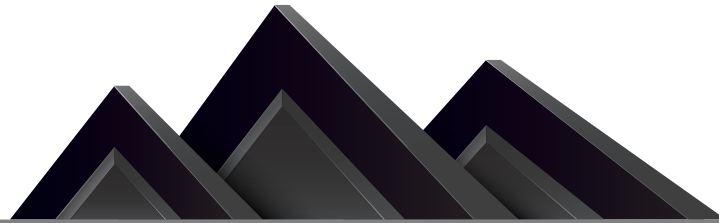


**/ TECHNICAL DATA** **LABELED**



**BLACK MOUNTAIN**  
**DOOR™**

[www.blackmountaindoor.com](http://www.blackmountaindoor.com)

310 Flint Drive  
Mt. Sterling, KY 40353

**FAX:** (859)762-0852  
**TOLL FREE:** (855)370-4580

<u><b>Description</b></u>	<u><b>Number</b></u>
15LE-17LE Series 1-3/4" UL or WHI Doors Full Flush & Seamless Super-Core® Doors.....	L-1.0
Amweld 35LE & 37LE Series 1-3/4" UL or WHI Doors .....	L-2.0
45LE & 47LE Series 1-3/4" Full Flush & Seamless Kraft Honeycomb UL or WHI Core Doors.....	L-3.0
UL or WHI Labeled Amweld 55LE & 57LE Series Type Transom Assemblies.....	L-4.0
Amweld 400 Series UL or WHI Labeled Fire Door Frames.....	L-5.0
Amweld Series 600/2600 Slip On Drywall UL or WHI Fire Door Frames .....	L-6.0
Amweld 4400 Series UL or WHI Double Egress Frames.....	L-7.0
Amweld 400 Series UL Labeled Fab-A-Frame Assemblies .....	L-8.0
UL Labeled Fire Door Frames.....	L-8.1
UL Labeled Fire Doors.....	L-8.2
Glazing for UL Fire Doors .....	L-8.3
Glazing for UL Fire Windows and Fab-A-Frame Assemblies .....	L-8.4
Firedoor Brand Oversize Swinging UL Fire Rated Assemblies by Black Mountain Door .....	L-8.5
Amweld 400 Series Labeled Fire Windows (Borrowed Lites).....	L-9.0
Amweld 400 Series - WHI Labeled Fire Windows (Borrowed Lites) .....	L-10.0
Basic Requirements - Fire Doors & Frames.....	L-11.0
Hourly Classifications For Fire Door Assemblies.....	L-12.0
WHI Labeled Frames and Doors .....	L-14.0
WHI Basic Positive Pressure Labeled Fire Doors & Frames .....	L-14.1
WHI Labeled Frames & Doors / Multiple Openings.....	L-14.2
WHI 3 Hour Rated Fire Door Frame For 4 Hour Steel Stud Walls.....	L-15.0
Louvered Fire Doors.....	L-17.0
Astragals on Pairs of Fire Doors.....	L-18.0
20-Minute Smoke Control Doors.....	L-19.0
Black Mountain Door's 20-Minute-No Hose Stream Full Glass Door.....	L-20.0
20-Minute Transom and/or Sidelites, or Borrowed Lites Tested Without Hose Stream.....	L-21.0
Steel Stiffened Door – UL Classifications .....	L-22.0
Summary of Windstorm Rated Assemblies (Components).....	L-23.0
Important Windstorm (Structural) Provisions of the International Building Code 2001 & 2006.....	L-23.1
+/- 70 psf "Full Glass" Windstorm Assemblies (Components).....	L-23.3
+/- 60 psf Single Windstorm Assemblies (Components).....	L-23.4
+/- 45 psf Double & Single Windstorm Assemblies (Components).....	L-23.5
Series 61LE-63LE Windstorm Rated Embossed Doors (Components) .....	L-23.6
Summary of Firedoor Brand Windstorm Rated Assemblies (Components).....	L-23.7
Fire Door/Frames Butted to Drywall.....	L-24.0
UL Frames – Fire Rated Retrofit Installations – Amweld 800 Series.....	L-25.0
Amweld 400 Series WHI Labeled Frames for "Light Duty" Steel Doors.....	L-26.0
WHI Smoke Control (S Label) Installation Instructions.....	L-27.0

Black Mountain Door reserves the right to make changes to designs or specifications or make improvements to its products without prior notice without incurring an obligation to incorporate such changes in products previously manufactured.



**SUBJECT:**

**Amweld 15LE - 17LE Series 1 3/4" UL or WHI Doors  
Full Flush & Seamless Super-Core®Doors**

**NO: L-1.0****DATE: 03/12****PAGE: 1**

---

**SCOPE:**

This bulletin covers the details and features of the subject doors when they bear an Underwriters' Laboratories, Inc. or Warnock Hersey Inc. label.

**PURPOSE:**

To insure the reader is aware of this important part of all Black Mountain Door's brands and product lines.

**LABELS:**

*1 3/4" Super-Core® doors may bear the following label.*

- 1) Doors in openings in walls separating buildings, or parts of buildings, into fire areas may be provided with 3-hour label. These units are only available flush, except where local jurisdictions allow 100 sq. inches of FireLite® glazing.
- 2) Doors in openings in walls enclosing areas of vertical communication (i.e. stairwells) may be provided with a 1 1/2-hour label. These units are available flush or with V, N520, N425, and N333 lites. 1 1/2 hour doors in other locations may be provided with fusible link louvers.
- 3) Doors in room and corridor partitions may be provided with a 3/4-hour label. These units are available flush G, V, N520, N425, N333 and LI designs.
- 4) All units do not bear temperature rise labels.
- 5) Doors over 7'2" height available as single 18 or 16 gage doors only.

**TEST CRITERIA:**

Doors are constructed to meet fire test criteria as defined in UL10b, NFPA252 or UBC 7-2(1994).



**SUBJECT:****Amweld 35LE & 37LE Series 1 3/4" UL or WHI Doors****NO: L-2.0****DATE: 03/12****PAGE: 1****SCOPE:**

This bulletin covers the details and features of the subject doors when they bear an Underwriters' Laboratories, Inc. or Warnock Hersey Inc. temperature rise labels.

**PURPOSE:**

To insure the reader is aware of the extent of this program.

**LABELS:**

As noted on the enclosed, 1 3/4" 18 or 16 gage 35LE - 37LE Series doors may bear the following label.

1) Doors in openings in walls separating buildings, or parts of buildings, into fire areas may be provided with 3-hour label. These units are only available flush, except where local jurisdictions allow 100 sq. inches of FireLite® glazing.

2) Doors in openings in walls enclosing areas of vertical communication (i.e. stairwells) may be provided with a 1 1/2-hour label. These units are available flush or with V, N520, N425, and N333 lites. 1 1/2 hour doors in other locations may be provided with fusible link louvers.

3) Doors in room and corridor partitions may be provided with a 3/4-hour label. These units are available flush G, N520, N425, N333 and LI designs.

The 3-hour and most 1 1/2-hour 35LE - 37LE Series doors will bear are capable of bearing a 250° temperature rise label, the most stringent rating available.

The 3/4-hour units, those with louvers, and those with lites over 100 square inches cannot bear temperature rise labels.

**TEST CRITERIA:**

Doors are constructed to meet fire test criteria as defined in UL10b, NFPA252 or UBC 7-2(1994).

**IMPORTANT NOTE:**

Temperature rise rating indicates the temperature of the unexposed face of the door (above ambient) measured at 30 minutes into the fire test. At this point, furnace temperature is in excess of 1500° F. Commonly used ratings are 250°F, 450°F and 650°F. The 250°F rating indicates the least transmission of heat through the door.

<b>ENGINEERING DATA ON CORE</b>	
"K" Factor @70° Mean Temperature	.33 BTU-in./ sq. ft. - Hr. - F°
Service Temperature Range	-50° to 250° F
Density	15-18 lbs./ cu. ft.
Compression Strength ASTM C-367-57	200# 1/ 4" penetration of a 2" dia. steel ball
Underwriters' Classification	Fuel Contribution - 30 Smoke developed - 0
Sound Transmission	34db minimum (ASTM E90-66T) Depends on type of construction
Capillarity	0
Water Absorption (ASTM #32127-62T)	Less than 3% by volume in two hours.

**TECH  
DATA**

**SCOPE:**

This bulletin covers the details and features of the subject doors when they bear an Underwriters' Laboratories, Inc. or Warnock Hersey Inc. label.

**PURPOSE:**

To inform the reader of the construction features, specifications and available types and sizes of these door Series.

**DESCRIPTION:**

1) The 45LE-47LE Series is generally used as part of a labeled double egress assembly, a labeled transom panel assembly or a Dutch door assembly.

**LABELS:**

- 1) Doors in openings in walls separating buildings, or parts of buildings, into fire areas may be provided with 3-hour label. These units are only available flush, except where local jurisdictions allow 100 sq. inches of FireLite® glazing.
- 2) Doors in openings in walls enclosing areas of vertical communication (i.e. stairwells) may be provided with a 1 1/2-hour label. These units are available flush or with V, N520, N425, and N333 lites. 1 1/2 hour doors in other locations may be provided with fusible link louvers.
- 3) Doors in room and corridor partitions may be provided with a 3/4-hour label. These units are available flush G, N520, N425, N333 and LI designs.
- 4) All units do not bear temperature rise labels.

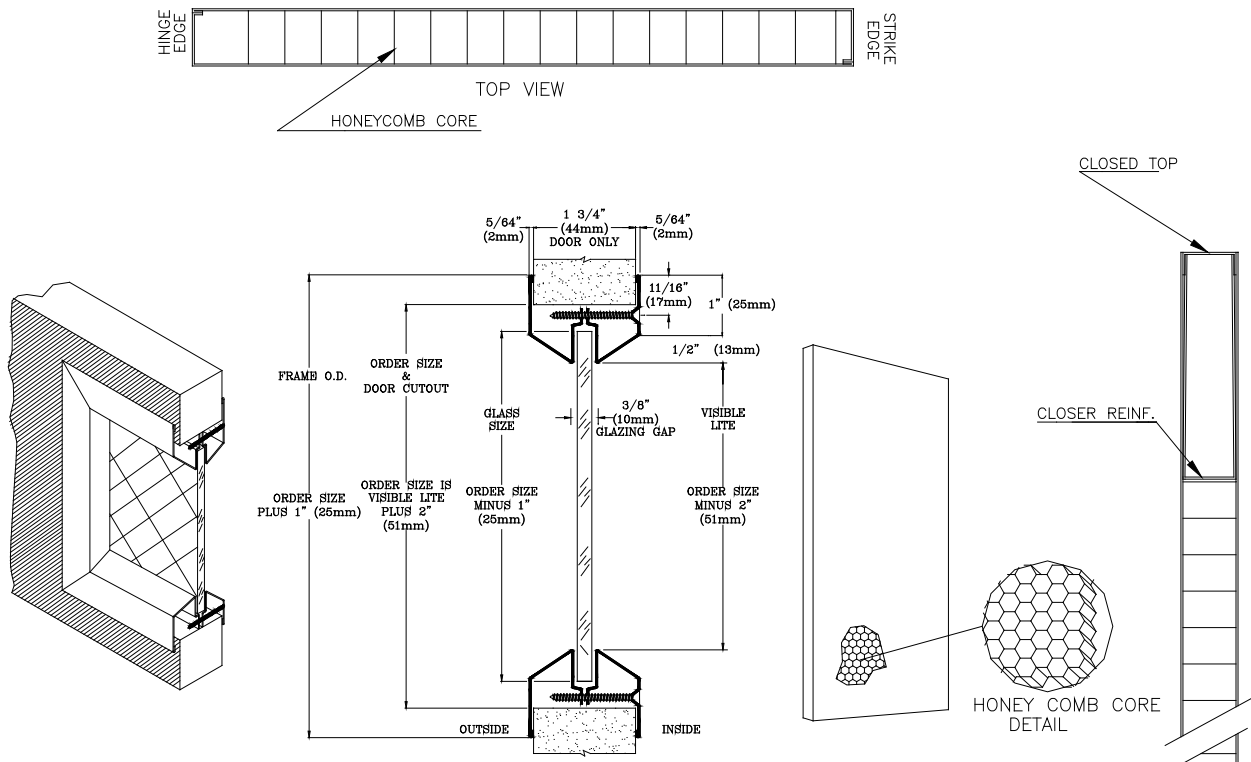
**TEST CRITERIA:**

Doors are constructed to meet fire test criteria as defined in UL10b, NFPA252 or UBC 7-2(1994).

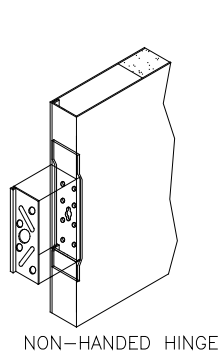
Product Assembly Details on Next Page.



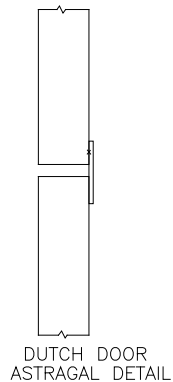
45LE / 47LE DOOR CONSTRUCTION



TYPICAL GLAZING SYSTEM



NON-HANDED HINGE



DUTCH DOOR ASTRAGAL DETAIL

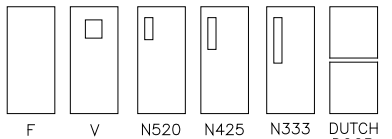
TYPICAL SECTION

3 HR. LABEL STYLES



F

1 1/2 HR. LABEL STYLES



F

V

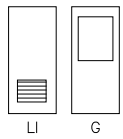
N520

N425

N333

DUTCH DOOR 4072 MAX

3/4 HR. LABEL STYLES



LI

G



TECH DATA

**SCOPE:**

This bulletin covers the details of this program.

**PURPOSE:**

To insure the reader understands the details of what is involved.

**DESCRIPTION - GENERAL:**

The product application is a fire door assembly equipped with a hollow metal transom panel, with or without transom bar, for walls at least 4" thick. The panels may be used in conjunction with single swing doors or those swinging in pairs in the same direction. It is fire rated at 1 1/2 hours. The frame and panel must be sold together as an assembly.

**THE FRAME:**

Normal 400 Series frames, 4 3/4" and over in depth, may be employed. The maximum width, rabbet to rabbet, shall be 96" for pairs of doors and 48" for single doors. The maximum height, top rabbet to bottom of frame, shall be 134".

Frames for 57LE panels must be welded. Frames for 55LE panels may be knocked-down.

**THE 55LE SERIES TRANSOM PANEL:**

This transom panel is identical construction-wise to the non-labeled 55LE Series except that the panels are securely bonded by a thermosetting adhesive to Kraft honeycomb. The core is impregnated with an 11% phenolic resin to resist atmospheric conditions.

The panel must be equipped with an astragal. The panels are made of 18 gage steel (16 gage optional). The maximum nominal width of the panel is 96" and the maximum nominal height is 48" for use without transom bar.

The panel must be reinforced for closers and on double door assemblies, prepared for flush bolts or surface bolts. All panels are handed.

Panels must be ordered as labeled.

**THE 57LE SERIES TRANSOM PANEL**

The 57LE series transom panel is identical to the 55LE series labeled transom panel except:

1. Intended for use with transom bar or as a side panel.
2. (2) screws #10, 2 1/4" FHSMS at the bottom in lieu of (2) clips.
3. No hardware preps required.
4. No closer reinforcement required.
5. No astragal required.

When 57LE series is used as a side panel the maximum sizes are 2'2" x 4'8".

The panel must be made by Black Mountain Door and can be shipped properly labeled as a separate item. It need not be part of the door frame assembly except, of course, in the field.

**THE DOOR:**

Any labeled fire door may be used.

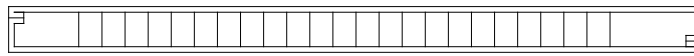
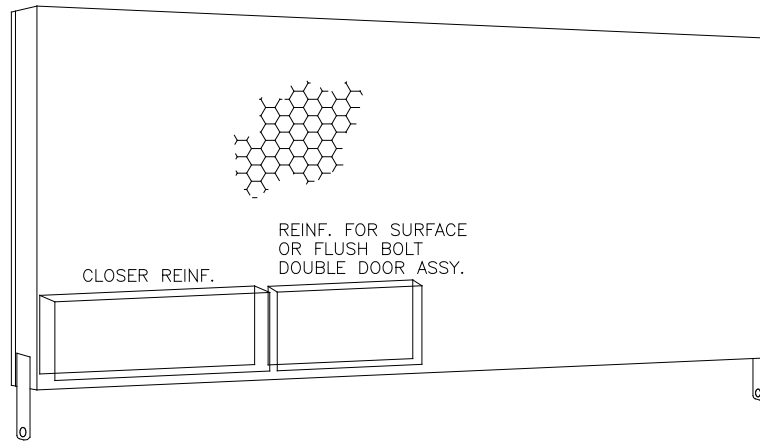
In this type of assembly, the maximum size single door is 4080. The maximum size pairs of doors is 8080.

**TEST CRITERIA:**

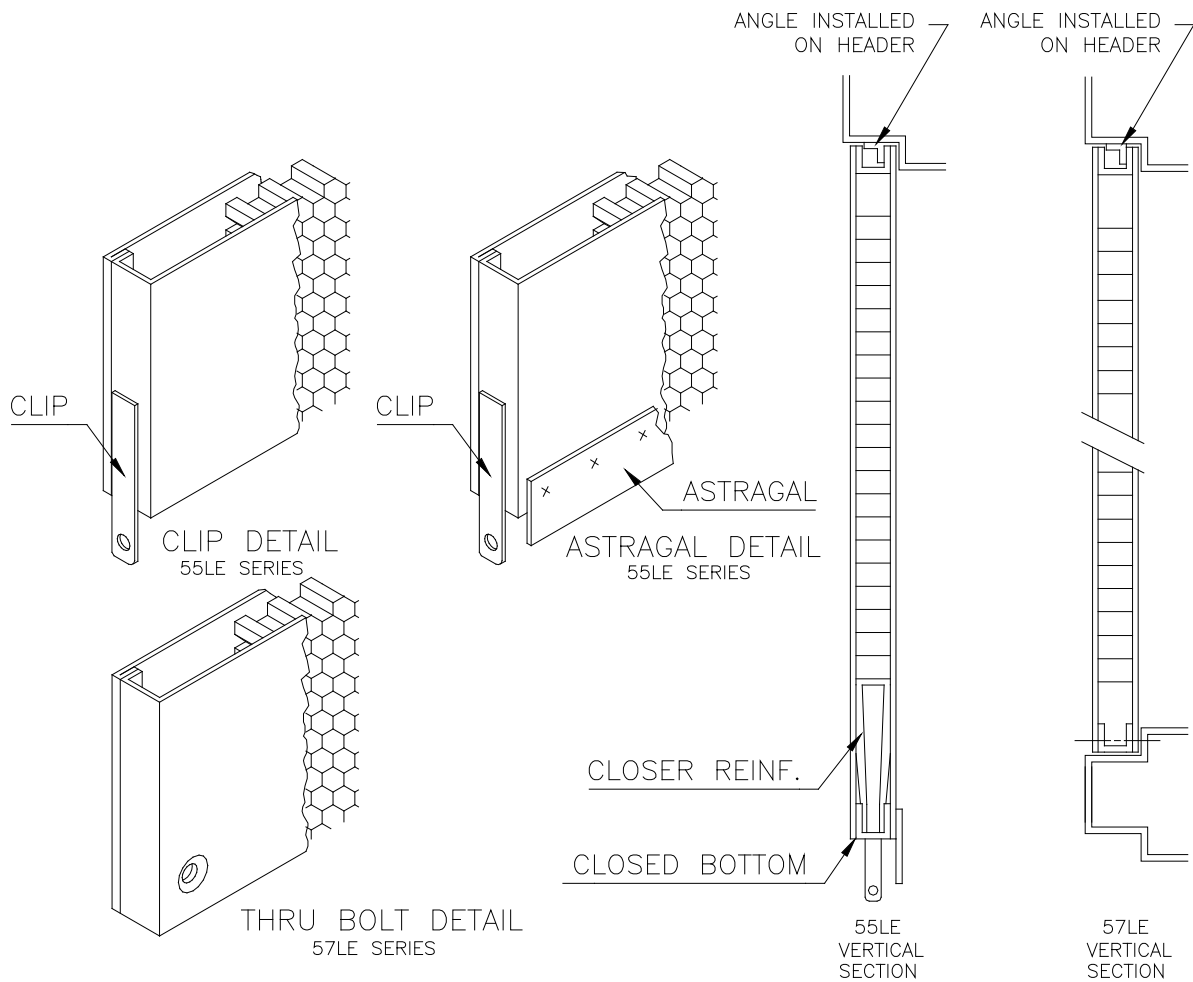
Units are constructed to meet fire test criteria as defined in UL10b, NFPA252 or UBC 7-2(1994).

---

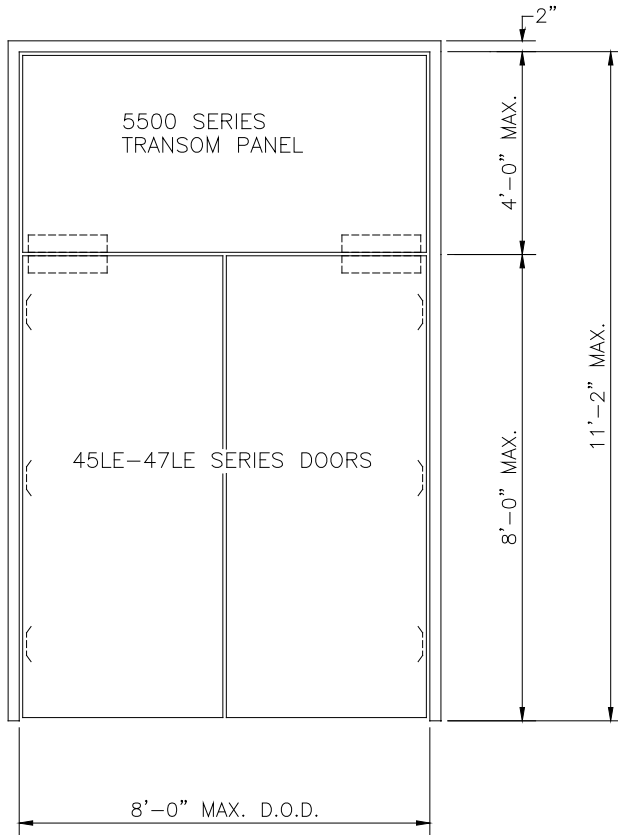




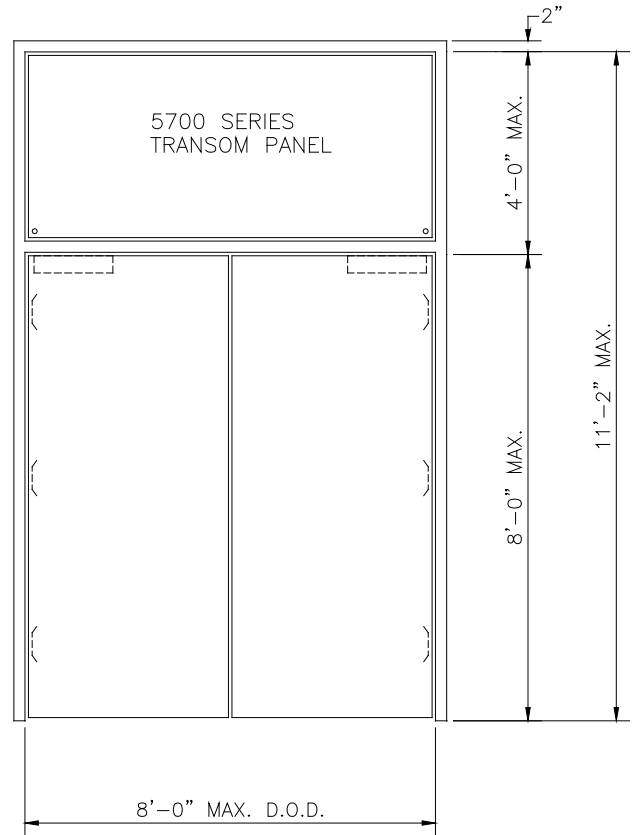
HORIZONTAL SECTION



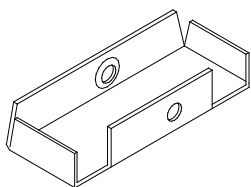




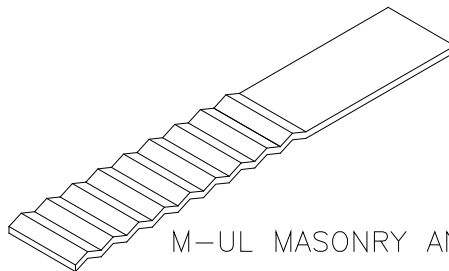
ASSEMBLY UNIT



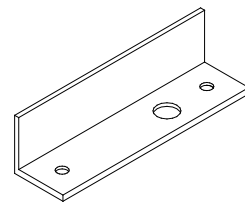
ASSEMBLY UNIT



C/O-COMPLETED OPNG.  
 ANCHOR



M-UL MASONRY ANCHOR



STD. FLOOR ANCHOR

**SCOPE:**

This bulletin covers specifications and features of Black Mountain Door's labeled frames for fire doors.

**PURPOSE:**

To insure the reader is aware of this important part of the Black Mountain Door product line.

**DESCRIPTION:**

Black Mountain Door's line of wall anchors has made it possible to supply labeled frames for virtually every type of wall construction. Anchors are available "loose" within limits of jamb depths. In addition to the specifications on the inside page, the following information should be noted when ordering frames for fire doors:

- 1) Double door headers for labeled openings must be prepared for flush bolt or vertical rod strikes, or reinforced for vertical rod or surface bolt strikes.
- 2) Hardware preparations are those which are listed for the respective labeling programs.
- 3) Double frames with hardware or hollow metal mullions are available. When ordering this type of frame, consider all procedures and hardware applications the same as single doors.
- 4) Fire door frames over 7'6" high must be prepared for four hinges.
- 5) Plastic frame spacers shall not be used on fire door frame returns.
- 6) Grouting is not mandatory (customary at new masonry installations only).

**TEST CRITERIA:**

Frames are constructed to meet fire test criteria as defined in UL10b, NFPA252 or UBC 7-2(1994).

**LABELING:**

Three sided frames generally assume the rating of the least rated component and are normally not rated with hourly ratings.



**SCOPE:**

This bulletin covers specifications and features of Black Mountain Door's labeled slip-on drywall frames for fire doors.

**DESCRIPTION:**

In addition to the specifications on the inside page, the following information should be noted when ordering frames for fire doors:

- 1) Double door headers for labeled openings must be prepared for flush bolt or vertical rod strikes, or reinforced for vertical rod or surface bolt strikes.
- 2) Hardware preparations are those which are listed for the respective labeling programs.
- 3) Fire door frames over 7'6" high must be prepared for four hinges.
- 4) Plastic frame spacers shall not be used on fire door frame returns.

**TEST CRITERIA:**

Frames are constructed to meet fire test criteria as defined in UL10b, NFPA252 or UBC 7-2(1994).

**LABELING:**

Three sided frames generally assume the rating of the least rated component and are normally not rated with hourly ratings.

**600 SERIES:**

These frames are generally used for thinner walls. Contact Black Mountain Door or see specific synopsis pages for dimensional data.



**SUBJECT:****Amweld 4400 Series UL or WHI Double Egress Frames****NO: L-7.0****DATE: 03/12****PAGE: 1**

---

**SCOPE:**

This bulletin covers Black Mountain Door's fire-rated double egress program.

**PURPOSE:**

To insure the reader is aware of this important part of the Black Mountain Door product line.

**DESCRIPTION (FRAMES):**

Details of the fire-rated double egress frame are on the next page of this bulletin. Several points need emphasizing:

- 1) Maximum label - For use with up to 3 hour doors dependant on wall rating and door rating.
- 2) RH swing units supplied unless specified differently on order.
- 3) Maximum size - 8'0" x 10'0".
- 4) Frames available for rated double egress wood doors.
- 5) Frames are available in full mitered corner either knocked down or completely welded assembly with welded and ground smooth corners.

**TEST CRITERIA:**

Frames are constructed to meet fire test criteria as defined in UL10b, NFPA252 or UBC 7-2(1994). For positive pressure applications, frames must meet UL10c or UBC 7-2(1997).

**LABELING:**

Three sided frames generally assume the rating of the least rated component and are normally not rated with hourly ratings.

**DESCRIPTION (DOORS):**

Doors suitable for use in Black Mountain Door's 4400 Series Fire Rated Double Egress Frames DO NOT include the 15LE Series, regardless of whether or not doors are UL or WHI labeled.

Allowable doors for Fire Rated Double Egress applications are as follows:

- 3 Hours: 45LE, 47LE, 700 in 18 or 16 gage, with astragals, in sizes up to 8'0" x 8'0", (45LE/47LE UL or WHI) (700 UL only).
- 1 1/2, 3/4, 1/3 Hours: 700 (VR) in 18 or 16 gage, without astragals, in sizes up to 8'0" x 8'0".
- 1 1/2, 3/4, 20 Minute (N.H.S.): 35LE, 37LE, 45LE, 47LE in 18 or 16 gage, (astragals optional) in sizes up to 8'0" x 8'0", UL or WHI.
- 20 Minute (N.H.S.): Algoma Hardwoods Double Egress Door up to 8'0" x 9'0" (WHI only). Other doors may be used in Black Mountain Door's UL or WHI 4400 frames IF they are fire rated for DOUBLE EGRESS applications.

When used with Algoma Hardwoods' 20 minute wood double egress doors, WHI labels may be provided on 4400 Series frames as follows:

- WHI 20 minute labels only.
- 

**TECH  
DATA**

**SUBJECT:**

**Amweld 4400 Series UL or WHI Double Egress Frames**

**NO: L-7.0**

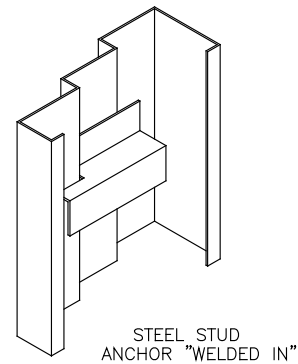
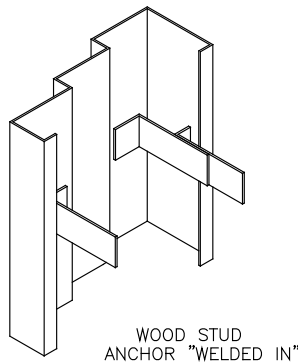
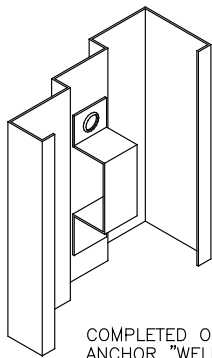
**DATE: 03/12**

**PAGE: 2**

- 
- Maximum opening size 8'0" wide x 9'0" high.
  - Minimum throat size 4".
  - Consult Algoma Hardwoods for available vertical rod type fire exit devices. Unit tested with Von Duprin #9927-(F) devices.
  - 16 gage (minimum) frame.
  - Other requirements, anchors, etc. same as existing 4400 WHI frames.

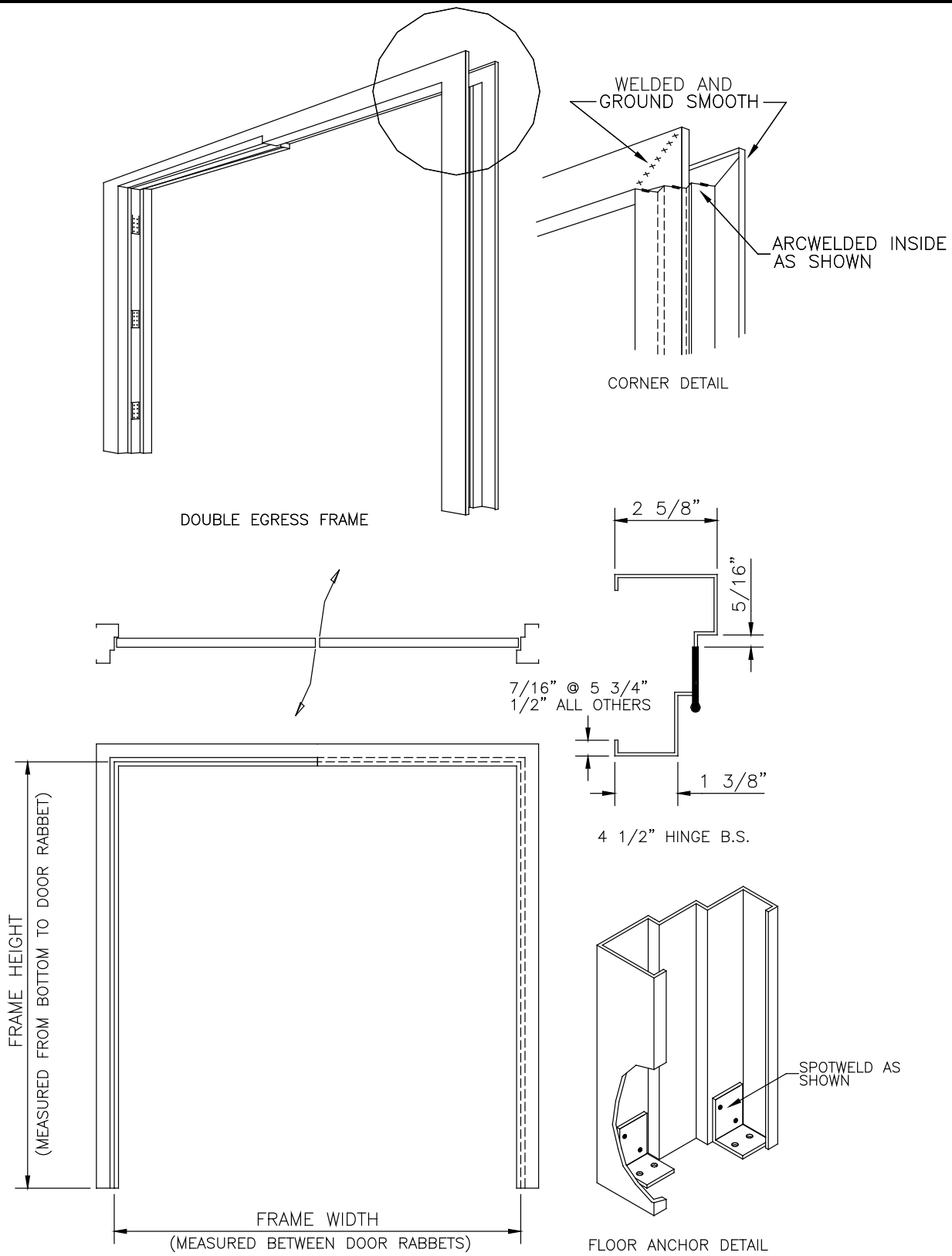
**ANCHORS:**

In addition to loose masonry anchors, the following welded-in anchors are also available. For installations requiring frames to be butted to drywall partitions, see Page #4.



More Construction Details Available on following Page.





**4400 FRAMES BUTTED TO DRYWALL**

As you are aware, NFPA-80 currently prohibits door frames from butting drywall partitions. Resulting from a recent HMMA fire test, Black Mountain Door can now provide 4400 Series Frames per this condition based on the "hole plug" mounting shown below.

Frames may be ordered with "positive pressure" UL10c-UBC 7-2(97) supplemental labels.

Dimensional criteria are as follows:

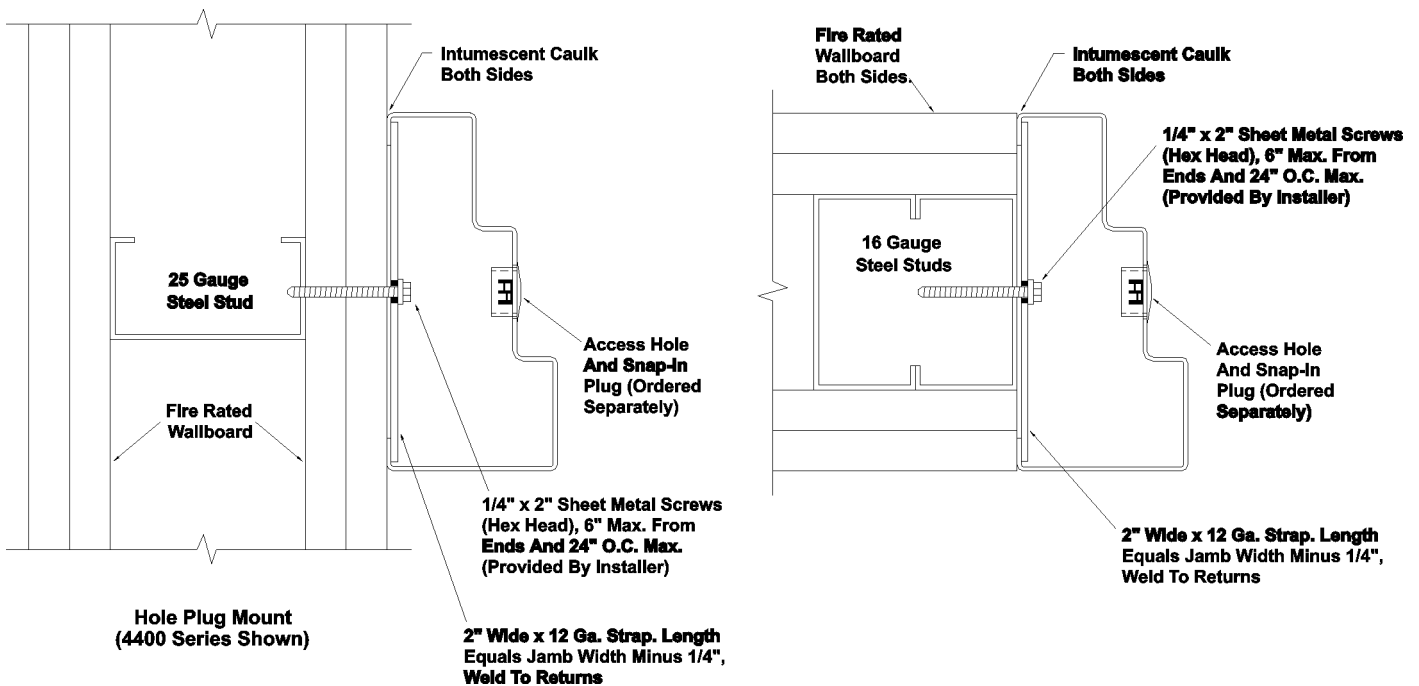
Faces 4400 = 1-3/8" / 2-5/8"

Soffit 1-1/2" Minimum – Stop Height 5/8"

Throat Size 3-3/4" Minimum & 4-3/4" Minimum Jamb Depth

Max Opening Size = 8'0" x 10'0"

*\* Specify "Hole Plug Mounting L-7.0" on your order for headers or jambs having this condition.*



**SCOPE:**

This bulletin covers specifications and features of Black Mountain Door's UL labeled Fab-A-Frame program.

**PURPOSE:**

To provide the necessary information for specifying and detailing Fab-A-Frame assemblies.

**DESCRIPTION:**

Black Mountain Door's labeled Fab-A-Frame program is approved for 1 3/4" doors using glass lites or solid panels in the transom and sidelite assemblies. All units will be assembled by Black Mountain Door with the exception of the glass. When glass lites are required, labeled glazing materials and labor for installation will be supplied by contractor. Shipping limitations require that units exceeding 8'0" overall width or height must be manufactured in subassemblies for field assembly. All screws and clips for field assembly of field spliced units will be supplied when required.

**SERIES 400 UL LABELED FAB-A-FRAME**

Contractor shall furnish and install labeled Fab-A-Frame assemblies as manufactured by Black Mountain Door in all openings specified.

GENERAL

Frame members for Underwriters' labeled units are formed of 16 gage steel (14 gage optional) for 1 3/4" labeled doors. Standard door heights and widths are available up to and including the maximum sizes listed.

When specified, frame members shall be manufactured of hot dip material in the .6 oz (A60) coating class conforming to ASTM A924 and A653 (formerly A525 and A526 respectively). The material shall be treated in the mill to insure superior prime paint adhesion.

All frame members shall be furnished as a complete one-piece welded assembly. (Exception: May be furnished KD in sub-assemblies on larger units for field assembly. All KD joints are furnished with 16 gage joint reinforcements.)

Assemblies employing 400 Series frame or 57LE Series transom panels must be furnished with horizontal and/or vertical mullions.

Each perimeter jamb shall be equipped with one welded-in floor anchor and appropriate wall anchors. Base anchors shall be supplied for floor attachment of mullions where required.

Exposed surfaces shall be cleaned, treated with a three (3) stage iron phosphate and given one shop coat of synthetic resin, rust-inhibitive alkyd enamel primer.

Strike jambs, strike mullions and headers for double doors shall have two rubber mutes furnished for stops.

All stop heights 5/8". (Must be modified to 3/4" for lites over 500 square inches).

All perimeter hardware preparations shall be covered with steel masonry guard.

Hardware preparations will be made only for those items listed by the Underwriters' Laboratories.

Removable and fixed door mullions are available in all assemblies.

HARDWARE - 1 3/4" DOOR FRAMES

Hinge jambs shall be mortised and reinforced with 10 gage steel to receive 1 1/2 pairs of 4 1/2" x 4 1/2" template hinges (2 pairs on frames 7'6" and above in height). Hinge reinforcements shall be covered with a welded-in steel plaster guard. (Hinges not furnished.) Strike jambs shall be mortised and reinforced to receive an ANSI/DHI A115.1 strike (4 7/8" Universal) or optional ANSI/DHI A115.2 (2 3/4"). Strike plate cutouts shall be covered with either an integral plaster guard as part of the reinforcement or with a welded-in steel plaster guard.

Strike jambs shall be prepared to receive three (3) mutes and headers for double doors shall be prepared to receive two (2) mutes.

PANELS & LITES

Frame assemblies are available to a maximum overall width of 136" and maximum overall height of 144" for single or double doors. Panels and lites must at least extend the full width of the door opening. Panels and lites may be elevated off the floor, but must at least extend to the height of the door opening.





Labeled Fab-A-Frame assemblies are available in four rating classifications:

- 1) Frame assemblies incorporating labeled glazing are for use with 3/4 hour labeled doors.
- 2) Frame assemblies incorporating solid panels are for use with 1 1/2 hour labeled doors.
- 3) Frame assemblies incorporating both solid panels and labeled glazing are for use with 3/4 hour labeled doors.
- 4) Frame assemblies incorporating FireLite® glazing are for use with up to 1 hour labeled doors.

**WALL ANCHORS**

Non-removable masonry anchors may be provided in units up to 11'4" wide and 12'0" high.

Wood stud, steel stud and completed opening anchors may be provided in units up to 8'0" wide and 10' 0" high.

**OVERALL SIZES AND LITES SIZES**

The following chart indicates general dimensional and wall criteria applicable to these assemblies.

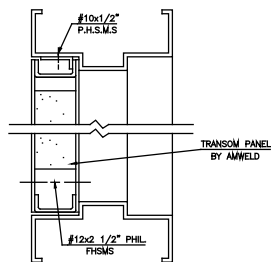
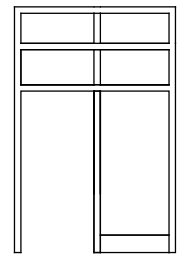
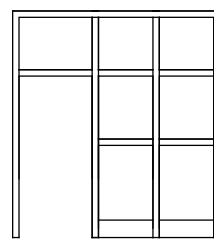
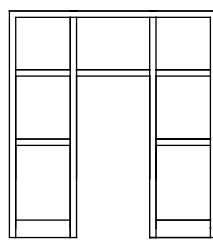
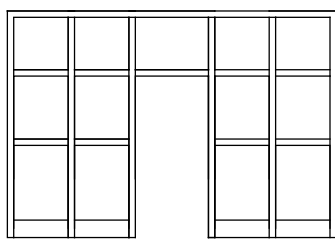
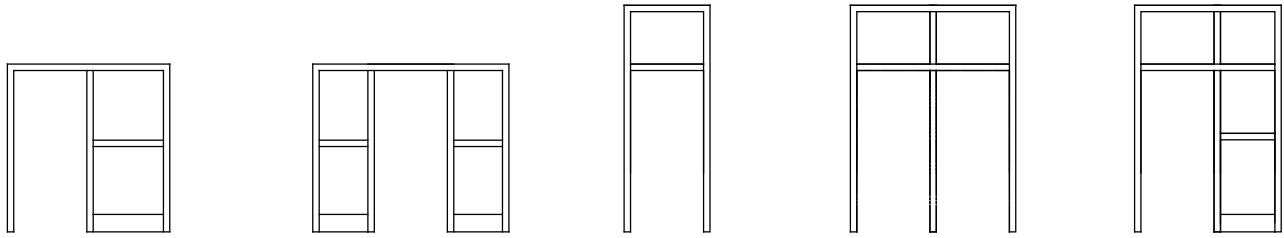
UL FAB-A-FRAME ASSEMBLIES																	
HOURLY RATING OF DOOR	MAXIMUM SIZE DOOR OPENING		MAXIMUM SIZE OVERALL		MAXIMUM LITE SIZE		MAXIMUM LITE AREA SQ. IN.	MAXIMUM PANEL SIZE		MAXIMUM PANEL AREA SQ. IN.	WALL THICKNESS	MASONRY	EXISTING MAS.	STEEL STUD	WOOD STUD	WELDED	REMARKS
	WIDTH	HEIGHT	WIDTH	HEIGHT	WIDTH	HEIGHT		WIDTH	HEIGHT								
1	80"	80"	102"	101"	54"	54"	1 296				4 7/8" to 12"	.	.	.	.	.	1,2,3,4
1	80"	80"	102"	101"	54"	77 3/4"	1 296				4 7/8" to 12"	.	.	.	.	.	2,3,4
3/4	80"	90"	136"	120"	54" transom 30" side lite	54" transom 54" sidelite	1 296	41" transom 30" side lite	26" transom 54" side lite	1 296	4" to 12"	.				.	4
3/4	80"	90"	11'4"	10'0"	54" transom 30" side lite	54" transom 54" sidelite	1 296	41" transom 30" side lite	26" transom 54" side lite	1 296	4" to 12"		.	.	.	.	2,4
3/4	80"	90"	92 1/2"	10'0"	54" transom 51 1/2" sidelite	54" transom 54" sidelite	1 296	41" transom 30" side lite	26" transom 54" side lite	1 296	4" to 12"	.	.	.	.	.	2
1 1/2	80"	80"	11'2"	11'4"	N/A	N/A	N/A	30" transom 30" side lite	48" transom 54" side lite	1440 transom 1620 side lite	4" to 12"	.				.	4,5
1 1/2	80"	80"	8'4"	10'2"	N/A	N/A	N/A	30" transom 30" side lite	48" transom 54" side lite	1440 transom 1620 side lite	4" to 12"		.	.	.	.	2,6
3/4	80"	80"	11'2"	11'4"	30" transom 30" side lite	48" transom 54" sidelite	1 296	30" transom 30" side lite	48" transom 54" side lite	1440 transom 1620 side lite	4" to 12"	.				.	4,5
3/4	80"	80"	8'4"	10'2"	30" transom 30" side lite	48" transom 54" sidelite	1 296	30" transom 30" side lite	48" transom 54" side lite	1440 transom 1620 side lite	4" to 12"		.	.	.	.	2,6

**REMARKS:**

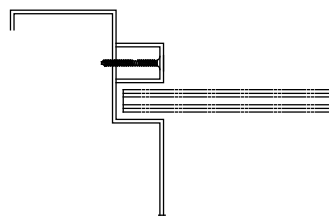
1. With frame faces under 2"
2. If used in stud wall, frame must be mounted on masonry sill.
3. Fire Lite glass and corresponding glazing material required.
4. Field splice permitted for shipping purposes.
5. Face dimension 1" minimum.
6. Face dimension 1-1/4" minimum.



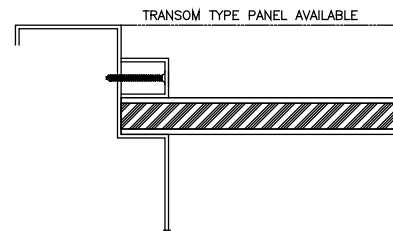
**400 SERIES FAB-A-FRAME DETAILS**



SERIES 5700 TRANSOM OR SIDELIGHT PANEL DETAIL



1/4" GLASS DETAIL



SERIES 400 INSULATED PANEL

**SCOPE:**

This bulletin covers specifications and features of Black Mountain Door's UL labeled frames for fire doors.

**PURPOSE:**

To insure the reader is aware of this important part of the Black Mountain Door product line.

**DESCRIPTION:**

Black Mountain Door's line of wall anchors has made it possible to supply labeled frames for virtually every type of wall construction. Anchors are available "loose" within limits of jamb depths and as shown in charts.

In addition to the specifications on the inside page, the following information should be noted when ordering frames for fire doors:

1. Double door headers for labeled openings must be prepared for flush bolt or vertical rod strikes, or reinforced for vertical rod or surface bolt strikes.
2. Hardware preparations are those which are listed for the respective labeling programs.
3. Double frames with hardware or hollow metal mullions are available. When ordering this type of frame, consider all procedures and hardware applications the same as single doors.
4. Fire door frames over 7'6" high must be prepared for four hinges.
5. Plastic frame spacers shall not be used on fire door frame returns.
6. Grouting is not mandatory (customary at new masonry installations only).

**TEST CRITERIA:**

Frames are constructed to meet fire test criteria as defined in UL10b, NFPA252 or UBC 7-2(1994).

**LABELING:**

Three sided frames generally assume the rating of the least rated component and are normally not rated with hourly ratings.



400 SERIES UL FRAMES													
OPENING DESCRIPTION		MAX. DOOR OPENING SIZE W X H	THROAT SIZE	MAX. DOOR RATING	WALL				ASSEMBLY		FACES		REMARKS/SPECIAL NOTES
					MASONRY	EXIST. MASONRY	STEEL STUD	WOOD STUD	KNOCKED DOWN	WELDED	MIN.	MAX.	
SGL.	DBL.												
●		4'0" x 10'0"	2" to 13"	3 Hr.	●	●			●	●	1"	8"	②⑥
	●	8'0" x 10'0"	2" to 13"	3 Hr.	●	●			●	●	1"	8"	①②⑥
●		4'0" x 10'0"	2" to 13"	1 1/2 Hr.			●	●	●	●	1 1/4"	8"	②
	●	8'0" x 10'0"	2" to 13"	1 1/2 Hr.			●	●	●	●	1 1/4"	8"	①②
●		4'0" x 8'0"	2" to 13"	3 Hr.	●	●			●	●	1"	8"	Dutch ②⑥
●		4'0" x 8'0"	2" to 13"	1 1/2 Hr.			●	●	●	●	1 1/4"	8"	Dutch ②
MULTI		③	2" to 13"	3 Hr.	●	●				●	2"	4"	Multi-Egress ③
●		4'0" x (Note 4)	2" to 13"	3 Hr.	●	●			●	●	1"	8"	4-Sided ②④⑥
●		4'0" x (Note 4)	2" to 13"	1 1/2 Hr.			●	●	●	●	1 1/4"	8"	4-Sided ②④
		⑤	2" to 13"	3 Hr.	●	●			●	●	1"	8"	4-Sided ②⑤⑥
		⑤	2" to 13"	1 1/2 Hr.			●	●	●	●	1 1/4"	8"	4-Sided ②⑤

**Remarks**

- 1.) Fixed or removable mullions allowed.
- 2.) Loose anchors allowed where permitted by jamb depth.
- 3.) Removable hardware mullions allowed. H.M. Mullions must be welded. "Bank of Doors" 12'8"x8'2" overall maximum (with 4" face). Each door opening 4'0"x8'0" or 8'0"x8'0" maximum.
- 4.) 4-sided frame with mitered or butted sill. 10'0" Maximum height from bottom of frame to underside of header. MUST be wall mounted.
- 5.) 4-sided frame with mitered or butted sill, hinged at header. MUST be wall mounted 10'0"x4'0" high maximum opening.
- 6.) 1" face only on welded frame in new masonry.



600 (2600) SERIES UL FRAMES													
OPENING DESCRIPTION		MAX. DOOR OPENING SIZE W X H	THROAT SIZE	MAX. DOOR RATING	WALL				ASSEMBLY		FACES		REMARKS/SPECIAL NOTES
					MASONRY	EXIST. MASONRY	STEEL STUD	WOOD STUD	KNOCKED DOWN	WELDED	MIN.	MAX.	
SGL.	DBL.												
•		4'0" x 9'0"	2" to 13"	1 1/2 Hr.			•	•	•		1 1/2"	2"	
	•	8'0" x 8'0"	2" to 13"	1 1/2 Hr.			•	•	•		1 1/2"	2"	①
	•	7'0" x 9'0"	2" to 13"	1 1/2 Hr.			•	•	•		1 1/2"	2"	①
•		4'0" x 8'0"	2" to 13"	1 1/2 Hr.			•	•	•	•	1 1/2"	2"	
•		4'0" x 8'0"	2" to 13"	1 1/2 Hr.			•	•	•		1 1/2"	2"	②

Remarks:

- 1.) Removable mullion hardware allowed.
- 2.) Communicating motel or contra-swing frame.



**SCOPE:**

This bulletin covers specifications and features of Black Mountain Door's UL door availability.

**PURPOSE:**

To insure the reader understands the extent of available UL doors.

**DESCRIPTION:**

The charts and text on the following pages will serve as a general outline of UL fire doors available from Black Mountain Door. Consult individual Tech Data # L-1.0 through L-3.0 for specific door details.

**TEST CRITERIA:**

Doors are constructed to meet fire test criteria as defined in UL10b, NFPA252 or UBC 7-2(1994).



UL FIRE DOOR LABELING SYNOPSIS UL10B-NFPA252																		
SERIES	SINGLE	PAIR	GAGE			MAX. RATING	TEMP. RISE MAX.	MAX. SIZE	SINGLE OR ACTIVE DOOR							REMARKS		
			20	18	16				SINGLE POINT	MIN. THROW	RIM PANIC (SEE NOTE)	MORTISE PANIC (SEE NOTE)	SURF V. ROD (SEE NOTE)	CONC. V. ROD (SEE NOTE)	FLUSHBOLT		SURFACE BOLT	ASTRAGAL REQD (SEE NOTES)
15-17LE 25-27LE	•		•	•	•	3 HR.		4'0" x 10'0"	•	1/2"	•	•	•	•				
	•		•	•	•	3 HR.		4'0" x 8'0"	•	1/2"	•	•	•	•				
	•	•	•	•	•	3 HR.		8'0" x 7'2"	•	3/4"	•	•	•	•	•	•	•	•
15LE	•		•	•	•	1 1/2 HR.		8'0" x 7'2"	•	3/4"	•	•	•	•	•	•	•	1 3/8" THICK DOOR
61LE/63LE	•		•	•	•	3 HR.		3'4" x 7'0"	•	1/2"	•	•	•	•				
	•		•	•	•	3 HR.		3'6" x 6'8"	•	1/2"	•	•	•	•				
	•	•	•	•	•	3 HR.		6'8" x 7'0"	•	3/4"	•	•	•	•	•	•	•	6 PANEL
	•	•	•	•	•	3 HR.		7'0" x 6'8"	•	3/4"	•	•	•	•	•	•	•	•
61LE/63LE	•		•	•	•	3 HR.		3'0" x 7'0"	•	1/2"	•	•	•	•				
	•		•	•	•	3 HR.		6'0" x 7'0"	•	3/4"	•	•	•	•				
	•	•	•	•	•	3 HR.	250°	4'0" x 8'0"	•	1/2"	•	•	•	•				8 PANEL
35LE/37LE	•		•	•	•	3 HR.	250°	8'0" x 8'0"	•	3/4"	•	•	•	•				
	•		•	•	•	3 HR.	250°	8'0" x 8'0"	•	3/4"	•	•	•	•				
	•	•	•	•	•	3 HR.	250°	8'0" x 8'0"	•	---	•	•	•	•				DOUBLE EGRESS
45LE/47LE	•		•	•	•	3 HR.		4'0" x 10'0"	•	1/2"	•	•	•	•				
	•		•	•	•	1 1/2 HR.		4'0" x 8'0"	•	1/2"	•	•	•	•				
	•		•	•	•	3 HR.		8'0" x 8'0"	•	3/4"	•	•	•	•				
	•	•	•	•	•	1 1/2 HR.		8'0" x 8'0"	•	3/4"	•	•	•	•				
	•	•	•	•	•	3 HR.		8'0" x 8'0"	•	---	•	•	•	•				DOUBLE EGRESS

**SPECIAL NOTES:**

1. Listed fusible link louvers may be used on single or double 1 1/2 hour or 3/4 hour doors. Maximum louver size 24" x 24". Louvers may not be used in combination with lites or exit devices.
2. Hinge preparation shall be as defined in NFPA-80. Listed (labeled) continuous hinges, pivots, anchor hinges, or pocket pivots may be used.
3. 20 Min. doors in smoke barriers do not require positive latching if acceptable by local Authority Having Jurisdiction.
4. Overlapping astragals may be deleted at double doors (same direction) for 1 1/2 Hour ratings and under. Amweld's "U" astragal must be factory applied to inactive door.
5. Vision lites limited to 100 sq. in. for temperature rise doors.
6. Door heights for doors with fire exit devices over 8'0" subject to limitations of hardware listings.
7. 36" high steel protection plates with top of plate 48" maximum above bottom of door may be mounted on one face only.
8. See U.L. Building Materials Directory for glazing and lite kit variations available.



**SCOPE:**

This Tech Data is intended to provide specific information on pertinent fire ratings, dimensional limitations and thickness of glazing materials suitable for use in both Amweld and Firedoor Brand UL doors. It also relates this glazing to Amweld Brand standard lite kits in fire-rated doors manufactured by Black Mountain Door.

**PURPOSE:**

The information contained herein is to be used by the reader as a “tool” for selecting the proper glazing material from materials approved by Underwriters Laboratories based on published Listings. These Listings may be accessed from the “Online Certifications Directory” link at [www.ul.com](http://www.ul.com).

**DESCRIPTION:**

With the usage of wired and non-wire materials such as ceramics, laminates, plastics, or others, it is no longer applicable to use the term “glass”. The terms “glazing” or “glazing material” more accurately describes transparent materials used in fire doors.

Many of these alternative materials greatly exceed the “historic” dimensions of wire glass as shown on the first four lines of the charts. Some are limited to specific maximum ratings based on their performance in fire tests. Some materials require specific glazing compounds beyond the usual glazing tape or putty. Others require glass stop heights in excess of the 5/8” standard dimensions. Thickness of these materials also varies from the typical 1/4” of wire glass.

The charts on this Tech Data are intended to define these limitations. They are generally set up in order by increasing thickness. A column entitled “LITE KIT” is provided to identify which glazing materials may be used in Amweld Brand standard “SLIMLINE” lite kits or those which require a modified SLIMLINE kit. Glazing materials that require custom manufactured lite kits due to their thickness or depth of groove are not shown. Thicknesses over 1” are not listed since their use with any lite kit design will exceed the 1 3/4” typical door thickness.

Parentheses following the glazing material description identify those requiring glazing compounds other than pvc tape or silicone “putty”.

A column entitled “DOOR RATING” is provided to denote the maximum rating for the glazing material on the corresponding line. The rating of any glazing material may vary with dimensional limitations. Where NHS is indicated, it denotes those materials that have been fire tested WITHOUT the hose stream “integrity” test.

Area, width, and height dimensions are published maximums based on exposed (visible) lite sizes.

In no case may ANY of these dimensions be exceeded without compromising the rating. For example, a 12” by 33” size exceeds the 100 square inch maximum and is therefore not applicable.

**DISCLAIMER:**

Black Mountain Door provides this chart for reference only. We have no financial interest in any of the manufacturers listed, nor do we endorse the use of any glazing material over others. The charts were prepared using information published in 2006. They are not intended to be all-inclusive or to be used as a current source of reference. Before using this chart for your order, consult the UL online or printed Directories for current information. Content and updating of these Directories are the responsibility of the individual glazing manufacturers.

In all cases, the use of glazing materials is subject to the approval of Building Codes and the local Authority Having Jurisdiction (AHJ).

**Verification of proposed glazing with UL Category KCMZ shall be the responsibility of buyer and must be conveyed to Black Mountain Door (or its authorized manufacturer) in writing.**

**METRICATION:**

Many of the glazing materials indicated are the products of foreign manufacturers; therefore some thicknesses are indicated in metrics. Approximate fractional “inch sizes” are sometimes used by these manufacturers, therefore both are sometimes given on separate lines.

Approximate equivalents of metric dimensions (based on 1”=25.4mm) used in the charts are:

5 mm. = 0.197”	8.6 mm. = 0.338”	17 mm. = 0.670”
21 mm. = 0.827”	25 mm. = 0.984”	

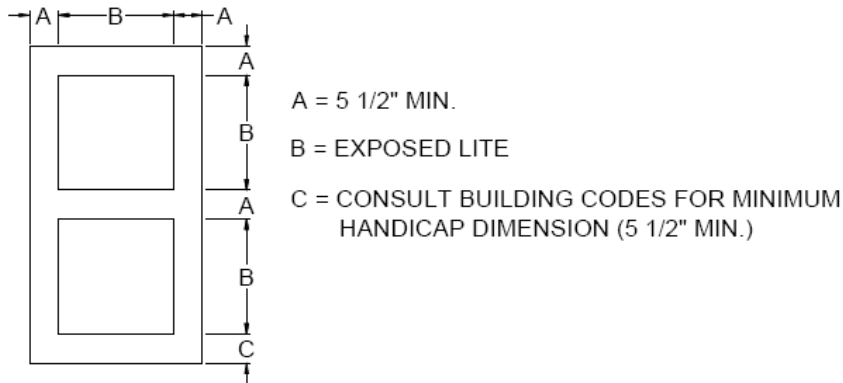




**UL PROCEDURE EXCERPTS:**

Black Mountain Door's UL Procedure (and the UL Procedure released to authorized branch manufacturers) includes the following very important points relating to these alternate glazing materials. These are EXCERPTS, not the complete proprietary text:

- Glazing materials shall be as listed in UL Category KCMZ.
- Door Light kits shall be as listed in UL Category GVVX.
- Hourly ratings of doors may be maintained through the use of alternate glazing materials, but SHALL NOT be increased.
- Exposed light locations shall not be less than 5 1/2" from door edges, top or bottom of door, or between lights.
- Sizes of individual lights may be up to the maximum sizes listed in UL Category KCMZ.
- Door Light kits or mouldings shall maintain the minimum width of glazing groove (glazing gap) in order to accommodate caulk, glazing, or other compounds required by the glazing material.
- Door Light kits or mouldings shall maintain the minimum depth of glazing groove (normally a minimum of "bite" plus 1/8" all four sides) in accordance with dimensions shown in UL Category KCMZ for the size, thickness, or rating required by the glazing material.
- Where rating or dimensional discrepancies may occur between glazing manufacturer's catalog information and UL Categories KCMZ or GVVX, the information shown in KCMZ or GVVX shall govern.
- It is recognized that the door manufacturer has no liability resulting from the use of substitute glazing material by the glazier.



**CERTIFICATION:**

This Tech Data will serve as a certification that Amweld International UL labeled Doors may be prepared for glazing materials as listed herein or as included in UL Categories KCMZ or GVVX. This certification applies ONLY if other critical requirements (such as door size or rating) are not exceeded.



FIRE RATED GLAZING MATERIAL	DOOR RATING	MAX. AREA (sq. in.)	MAX. WTH (in.)	MAX. HGT (in.)	LITE KIT
1/4" WIRE	3 hrs.	N/A	N/A	N/A	SLIMLINE
1/4" WIRE	1 or 1 1/2 hrs.	100 per door	10	33	SLIMLINE
1/4" WIRE	3/4 hr.	1296 per lite	54	54	SLIMLINE
1/4" WIRE	20 min. NHS	1296 per lite	54	54	SLIMLINE
1/4" WIRE	20 min. NHS	2994 per lite	35 13/16	83 5/8	SLIMLINE
3/16" FIRELITE incl. NT & PLUS	3 hrs.	100 per door	12	33	SLIMLINE
3/16" FIRELITE incl. NT & PLUS	1 or 1 1/2 hr. (temp rise)	100 per door	12	33	SLIMLINE
3/16" FIRELITE incl. NT & PLUS	1 1/2 hrs.	2034 per door	36	56 1/2	SLIMLINE
3/16" FIRELITE incl. NT & PLUS	1 hr.	3204 per door	36	56 1/2	SLIMLINE
3/16" FIRELITE incl. NT & PLUS	3/4 hr.	3204 per lite	36	89	SLIMLINE
3/16" FIRELITE incl. NT & PLUS	20 min. NHS	3204 per lite	36	89	SLIMLINE
5mm. PYRAN (Fiberfrax tape or Pemko FG3000)	1 or 1 1/2 hr.	2736 per door	36	76	SLIMLINE
5mm. PYRAN (Fiberfrax tape or Pemko FG3000)	20 min NHS	3204 per lite	36	89	SLIMLINE
1/4" PILKINGTON WIRE (Pemko FG3000)	3/4 hr.	2856 per lite	34	84	SLIMLINE
1/4" PILKINGTON WIRE (Pemko FG3000)	20 min. NHS	2856 per lite	34	84	SLIMLINE
1/4" PYROSWISS (Kerafix tape)	20 min. NHS	3419 per lite	47 1/2	95 1/2	SLIMLINE
1/4" PYROSWISS	20 min. NHS	3414 per lite	35 3/4	95 1/2	SLIMLINE
1/4" SUPERLITE I-XL	20 min. NHS	2678 per lite	109	109	SLIMLINE
1/4" SUPERLITE I	20 min. NHS	3341 per lite	35 1/8	96	SLIMLINE
1/4" PYROEDGE-20 (closed cell foam tape)	20 min. NHS	3154 per lite	90 3/4	90 3/4	SLIMLINE
1/4" SUPERLITE I-XL	20 min. NHS	2648 per lite	34	77 7/8	SLIMLINE
1/4" SUPERLITE I	20 min. NHS	2648 per lite	34	77 7/8	SLIMLINE
5/16" FIRELITE incl. NT & PLUS	1 or 1 1/2 hr. (temp rise)	100 per door	12	33	SLIMLINE
5/16" FIRELITE incl. NT & PLUS	1 1/2 hrs.	2034 per door	36	56 1/2	SLIMLINE
5/16" FIRELITE incl. NT & PLUS	1 hr.	3204 per door	36	56 1/2	SLIMLINE
5/16" FIRELITE incl. NT & PLUS	3/4 hr.	3204 per lite	36	89	SLIMLINE
5/16" FIRELITE incl. NT & PLUS	20 min. NHS	3204 per lite	36	89	SLIMLINE
5/16" KERALITE FRL	3 hrs.	100 per door	12	33	SLIMLINE
5/16" KERALITE FRL	1 or 1 1/2 hrs.	490 per door	33	33	SLIMLINE
5/16" KERALITE FRL	3/4 hrs	490 per lite	33	33	SLIMLINE
5/16" KERALITE FRL	20 min. NHS	490 per lite	33	33	SLIMLINE



FIRE RATED GLAZING MATERIAL	DOOR RATING	MAX. AREA (sq. in)	MAX. WTH (in)	MAX. HGT (in)	LITE KIT
8.6mm. PYRAN CRYSTAL L (Pemko FG3000)	1 or 1 1/2 hr. (temp rise)	100 per door	12	33	SLIMLINE IG 1/2"
8.6mm. PYRAN CRYSTAL L (Pemko FG3000)	1 or 1 1/2 hr.	2736 per door	36	76	SLIMLINE IG 1/2"
3/8" FIREGLASS 20 (Fiberfrax tape,DAP33,PVC)	20 min.NHS	3024 per lite	36	89	SLIMLINE IG 1/2"
7/16" NATIONAL GUARD PYROSHIELD PLUS	1 1/2 hr.	552 per door	12	46	SLIMLINE IG 1/2"
7/16" NATIONAL GUARD PYROSHIELD PLUS	3/4 hr.	2856 per lite	34	84	SLIMLINE IG 1/2"
7/16" NATIONAL GUARD PYROSHIELD PLUS	20 min. NHS	3289 per lite	35 3/4	92	SLIMLINE IG 1/2"
1/2" FIREGLASS 20 (Fiberfrax tape,DAP33,PVC)	20 min.NHS	3024 per lite	36	89	SLIMLINE IG 1/2"
17mm. KERAFLAM (Kerafix tape)	1 or 1 1/2 hrs.	1222.5 per door	23	53	SLIMLINE IG 3/4"
17mm. KERAFLAM (Kerafix tape)	UP TO 3/4 hr.	1222.5 per lite	23	53	SLIMLINE IG 3/4"
3/4" KERALITE ULTRA	1 or 1 1/2 hrs.	1680 per door	58 1/2	58 1/2	SLIMLINE IG 3/4"
3/4" KERALITE ULTRA	UP TO 3/4 hr.	1680 per lite	58 1/2	58 1/2	SLIMLINE IG 3/4"
3/4" SWISSFLAM 45	UP TO 3/4 hr.	2635 per lite	36	77 1/2	SLIMLINE IG 3/4"
3/4" FIREGLASS 20 (Fiberfrax tape,DAP33,PVC)	20 min.NHS	3024 per lite	36	89	SLIMLINE IG 3/4"
3/4" PILK. PYROSTOP 45-200 (Pemko FG3000)	3/4 hr.	3724 per lite	41 5/8	89 3/4	SLIMLINE IG 3/4"
3/4" SUPERLITE II-XL	3/4 hr.	2432 per lite	34 1/2	70 1/2	SLIMLINE IG 3/4"
3/4" SWISSFLAM 45-N2	3/4 hr.	2635 per lite	36	77 1/2	SLIMLINE IG 3/4"
3/4" SWISSFLAM 45-N2 (Kerafix tape)	3/4 hr.	3419 per lite	35 13/16	95 1/2	SLIMLINE IG 3/4"
3/4" PYROBEL 45 (closed cell foam tape)	3/4 hr.	2747 per lite	58 3/4	58 3/4	SLIMLINE IG 3/4"
21mm.VISTAMATIC VB1,VS1,VB2,VS2 (Intumet2002)	20 min. NHS	849 per lite	22 1/2	37 3/4	SLIMLINE IG 1"
0.82" VIRACON (non-wire)	20 min. NHS	360 per lite	36	36	SLIMLINE IG 1"
0.85" VIRACON (wire)	20 min. NHS	576 per lite	36	36	SLIMLINE IG 1"
7/8" PILK. PYROSTOP 60-101 (Pemko FG3000)	1 hr.	3724 per door	41 5/8	89 3/4	SLIMLINE IG 1"
15/16" PILK. PYRODUR 20-250,260,350,360	20 min. NHS	4477 per lite	95	95	SLIMLINE IG 1"
25mm. SWISSFLAM 60-N2	1 hr.	3325 per door	36	95	SLIMLINE IG 1"
25mm. SWISSFLAM 60-N2 (Kerafix tape)	1 hr.	2685 per door	30	89 1/2	SLIMLINE IG 1"
25mm. CONTRAFLAM 60-N2	1 hr.	3325 per door	36	95	SLIMLINE IG 1"
25mm. CONTRAFLAM 60-N2 (Kerafix tape)	1 hr.	2685 per door	30	89 1/2	SLIMLINE IG 1"
1" SUPERLITE II-XL	1 hr.	4952 per door	124 1/2	124 1/2	SLIMLINE IG 1"
1" SUPERLITE II-XL	3/4 hr.	4952 per lite	124 1/2	124 1/2	SLIMLINE IG 1"
1" PYROBEL 60 (1/8" closed cell foam)	1 hr. (temp rise)	3855 per door	87 5/8	87 5/8	SLIMLINE IG 1"



**SCOPE:**

This Tech Data is intended to provide specific information on pertinent fire ratings, dimensional limitations, thickness, and suitability of glazing materials for use in both Amweld and Firedoor Brand fire-rated Fab-A-Frame (FAF) units and fire windows by Black Mountain Door.

**PURPOSE:**

The information contained herein is to be used by the reader as a “tool” for selecting the proper glazing material from materials approved by Underwriters Laboratories based on published Listings. It is also intended to clarify how the glazing dimensions may be applied to FAF units. These Listings may be accessed from the “Online Certifications Directory” link at [www.ul.com](http://www.ul.com).

**DESCRIPTION:**

With the usage of wired and non-wire materials such as ceramics, laminates, plastics, or others, it is no longer applicable to use the term “glass”. The terms “glazing” or “glazing material” more accurately describes transparent materials used in fire doors.

Many of these alternative materials greatly differ from the dimensions of wire glass historically used for 3/4 hour or 20 minute NHS fire tests. Some are limited to specific maximum ratings based on their performance in fire tests. Some materials require specific glazing compounds beyond the usual glazing tape or putty. Others require glass stop heights in excess of the 5/8” standard dimensions or glazing gaps in excess of those used for 1/4” wire glass.

The charts on this Tech Data are intended to define these limitations. These charts ARE NOT intended to be all inclusive; they cover the more common situations. They are generally set up in order by increasing thickness. A column entitled “USED IN” is provided to identify which glazing materials are limited to use in certain areas of frames (noted as transom, etc.), fire windows only, or limited to single lite windows in masonry only. Minimum stop height for each glazing material is indicated in the “MIN STOP” column. Thicknesses or stop heights over 1” are not shown since their use requires specialized frame profiles. Parentheses following the glazing material description identify those requiring glazing compounds other than pvc tape or silicone “putty”.

A column entitled “RATING” is provided to denote the maximum fire rating for the glazing material on the corresponding line. Keep in mind that most frames for fire doors DO NOT have hourly ratings. The rating of any glazing material may vary with dimensional limitations. Where NHS is indicated, it denotes those materials that have been fire tested WITHOUT the hose stream “integrity” test.

Area, width, and height dimensions are published maximums based on exposed (visible) lite sizes.

In no case may ANY of these dimensions be exceeded without compromising the rating. For example, a 54” by 54” size exceeds the 1,296 square inch maximum and is therefore not applicable.

**THE BASIC CONCEPT:**

FAF units and fire windows are a means of retaining the glazing material into the wall construction. Historically, they were fire tested with 1/4” wire glass (prior to the existence of non-wired glazing) or even steel panels. The critical performance factors are generally overall frame width, overall frame height, total frame area, and how the glazing was held in place. We have confirmed through an Engineering Evaluation by UL that as long as the frame perimeter and area dimensions are not exceeded, the sizes of glazing “infill” may vary.

**DISCLAIMER:**

Black Mountain Door provides this chart for reference only. We have no financial interest in any of the manufacturers listed, nor do we endorse the use of any glazing material over others. The charts were prepared using information published in 2006. They are not intended to be all-inclusive or to be used as a current source of reference. Before using this chart for your order, consult the UL online or printed Directories for current information. Content and updating of these Directories are the responsibility of the individual glazing manufacturers.

In all cases, the use of glazing materials is subject to the approval of Building Codes and the local Authority Having Jurisdiction (AHJ).

**Verification of proposed glazing with UL Category KCMZ shall be the responsibility of buyer and must be conveyed to Black Mountain Door (or its authorized manufacturer) in writing.**



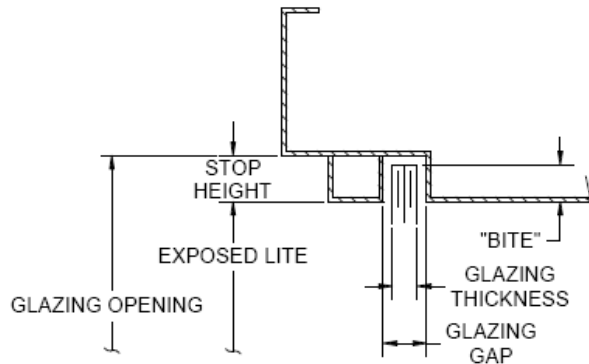
**GLAZING TESTED AS “WALLS”:**

This chart is not intended to include glazing materials specifically approved for use as walls or those specifically approved for use in “proprietary frame systems”. In most cases these are fire tested to Standards applicable to wall materials such as ASTM E-119 rather than UL-9, UL 10b (neutral pressure), UL 10c (positive pressure), or NFPA 252 applicable to fire doors and/or windows.

**UL PROCEDURE EXCERPTS:**

The Amweld International UL Procedure (and the UL Procedure released to authorized manufacturers) includes the following very important points relating to these alternate glazing materials. These are EXCERPTS, not the complete proprietary text:

- Glazing materials shall be as listed in UL Category KCMZ.
- Hourly ratings of frames may be maintained through the use of alternate glazing materials, but SHALL NOT be increased.
- Overall sizes of frames shall be maintained but sizes of individual lights may be increased up to the maximum sizes as shown in UL Category KCMZ.
- Frame sections shall be fabricated or modified to maintain minimum width and minimum depth of glazing groove (stop height) in accordance with dimensions shown in UL Category KCMZ for the size, thickness, or rating required by the glazing material.
- Where rating or dimensional discrepancies may occur between glazing manufacturer’s catalog information and UL Category KCMZ, the information shown in KCMZ shall govern.
- It is recognized that the frame assembler has no liability resulting from the use of substitute glazing material by the glazier.



**METRICATION:**

Many of the glazing materials indicated are the products of foreign manufacturers; therefore some thicknesses are indicated in metrics. Approximate fractional “inch sizes” are sometimes used by these manufacturers, therefore both are sometimes given on separate lines.

Approximate equivalents of metric dimensions (based on 1”=25.4mm) used in the charts are:

- |                 |                  |                 |
|-----------------|------------------|-----------------|
| 5 mm. = 0.197”  | 8.6 mm. = 0.338” | 17 mm. = 0.670” |
| 21 mm. = 0.827” | 25 mm. = 0.984”  |                 |

**CERTIFICATION:**

This Tech Data will serve as a certification that Black Mountain Door UL FAF assemblies and Fire Windows may be prepared for glazing materials as listed herein or as included in UL Categories KCMZ or GVVX. This certification applies ONLY if other critical requirements (such as overall size, minimum dimensions, or rating) are not exceeded.



LISTED GLASS TYPE	USED IN	RATING	MAX. AREA	MAX. WTH	MAX. HGT	MIN STOP
1/4" wire glass	sidelite/window	3/4 hr.	4608	100	100	5/8
1/4" wire glass	transom	3/4 hr.	3456	96	36	5/8
1/4" wire glass + 1/4" tempered glass (incl. PILKINGTON)	all	up to 3/4 hr.	1296	54	54	5/8
3/16" FIRELITE (incl. NT)	all	1 1/2 hr.	2627	46 1/2	56 1/2	5/8
3/16" FIRELITE (incl. NT)	all	up to 1 hr.	3325	95	95	5/8
3/16" KERALITE FR-F or FR-R (Kerafix tape)	all	1 or 1 1/2 hr.	1763	60 1/4	60 1/4	5/8
3/16" KERALITE FR-F or FR-R	all	3/4 hr.	1763	60 1/4	60 1/4	5/8
5mm PYRAN S (PVC or Fiberfrax tape, Pemko FG3000)	all	20 min NHS	7228	116 3/4	116 3/4	3/4
5mm PYRAN CRYSTAL (Fiberfrax tape, Pemko FG3000)	all	1 or 1 1/2 hr.	3202	76	76	3/4
5mm PYRAN STAR (Fiberfrax tape, Pemko FG3000)	all	1 or 1 1/2 hr.	3202	76	76	3/4
1/4" ASAHI-CENTRAL-PILK. wire glass (Pemko FG3000)	sidelite/window	3/4 hr.	4608	48	96	5/8
1/4" ASAHI-CENTRAL-PILK. wire glass (Pemko FG3000)	transom	3/4 hr.	3456	96	36	5/8
1/4" CENTRAL wire glass (Norseal V980)	all	3/4 hr.	1296	54	54	3/4
1/4" PYROEDGE 20 (Pemko FG3000)	sidelite/window	20 min NHS	3698	40 3/4	90 3/4	5/8
1/4" SUPERLITE I-W + 1/4" tempered glass	all	up to 3/4 hr.	1296	54	54	5/8
1/4" SUPERLITE I-W	sidelite/window	3/4 hr.	4608	100	100	5/8
1/4" SUPERLITE I-W	transom	3/4 hr.	3456	96	36	5/8
1/4" SUPERLITE I	window/transom	20 min NHS	2800	71 1/4	71 1/4	5/8
1/4" SUPERLITE XL	all	20 min NHS	3341	48	96	5/8
1/4" SUPERLITE C-CP (Fiberfrax tape or Pemko FG3000)	all	up to 1 1/2 hr.	3202	76	76	3/4
1/4" FIREGLASS 20 (PVC or Fiberfrax tape, DAP33)	all	20 min NHS	6272	106 1/2	106 1/2	5/8
1/4" NAT GUARD FIREGLASS 20 (PVC or Fiberfrax tape, DA	all	20 min NHS	6396	59 1/2	107 1/2	5/8
1/4" PYROSWISS (Kerafix tape)	all	20 min NHS	4626	95 1/2	95 1/2	5/8
1/4" PYROSWISS MASTERCARREE (Kerafix tape)	all	20 min NHS	3419	95 1/2	95 1/2	5/8
1/4" PYRODUR 20-104	all	20 min NHS	1944	36	54	5/8
5/16" FIRELITE PLUS & IGU	all	1 1/2 hr.	2627	46 1/2	56 1/2	5/8
5/16" FIRELITE PLUS & IGU	all	up to 1 hr.	3325	95	95	5/8
5/16" KERALITE FR-L (Kerafix tape)	all	1 or 1 1/2 hr.	1763	60 1/4	60 1/4	5/8
5/16" KERALITE FR-L	all	3/4 hr.	1763	60 1/4	60 1/4	5/8
5/16" PYROGUARD (K-tape or Pemko FG3000)	all	20 min NHS	2187	33	66	3/4
5/16" PYROGUARD (K-tape or Pemko FG3000)	all	20 min NHS	1728	36	48	3/4



**SUBJECT:****Glazing for UL Fire Windows and Fab-A-Frame Assemblies****NO: L-8.4****DATE: 03/12****PAGE: 4**

LISTED GLASS TYPE	USED IN	RATING	MAX. AREA	MAX. WTH	MAX. HGT	MIN STOP
8.6mm (0.338") PYRAN CRYSTAL L (Pemko FG3000)	all	1 or 1 1/2 hr.	2786	66	76	3/4
3/8" FIREGLASS 20 (PVC or Fiberfrax tape, DAP33)	all	20 min NHS	6272	106 1/2	106 1/2	5/8
3/8" NAT GUARD FIREGLASS 20 (PVC or Fiberfrax tape, DA	all	20 min NHS	6396	59 1/2	107 1/2	5/8
3/8" PYRODUR 20-200	all	20 min NHS	4477	95	95	5/8
13/32" PYROSHIELD PLUS (Pemko FG3000)	all	3/4 hr.	1296	36	36	5/8
7/16" PYROSHIELD PLUS	sidelite/window	3/4 hr.	4608	100	100	5/8
7/16" PYROSHIELD PLUS	transom	3/4 hr.	3456	96	36	5/8
7/16" Nat Guard PYROSHIELD PLUS+ 1/4" temp gl.	all	up to 3/4 hr.	1296	54	54	5/8
1/2" FIREGLASS 20 (PVC or Fiberfrax tape, DAP33)	all	20 min NHS	6272	106 1/2	106 1/2	5/8
1/2" NAT GUARD FIREGLASS 20 (PVC or Fiberfrax tape, DA	all	20 min NHS	6396	59 1/2	107 1/2	5/8
3/4" PYROSTOP 45-200 (PVC tape or Pemko FG3000)	all	3/4 hr.	4500	95 1/4	95 1/4	5/8
3/4" SUPERLITE II-XL	all	3/4 hr.	2432	70 1/2	70 1/2	5/8
3/4" SWISSFLAM 45-N2 (Kerafix tape)	all	3/4 hr.	3419	95 1/2	95 1/2	5/8
3/4" VISTAMATIC VB1 & VS1 (Zero Intumet 2002)	window	3/4 hr.	333	18 1/4	18 1/4	13/16
3/4" VISTAMATIC VB1-VS1-VB2-VS2 (Zero Intumet 2002)	window	20 min NHS	849	22 1/2	37 3/4	13/16
0.85" VIRACON wired	all	20 min NHS	500	40	40	5/8
0.85" VIRACON wired	all	20 min NHS	880	40	40	3/4
13/16" INFERNO-LITE FRP100 & 4510 (Metacaulk 950-990)	1 lite in masonry	3/4 hr.	1296	42	42	3/4
7/8" PYROSTOP 60-101 (PVC tape or Pemko FG3000)	all	1 hr.	5605	96	96	1
15/16" CONTRAFLAM 60-N2 (Kerafix tape)	all	1 hr.	4449	94 13/16	94 13/16	7/8
15/16" INFERNO-LITE FRP4520 (Metacaulk 950-990)	1 lite in masonry	3/4 hr.	1296	42	42	3/4
15/16" PYRODUR 20-250,260,350,360	all	20 min NHS	4477	95	95	5/8
1" INFERNO-LITE FRP4540 (Metacaulk 950-990)	1 lite in masonry	3/4 hr.	1296	42	42	3/4
1" SUPERLITE II-XL	all	3/4 or 1 hr.	4952	124 1/2	124 1/2	5/8

**TECH  
DATA**

---

**SCOPE:**

This bulletin covers the description, dimensions, and details for Swinging Fire Rated Door and Frame Assemblies exceeding 4'-0" X 10'-0" each leaf. The doors and frames are manufactured by Black Mountain Door under the Firedoor Brand and are eligible for **ratings up to 1 1/2 hours**.

**PURPOSE:**

To provide a verbal and visual description of the requirements for providing UL Marks (labels) on door and frame assemblies for up to **5'-0" X 12'-0" single** or **10'-0" X 12'-0" double** openings.

**These requirements are VERY SPECIFIC and no substitutions are permissible.**

**IMPORTANT NOTES:**

- 1) As part of the harmonizing process of Amweld and Firedoor Brands, vertical hardware locations for Firedoor and Amweld are now **the same unless ordered otherwise**. Vertical locations defined in HMMA 861 are slightly different from ANSI A250.8 locations used by the Amweld Brand.
- 2) Since this size exceeds sizes commonly referenced in Building Codes or NFPA-80, Black Mountain Door suggests that the customer or contractor review their use with the Authority Having Jurisdiction (AHJ).

**DESCRIPTION:**

Historically, swinging hollow metal fire-rated doors have been limited to door leaves not exceeding 4'-0" X 10'-0" in single or double configurations. Recent testing by the Hollow Metal Manufacturers Association (HMMA) division of NAAMMA intended for installation in elevator lobbies has increased the door leaf size to 5'-0" X 12'-0". Obviously doors and frames of this size are "made-to-order" and will be subject to the availability of steel in the necessary sheet sizes. Black Mountain Door prefers to provide BOTH doors and frames due to the manufacturing coordination involved.

Testing was conducted for 1 1/2 hours on double doors under positive pressure furnace conditions and corresponding hose stream requirements of UL-10C. As a default, testing to UL 10-C also qualifies for UL-10B (neutral pressure) and the very similar NFPA-252 test standards.

Doors used in the test incorporated a high density insulation and separators between back-to-back stiffeners, and achieved a 450 degree F temperature rise rating.

Doors are capable of bearing the "S" mark (smoke control) on the labels, and frames are suitable for use in smoke control applications when used with doors bearing the "S" mark.

The UL Manufacturing Procedure is based on the requirements for doors, frames, glazing, and hardware preparations as follows:

**FRAMES:**

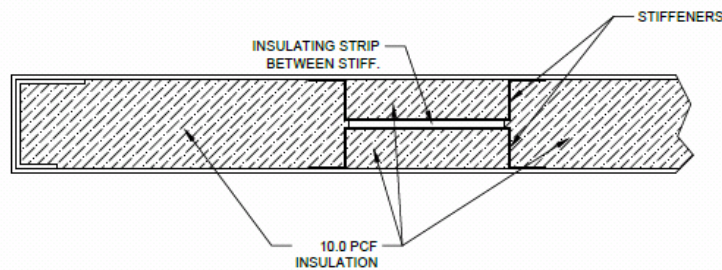
- Frames are made to general manufacturing requirements of HMMA-861.
- 14 gage (0.067") minimum material thickness, 61/8" minimum profile depth (5" wall + 1/2" backbend returns+ 1/8" clearance). Maximum throat size is 13" (per UL-63).
- Corners of frame continuously full profile welded.
- Splice joints for field welding are allowable in jams and/or head. Such joints must be reinforced with a 12" long channel.
- Testing of frames in steel stud walls allows use with masonry, existing masonry, steel stud, or wood stud wall construction. Non-masonry anchors are welded to frames.
- Hinge reinforcing is 7 gage (3/16" nominal) thickness.
- Strike reinforcing tabs for 4 7/8" "U" strike at single frames are 10 gage (1/8" nominal) thickness.
- Flushbolt reinforcing tabs at double frames are 7 gage (3/16" nominal) thickness.
- Frame headers must be prepared for fire pins as noted under "HARDWARE". Fire pins are located 6 1/8" from strike jamb of single frames and in two places 6 1/8" in from center of double frames.
- Frames DO NOT require grouting in dry wall installations.



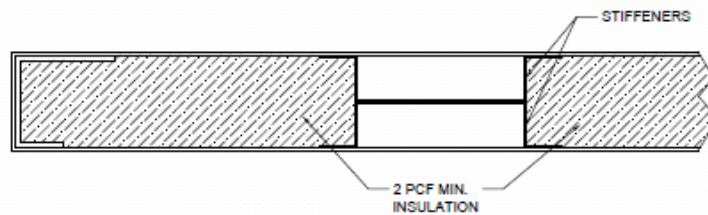


DOORS:

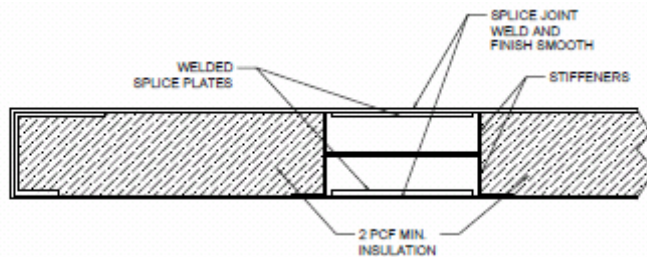
- Doors are made to general manufacturing requirements of HMMA-861.
- Series designation is 07CS representing a 1 3/4" thick continuously seam welded, bevel edge, steel stiffened "special" door (replaces 7700 Series).
- Door faces are either 16 (0.053" min) or 14 (0.067" min).
- Internal reinforcing is 14 gage edge, top, and bottom channels and 22 to 20 gage steel stiffeners spaced 6" maximum apart.
- 16 gage top closing channels are permitted.
- To qualify for the 450 F temperature rise rating, all voids in the door (between and inside stiffeners must be insulated with 10 pounds per cubic foot (pcf) mineral wool AND an insulating strip must be installed to separate the back-to-back stiffeners.



- Insulation in non-temperature rise rated doors may be 2.0 pcf (min) mineral wool.



- Hinge reinforcing is 7 gage (3/16" nominal) thickness.
- Single point lock, 4 7/8" "U" strike, and flushbolt reinforcing tabs are 10 gage (1/8" nominal) thickness.
- Lock reinforcing plates are 16 gage minimum thickness.
- Top of doors must be prepared for fire pins as noted under "HARDWARE". Fire pins are located 6" in from lock edge of single doors and 6" in from both lock edge and strike edge of double doors.
- A single vertical or horizontal splice joint welded, ground, and filled may occur on door faces.



HARDWARE:

- Single point mortise or cylindrical locks with 3/4" minimum latch throw. Since most locks are not listed for doors of this size, Black Mountain Door recommends that only locks approved for 4'-0" X 10'-0" be used.
- Exit devices, electric strikes, or other primary latches are not permitted. Most of those have only been tested to 8'-0" or 10'-0" opening heights.
- Steel, ball bearing butt hinges no less than 4 1/2" in height, **FIVE** per door.
- Each door leaf in either single or double configuration requires a fusible type auxiliary fire latch (fire pin) located at the top of the door 6" in from lock edge of single doors and 6" in from both lock edge and strike edge of double doors. **The fire pins may be selected from the types used on vertical rod fire exit hardware that is Listed (Approved) for "less bottom rod" (LBR) installations.**
- Inactive leaf of double doors requires listed "automatic" flushbolts, top and bottom. Due to the door height, manual flushbolts are not readily accessible.
- Surface closers.
- Coordinator as needed to meet local Building Codes based on usage of the assembly.

PREPARATION FOR GLAZING:

- Exposed light size for doors rated for 450 degree (F) temperature rise **cannot exceed 100 square inches per door.**
- Refer to Tech Data # L-8.3 for glazing options in non-temperature rise doors.

**SUMMARY:**

Although not commonly used, many occupancy classifications require oversize door openings previously available as rolling steel, sliding steel, tin-clad, or roll-up types. This approval allows the Architect or Owner the option of using hollow metal doors with the added benefit of a temperature rise option.

**CERTIFICATION:**

Black Mountain Door's UL Listings are available online at [www.ul.com](http://www.ul.com). The reader is to keep in mind that the true certification to fire protection ratings is the physical UL marks (labels) applied onto the product.



**SCOPE:**

This bulletin covers specifications and features of Black Mountain Door's UL labeled fire window (borrowed lite) program.

**PURPOSE:**

To provide the necessary information for specifying and detailing fire window (borrowed lite) assemblies.

**DESCRIPTION:**

Window frame members are formed of #16 gage steel (14 gage optional). Widths and heights are available up to and including the maximum sizes listed.

All fire windows shall be furnished as a complete one-piece welded assembly unless noted. Glazing materials and installation of glazing are by others.

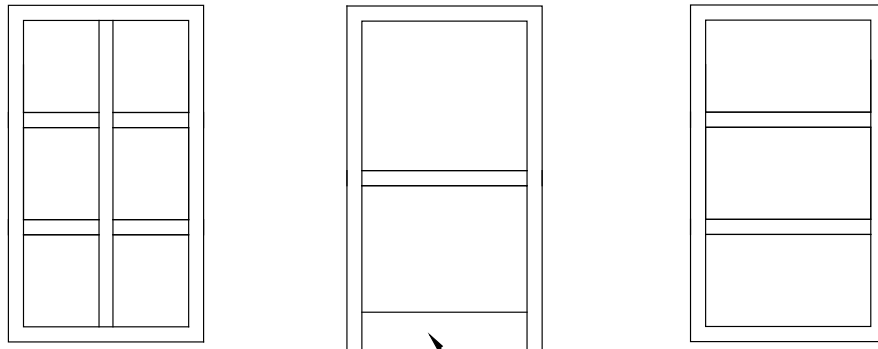
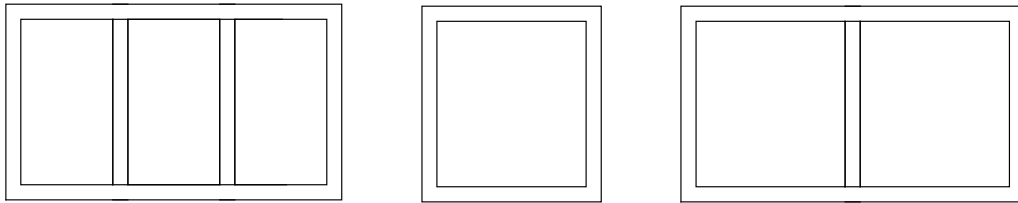
Each vertical jamb shall be equipped with one welded-in floor anchor and masonry anchors 24" O.C.\* Welded in completed opening frame anchors, wood stud and steel stud anchors are also available.  
 \* (Lock-in wire masonry anchors are approved in assemblies up to 4'0" x 10'0" in size. larger units up to 7'0" x 10'0" in size must be equipped with welded-in anchors.

All stop heights are 5/8" for 20 minute lites and 3/4 hour lites under 500 square inches. Stop heights must be modified to 3/4" for 3/4 hour lites 500 square inches and over. Stop height is 5/8" for 1 hour lites utilizing FireLite® glazing.

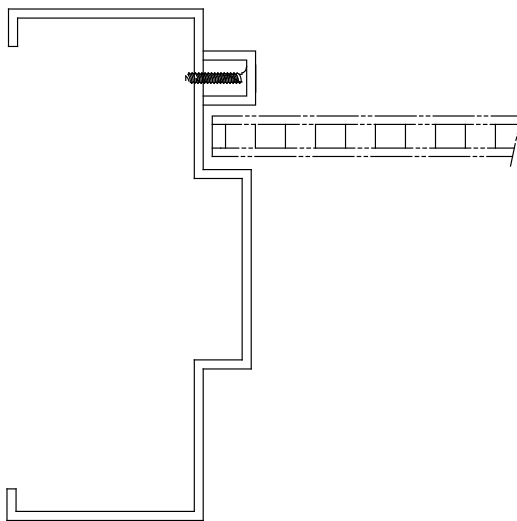
RATING	MAXIMUM LITE AREA OVERALL W X H	MAXIMUM LITE SQ IN	MAXIMUM LITE WIDTH	MAXIMUM LITE HEIGHT	WALL	MIN WALL THICKNESS
1 HOUR	10'2 1/2" X 10'1"	2721"	54"	77 3/4"	MASONRY ONLY	4 7/8"
1 HOUR	10'2" X 10'1"	2721"	54"	77 3/4"	DRYWALL/MASONRY SILL	4 7/8"
1 HOUR	9'2 1/2" X 4'11 1/2"	2721"	54"	77 3/4"	DRYWALL	4 7/8"
3/4 HOUR	13'6" X 12'0"	1296"	30"	54"	MASONRY ONLY	4"
3/4 HOUR	9'2 1/2" X 10'0"	1296"	51 1/2"	54"	MASONRY OR DRYWALL/MASONRY SILL	4"
3/4 HOUR	11'4" X 10'0"	1296"	30"	54"	DRYWALL/MASONRY SILL	4"
3/4 HOUR	9'2 1/2" X 4'11 1/2"	1296"	51 1/2"	54"	DRYWALL	4"
20 MIN NHS	13'2" X 9'7"	5268"	109 3/4"	109 3/4"	ANY	4"

Typical Borrowed Lite & Mullion Configurations Details on Next Page.

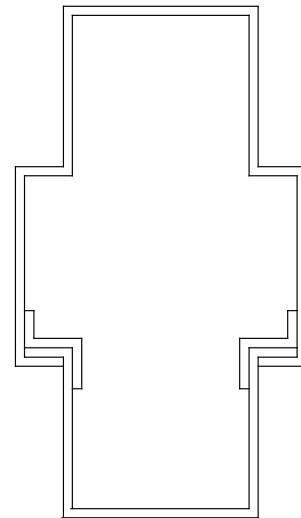




8 3/4" SILL AVAILABLE



1/4" WIRE GLASS DETAIL



TYPICAL MULLION

**SCOPE:**

This bulletin covers specifications and features of Black Mountain Door's WHI labeled fire window (borrowed lite) program.

**PURPOSE:**

To provide the necessary information for specifying and detailing fire window (borrowed lite) assemblies.

**DESCRIPTION:**

All units will be factory assembled with the exception of the glass. Glazing materials and labor for installation will be supplied by contractor.

Window frame members are formed of #16 gage steel (14 gage optional). Widths and heights are available up to and including the maximum sizes listed.

All fire windows shall be furnished as a complete one-piece welded assembly unless noted. Glazing materials and installation of glazing are by others.

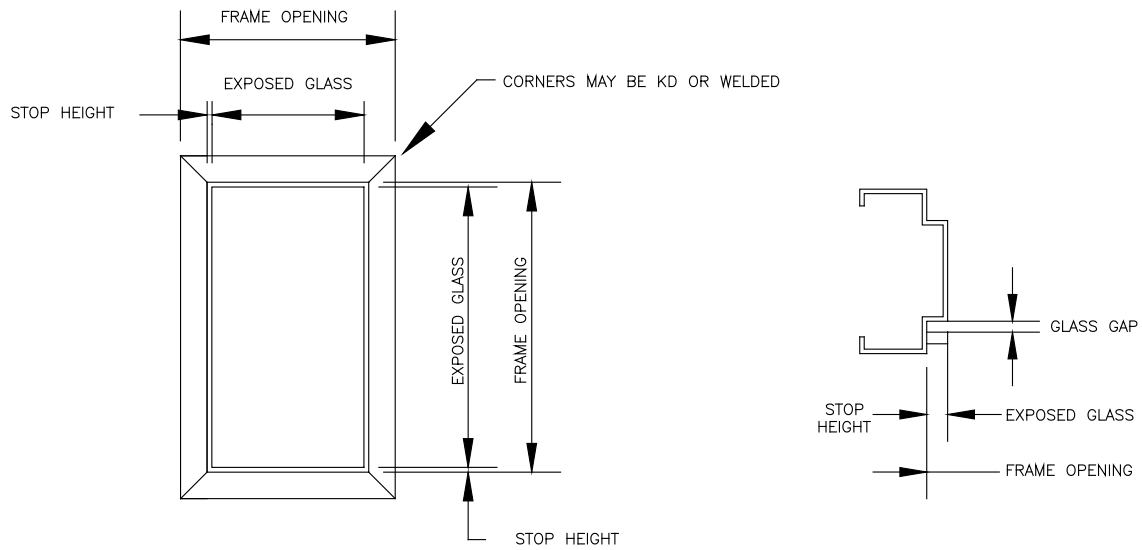
Each vertical jamb shall be equipped with one welded-in floor anchor and masonry anchors 24" O.C.\*  
Welded in completed opening frame anchors, wood stud and steel stud anchors are also available.

*\* (Lock-in wire masonry anchors are approved in assemblies up to 4'0" x 10'0" in size. larger units up to 7'0" x 10'0" in size must be equipped with welded-in anchors.*

All stop heights are 5/8" for 20 minute lites and 3/4 hour lites under 500 square inches. Stop heights must be modified to 3/4" for 3/4 hour lites 500 square inches and over. Stop height is 5/8" for 1 hour lites utilizing FireLite® glazing.

Details and Labeling charts on following pages.

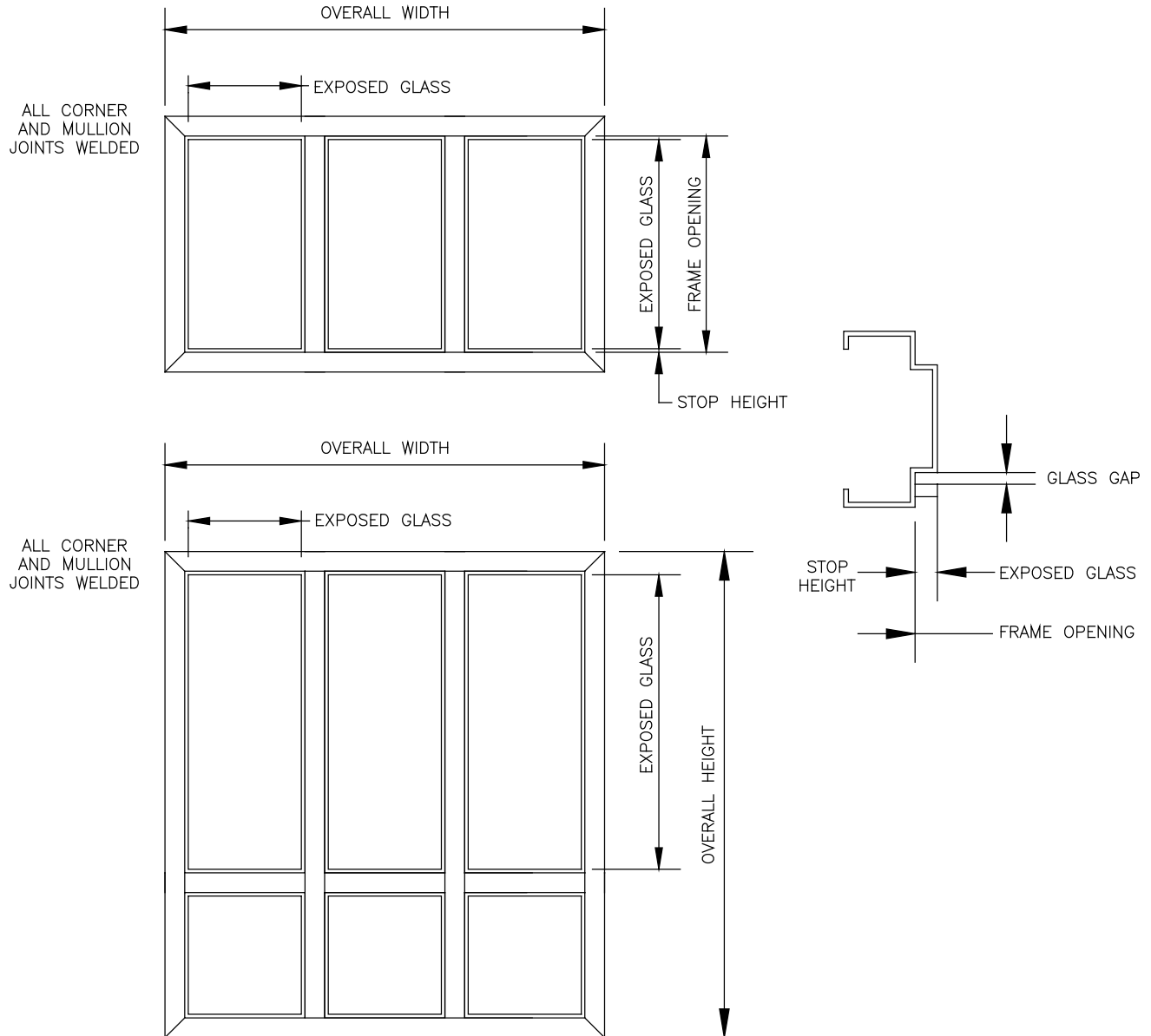




	GLAZING	EXPOSED GLASS WIDTH X HEIGHT	TOTAL EXPOSED GLASS	MINIMUM STOP HEIGHT	MINIMUM WALL THICKNESS	GLASS GAP
1 HOUR	FIRELITE	54" x 77 3/4" *	2721 SQ. IN.	5/8"	4 7/8"	3/8"
	FIRELITE PLUS	54" x 77 3/4" *	2721 SQ. IN.	5/8"	4 7/8"	1/2"
3/4 HOUR	1/4" LISTED WIRE GLASS	NEITHER TO EXCEED 54"	500 SQ. IN.	5/8"	4"	3/8"
	1/4" LISTED WIRE GLASS	NEITHER TO EXCEED 54"	1296 SQ. IN.	3/4"	4"	3/8"
	FIRELITE	54" X 95" *	3325 SQ. IN.	5/8"	4 7/8"	3/8"
	FIRELITE PLUS	54" X 95" *	3325 SQ. IN.	5/8"	4 7/8"	1/2" MIN.
	SUPERLITE II (45)	100" X 93 1/2" *	4600 SQ. IN.	1 1/4"	4"	1/2" MIN.
20 MIN. (N.H.S.)	1/4" LISTED WIRE GLASS	109 3/4" X 109 3/4"	5268 SQ. IN.	5/8"	4"	3/8"
	FIRELITE	81 1/2" X 95" *	3325 SQ. IN.	5/8"	4"	3/8"
	FIRELITE PLUS	81 1/2" X 95" *	3325 SQ. IN.	5/8"	4 7/8"	1/2" MIN.
	SUPERLITE II (45)	43" X 77 1/2"	2516 SQ. IN.	7/8"	4"	3/4" MIN.
	PYROSWISS	60" X 57 3/8"	3442 SQ. IN.	5/8"	4"	THICKNESS + 1/8" MIN.
	PYROSTOP (3/8)	38" X 46" OR 46" X 38"	1748 SQ. IN.	5/8"	4"	1/2"

\* CHECK WITH GLASS MANUFACTURER FOR AVAILABLE GLASS SIZES





\*\* QUANTITY OF INDIVIDUAL LITES MAY VARY  
\*\* FRAMES NOT EXCEEDING 96" (OVERALL WIDTH) & 108" (OVERALL HEIGHT) MAY BE PROVIDED WITH WALL ANCHORS SHIPPED LOOSE WITH FRAME

GLAZING TYPE	MAXIMUM OVERALL SIZE		MAXIMUM EXPOSED LITE SIZES			MIN. STOP HGT.	GLASS GAP	MIN. WALL THICKNESS	ANCHORS					MUST BE MOUNTED ON MASONRY SILL
	WIDTH	HEIGHT	WIDTH	HEIGHT	SQ. IN.				MASONRY	EXIST. MASONRY	STEEL STUD	WOOD STUD	BASE ANCHOR	
<b>1 HOUR RATING</b>														
FIRELITE *	10' 2 1/2"	10' 1"	54"	77 3/4"	2721	5/8"	3/8"	4 7/8"	•					•
	10' 2"	10' 1"	54"	77 3/4"	2721	5/8"	3/8"	4 7/8"		•	•	•	•	•
	9' 2 1/2"	4' 11 1/2"	54"	54"	2721	5/8"	3/8"	4 7/8"		•	•	•	•	
FIRELITE PLUS *	10' 2 1/2"	10' 1"	54"	77 3/4"	2721	5/8"	1/2"	4 7/8"	•					•
	10' 2"	10' 1"	54"	77 3/4"	2721	5/8"	1/2"	4 7/8"		•	•	•	•	•
	9' 2 1/2"	4' 11 1/2"	54"	54"	2721	5/8"	1/2"	4 7/8"		•	•	•	•	
<b>20 MINUTE RATING - NO HOSE STREAM</b>														
1/4" LISTED WIRE GLASS	13' 0"	9' 7"	109 3/4"	109 3/4"	5268	5/8"	3/8"	4 1/2"	•	•	•	•	AS REQ'D	
SUPERLITE II (20)	13' 0"	9' 7"	43"	77 1/2"	2516	7/8"	7/8" MIN.	4 1/2"	•	•	•	•	AS REQ'D	
FIRELITE	13' 0"	9' 7"	81 1/2"	95"	3325	5/8"	3/8"	4 1/2"	•	•	•	•	AS REQ'D	
FIRELITE PLUS	13' 0"	9' 7"	81 1/2"	95"	3325	5/8"	1/2"	4 1/2"	•	•	•	•	AS REQ'D	
PYROSWISS G (THICKNESS VARIES)	13' 0"	9' 7"	93 1/2"	93 1/2"	4738	5/8"	THK + 1/8" MIN.	4 1/2"	•	•	•	•	•	•
PYROSWISS G (6MM)	13' 0"	9' 7"	50"	92 3/4"	4638	5/8"	3/8"	4 1/2"	•	•	•	•	•	•
	13' 0"	9' 7"	60"	57 3/8"	3442	5/8"	3/8"	4 1/2"	•	•	•	•	AS REQ'D	
PYROSTOP (3/8")	13' 0"	9' 7"	47"	39"	1748	5/8"	1/2"	4 1/2"	•	•	•	•	AS REQ'D	
	13' 0"	9' 7"	39"	47"	1748	5/8"	1/2"	4 1/2"	•	•	•	•	AS REQ'D	
<b>3/4 HOUR RATING</b>														
1/4" LISTED WIRE GLASS	13' 6"	12' 0"	30"	54"	1296	3/4"	3/8"	4"	•	•				•
	9' 2 1/2"	10' 0"	30"	54"	1296	3/4"	3/8"	4"			•	•	•	•
	9' 2 1/2"	4' 11 1/2"	30"	50"	1296	3/4"	3/8"	4"			•	•		
SUPERLITE II (45)	13' 6"	12' 0"	100"	93 1/2"	4600	1 1/4"	1 1/4" MIN.	4"	•	•				•
	9' 2 1/2"	10' 0"	100"	93 1/2"	4600	1 1/4"	1 1/4" MIN.	4"			•	•	•	•
	9' 2 1/2"	4' 11 1/2"	100"	93 1/2"	4600	1 1/4"	1 1/4" MIN.	4"			•	•		
FIRELITE *	13' 6"	12' 0"	54"	95"	3325	5/8"	3/8"	4"	•	•				•
	9' 2 1/2"	10' 0"	54"	95"	3325	5/8"	3/8"	4"			•	•	•	•
	9' 2 1/2"	4' 11 1/2"	54"	54"	2916	5/8"	3/8"	4"			•	•		
FIRELITE PLUS *	13' 6"	12' 0"	54"	95"	3325	5/8"	1/2"	4"	•	•				•
	9' 2 1/2"	10' 0"	54"	95"	3325	5/8"	1/2"	4"			•	•	•	•
	9' 2 1/2"	4' 11 1/2"	54"	54"	2916	5/8"	1/2"	4"			•	•		
5700 SERIES SOLID PANELS	SAME AS 1/4" LISTED GLASS					5/8"	TO SUIT	4"	SAME AS 1/4" LISTED GLASS					

\* CHECK WITH GLASS MANUFACTURER FOR AVAILABLE SHEET SIZES





**SCOPE:**

This bulletin covers the design requirements that are basic to fire doors and frames. Detailed information on a number of the points noted below are found in other Technical bulletins. Another source of information is SDI 118 available from the Steel Door Institute or ANSI/NFPA 80 available from ANSI or NFPA.

**PURPOSE:**

To provide the reader with this information in a single document for quick reference purposes.

**DESCRIPTION - DOORS:**

- 1) The obvious difference between standard and fire doors is that the fire door unit must bear a label indicating the product complies with samples previously fire tested.
- 2) Fire doors must have three hinge preps in all standard heights up to 7'6". Four hinges are required on doors from 7'6" to 10'0". Hinges must be at least standard weight, steel "ball bearing" except on those from 8'1" to 10'0" where the heavy weight hinge is mandatory. Other methods of hinging doors are contained in the UL Building Materials Directory or ITS/WHI Directory of Listed Products.
- 3) All doors must be prepared for some type of latching device. This might be a single point lock prep, a mortise panic device prep or a labeled rim or vertical rod panic device. In the case of fire exit devices, the supplemental label must indicate "fire door to be equipped with fire exit hardware". Fire exit devices cannot be used on doors labeled with latch throw type labels.  
  
*Special Note: Both listed concealed and surface vertical rods are approved for double doors or inactive doors. They are not approved on single doors.*
- 4) Except for hinges, fire doors can be prepared for Builders' Hardware bearing markings indicating approval for use on fire doors.
- 5) All doors must be reinforced for closers, except for inactive leaves going into room not normally inhabited by humans.
- 6) Good practice indicates inactive leaves must also be self-latching using flush or surface bolts or vertical rod exit devices. Manual latching devices must be approved by the authority having jurisdiction.
- 7) The doors cannot be prepared for normal door holders or "hook back" door stops. Hold-open devices must have some type of "fail-safe" feature that will allow the door to close and latch when signaled from a device that senses one of the products of combustion.  
NOTE: Some code authorities still allow the use of fusible link closers, but this should be considered bad practice. They react only to fire, not to smoke.
- 8) All pairs of Black Mountain Door doors must be prepared for astragals except where noted on L-18.0.
- 9) All glazed fire doors must have a steel glazing system. Black Mountain Door's standard system is designed with a 3/8" gap intended for use with 1/4" labeled glazing material. As with all other components of the fire door opening, glazing must be labeled.



10) Normally glass is not allowed in 3 hour units. 1 1/2 hour units may have 100 square inches of glass in each leaf, essentially a V, N520, N425 or N333. 3/4 hour doors may have 1,296 square inches of glass per lite. Glazing is available for use on 3 hour doors subject to approval of the authority having jurisdiction.

11) Louvered fire doors (singles or in pairs) are available. Louvers must be fusible link and may be installed in the plant or in the field. Their use is restricted to openings into areas like boiler rooms. They should not be used in stairwells, for example, since they will allow passage of smoke, a clear safety-to-life problem. Louvers are not permitted in combination with lites or exit devices. As with all other components of the assembly, louvers must be labeled.

12) Clearances at the bottom of the door are restricted to 3/4" maximum. Consult ANSI/NFPA 80 for further information relating to thresholds or flooring materials.

13) Some codes require temperature rise labels on stairwell doors. This provision is covered by our 35LE/37LE. - 700 Series doors. *If not specifically ordered, a non-temperature rise label is provided.*

**DESCRIPTION - FRAMES:**

- 1) There are four obvious differences between a standard frame and a fire door frame.
  - The fire door frame bears a label.
  - B) Frames shipped KD must have a sticker added to all members.
  - C) On 2600 Series frames, an extra stiffener is added to the jambs at the strike point on frames over 7'0" high.
- 2) Except under very special circumstances, KD frames must be provided as a unit.
- 3) Hardware preparations corresponding to the door rules indicated above must be added to the frame. All headers must be prepared for closers unless listed spring hinges are used.
- 4) All frames must be at least 16 gage.

**SUMMARY:**

The information in this bulletin is not intended to replace the detailed studies found elsewhere in the Technical Bulletin Manual. A study of these is recommended when specific detailed information is required.

**SCOPE:**

This bulletin covers the description of the hourly classifications on fire doors.

**PURPOSE:**

To provide the reader with a handy reference document covering this subject.

**DESCRIPTION:**

Unlike some wood doors classified in minutes, steel doors are normally classified by hourly ratings. The hourly designation indicates the duration of the fire test exposure and is called the "fire protection rating".

The fire protection ratings of 3, 1 1/2, 1, 3/4, 1/2 or 1/3 hours indicate the duration of the test exposure. The following indicates suitable building locations for each:

3-Hour: Openings in fire walls and in walls that divide a single building into fire protection areas.

1 1/2-Hour: Openings in enclosures of vertical communications through buildings and in 2-hour rated partitions providing horizontal fire separations. Openings in exterior walls subject to severe fire exposure from outside of building.

1 Hour: Openings in 1 hour fire resistance rated shaft or exit enclosure walls.

3/4-Hour: Openings in walls or partitions between rooms and corridors having a fire resistance rating of 1 hour or less. Openings in exterior walls subject to moderate or light fire exposure from outside of the buildings.

1/3-hour fire doors are for use where smoke control is a primary consideration such as for the protection of openings in partitions between a habitable room and a corridor when the wall is constructed to have a fire resistance rating of not more than 1 hour or across corridors where a smoke partition is required. The hourly classification indicates a door which has passed both the fire and hose stream criteria of the standard fire test.

The hose stream criteria is sometimes deleted for 20 minute ratings. Since the deletion of hose stream does not qualify these units as true fire doors, the ratings are identified with a supplemental notation "no hose stream" or similar wording.



**SCOPE:**

This bulletin covers the various elements in our program that are eligible to bear a WHI label.

**PURPOSE:**

To insure the reader understands the opportunities involved with the use of this product as well as the details that have to be considered with its use.

**LABELING AGENCY:**

Warnock Hersey a division of Intertek Testing Services, is an independent laboratory that has done testing and certification in the Western United States and Canada, mainly on wood doors. Their certification program has been expanded and now includes many of the major hollow metal manufacturers, including Black Mountain Door.

WHI has unannounced in-plant inspection which makes them acceptable to most code people. It is recommended that the distributor confirm that his community has agreed that WHI is an acceptable labeling agency before an order is placed for WHI labeled material.

**DESCRIPTION:**

The products covered are essentially similar to those in Black Mountain Door's UL program, although not as all-inclusive.

Products were chosen that include the most popular or the most advantageous for meeting most specifications.

The charts on the following pages will serve as a general outline of WHI material available from Black Mountain Door.

WHI also has a Distributor Machining Program covering distributor modifications to Black Mountain Door doors and frames.



**ITS/WHI GLAZING MATERIALS UL 10b-NFPA 252**

<b>GLAZING</b>	<b>3 HOUR</b>	<b>1 1/2 HOUR</b>	<b>3/4 HOUR</b>	<b>1/3 HOUR</b>	<b>20 MIN. (NHS)</b>
<b>LABELED WIRE GLASS</b>		100/Door	1296/Lite	1296/Lite	2994/Door
<b>1/4" TO 1/2" SUPERLITE I</b>					2647/Door
<b>1 1/8" SUPERLITE II</b>			2880/Lite	2880/Lite	2880/Lite
<b>1/4" PILKINGTON (LABELED) WITH PEMKO FG3000</b>		2208/Door	2856/Door	2856/Door	2856/Door
<b>PYROSTOP 1 1/2"</b>		1015/Door <sup>1</sup>	1015/Door	1015/Door	1015/Door
<b>PYROSTOP (38mm)</b>		1080/Door	1080/Door	1080/Door	1080/Door
<b>PYROSTOP (18mm)</b>			1080/Door	1080/Door	1080/Door
<b>PYROSTOP (10mm)</b>					1080/Door
<b>PYROSTOP (90-10 &amp; 90-20)</b>		1080/Door	1080/Door	1080/Door	1080/Door
<b>3/16" FIRELITE</b>	100/Door	100/Door	1296/Lite	1296/Lite	2000/Lite
<b>5/16" FIRELITE PLUS</b>		100/Door	1296/Lite	1296/Lite	2000/Lite
<b>PYROSWISS</b>					2910/Door
<b>SUPERLITE II</b>					2792/Lite

**NOTES:**

- 1) The above chart was derived from information contained in 1998 WHI "Directory of Listed Products" and is subject to change.
- 2) Consult Authority Having Jurisdiction regarding use of glazing in 3 Hour rated doors.
- 3) Consult WHI "Directory of Listed Products" for other pertinent dimensional information.
- 4) Generally, minimum stile, rail or midrail dimension on doors is 5 1/2".

**SPECIAL NOTES:**

*\*Maintains 250° or 450° temp. rise rating when used with Anemostat FGS-IS kit.*



ITS/WHI DOOR LABELING SYNOPSIS UL10b-NFPA 2252													REVISED 6/30/99					
SERIES	SINGLE	PAIR	GAGE			MAX. RATING	TEMP. RISE MAX.	MAX. SIZE	SINGLE OR ACTIVE DOOR				INACTIVE DOORS				ASTRAGAL REQ'D (SEE NOTES)	REMARKS
			20	18	16				SINGLE POINT	MIN. THROW	RIM PANIC (SEE NOTE)	MORTISE PANIC (SEE NOTE)	SURF. V. ROD	CONC. V. ROD	FLUSHBOLT	SURFACE BOLT		
15LE	•			•	•	3 HR.		4'0" x 10'0"	•		•	•						
17LE	•		•			3 HR.		4'0" x 8'0"	•		•	•						
25LE		•		•	•	3 HR.		8'0" x 7'2"	•		•	•	•	•	•	•	•	
27LE		•	•	•	•	1 1/2 HR.		8'0" x 7'2"	•		•	•	•	•	•	•	•	
61LE/63LE	•			•		3 HR.		3'4" x 7'0"	•		•	•						6 PANEL
	•			•		3 HR.		3'6" x 6'8"	•		•	•						
		•		•		3 HR.		6'8" x 7'0"	•		•	•	•	•	•	•		
		•		•		3 HR.		7'0" x 6'8"	•		•	•	•	•	•	•		
61LE/63LE	•			•		3 HR.		3'0" x 7'0"	•		•	•						8 PANEL
		•		•		3 HR.		6'0" x 7'0"	•		•	•	•	•	•	•		
35LE/37LE	•			•	•	3 HR.	250°	4'0" x 8'0"	•		•	•						
		•		•	•	3 HR.	250°	8'0" x 8'0"	•		•	•	•	•	•	•	•	
		•		•	•	3 HR.	250°	8'0" x 8'0"	•		•	•					•	DOUBLE EGRESS
45LE/47LE	•			•	•	3 HR.		4'0" x 10'0"	•		•	•						
	•		•			1 1/2 HR.		4'0" x 8'0"	•		•	•						
		•		•		3 HR.		8'0" x 8'0"	•		•	•	•	•	•	•	•	
		•	•			1 1/2 HR.		8'0" x 8'0"	•		•	•	•	•	•	•	•	
		•		•	•	3 HR.		8'0" x 8'0"									•	DOUBLE EGRESS
		•	•	•	•	1 1/2 HR.		8'0" x 8'0"									•	DOUBLE EGRESS
	•		•	•	•	1 1/2 HR.		4'0" x 7'2"	•							•	DUTCH DOOR	

**SPECIAL NOTES:**

1. Listed fusible link louvers may be used on single or double 1 1/2 hour or 3/4 hour doors. Maximum louver size 24" x 24". Louvers may not be used in combination with lites or exit devices.
2. Hinge preparation shall be as defined in NFPA-80. Listed (labeled) continuous hinges, pivots, anchor hinges, or pocket pivots may be used.
3. 20 Min. doors in smoke barriers do not require positive latching if acceptable by local Authority Having Jurisdiction.
4. Overlapping astragals may be deleted at double doors (same direction) for 1 1/2 Hour ratings and under. Black Mountain Door's "U" astragal must be factory applied to inactive door.
5. Vision lites limited to 100 sq. in. for temperature rise doors.
6. Door heights for doors with fire exit devices over 8'0" subject to limitations of hardware listings.
7. 36" high steel protection plates with top of plate 48" maximum above bottom of door may be mounted on one face only.
8. See glazing synopsis pages for glazing and lite kit variations available.



400 SERIES WHI FRAMES													
OPENING DESCRIPTION		MAX. DOOR OPENING SIZE W X H	THROAT SIZE	MAX. DOOR RATING	WALL				ASSEMBLY		FACES		REMARKS/SPECIAL NOTES
					MASONRY	EXIST. MASONRY	STEEL STUD	WOOD STUD	KNOCKED DOWN	WELDED	MIN.	MAX.	
SGL.	DBL.												
●		4'0" x 10'0"	2" to 13"	3 Hr.	●	●			●	●	1 1/4"	4"	②
	●	8'0" x 10'0"	2" to 13"	3 Hr.	●	●			●	●	1 1/4"	4"	① ②
●		4'0" x 10'0"	2" to 13"	1 1/2 Hr.			●	●	●	●	1 1/4"	4"	②
	●	8'0" x 10'0"	2" to 13"	1 1/2 Hr.			●	●	●	●	1 1/4"	4"	① ②
●		4'0" x 8'0"	2" to 13"	3 Hr.	●	●			●	●	1 1/4"	4"	Dutch ②
●		4'0" x 8'0"	2" to 13"	1 1/2 Hr.			●	●	●	●	1 1/4"	4"	Dutch ②
MULTI		③	4 3/4" to 14 1/2"	3 Hr.	●	●			●	●	1 1/4"	4"	Multi-Egress ③
●		4'0" x (Note 4)	2" to 13"	3 Hr.	●	●			●	●	1 1/4"	4"	4-Sided ② ④
●		4'0" x (Note 4)	2" to 13"	1 1/2 Hr.			●	●	●	●	1 1/4"	4"	4-Sided ② ④
		⑤	2" to 13"	3 Hr.	●	●			●	●	1 1/4"	4"	4-Sided ② ⑤
		⑤	2" to 13"	1 1/2 Hr.			●	●	●	●	1 1/4"	4"	4-Sided ② ⑤
●		4'0" x 8'0"	5 5/8"	3 Hr.			●			●	1 1/2"	4"	⑥
	●	8'0" x 8'0"	5 5/8"	3 Hr.			●			●	1 1/2"	4"	⑥
●		4'0" x 10'0"	3 3/4" to 13"	1 1/2 Hr.			●		●	●	2"	2"	⑦
	●	8'0" x 10'0"	3 3/4" to 13"	1 1/2 Hr.			●		●	●	2"	2"	⑦

- ① Fixed or removable mullions allowed.
- ② Loose anchors allowed where permitted by jamb depth.
- ③ Removable hardware mullions allowed. H.M. mullions must be welded. "Bank of doors" 12'8" x 8'4" overall maximum (with 4" faces). Each door opening 4'0" x 8'0" or 8'0" x 8'0" maximum.
- ④ 4-sided frame with mitered or butted sill. 10'0" maximum height from bottom of frame to underside of header. MUST be wall mounted.
- ⑤ 4-sided frame with mitered or butted sill, hinged at header. MUST be wall mounted. 10'0" wide x 4'0" high maximum opening.
- ⑥ See T.D. #L-15.0 for particulars on wall, anchors and reinforcing. 4 hour steel stud wall.
- ⑦ See T.D. #L-24.0. Frame butted to steel stud wall.



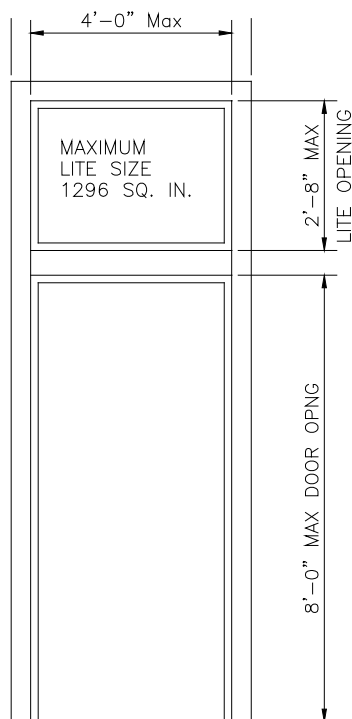
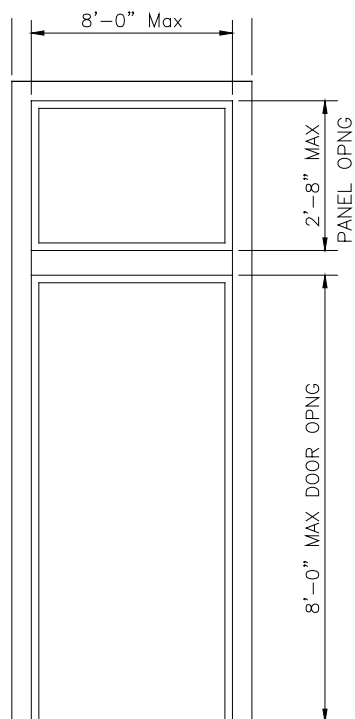
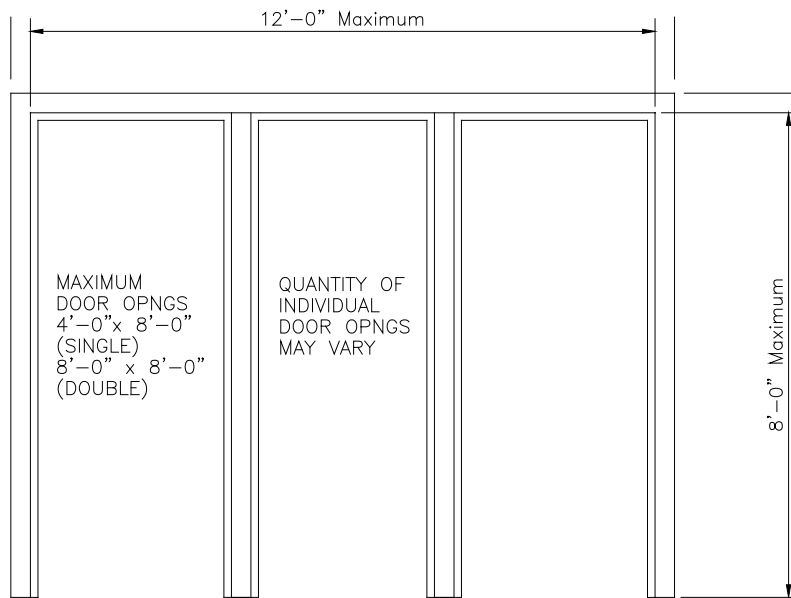
FAF "SMOKE SCREEN" FRAMES																	
HOURLY RATING	MAXIMUM DOOR OPENING		MAXIMUM SIZE OVERALL		MAXIMUM LITE SIZE		MAX. LITE AREA SQ. IN.	MAXIMUM PANEL SIZE		MAXIMUM PANEL AREA SQ. IN.	THROAT SIZE	MASONRY	EXISTING MAS.	STEEL STUD	WOOD STUD	WELDED	REMARKS
	WIDTH	HEIGHT	WIDTH	HEIGHT	WIDTH	HEIGHT		WIDTH	HEIGHT								
1 1/2	8'0"	8'0"	11'4"	12'0"			1,296	41" transom 30" sidelite	26" transom 54" sidelite	1,296	4" to 12"	•	•			•	
3/4 or 1/3	8'0"	9'0"	13'6"	12'0"	41" transom 30" sidelite	26" transom 54" sidelite	1,296	41" transom 30" sidelite	26" transom 54" sidelite	1,296	4" to 12"	•	•			•	
3/4 or 1/3	8'0"	9'0"	11'4"	10'0"	41" transom 30" sidelite	26" transom 54" sidelite	1,296	41" transom 30" sidelite	26" transom 54" sidelite	1,296	4" to 12"			•	•	•	*
3/4 or 1/3	8'0"	9'0"	9'2 1/2"	10'0"	41" transom 51 1/2" side	26" transom 54" sidelite	1,296	41" transom 30" sidelite	26" transom 54" sidelite	1,296	4" to 12"	•	•	•	•	•	

\* Installed on masonry sill

3 SIDED FIRE DOOR FRAMES										
SERIES	MAX. OPENING SIZE WIDTH X HEIGHT	THROAT SIZE	MAX. DOOR RATING	WALL				ASSEMBLY		REMARKS
				MASONRY	EXISTING MASONRY	STEEL STUD	WOOD STUD	KNOCKED DOWN	WELDED	
400	8'0" x 10'0"	2" to 13"	3 HR	•	•			•	•	
400	8'0" x 8'0"	5 3/4"	3 HR			•			•	Contact Amweld for special anchor/reinf. required
400	8'0" x 10'0"	2" to 13"	1 1/2 HR			•	•	•	•	
400	4'0" x 7'2"	2" to 13"	3 HR	•	•			•	•	Dutch door frame
400	4'0" x 7'2"	2" to 13"	1 1/2 HR			•	•	•	•	Dutch door frame
400	4'0" x 5'0"	2" to 13"	3 HR	•	•			•	•	4 sided access door frame 1'6" x 2'0" minimum
400	4'0" x 5'0"	2" to 13"	1 1/2 HR			•	•	•	•	4 sided access door frame 1'6" x 2'0" minimum
4400	8'0" x 8'0"	4" to 13"	3 HR	•	•				•	Double egress
4400	8'0" x 8'0"	4" to 13"	1 1/2 HR			•	•		•	Double egress
2600	8'0" x 8'0"	4" to 13"	1 1/2 HR			•	•	•		
2600	7'0" x 9'0"	4" to 13"	1 1/2 HR			•	•	•		
400	See remarks	4 3/4" to 14 1/2"	3 HR	•	•				•	Multiple opening see elevation L13-1
400	See remarks	4" to 13"	1 1/2 HR	•	•	•	•		•	Transom frame see elevation L13-2
400	See remarks	4" to 13"	1 1/2 HR	•	•	•	•		•	Transom frame see elevation L13-3







**SCOPE:**

This bulletin covers the details and availability criteria of Black Mountain Door's basic WHI program for positive pressure labeled fire doors and frames.

**PURPOSE:**

To inform the reader of current sizes, preparations, gages, and other dimensional criteria for positive pressure labeled products.

**DESCRIPTION:**

The charts following are intended to be synopses in a condensed form of this program. These are intended to be used in jurisdictions that have chosen to adopt the "positive pressure" test method in lieu of the conventional "neutral pressure" test method.

**TEST CRITERIA:**

Fire doors and frames as shown are constructed to meet test criteria as defined in UL10C, NFPA252 (with neutral plane at 40" above the sill) or UBC 7-2(1997). These doors and frames also comply with test criteria defined in UL10B, NFPA252, and UBC 7-2(1994).

**SPECIAL NOTES:**

- Unless shown otherwise, doors have a temperature rise rating of greater than 650°F.
- The ITS/WHI Directory of Listed Positive Pressure Rated Door Assemblies and Components should be consulted for information on optional available components.
- All doors and frames shown in charts DO NOT require any additional perimeter sealing systems.



ITS/WHI Positive Pressure Door Synopsis																								
Door Series	Hourly Rating			Swing		Max. Size	Gage			Overlap Astragal Required	Hardware Preps						Glazing <small>See Note</small>	Special Notes						
	3	1 1/2	1	3/4	Single		Double	DBI Egr.	20		18	16	14	Cyl. Lk.	Mort. Lk.	PB			MP	VR	CVR	FB	SB	Butt Hg.
45LE - 47LE	•	•	•	•	•	•	4080	•	•	•	•	•	•	•	•	•	•	•	•	•	•	③		
45LE - 47LE	•	•	•	•	•	•	8080	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	③	
45LE - 47LE	•	•	•	•	Dutch		Dutch 4072	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
15LE - 25LE	•	•	•	•	•	•	4080	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	③	
17LE - 27LE	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
15LE - 25LE	•	•	•	•	•	•	8072	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	③	
17LE - 27LE	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
61LE - 63LE	•	•	•	•	•	•	①	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
61LE - 63LE	•	•	•	•	•	•	①	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
35LE - 37LE	•	•	•	•	•	•	4080	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	③	
35LE - 37LE	•	•	•	•	•	•	8080	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	③	
45LE - 47LE	•	•	•	•	•	•	4080	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	③	
45LE - 47LE	•	•	•	•	•	•	8080	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	③	

Doors noted above comply with UL 10C (UBC 7-2-1997) Positive Pressure test requirements.  
The validity of this label requires application of qualified components at installation.

**Special Notes:**

- ① See Tech. Data D4.0 for available sizes and gauges.
- ② 2400 square inch maximum lite size per door 20" maximum height each.
- ③ Refer to Positive Pressure Lite Kits document and ITS "Directory of Listed Positive Pressure Rated Door Assemblies and Components".

**General Notes:**

- ◆ All doors 1 3/4" thick only.
- ◆ Supplemental smoke control (S label) in UBC 7-2 Jurisdictions available on all doors.
- ◆ Viewers (if used) must be fire labeled for positive pressure.
- ◆ Protection plates may be installed with top of plate 48" maximum above floor.
- ◆ Louvers 24" x 24" maximum may be installed in 4 sided reinforced cutout at bottom of doors without lites or exit devices.
- ◆ Positive pressure labeled glazing materials and lite kits required. Three hour rated doors require "Firelite".
- ◆ See ITS/WHI "Directory of Listed Positive Pressure Rated Door Assemblies and Components" for optional available lite kit/glazing combinations.

WHI Labels	
3 HR	# 09465-04
1 1/2 HR	# 09465-03
3/4 HR	# 09465-02
20 Min.	# 09465-01
Pos Pressure Supplement	# 093474-28
Exit Device (Supplement)	# 09465-05
"S" (Supplement)	# 09465-15
"S" Instructions	# 09465-16
3 Hr. flush only with S and > 650 temp rise	# 09465-38



ITS/WHI Positive Pressure Frame Synopsis																				
Frame Series	Rating			Max Opening		Wall Construction				Hardware Preps					Corners		Special Notes			
	3 HR	1 1/2 HR	3/4 HR	20 Min.	Width	Height	New Mas.	Exist. Mas.	Steel Stud	Wood Stud	Butt Hinge	Univ. Strike	Flush Bolt	VR	CVR	SB		RPSTK	K-D	Welded
400	•	•	•	•	4-0	10-0	•	•			•	•				•		•	•	
400	•	•	•	•	8-0	10-0	•	•			•		•			•		•	•	
400 Dutch	•	•	•	•	4-0	8-0	•	•			•	•				•		•	•	
400	•	•	•	•	4-0	10-0			•		•	•					•	•	•	④
400	•	•	•	•	8-0	10-0			•		•	•	•					•	•	①④
400 Dutch	•	•	•	•	4-0	8-0			•		•	•				•		•	•	④
4400	•	•	•	•	8-0	10-0	•	•			•	•						•	•	
4400	•	•	•	•	8-0	10-0			•		•	•						•	•	①④
4400	•	•	•	•	8-0	9-0	•	•			•	•						•	•	③
2600, 600	•	•	•	•	4-0	8-0			•		•	•					•	•	•	②
2600, 600	•	•	•	•	7-0	9-0			•		•	•	•					•	•	②
2600, 600	•	•	•	•	8-0	8-0			•		•	•	•					•	•	②

Frames noted above comply with UL 10C (UBC 7-2-1997) Positive Pressure test requirements.  
 The validity of the supplemental label requires application of qualified components at installation.

**Special Notes:**

- ① Frames for double doors over 3/4 hour rating require at least 1 header anchor near centerline.
- ② Frame faces 2" only.
- ③ Requires use of positive pressure rated double egress wood doors.
- ④ Frames butted to drywall must be welded, 3-3/4" min. throat, 2" faces only.

**General Notes:**

- 1. Frame faces 1 1/4" minimum to 4" maximum (4400 1 3/8" minimum door side).
- 2. Minimum throat size: 3" (400), 4" (600-2600), 3-3/4" (4400).
- 3. Other wall constructions dependant on issued specifications from WHI.
- 4. Frames 16 or 14 gage C.R.S. or galvanized for 1 3/4" or 1 3/8" positive pressure labeled doors.
- 5. Smoke control (S labels) not required on frames.

WHI Labels With Supplement	
3 HR	# 09465-09
1-1/2 HR	# 09465-08
3/4 HR	# 09465-07
20 Min.	# 09465-06
Pos. Pressure Supplement	# 03474-28



**Embossed ITS/WHI Positive Pressure Frame Synopsis**

Frame Series	Rating		Max Opening		Wall Construction			Hardware Preps						Corners		Special Notes		
	3 HR MAX.	1 1/2 HR MAX.	Width	Height	New Mas.	Exist. Mas.	Steel Stud	Wood Stud	Butt Hinge	Univ. Strike	Flush Bolt	VR	CVR	SB	RPSTK		K-D	Welded
400	•	•	4-0	8-0	•	•			•	•					•	•	•	
400	•	•	8-0	8-0	•	•			•		•					•	•	
400 Dutch	•	•	4-0	8-0	•	•			•	•						•	•	
400	•	•	4-0	8-0			•	•	•	•					•	•	•	②
400	•	•	8-0	8-0			•	•	•		•					•	•	①②
400 Dutch	•	•	4-0	8-0			•	•	•	•						•	•	②
2600	•	•	4-0	8-0			•	•	•	•					•	•	•	
2600	•	•	8-0	8-0			•	•	•	•						•	•	

Frames noted above comply with UL 10C (UBC 7-2-1997) Positive Pressure test requirements. The validity of the embossing requires application of qualified components at installation.

**Special Notes:**

- ① Frames for double doors over 3/4 hour rating require at least 1 header anchor near centerline.
- ② Frames butted to drywall must be welded, 3-3/4" min. throat, 2" faces only.

**General Notes:**

- 1. Frame faces 2" only.
- 2. Minimum throat size: 3-3/4" (400), 4" (2600).
- 3. 400 Series will have "3 Hr max." embossing. 2600 Series will have "1-1/2 Hr max." embossing.
- 4. Frames 16 or 14 gage C.R.S. or galvanized for 1 3/4" or 1 3/8" positive pressure labeled doors.
- 5. Smoke control (S labels) not required on frames.



ITS/WHI Positive Pressure Glazed Frame Synopsis														
Hourly Rating	Max Door Opening		Max Size Overall		Max. Lite Area Sq. In.	Max Lite Panel Size		Throat Size	Masonry	Existing Mas.	Steel Stud	Wood Stud	Welded	Remarks
	Width	Height	Width	Height		Width	Height							
3/4 Max.	8'0"	9'0"	13'6"	12'0"	1296"	54"	54"	4" to 12"	•	•			•	②
3/4 Max.	8'0"	9'0"	11'4"	10'0"	1296"	54"	54"	4" to 12"			•	•	•	① ②
3/4 Max.	8'0"	9'0"	9'2 1/2"	10'0"	1296"	54"	54"	4" to 12"	•	•	•	•	•	②

Frames noted above comply with UL 10C (UBC 7-2-1997) Positive Pressure test requirements. The validity of this label requires application of qualified components at installation.

**Special Notes:**

- ① When installed on masonry sill under lites.
- ② When used with positive pressure listed 1/4" wire glass or positive pressure listed FireLite O.

**General Notes:**

- 1. Frame faces 1 1/4" minimum to 4" maximum (4400 1 3/8" minimum door side).
- 2. Other wall constructions dependant on issued specifications from WHI.
- 3. Frames 16 or 14 gage C.R.S. or galvanized for 1 3/4" or 1 3/8" positive pressure labeled doors.
- 4. Smoke control (S labels) not required on frames.

WHI Labels With Supplement	
3/4 HR	# 09465-07
20 Min.	# 09465-06
Pos. Pressure Supplement	# 03474-28

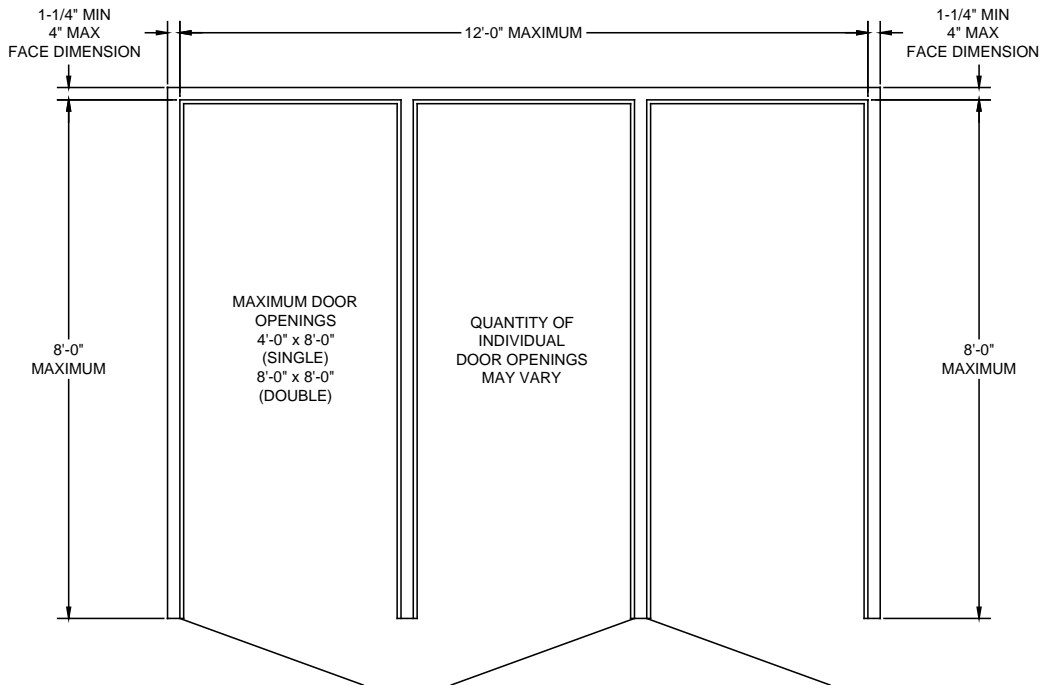


**SCOPE:**

This bulletin covers WHI Labeled Frames with multiple door openings (exerted from L-14.0 for easier reference).

**PURPOSE:**

To inform the reader of current sizes, preparations, gages, and other dimensional criteria for WHI labeled products as they relate to subject.



**WHI MULTIPLE OPENING - FIRE DOOR FRAMES**

SERIES	MAX OPENING SIZE WIDTH X HEIGHT	THROAT SIZE	MAX. DOOR RATING	WALL CONDITION				ASSEMBLY		REMARKS
				MASONRY	EXISTING MASONRY	STEEL STUD	WOOD STUD	KNOCKED DOWN	WELDED	
400 MASONRY	SEE DETAIL	4-3/4" - 14-1/2"	3 HR	•	•				•	MULTIPLE OPENINGS - SEE DETAIL

**SCOPE:**

This bulletin covers the availability and present criteria for a 3 hour rated frame in steel stud doors.

**PURPOSE:**

To provide the necessary information concerning availability and criteria for this relatively rarely used product.

**DESCRIPTION:**

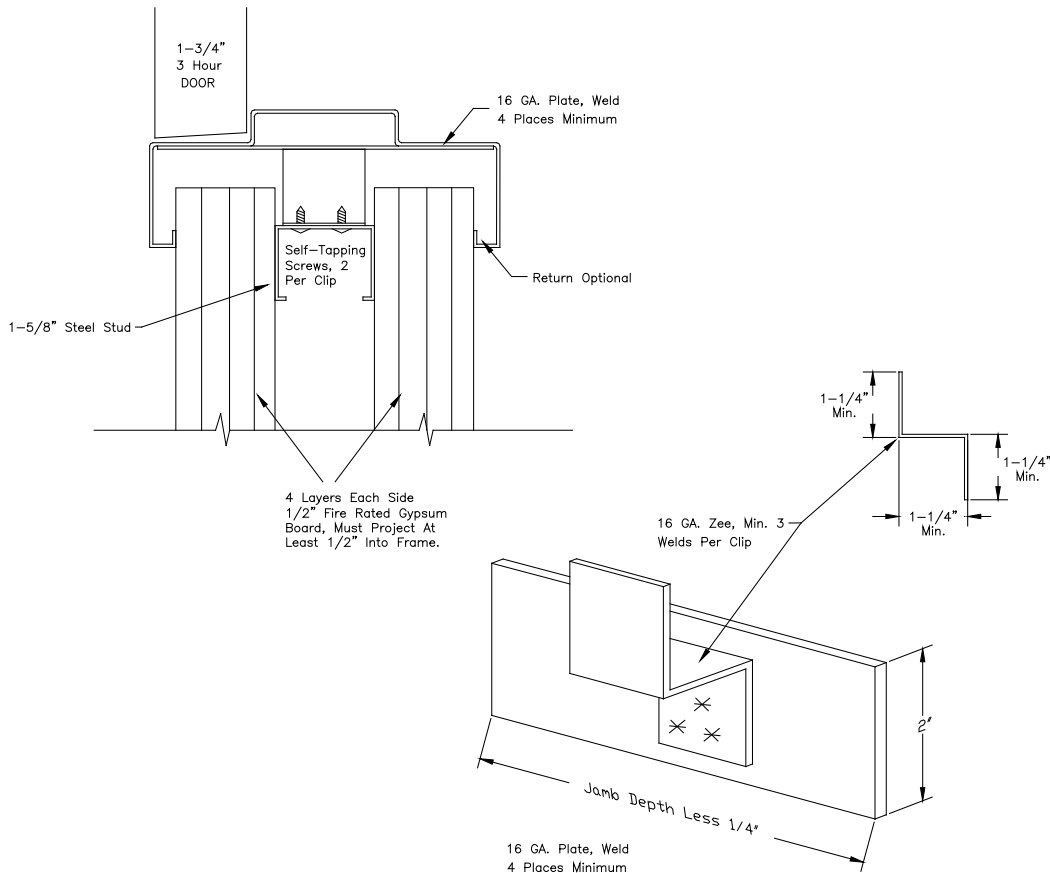
Black Mountain Door has acquired, through ITS/Warnock Hersey, Manufacturing Specifications for a 3 hour 400 Series frame in steel stud partitions. The wall is a 1 5/8" steel stud with four layers of 1/2" fire rated gypsum board each side (Gypsum Association #WP2970).

Notable construction requirements are:

- Single 4'0" x 8'0" maximum. Double 8'0" x 8'0" maximum.
- 16 or 14 gage. 6 3/4" minimum frame depth.
- Frame must be welded.
- Hinge reinforcing must be #7 gage x 1 1/4" x 10".
- Strike reinforcing must be 12 gage.
- Wall and floor anchors are custom parts, welded to jambs.
- Frame faces may range from 1 1/2" minimum to 4" maximum.

**TEST CRITERIA:**

Frames are constructed to meet fire test criteria defined in UL10b, NFPA 252, or UBC 7-2 (1994).





**SCOPE:**

This bulletin covers the code ramifications of using labeled doors with louvers and the extent of Black Mountain Door's participation in this program.

**PURPOSE:**

To insure the reader understands the extent of this program.

**AUTOMATIC LOUVERS**

"Only labeled fire door louvers shall be used in fire doors." These usually involve a fire activated fusible link mechanism to close louver blades.

**ULI AND WHI PROGRAM**

Fire door louvers are intended for installation in classified swinging of fire doors rated up to and including 1 ½ hours as provided by the door manufacturers indicated by the individual classification in the "fire door" categories and in the Building Materials Directory or Directory of Listed Products.

Fire door louvers consist essentially of steel framing members, adjustable steel blades, operating lever, a fusible link in the system for automatically closing the blades when the link is activated. The maximum size of the automatic closing louver assemblies should not exceed 576 sq. inches no dimension exceeding 24 inches.

A fire door louver is intended to be installed in accordance with the installation instructions packaged with the device.

The fire door louver may be installed in a Classified swinging fire door at the door manufacturer's plant or in the field. When the louvers are intended to be installed in the field, the cutout in the door shall be made at the door manufacturer's plant.

As with the other components of a valid fire door system, the louvers must bear labels.

**THE LOUVER:**

The louver normally provided with the Black Mountain Door program incorporates an automatic release mechanism which closes the V-shaped blades when the fusible link is activated. For day to day usage, it can be operated by the use of a handle similar in design to those normally encountered on adjustable louvers. The free air space is approximately 45% of the order size area.

**THE DOOR PROGRAM:**

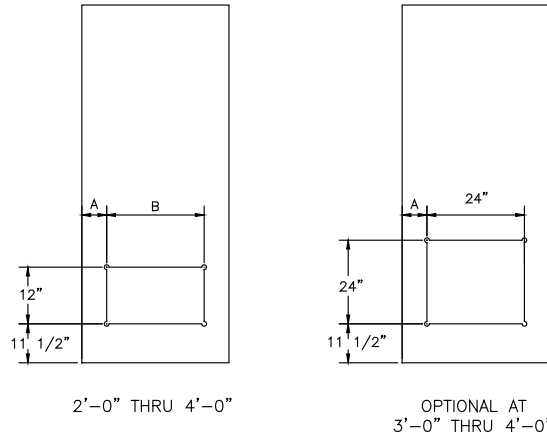
UL labeled louvered fire doors are available up to 4080 and 8080 in size when this maximum size is within our 1 1/2 hour UL or WHI program. The louver is approved in 1 3/4" 35LE, 37LE, 700, 15LE, 17LE, 25LE and 27LE Amweld Series labeled doors in appropriate maximum sizes. Non temperature rise labels are used. No lites or exit devices are allowed on louvered doors. Louvers must be installed at the bottom of doors.

In doors under 3'0" in width, standard louver sizes are employed. Units 3'0" and wider will receive a nominal 24" wide x 14" high louver centered in the door horizontally. In every case, the standard nominal 11 1/2" dimension from the bottom of the unit will be used. Louvers up to 24" x 24" in size are also available on doors 3'0" to 4'0" in width.



Louvers on all door series other than 700 are shipped loose for jobsite installation by others.

**CUTOUT PREPARATION DETAIL(s) and DIMENSIONS:**



DOOR WIDTH	2'-0"	2'-4"	2'-6"	2'-8"	2'-10"	3'-0"	3'-4"	3'-6"	3'-8"	3'-10"	4'-0"
A	5 7/8"	7 7/8"	5 7/8"	6 7/8"	7 7/8"	5 7/8"	7 7/8"	8 7/8"	9 7/8"	10 7/8"	11 7/8"
B	12	12	18	18	18	24	24	24	24	24	24

NOTE: DIMENSIONS SHOW CUTOUT SIZE IN DOOR  
 (ORDER SIZE IS DOOR CUTOUT SIZE)

**SCOPE:**

This bulletin covers Black Mountain Door's program on astragals for fire doors.

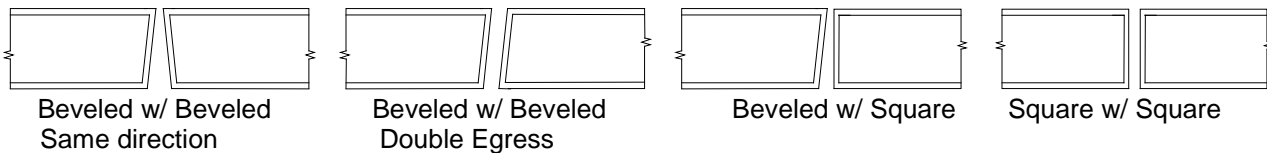
**PURPOSE:**

To ensure the reader is aware of the variables in this area.

**PRODUCT DESCRIPTION:**

When doors are ordered for paired openings the following astragal, door activity and mullion type (if applicable) will be indicated. Other considerations regarding door edge design are outlined in the detail below. Beveled edge doors will be designated using the BVLD option.

**DOOR EDGE CONFIGURATIONS:**



The edge designs for paired doors can be square on both doors, 1/8" bevel across 2" on one door or on both doors in the pair. **Beveled edges can only be used on doors with a flat astragal or no astragal designations.**

**ASTRAGAL APPLICATION:**

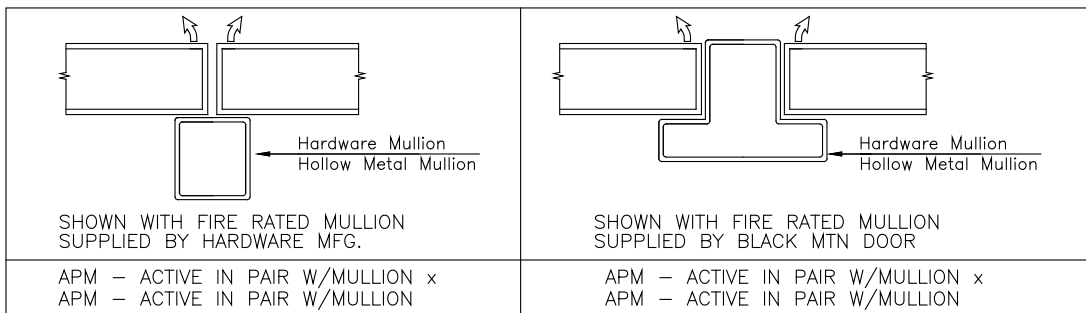
"U", "Z", Wrap, Flat and Dogleg astragals can be welded or applied with screws. Screw-on applications use #8x1/2" Truss Head SMS or similar. Weld or screw locations should be 1-1/2" maximum from each end and are not to exceed 12" O.C. across the height of the astragal. Overlapping astragals are REQUIRED on 3-Hour Ratings.

**ACCEPTABLE PAIRED OPENING CONFIGURATIONS:**

The details below and on the following pages will define the astragal options, door series, hardware configurations, size limitations and hourly rating available based on UL & ITS/WHI procedures relating to Black Mountain Door's fire door program. Hourly rating notes are maximum rating.

**3-HOUR APPLICATIONS WITH MULLION**

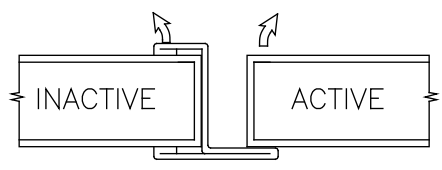
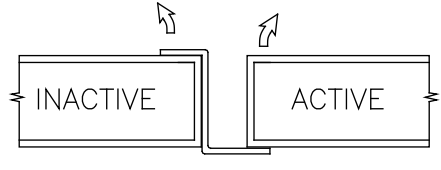
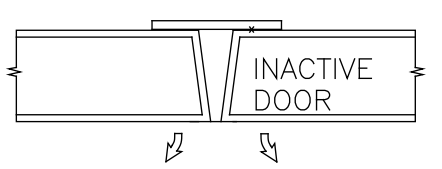
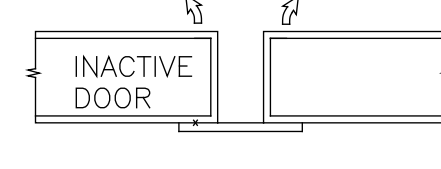
Door Series: 15LE, 17LE, 25LE, 27LE, 61LE, 63LE, 35LE, 37LE, 700, 45LE, and 47LE  
 Hardware: Rim Panic on Both Leaves with a Mullion (Astragal not Required)  
 Sizes: See Chart Z.1 on Page 6  
 Label: 3-Hour Maximum



**3-HOUR APPLICATIONS WITH LOCKSET**

Door Series: 15LE, 17LE, 25LE, 35LE, 37LE, 700\*, 45LE, 47LE, 61LE and 63LE  
 Hardware: Lockset on active leaf, automatic flush or surface bolt on inactive (manual flush or surface bolt preparation available when acceptable to authorities having jurisdiction).  
 Sizes: See Chart Z.2 on Page 6  
 Label: 3-Hour Maximum

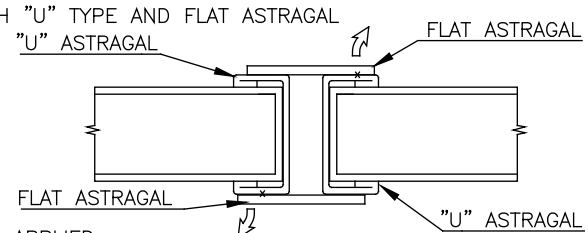
***\*700 Series available with Flat Astragal Only.***

<p>WRAP-AROUND ASTRAGAL</p>  <p>WELD OR SCREW APPLIED</p>	<p>"Z" TYPE ASTRAGAL</p>  <p>WELD OR SCREW APPLIED</p>
<p>IPW – INACTIVE IN PAIR W/ WRAP AST. x                  AP – ACTIVE IN PAIR</p>	<p>IZW – INACTIVE IN PAIR W/ WELDED Z AST. x                  AP – ACTIVE IN PAIR</p>
<p>FLAT ASTRAGAL / BVLD DOORS</p>  <p>WELD OR SCREW APPLIED</p>	<p>FLAT ASTRAGAL</p>  <p>WELD OR SCREW APPLIED</p>
<p>IPF – INACTIVE IN PAIR W/ FLAT AST. x                  AP – ACTIVE IN PAIR</p>	<p>IPF – INACTIVE IN PAIR W/ FLAT AST. x                  AP – ACTIVE IN PAIR</p>

**3-HOUR APPLICATIONS – DOUBLE EGRESS CVR/SVR**

Door Series: 45LE and 47LE (18 & 16 Gauge), 35LE, 37LE, and 700\*  
 Hardware: Concealed or Surface Vertical Rods on both leaves.  
 Sizes: See Chart Z.3 on Page 6  
 Label: 3-Hour Maximum

***\*700 Series available with Flat Astragal Only***

<p>DOUBLE EGRESS WITH "U" TYPE AND FLAT ASTRAGAL</p>  <p>WELD OR SCREW APPLIED</p>
<p>APUF – ACTIVE IN PAIR W/ U &amp; FLAT AST. x                  APUF – ACTIVE IN PAIR W/ U &amp; FLAT AST.</p>

**3-HOUR APPLICATIONS WITH ACTIVE GAP COVERAGE**

Door Series: 15LE, 17LE, 25LE, 35LE, 37LE, 45LE, 47LE, 61LE and 63LE

Hardware: 1) Lockset on active leaf, automatic flush or surface bolt on inactive (manual flush or surface bolt preparation available when acceptable to Authorities having jurisdiction).

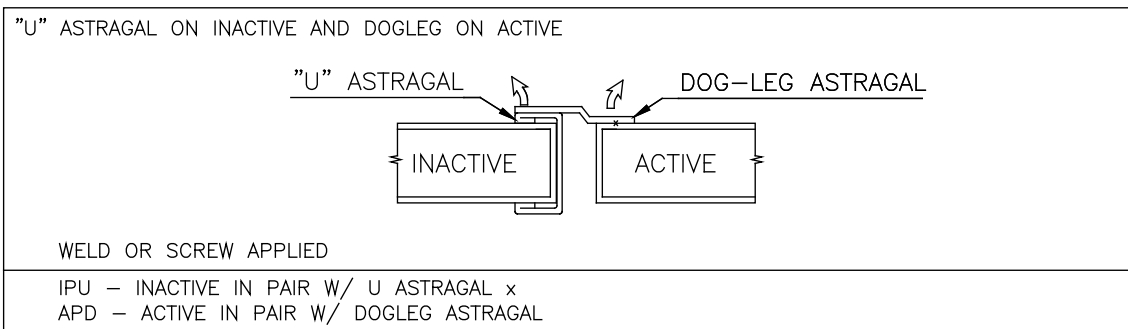
2) Mortised Panic on Active Leaf / Concealed or Surface Vertical Rod on Inactive Leaf.

3) Special Combinations of 1 & 2 when acceptable to Authorities having

jurisdiction.

Sizes: See Chart Z.2 on Page 6

Label: 3-Hour Maximum



**3-HOUR APPLICATIONS WITH FULL GAP COVERAGE**

Door Series: 15LE, 17LE, 25LE, 35LE, 37LE, 45LE, 47LE, 61LE and 63LE

Hardware: 1) Lockset on active leaf, automatic flush or surface bolt on inactive (manual flush or surface bolt preparation available when acceptable to Authorities having jurisdiction).

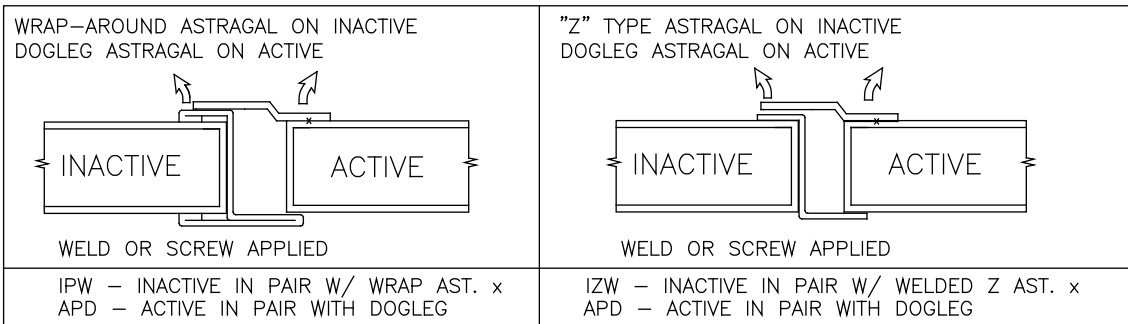
2) Mortised Panic on Active Leaf / Concealed or Surface Vertical Rod on Inactive Leaf.

3) Special Combinations of 1 & 2 when acceptable to Authorities having

jurisdiction.

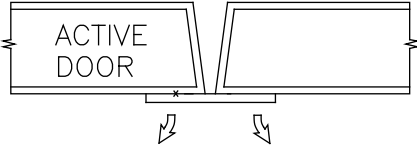
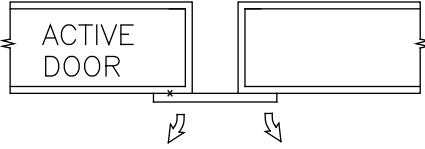
Sizes: See Chart Z.2 on Page 6

Label: 3-Hour Maximum



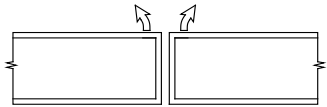
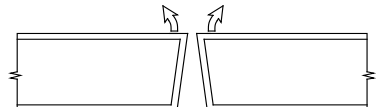
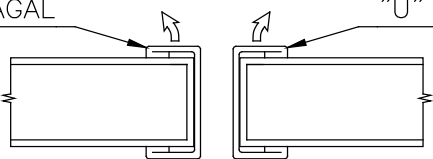
**3-HOUR APPLICATIONS WITH ACTIVE GAP COVERAGE**

Door Series: 35LE, 37LE, 700  
 Hardware: Concealed or Surface Vertical Rods on both leaves.  
 Sizes: See Chart Z.2 on Page 6  
 Label: 3-Hour Maximum

<p>FLAT ASTRAGAL ON ACTIVE LEAF BEVELED</p>  <p>WELD OR SCREW APPLIED</p>	<p>FLAT ASTRAGAL ON ACTIVE LEAF</p>  <p>WELD OR SCREW APPLIED</p>
<p>APF – ACTIVE IN PAIR W/FLAT ASTRAGAL x                  AP – ACTIVE IN PAIR</p>	<p>APF – ACTIVE IN PAIR W/FLAT ASTRAGAL x                  AP – ACTIVE IN PAIR</p>

**1-1/2 HOUR APPLICATIONS – SAME SWING DIRECTION**

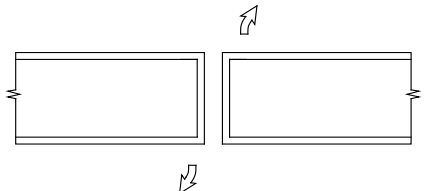
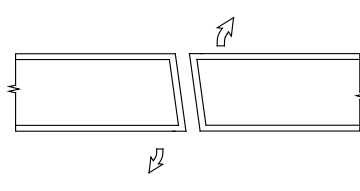
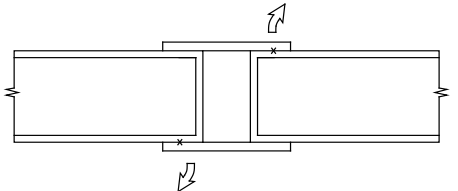
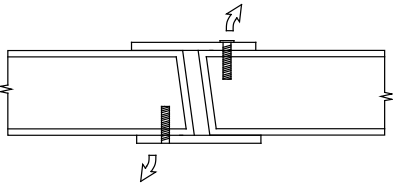
Door Series: 15LE, 17LE, 25LE, 35LE, 37LE, 45LE, 47LE, 700, 61LE and 63LE  
 Hardware: Concealed or Surface Vertical Rod on both leaves, a concealed or surface vertical rod can be employed on one leaf and an automatic or manual flush or surface bolt on other leaf when acceptable to Authorities having jurisdiction).  
 Sizes: See Chart Z.2 on Page 6  
 Label: 1-1/2 Hour Maximum

<p>NO ASTRAGALS – SQUARE EDGE</p> 	<p>NO ASTRAGALS – BEVELED EDGE (BVLD)</p> 
<p>AP – ACTIVE IN PAIR x                  AP – ACTIVE IN PAIR</p>	<p>AP – ACTIVE IN PAIR (BVLD) x                  AP – ACTIVE IN PAIR (BVLD)</p>
<p>"U" ASTRAGAL</p>  <p>WELD OR SCREW APPLIED</p>	
<p>APU – ACTIVE IN PAIR WITH U ASTRAGAL x                  APU – ACTIVE IN PAIR WITH U ASTRAGAL</p>	

**Note: U Astragals not available for 700 Series**

**1-1/2 HOUR APPLICATIONS – DOUBLE EGRESS**

Door Series: 35LE, 37LE (18Ga) 45LE, 47LE (18 & 16Ga)  
 Hardware: Concealed or Surface Vertical Rod on both leaves.  
 Sizes: See Chart Z.3 on Page 6  
 Label: 1-1/2 Hour Maximum

<p>NO ASTRAGALS – SQUARE EDGE</p> 	<p>NO ASTRAGALS – BEVELED EDGE (BVLD)</p> 
<p>AP – ACTIVE IN PAIR x                  AP – ACTIVE IN PAIR</p>	<p>AP – ACTIVE IN PAIR (BVLD) x                  AP – ACTIVE IN PAIR (BVLD)</p>
<p>FLAT ASTRAGALS – SQUARE EDGE</p> 	<p>FLAT ASTRAGALS – BEVELED EDGE (BVLD)</p> 
<p>WELD OR SCREW APPLIED</p> <p>APF – ACTIVE IN PAIR WITH FLAT ASTRAGAL x                  APF – ACTIVE IN PAIR WITH FLAT ASTRAGAL</p>	<p>WELD OR SCREW APPLIED</p> <p>APF – ACTIVE IN PAIR WITH FLAT ASTRAGAL x                  APF – ACTIVE IN PAIR WITH FLAT ASTRAGAL</p>

See pages 6 and 7 for Size Limitations and Hardware Configuration Chart.

## DOOR HEIGHT CHART

The following Chart shows the maximum height for the applications stated on the previous pages. Single Door widths will not exceed 4'-0" Nominal.

### Maximum Height Tables by Series

#### Z.1

##### All Applications with Mullions

Series	Gauge	Maximum Height
15LE, 17LE, 25LE, 27LE	20	8'-0"
15LE, 17LE, 25LE, 27LE	18 or 16	10'-0"
35LE, 37LE	18 or 16	8'-0"
45LE, 47LE	20	8'-0"
45LE, 47LE	18 or 16	10'-0"
61LE, 63LE*	18	7'-0"
*P6 & P8 Style Only (Over 6'8" - 3'-4" to 3'6" Width)		
61LE, 63LE**	16	7'-0"
**P6 Style Only (2'-8" to 3'-4" Width)		
700	18,16 or 14	10'-0"

#### Z.2

##### Paired Door Openings

Series	Gauge	Maximum Height
15LE, 17LE, 25LE, 27LE	20,18 or 16	7'-2"
35LE, 37LE	18 or 16	8'-0"
45LE, 47LE	20,18 or 16	8'-0"
61LE, 63LE*	18	7'-0"
*P6 & P8 Style Only (Over 6'8" - 3'-4" to 3'6" Width)		
61LE, 63LE**	16	7'-0"
**P6 Only Style (2'-8" to 3'-4" Width)		
700	18,16 or 14	10'-0"

#### Z.3

##### Double Egress Openings

Series	Gauge	Maximum Height
35LE, 37LE	18 or 16	8'-0"
45LE, 47LE	18 or 16	8'-0"
700	18,16 or 14	10'-0"



**HARDWARE CONFIGURATIONS**

The following Chart shows acceptable hardware configurations for the openings stated in this document.

**Hardware configurations on pairs of doors**

<b>ACTIVE DOOR HARDWARE</b>		<b>INACTIVE DOOR HARDWARE</b>
CONCEALED VERTICAL ROD	BY	CONCEALED VERTICAL ROD
CONCEALED VERTICAL ROD	BY	SURFACE VERTICAL ROD
CONCEALED VERTICAL ROD*	BY	FLUSH/SURFACE BOLT
CYLINDRICAL*	BY	CONCEALED VERTICAL ROD & STRIKE
MORTISE*	BY	CONCEALED VERTICAL ROD & STRIKE
SURFACE VERTICAL ROD	BY	SURFACE VERTICAL ROD
CYLINDRICAL*	BY	SURFACE VERTICAL ROD & STRIKE
MORTISE*	BY	SURFACE VERTICAL ROD & STRIKE
SURFACE VERTICAL ROD*	BY	FLUSH/SURFACE BOLT
RIM EXIT DEVICE*	BY	CONCEALED VERTICAL ROD
RIM EXIT DEVICE*	BY	SURFACE VERTICAL ROD
RIM EXIT DEVICE*	BY	FLUSH/SURFACE BOLT
CYLINDRICAL	BY	STRIKE & FLUSH/SURFACE BOLT
MORTISE	BY	STRIKE & FLUSH/SURFACE BOLT
MORTISE PANIC	BY	SURFACE VERTICAL ROD & STRIKE
MORTISE PANIC	BY	CONCEALED VERTICAL ROD & STRIKE
MORTISE PANIC*	BY	FLUSH/SURFACE BOLT

**\*NOTE: ONLY WHEN ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION  
WHEN USED AT EGRESS LOCATIONS AND SUBJECT TO HARDWARE LISTINGS**



**SCOPE:**

This bulletin covers a general overview of the 20-minute classification.

**PURPOSE:**

To advise the reader of our program in this area and the significance of such approval.

**MODEL CODES:**

ICBO, BOCA and SBCCI have adopted the 20-minute door assembly requirement as has NFPA 101, the Life Safety Code.

**HISTORY:**

The 20-minute assemblies have been added to the codes in response to widespread abuse of the old "solid wood core door" specs that are the norm for doors leading directly into an exit corridor. Fire ratings were not required, nor were they available on this door. As the concern for fire and smoke control increased, non labeled units were deemed insufficient. Tested and rated units controlled by in-plant inspection were seen as a way to solve this problem.

**TESTING:**

The standard tests for fire doors require both a fire exposure and a hose stream integrity test. These tests however, do not address the amount of smoke allowed to pass through the opening. As these openings were intended to perform safety-to-life rather than protection-to-property functions, the usual fire test was modified somewhat. Fire exposure duration of 20 minutes was established, probably based on the performance of the commonly used wood door. The hose stream was deleted as unnecessary and probably unattainable with doors commonly in use.

Note: With deletion of the hose stream integrity test, these doors are not considered fire doors. To satisfy the smoke passage criteria, NFPA adopted a standard (NFPA-105) to clarify the allowable maximum air leakage requirements for various locations. Generally, smoke control gasket is required. Units could now be tested, rated, and labeled for all of their component parts.

**DESCRIPTION:**

Although Black Mountain Door does not presently market a 20-minute smoke control "assembly", the requirement may be satisfied in the following manner:

There is no reason why a conventionally labeled fire door frame cannot be used. Similarly a conventionally labeled fire door can be used. Weather-stripping properly labeled for smoke control should be installed. In any case, the rating of the assembly is based on the least rating of all the components. For example, using 20-minute rated glazing in an otherwise 1 1/2 hour opening yields a 20-minute assembly. Black Mountain Door has 20 minute frame labels available for use with properly labeled wood doors.



**SUBJECT:****Black Mountain Door's 20-Minute-No Hose Stream Full Glass Door****NO: L-20.0****DATE: 03/12****PAGE: 1**

---

**SCOPE:**

This bulletin will cover the details particular to the 20-minute full glass door.

**THE TEST:**

The 20-minute x no hose stream test is what it says it is - a standard test (UL10b) except that hose stream integrity is deleted. Older editions of the NFPA 80 document set limits on glass lite sizes based on 1/4" wide glass limitations. The hose stream test dislodges large amounts of glass creating a failure in a fire door test. Since the hose stream is deleted, glass failure is no longer in the acceptance criteria.

**DESCRIPTION:**

With the maximum lite size removed, NFPA-80 now limits lites to the maximum area tested.

Distributors approved by Black Mountain Door's Fab-A-Frame program have an option to use the 15LE-17LE Series door in single sizes up to 4'0" x 8'0" or double doors up to 8'0" x 7'2".

Door labels will read "Twenty Minute Type Door Fire Tested without Hose Stream". These are not to be confused with 1/3 hour fire doors or smoke door assemblies conforming to NFPA-105. Doors tested without hose stream are not true fire doors.

Although "exotic" glazing materials exist for "20 minute N.H.S." labeled doors, a common application is 1/4" labeled wire glass. Doors may be provided in FG, FG2 or FG3 configurations as long as the maximum exposed lite size does not exceed 2994 square inches per door.

**TECH  
DATA**

**SCOPE:**

This bulletin covers a significant element in the development of transom and/or sidelite frames suitable for use as office fronts or smoke barriers.

**PURPOSE:**

To insure the reader has the latest information on this subject.

**DESCRIPTION:**

Traditional transom and/or sidelite assemblies were fire-rated 3/4 hours for 1 hour partitions and required strict limitations on lite sizes and stop heights based on hose stream performance of 1/4" wire glass.

With the revision of the 1 hour partition requirements to allow 20-minute - no hose stream requirements, this classification becomes useful for office fronts in exit corridors, as an example.

Notable features of these units are the following:

1. Increased exposed lite area of 5,268 square inches
2. Increased width or height of each individual lite to 109 3/4" measured soffit to soffit.
3. Stop height in all cases is standard 5/8".
4. Masonry sill is not required under sidelites raised above floor.
5. Maximum overall size is 13'2" wide and 11'7" high.
6. Labels must read "20-Minute Type Door Frame Fire Tested Without Hose Stream".
7. Since the hose stream portion of the fire test is deleted, these units are not to be considered as fire rated frames.
8. Any rated wall construction is applicable.
9. All units must be shipped welded.

Borrowed lite frames are subject to similar requirements as the transom/sidelite type frames.



**SCOPE:**

This bulletin is intended summarize the available designs and the wide range of UL Classification Marks (labels) available on steel stiffened doors available from Black Mountain Door. Where UL is used, it shall mean "Underwriters Laboratories, Inc."

**PURPOSE:**

To inform the reader of the varieties, basic differences among the Series designations, and capabilities of Black Mountain Door's steel stiffened UL door program.

**DESCRIPTION:**

Historically, steel stiffened doors available from "Amweld" included 700 and 500 Series, both with a seam welded edge only. With the unification of the Amweld and Firedoor brands into Black Mountain Door, this is no longer subject to such limitations. As a result, the 700 and 500 designations have been eliminated in favor of alpha-numeric Series designations. A brief description of these designations is as follows:

- Series 05WE (replaces 500 Series) seamless hot-dip galvanized (galvanneal) steel stiffened non-handed doors with no visible seams on either face or vertical edges; continuously welded door edges.
- Series 07WE (replaces 700 Series) seamless hot-dip galvanized (galvanneal) steel stiffened handed and beveled doors with no visible seams on either face or vertical edges; continuously welded door edges.
- Series 07CS (replaces 7700 Series) is identical to Series 07WE. It is used for doors of highly abnormal size, design, or configuration
- Series 05LS full flush hot-dip galvanized (galvanneal) steel stiffened non-handed doors joined at the edge with a continuous interlocking seam, with no visible seams on faces.
- Series 05LS seamless hot-dip galvanized (galvanneal) steel stiffened non-handed doors joined at the edge with a continuous interlocking seam using filler material to create a smooth unbroken surface on door edge.
- Series 07LS full flush hot-dip galvanized (galvanneal) steel stiffened handed and beveled doors joined at the edge with a continuous interlocking seam, with no visible seams on faces.
- Series 07LS seamless hot-dip galvanized (galvanneal) steel stiffened handed and beveled doors joined at the edge with a continuous interlocking seam using filler material to create a smooth unbroken surface on door edge.

Important to note is that ALL steel stiffened doors are now fabricated from hot-dip galvanized (galvanneal) steel Class A-40 (ZF120) as STANDARD.

**FIRE TESTS AND EVALUATIONS:**

With the unification into Black Mountain Door, all doors in this Tech Data have been tested or otherwise evaluated to UL-10C Positive Pressure as adopted by almost all Code Jurisdictions. Of course they still comply with older standards such as UL-10B and UBC 7-2 (1997).

Fire Protection ratings used on steel doors are:

3-hours at 4-hour walls.

1 1/2-hours at 2-hour walls.

3/4-hour at 1-hour walls.

1/3-hour at smoke control fire doors usually in 1-hour walls.

20 minute-no hose stream (usually for wood doors and glazing) at 2-hour (or less) walls.

1-hour (where permitted by Codes and glazing) at 2-hour (or less) walls.

**SMOKE CONTROL:**

Testing to UL-1784 by Industry Groups has shown that the critical component for achieving smoke control is the rated smoke gaskets field-applied onto doors. All steel stiffened doors are available with supplemental "S" markings, WHEN ORDERED, indicating compliance when gaskets are applied.

**LOUVERS:**



Where indicated in the chart, single or double doors rated 1 1/2 hours or less may be equipped with fusible link louvers at the bottom of doors not larger than 24" X 24" (610 X 610 mm.). Louvers shall not be used at doors prepared for exit devices, doors with glazing, or smoke control doors.

**GLAZING:**

Historically, glazing in doors was limited to sizes for 1/4" (6.4 mm.) wire glass with conventional glazing methods. The testing done with materials other than wire glass or with specialized glazing "putty" has made these sizes obsolete. Black Mountain Door has established with UL methods of accommodating glazing options as described in Tech Data # L-8.3, not duplicated in this TD. Essentially, the availability of glazing options is "linked" with UL Category KCMZ. We have recommended certain minimum stile and rail dimensions. Note that these dimensions should be coordinated with hardware, Accessibility (handicap) Codes, and Local Jurisdictions by the Customer.

**METRICATION:**

"Soft" metric conversions for common sizes are covered in Tech Data # G-10.0.

1 3/4" THICK DOORS UL ONLY																		
SINGLE	PAIR	GAGE			MAX. RATING	TEMP. RISE MAX.	MAX. SIZE	SINGLE OR ACTIVE DOOR				INACTIVE DOORS				ASTRAGAL REQUIRED	REMARKS	
		18	16	14				SINGLE POINT	MIN. THROW	RIM PANIC	MORT. PANIC	SURF. V. ROD	CONC. V. ROD	FLUSH BOLT	SURF. BOLT			
•		•	•	•	3 HR		4'0" X 10'0"	•	3/4"	•	•							
•		•	•	•	3 HR		4'0" X 8'0"	•	1/2"	•	•							
	•	•	•	•	3 HR		8'0" X 10'0"	•	3/4"					•	•			
	•	•	•	•	3 HR		8'0" X 10'0"	SURF. OR CONC. VERTICAL ROD				•	•			•	PAIR IN SAME DIRECTION OR DOUBLE EGRESS	
•		•			3 HR		3'6" X 7'6"	•	1/2"					•			•	DUTCH DOOR
•		•	•	•	3 HR		4'0" X 8'0"	•	1/2"	•	•							RADIATION SHIELDING (LEAD LINED) DOOR
	•	•	•	•	3 HR		8'0" X 8'0"	•	3/4"		•	•		•	•	•		RADIATION SHIELDING (LEAD LINED) DOOR
•		•	•	•	1 1/2 HR	450°	4'0" X 9'0"	•	3/4"		•			•	•	•		
	•	•	•	•	1 1/2 HR	450°	8'0" X 9'0"	•	3/4"					•	•	•		
	•	•	•	•	1 1/2 HR		8'0" X 8'0"	•	3/4"		•	•	•	•	•			OPEN BACKSTROKE
	•	•	•	•	1 1/2 HR		8'0" X 10'0"	SURF. OR CONC. VERTICAL ROD				•	•					PAIR IN SAME DIRECTION OR DOUBLE EGRESS
•		•	•	•	1 1/2 HR		4'0" X 8'0"	•	1/2"									LOUVERS
	•	•	•	•	1 1/2 HR		8'0" X 8'0"	•	3/4"					•	•	•		LOUVERS BOTH DOORS

NOTES: EXIT DEVICES SUBJECT TO HEIGHTS PUBLISHED IN UL BUILDING MATERIALS DIRECTORY.



<b>AVAILABLE DOOR LITE SIZES</b>			
<b>Rating</b>	<b>Maximum Sq. In.</b>	<b>Maximum Width</b>	<b>Maximum Height</b>
<i>3 Hour</i>	<i>100 per door</i>	<i>10"</i>	<i>33"</i>
<i>1 1/2 Hour</i>	<i>100 per door</i>	<i>10"</i>	<i>33"</i>
<i>3/4 Hour</i>	<i>1,296 per lite</i>	<i>30"</i>	<i>54"</i>
<i>1 1/2 and 3 Hour 250° temp.</i>	<i>100 per door</i>	<i>10"</i>	<i>33"</i>
<i>1/3 Hour</i>	<i>1,296 per lite</i>	<i>30"</i>	<i>54"</i>

Notes:

- 1.) 5-1/2" Min Stile or Rail must be maintained.  
5-1/2" Between Cutouts
- 2.) Louvers not permitted in doors with lights.
- 3.) 3 Hour Doors for Firelight® glazing where permitted by local jurisdiction.



**SCOPE:**

This Tech Data summarizes in chart form the windstorm rated assemblies and components available from Black Mountain Door under the Amweld brand name.

**PURPOSE:**

To act as a condensed reference for the reader. It is intended to summarize, **but not replace**, other Tech Data Documents in the L-23 Series.

**DESCRIPTION and APPROVALS:**

Based on extensive windstorm testing and Engineering Evaluations with Intertek Testing Services (ITS), the windstorm capabilities and certifications have been expanded. Certifications and Follow-up inspections have been consolidated under an ITS windstorm program. In addition, these doors and frames have been evaluated and approved for the **2007 Florida Building Code under FL3078 R2 and FL5753 R1** for use in and outside of the HVHZ, including missile impact. Previous approval included the **2007 Florida Building Code**.

The charts and notes following are intended to summarize the products available.

- The L-23 Series of Documents shall be used in conjunction with this TD. As a summary, it is not intended to address all of the variations, technical details, and specific requirements of individual products. In the event of apparent discrepancies, other Documents in the L-23 Series shall take precedence.
- In most cases, building codes require design pressure (in pounds per square foot) to be indicated at each individual door opening either on floor plans or on door schedules. This requirement **is not** to be noted as "wind speed". Actual structural wind loads on an individual door will vary by the location of the building with respect to adjacent terrain, nearby structures, distance from a coastline, location of doors in the building (corners or middle of walls), height above grade, in addition to wind velocity and direction. In addition, importance factors (different for schools, warehouses, police or fire facilities, etc.) will increase or decrease design pressures accordingly.
- The design pressure is based on the area of the entire assembly, not the door area.
- The approval to ANSI A250.13 (2003) allows the use of approved (and rated) hardware or components other than those tested. The use of substitute components **may** maintain or reduce the rating of the assembly, but **shall not** increase the rating.





**15-17-25-27 LE SERIES WINDSTORM RATED DOORS**

DESIGN PRESSURE (PSF)					STYLE		HARDWARE PREPARATIONS							CERTIFICATION	
	SGL	DBL	GAGE	MAX DOOR SIZE	F	LITES	SGL POINT	RIM PB	MORT PB	SVR CVR	SURF BOLTS	HDWE MULL	MIN HG QTY	ITS	2007 FBC
+/- 70	X		16	4-0 X 7-2	X	X	X	X	X				3	X	FL5753.1
+/- 70	X		18	3-4 X 7-2	X	X	X	X	X				3	X	FL5753.1
+/- 60	X		18-16	3-4 X 8-0	X	X	X	X	X				4	X	FL3078.1
+/- 60	X		18-16	3-4 X 7-2	X	X	X	X	X				3	X	FL3078.1
+/- 45		X	18-16	3-0 X 7-2	X	X	X	X	X	X	X	X	3	X	FL3078.2
+/- 45	X		18-16	3-0 X 7-2	X	X	X	X	X	X			3	X	FL3078.2

**61-63 LE SERIES WINDSTORM RATED EMBOSSED DOORS**

DESIGN PRESSURE (PSF)					STYLE		HARDWARE PREPARATIONS							CERTIFICATION	
	SGL	DBL	GAGE	MAX DOOR SIZE	P6	P8	SGL POINT	RIM PB	MORT PB	SVR CVR	SURF BOLTS	HDWE MULL	MIN HG QTY	ITS	2007 FBC
+/- 70	X		18-16	3-4 X 7-0	X		X	X	X				3	X	FL3078.3
+/- 70	X		18	3-6 X 7-0	X		X	X	X				3	X	FL3078.3
+/- 70	X		18-16	3-0 X 7-0		X	X	X	X				4	X	FL3078.3
+/- 60	X		18-16	3-4 X 7-0	X		X	X	X				3	X	FL3078.3
+/- 60	X		18	3-6 X 7-0	X		X	X	X				3	X	FL3078.3
+/- 60	X		18-16	3-0 X 7-0		X	X	X	X				3	X	FL3078.3
+/- 45	X	X	18-16	3-0 X 7-0	X	X	X	X	X	X	X	X	3	X	FL3078.3

**400 SERIES WINDSTORM RATED FRAMES**

DESIGN PRESSURE (PSF)	MAX SIZES				HARDWARE PREPARATIONS							ASSEMBLY		CERTIFICATION		
	SGL	DBL	OPNG	OVERALL	MIN HG. QTY	USTK	RIM PB	SVR	CVR	SURF BOLT	HDWE MULL	K-D	WELD	ITS	2007 FBC	
+/- 70	X		4-0 X 7-2	4-4 X 7-4	3	X	X							X	X	FL5753.1
+/- 60	X		3-4 X 8-0	3-8 X 8-2	4	X	X						X	X	X	FL3078.1
+/- 60	X		3-4 X 7-2	3-8 X 7-6	3	X	X						X	X	X	FL3078.1
+/- 45	X		3-0 X 7-2	3-4 X 7-6	3	X	X	X	X				X	X	X	FL3078.2
+/- 45		X	6-0 X 7-2	6-4 X 7-4	6	X	X	X	X	X	X	X	X	X	X	FL3078.2

**GENERAL NOTES**

- FACES 2" TO 4" ALLOWED AS LONG AS OVERALL DOES NOT EXCEED MAXIMUM.
- PROFILE 5 3/4" MINIMUM- 12 3/4" MAXIMUM.
- WALL ANCHORS AVAILABLE: MASONRY, COMPLETED OPENING, LAG BOLT.
- FOUR (4) HINGES REQUIRED PER JAMB OVER 7'-2" HEIGHT.
- ALL FRAMES AVAILABLE IN 16 OR 14 GAGE OR A40/A60 GALV.



**SCOPE:**

To inform the Reader (in a condensed statement) of the Structural Design Wind Load provisions and some related terminology in Section 16 of the 2000 and 2006 editions of the International Building Code (IBC). This Tech Data will focus on low-rise buildings with roof heights of 60 feet or less.

**PURPOSE:**

To allow the Reader to have a concise yet thorough knowledge of how the IBC addresses Structural Design of Buildings and their components with emphasis on exterior door assemblies.

**OVERVIEW:**

By this time, the vast majority of Jurisdictions have adopted (or are in the process of adopting) the 2000 or 2006 Edition of the IBC. Section 1609 (along with 1603 and 1604 to a lesser degree) of this Document concerns Structural Design relating to wind loads. This is a STRUCTURAL design issue rather than an Architectural issue. IBC-2000 contains a method for calculating wind loads which will be summarized here. IBC-2006 defers to documents of the American Society of Civil Engineers (ASCE), notably ASCE-7 that uses similar criteria.

We recognize the right of Local Jurisdictions to utilize Documents different from IBC as the basis of their Local Codes.

**DISCLAIMER:**

**Black Mountain Door WILL NOT accept the liability for Structural Design nor the improper use of the information following. It is provided solely as a reference to convey some of the important considerations of the Source Document.**

**POSITIVE OR NEGATIVE LOADS:**

Wind loads are either positive (+) or negative (-). Positive loads are generally windward loads acting directly on the door. Negative loads are suction loads on doors either on the leeward side of the building or the result of a structural failure of walls or the roof. Negative loads are generally greater than positive loads.

**REQUIREMENTS OF CONSTRUCTION DOCUMENTS:**

Section 1603 of IBC requires design loads for “components and cladding” (which includes exterior doors) to be clearly indicated on construction documents. It requires design wind pressure in terms of pounds per square foot (psf) for components and cladding. Among the other required information to be shown are Basic Wind Speed (based on a 3-second gust), the building’s “importance factor”, the building category, wind exposure, and wind direction. It is for this reason that licensed Structural Engineers are an integral part of the process.

**BASIC WIND SPEED:**

Basic Wind Speed (abbreviated here as BWS) IS NOT sustained wind speed in miles per hour. Rather it is based on the speed of a 3-second gust. Think of weather reports “winds of X mph. gusting to X mph”. Both IBC-2000 and 2006 contain charts that allow for conversion between fastest speed and 3-second gust. The 3-second gust (used for calculations and shown on wind speed maps) is considerably higher. As examples, in IBC-2000 a fastest wind of 100 mph converts to a 120 mph BWS; a 130 mph fastest speed converts to 150 mph BWS. Conversions in IBC-2006 are slightly higher

Local Jurisdictions are allowed to establish their own BWS in accordance with ASCE 7 for special wind regions or for mountain/valley regions.

---

**BASIC WIND SPEED MAPS:**

Contour maps in IBC indicate the “basic wind speed” for all States in the continental US including Alaska. BWS for Hawaii and US possessions are also given. These are based on 3-second gusts at 33’ above ground for an exposure C (flat, open terrain with scattered obstructions). The extremes vary from 150 mph in South Florida or 170 mph in Guam to 85 mph in coastal western states.

**IMPACT PROTECTION OF OPENINGS:**

Wind loads are not the only structural design considerations addressed by IBC. In regions or Jurisdictions classified as wind-borne debris (hurricane) areas, glazing in the lower 60 feet is required to be impact resistant or must be “protected”. Wind-borne debris regions are defined as regions with a BWS of 120 mph or greater, areas within 1 mile of the coastal high water line subject to a BWS of 110 mph or greater, or certain other designated areas.

Glazing in doors or windows within 30 feet of grade must meet Large Missile (9 pound 2X4 propelled at 100 feet per second) testing. This equates to 350 foot pounds, or a 35 pound weight dropped from 10 feet. Glazing above that height must meet Small Missile (small pellets, rocks, etc.) testing. Tests are conducted to recognized test Standards. Successful Large Missile testing usually qualifies Small Missile, but not vice-versa.

Doors and Frames tested by Black Mountain Door routinely include the large missile test, whether they contain glazing or not.

**IMPORTANCE FACTOR:**

Section 1604 of IBC-2000 establishes a CATEGORY method of determining the Building’s importance by the nature of its occupancy. This Category is a ratio used in calculating the wind load on the building or its components.

As examples, in IBC-2000, schools, health care facilities, police and fire stations, water or power utility buildings, shelters, and emergency treatment facilities (Category II & III) are assigned a 15% GREATER Importance Factor than a convenience store (Category I). Conversely, a storage building or agricultural shed (Category IV) may be assigned an Importance Factor 13% LESS than the store. A Category IV building in a hurricane zone has an Importance Factor 23% LESS than the store.

IBC-2006 uses an “occupancy” category OPPOSITE the “importance factor” category in IBC-2000.

**EXPOSURE CATEGORY:**

Characteristics of the site, topography, vegetation, adjacent buildings, other obstructions, and even wind direction must also be factored into the wind load calculations.

In IBC-2000 Exposure A is a large city with at least half of the buildings over 70 feet tall. Wind pressure and direction can be affected by adjacent buildings. Exposure B is the “default” category and is used for buildings in urban or suburban areas, those in wooded areas or other closely spaced obstructions such as single or multiple family residences. Exposure C is generally flat terrain, scattered obstructions less than 30 feet tall, or along shorelines in hurricane regions. Exposure D is similar to C except it is generally applicable to the Great Lakes area, Western coast of the US, or areas where wind can blow unobstructed over water for at least 1 mile.

IBC-2006 uses a combination of Surface Roughness based on conditions upwind of the building and Exposure categories based on building height and travel distance of prevailing winds.

**COMPONENT LOADING DIAGRAMS:**

Figure 1609.6(2) of IBC-2000 shows the general “zones” of a typical low-rise building for reference. For wall openings there are two zones either at the corner of the building or on the windward-leeward wall surface. These are used in conjunction with the Wind Load Tables.

IBC-2006 defers to ASCE 7.

**WIND LOAD TABLES:**

IBC-2000 allows for wind loads to be calculated using the “simplified provisions for low-rise buildings” (Section 1609.6). IBC-2000 includes a series of tables (1609.6.2.1(2) for a building in Exposure B (the “default”) with a roof height of 30 feet. These tables show positive and negative loads for BWS of 85 to 170 mph. for areas from 10 to 100 square feet located either at the corners or in walls.

Again, IBC-2006 defers to ASCE 7.

**HEIGHT AND EXPOSURE ADJUSTMENTS:**

Since all of the WIND LOAD TABLES in IBC-2000 do not cover all the pertinent variables, Table 1609.6.2.1(4) includes adjustment factors for other roof heights from 15 to 60 feet along with adjustment factors for buildings located in Exposures B-C-D.

Again, IBC-2006 defers to ASCE 7.

**WHAT DOES ALL THIS MEAN???:**

Using IBC-2000, we will give an example of how these factors affect the wind pressure ratings on a door using a door located in the middle of a 20 sq. ft. area of a 30-ft. high small convenience store during a 100 mph windstorm. The store is in a small, suburban village (exposure B).

First, the wind speed needs to be adjusted to a BWS of 120 mph.

Wind load tables indicate a base load of +24.7 and -26.9.

If this door is relocated to the corner, the base load increases to +24.7 and -32.4.

If this building is increased to 45 feet high, the base loads increase by 12%.

If this corner door in a 45 foot building is located in an exposure C location, the base load is increased by another 40%.

If the small store in the above example is a fire or police station, a day-care center, or a small emergency health care facility (as examples) the load factor increases by 15%. If it is a storage shed (for example) the load decreases by 13%.

Local Jurisdictions reserve the right to assign additional safety factors to these ratings or to use different rating methods. As a safety precaution, doors are commonly structurally loaded to 150% of the intended design load during testing.

**CONCLUSIONS:**

We trust the above information is helpful in answering some of the reasons why wind speed alone does not easily convert to Structural Design pressure. The involvement of a licensed Structural Engineer is of the utmost importance in maintaining the structural integrity of virtually any building situated in a windstorm area.

**SCOPE:**

This bulletin covers the scope, extent, and Code compliance criteria for the Black Mountain Door "Full Glass" 70 psf windstorm and impact rated doors and frames.

**PURPOSE:**

To provide the necessary information to evaluate or specify this product and its components.

**APPROVALS:**

Approvals and certifications have been consolidated under Intertek Testing Services (ITS). In addition, these doors and frames have been evaluated and approved for the **2007 Florida Building Code under FL5753.1 (FL5753 R1)** for use in and outside of the HVHZ, including missile impact. Previous approval included the **2007 Florida Building Code**.

**PRODUCT DESCRIPTION:**

Essentially standard 400 Series 16 gage welded frames and specifically designed 15LE Series 16 Gage doors with "Full Glass" type glazing were subjected to tests as defined by ANSI A250.13 (2003), the Florida Building Code, and related ASTM Standards. Assemblies utilized common builder's hardware and weatherstripping.

A series of single 4'-0" x 7'-2" units were tested. The 7'-2" height was chosen to allow for a 7'-0" door opening with 4" header or 7'-2" door opening with 2" header to match masonry block coursing. Anchors were located to allow masonry anchors to match block coursing and completed opening anchors to miss weaker mortar joints.

The "Full Glass" door was designed with stile and top rail sizes to allow the impact points (6" down and 6" from edge) to impact the door surface and to eliminate interference between light kit and lever lock trim.

**TEST PROTOCOLS:**

Assemblies were physically tested to recognized test protocols at Intertek Testing Services (ITS) in Middleton, Wisconsin. These tests included the following:

- Florida Building Code TAS 201-202-203 (1994).
- ANSI A250.13 (2003).
- ASTM E283 (air infiltration), ASTM E330 (uniform structural load), and ASTM E547/E331 (water penetration), and ASTM E1886/1996 (impact and cyclic pressure).
- These tests are similar (but not identical) to the old Miami-Dade protocols PA 201-202-203.

**RELEVANCE OF COMPONENT APPROVALS and ANSI A250.13 (2003):**

The 2004 Edition of the Florida Building Code incorporates (in paragraph 1609.1.4.2 and paragraph 1714.5.3.3.2) a reference to a new ANSI Standard A250.13 (2003). This Standard creates a method of testing and rating **components** rather than **assemblies** utilizing recognized Standards in addition to tests specific to individual components. Component approval means (for example) that the door may be used in an existing frame deemed suitable by the Authority Having Jurisdiction (AHJ). More importantly, it allows the use of approved (and rated) hardware other than what was tested. The use of substitute hardware **may** maintain or reduce the rating of the assembly, but **shall not** increase the rating. It does, however, allow for greater flexibility in choice of hardware.

**TEST DESCRIPTION:**

Structural load testing confirmed that the assembly withstood pressure of +/-105 lbs/square foot (psf). Using the customary allowance for a 1.5 safety factor (2/3 of the "structural load" result), a design pressure

---



of 70 psf. was established. The structural load and design pressure is based on the area of the entire assembly, not the door area.

The assemblies were tested for large missile impact using the "flying 2X4" method. A 9 pound 2X4 propelled by an air cannon at a speed of 50 feet per second (about 34mph) impacted the assemblies, including the glazing, at various points. Although minor damage was done, the assemblies passed. Large missile success automatically assures small missile compliance. The assemblies successfully passed the cyclic pressures in both directions (total of 9,000 cycles) up to the design pressure.

With additional stop-mounted gasketing, the assemblies were subjected to air infiltration and water penetration tests. Air infiltration (leakage) was 0.12 cubic feet/minute per square foot at 1.57 pounds/square foot pressure. Water penetration was not successful due to leakage at the threshold.

For frame components to comply with ANSI A250.13 (2003), additional impact and cyclic testing was done. These tests confirmed that frames survived deflection limits in both masonry and wood stud walls.

Door stiffness testing on the "standardized" 3-0X7-0 door panel established the 16 gage doors as Class I (the highest) with a deflection of only 0.360" after application of a 300 pound load.

#### PREVIOUS TEST EVALUATIONS:

Based on successful testing previously conducted at ITS, an engineering evaluation of an 18 gage door was requested. Based on comparative results, ITS has allowed the reduction in gage to 18 for doors up to 3'-4" X 7'-2" high for the same +/-70psf design pressure. The 18 gage doors, however, are rated as Class II (second best) stiffness. The 3'-4" door width matches the 40" standard unit of exit width in most Codes.

#### CODE COMPLIANCE:

Based on successful completion of these tests, a certification, labeling, and follow-up inspection program with ITS has been established. The third-party labeling fully complies with Florida Statutes #553.842 and 553.8425 and Rule 9B-72 Method 1(a). Results were also submitted to the Florida Building Commission division of the Florida Department of Community Affairs for review and approval. Approval to the **2007 Florida Building Code appears under FL5753.1 (FL5753 R1)** for use in and outside of the HVHZ, including missile impact.

These assemblies/components are rated for +/- 70 psf design pressure. They do not comply with water penetration limits for **non-egress doors** in certain structures within the HVHZ without an overhang.

#### SUMMARY of APPROVAL:

**FRAME:** 400 Series 16 gage (min) welded frame 4'-0" X 7'-2" (max) with depth from 5 3/4" to 12 3/4".

Jamb & header faces are from 2" to 4" as long as the overall size does not exceed 4'-4" X 7'-6". Anchors are available for new or existing masonry, concrete, steel framing, or wood stud framing.

**DOOR:** 15LE, 17LE, 25LE, or 27LE, 4'-0" X 7'-2" max (16 gage) and 3'-4" X 7'-2" max (18 gage). Available elevations are FG, G, multi-light, N, V, or F. Side stiles are 8" (min), top rail is 8 3/4" (min) to exposed light.

**GLAZING:** A thru-bolted light kit with 3/4" stop height was developed with our Supplier to accommodate 5/16" (nom) impact resistant glazing and structural glazing sealant. The maximum exposed light size (based on 4-0 X 7-2 door) is 31 3/4" wide X 62" high.

**HARDWARE:** Hinges are 4 1/2" X 0.134" (min). Lock preparations may be for approved and rated mortise or cylindrical locks and mortise or rim exit devices. Press-on seals are used at the jambs and header.

More complete details are in the drawings and matrix that follow. Complete information is available in the installation details on the FBC website ([www.floridabuilding.org](http://www.floridabuilding.org)).

#### IMPORTANT NOTES:

1) In most cases, building codes require design pressure (in pounds per square foot) to be indicated at each individual door opening either on floor plans or on door schedules. This requirement **is not** to be





noted as "wind speed". Actual structural wind loads on an individual door will vary by the location of the building with respect to adjacent terrain, nearby structures, distance from a coastline, location of doors in the building (corners or middle of walls), height above grade, in addition to wind velocity and direction. In addition, importance factors (different for schools, warehouses, police or fire facilities, etc.) will increase or decrease design pressures accordingly.

2) The design pressure is based on the area of the entire assembly, not the door area.

3) The approval to ANSI A250.13 (2003) allows the use of approved (and rated) hardware or components other than those tested. The use of substitute components **may** maintain or reduce the rating of the assembly, but **shall not** increase the rating. It does allow for greater flexibility in design choices.

#### MANDATORY HARDWARE:

- HINGES: 4 1/2" minimum height ball-bearing steel with 0.134" minimum leaf thickness. Hinges applied with (4) #12-24 steel machine screws. Spacing: 12 3/8" maximum from top or bottom to centerline AND 31 15/16" maximum on center. (Tested Hager #BB1279 X NRP to qualify use of heavier hinges as needed).
- MORTISED STRIKE: ANSI 4 7/8" steel strike applied with (2) #12-24 steel machine screws  
Location: 45 11/16" maximum from underside of header or bottom of frame to centerline. (Tested Schlage #10-072 & 10-075).
- RIM-MOUNTED STRIKE: Hardware Manufacturer's strike as tested and approved for design load.  
Location: 45 11/16" maximum from underside of header or bottom of frame to centerline.
- CYLINDRICAL LOCK: BHMA Grade 1 type with thru bolted lever or knob trim and 3/4" latch throw.  
Location: To align with mortised strike. (Tested Schlage ND60PD X RHO).
- MORTISE LOCK: BHMA Grade 1 type with thru bolted lever or knob, sectional or escutcheon trim and 3/4" latch throw. Location: To align with mortised strike. (Performance of single point latch of cylindrical lock confirms deadbolt is not required). (Tested Schlage L9457 X 03B).
- RIM EXIT DEVICE: BHMA Grade 1 type touch bar or crossbar device with 1/2" minimum latchbolt projection. Location: To align with rim mounted strike. (Tested door prepared for Von Duprin #98/99 TP).
- MORTISE EXIT DEVICE: BHMA Grade 1 type touch bar or crossbar device with 3/4" latch throw.  
Location: To align with mortised strike. (Performance of mortised and cylindrical single point locks and rim exit device justifies this variation).
- WEATHERSTRIP (non-water penetration): Press-on seal applied to rabbets. (Tested Hager #736S).
- THRESHOLD (non-water penetration): Bumper type threshold with silicone insert providing 1/8" minimum overlap at bottom of door. (Tested Hager #477S).

#### GLAZING COMPONENTS (steel unless noted):

**G1** Closed Cell EPDM Press-On Glazing Tape 1/4" X 3/8" Applied to Inside Face of Light Kit Frame.

**G2** Sponge Rubber, EPDM, or Neoprene Press-On Glazing Tape 1/8" X 3/8".

**G3** "STORMGLASS" by OLDCASTLE Glass (or equal) in 5/16" Thick Configuration (2) 1/8" Heat Strengthened Glass Separated by 0.075" StormGlass Interlayer.

**G4** Neoprene "O"-Ring, 7/32" I.D. with 1/16" Wall, 50-70 Durometer.

**G5** Thru-Bolted Vision Frame, 0.045" min. with corners Mitered and Welded on Outside Face and Inside Return. Mounting Holes Pierced for #8-32 Screws at 7 1/2" to 8" Centers. Air Louvers model VLF-IGHRC.

**G6** #8-32 X 1 1/4" Dome Head Phillips Machine Screw with **G6A** #8-32 X 1 7/16" Blank Head Binder Bolt.

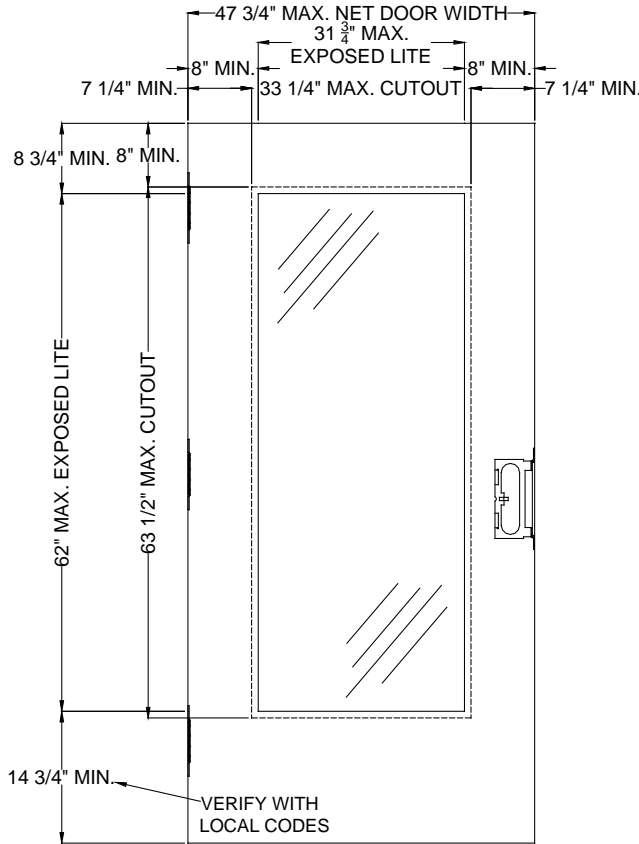
**G7** Internal Reinforcing Channel 5/8" Legs X 1 5/8" Width X 0.042" min. X Length to Suit Cutout Size. All Corners Welded. Channel Welded to Both Door Faces 16" On Center max.

**G8** Dow Corning #995 (or equal) Silicone Structural Glazing Sealant Applied per Dow Corning Instructions.

**G9** EPDM or Neoprene Setting Blocks 1/16" min. Thickness at Quarter Points of Bottom of Glass and Elsewhere as Needed.

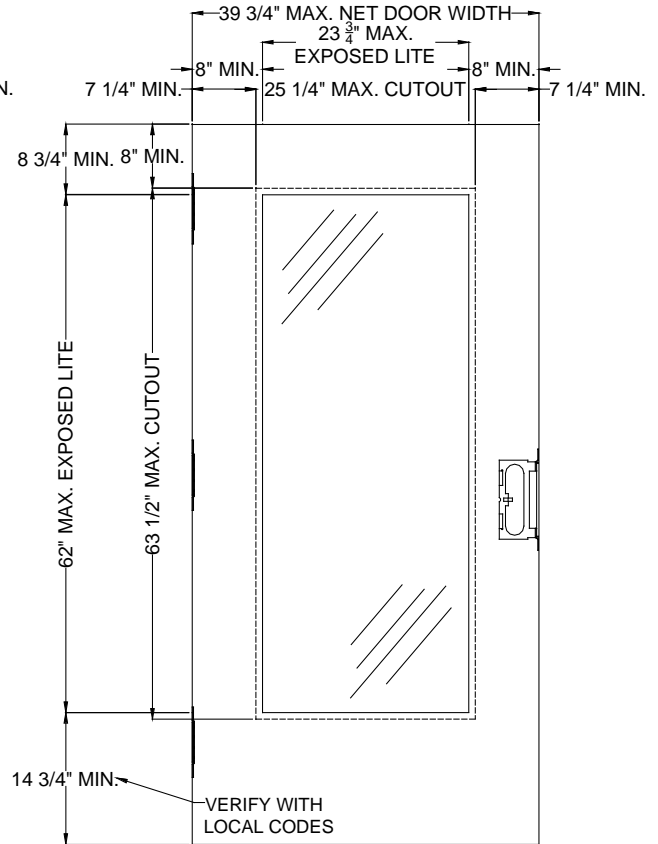


"FULL GLASS" DIMENSIONS 0.053" (MIN.) DOOR

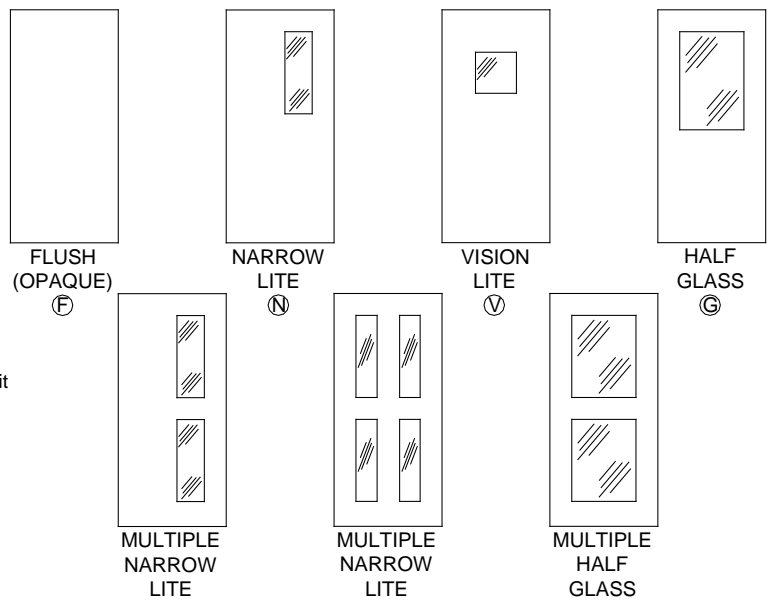
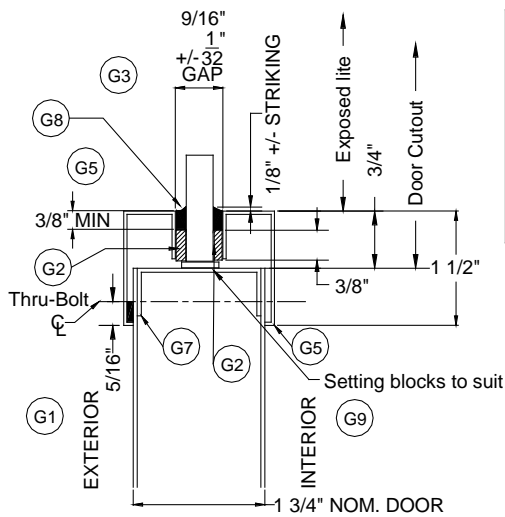


**GLAZING ASSEMBLY DETAIL**

"FULL GLASS" DIMENSIONS 0.042" (MIN.) DOOR



**ALTERNATE GLAZING CONFIGURATIONS**



**GENERAL NOTES**

- EXPOSED LITE SHALL NOT BE LOCATED LESS THAN 8 3/4" FROM TOP, 14 3/4" FROM BOTTOM OR 8" FROM DOOR EDGES
- MULTIPLE LITES SHALL NOT BE LOCATED LESS THAN 8" BETWEEN EXPOSED LITES



**SCOPE:**

This Tech Data covers the scope and Code compliance criteria for Black Mountain Door 60 PSF windstorm and impact rated doors and frames.

**PURPOSE:**

To provide the necessary information to evaluate or specify this important product. Extensive validation testing and evaluation was conducted by Intertek Testing Services (ITS) to include a broader range of hardware preparations, elimination of anchors at headers, and "component" substitutions.

**APPROVALS:**

Approvals and certifications have been consolidated under Intertek Testing Services (ITS). In addition, these doors and frames have been evaluated and approved for the **2007 Florida Building Code under FL3078.1 (FL3078 R2)** for use in and outside of the HVHZ, including missile impact. Previous approval included the **2004 Florida Building Code**.

**PRODUCT DESCRIPTION:**

Essentially standard 400 Series, 16 gage knocked-down frames and specifically designed 15LE Series 18 Gage doors with "opaque" and "Full Glass" type configurations were subjected to tests as defined by ANSI A250.13 (2003), the Florida Building Code, and related ASTM Standards. Tested assemblies utilized a wide variety of common builder's hardware. There were deviations from "stock" materials in anchor quantity/location, in hinge quantity/locations over 7'-2" height and in additional welding of doors in lock areas.

A series of single 3'-4" x 8'-0" units were tested. The 3'-4" width represents a common unit of exit width. In addition to "opaque" doors, tests included "Full Glass" doors equipped with glazing kits as described in TD # L-23.3. Stile and top rail sizes were established to allow the impact points (6" down and 6" from edge) to impact the door surface and to eliminate interference between the glazing kit and lever lock trim. Assemblies were tested WITHOUT the aid of stepped thresholds or weatherstripping "cushions".

**TEST PROTOCOLS:**

Assemblies were physically tested to recognized test protocols at ITS in Middleton, Wisconsin. These tests included the following:

- Florida Building Code TAS 201-202-203 (1994), including "forced entry".
- ANSI A250.13 (2003).
- ASTM E330 (uniform structural load) and ASTM E1886/1996 (impact and cyclic pressure).
- Air infiltration and water penetration tests were not conducted since our purpose was the evaluation of doors, frames, and anchoring systems.

**RELEVANCE OF COMPONENT APPROVALS and ANSI A250.13 (2003):**

The 2004 Edition of the Florida Building Code incorporates (in paragraph 1609.1.4.2 and paragraph 1714.5.3.3.2) a reference to a new ANSI Standard A250.13 (2003). This Standard creates a method of testing and rating **components** rather than **assemblies** utilizing recognized Standards in addition to tests specific to individual components. Component approval means (for example) that the door may be used in an existing frame deemed suitable by the Authority Having Jurisdiction (AHJ). More importantly, it allows the use of approved (and rated) hardware other than what was tested. The use of substitute hardware **may** maintain or reduce the rating of the assembly, but **shall not** increase the rating. It does, however, allow for greater flexibility in choice of hardware.



---

**TEST DESCRIPTION:**

Structural load testing confirmed that the assembly withstood pressure of +/-90 lbs/square foot (psf). Using the customary allowance for a 1.5 safety factor (2/3 of the "structural load" result), a design pressure of 60 psf. was established. The structural load and design pressure is based on the area of the entire assembly (3'-8"x 8'-2"), not the door area.

The assemblies were tested for large missile impact using the "flying 2X4" method. A 9 pound 2X4 propelled by an air cannon at a speed of 50 feet per second (about 34mph) impacted the assemblies, including the glazing, at various points. Although minor damage was done, the assemblies passed. Large missile success automatically assures small missile compliance.

The assemblies successfully passed the cyclic pressures in both directions (total of 9,000 cycles) up to the design pressure.

**PREVIOUS TEST EVALUATIONS:**

Based on successful testing previously conducted at ITS, Engineering Evaluations were conducted on a variety of wall anchors, hardware, and component approval for frames. Previous testing also established the 18 gage doors as Class II stiffness.

**CODE COMPLIANCE:**

Based on successful completion of these tests, a certification, labeling, and follow-up inspection program with ITS has been established. The third-party labeling fully complies with Florida Statutes #553.842 and 553.8425 and Rule 9B-72 Method 1(a). Results were also submitted to the Florida Building Commission division of the Florida Department of Community Affairs for review and approval. Approval to the **2007 Florida Building Code appears under FL3078.1 (FL3078 R2)** for use in and outside of the HVHZ, including missile impact.

These assemblies/components are rated for +/-60 psf design pressure. They do not comply with water penetration limits for **non-egress doors** in certain structures within the HVHZ without an overhang.

**SUMMARY:**

A short summary of this approval is as follows:

**FRAME:** 400 Series 16 gage (min) K-D or welded frame 3'-4" X 8'-0" (max opng) with depth from 5 3/4" through 12 3/4". Jamb & header faces are from 2" to 4" as long as the overall size does not exceed 3'-8" X 8'-2". Anchors are available for new or existing masonry, concrete, steel framing, or wood stud framing. Frames up to 7'-2" require FOUR anchors per jamb, frames over 7'-2" require FIVE per jamb.

**DOOR:** 15LE, 17LE, 25LE, or 27LE, 3'-4" X 8'-0" maximum with 18 gage minimum faces. Available elevations are FG, G, multi-light, N, V, or F. Side stiles are 8" (min), top rail is 8 3/4" (min) to exposed light.

**GLAZING:** A thru-bolted light kit with 3/4" stop height was developed with our Supplier to accommodate 5/16" (nom) impact resistant glazing and structural glazing sealant. The maximum exposed light size (based on 3'-4" X 8'-0" door) is 23 3/4" wide X 62" high.

**HARDWARE:** Hinges are 4 1/2" X 0.134" (min). Frames up to 7-2 in height require THREE hinges; frames over 7-2 require FOUR hinges. Lock preparations may be for approved and rated mortise or cylindrical locks and mortise or rim exit devices.

**AUXILIARY LOCKS:** Additional auxiliary locks are permitted since only the primary lock is used for testing. No additional lock box welding needed.



**IMPORTANT NOTES:**

- 1) In most cases, building codes require design pressure (in pounds per square foot) to be indicated at each individual door opening either on floor plans or on door schedules. This requirement **is not** to be noted as "wind speed". Actual structural wind loads on an individual door will vary by the location of the building with respect to adjacent terrain, nearby structures, distance from a coastline, location of doors in the building (corners or middle of walls), height above grade, in addition to wind velocity and direction. In addition, importance factors (different for schools, warehouses, police or fire facilities, etc.) will increase or decrease design pressures accordingly.
- 2) The design pressure is based on the area of the entire assembly, not the door area.
- 3) The approval to ANSI A250.13 (2003) allows the use of approved (and rated) hardware or components other than those tested. The use of substitute components **may** maintain or reduce the rating of the assembly, but **shall not** increase the rating. It does, however, allow for greater flexibility in design choices.

**MANDATORY HARDWARE:**

- **HINGES:** 4 1/2" minimum height ball-bearing steel with 0.134" minimum leaf thickness. Hinges applied with (4) #12-24 steel machine screws. Spacing (up to 7'-2"): 12 3/8" maximum from top or bottom to centerline AND 31 15/16" maximum on center. Spacing (over 7'-2"): 12 3/8" maximum from top or bottom to centerline AND 25 15/16" maximum on center. (Tested Hager #BB1279 to qualify use of heavier hinges as dictated by door weight or frequency of use.)
- **MORTISED STRIKE:** ANSI 4 7/8" steel strike applied with (2) #12-24 steel machine screws. Location: 45 11/16" maximum from bottom of frame to centerline.
- **RIM-MOUNTED STRIKE:** Hardware Manufacturer's strike as tested and approved for design load. Location: 45 11/16" maximum from bottom of frame to centerline.
- **CYLINDRICAL LOCK:** BHMA Grade 1 type with thru bolted lever or knob trim and 3/4" latch throw. Location: To align with mortised strike. (Tested BEST 9K Series with 3/4" throw).
- **MORTISE LOCK:** BHMA Grade 1 type with thru bolted lever or knob, sectional or escutcheon trim and 3/4" latch throw. Location: To align with mortised strike. (Performance of single point latch of cylindrical lock confirms deadbolt is not required). (Tested BEST 40H Series).
- **RIM EXIT DEVICE:** BHMA Grade 1 type touch bar or crossbar device with 3/4" minimum latchbolt projection. Location: To align with rim mounted strike. (Tested Precision HC2100 with S300 strike and S1447 interlock).
- **MORTISE EXIT DEVICE:** BHMA Grade 1 type touch bar or crossbar device with 3/4" latch throw. Location: To align with mortised strike. (Performance of mortised and cylindrical single point locks and rim exit device justifies this variation).

**GLAZING COMPONENTS:**

A full description and details of the tested kit is on Tech Data L-23.3. Therefore, it is not duplicated here. The kit is available from Air Louvers as model VLFIG-HRC.

The tested glazing material was "StormGlass" by Oldcastle Glass in a 5/16" configuration (two layers of 1/8" heat strengthened glazing separated by 0.075" StormGlass interlayer. The glazing tape, setting blocks, and structural glazing sealant are as described on TD L-23.3.

**FURTHER DETAILS:**

Further information is published (for those with access) in the ITS SpecDirect system at [www.spec-direct.com](http://www.spec-direct.com). Details are also included on the Florida Building Commission website at [www.floridabuilding.org](http://www.floridabuilding.org) under FL3078 R02 (FL3078.1).



**SCOPE:**

This Tech Data covers the scope and Code compliance criteria for Black Mountain Door 45 PSF windstorm and impact rated doors and frames.

**PURPOSE:**

To provide the necessary information to evaluate or specify this important product. Extensive validation testing and evaluation was conducted by Intertek Testing Services (ITS) to include a broader range of hardware preparations, elimination of anchors at headers, and "component" substitutions.

**APPROVALS:**

Approvals and certifications have been consolidated under Intertek Testing Services (ITS). In addition, these doors and frames have been evaluated and approved for the **2007 Florida Building Code under FL3078.2 (FL3078 R2)** for use in and outside of the HVHZ, including missile impact. Previous approval included the **2004 Florida Building Code**.

**PRODUCT DESCRIPTION:**

Essentially standard 400 Series, 16 gage knocked-down frames and specifically designed 15LE Series 18 Gage doors with "opaque" and "Full Glass" type configurations were subjected to tests as defined by ANSI A250.13 (2003), the Florida Building Code, and related ASTM Standards. Tested assemblies utilized a wide variety of common builder's hardware. There were deviations from "stock" materials in anchor quantity/location and in additional welding of doors in lock areas.

A series of double 6'-0" x 7'-2" units were tested. In addition to "opaque" doors, tests included "Full Glass" doors equipped with glazing kits as described in TD # L-23.3. Stile and top rail sizes were established to allow the impact points (6" down and 6" from edge) to impact the door surface and to eliminate interference between the glazing kit and lever lock trim.

Assemblies were tested WITHOUT the aid of stepped thresholds or weatherstripping "cushions".

**TEST PROTOCOLS:**

Assemblies were physically tested to recognized test protocols at ITS in Middleton, Wisconsin. These tests included the following:

- Florida Building Code TAS 201-202-203 (1994), including "forced entry".
- ANSI A250.13 (2003).
- ASTM E330 (uniform structural load) and ASTM E1886/1996 (impact and cyclic pressure).
- Air infiltration and water penetration tests were not conducted since our purpose was the evaluation of doors, frames, and anchoring systems.

**RELEVANCE OF COMPONENT APPROVALS and ANSI A250.13 (2003):**

The 2004 Edition of the Florida Building Code incorporates (in paragraph 1609.1.4.2 and paragraph 1714.5.3.3.2) a reference to a new ANSI Standard A250.13 (2003). This Standard creates a method of testing and rating **components** rather than **assemblies** utilizing recognized Standards in addition to tests specific to individual components. Component approval means (for example) that the door may be used in an existing frame deemed suitable by the Authority Having Jurisdiction (AHJ). More importantly, it allows the use of approved (and rated) hardware other than what was tested. The use of substitute hardware **may** maintain or reduce the rating of the assembly, but **shall not** increase the rating. It does, however, allow for greater flexibility in choice of hardware.



**TEST DESCRIPTION:**

Structural load testing confirmed that the assembly withstood pressure of +/-67.5 lbs/square foot (psf). Using the customary allowance for a 1.5 safety factor (2/3 of the "structural load" result), a design pressure matching the original 45psf. was established. The structural load and design pressure is based on the area of the entire assembly, not the door area.

The assemblies were tested for large missile impact using the "flying 2X4" method. A 9 pound 2X4 propelled by an air cannon at a speed of 50 feet per second (about 34mph) impacted the assemblies, including the glazing, at various points. Although minor damage was done, the assemblies passed. Large missile success automatically assures small missile compliance.

The assemblies successfully passed the cyclic pressures in both directions (total of 9,000 cycles) up to the design pressure.

**PREVIOUS TEST EVALUATIONS:**

Based on successful testing previously conducted at ITS, Engineering Evaluations were conducted on a variety of wall anchors, hardware, and component approval for frames. Previous testing also established the 18 gage doors as Class II stiffness.

**CODE COMPLIANCE:**

Based on successful completion of these tests, a certification, labeling, and follow-up inspection program with ITS has been established. The third-party labeling fully complies with Florida Statutes #553.842 and 553.8425 and Rule 9B-72 Method 1(a). Results were also submitted to the Florida Building Commission division of the Florida Department of Community Affairs for review and approval. Approval to the **2007 Florida Building Code appears under FL3078.2 (FL3078 R2)** for use in and outside of the HVHZ, including missile impact.

These assemblies/components are rated for +/- 45psf design pressure. They do not comply with water penetration limits for **non-egress doors** in certain structures within the HVHZ without an overhang.

**SUMMARY:**

**FRAME:** 400 Series 16 gage (min) K-D or welded double door frame 6'-0" X 7'-2" (max opening) with depth from 5 3/4" through 12 3/4". Jamb & header faces are from 2" to 4" as long as the overall size does not exceed 6'-4" X 7'-4". Anchors are available for new or existing masonry, concrete, steel framing, or wood stud framing. Frames require FOUR anchors per jamb, none at header.

Single frames up to 3'-0" X 7'-2" (opening) and 3'-4" X 7'-4" (overall) are also permitted.

**DOORS:** 15LE, 17LE, 25LE, or 27LE, each 3'-0" X 7'-2" maximum with 18 gage minimum faces. Available elevations are FG, G, multi-light, N, V, or F. Side stiles are 8" (min), top rail is 8 3/4" (min) to exposed light. Single doors up to 3'-0" X 7'-2" are also permitted.

**GLAZING:** A thru-bolted light kit with 3/4" stop height was developed with our Supplier to accommodate 5/16" (nom) impact resistant glazing and structural glazing sealant. The maximum exposed light size (based on 3-0 X 7-2 door) is 19 3/4" wide X 62" high.

**HARDWARE:** Hinges are 4 1/2" X 0.134" (min), 3 per jamb. Lock preparations may be for approved and rated mortise or cylindrical locks, mortise, rim, surface vertical rod, and concealed vertical rod exit devices.

Flushbolts **are not** permitted due to failure to achieve and maintain structural load even with a variety of stainless steel rod substitutions. Approved and rated surface bolts must be used instead.

**AUXILIARY LOCKS:** Additional auxiliary locks are permitted since only the primary lock is used for testing. No additional lock box welding needed.



**IMPORTANT NOTES:**

- 1) In most cases, building codes require design pressure (in pounds per square foot) to be indicated at each individual door opening either on floor plans or on door schedules. This requirement **is not** to be noted as "wind speed". Actual structural wind loads on an individual door will vary by the location of the building with respect to adjacent terrain, nearby structures, distance from a coastline, location of doors in the building (corners or middle of walls), height above grade, in addition to wind velocity and direction. In addition, importance factors (different for schools, warehouses, police or fire facilities, etc.) will increase or decrease design pressures accordingly.
- 2) The design pressure is based on the area of the entire assembly, not the door area.
- 3) The approval to ANSI A250.13 (2003) allows the use of approved (and rated) hardware or components other than those tested. The use of substitute components **may** maintain or reduce the rating of the assembly, but **shall not** increase the rating. It does, however, allow for greater flexibility in design choices.

**MANDATORY HARDWARE:**

- HINGES: 4 1/2" minimum height ball-bearing steel with 0.134" minimum leaf thickness. Hinges applied with (4) #12-24 steel machine screws. Spacing: 12 3/8" maximum from top or bottom to centerline AND 31 15/16" maximum on center. (Tested Hager #BB1279 to qualify use of heavier hinges as dictated by door weight or frequency of use.)
- MORTISED STRIKE: ANSI 4 7/8" steel strike applied with (2) #12-24 steel machine screws. Location: 45 11/16" maximum from underside of header or bottom of frame to centerline.
- RIM-MOUNTED STRIKE: Hardware Manufacturer's strike as tested and approved for design load. Location: 45 11/16" maximum from underside of header or bottom of frame to centerline.
- CYLINDRICAL LOCK: BHMA Grade 1 type with thru bolted lever or knob trim and 3/4" latch throw. Location: To align with mortised strike. (Tested BEST 9K Series with 3/4" throw).
- MORTISE LOCK: BHMA Grade 1 type with thru bolted lever or knob, sectional or escutcheon trim and 3/4" latch throw. Location: To align with mortised strike. (Performance of single point latch of cylindrical lock confirms deadbolt is not required). (Tested BEST 40H Series).
- MORTISE EXIT DEVICE: BHMA Grade 1 type touch bar or crossbar device with 3/4" latch throw. Location: To align with mortised strike. (Performance of mortised and cylindrical single point locks and rim exit device justifies this variation).
- RIM EXIT DEVICE & MULLION: BHMA Grade 1 type touch bar or crossbar device with 3/4" minimum latchbolt projection. Location: To align with rim mounted strike on hardware mullion. (Tested Precision HC2100 with S300 strikes, S1447 interlocks, HC822 mullion without liner, ST989 stabilizers, MC822 cap, MB822 base, and MCS822 spacer).
- SURFACE VERTICAL ROD EXIT DEVICE(S): BHMA Grade 1 type touch bar or crossbar device with 3/4" minimum latchbolt projection. May be two SVR or SVR X CVR. (Tested Precision HC2200 Series).
- CONCEALED VERTICAL ROD EXIT DEVICES: BHMA Grade 1 type touch bar or crossbar device with 5/8" minimum latchbolt projection. May be two SVR or SVR X CVR. (Tested Precision HC2800 Series).
- SURFACE BOLTS: Sargent 988 top and bottom with surface angle strike at top and flat strike at bottom mounted to door and frame with 1/4"-20 steel machine screws. Thru-bolts/sex bolts must be used on un-reinforced doors.



**ASTRAGAL CONFIGURATIONS:**

- Mortise lock, cylindrical lock, or mortise exit device X surface bolts: Black Mountain Door wrap-around overlapping astragal welded to inactive door.
- Two rim exit devices X hardware mullion: None required.
- Surface or concealed vertical rod exit devices: Black Mtn's U-shaped wrap around astragal welded to each door.
- Any "both active" handing: Black Mountain Door U-shaped wrap around astragal welded to each door.
- Single door with Mortise lock, cylindrical lock, or mortise exit device: None required.
- Single door with surface or concealed vertical rod exit device: Black Mountain Door U-shaped wrap around astragal welded to door.

Note: Inactive doors with surface bolts may be YBP doors with additional lock box welding and wrap-around overlapping astragal welded to door.

**GLAZING COMPONENTS:**

A full description and details of the tested kit is on Tech Data L-23.3. Therefore, it is not duplicated here. The kit is available from Air Louvers as model VLFIG-HRC.

The tested glazing material was "StormGlass" by Oldcastle Glass in a 5/16" configuration (two layers of 1/8" heat strengthened glazing separated by 0.075" StormGlass interlayer. The glazing tape, setting blocks, and structural glazing sealant are as described on TD L-23.3.

**FURTHER DETAILS:**

Further information is published (for those with access) in the ITS SpecDirect system at [www.spec-direct.com](http://www.spec-direct.com). Details are also included on the Florida Building Commission website at [www.floridabuilding.org](http://www.floridabuilding.org) under FL3078 R02 (FL3078.2).



**SCOPE:**

This Tech Data defines how Black Mountain Door Series 61LE and 63LE (6 & 8 panel) doors may be used as windstorm rated components.

**PURPOSE:**

To familiarize the reader with a new and interesting option to “opaque” windstorm rated doors.

**DESCRIPTION:**

While conducting extensive windstorm testing at Intertek Testing Services (ITS), Model 61LE, 18 gage, 6-panel doors were subjected to evaluation and testing as an alternate to FLUSH (opaque) styles.

These tests included the stiffness test described in ANSI A250.13 (2003) and impact testing in the thinnest cross-section of the door per Florida TAS-201-1994.

**RESULTS:**

Stiffness testing confirmed that the 18 gage embossed door was equivalent to the corresponding 18 gage “opaque” door as a Class II stiffness.

“Large missile” impacts were delivered to the door using the 9 pound 2X4 propelled from an air cannon at 50 feet per second (about 34 mph). The impacts included the thinnest cross-section (the perimeter of the embossed area) where the core is only about 1” thick. There was no difference from an equivalent opaque or glazed door.

Engineering Evaluations were conducted by ITS based on the results and equivalence.

**SUMMARY AND IMPORTANT NOTES:**

- Based on ANSI A250.13 (2003) included in the Florida Building Code, the 61LE and 63LE (6 & 8 panel) doors may be substituted for opaque doors WITHOUT affecting the design pressure or structural load integrity.
- This door design has been evaluated and approved for the **2007 Florida Building Code under FL3078.3 (FL3078 R2)** for use in and outside of the HVHZ, including missile impact. Previous approval included the **2004 Florida Building Code**.
- Embossed doors cannot contain glazing since their stile dimensions will not allow compliance with minimum stile/rail dimensions of glazed doors.
- Available door sizes and gages are as follows:
  - 6-panel design, 18 or 16 gage: 3'-4" X 7'-0" maximum.
  - 6-panel design, 18 gage: 3'-6" X 7'-0" maximum.
  - 8-panel design, 18 or 16 gage: 3'-0" X 7'-0" maximum.
- Since doors cannot contain glazing, they may be factory prefinished (color painted).
- This applies to P6 and P8 styles ONLY.





**SCOPE:**

This Tech Data summarizes the windstorm rated assemblies and components available from Black Mountain Door under the FIREDOOR brand name.

**PURPOSE:**

To act as a condensed reference for the reader. It is intended to summarize the FIREDOOR approvals listed under the Miami-Dade Building Code Compliance Office (BCCO) and the Florida Department of Community Affairs Building Codes and Standards (FBC). As a summary, it is not intended to replace NOA or FL publications.

**DESCRIPTION and APPROVALS:**

As the leading manufacturer of hollow metal doors and frames in the South Florida area, FIREDOOR has conducted extensive windstorm testing along with calculations based on realistic engineering practices by an independent Florida licensed firm. Testing was conducted in accordance with Florida protocols TAS 201-202-203. These are essentially similar to ASTM E-330, E-1886, and E-1996. The Miami-Dade BCCO is used as the certification and inspection entity due to the close proximity to FIREDOOR.

Doors, frames, hardware, glazing, anchors, etc. are described in detail on the BCCO Notices of Acceptance (NOAs), therefore details are not reproduced in this Tech Data document.

Being based in Florida's High Velocity Hurricane Zone (HVHZ) virtually all assemblies and components are approved for use in and outside of the HVHZ, including large and small missile impact.

The charts and notes following are intended to summarize the products available keeping in mind these important notes:

- In most cases, building codes require design pressure (in pounds per square foot) to be indicated at each individual door opening either on floor plans or on door schedules. This requirement **is not** to be noted as "wind speed". Actual structural wind loads on an individual door will vary by the location of the building with respect to adjacent terrain, nearby structures, distance from a coastline, location of doors in the building (corners or middle of walls), height above grade, in addition to wind velocity and direction. In addition, importance factors (different for schools, warehouses, police or fire facilities, etc.) will increase or decrease design pressures accordingly.
- The design pressure is based on the area of the entire assembly, not the door area.
- The Florida Building Code, and where permitted by local jurisdiction, recognizes ANSI A250.13 (2003). This Standard allows the use of approved (and rated) hardware or components other than those tested. The use of substitute components **may** maintain or reduce the rating of the assembly, but **shall not** increase the rating.

**FRAME ANCHORS:**

Testing, engineering calculations, and certification reviews have allowed the use of the following anchor types for all frames. Design pressures will vary based on the type of anchor, therefore the installer must assure that the correct anchor for DP is used. The following abbreviations are used throughout this TD:

**A.** 5/16" diameter ULTRACON by "ELCO" with 1 1/4" minimum embed into concrete or masonry.

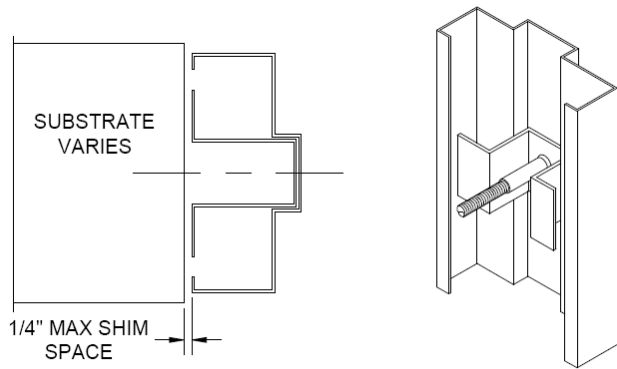
**B.** 3/8" diameter carbon steel sleeve anchor by "HILTI" with 1 5/8" minimum embed into concrete or masonry.

**C.** 3/8" diameter grade 2 steel machine bolts or sheet metal screws into steel or aluminum substrates at least 1/8" thick.

**MASONRY "TEE" anchors, 10" long, are permitted where noted.**

A-B-C anchors are used with welded-in spacers or welded-in pipe sleeves.





**TYPICAL ANCHOR SPACER**

**STORM GUARD 4080-F HIGH PERFORMANCE  
NOA 08-0310.02, FL 6872.2, reference drawing W02-94  
PENDING NOA 09-0923.15**

Single only, Outswing, Large & Small Missile Impact, HVHZ.

**Frames:** Series FR, Face welded, 16 gage (0.062" min.), 5 3/4" depth only, 2" faces only.

**Doors:** Series 25WE and 27WE, 16 gage (0.060" min.) faces, opaque (Flush) only.

**Hardware:** Butt hinges (4 1/2" X 0.134 min.) or Roton 780/224 continuous.

Securitech 3-point mortise lock or mortise exit device.

DP	SGL	DBL	DOOR OPNG SIZE ft-in	MAX OVERALL SIZE ft-in	ANCHOR TYPE	JAMB ANCH	HEAD
						MAX OC	ANCH QTY
200	▪		3-2 X 8-0	3-6 X 8-2	A-B	18"	0
200	▪		4-0 X 8-0	4-4 X 8-2	C	18"	0
192	▪		3-8 X 8-0	4-0 X 8-2	B	18"	0
182	▪		3-8 X 8-0	4-0 X 8-2	A	12"	0
177	▪		4-0 X 8-0	4-4 X 8-2	B	18"	0
168	▪		4-0 X 8-0	4-4 X 8-2	A	12"	0
161.8	▪		2-8 X 8-0	3-0 X 8-2	A	18"	0
138.6	▪		3-2 X 8-0	3-6 X 8-0	A	18"	0
121.3	▪		3-8 X 8-0	4-0 X 8-2	A	18"	0
112	▪		4-0 X 8-0	4-4 X 8-2	A	18"	0

**STORM GUARD 4080-F HIGH PERFORMANCE**

**NOA 04-0923.02 & 05-1129.04, FL 6736.3, reference drawing W04-31**

**NOA 09-0923.09**

Single only, Outswing, Large & Small Missile Impact, HVHZ. May be Water Penetration rated with proper threshold and gaskets.

**Frames:** Series FR Face Welded, 16 gage (0.058" min.), 5 3/4" depth only, 2" faces only.

**Doors:** Series 07WE, 14 gage (0.067" min.) faces, opaque (Flush) only.

**Hardware:** Butt hinges (4 1/2" X 0.134 min.), 4 at 8-0, or Z955 St/Stl Cam Lift Hinge, 3 at 8-0. Securitech 3-point mortise lock or mortise exit device.

DP	SGL	DBL	DOOR OPNG SIZE ft-in	MAX OVERALL SIZE ft-in	ANCHOR TYPE	JAMB ANCH	HEAD
						MAX OC	ANCH QTY
114	▪		3-11 X 8-0	4-3 X 8-2	B-C	25 1/2"	1
114	▪		3-11 X 8-0	4-3 X 8-2	A	16"	1
114	▪		3-6 X 8-0	3-10 X 8-2	A	20	1
114	▪		3-0 X 8-0	3-4 X 8-2	A	25 1/2"	1
109.2	▪		3-11 X 8-0	4-3 X 8-2	A	20"	1
97.9	▪		3-6 X 8-0	3-10 X 8-2	A	25 1/2"	1
85.6	▪		3-11 X 8-0	4-3 X 8-2	A	25 1/2"	1

**STORM GUARD 4080-F HIGH PERFORMANCE**

**NOA 04-0923.02 & 05-1129.04, FL 6736.3, reference drawing W04-31**

**NOA 09-0923.09**

Two Singles with Welded Mullion Between, Out-swing, Large & Small Missile Impact, HVHZ. May be Water Penetration rated with proper threshold and gaskets.

**Frames:** Series FR Face Welded, 16 gage (0.058" min.), 5 3/4" depth only, 2" faces only.

**Doors:** Series 07WE, 14 gage (0.067" min.) faces, opaque (Flush) only.

**Hardware:** Butt hinges (4 1/2" X 0.134 min.), 4 at 8-0, or Z955 St/Stl Cam Lift Hinge, 3 at 8-0. Securitech 3-point mortise lock or mortise exit device.

DP	SGL	DBL	DOOR OPNG SIZE ft-in	MAX OVERALL SIZE ft-in	ANCHOR TYPE	JAMB ANCH	HEAD
						MAX OC	ANCH QTY
114	mull		2)3-11 X 8-0	8-4 X 8-2	B-C	25 1/2"	6
114	mull		2)3-11 X 8-0	8-4 X 8-2	A	16"	8
114	mull		2)3-6 X 8-0	7-6 X 8-2	A	20	8
114	mull		2)3-0 X 8-0	6-6 X 8-2	A	25 1/2"	6
109.2	mull		2)3-11 X 8-0	8-4 X 8-2	A	20"	8
97.9	mull		2)3-6 X 8-0	7-6 X 8-2	A	25 1/2"	8
85.6	mull		2)3-11 X 8-0	8-4 X 8-2	A	25 1/2"	8



**STORM GUARD 8080-F**

**NOA 06-0512.04, FL 7654, reference drawing W06-31**

**NOA 09-0923.12**

Single or double, Out-swing, Large & Small Missile Impact, HVHZ. May be Water Penetration rated with proper threshold and gaskets.

**Frames:** Series FR Face Welded, 16 gage (0.053" min.), 5 3/4" to 8 3/4" depth, 1 1/4" to 2" faces at jambs, 1 1/4" to 4" faces at head. Masonry Tee anchors permitted.

**Doors:** Series 25WE, 27WE, 25LS, 27LS, 07WE, or 07LS, 18 gage (0.045" min.) faces, opaque (Flush) only. Insulation at 07WE and 07LS may be expanded polystyrene (EPS) or batt-type insulation. Flat astragals required both sides of double doors. Split astragals required both leaves of double doors with exit devices.

**Hardware:** Butt hinges (4 1/2" X 0.134 min.). Cylindrical lock plus auxiliary deadbolt, mortise lock with deadbolt function, approved flushbolts (at dbl doors) with 3/4" engagement, vertical rod exit devices, or rim exit devices. All latchbolts AND deadbolts MUST be engaged to maintain DP.

**Mullion:** Rim exit devices at double doors require reinforced VD 9954 removable mullion. Without reinforcing 90 psf up to 6-0 X 7-6 or 7-0 X 7-0 door opening.

DP	SGL	DBL	DOOR OPNG SIZE ft-in	MAX OVERALL SIZE ft-in	ANCHOR TYPE	JAMB ANCH	HEAD
						MAX OC	ANCH QTY
90	.		4-0 X 8-0	4-4 X 8-4	A-B-C	19 1/8"	0
90		.	8-0 X 8-0	8-4 X 8-4	A-B-C	19 1/8"	3
90	.		4-0 X 8-0	4-4 X 8-4	MAS TEE	16"	0
90		.	8-0 X 8-0	8-4 X 8-4	MAS TEE	16"	0

**STORM GUARD 3070-FV (Also includes opaque and 6-panel)**

**NOA 09-0923.08, reference drawing W07-82**

Single only, Out-swing, Large & Small Missile Impact, HVHZ. May be Water Penetration rated with proper threshold and gaskets.

**Frames:** Series FR Face Welded, 16 gage (0.053" min.), 5 3/4" to 8 3/4" depth, 1 1/4" to 2" faces at jambs, 1 1/4" to 4" faces at head. Masonry Tee anchors permitted.

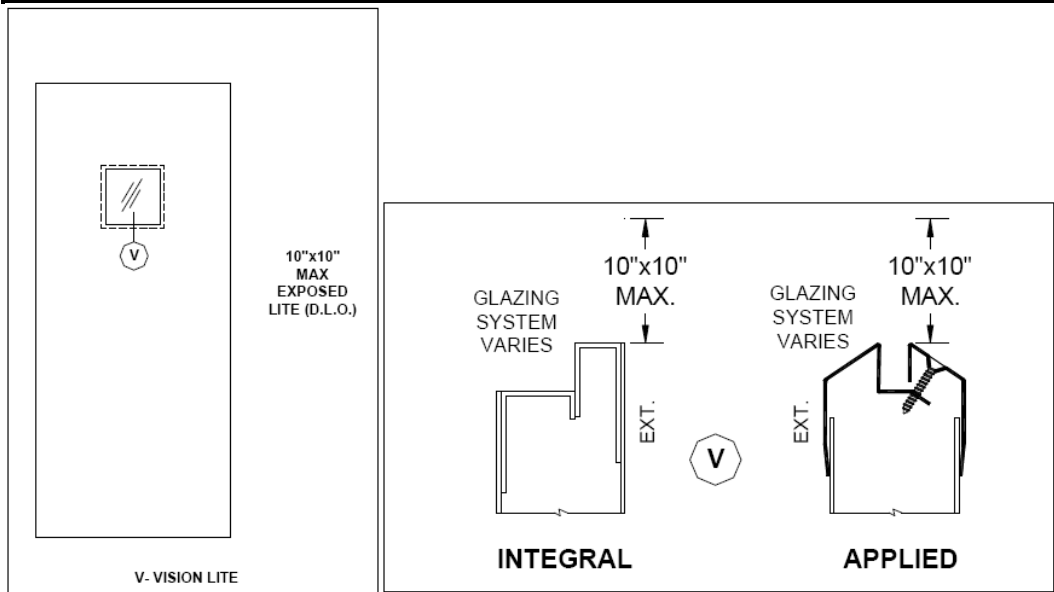
**Doors:** Series 25WE, 27WE, 25LS, 27LS, 07WE, 07LS, 61LS, and 63LS, 18 gage (0.045" min.) faces. Doors may be opaque (Flush), FV (vision light), or 6-panel embossed. Insulation at 07WE and 07LS is batttype insulation.

**Hardware:** Butt hinges (4 1/2" X 0.134 min.). Cylindrical lock plus auxiliary deadbolt, mortise lock with deadbolt function, vertical rod exit device, or rim exit device. All latchbolts AND deadbolts MUST be engaged to maintain DP.

**Vision and Glazing:** Vision may be either Integral (Flush) Molding or Air Louvers kit with maximum exposed light size 10" X 10". Loose glazing beads are on the exterior side for impact resistance purposes. Glazing is "LEXAN" with Structural Sealant.

DP	SGL	DBL	DOOR OPNG SIZE ft-in	MAX OVERALL SIZE ft-in	ANCHOR TYPE	JAMB ANCH	HEAD
						MAX OC	ANCH QTY
110	.		3-0 X 7-0	3-4 X 7-4	A-B-C	22"	0
110	.		3-0 X 7-0	3-4 X 7-4	MAS TEE	24"	0





**STORM GUARD 6070-F**

**NOA 05-0426.04 & 05-1129.03, FL 6629, reference drawing W05-07**

**NOA 09-0923.10**

Single or double, Out-swing, Large & Small Missile Impact, HVHZ. May be Water Penetration rated with proper threshold and gaskets.

**Frames:** Series FR Face Welded, 16 gage (0.058" min.), 5 3/4" to 8 3/4" depth, 1 1/4" to 2" faces at jambs, 1 1/4" to 4" faces at head.

**Doors:** Series 25WE, 27WE, 25LS, 27LS, 07WE, or 07LS, 18 gage (0.045" min.) faces, opaque (Flush) only. Insulation at 07WE and 07LS is expanded polystyrene (EPS). Flat astragals required both sides of double doors.

**Hardware:** Butt hinges (4 1/2" X 0.134 min.). Cylindrical locks, approved flushbolts (at dbl doors) with 3/4" engagement (MUST be engaged to maintain DP).

DP	SGL	DBL	DOOR OPNG SIZE ft-in	MAX OVERALL SIZE ft-in	ANCHOR TYPE	JAMB ANCH	HEAD
						MAX OC	ANCH QTY
75	.		3-0 X 7-0	3-4 X 7-4	A-B-C	32"	0
75		.	6-0 X 7-0	6-4 X 7-4	A-B-C	32"	2

**STORM GUARD 3070-F (Also includes 6-panel)**

**NOA 05-1129-08 & 08-0820.16, FL 6629, reference drawing W05-09**

**NOA 09-0923.16**

Single ONLY, **INSWING** or out-swing, Large & Small Missile Impact, HVHZ. May be Water Penetration rated with proper threshold and gaskets.

**Frames:** Series FR Face Welded, 16 gage (0.058" min.), 5 3/4" to 8 3/4" depth, 1 1/4" to 2" faces at jambs, 1 1/4" to 4" faces at head.

**Doors:** Series 25WE, 27WE, 25LS, 27LS, 07WE, 07LS, 61LS, and 63LS, 18 gage (0.045" min.) faces, opaque (Flush) or 6-panel embossed. Insulation at 07WE and 07LS is expanded polystyrene (EPS).

**Hardware:** Butt hinges (4 1/2" X 0.134 min.). Cylindrical locks, rim exit devices (at outswing).

DP	SGL	DBL	DOOR OPNG SIZE ft-in	MAX OVERALL SIZE ft-in	ANCHOR TYPE	JAMB ANCH	HEAD
						MAX OC	ANCH QTY
75	.		3-0 X 7-0	3-4 X 7-4	A-B-C	32"	0



**STORM GUARD 8080-IL (FULL LOUVER)  
NOA 06-0222.10, FL 6973, reference drawing W06-01  
NOA 09-0923.12**

Single or double, Out-swing, Large & Small Missile Impact, HVHZ.

**Frames:** Series FR Face Welded, 16 gage (0.053" min.), 5 3/4" to 8 3/4" depth, 1 1/4" to 2" faces at jambs, 1 1/4" to 4" faces at head. Masonry Tee anchors permitted (see locations noted below).

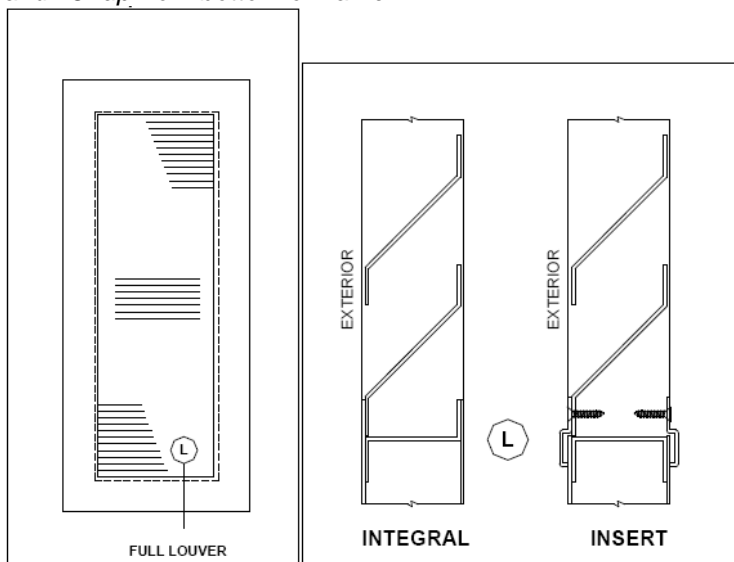
**Doors:** Series 25WE, 27WE, 25LS, 27LS, 07WE, or 07LS, 18 gage (0.045" min.) faces, opaque (Flush) only. Insulation at 07WE and 07LS may be expanded polystyrene (EPS) or batt-type insulation. Flat astragals required both sides of double doors.

**Louvers:** ZEE blade type, either 16 gage (0.053" min.) integral (welded into door) or 18 gage louver insert design. Maximum cutout for integral louver is 35 13/16" X 76"; maximum cutout for insert type louver is 36" X 72".

**Hardware:** Butt hinges (4 1/2" X 0.134 min.). Cylindrical lock plus auxiliary deadbolt or auxiliary padlock type hasp, approved flushbolts or surface bolts (at dbl doors) with 3/4" engagement. All deadbolts, hasps, and flush/surface bolts **MUST** be engaged to maintain DP.

DP	SGL	DBL	DOOR OPNG SIZE ft-in	MAX OVERALL SIZE ft-in	ANCHOR TYPE	JAMB ANCH	HEAD
						MAX OC	ANCH QTY
90	•		4-0 X 8-0	4-4 X 8-4	A-B-C	19 1/8"	0
90		•	8-0 X 8-0	8-4 X 8-4	A-B-C	19 1/8"	3
90	•		4-0 X 8-0	4-4 X 8-4	MAS TEE	##	0
90		•	8-0 X 8-0	8-4 X 8-4	MAS TEE	##	0

## Masonry Tee Anchors are to be located in block joints 8" and 16" down from top of frame, 8" and 48" up from bottom of frame.



**STORM GUARD 60701G (FULL GLASS DOORS with/without transoms)  
NOA 07-1019.06 & 07-0613.04, FL 6736.2, reference drawing W02-52  
NOA 09-0923.13**

Single or double, Outswing, Large & Small Missile Impact, HVHZ. May be Water Penetration rated with proper threshold and gaskets.

**Frames:** 3-sided Series FR Face Welded, 16 gage (0.058" min.), 5 1/8" minimum depth, 2" faces ONLY. Frames may be "storefront" frames detailed in a separate Tech Data.

**Doors:** Series 07WE, 16 gage (0.058" min.) faces, stiles, and rails. Doors may also be opaque (Flush). Insulation may be expanded polystyrene (EPS) or batt-type insulation. Flat astragals required both sides of double doors (one side where removable hardware mullion is used).

**Hardware:** Butt hinges (4 1/2" X 0.134 min.). Cylindrical lock plus auxiliary deadbolt, mortise lock with deadbolt function, approved flushbolts (at dbl doors) with 3/4" engagement, vertical rod exit devices, or rim exit devices. All latchbolts AND deadbolts MUST be engaged to maintain DP.

**Mullion:** Rim exit devices at double doors require VD 9954 removable mullion.

**Transom Panels:** Same construction as doors; field-installed on door side (exterior) with screws through steel angles at perimeter of transom opening. The use of a steel transom panel will maintain the +/- 75 Design Pressure.

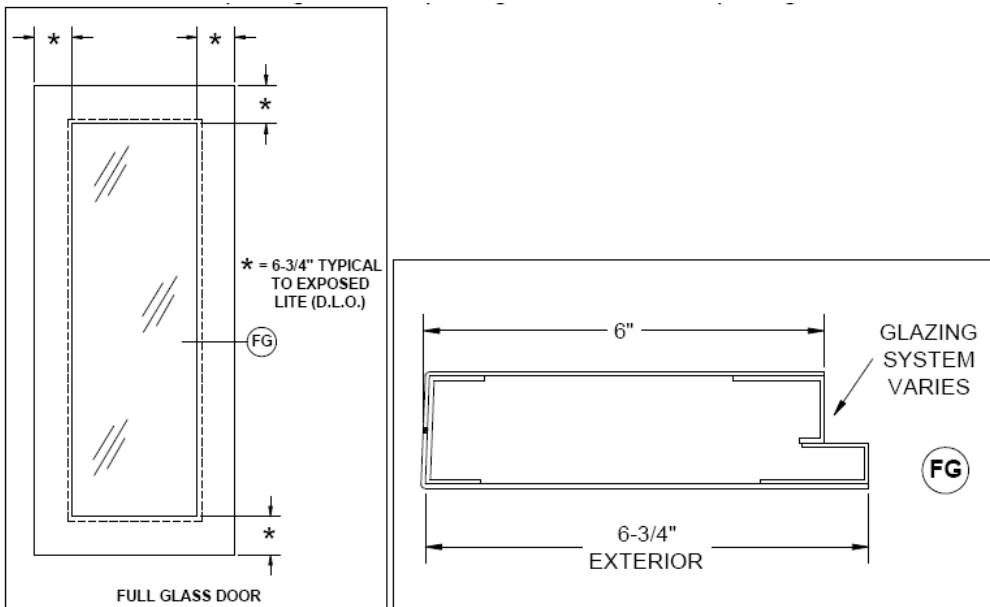
**Transom Bar:** Non-removable (welded to jambs), 16 gage (0.058" min.), 5 1/8" minimum depth, reinforced with continuous C5 channel, 2" face ONLY.

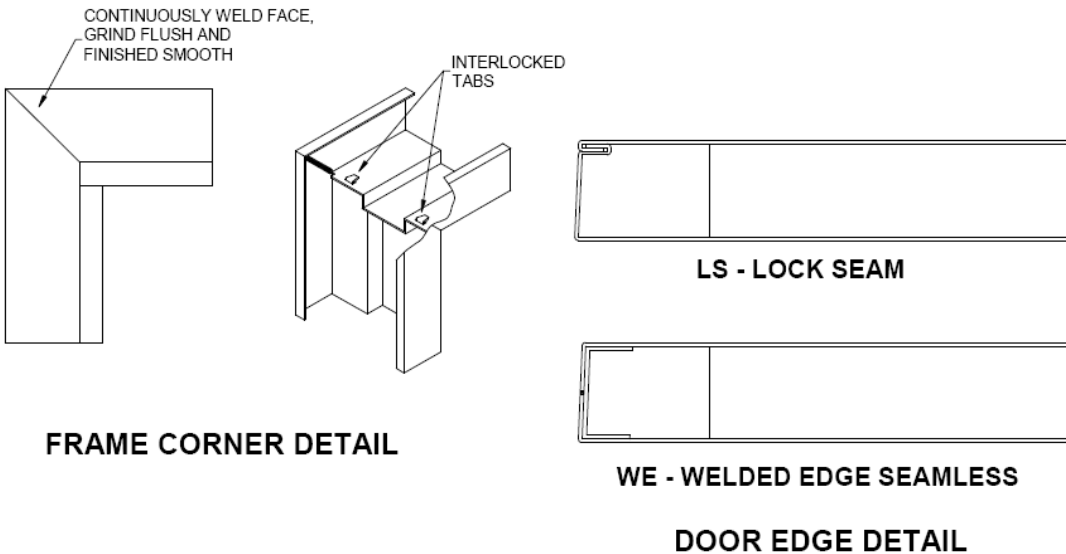
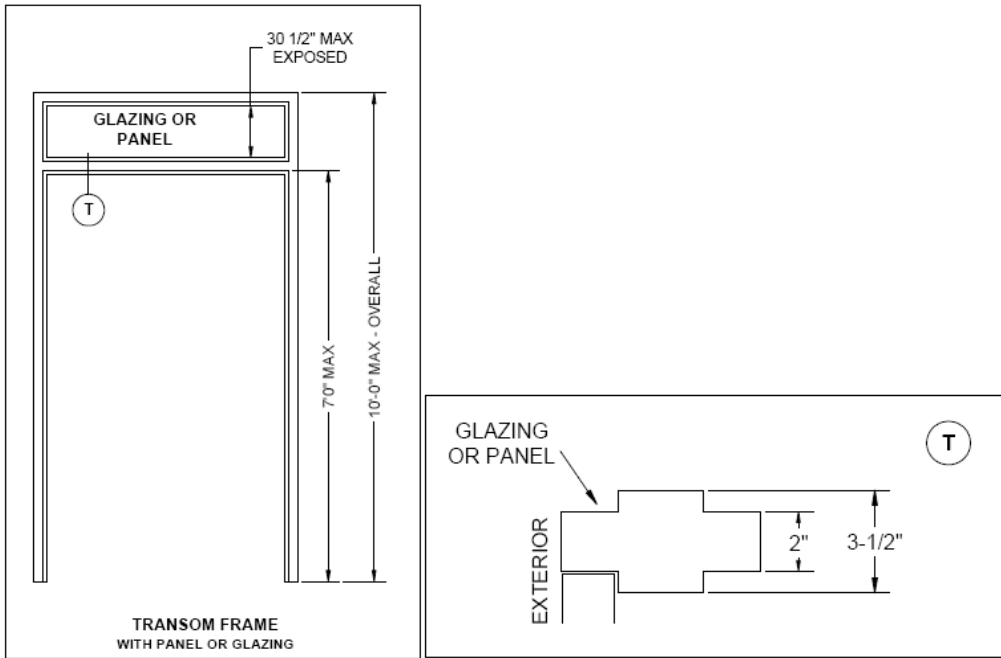
**Door Glazing:** Doors have an Integral (Flush) Molding with channel or angle shaped glazing beads on the interior side. A wide variety of glazing materials (too numerous to list here) will maintain the +/- 75 psf design pressure. Glazing is to be installed with a Structural Sealant.

**Transom Glazing:** Glazed transom frames have channel shaped glazing beads on the exterior side. A wide variety of glazing materials (too numerous to list here) will maintain the +/- 75 psf design pressure up to 60" X 24" or 70 1/2" X 21" exposed light (daylight opening). These variations are noted on the corresponding FL or NOA drawings. Glazing is to be installed with a Structural Sealant.

DP	SGL	DBL	DOOR OPNG SIZE ft-in	MAX OVERALL SIZE ft-in	ANCHOR TYPE	JAMB ANCH	HEAD
						MAX OC	ANCH QTY
75	▪		3-0 X 7-0	3-4 X 7-2	A-B-C	21"	2
75		▪	6-0 X 7-0	6-4 X 7-2	A-B-C	21"	4
75	▪		3-0 X 7-0	3-4 X 10-0	A-B-C	**21"/18"	2
75		▪	6-0 X 7-0	6-4 X 10-0	A-B-C	**21"/18"	3

**\*\* 21" maximum spacing at door opening; 18" maximum spacing at transom.**





**CERTIFICATION:**

This Tech Data may serve as a certification of compliance with the fabrication or testing Standards specifically referenced herein. For full details, signed documents, NOA provisions, etc. refer to the Miami-Dade Building Code Compliance or Florida Building Commission published approvals.



**SCOPE:**

This bulletin covers the availability and present criteria for Fire Door Frames butted (instead of wrapping) drywall construction.

**PURPOSE:**

To provide the necessary information regarding this feature.

**DESCRIPTION:**

As you are aware, NFPA-80 currently prohibits door frames from butting steel and/or drywall partitions. Resulting from a recent H.M.M.A. fire test, Black Mountain Door can now provide 400 and 4400 frames per this condition based on anchor systems shown below. Frames fabricated by Black Mountain Door will have the "hole plug" mounting.

*Sizes available are:*

400: 4'0" x 10'0" (SGL), 8'0" x 10'0" (DBL)

4400: 8'0" x 10'0"

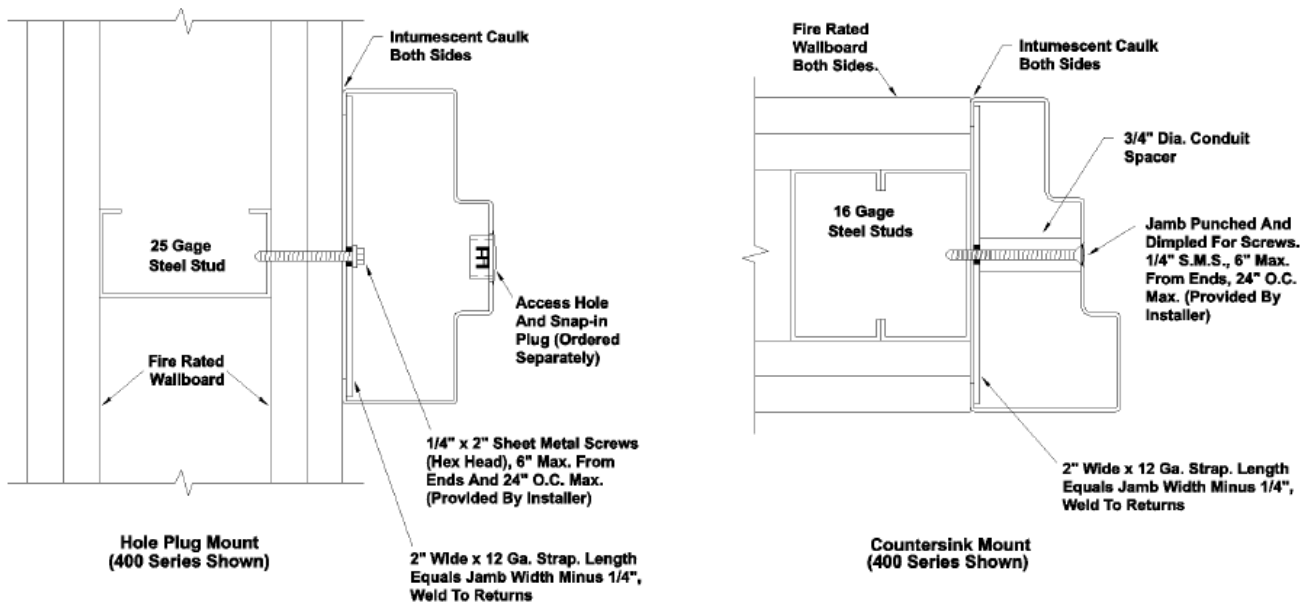
*Dimensional criteria are as follows:*

Faces 4400 = 1 3/8" / 2 5/8" 400 = 2"

Soffit 1 1/4" Min. - Stop Ht. 5/8"

Throat Size 3 3/4" Min. - Jamb Depth 4 3/4" Min.

\* Specify "Hole Plug Mount" on your order for headers or jambs having this condition. Price anchors like "COW".



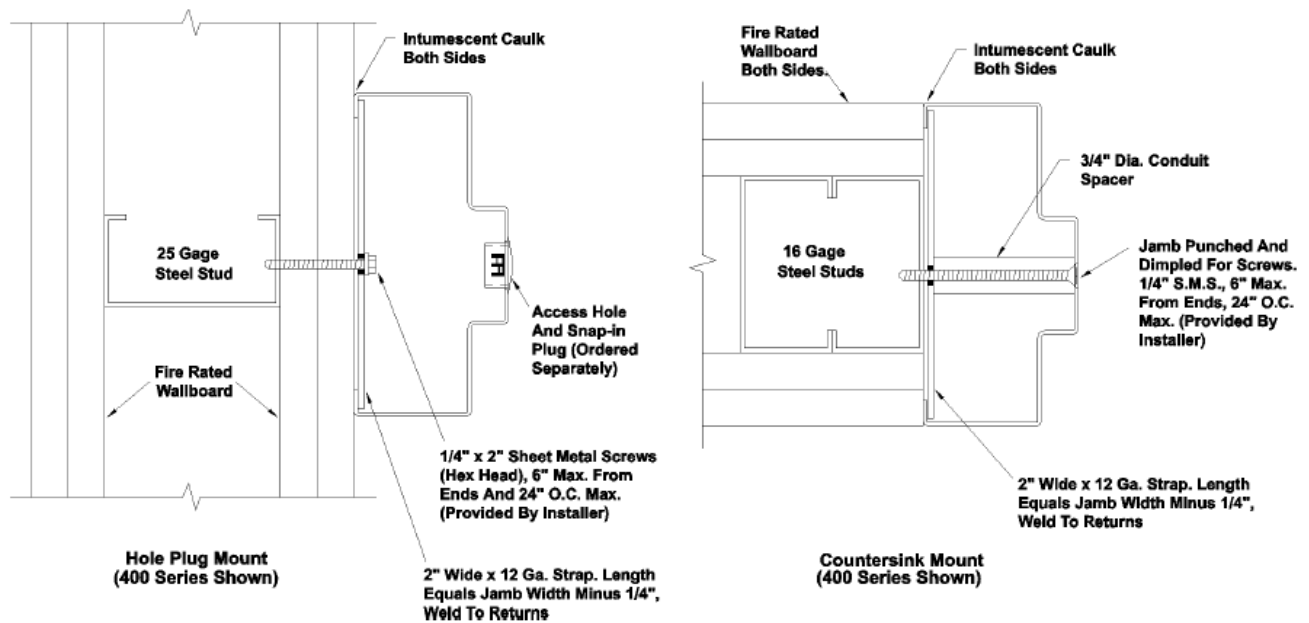
**INSTALLATION INSTRUCTIONS:**  
**Amweld 400/4400 Series Fire Door Frame Butted to Drywall**

**GENERAL:**

- The Authority Having Jurisdiction shall be consulted to verify that the installation will be acceptable, as it does not conform to NFPA-80 paragraph 2-6.2.1.
- For basic installation instructions, consult Black Mountain Door Tech Data F-12.0 [www.blackmountaindoor.com](http://www.blackmountaindoor.com) or SDI ([www.steeldoor.org](http://www.steeldoor.org)).

**MOUNTING:**

- Rough openings shall not exceed 1/4" wider or higher than overall frame sizes, and the space between the frame returns and wall shall not exceed the diameter of caulking bead.
- Mounting screws shall be steel 1/4" diameter sheet metal screws in prepared holes in frame soffit (see below) fastened securely to steel studs.



**SCOPE:**

This bulletin covers the details, scope and dimensions for UL fire rated 800 Series frames and important variations thereof.

**PURPOSE:**

To inform the reader of the technical aspects of this useful frame application.

**DESCRIPTION:**

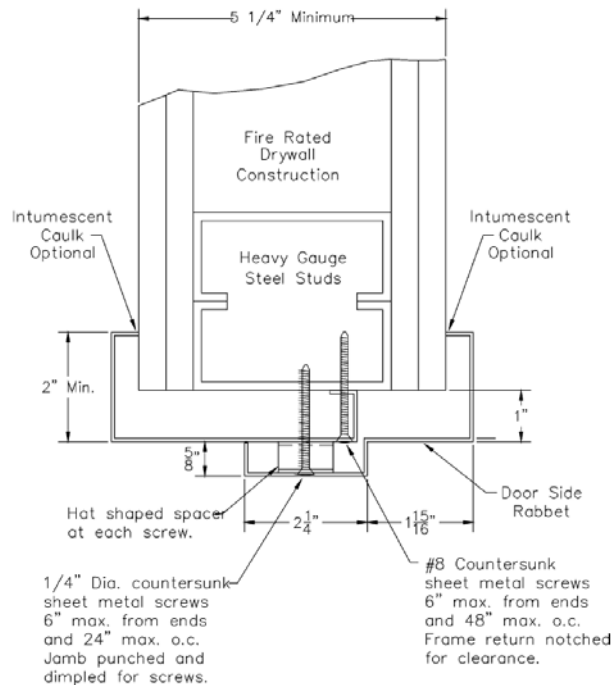
Black Mountain Door 800 Series frames are detailed in Tech Data sheet F-3.0. These frames are available with UL labels in retrofit applications such as to install over an existing non-rated frame. Another important installation possibility is their use as an adjustable frame where stud wall thicknesses vary from opening to opening. The 08PP design is especially important for jurisdictions requiring "positive pressure" ratings. Sizes and design criteria are as follows:

CRITERIA	800 SERIES	08PP SERIES
Door Rating	1 1/2 Hr - 3/4 Hr - 20 Min. NHS	1 1/2 Hr - 3/4 Hr - 20 Min. NHS
Opening Size (Max)	4'0" x 7'0" Single Only	4'0" x 8'0" Single Only
Wall Type & Size	Wood/Steel Stud or Existing Frame	Wood or Steel Stud
Throat Size Limits	3 1/4" to 9 7/16"	5 1/4" Minimum
Corners	K-D or Welded	Welded
Frame Gauge	#16 Min.	#16 Min.

**TEST CRITERIA:**

The 800 Series successfully passed test criteria as defined in UL10b, NFPA252 or UBC 7-2 (1994).  
 The 08PP Series successfully passed "positive pressure" test criteria and therefore complies with UL10b, UL10c, NFPA 252, UBC 7-2 (1994) or UBC 7-2 (1997) criteria.

**FRAME DETAIL:**



**SUBJECT:**

**Amweld 400 Series WHI Labeled Frames for "Light  
Duty" Steel Doors**

**NO: L-26.0****DATE: 03/12****PAGE: 1**

---

**SCOPE:**

This bulletin covers the details of fire rated WHI frames for steel 1 3/4" doors lighter than #20 gage with 4" hinge preparations.

**PURPOSE:**

To provide information on the availability of a label program covering this increasingly popular application.

**DESCRIPTION:**

In many "light commercial or light duty" applications such as residential doors from attached garages to living areas and low "frequency of use" areas of commercial buildings, steel doors less than #20 gage with 4" hinges are used. These applications generally require cycle testing of hinges in addition to fire testing of doors.

As a means of determining compliance with these requirement, Black Mountain Door has been authorized to use the WHI

Directory of Listed Products as a source for applicable doors. Doors lighter than #20 gage described therein qualify for use with Black Mountain Door's 400 Series 3-SIDED frames for up to 1 1/2 hour ratings.

**SPECIFICATIONS:**

- Amweld Series 400, 3 sided frames for single or double sided doors (see above).
- Frames may be K-D or welded.
- #16 gage minimum with 1 1/4" to 4" faces, 3" to 13" throat size.
- 1 1/2 hour minimum.
- 4" hinge preparations (0.100" ± .005" leaf thickness).
- Wall anchors for masonry, existing masonry, wood stud or steel stud may be shipped loose or welded to frames.
- Opening sizes and single/double door configurations MUST be as described in the WHI Directory of Listed Products.

**TEST CRITERIA:**

Compliance with fire test standards is generally a function of door testing. UL10b, NFPA252 or UBC 7-2 (1994) are the test standards generally applicable to these doors. Since 3 sided steel frames do not adversely contribute to failure in positive pressure situations, they may also be used in UL10c, or UBC 7-2 (1997) applications where doors also comply.

**SPECIAL ORDERING:**

- It is the CUSTOMER'S responsibility to verify usage of these labeled frames with doors listed in the WHI Directory of Listed Products.
- For hinges that DO NOT comply with ANSI/BHMA A156.7 (for example, mounting screw location or round corners) a proper template suitable for steel frames MUST be provided with order. Hinge preps of a noncompliant nature may be subject to set-up charges or minimum order quantities.
- To assure proper labeling, the order MUST indicate "EWH3" in the thickness/type area of order forms AND #09465-26 in the remarks area of order forms.

**TECH  
DATA**

**SCOPE:**

This bulletin covers instructions for "S" labels on WHI labeled doors. The "Smoke Control" provision is indicated by **S** on doors labels.

**PURPOSE:**

To inform the reader of the important aspects of "smoke control" labeling and to provide installation instructions for complying product.

**DESCRIPTION:**

**Installation Instructions for Smoke Control Doors Provided with ITS/WHI "S" Labels.**

The "S" label applied to Black Mountain Door's complying ITS/WHI doors **MUST** be validated by the installation of a listed **FIRE RATED** and smoke tested gasket system. These labels are not required on frames.

Testing done by Major Steel Door Industry Groups has established the **NECESSITY** of listed gaskets for openings requiring smoke and draft control ratings. The door and frame **WILL NOT** meet these requirements without the gasket system installed properly.

General installation instructions for doors and frames may be found in:

SDI-105 at [www.steeldoor.org](http://www.steeldoor.org)  
Black Mountain Door's Tech Data at [www.BlackMountainDoor.com](http://www.BlackMountainDoor.com)  
ANSI/NFPA 80  
ANSI/DHI A115 IG  
HMMA 840-99  
ANSI A250.11 (1999 pending)

Listed gaskets may be found in the following source publications:

ITS/WHI Directory of Listed Products  
UL Building Materials Directory  
ITS/WHI Directory of Listed Positive Pressure Rated Door Assemblies and Components

**REMEMBER: The validity of these labels is dependant on the gasket system.**  
**"Application of a fire-rated gasket system is required for compliance with the smoke rating requirements".**

In addition, for positive pressure installations the gasket system shall also meet UBC 7-2-1997 parts 1 and 2 and/ or UL 10c and shall be Listed as such.

