 1/2" hinges



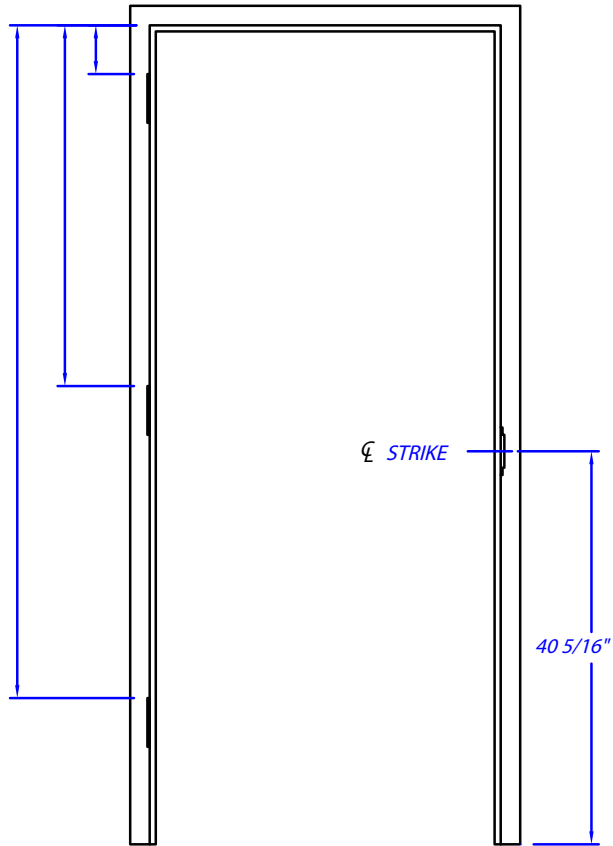
*53/64" represents a measurable approximation to .83".

The hardware locations shown are for 1-3/4" door frames, for heights shown with 4-1/2" hinges, and will be furnished unless otherwise agreed to.

6-8, 7-0 & 7-2 Heights with 5" hinges

DOOR OPENING HEIGHTS

	<u>7-2</u>	<u>7-0</u>	<u>6-8</u>
<i>H I N G E</i>	5	5	5
<i>S P A C I N G</i>	38	37	35
	71	69	65

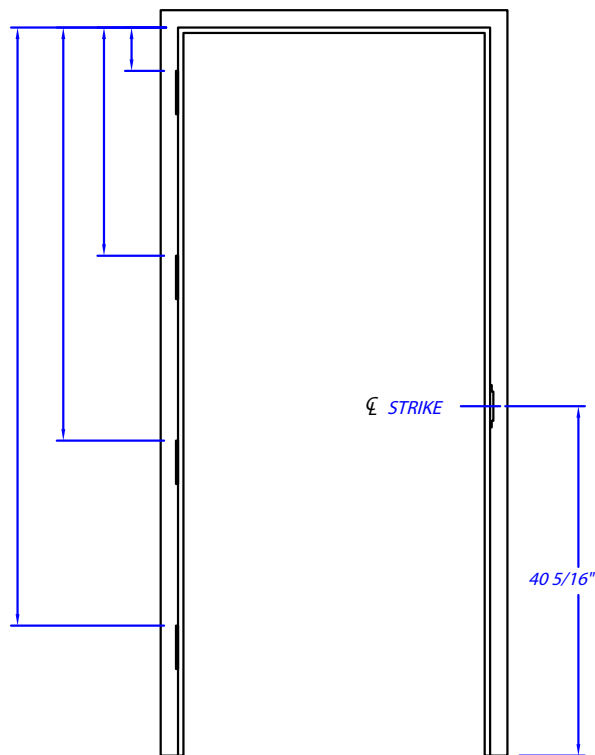


The hardware locations shown are for 1-3/4" door frames, for heights shown with 5" hinges, and will be furnished unless otherwise agreed to.

Miscellaneous • Standard hardware locations

7-10, 8-0, 9-0 & 10-0 Heights with 5" hinges

	<i>DOOR OPENING HEIGHTS</i>			
	<u>10-0</u>	<u>9-0</u>	<u>8-0</u>	<u>7-10</u>
	5	5	5	5
<i>H I N G E</i>	38.328 (38 21/64)	34.328 (34 21/64)	30.328 (30 21/64)	29.672 (29 43/64)
<i>S P A C I N G</i>	71.667 (71 21/32)	63.667 (63 21/32)	55.667 (55 21/32)	54.333 (54 21/64)
	105	93	81	79



*21/64" represents a measurable approximation to .33".

*43/64" represents a measurable approximation to .66".

The hardware locations shown are for 1-3/4" door frames, for heights shown with 5" hinges, and will be furnished unless otherwise agreed to.

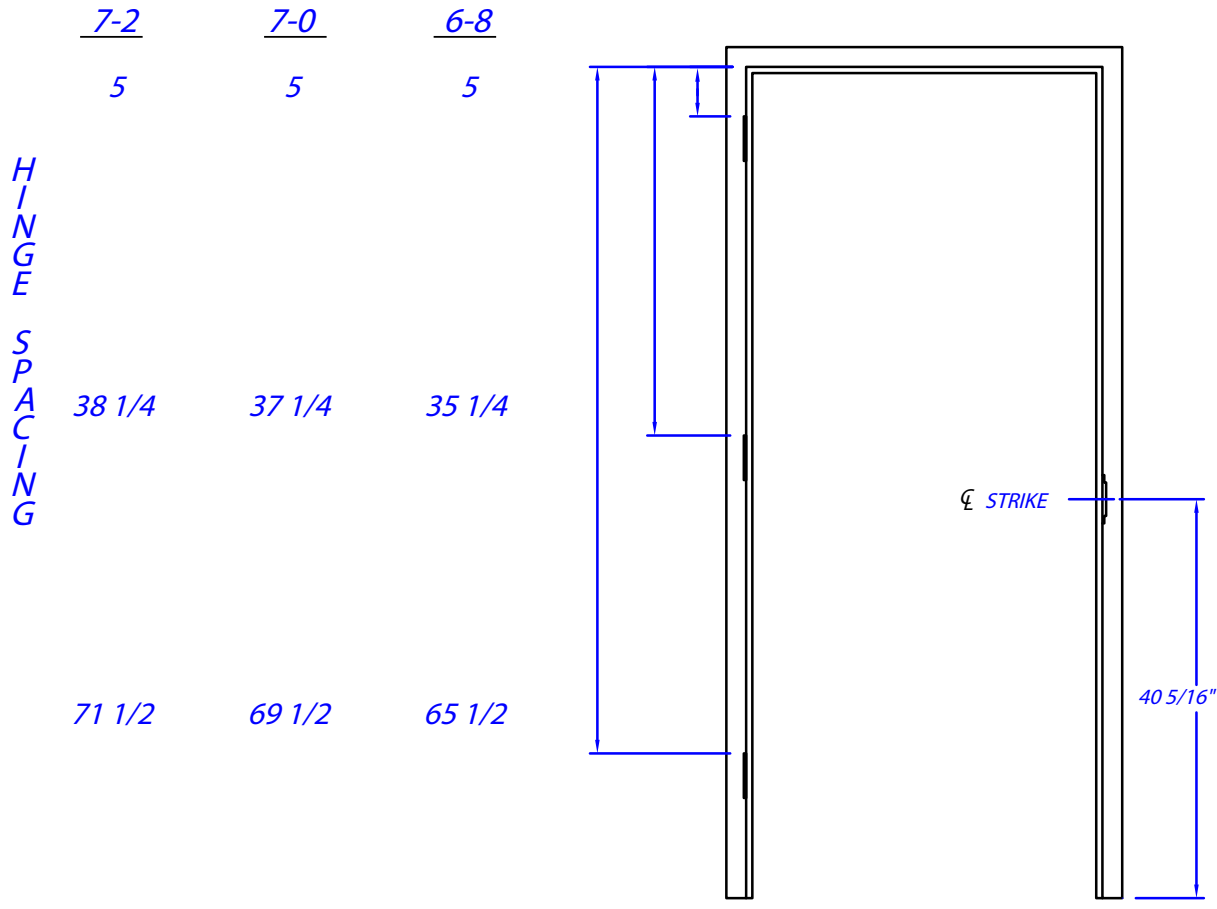
NAAMM Alternate hardware locations for door frames

6-8, 7-0 & 7-2 Heights with 4 1/2" hinges

Hardware locations are based on the following:

- 5" from header to top of upper hinge.
- 10" from bottom of jamb to bottom of lower hinge.
- Equal spacing between intermediate hinges.

DOOR OPENING HEIGHTS



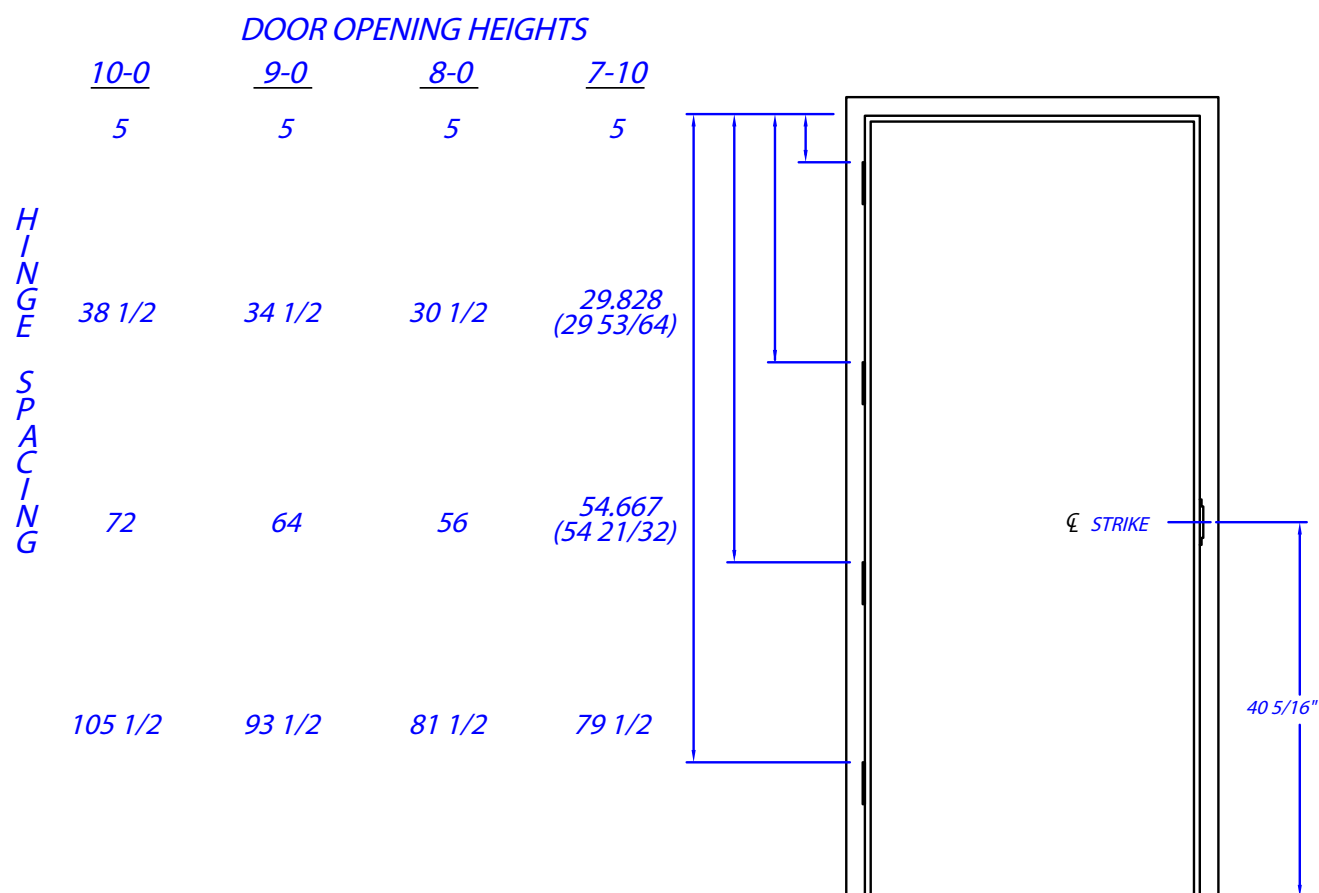
The above 4-1/2" hardware locations will be furnished only when agreed to.

Miscellaneous • NAAMM Alternate hardware

7-10, 8-0, 9-0 & 10 Heights with 4 1/2" hinges

Hardware locations are based on the following:

- 5" from header to top of upper hinge.
- 10" from bottom of jamb to bottom of lower hinge.
- Equal spacing between intermediate hinges.



*53/64" represents a measurable approximation to .83".

The above 4-1/2" hardware locations will be furnished only when agreed to.

Miscellaneous • NAAMM Alternate hardware

6-8, 7-0 & 7-2 Heights with 5" hinges

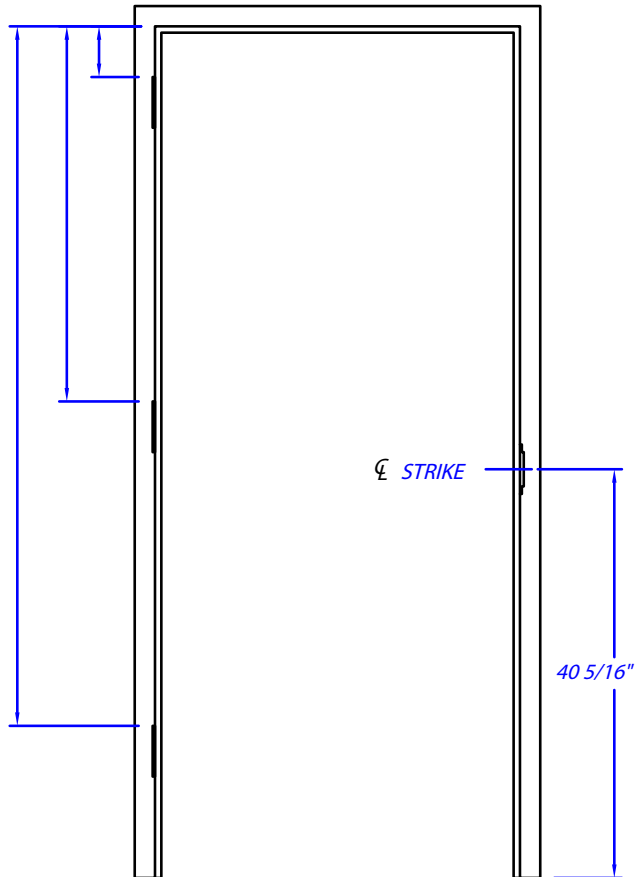
Hardware locations are based on the following:

- 5" from header to top of upper hinge.
- 10" from bottom of jamb to bottom of lower hinge.
- Equal spacing between intermediate hinges.

DOOR OPENING HEIGHTS

HINGE SPACING

	<u>7-2</u>	<u>7-0</u>	<u>6-8</u>
5	5	5	5
38	37	35	
71	69	65	



The above 5" hardware locations will be furnished only when agreed to.

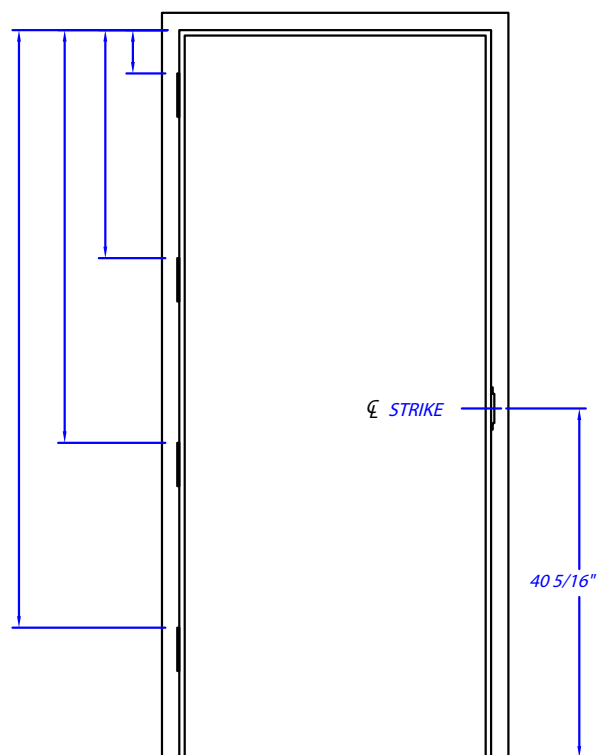
Miscellaneous • NAAMM Alternate hardware

7-10, 8-0, 9-0 & 10-0 Heights with 5" hinges

Hardware locations are based on the following:

- 5" from header to top of upper hinge.
- 10" from bottom of jamb to bottom of lower hinge.
- Equal spacing between intermediate hinges.

	<i>DOOR OPENING HEIGHTS</i>			
	<u>10-0</u>	<u>9-0</u>	<u>8-0</u>	<u>7-10</u>
	5	5	5	5
<i>H I N G E</i>	38.328 (38 21/64)	34.328 (34 21/64)	30.328 (30 21/64)	29.672 (29 43/64)
<i>S P A C I N G</i>	71.667 (71 21/32)	63.667 (63 21/32)	55.667 (55 21/32)	54.333 (54 21/64)
	105	93	81	79



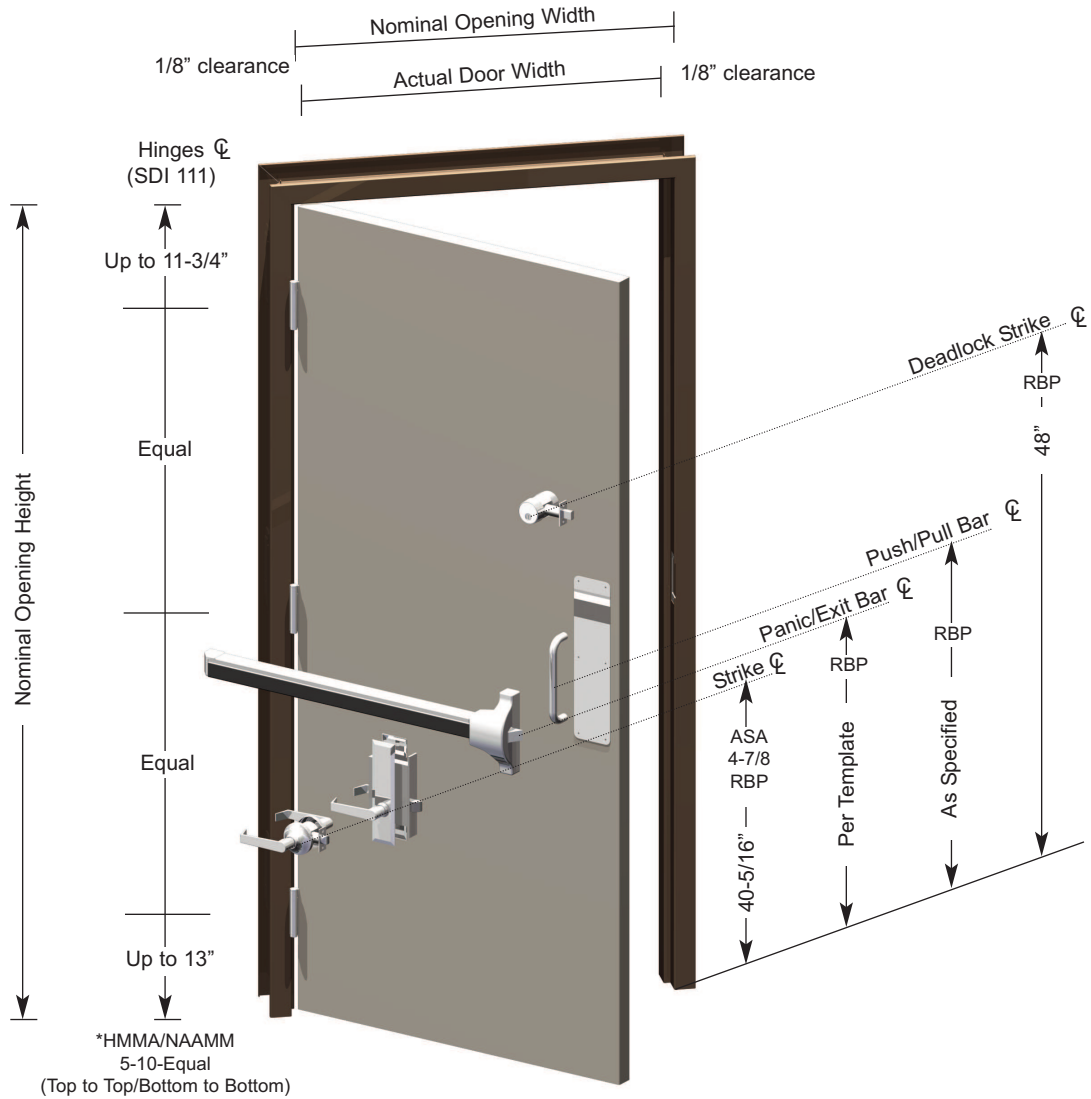
*21/64" represents a measurable approximation to .33".

*43/64" represents a measurable approximation to .66".

The above 5" hardware locations will be furnished only when agreed to.

Standard hardware locations

*Locations are on frame



References:

- RBP Republic Doors and Frames
- SDI Steel Door Institute
- ADA American with Disabilities Act
- HMMA Hollow Metal Manufacturer's Association
- NAAMM National Association of Architectural Metal Manufacturers

Locations	RBP	SDI	ADA	HMMA	NAAMM
Deadbolt Strike	48"	48"	48"		
Deadbolt Cyl				46"	46"
Strike	40-5/16"	38"-42"		38"	38"
Panic/Exit Bar	Per Template			38"	38"
Push/Pull Bar	As Specified			42"	42"

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Section 08110 - Steel Doors and Frame

Steel doors and frames

Part 1: General**1.1 Section includes**

- A. Steel doors and steel frames.
- B. Steel frame components for stick assemblies.

1.2 Related sections

- A. Section 04800 - Masonry Assemblies.
- B. Section 08210 - Wood Doors.
- C. Section 08710 - Door Hardware.
- D. Section 08800 - Glazing: Glass for door lights and borrow lights.
- E. Section 09250 - Gypsum Board.
- F. Section 09900 - Painting: Field painting of doors and frames.

1.3 References

- A. ANSI A250.8 - SDI-100 Recommended Specifications for Standard Steel Doors and Frames; 2014.
- B. ANSI A250.3 - Test Procedure and Acceptance Criteria for Factory Applied Finish Painted Steel Surfaces for Steel Doors and Frames.
- C. ANSI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 2011.
- D. ANSI A250.11, Recommended Erection Instructions for Steel Frames.
- E. ASTM A 366/A 366M - Standard Specification for Commercial Steel (CS) Sheet, Carbon, (0.15 Maximum Percent) Cold-Rolled
- F. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-coated (Galvannealed) by the Hot-Dip Process
- G. ASTM E-90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
- H. DHI A115.1G - Installation Guide for Doors and Hardware; 1994.
- I. NFPA 80 - Standard for Fire Doors and Windows; 2019.
- J. NFPA 252 - Standard Methods of Fire Tests for Door Assemblies; 2017.
- K. UL 10B - Standard for Fire Tests of Door Assemblies
- L. UL 10C - Positive Pressure Fire Tests of Door Assemblies.

1.4 Submittals

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's data sheets and specifications.
- C. Shop Drawings: Include schedule identifying each unit, with door marks or numbers referencing drawings. Show layout, profiles, product components and anchorage.
- D. Certificates: Product certificates signed by the manufacturer certifying material compliance with ANSI A250.8, specified performance characteristics and criteria, and physical requirements.
- E. Installation Instructions: Manufacturer's printed installation instructions, if other than as specified in SDI-105.

1.5 Quality assurance

- A. All products shall conform to the requirements of ANSI A250.8, "SDI 100 Recommended Specifications for Standard Steel Doors and Frames".
- B. Acoustical Doors STC openings available – 42, 43, 47, 48, 50 and 52 – all tested in accordance with ASTM E90 and E413
- C. Insulated Doors shall have (per ASTM C1363):
 - 1. A "U Factor" of 0.39 for a Polyurethane core.
 - 2. A "U Factor" of 0.41 for a Polystyrene core.
- D. Fire Rated Doors:
 - 1. Doors shall be tested in accordance with UL 10B, "Fire Tests of Door Assemblies", NFPA 252, "Fire Tests of Door Assemblies", and UL 10C, "Positive Pressure Fire Tests of Door Assemblies".

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2. Doors must have an approved marking or physical label, applied by an authorized facility, in accordance with the procedure set forth by an independent certification agency.
- E. Stairwell Doors shall have a 250° F temperature rise rating (30 minute fire test duration.) The fire label on the door shall indicate the specific hourly rating.

1.6 Delivery, storage and handling

- A. Deliver doors and frames palletized and wrapped to provide protection while in transit.
- B. Store all materials under cover. Avoid use of non-vented plastic or canvas shelters to prevent forming of humidity chambers that cause rust.
- C. If cardboard wrapping becomes wet, remove cartons immediately.
- D. Provide ¼" (6 mm) spacing between doors to provide air circulation.

Part 2: Products

2.1 Manufacturers

- A. Acceptable Manufacturer: Republic Doors and Frames, which is located at: 155 Republic Drive, McKenzie, TN 38201; Toll Free Tel: 800-733-3667; Tel: 731-352-3383; Email: contacts@republicdoor.com; Web: www.republicdoor.com.
- B. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 Materials

- A. Uncoated Steel Sheet: Cold rolled commercial steel sheet complying with ASTM A 366/A 366M.
- B. Galvannealed Steel Sheet: ASTM A 653/A 653M, commercial quality, hot-dipped.
 1. Coating Thickness: A40 coating - Embossed Panel Doors.
 2. Coating Thickness: A60 coating.
 3. Coating Thickness: G90 coating (Galvanized.)

2.3 Door construction

- A. Doors: Full flush (No Vertical Face Seams), complying with ANSI A250.8; face panels laminated to core.
 1. Thickness: 1 ¾" (44 mm).
 - a. ANSI Level 1, Model 1; 20 gauge (0.8 mm) faces, visible edge seams.
 - b. ANSI Level 2, Model 1; 18 gauge (1.0 mm) faces, visible edge seams.
 - c. ANSI Level 2, Model 2; 18 gauge (1.0 mm) faces, no visible edge seams.
 - d. ANSI Level 3, Model 1; 16 gauge (1.3 mm) faces, visible edge seams.
 - e. ANSI Level 3, Model 2; 16 gauge (1.3 mm) faces, no visible edge seams.
 - f. ANSI Level 4, Model 1; 14 gauge (1.7 mm) faces, visible edge seams.
 - g. ANSI Level 4, Model 2; 14 gauge (1.7 mm) faces, no visible edge seams.
 2. Thickness: 1 ⅜" (35 mm).
 - a. ANSI Level 1, Model 1; 20 gauge (0.8 mm) faces, visible edge seams.
 - b. ANSI Level 2, Model 1; 18 gauge (1.0 mm) faces, visible edge seams.
 - c. ANSI Level 2, Model 2; 18 gauge (1.0 mm) faces, no visible edge seams.
 3. Faces: Full flush.
 4. Faces: Embossed in 2, 4, 6, 8 - panel design laminated to a polystyrene core
 5. Face Material: Cold Roll Steel sheet.
 6. Face Material: Galvannealed steel sheet.
 7. Face Material: Galvanized steel sheet.
 8. Insulated Doors: Insulated; U-value of 0.39, polyurethane core (per ASTM C1363).
 9. Insulated Doors: Insulated; U-value of 0.41, polystyrene core (per ASTM C1363).
 10. Core: Doors fabricated by laminating panels to a specified core. Core shall be as follows:
 - a. ¾" (19 mm) cell honeycomb core.
 - b. Expanded polystyrene core.
 - c. Polyurethane core.
 - d. Mineral fiber core / 250° Temperature rise core.

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11. Steel Stiffened Doors: Reinforced with minimum 20 gauge (0.794mm) hat shaped stiffeners welded to the inside of each face sheet at maximum of 6" (150 mm) on center, with fiberglass batting filling spaces between stiffeners. Optional 18 or 16 gauge stiffeners.
 12. Beveled Doors: Bevel lock edge of door 1/8" in 2" (3 mm in 50 mm).
 13. Square Edge Doors
 14. Finish: Factory prime finish.
 15. Finish: Factory paint finish. Optional
- B. Door Reinforcements:**
1. Top and Bottom Channels: 16 gauge steel, projection welded to both face sheets at a maximum of 2 1/2 inches (64 mm) on center.
 - a. For exterior Doors fill top channel with epoxy and grind smooth. Optional
 2. Hinge Reinforcement:
 - a. DP Series: 1 3/4" (44 mm) thick. 7 gauge universal standard/heavy weight hinge reinforcements.
 - b. DL Series: 1 3/4" (44 mm) thick. Reinforced with a continuous 16 gauge channel with additional 9 gauge reinforcements located at each hinge preparation. Channel shall be projection welded to face sheets at a maximum of 5" (127mm) on center.
 - c. DE Series: 1 3/4" (44 mm) thick. Reinforced with a continuous 10 gauge channel that shall be projection welded to face sheets at a maximum of 5" (127 mm) on center.
 3. Lock Reinforcement:
 - a. DP Series: Beveled edge with 16 gauge reinforcements for mortised or cylindrical locks in accordance with ANSI A115 standards.
 - b. DL Series: Square Edge (option – Bevel) and reinforced with a continuous 16 gauge channel. 16 gauge reinforcements for mortised or cylindrical locks are of an integral type in accordance with ANSI A115 standards.
 - c. DE Series: Square Edge (option – Bevel) and reinforced with a continuous 14 gauge steel channel. 16 gauge reinforcements for mortised or cylindrical locks are of an integral type in accordance with ANSI A115 standards.
 4. Closer Reinforcement: 14 gauge box type reinforcement, 18" (457 mm) long.
- C. Fire Rated Doors:** Ratings as indicated on Door Schedule, when tested in accordance with NFPA 252 or UL 10B.
1. Labeled by UL or ITS
 2. Stairwell Doors: 250° F (139° C) temperature rise rating as well as the required fire rating
- D. Acoustical Doors:** Sound Transmission Classification (STC) Rating of 38 when tested according to ASTM E 90. (Flush Honeycomb core).

2.4 Frames construction

- A. Frames:** Formed steel sheet, with 2" (50 mm) wide face jambs and heads unless otherwise indicated; complying with ANSI A250.8.
1. Frame Depth: Fixed, as indicated on drawings.
 2. ANSI Level 1 Doors: 16 gauge (1.5 mm) frames.
 3. ANSI Level 2 Doors: 16 gauge (1.5 mm) frames.
 4. ANSI Level 3 Doors: 16 gauge (1.5 mm) frames.
 5. ANSI Level 3 Doors: 14 gauge (1.9 mm) frames.
 6. ANSI Level 4 Doors: 14 gauge (1.9 mm) frames.
 7. ANSI Level 4 Doors: 12 gauge (2.6 mm) frames.
 8. Material: Cold Roll Steel sheet.
 9. Material: Galvannealed steel sheet.
 10. Material: Galvanized steel sheet.
 11. Corners: Mitered; knockdown type.
 12. Corners: Mitered; face welded and ground smooth.
 13. Corners: Square; Cut; Notch
 14. Corners: Square; Cut; Notch face (option – full profile) welded and ground smooth.
 15. Provide 3 silencers for single doors, 2 silencers on head of frame for pairs of doors.

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16. Finish: Factory prime finish.
17. Finish: Factory paint finish.
- B. Reinforcements for 1 ¾" (44 mm) Frames:
 1. Hinge Reinforcements: 7 gauge (3.8 mm).
 2. Strike Reinforcement: 10 gauge (3.4 mm) equivalent.
 3. Closer Reinforcements: 14 gauge (2.6 mm).
- C. Reinforcements for 1 ⅜" (35 mm) Frames:
 1. Hinge Reinforcements: 11 gauge (3.0 mm).
 2. Strike Reinforcement: 14 gauge (1.9 mm) equivalent.
 3. Closer Reinforcements: 14 gauge (2.6 mm).
- D. Frame Anchors: Minimum of six wall anchors and two sill anchors. (Additional anchor for every 30" over 90")

2.5 Stick assemblies

- A. Architectural Stick Assemblies: Standard profile frame material, notched or mitered to coordinate with adjoining frame members and forming square corners.
 1. Thickness: 16 gauge (1.3 mm).
 2. Thickness: 14 gauge (1.7 mm).
 3. Thickness: 12 gauge (2.4 mm).
 4. Reinforce or prepare to receive required hardware.
 5. Glazing Bead: Pre-punched, cut to proper length and shipped loose for field installation.
 6. Panels: Matching door construction.
 7. Perform all fabrication in shop or plant; field joints permitted only when size of total assembly exceeds shipping limitations.
 8. Exterior Wind Load-Bearing Assemblies: Vertical load-bearing members fabricated without splices.

2.6 Factory finish

- A. All doors, frames, and stick components shall be cleaned and finished in accordance with ANSI A250.10, "Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames".
- B. Preparation: Clean and phosphatize surfaces of steel doors and frames.
- C. Primer: Apply one coat of a gray, alkyd acrylic enamel primer, forced cured.
- D. Finish: Paint with alkyd acrylic enamel using a two-coat process, with each coat being force cured after each coating.

Part 3: Execution

3.1 Examination

- A. Before beginning installation, verify that substrate conditions previously installed under other sections are acceptable for installation of doors and frames in accordance with manufacturer's installation instructions and technical bulletins.
- B. Verify door frame openings are installed plumb, true, and level.
- C. Select fasteners of adequate type, number, and quality to perform intended functions.

3.2 Installation

- A. Install frames plumb, level, rigid and in true alignment in accordance with ANSI A250.11, "Recommended Erection Instructions for Steel Frames" and ANSI A115.IG, "Installation Guide for Doors and Hardware".
- B. All frames other than slip-on types shall be fastened to the adjacent structure to retain their position and stability. Drywall slip-on frames shall be installed in prepared wall openings, and shall use pressure type and sill anchors to maintain stability.
- C. Where grouting is required in masonry installations, frames shall be braced or fastened to prevent the pressure of the grout from deforming the frame members.
- D. Install fire-rated doors and frames in accordance with NFPA 80 and local code authority requirements.
- E. Install doors to maintain alignment with frames to achieve maximum operational effectiveness and appearance. Adjust to maintain perimeter clearances as required. Shim as needed to assure the proper clearances are achieved.
- F. Install hardware as specified in Section 08710 in accordance with the hardware manufacturer's recommendations and templates. ANSI A115.IG, "Installation Guide for Doors and Hardware" shall be consulted for other pertinent information.

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3.3 Clearances

- A. Clearance between the door and frame head and jambs for both single swing and pairs of doors shall be $\frac{1}{8}$ " (3.2 mm).
- B. Clearance between the meeting edges of pairs of doors shall be $\frac{3}{16}$ " plus or minus $\frac{1}{16}$ " (5 mm plus or minus 1.6 mm). For fire rated applications, the clearance between the meeting edges of pairs of doors shall be $\frac{1}{8}$ " plus or minus $\frac{1}{16}$ " (3.2 mm plus or minus 1.6 mm).
- C. Bottom clearance shall be $\frac{3}{4}$ " (19 mm). (Standard)
- D. The clearance between the face of the door and door stop shall be $\frac{1}{16}$ " to $\frac{1}{8}$ " (1.6 mm plus or minus 3.2 mm).
- E. All clearances shall be, unless otherwise specified, subject to a tolerance of plus or minus $\frac{1}{32}$ " (.4 mm).

3.4 Adjusting and cleaning

- A. Adjust doors for free swing without binding.
- B. Adjust hinge sets, locksets, and other hardware. Lubricate using a suitable lubricant compatible with door and frame coatings.
- C. Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions before owner's acceptance.
- D. Remove from project site and legally dispose of construction debris associated with this work.

3.5 Protection

- A. Protect installed products and finished surfaces from damage during construction.

3.6 Schedules

End of Section

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