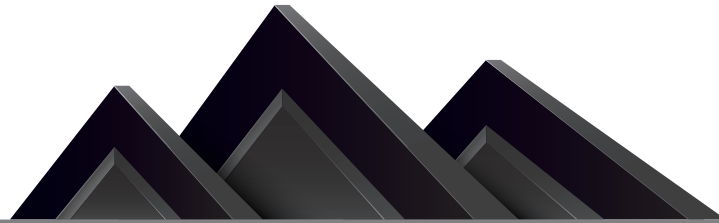


/ TECHNICAL DATA **DOORS**



BLACK MOUNTAIN
DOOR™

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Mt. Sterling, KY 40353

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Description	Number
Door Elevations and Nomenclature	D-1.0
Amweld 15LE & 17LE Series 1-3/4" Full Flush & Seamless Solid Core Doors	D-2.0
Amweld Brand Series 25LE "Liberty" Doors	D-2.1
Amweld 85LE, 87LE, 83LE, 89LE – Laser Edge Polyurethane Solid Core Doors	D-2.2
Amweld 25LE & 27LE Series 1-3/4" Full Flush & Seamless Solid Core Doors	D-3.0
Amweld / Firedoor 27WE/17WE Series 1-3/4" Full Flush & Seamless Doors Welded Edge – Solid Polystyrene Core	D-3.1
Amweld 61LE & 63LE Series Embossed Panel Doors	D-4.0
Physical Properties of Polystyrene Super-Core [®] Material	D-5.0
Amweld 300 Series 1-3/4" Extra Heavy Duty Doors	D-7.0
Amweld 1538 & 1544 Series Bullet Resisting Door Assemblies	D-8.0
Amweld 1538-1544 Series 1-3/4" Security Door & Bullet Resistant Frame Products	D-11.0
SoundShield [®] (Acoustical) Amweld 15LE-17LE-51LE-53LE-61LE Series Doors	D-12.0
Amweld 21LE-23LE Series 1-3/4" Replacement Doors	D-13.0
Access Doors and Frames	D-14.0
Amweld 55LE Series 1-3/4" Transom Panels	D-15.0
Amweld 56LE Series 1-3/4" Transom Panels	D-16.0
Amweld 07WE Series 1-3/4" Seamless / Steel Stiffened Doors	D-17.0
Amweld 07LE Series 1-3/4" Full Flush & Seamless Steel Stiffened – Laser Edge Doors	D-17.1
Inserted Louvers	D-19.0
Glazing Black Mountain Door's Amweld Series Doors (Excluding 700 Series)	D-20.0
Glass Lites in Amweld 07WE Series Doors	D-21.0
Optional Glazing Types for Black Mountain Door's Amweld and Firedoor Series Doors	D-22.0
Amweld 07WE Series Lead Lined Doors	D-23.0
Firedoor 05WE Series 1-3/4" Seamless / Steel Stiffened Doors (Welded Square Edge)	D-24.0
Measuring Door Width	D-25.0
Door Undersizing for Narrow Leaf in Pair	D-25.1

SCOPE:

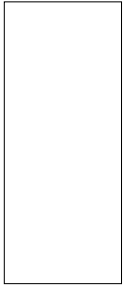
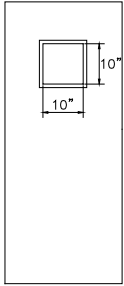
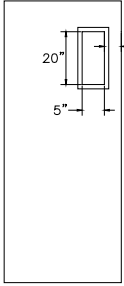
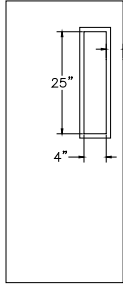
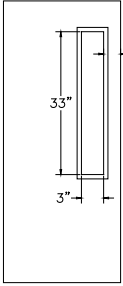
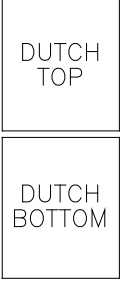
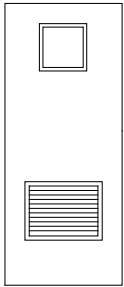
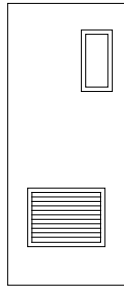
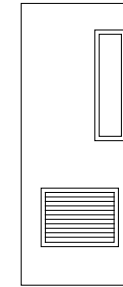
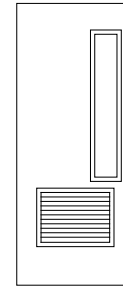
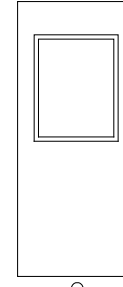
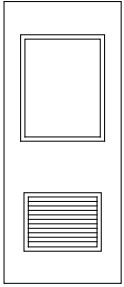
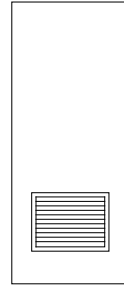
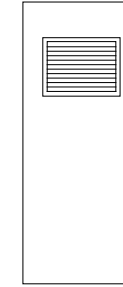
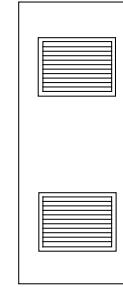
This bulletin provides the specifier visual information of Black Mountain Door's standard door elevation.

PURPOSE:

To provide the necessary information for identifying, specifying and detailing standard lite and louver configurations.

DESCRIPTION:

Black Mountain Door offers a complete line of doors with standard lites and louvers. The following page depicts those standard lites and louvers with the proper corresponding nomenclature shown.

 F	 V	 N520	 N425	 N333
 D	 VLI	 N5LI	 N4LI	 N3LI
 G EXPOSED GLASS VARIES (SEE D-20.0pg2)	 GLI	 LI	 TLI	 LLI

Dimensions Shown are Exposed Glass Size. (G) Half Glass Sizes are dependant on Door Size.
 See L-17.0 for Labeled Louver Sizes, See D-19.0 for Non-Labeled Louver Sizes.

SCOPE:

This bulletin is intended to highlight the availability and features of the Series 15LE "Liberty" door manufactured under the Amweld Brand, along with the differences from the Series 15LE doors.

PURPOSE:

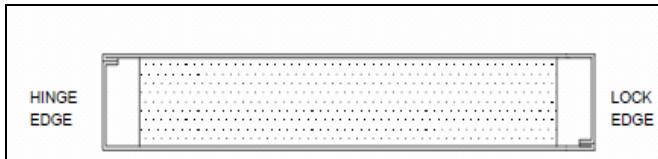
To inform the reader of the important differences between the "Liberty" Series doors and the standard Series 15LE doors, along with providing a verbal and visual description of this product.

DESCRIPTION:

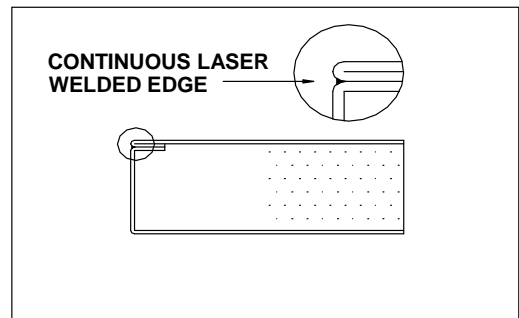
The 15LE "Liberty" Series doors are essentially similar to 15LE doors. The "Liberty" Series was created in order to answer the demand for an economical version of the 15LE door instead of importing doors from overseas sources. This Series is **manufactured**, not just marketed, by Black Mountain Door.

SIMILARITIES:

- Outward appearances are identical to the 15LE doors. The same edge configuration and the same "Laser Weld" process (see Tech Data G-7.0) are used, along with flush top/inverted bottom end closures.

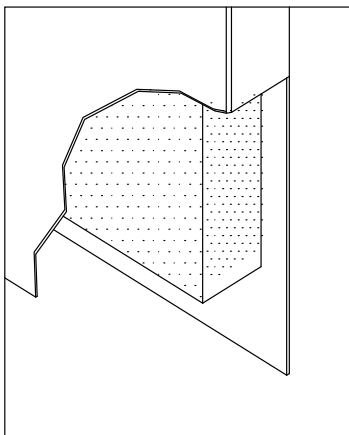


HORIZONTAL SECTION

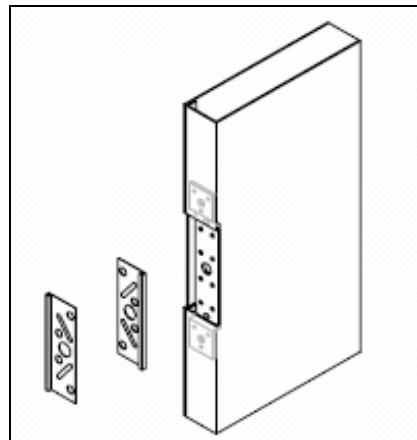


LASER WELDED "LE" EDGE

- "Liberty" doors also use the same adhesive processes and the expanded polystyrene Super-Core® (see Tech Data G-6.0) as the 15LE doors.
- "Liberty" doors are manufactured using the same cold rolled steel faces (**18 gage only**) as the 15LE complying with ASTM A 568.
- Hinge preparation is also identical, but is limited to **10 gage** and **4 1/2" template hinges only**.



POLYSTYRENE CORE



4 1/2" UNIVERSAL HINGE



DIFFERENCES:

- Closer reinforcing box is 14 gage for the "Liberty" door.
- Top and bottom end closures are 18 gage for the "Liberty" door.

These changes still comply with fabrication requirements of ANSI/SDI A250.8.

- Fire labels, where ordered, are ITS/Warnock Hersey 1 1/2 hour positive pressure labels certifying compliance to samples tested or evaluated to UL 10C, UL 10B, or NFPA 252. These labels incorporate the smoke control "S" certifying compliance when used with Listed gaskets.
- Prime paint is standard for the "Liberty" door; no other paint options are available. Prime paint meets acceptance conditions of ANSI/SDI A250.10.
- "Liberty" doors may only be ordered in lots of 20 on a single pallet.
- "Liberty" doors may only be ordered as "FULL FLUSH"; no joints on faces, exposed edge seam.
- "Liberty" doors may only be ordered as style F; louvers, visions, or "cutout only" are not available.

AVAILABLE SIZES, HARDWARE LOCATIONS & REINFORCING:

- "Liberty" doors are available as standard 3'-0" X 7'-0" or 3'-0" X 6'-8" nominal sizes with 3/4" standard undercuts. Special undercuts, heights, or widths are not available.
- "Liberty" doors are available only with Amweld Brand standard hinge and lock locations.
- "Liberty" doors have 16 gage integral reinforcing for cylindrical locks, 14 gage boxes for YBP (mortise type) locks, and 14 gage reinforcing for PBBP exit devices. These gages comply with fabrication requirements of ANSI/SDI A250.8 and ANSI/SDI A250.6.

AVAILABLE LOCK PREPARATIONS:

- D: Cylindrical lock, 2 3/4" backset in accordance with ANSI/BHMA A156.115.
- T: Through-bolted cylindrical lock, 2 3/4" backset in accordance with ANSI/BHMA A156.115.
- D+ D48: Standard cylindrical lock, 2 3/4" backset in accordance with ANSI/BHMA A156.115 with cylindrical (2 1/8" diameter) deadlock at 48".
- T+ D48: Through-bolted cylindrical lock, 2 3/4" backset in accordance with ANSI/BHMA A156.115 with cylindrical (2 1/8" diameter) deadlock at 48".
- YBP: Mortise lock (blank door face) edge preparation only sized in accordance with ANSI/BHMA A156.115.
- PBBP: Reinforced for rim exit device, blank faces and edges.

SUMMARY:

The Series 15LE "Liberty" door provides an economical alternative that still complies with manufacturing provisions of ANSI/SDI A250.8, A250.6, and A250.10. Hardware preparations and locations assure compatibility with Amweld Brand standard frames or with Firedoor Brand frames having Amweld locations.

CERTIFICATION:

This Tech Data may serve as a certification of compliance with fabrication or testing Standards specifically referenced herein.



SCOPE:

This bulletin covers the details and features of the subject door.

PURPOSE:

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

DESCRIPTION:

While the details and specifications enclosed are self-explanatory, the following features should be noted:

- 1) Please note the chart covering in detail the applicable physical properties of Black Mountain Door's Super-Core® material, as shown on page D-5.0.
- 2) The 15LE Series door will be furnished with a visible seam on the vertical edges. The 17LE Series door will be furnished as a completely seamless unit.
- 3) Super-Core®, the rigid foam plastic core, is in a slab form and bonded to the panel faces with a heat cured urethane adhesive, pressure rolled to improve flatness.
- 4) The top of the door is flush to meet most architectural specifications. This allows the unit to be installed in exterior openings without the use of special top cap closures. For watertight conditions, caulking by painter is required.
- 5) Reference Page D-1.0 for typical door elevations/styles available.
- 6) Wrap around astragals may be required for inactive doors in certain fire rated applications.
- 7) "G" lites in doors up to and including 9'0" in height will be the same size as those in 8'0" units. Those in doors from 9'1" up to and including 10'0" in height will be approximately 60" high. Standard glazing hole spacing from the top and both vertical edges will apply. The dimension from the bottom of the hole to the bottom of the door will vary.

SUMMARY:

The 1 3/4" doors, in Amweld15LE full flush and 17LE seamless series, provide an expanded door product line coupled with a wide range of hardware preparations, enabling architects and contractors to exercise complete freedom in selecting door types and thicknesses for all construction projects.



15LE - 17LE SERIES 1 3/4" SPECIFICATIONS

CONSTRUCTION – 15LE Series full flush 1 3/4" doors shall have each face formed of 20, 18, 16 or 14 gage* steel to present a completely smooth and unbroken surface on faces of door. Visible seams at door edges. With 16 gage flush top and inverted bottom steel channels projection welded on 2 1/2" centers (Optional inverted top and flush bottom channels), the face panels shall be continuously laser welded around their entire perimeters. Doors are non-handed square edge design (1/8" in 2" beveled lock edge optional)

17LE Series seamless doors shall be similar in construction to full flush doors. Panels shall present a completely smooth and unbroken surface on faces and vertical edges of door. No visible seams permitted. The panels shall be securely bonded by a thermosetting adhesive to Black Mountain Door's Super-Core®, a 1# density, odorless, rigid polystyrene foam that is resistant to fungus, bacteria, moisture, mildew and rot.

HARDWARE PREPARATIONS - Lockset preparation shall provide for field installation of locksets manufactured in accordance with ANSI/BHMA A156.115 (Mortise) or (Bored). The lock reinforcing shall be 14 gage. They shall be pierced and tapped for mounting specified locksets. Mounting holes for surface applied escutcheons shall be drilled in the field by others. Hinge mortises shall be reinforced with 10 gage steel standard, (7 gage optional), welded in place and tapped for 1 1/2 pairs 4 1/2" x 4 1/2" templated hinges (2 pair at doors over 7'6") (5" regular or heavyweight optional).

Mortises shall extend the full width of hinge stile and filler plates shall be provided to permit installation of hinges for right or left hand swing, as specified. 4 1/2" hinge preparation shall accept both regular and heavyweight.

All 15LE - 17LE Series 1 3/4" doors shall be prepared with 14 gage closer reinforcing (12 gage optional) which will accept most regular or parallel arm applications. When called for on drawings, or otherwise specified, doors shall be prepared with 14 gage reinforcing for push-pull plates. Reinforcings must be drilled and tapped in the field by installer.

Inactive leaves, where called for on drawings or in the door schedule, shall be mortised and reinforced with 14 gage steel for top and bottom flush bolts (ANSI/BHMA A156.115). Strike edge of all doors shall be prepared for ANSI/BHMA A156.115 strike (4 7/8" Universal). Inactive doors shall be provided with an astragal, except inactive leaves prepared for push-pull plates or rim-type panic devices which shall have blank panels and be furnished without astragals.

GLAZING - Glass lite doors are furnished with formed (18 Ga. Galv./CR) steel vision frame of the screw-fastened type to permit selection of secure side in the field. Glazing arrangements accommodate 1/4" (6.4mm) thick glass, supplied by others.

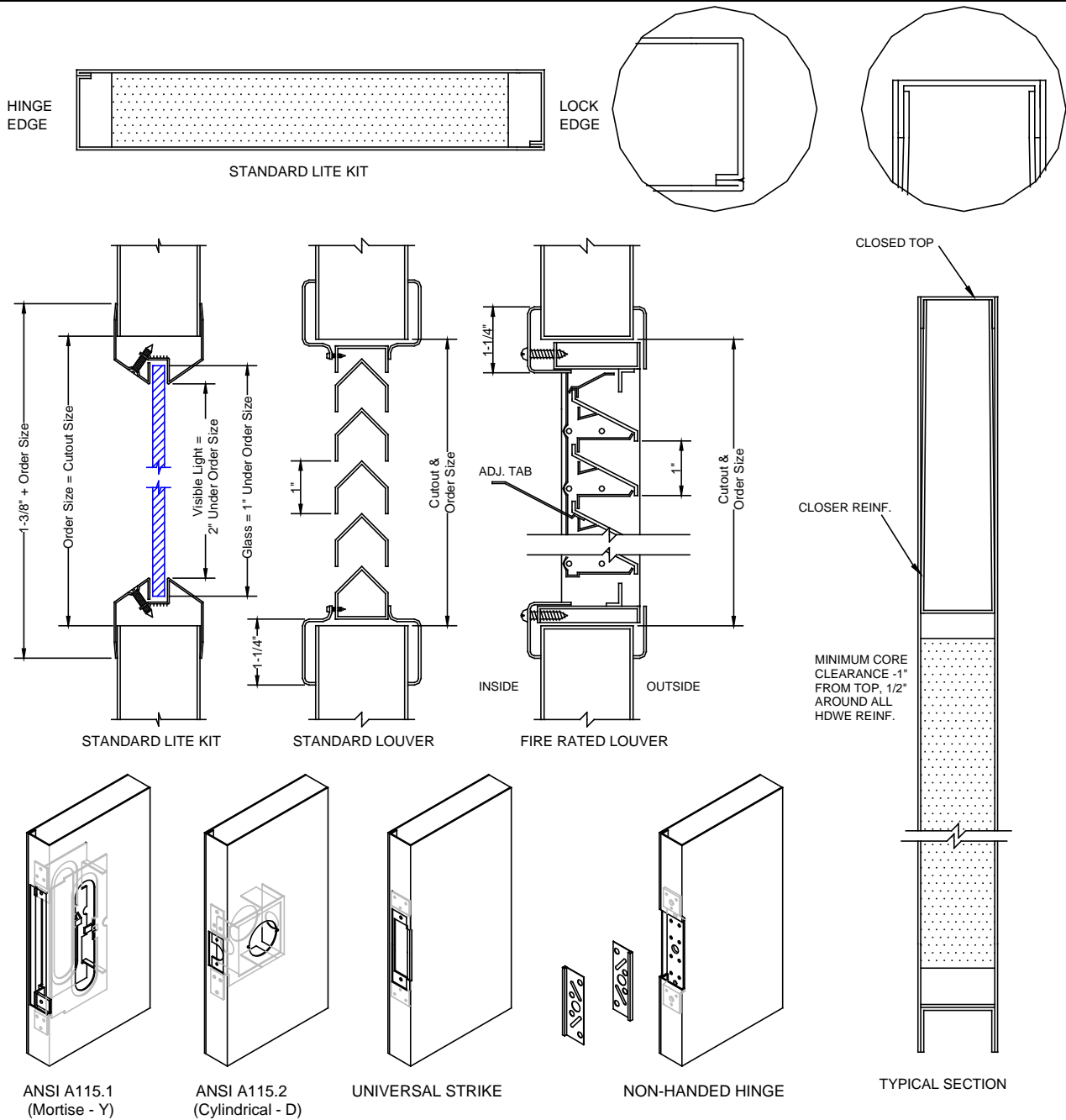
FINISH - Doors are thoroughly cleaned, phosphatized, and primed with a coat of force cured rust inhibiting primer that meets and/or exceeds the requirements of ANSI A250.10 (120 hour continuous salt spray test per ASTM B117 and 240 hour continuous humidity test per ASTM D4585)

STANDARD DOOR SIZES -

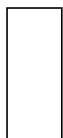
Width 2'0", 2'4", 2'6", 2'8", 2'10", 3'0", 3'4", 3'6", 3'8", 3'10" and 4'0"
Height 6'8", 7'0", 7'2", 7'10", 8'0", 8'1" to 10'0"

**20 gage available up to 3'6" x 7'2" | 18 and 16 gage available up to 4'0" x 10'0" | 14 gage available up to 4'0" x 8'0"*





3 HR. LABEL STYLES



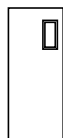
F



F



V



N520



N425



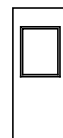
N333



LI

1 1/2 HR. LABEL STYLES

3/4 HR. LABEL STYLES



G



LI

EXPOSED GLASS VARIES



SCOPE:

This bulletin is intended to highlight the availability and features of the Series 25LE "Liberty" door manufactured under the Amweld Brand, along with the differences from the Series 25LE doors.

PURPOSE:

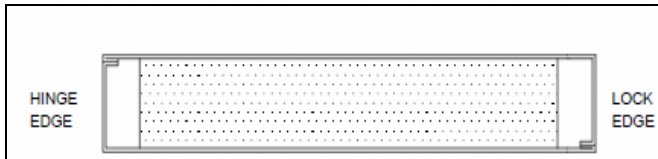
To inform the reader of the important differences between the "Liberty" Series doors and the standard Series 25LE doors, along with providing a verbal and visual description of this product.

DESCRIPTION:

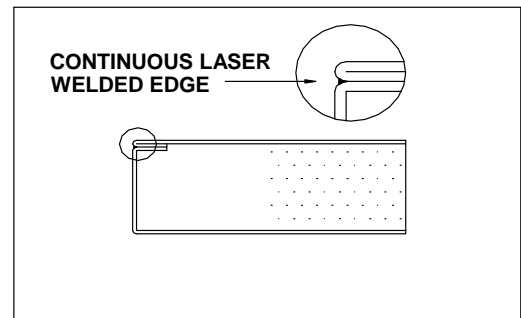
The 25LE "Liberty" Series doors are essentially similar to 25LE doors. The "Liberty" Series was created in order to answer the demand for an economical version of the 25LE door instead of importing doors from overseas sources. This Series is **manufactured**, not just marketed, by Black Mountain Door.

SIMILARITIES:

- Outward appearances are identical to the 25LE doors. The same edge configuration and the same "Laser Weld" process (see Tech Data G-7.0) are used, along with flush top/inverted bottom end closures.

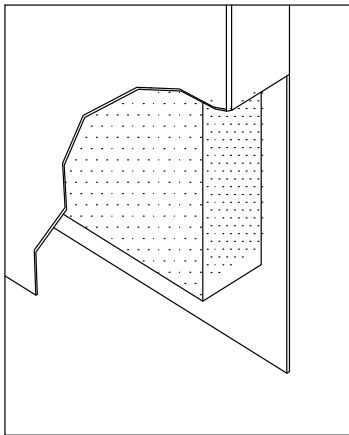


HORIZONTAL SECTION

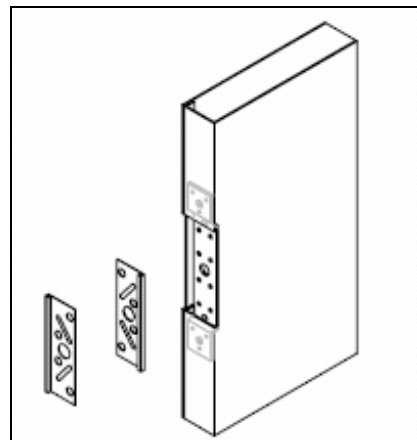


LASER WELDED "LE" EDGE

- "Liberty" doors also use the same adhesive processes and the expanded polystyrene Super-Core® (see Tech Data G-6.0) as the 25LE doors.
- "Liberty" doors are manufactured using the same galvanneal (hot-dip galvanized) faces (**18 gage only**) as the 25LE complying with ASTM A 653 and A 924 in Coating Class A40 (See Tech Data G-9.0).
- Hinge preparation is also identical, but is limited to **10 gage** and **4 1/2" template hinges only**.



POLYSTYRENE CORE



4 1/2" UNIVERSAL HINGE

DIFFERENCES:

- Closer reinforcing box is 14 gage for the "Liberty" door.
- Top and bottom end closures are 18 gage for the "Liberty" door.
These changes still comply with fabrication requirements of ANSI/SDI A250.8.
- Fire labels, where ordered, are ITS/Warnock Hersey 1 1/2 hour positive pressure labels certifying compliance to samples tested or evaluated to UL 10C, UL 10B, or NFPA 252. These labels incorporate the smoke control "S" certifying compliance when used with Listed gaskets.
- Prime paint is standard for the "Liberty" door; no other paint options are available. Prime paint meets acceptance conditions of ANSI/SDI A250.10.
- "Liberty" doors may only be ordered in lots of 20 on a single pallet.
- "Liberty" doors may only be ordered as "FULL FLUSH"; no joints on faces, exposed edge seam.
- "Liberty" doors may only be ordered as style F; louvers, visions, or "cutout only" are not available.

AVAILABLE SIZES, HARDWARE LOCATIONS & REINFORCING:

- "Liberty" doors are available as standard 3'-0" X 7'-0" or 3'-0" X 6'-8" nominal sizes with 3/4" standard undercuts. Special undercuts, heights, or widths are not available.
- "Liberty" doors are available only with Black Mountain Door Brand standard hinge and lock locations.
- "Liberty" doors have 16 gage integral reinforcing for cylindrical locks, 14 gage boxes for YBP (mortise type) locks, and 14 gage reinforcing for PBBP exit devices. These gages comply with fabrication requirements of ANSI/SDI A250.8 and ANSI/SDI A250.6.

AVAILABLE LOCK PREPARATIONS:

- D: Cylindrical lock, 2 3/4" backset in accordance with ANSI/BHMA A156.115.
- T: Through-bolted cylindrical lock, 2 3/4" backset in accordance with ANSI/BHMA A156.115.
- D+ D48: Standard cylindrical lock, 2 3/4" backset in accordance with ANSI/BHMA A156.115 with cylindrical (2 1/8" diameter) deadlock at 48".
- T+ D48: Through-bolted cylindrical lock, 2 3/4" backset in accordance with ANSI/BHMA A156.115 with cylindrical (2 1/8" diameter) deadlock at 48".
- YBP: Mortise lock (blank door face) edge preparation only sized in accordance with ANSI/BHMA A156.115.
- PBBP: Reinforced for rim exit device, blank faces and edges.

SUMMARY:

The Series 25LE "Liberty" door provides an economical alternative that still complies with manufacturing provisions of ANSI/SDI A250.8, A250.6, and A250.10. Hardware preparations and locations assure compatibility with Black Mountain Door Brand standard frames or with Firedoor Brand frames having Black Mountain Door locations.

CERTIFICATION:

This Tech Data may serve as a certification of compliance with fabrication or testing Standards specifically referenced herein.



SCOPE:

This bulletin covers the details and features of the subject door.

PURPOSE:

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

DESCRIPTION:

While the details and specifications enclosed are self-explanatory, the following features should be noted:

- 1) Please note the chart covering in detail the applicable physical properties of Black Mountain Door's Polyurethane Core material, as shown on page D-5.5.
- 2) The 85LE and 83LE Series door will be furnished with a visible seam on the vertical edges. The 87LE and 89LE Series door will be furnished as a completely seamless unit.
- 3) The Polyurethane Core, the polyisocyanurate foam plastic core, is in a slab form and bonded to the panel faces with a heat cured urethane adhesive, pressure rolled to improve flatness.
- 4) The top of the door is flush to meet most architectural specifications. This allows the unit to be installed in exterior openings without the use of special top cap closures. For watertight conditions, caulking by painter is required.
- 5) Reference Page D-1.0 for typical door elevations/styles available.
- 6) Wrap around astragals may be supplied as an option for inactive doors..
- 7) "G" lites in doors up to and including 9'0" in height will be the same size as those in 8'0" units. Those in doors from 9'1" up to and including 10'0" in height will be approximately 60" high. Standard glazing hole spacing from the top and both vertical edges will apply. The dimension from the bottom of the hole to the bottom of the door will vary.

SUMMARY:

The 1 3/4" doors, in Amweld Series 85LE/83LE full flush and Series 87LE/89LE seamless, provide an expanded door product line coupled with a wide range of hardware preparations, enabling architects and contractors to exercise complete freedom in selecting door types and thicknesses for all construction projects.

NOTE: Current procedures do not allow an application of any fire rating designation on these products.



85LE-87LE-83LE-89LE SERIES 1 3/4" SPECIFICATIONS

CONSTRUCTION – 85LE/83LE Series full flush 1 3/4" doors shall have each face formed of 20, 18, 16 or 14 gage* steel to present a completely smooth and unbroken surface on faces of door. Visible seams at door edges. With 16 gage flush top and inverted bottom steel channels projection welded on 2 1/2" centers (Optional inverted top and flush bottom channels), the face panels shall be continuously laser welded around their entire perimeters. Doors are non-handed square edge design (1/8" in 2" beveled lock edge optional)

87LE/89LE Series seamless doors shall be similar in construction to full flush doors. Panels shall present a completely smooth and unbroken surface on faces and vertical edges of door. No visible seams permitted. The panels shall be securely bonded by a thermosetting adhesive to a Polyurethane core, 2 # density (per cubic ft.), rigid polyurethane foam.

85LE and 87LE Door faces will be constructed of Cold Rolled Steel Material while 83LE and 89LE door faces are constructed of hot dip material in the .6 oz. coating class conforming to ASTM designations A924 and A653 (replaces A525 and A526, respectively). The material shall be treated in the mill to insure superior prime paint adhesion.

HARDWARE - Lockset preparation shall provide for field installation of locksets manufactured in accordance with ANSI/BHMA A156.115 (Mortise) or (Bored). The lock reinforcing shall be 14 gage. They shall be pierced and tapped for mounting specified locksets. Mounting holes for surface applied escutcheons shall be drilled in the field by others. Hinge mortises shall be reinforced with 10 gage steel standard, (7 gage optional), welded in place and tapped for 1 1/2 pairs 4 1/2" x 4 1/2" templated hinges (2 pair at doors over 7'6") (5" regular or heavyweight optional).

Mortises shall extend the full width of hinge stile and filler plates shall be provided to permit installation of hinges for right or left hand swing, as specified. 4 1/2" hinge preparation shall accept both regular and heavyweight.

All doors shall be prepared with 14 gage closer reinforcing (12 gage optional) which will accept most regular or parallel arm applications. Doors shall be prepared with 14 gage reinforcing for push-pull plates. Reinforcing must be drilled and tapped in the field by installer.

Inactive leaves, where called for on drawings or in the door schedule, shall be mortised and reinforced with 14 gage steel for top and bottom flush bolts (ANSI/BHMA A156.115). Strike edge of all doors shall be prepared for ANSI/BHMA A156.115 strike (4 7/8" Universal). Inactive doors shall be provided with an astragal, except inactive leaves prepared for push-pull plates or rim-type panic devices which shall have blank panels and be furnished without astragals.

GLAZING - Glass lite doors are furnished with formed (20 Ga. Galv./CR) steel vision frame of the screw-fastened type to permit selection of secure side in the field. Glazing arrangements accommodate 1/4" (6.4mm) thick glass, supplied by others.

FINISH - Doors are thoroughly cleaned, phosphatized, and primed with a coat of force cured rust inhibiting primer that meets and/or exceeds the requirements of ANSI A250.10 (120 hour continuous salt spray test per ASTM B117 and 240 hour continuous humidity test per ASTM D4585)



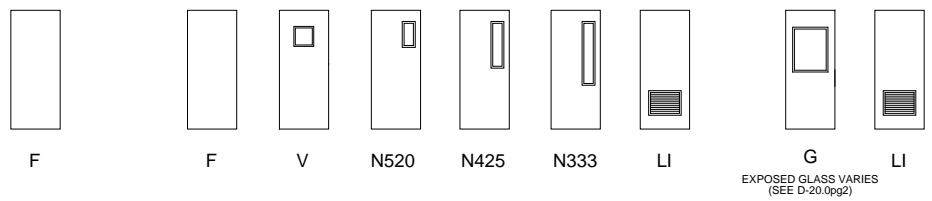
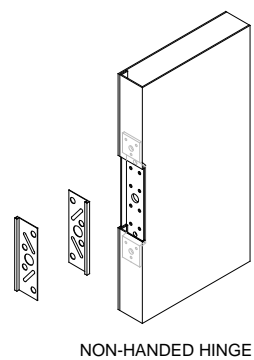
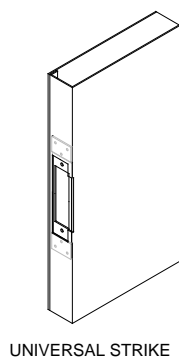
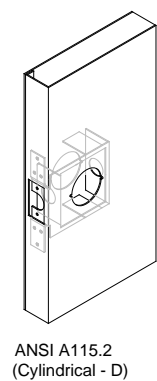
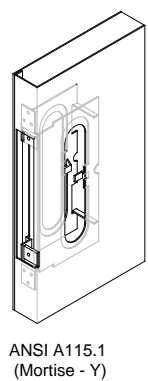
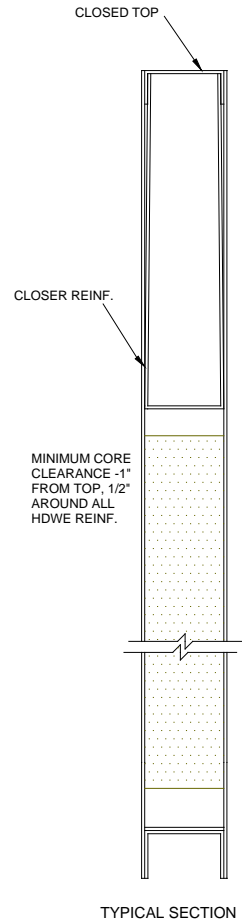
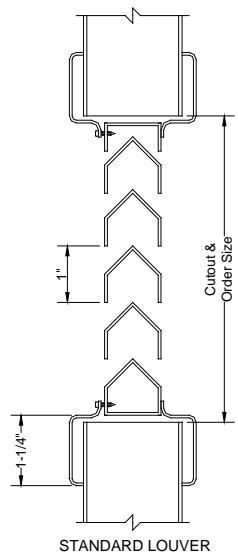
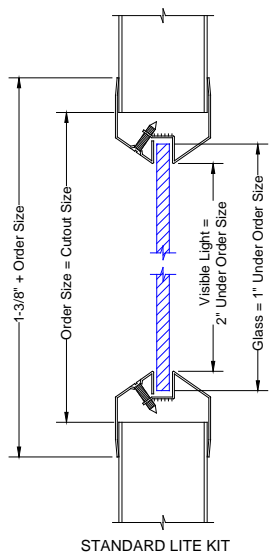
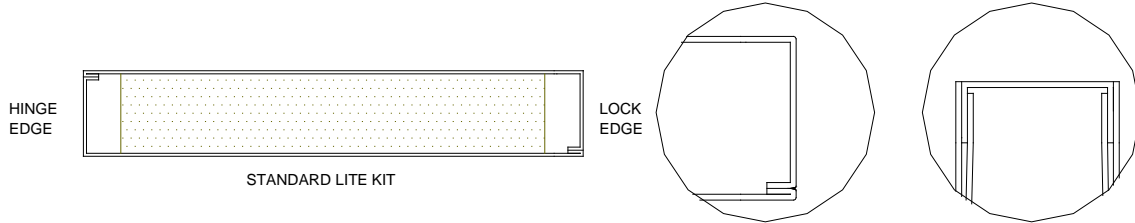
SUBJECT:
AMWELD 85LE, 87LE, 83LE, 89LE – Laser Edge
Polyurethane Solid Core Doors

NO: D-2.2
DATE: 3/12
PAGE: 3

STANDARD DOOR SIZES -

Width 2'0", 2'4", 2'6", 2'8", 2'10", 3'0", 3'4", 3'6", 3'8", 3'10" and 4'0"
 Height 6'8", 7'0", 7'2", 7'10", 8'0", 8'1" to 10'0"

**20 gage available up to 3'6" x 7'2" | 18 and 16 gage available up to 4'0" x 10'0" | 14 gage available up to 4'0" x 8'0"*



TECH DATA

SCOPE:

This bulletin covers the details and features of the subject door.

PURPOSE:

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

DESCRIPTION:

While the details and specifications enclosed are self-explanatory, the following features should be noted:

- 1) Please note the chart covering in detail the applicable physical properties of Black Mountain Door's Super-Core® material as shown on page D-5.0.
- 2) The 25LE Series door will be furnished with a visible seam on the vertical edges. The 27LE Series door will be furnished as a completely seamless unit.
- 3) Super-Core®, the rigid foam plastic core, is in a slab form and bonded to the panel faces with a high strength thermosetting adhesive. The adhesive is applied in a horizontal bead pattern approximately 4" on center.
- 4) The top of the door is closed flush to meet most architectural specifications. This allows the unit to be installed in exterior openings without the use of special cap closures. For watertight conditions, caulking by painter is required.
- 5) Reference page D-1.0 for typical door elevations/styles available.

25LE-27LE SERIES 1 3/4" SPECIFICATIONS

CONSTRUCTION - 25LE Series full flush 1 3/4" doors shall have each face formed of 20, 18 or 16 gage steel (14 gage in 27LE Series only) to present a completely smooth and unbroken surface on faces of door. Visible seams at door edges. With 16 gage flush top and inverted bottom steel channels projection welded on 2 1/2" centers (Optional inverted top and flush bottom channels), the face panels shall be continuously laser welded around their entire perimeters. Doors are non-handed square edge design (1/8" in 2" beveled lock edge optional)

27LE Series seamless doors shall be similar in construction to full flush doors. Panels shall present a completely smooth and unbroken surface on faces and vertical edges of door. No visible seams permitted.

When specified, door panels and end closures shall be manufactured of hot dip material in the .6 oz. coating class conforming to ASTM designations A924 and A653 (replaces A525 and A526, respectively).

The panels shall be securely bonded by a thermosetting adhesive to Black Mountain Door's Super-Core®, a 1# density, odorless, rigid foam that is resistant to vermin, fungus, bacteria, moisture, mildew and rot.



Continued..

HARDWARE - Lockset preparation shall provide for field installation of locksets manufactured in accordance with ANSI/BHMA A156.115 (Mortise) and (Bored). The lock reinforcing shall be 14 gage. They shall be pierced and tapped for mounting specified locksets. Mounting holes for surface applied escutcheons shall be drilled in the field by others.

Hinge mortises shall be reinforced with 10 gage steel (7 ga. optional) welded in place and tapped for 1 1/2 pairs 4 1/2" x 4 1/2" templated hinges (2 pair at doors over 7'6") (5" regular or heavyweight optional). Hinges furnished by others. Mortises shall extend the full width of hinge stile and filler plates shall be provided to permit installation of hinges for right or left hand swing, as specified. 4 1/2" hinge preparation shall accept both regular and heavyweight.

All 25LE- 27LE Series 1 3/4" doors shall be prepared with 14 gage closer reinforcing (12 gage optional) which will accept most regular and parallel arm applications. When called for on drawings, or otherwise specified, doors shall be prepared with 14 gage reinforcing for panic devices and push-pull plates. Reinforcings must be drilled and tapped in the field.

Inactive leaves, where called for on drawings or in the door schedule, shall be mortised and reinforced for 14 gage steel for top and bottom flush bolts (ANSI/BHMA A156.115). As an alternate, inactive leaves, where called for on drawings or in the door schedule, shall be reinforced with 14 gage plates for 6" top and bottom surface bolts. Strike edge of all doors shall be prepared for ANSI/BHMA A156.115 strike (4 7/8" Universal). Inactive doors shall be provided with an astragal, except inactive leaves prepared for push-pull plates or rim-type panic devices which shall have blank panels and be furnished without astragals.

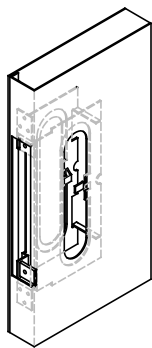
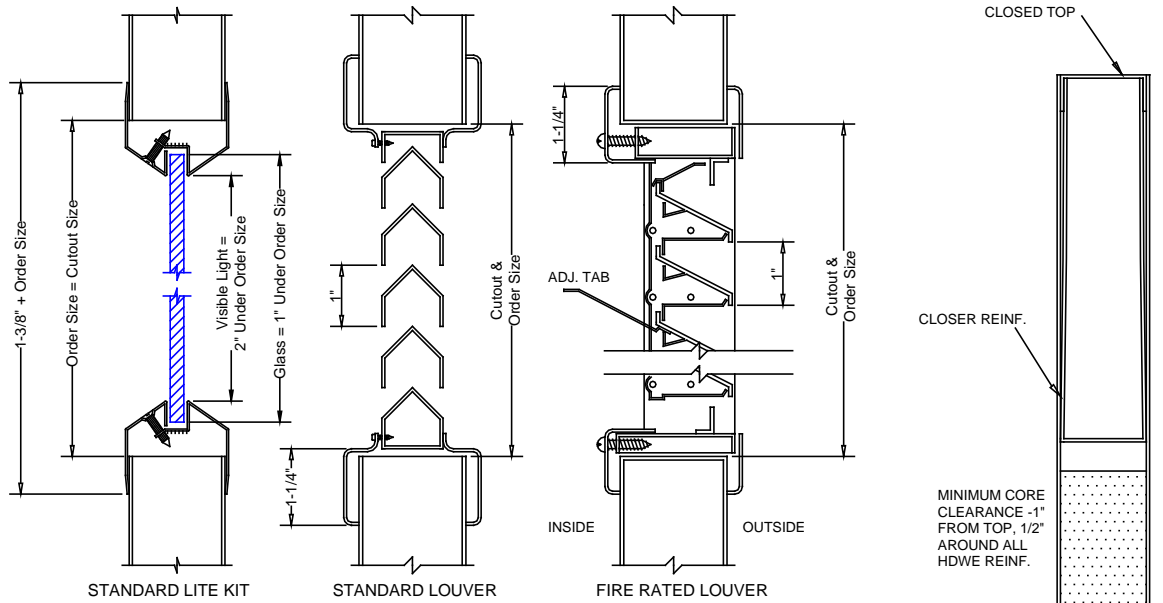
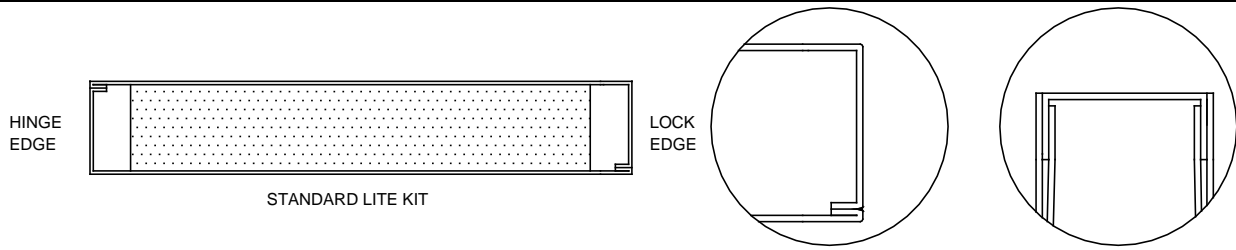
GLAZING - Glass lite doors are furnished with formed (20 Ga. Galv.) steel vision frame of the screw fastened type to permit selection of secure side in the field.
Glazing arrangements accommodate 1/4" (6.4mm) thick glass, supplied by others.

FINISH - Doors are thoroughly cleaned, phosphatized, and primed with a coat of force cured rust inhibiting primer that meets and/or exceeds the requirements of ANSI A250.10 (120 hour continuous salt spray test per ASTM B117 and 240 hour continuous humidity test per ASTM D4585)

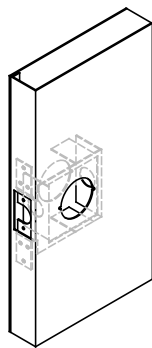
STANDARD DOOR SIZES –

Width 2'0", 2'4", 2'6", 2'8", 2'10", 3'0", 3'4", 3'6", 3'8", 3'10" and 4'0"
Height 6'8", 7'0", 7'2", 7'10", 8'0", 8'1" to 10'0"
14 gage available up to 4'0" x 8'0"

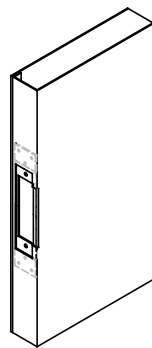




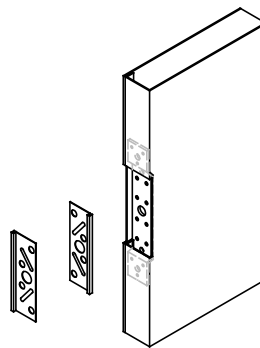
ANSI A115.1
(Mortise - Y)



ANSI A115.2
(Cylindrical - D)



UNIVERSAL STRIKE



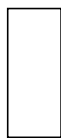
NON-HANDED HINGE

TYPICAL SECTION

3 HR. LABEL STYLES



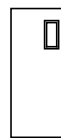
F



F



V



N520



N425



N333



LI

1 1/2 HR. LABEL STYLES

3/4 HR. LABEL STYLES



G



LI

EXPOSED GLASS VARIES
(SEE D-20.0pg2)

SUBJECT:**AMWELD/FIREDOOR 27WE/17WE Series 1-3/4" Full Flush & Seamless Doors****Welded Edge – Solid Polystyrene Core****NO: D-3.1****DATE: 03/12****PAGE: 1****SCOPE:**

This bulletin covers the details and features of the subject door.

PURPOSE:

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

DESCRIPTION:

While the details and specifications enclosed are self-explanatory, the following features should be noted:

- 1) Please note the chart covering in detail the applicable physical properties of Black Mountain Door's Super-Core® material as shown on page D-5.0.
- 2) Edges are beveled, fully welded, and seamless. This Series door is handed.
- 3) Super-Core®, the rigid foam plastic core, is in a slab form and bonded to the panel faces with a high-strength thermosetting adhesive.
- 4) The top of the door is closed flush to meet most architectural specifications. This allows the unit to be installed in exterior openings without the use of special cap closures. For watertight conditions, caulking by painter is required.
- 5) Reference this document for typical door elevations/styles available.

27WE/17WE SERIES 1 3/4" SPECIFICATIONS

CONSTRUCTION – 27WE/17WE Series seamless 1 3/4" doors shall have each face formed of 18, 16 or 14 gage steel (specify) to present a completely smooth and unbroken surface on face and edge of door. With 16 gage flush top and inverted bottom steel channels projection welded on 2 1/2" centers (Optional inverted top and flush bottom channels), The door faces shall be joined at the vertical edges by continuous weld extending the full height of the door. All such welds shall be ground, filled and dressed to provide a smooth, flat surface.

27WE Door panels and end closures shall be manufactured of A60 Galvanealed steel conforming to ASTM designations A924 and A653 (replaces A525 and A526, respectively). 17WE Door Panels will be provided in Cold-Rolled Steel. The material shall be treated in the mill to insure superior prime paint adhesion.

The panels shall be securely bonded by a thermosetting adhesive to Black Mountain Door's Super-Core®, a 1# density, odorless, rigid foam that is resistant to vermin, fungus, bacteria, moisture, mildew and rot.

HARDWARE- Lockset preparation shall provide for field installation of locksets manufactured in accordance with ANSI/BHMA A156.115 (mortise or bored). The lock reinforcing shall be 14 gage integral boxes pierced and tapped for mounting specified locksets. Mounting holes for surface-applied escutcheons shall be drilled in the field by others. Where required by special locksets or exit devices, reinforcing conforming to NAAMM HMMA 861 shall be used.



Continued...

Hinge mortises shall be reinforced with #7 gage steel plates welded in place and tapped for (minimum) 4 1/2" x 4 1/2" templated hinges. Preparation for 5" hinges, pivots or other variations are available.

All 27WE/17WE Series 1 3/4" doors shall be prepared with 12 gage closer reinforcing. When required or otherwise specified, doors shall be prepared with 14 gage (min.) face reinforcing for push-pull plates, panic devices or other surface hardware. Drilling and tapping for all surface hardware is not included.

Inactive leaves, where called for on drawings or in the door schedule, shall be mortised and reinforced with 12 gage steel for top and bottom flush bolts (ANSI/BHMA A156.115) and 4 7/8" universal strike (ANSI/BHMA A156.115).

Flat astragals shall be factory installed when specified.

GLAZING - Glass lite doors are furnished with formed (20 Ga. Galv.) steel vision frame of the screw fastened type to permit selection of secure side in the field.

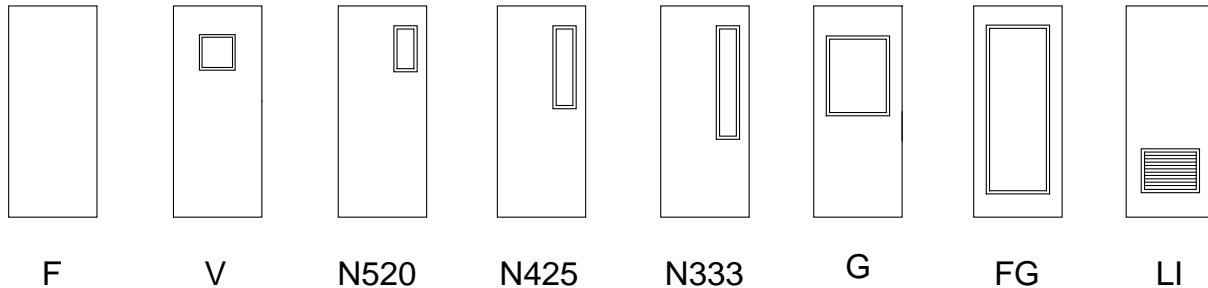
Glazing arrangements accommodate 1/4" (6.4mm) thick glass, supplied by others.

FINISH - Doors are thoroughly cleaned, phosphatized, and primed with a coat of force cured rust inhibiting primer that meets and/or exceeds the requirements of ANSI A250.10 (120 hour continuous salt spray test per ASTM B117 and 240 hour continuous humidity test per ASTM D4585).

STANDARD DOOR SIZES –

Width	2'0", 2'4", 2'6", 2'8", 2'10", 3'0", 3'4", 3'6", 3'8", 3'10", 4'0"
Height	6'8", 7'0", 7'2", 7'10", 8'0"

STANDARD DOOR STYLES:



*Available standard lock preparations will include:

- D - ANSI/BHMA A156.115
- L - Variation of ANSI/BHMA A156.115
- T – Universal Lever Lock Preparation
- Y - ANSI/BHMA A156.115
- YBP - Sectional trim available
- U/FB - Universal strike, ANSI flushbolts
- PB - Rim Panic - blank faces
- MP - Mortise Panic - edge only, blank faces
- VR - Surface Vertical Rod Panic - blank faces
- PP - Push & Pull

SUBJECT:

AMWELD/FIREDOOR 27WE/17WE Series 1-3/4" Full Flush & Seamless Doors

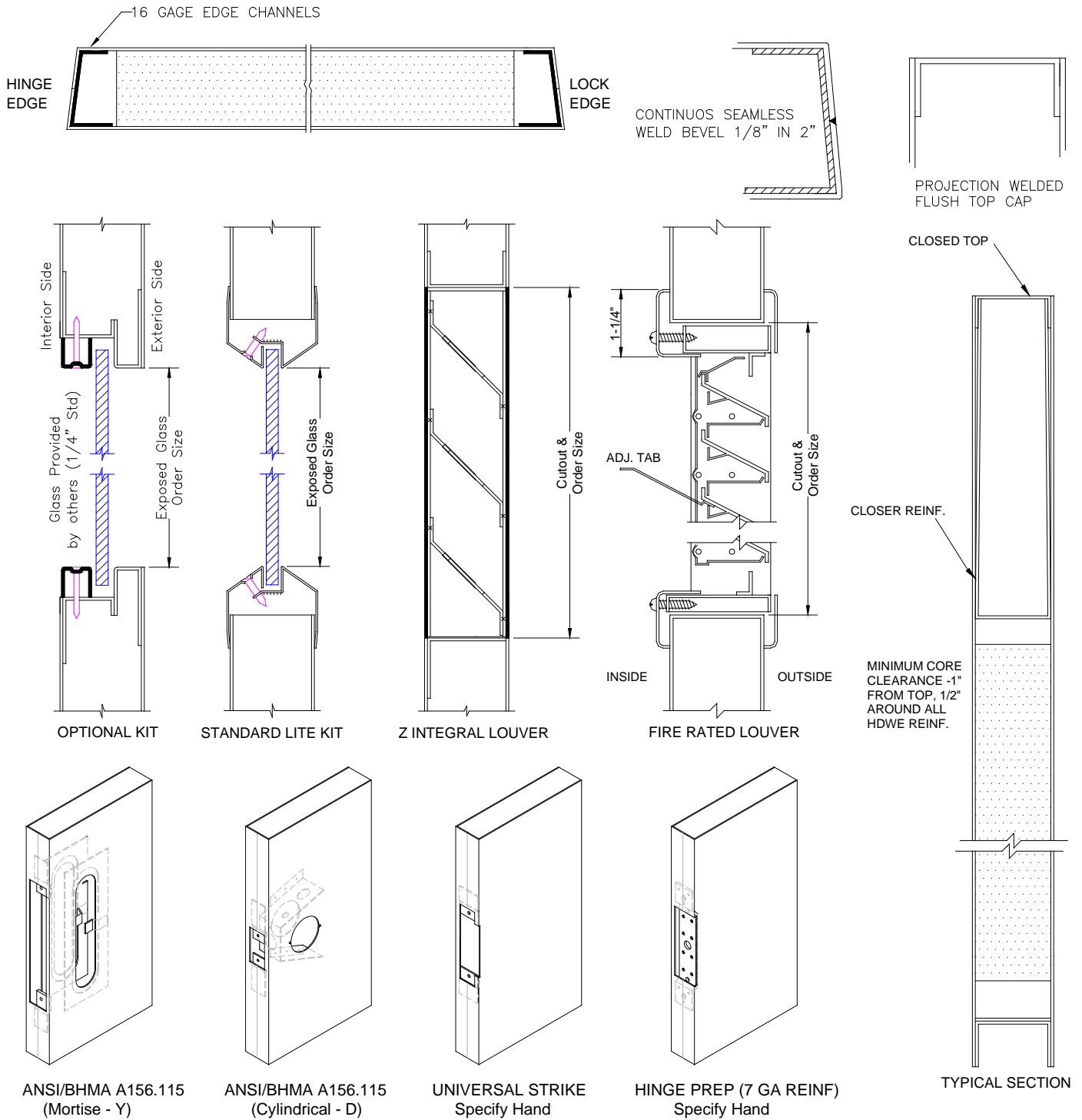
Welded Edge – Solid Polystyrene Core

NO: D-3.1

DATE: 03/12

PAGE: 3

CONSTRUCTION DETAILS:



SCOPE:

This Tech Data covers the details and features of Black Mountain Door's Series 61LE and 63LE embossed panel doors.

PURPOSE:

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

DESCRIPTION:

While the details and specifications following are self-explanatory, the following features should be noted:

- The 61LE Series door will be furnished with a visible seam on the vertical edges. The 63LE Series door will be furnished with seamless vertical edges. Doors are 1 3/4" thickness only.
- Door edges are joined together with Black Mountain Door's **LASER** welding process. This process results in a clean, continuous structural weld that does not require further grinding for aesthetics.
- Embossed patterns are "framed" by decorative offsets that return to the full door thickness so that structural integrity of the panel area is not compromised.
- Super-Core®, the rigid foam plastic core, is in a slab form and bonded to the panel faces with a high strength thermosetting adhesive.
- The top of the door is flush to allow the doors to be installed in exterior openings without the use of special cap closures. For weathertight conditions, Black Mountain Door recommends that caulking (by painter or installer) be used to seal joints.
- The embossed panel doors are available with up to 3-hour non-temperature rise UL or ITS/WHI labels showing compliance with UL 10C positive pressure fire testing.
- 18 gage doors are available with embossing omitted in the upper portions to facilitate the installation of half-glass (Style G) lite kits. See P2L in chart below and on page 3 of this TD.

SIZES & DESIGN OPTIONS: (CONTACT BLACK MOUNTAIN DOOR FOR AVAILABILITY)

<u>DESIGN</u>	<u>GAGE</u>	<u>SIZES AND NOTES</u>
6 PANEL P6	16-18	2-10, 3-0, 3-4 X 6-8 and 7-0
4 PANEL P4	16-18	2-10, 3-0, 3-4 X 6-8 and 7-0
6 PANEL P6	18	3-4 to 3-6 X 6-8
6 PANEL P6	20	2-8, 2-10, 3-0 X 6-8 and 7-0
6 PANEL P6 #	18	2-6, 2-8 X 6-8 and 7-0 (narrow mid-rail)
8 PANEL P8	18	2-8, 2-10, 3-0 X 6-8 and 7-0 (83 1/8" max height)
2 PANEL P2 #	18	3-0 X 7-0 up to 8-0
1 PANEL P1 #	18	3-0 X 7-0 up to 8-0
P2L-P2B #	18	2-10, 3-0 X 6-8 and 7-0 (P2L=half glass, P2B=blank top)
P2GR-P2S #	18	3-0 X 6-8 and 7-0 (P2GR=half glass cut & reinf, P2S=half glass stitch pierce)



61LE-63LE SERIES 1 3/4" EMBOSSED PANEL DOOR SPECIFICATIONS**CONSTRUCTION:**

61LE Series full flush 1 3/4" doors shall have each face formed of 18 or 16 gage A40 galvanized steel (6-panel doors 2'-10" or 3'-0" wide may be 20 gage) to present a completely smooth and unbroken surface on faces of door. The face panels shall be continuously laser welded at edge seams. Top and bottom end closures shall be 16 gage steel channels, securely welded to face panels.

63LE Series seamless doors shall be similar in construction to 61LE full flush doors. Panels shall present a completely smooth and unbroken surface on faces and vertical edges of door. No visible seams permitted. Panels shall be embossed for the design indicated. The panels shall be securely bonded by a thermosetting adhesive to Black Mountain Door's Super-Core®, a 1# density, odorless, rigid foam that is resistant to fungus, bacteria, moisture, mildew and rot.

HARDWARE:

Preparations for field installation of locksets shall comply with ANSI/BHMA A156.115. The lock reinforcing shall be 14 gage, pierced and tapped for mounting specified locksets. Mounting holes for surface applied escutcheons shall be drilled in the field by others. All doors require locksets with flat faces.

Hinge mortises shall be reinforced with 10 gage (7 gage optional) steel welded in place. Piercing and tapping shall accept 1 1/2 pairs of 4 1/2" x 4 1/2" template hinges (5" regular or heavyweight optional).

Mortises shall extend the full width of hinge stile and filler plates shall be provided to permit installation of hinges for right or left hand swing, as specified. 4 1/2" hinge preparation shall accept both regular and heavyweight.

All doors shall be reinforced with 14 gage closer reinforcing (12 gage optional) for surface closers. Caution: Parallel arm reinforcing is not available due to the toprail dimensions (drop plates or special templating may be required).

When called for on drawings or otherwise specified, doors shall be prepared with 14 gage reinforcing for pushpull plates. Reinforcing must be drilled and tapped in field.

Inactive leaves, where called for on drawings or in the door schedule, shall be mortised and reinforced with 14 gage steel for top and bottom flush bolts and 4 7/8" Universal strike in compliance with ANSI/BHMA A156.115.

Inactive doors shall be provided with an astragal, except inactive leaves prepared for push-pull plates or rim-type panic devices which shall have blank panels and be furnished without astragals.

GLAZING:

Doors, where specified to receive glazing, shall be provided with upper embossing removed. Doors are furnished with formed (18 Ga. GLV/CR) steel glazing strips of the screw-in type to permit selection of secure side in the field. Glazing arrangements accommodate 1/4" (6.4mm) thick glazing supplied and installed by others.

Doors may also be specified with upper embossing removed and either a reinforced cutout or stitch pierced cutout for installation of lite kits provided "by others".

FIRE RATINGS:

Where specified (and permitted by size, design, or hardware), doors shall bear Marks (labels) from ITS/WHI or Underwriters Laboratories indicating fire ratings based on the UL-10C positive pressure fire test method.

FINISH:

Doors are thoroughly cleaned, phosphatized, and primed with a coat of force cured rust inhibiting primer that meets and/or exceeds the requirements of ANSI A250.10 (120 hour continuous salt spray test per ASTM B117 and 240 hour continuous humidity test per ASTM D4585)

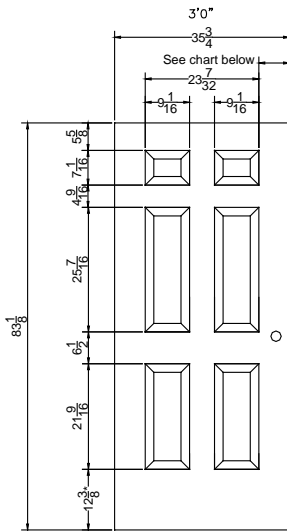
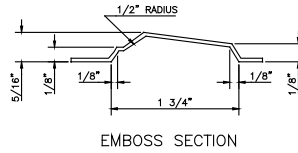
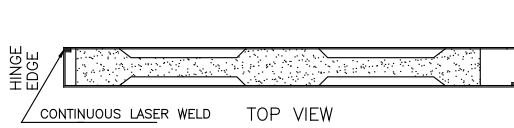
WINDSTORM COMPLIANCE:

In October of 2007, the 18 gage 61LE embossed design was tested and evaluated at Intertek Testing (ITS) for windstorm resistance. This testing confirmed that embossed faces **DO NOT** structurally negate the impact or design pressure ratings of opaque 15LE type doors. Although the embossed face design does not in itself create a windstorm rated door, it may be used as an option to flush (opaque) doors.



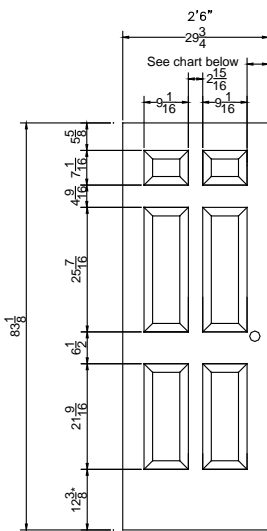
SUBJECT:
AMWELD 61LE AND 63LE EMBOSSED PANEL DOORS

NO: D-4.0
DATE: 03/12
PAGE: 3



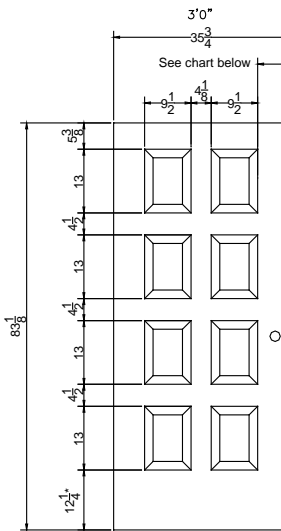
Standard embossed
 P6 dimensions
 Available Width

Width	Lock edge to embossment
2'10"	5 1/4"
3'0"	6 1/4"
3'4"	8 1/4"
3'6"	9 1/4"



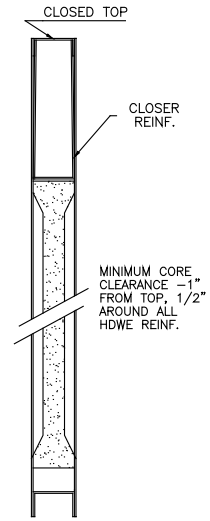
Narrow Center Stile **
 for 2'6" and 2'8" doors
 Available Width

Width	Lock edge to embossment
2'6"	4 5/16"
2'8"	5 5/16"



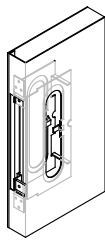
Standard embossed
 8P dimensions
 Available sizes

Width	Lock edge to embossment
2'8"	4 5/16"
2'10"	5 5/16"
3'0"	6 5/16"

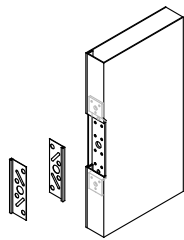


TYPICAL SECTION

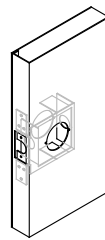
* ONLY 7'-0" DOORS MEET HANDICAP CODES.
 **NARROW CENTER RAIL USED FOR ANY DOOR UNDER 2'10" NOMINAL



OPTIONAL Y LOCK
 (MORTISE)
 NOT RECOMMENDED
 FOR DOORS UNDER 2'10"



NON HANDED HINGE



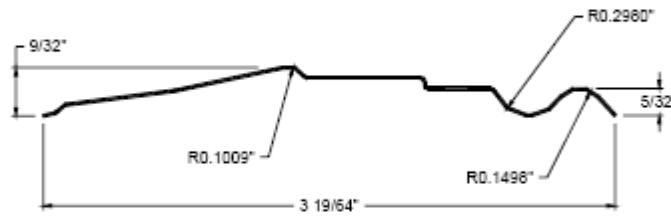
OPTIONAL D LOCK
 (BORED)



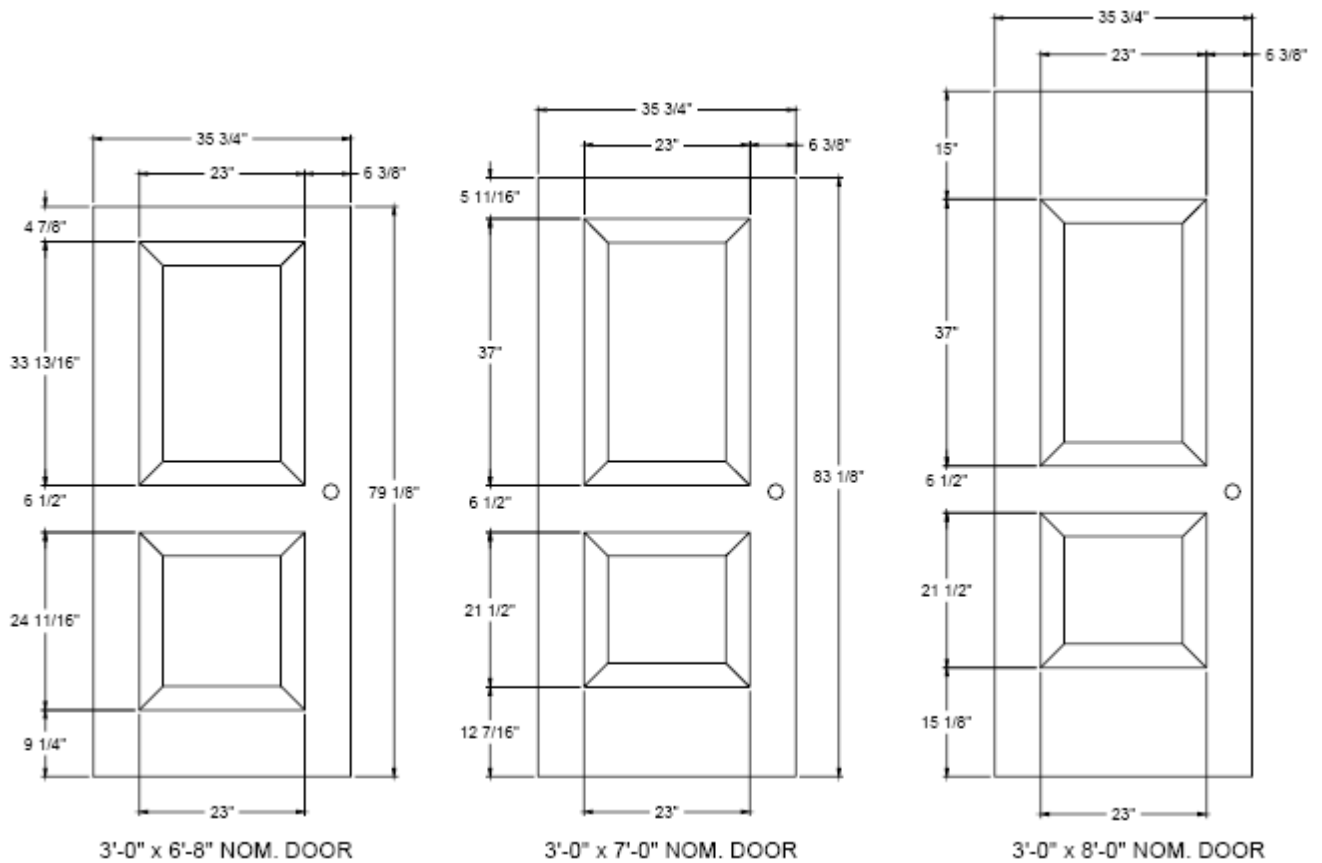
UNIVERSAL STRIKE
 (4 7/8")



P2
18 GAGE ONLY



EMBOSSMENT DETAIL



ENGINEERING DATA
SUPER-CORE®

THERMAL PROPERTIES	
"K" Factor @ 70° Mean Temperature	.157 Btu-in/sq. ft. - Hr. - F°
Service Temperature Range	-67° to 165° F.

PHYSICAL PROPERTIES	
Nominal Density	1.0 lbs./cu. ft.
Compressive Strength	1500-2000 lbs./sq. ft.
Tensile Strength	32.3 PSI
Shear Strength	18 lbs./sq. in.
Flexural Strength	34.5 lbs./in. width
Coefficient of Expansion (per °F.)	0.00002676
Sound Transmission	32db minimum (ASTM E-90-61T) Depends on type of construction.

WATER RESISTANCE PROPERTIES	
Capillarity	0
Water Absorption (ASTM #32127-62T)	Less than 2 % by volume

FIRE HAZARD CLASSIFICATION (1 5/8" MAX. THICKNESS)	
Fuel Contributed	20
Smoke Developed	75



SCOPE:

This bulletin covers details and features of the subject door.

PURPOSE:

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

DESCRIPTION:

Where flush panels are specified, note the chart on Page D-5.0 covering in detail the applicable physical properties of Black Mountain Door’s Super-Core material. Super-Core, the rigid foam plastic core in slab form is bonded to flush panels with an adhesive bead pattern approx. 4” on center.

The 300 Series doors are designed and fabricated to meet requirements found in extra heavy-duty unit specifications such as ANSI A250.8 Level 3 Model 3.

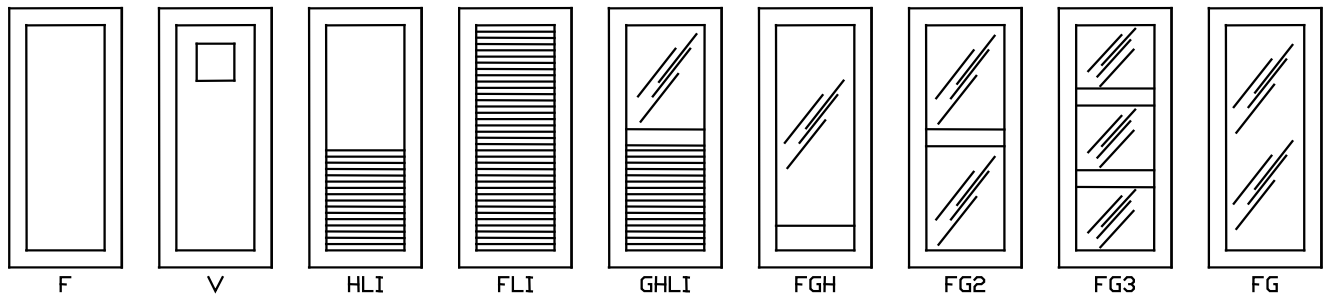
The stile and rail construction is superior in strength and integrity to a modified flush type door.

Perimeter stiles and rails may be optionally ordered with fiberglass insulation for additional sound deadening or thermal performance.

SUMMARY:

Black Mountain Door’s 300 Series door program includes a full range of styles that are engineered to meet all extra-heavy duty specification requirements.

AVAILABLE STYLES:



300 SERIES 1 3/4” SPECIFICATIONS**CONSTRUCTION:**

Doors shall be of rigid rail-and-stile construction in flush panel design. Stiles and rails shall be of 16 gage steel reinforced with channels, face welded and ground smooth at the corners. Panels shall be of flat, 18 gage steel, securely bonded by a thermosetting adhesive to Black Mountain Door’s Super-Core, a 1# density, odorless, rigid foam that is resistant to fungus, bacteria, moisture, mildew and rot. Optional insulation in perimeter stiles and rails is a 0.6# density fiberglass.

LABELS:

Available with UL (FG) or WHI (FG – FGH – FG2 – FG3) 20-minute x no hose stream based on UL-10C positive pressure (Single doors only, 4'-0" X 8'-0" maximum).

HARDWARE:

Preparations for field installation of locksets shall comply with ANSI/BHMA A156.115. The lock reinforcing shall be 14 gage, pierced and tapped for mounting specified locksets. Mounting holes for surface applied escutcheons shall be drilled in the field by others. All doors require locksets with flat faces.

Hinge mortises shall be reinforced with 10 gage steel (7 gage optional) welded in place. Piercing and tapping shall accept 1 1/2 pairs of 4 1/2" x 4 1/2" template hinges (5" regular or heavyweight optional). Hinges furnished by others. Mortises shall extend the full width of hinge stile and filler plates shall be provided to permit installation of hinges for right or left hand swing, as specified. 4 1/2" hinge preparation shall accept both regular and heavy weight hinges.

When specified, a closer reinforcing and/or 14 gage push-pull and exit device reinforcing shall be furnished. Reinforcing must be drilled and tapped in the field. 8" top rails (glazed units only) may be required for certain parallel arm closers. Consult hardware templates.

Inactive leaves, where called for on drawings or in the door schedule, shall be mortised and reinforced with 16 gage steel for top and bottom flush bolts and 4 7/8" Universal strike in compliance with ANSI/BHMA A156.115. Inactive leaves of pairs of doors are available with factory installed wrap-around astragal, or without astragal, for use with purchased weather-stripping. Flush bolt preparation is optional. Inactive leaves to be used with push-pull plates or rim-panic devices shall have blank panels and be furnished without astragals.

GLAZING:

Doors of half glass or full glass types shall be furnished with formed 20 gage CR/GAL steel vision frame of the screw fastened type, to permit selection of secure side in the field. Glazing arrangements shall accommodate 1/4" thick glass, supplied by others.

LOUVERS:

Louvers shall be of insert type with inverted "V" of "Y" blades.

FINISH:

Exposed surfaces on doors shall be cleaned and given one coat of synthetic resin, rust-inhibitive primer.

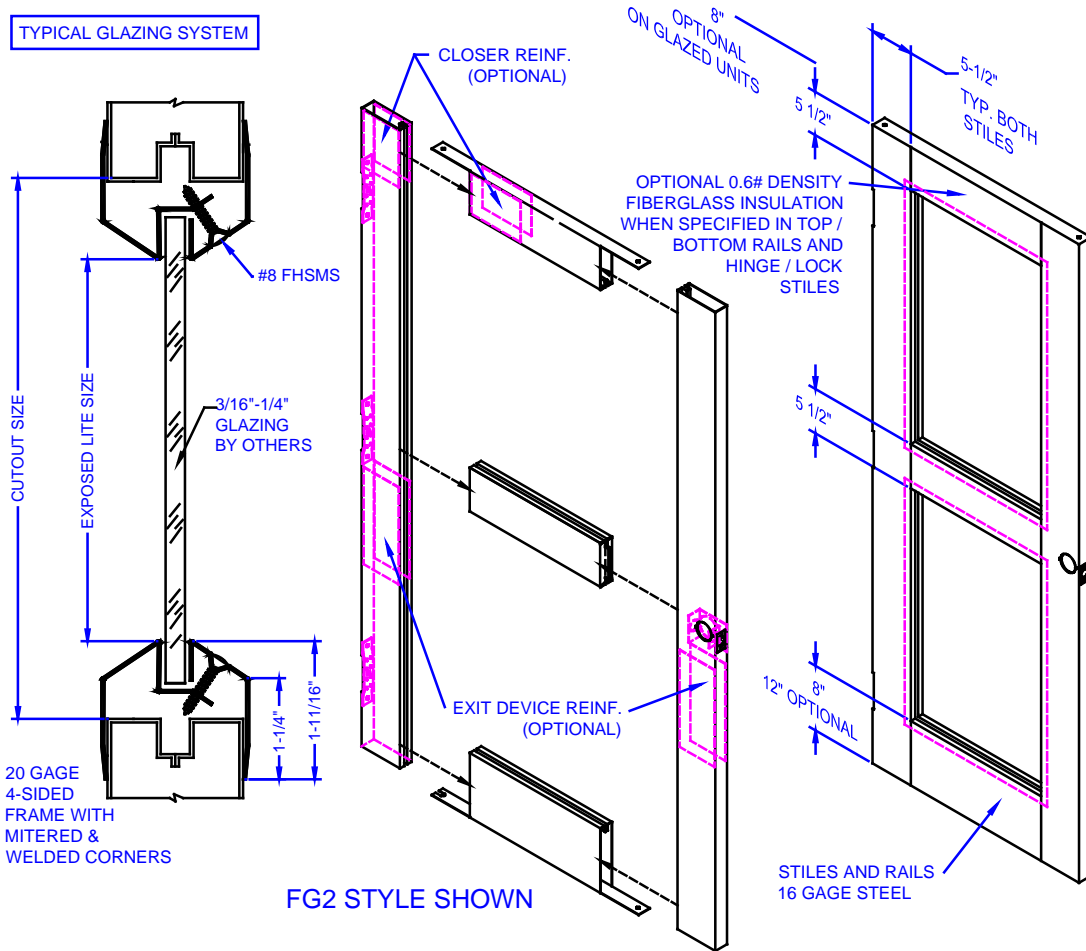


STANDARD DOOR SIZES:

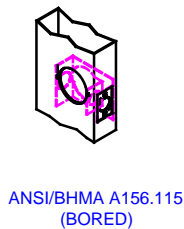
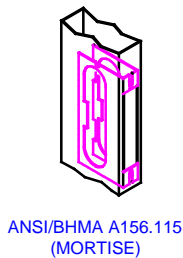
Width 2'0"⁽¹⁾, 2'4"⁽¹⁾, 2'6"⁽¹⁾, 2'8"⁽¹⁾, 3'0", 3'4", 3'6", 3'8", and 4'0"
 Height 6'8", 7'0", 7'2"⁽²⁾ and 8'0"⁽³⁾

Undercut 3/4" standard. Contact Black Mountain Door for other options.

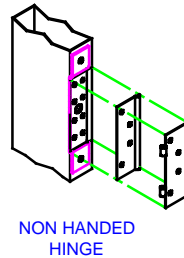
- (1) Doors under 3'0" not available in F designs.
- (2) 7'2" high doors are limited to the F, G, GHLI, FG and FLI elevations and or blank lock preparations. Muntin kits not available for 7'2" units.
- (3) 8'0" high doors are limited in width from 2'6" – 4'0" to the F, G, GHLI, FG and FLI elevations and Fed. 86 blank lock preparations.



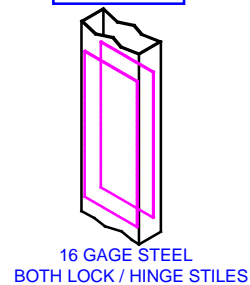
TYPICAL LOCK PREPARATIONS



HINGE DETAIL



PANIC REINF.



SCOPE:

This bulletin covers the details of Black Mountain Door's bullet resisting assembly program.

PURPOSE:

To insure the distributors and Black Mountain Door personnel are aware of all the special rules that apply to this type of unit.

THE TEST-UL:

The door assemblies were tested by ULI using their standard UL752 "Bullet Resisting Equipment." It is a relatively simple test. A series of guns are fired at the test unit at an approximate 15-foot range. If the bullet is stopped by the door, frame and hardware, the unit passes. If the bullet passes through the assembly and it strikes the wall immediately behind the test specimen, the unit fails. Specific target areas include the middle of the door, the frame face, the clearance between the door and frame, and the center of the lock cylinder.

The standard 1538 Series x 1600 Series reinforced frames passes the initial test, UL752 Level 1. It involves the use of a Super 38 Automatic or a 9 mm weapon.

The 1544 Series x 1400 Series reinforced frame passes the second and third tests, UL752 Level 3, employing a .357 magnum revolver and a .44 magnum revolver.

A chart from UL752 follows. It provides you with a more complete description of the weapons employed.

THE DOOR:

The 1538 Series door is a 15LE Series door with one 14 gage plate welded to the outside of the door. The 1544 Series door is the same as the 1538 Series except it has an extra 14 gage plate welded to the inside face of the door. Note that 5" heavy weight hinges are standard with all Bullet-Resisting doors. Unlike most Black Mountain Door doors, these doors must be ordered handed.

THE FRAME:

The 1538 Series door must be used with a 14 or 16 gage frame with 14 gage reinforcing covering the inside of the face and the stop-rabbit joint on the non-door side of the frame. The frame is Series 1600. The 1544 Series door must be used with a 14 or 16 gage frame with 14 gage reinforcing covering the inside of both the faces and both stop-rabbit joints. The frame is Series 1400. All frames must be set up with welded and ground smooth corners at Black Mountain Door except when shipped to UL Fab-A-Frame distributors. They are authorized to weld corners.

Welded-in steel stud, wood stud anchors or completed opening anchors are required because of the internal reinforcing. A welded "T" or "snap-in" masonry anchor is the standard for masonry construction.

THE LOCK:

A separate series of tests were applied to the cylinder of the lockset chosen by the manufacturer. In Black Mountain Door's case, it was our mortise lockset part 95005-07* or 95005-08* that was subjected to the .44 magnum. The lock passes the test with no apparent difficulty. Based on these tests, the attached listing of locksets has been approved.



THE PACKAGE:

The door, frame, 5" heavy duty hinges and lockset must be sold as a package. Closers need not be included in the sale of Black Mountain Door's bullet resisting doors, but the door and frame must be sold with one of the 95004*, 95005*, or 95006* Series locksets, or 95008*, 95009* Panic Devices on the attached list and whatever 5" heavy duty hinge you feel is appropriate. Orders for any deviation from the UL's defined program will be returned to the distributor or shipped without UL label.

* Changes to Inventory Numbers have been implemented since testing. Please see the attached chart for a current inventory offerings.

THE LABEL:

The 1538 Series door may bear a Mylar label which indicates it is listed to resist medium power small arms (UL 752 Level 1). The 1544 Series door will bear a Mylar label which indicates it is listed to resist super power small arms (UL 752 Level 3). It will also be furnished when a high power small arms label is specified.

Note that while they are UL labels, they have nothing to do with fire doors. Neither the 1538 nor the 1544 Series door have a fire door listing.

SPECIAL NOTE: Only the door will carry the label. The frame and lockset are considered part of the assembly but do not carry any special marking. Special care will have to be taken by the distributor to see that the frames and locks are segregated at the job site to insure they are used with the labeled door.

RATINGS OF BULLET-RESISTING MATERIALS

Minimum Velocity

Rating	Ammunition	Grain	(g)	fps	(m/s)	No. of shots
Level 1	9 mm Full Metal Copper Jacket with Lead Core	124	(8.0)	1,175	(358)	3
Level 2	.357 Magnum Jacketed Lead Soft Point	158	(10.2)	1,250	(381)	3
Level 3	.44 Magnum Lead Semi-Wadcutter Gas Checked	240	(15.6)	1,350	(411)	3
Level 4	.30 Caliber Rifle Lead Core Soft Point	180	(11.7)	2,540	(774)	1
Level 5	7.62 mm Rifle Lead Core Full Metal Copper Jacket, Military Ball	150	(9.7)	2,750	(838)	1
Level 6	9 mm Full Metal Copper Jacket with Lead Core	124	(8.0)	1,400	(427)	5
Level 7	5.56 mm Rifle Full Metal Copper Jacket with Lead Core	55	(3.56)	3,080	(939)	5
Level 8	7.62 mm Rifle Lead Core Full Metal Copper Jacket, Military Ball	150	(9.7)	2,750	(838)	5
Supplementary	12-gauge Rifled Lead Slug and	437	(28.3)	1,585	(483)	3
Shotgun	12-gauge 00 Lead Buckshot (12 pellets)	650	(42)	1,200	(366)	3

NOTE: Maximum velocity is 110 percent of the minimum velocity.



CURRENT BELLET RESISTING HARDWARE LIST:

APPROVED HARDWARE FOR BULLET RESISTANT OPENINGS

Must be Ordered with Bullet Resistant Door and Frame Components.
 Contact Black Mountain Door for Pricing.

Knob - Escutcheon				Black Mountain P/N for Corbin Russwin (26D Finish)
Corbin Russwin	Dorma Door Controls	Schlage	Yale	
ML 2051 GMW Entrance	ML 9050	L9453P	8747FL	95004-08
ML 2055 GMW Classroom	ML 9070	L9070P	8708FL	95004-12
ML 2057 GMW Storeroom	ML 9080	L9080	8705FL	95004-14

Contact Hardware Sales for Part Number and availability of other manufacturers & finishes.

Knob - Sectional Trim				Black Mountain P/N
Corbin Russwin	Dorma Door Controls	Schlage	Yale	
ML 2051 GWC Entrance	ML 9050	L9453P	8747FL	95005-08
ML 2055 GWC Classroom	ML 9070	L9070P	8708FL	95005-12
ML 2057 GWC Storeroom	ML 9080	L9080	8705FL	95005-14

Contact Hardware Sales for Part Number and availability of other manufacturers & finishes.

Lever - Escutcheon				Black Mountain P/N
Corbin Russwin	Dorma Door Controls	Schlage	Yale	
ML 2051 LMW Entrance	ML 9050	L9453P	8747FL	95476-06
ML 2055 LMW Classroom	ML 9070	L9070P	8708FL	95476-05
ML 2057 LMW Storeroom	ML 9080	L9080	8705FL	95476-04

Contact Hardware Sales for Part Number and availability of other manufacturers & finishes.

Lever - Sectional Trim				Black Mountain P/N
Corbin Russwin	Dorma Door Controls	Schlage	Yale	
ML 2051 LWA Entrance	ML 9050	L9453P	8747FL	95475-09
ML 2055 LWA Classroom	ML 9070	L9070P	8708FL	95475-89
ML 2057 LWA Storeroom	ML 9080	L9080	8705FL	95475-07

Contact Hardware Sales for Part Number and availability of other manufacturers & finishes.

Exit Devices*				Black Mountain P/N
Corbin Russwin	Dorma Door Controls	Schlage	Yale	
ED 6200 Rim Panic	9300 Push Bar - Rim	88EO	1500	95008-02
ED6600 Mortised Panic	9500 Push Bar - Mortised	8875L	1530	95009-02

* No Outside Trim or Cylinder Permitted.

Contact Hardware Sales for Part Number and availability of other manufacturers & finishes.

Hinges		Black Mountain P/N
5" x 4-1/2" Heavy Duty Hinges - BB - NRP		95000-26



SCOPE:

This bulletin covers the details and features of the subject door.

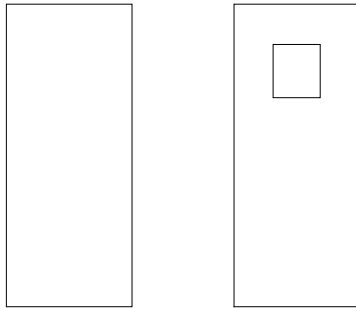
PURPOSE:

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

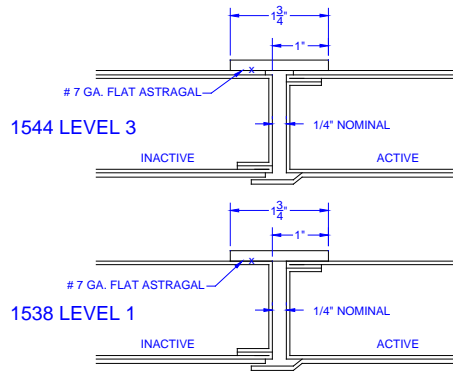
DESCRIPTION:

- 1) Please note that the chart covering in detail the applicable physical properties of Black Mountain Door's Super- Core® material, as shown on page D-5.0.
- 2) Super-Core®, a rigid foam plastic core, is in a slab form and bonded to the panel faces with a highstrength thermosetting adhesive. The adhesive is applied in a horizontal bead pattern approximately 4" on center.
- 3) As can be seen from the following pages, the units meet all requirements normally found in heavyduty unit specifications plus it give the user the obvious security benefits of additional 14 gage steel panels, one panel formed to protect the strike edge of the assembly.
- 4) Unlike most Black Mountain Door doors, the 1538 & 1544 Series are handed. Handing must be specified when ordering.
- 5) Note that the standard hinge preparation is for 5" heavy weight hinges.
- 6) Note also that trimming of the lip of the strike is assumed to be done in the field by others if a lipped strike is employed or order strikes 7/8" lip to center.
- 7) 1538 Series doors may receive a UL bullet-resisting door assembly label. The label indicates it has passed UL's test on resisting medium power small arms (UL 752, Level 1). 1544 Series doors may receive a UL bullet-resistant door assembly label. This label indicates it has passed the UL test on resisting super power small arms (UL 752, Level 3). (Note that these are not fire door labels.) The label has to be specifically ordered, and can only be furnished when ordered as an assembly (door, frame and hardware).
- 8) Doors with a vision lite will be shop glazed with 1 1/4" Lexgard®. The Lexgard will be masked to provide protection during the shipment. Masking should be removed at the job site after installation is complete.





Available Styles (F & V)



Astragal application for Pairs (8080 Max).

1538-1544 SERIES 1 3/4" SPECIFICATIONS

Contractor shall furnish and install steel doors as manufactured by Black Mountain Door, LLC. in all openings except as otherwise provided for in the specifications.

CONSTRUCTION - Security doors shall be of rigid full-flush type construction in flush panel design with 14 gage steel exterior security cover plates. Cover panels shall be of galvanized steel. Panels shall be of flat 16 gage steel, and be securely bonded by a thermosetting adhesive to Black Mountain Door's Super-Core, a 1# density, odorless, rigid foam that is resistant to fungus, bacteria, moisture, mildew and rot. The door is handed.

HARDWARE - Lockset reinforcing shall provide for field installation of locksets manufactured in accordance with ANSI/BHMA A156.115 (Mortise sectional Trim Preparation). The lock front reinforcing shall be 14 gage. They shall be pierced and tapped for mounting specified locksets. Mounting holes for escutcheons, cylinders, thumb pieces, knobs and/or lever handles shall be drilled in the field by others unless specified on the order. All doors require locksets with flat faces.

Hinge mortises shall be reinforced with 7 gage steel, welded in place and tapped for 1 1/2 pairs 5" heavy weight templated hinges (2 pairs at doors over 7'6"). Door shall be handed right or left, determined by exterior placement of the 14 gage cover plate.

All 1538-1544 Series doors shall be prepared with a closer reinforcing which will accept most regular or parallel arm applications. When specified, a 14 gage push-pull and exit device reinforcing shall be furnished. Reinforcings must be drilled and tapped in the field.

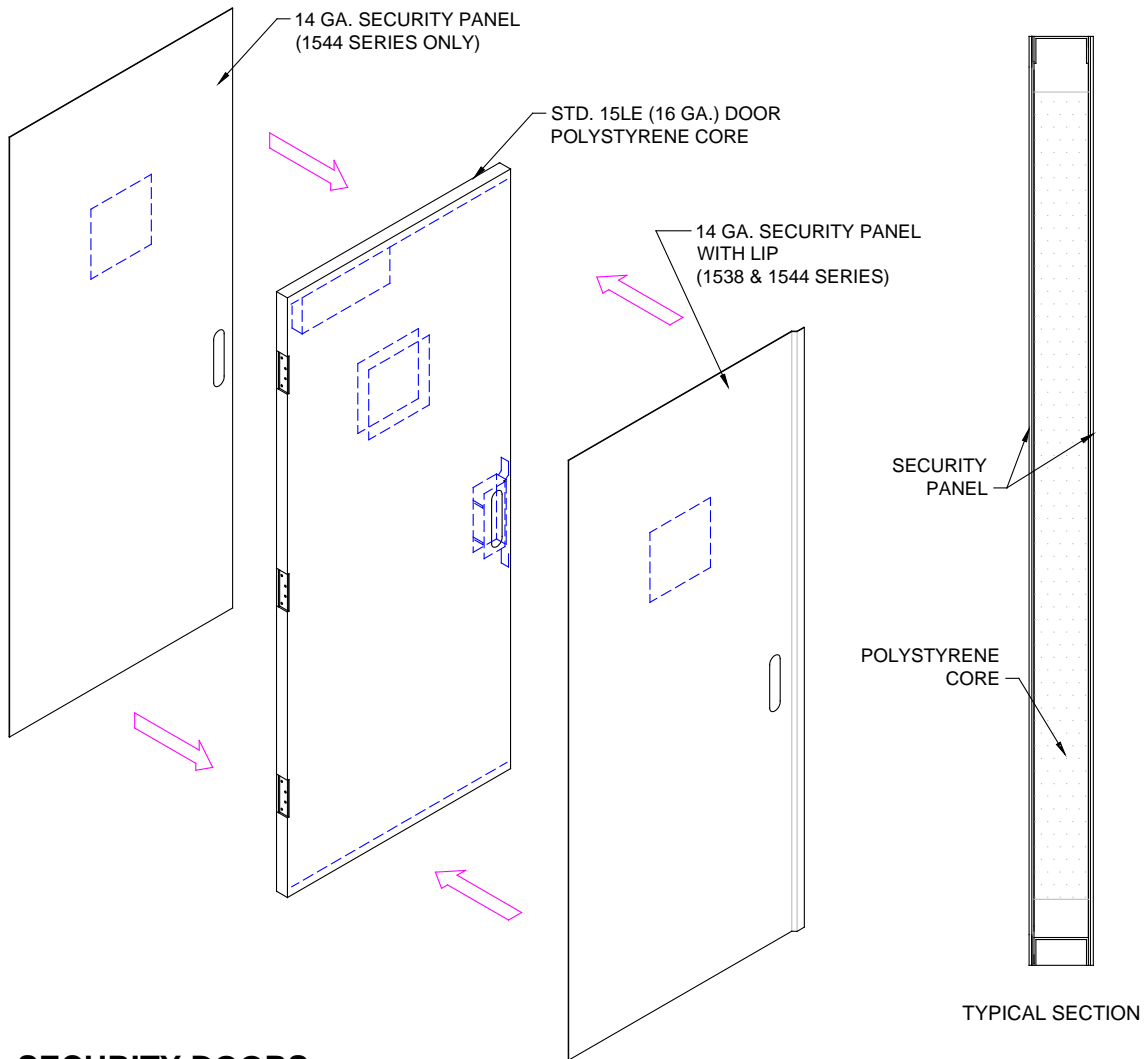
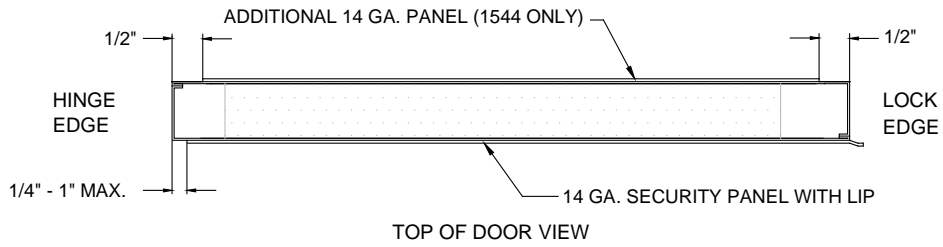
FINISH - The basic door is made of electro zinc-coated steel. The security cover plate is made of 14 gage galvanized steel. The assembly shall be cleaned and given one baked-on shop coat of gray primer.

GLAZING - Vision light doors shall be furnished with formed steel members designed to accommodate 1 1/4" thick Lexgard® lights whose cL is located 5' 2 1/2" from the bottom of the door with net opening of 12" x 12".

STANDARD DOOR SIZES -

Width 2'0", 2'4", 2'6", 2'8", 2'10", 3'0", 3'4", 3'6", 3'8", 3'10" and 4'0" (Singles)
Height 6'8", 7'0", 7'2", 7'10", 8'0". (8'0"x8'0" Max Pairs)
Undercut is 3/4" standard

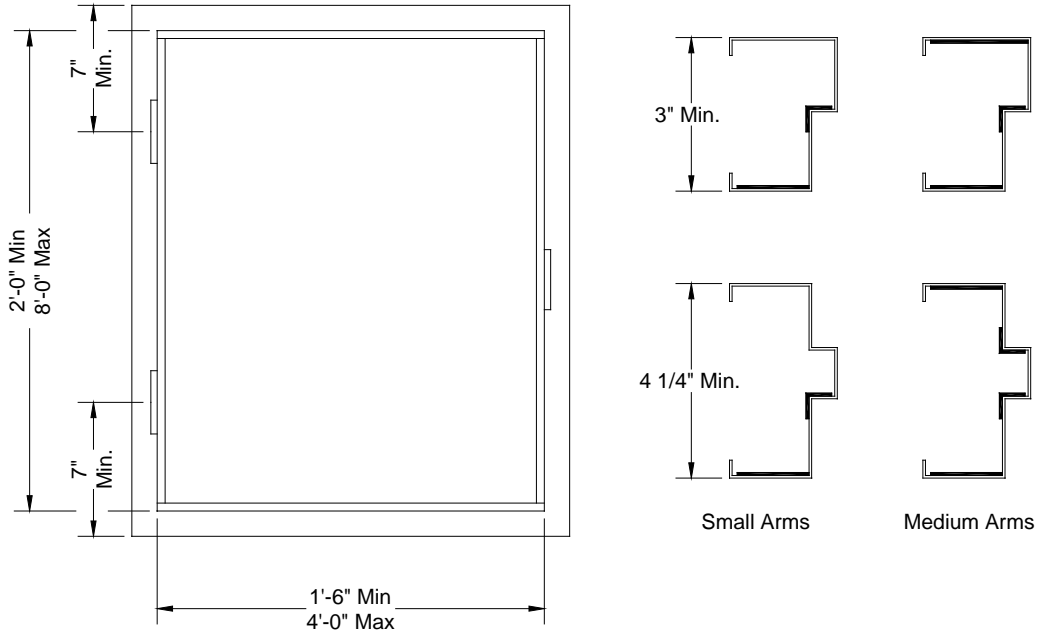




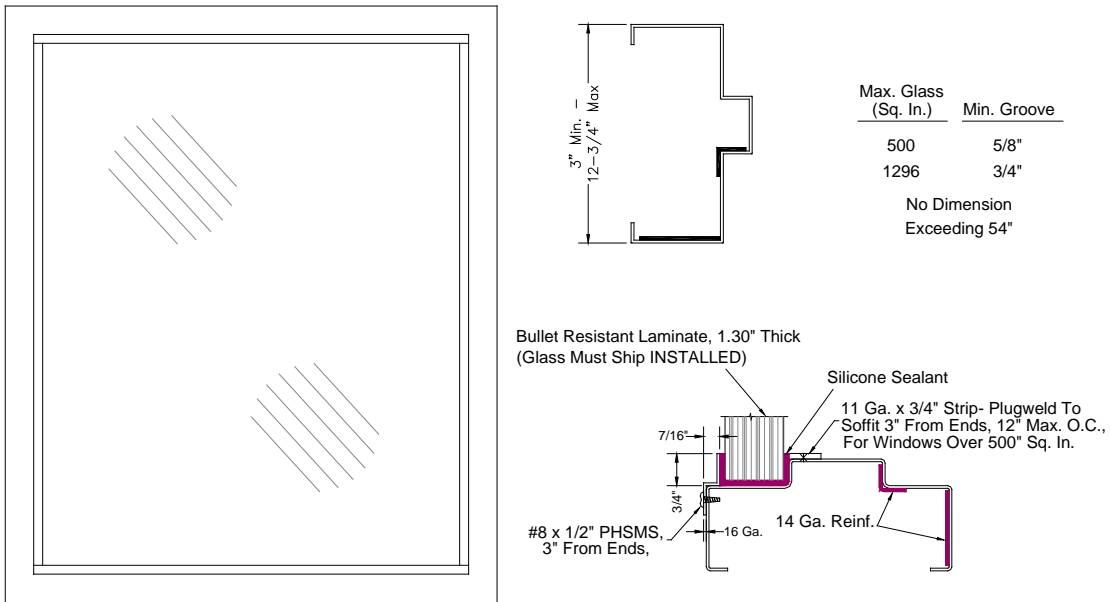
SECURITY DOORS
 1544 SERIES (QTY 2 - 14 GAGE PANELS)
 1538 SERIES (QTY 1 - 14 GAGE PANEL)

Additional Details:

1-3/4" 400 Series UL Frame for Bullet Resisting (Four Sided) Access Doors



1-3/4" 400 Series UL Frame for Bullet Resisting Borrowed Lite



Contact Black Mountain Door for quoting bullet resisting borrowed lite units.

SCOPE:

This bulletin covers the data developed during a series of tests that were run to determine appropriate acoustical capability of Super-Core® and SoundShield® doors.

PURPOSE:

To insure the reader has all the data needed to document this very significant characteristic of acoustical units.

DEFINITIONS:

In most technical areas, a proper understanding of the terms used in the discipline is a requirement for you to be able to study, analyze and discuss the performance of Black Mountain Door units. Listed below are some of the terms most commonly involved with the acoustical performance of a building, a room or a door.

Sound is a pulsation of air pressure capable of being heard. It is generated by vibrating objects, surfaces, or turbulent air.

Noise can be defined as unwanted sound. One man’s music can be, if it’s unwanted, another man’s noise.

Decibel is a division used to express the ratio of two like quantities, such as acoustical power. It is abbreviated as “dB”. It is sometimes used to compare loudness against the faintest sounds capable of being heard. For this use, the following table could be used as a guide.

dB	Sensation	Possible Sources
100-120	Deafening	Industrial machinery, jet engines
80-100	Very loud	Cocktail party, boom box
60 - 80	Loud Noisy	Office, dinner speaker
40 - 60	Average	Average residence, quiet speech
20 - 40	Faint	Soft whisper, recording studio
0 - 20	Very Faint	Acoustical laboratories, Deep Caves

Frequency is the rate of sound pulsations. When measured in cycles per second (cps) it is called hertz (abbreviated “Hz”). “Pitch” is the subjective response to “frequency,” so high pitched sounds have high frequencies and low pitches have low frequencies. Speech contains mostly frequencies between 100 to 5000 hertz, but young children can hear from less than 20 to more than 20,000 hertz.

Transmission is the passage of sound through a medium, whether air or solid. A pulsating air pressure will vibrate a barrier, causing it to transmit sound. A barrier which minimizes this transmission is commonly said to have a good *attenuation, sound isolation, sound insulation, or sound performance*. A barrier which is cracked or porous allows sound to pass through these openings. it has poor sound performance and, for most practical purposes, no value.

Transmission Loss is the ratio, expressed in decibels, of the sound energy on the loud side of a barrier to that on the quiet side. It is a fixed property of the barrier and not dependent upon the loudness of the sound.

Absorption is the process of removing sound energy. It occurs in both porous and solid materials. The sound energy is usually converted to heat. Soft, porous materials are often exposed within a room to absorb noise; within a wall, they are sometimes effective in damping the vibration of the surfaces.



Sound Transmission Class or STC is a single-figure rating system designed to give an estimate of the sound insulation properties of a partition. It is intended for use primarily when speech and office noise constitute the principal problem. ***The higher the rating, the more effective the barrier.***

Acoustics is the science of sound. It includes the generation, control, propagation, and reception of sound.

THE TEST - GENERAL

The information listed below was obtained from formal reports issued by the Riverbank Acoustical Laboratories, Geneva, Ill.

Formal certificates attesting to these results are available from Black Mountain Door if requested by a code official, professional engineer, or a person with a legitimate interest in the matter.

TEST SPECIMENS:

The units tested were operable 3070 units. Three butts were employed. A standard 161 cylindrical or #86 mortise lock was installed in all units. All doors were hung in a 16 gage 6 3/4" frame, grouted in place. The frame was equipped with regular commercial weatherstripping for STC doors 36 and lower. On 51LE and 53LE series doors, frame gasketing used was a combination of multiple weather-strips. All doors were tested fully operable.

THE TESTS:

The tests were made in explicit conformance with ASTM Designation E90.

The doors were opened and closed in a normal manner ten times before testing, and measurements made with no further adjustment.

The frame was installed by mortaring into a steel adapter, which was then set into a double wall designed by the Lab to exceed expected door capability. All joints between the wall and the adapter were sealed to eliminate any effect on test results. Room temperature and humidity were recorded.

The test signal was sent into half of the facility. Measurements were recorded continually in both halves of the unit during a complete sweep from 100 to 5,000 cps. For the report, data is tabulated at the 18 standard frequencies.

Transmission loss is computed from the measured noise reduction by adjustment for sample size and room absorptions. The sound transmission class (STC) is computed from the method recommended by ASTM E413.

THE TEST RESULTS:

The sound transmission class of the standard units tested were as follows:

61LE Series 1 3/4"	18 Gage Door	31
61LE Series 1 3/4"	20 Gage Door	31
15LE (17LE) Series 1 3/4"	20 Gage Door	32
15LE (17LE) Series 1 3/4"	16 Gage Door	35



The sound transmission class of our higher rated SoundShield® units tested were as follows:

51LE (5142/5342) Series 1 3/4"	16 Gage Door	42
51LE (5145/5345) Series 1 3/4"	16 Gage Door	45

The STC 45 door incorporates a security panel making it especially suitable for conference rooms where both acoustics and security may be a factor. Due to the additional weight of the security panel, 5" hinges are required as a minimum.

On the 45 STC unit the frame must be shipped with the door and gasketing. On the 42 STC unit the door and the gasketing must be ordered and shipped together, but a standard frame can be used.

The 45 STC flush door unit is available with a U.L. 3/4 hour label with or without 250° temperature rise rating when UL listed single point locks are used.

STC Values of SOUNDSHIELD® DOORS

	61LE	61LE	15LE	15LE	15LE	51LE	53LE
	20 Gage	18 Gage	20 Gage	18 Gage	16 Gage	16 Gage	16 Gage
100	24	25	22	19	28	22	26
125	22	23	21	24	24	22	31
160	25	26	22	23	25	28	29
200	26	27	22	23	25	34	39
250	28	29	24	27	28	37	41
315	27	28	26	27	29	41	42
400	27	27	28	29	30	42	45
500	25	24	30	29	29	45	43
630	26	27	30	27	30	46	43
800	32	31	29	29	34	45	45
1000	29	29	30	35	35	44	46
1250	28	29	31	36	35	44	44
1600	36	37	35	37	37	43	46
2000	42	42	39	40	39	38	47
2500	45	45	44	43	44	39	47
3150	45	46	46	44	47	47	51
4000	42	43	44	43	43	51	52
5000	44	45	47	44	46	52	51
STC	31	31	32	33	35	42	45

FREQUENCY



DESCRIPTION OF INSTALLATION:

The proper function of acoustical doors relies on a combination of factors which, unfortunately, are under the control of various firms, trades, specifiers, suppliers or designers. Without the cooperation of all concerned, the installed opening may not function as intended. The most important factors to influence an acoustical door's function are:

- * Correctly specifying the door capability for the job condition. Some doors, although rated higher in overall STC rating, do not perform as well as lower rated doors in certain specific frequency ranges. For example, test results indicate that Black Mountain Door's STC 42 door will outperform Black Mountain Door's STC 45 door at frequencies between 500 and 800 Hz. Test reports should be consulted.
- * Room design should create a full enclosure equal to or greater than the door's capability. For example, walls that do not run full height to a similar STC-rated overhead structure will allow sound leakage through ceilings. Louvers, pipe chases, access doors, etc. installed in the same partition as the acoustical door may create additional points of sound leakage.
- * Carpeting, although considered a good source of sound absorption, should not be used underneath acoustical doors. Door bottom gaskets must compress against a solid object to affect a proper seal. Carpeting, by its pliant nature, does not provide a proper seal.
- * Frames for acoustical doors must be installed plumb, true, and rigid. Extra care must be taken by the installer as even a 1/16" variance normally acceptable for non-gasketed frames could impair gasket sealing. Frames should be solidly grouted into masonry walls or completely filled with dense insulation in stud walls. Butting the frame to stud walls should be avoided.
- * Walls should be sufficiently designed to, in addition to STC rating, maintain the frame rigidly in position and to support the additional weight of acoustical doors. A wall that flexes or moves each time the door is opened or closed cannot assure that gasket alignment will be maintained.
- * Doors must be hung in true alignment with frames. Clearances at head, jambs, and sills shall be consistent throughout their length. Hinge shimming is usually sufficient to accomplish this.
- * Prior to installation of doors, it is advantageous to caulk the inside of hinge and lock front mortises to minimize sound leakage through these areas. Where possible, caulking should be used inside of roses, knobs, or escutcheons where leakage in these areas may be a factor.
- * Hardware should be specified and provided giving special consideration to acoustical doors. Thru-bolted hardware, concealed closers, etc. can become sources of sound leakage. Stop-mounted hardware can restrict gasket function or adjustment. Deadlocking hardware, especially those relying on key turn operation, will suffer operational difficulties due to gasket compression necessary for proper seal. Electric strikes may not be capable of holding doors in a closed position once gasketing is compressed.

Lever handle lock trim is recommended to eliminate "hollow" knobs and allow for easier operation of doors that are subject to forces of gasket compression. Needless to say, all latching devices should be heavy duty.



SUBJECT:**SoundShield® (Acoustical) Doors****AMWELD 15LE-17LE-51LE-53LE-61LE Series Doors****NO: D-12.0****DATE: 03/12****PAGE: 5**

* Gasketing should be positioned to create proper contact along the door's entire perimeter. The test for proper contact is usually done with common letterhead paper. The paper should be rigidly held in place by inserting it between the door and gasket and then closing the door. If the paper is not rigidly held in place, the seal is inadequate. The paper test should be conducted along the entire perimeter.

Bear in mind that the extra weight and forces due to proper gasket compression of acoustical doors results in a door that is somewhat difficult to operate. This is a normal condition, therefore acoustical doors are not recommended for use in handicapped access areas or egress corridors. Also, be cautioned that since the atmospheric conditions, room volumes, sound diffusion, sophisticated test analysis equipment and strict control needed to maintain uniformity in laboratory testing are not achievable in most other installations, test results from field tests will vary somewhat from lab tests.

SUMMARY

By following the above cautions and recommendations, and with the cooperation of all concerned, acoustical doors should function to the fullest possible capability of their installation.



SCOPE:

This bulletin covers the use of Black Mountain Door's Amweld replacement door.

PURPOSE:

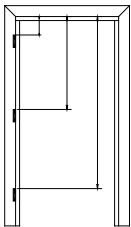
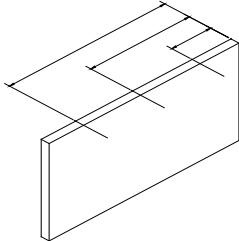
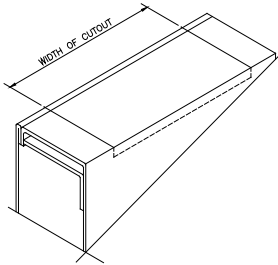
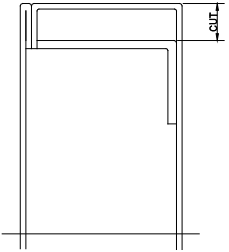
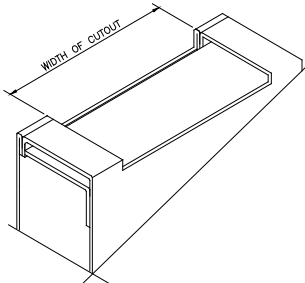
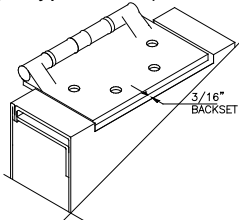
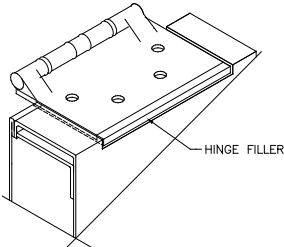
To advise the reader of the benefits that may be derived by the use of this type of door and to show the reader the proper method of modifying the unit.

DESCRIPTION:

Remodeling buildings is a major element in the current market. Black Mountain Door is offering a door unit to their program that is designed specifically for this purpose. Note the following:

- 1.) Unless specified locks will be prepared at Black Mountain Door standard location.
- 2.) An "L" shaped 10 gage channel along the hinge edge makes field or distributor modifications a relatively easy task.
- 3.) Hinge Fillers will be needed to complete door modification and must be ordered separately.

<i>Part Number</i>	<i>Description</i>	<i>Size</i>
#34134-00	with embossments for standard weight	4-1/2" Hinge
#34134-01	with no embossments for heavy duty weight	4-1/2" Hinge
#03441-00	with no embossments for std/hd weight	5" Hinge
- 4.) The 21LE Series will be furnished as a full flush. The 23LE Series will be furnished seamless on lock edge.
- 5.) The unit is available in 18 gage & 16 gage for the 21LE-23LE series.
- 6.) Doors can be labeled (UL) for 3 Hours: To be modified at UL Shops Only.

<p>A.) Measure Existing frame down from Rabbet on head to the top of existing hinges.</p> 	<p>B.) Mark Hinge edge of door at proper location. Be sure to include 1/8" top clearance.</p> 	<p>C.) Using hinge as a template. Scribe the hinge cutout.</p> 	<p>D.) Cut to top of reinforcement angle. (approx. . .210")</p> 
<p>E.) Complete removal of hinge blank and file burr.</p> 	<p>F.) Using Hinge as template, mark holes. Drill and tap reinforcement angle. (Drill size: #16{.177} tap to suit hinge- typ. #12-24)</p> 	<p>G.) Insert proper hinge filler and attach hinge.</p> 	<p>Aluminum Hinge Spacers are NO LONGER AVAILABLE</p> <p>ALUMINUM SPACER PARTS: #03470-00 – 4-1/2" Std #03471-00 – 4-1/2" Hd #03472-00 – 5" Std #03473-00 – 5" Hd</p> <p>WILL NO LONGER BE OFFERED FROM BLACK MOUNTAIN DOOR.</p>

SCOPE:

This bulletin covers specifications of Black Mountain Door's 1 3/4" access door and frame program.

PURPOSE:

To provide a concise specification on construction and availability of type and sizes.

DESCRIPTION:

Series 15LE-17LE and 35LE-37LE doors used with Series 400 frames are available as shown for the access door program. Black Mountain Door's anchoring system makes the door and frame applicable to virtually every type of wall construction, a feature that is not common with other types of access doors.

The unit is available non-labeled or 3 hour and 1 1/2 hour UL labeled. One additional important feature is that the 1 1/2 hour labeled doors may be provided with a "V" vision lite, "N" narrow lites for inspection purposes. Assemblies used in labeled situations for access, pipe chase and chute doors will be subjected to automatic closing devices, releasing devices, etc., as required to meet labeled and code requirements in your local area. For example, automatic closing of single swing doors may be accomplished by a listed door closer. This can be extended to include temperature release and smoke detection devices.

Note that the assembly must be furnished with a single point lock or latch. This will allow the access doors to be master keyed to the locks on the balance of the job, an important means of discouraging vandalism. It is necessary to be familiar with your local code requirements to order the door and frame with proper hardware reinforcements.

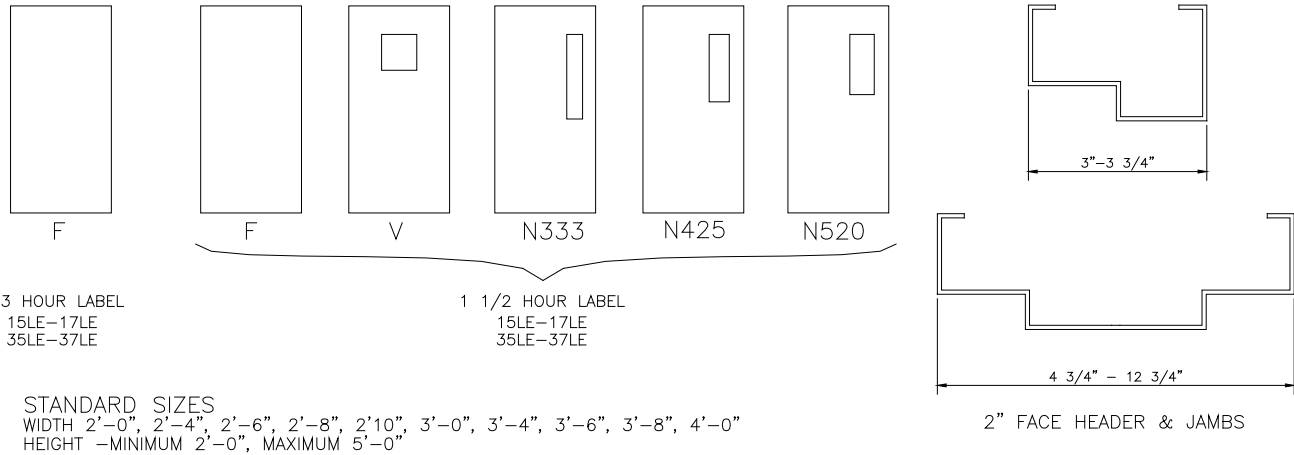
IMPORTANT NOTE: The rules for determining hinge and lock spacing on access doors are not the same as for special height assemblies that go into 3-sided frames. The 1/8" sill clearance makes the difference. See the enclosed details for determining these dimensions on 4-sided frame assemblies.

NON-FORMULA HARDWARE SPACING:

If, for some reason, there is a need for hardware spacing that does not conform to the locations indicated, the distributor must forward an initialed copy of form 9445A with the order. This cannot be handled by telephone. (Note that the form is based on hinge and strike centerlines.) Orders not complying with this requirement will be held in the Black Mountain Door Engineering Department until the form is received.

If additional copies of the form are required, they may be obtained through normal Customer Service sources by specifying Part D-9445A.





ACCESS DOOR & FRAME SPECIFICATIONS

Contractor shall furnish and install labeled or non-labeled access doors and frames as manufactured by Black Mountain Door, in all openings specified. Types and sizes are available as shown above.

THE DOOR - All doors will be manufactured under the specifications as published for the particular Series door as ordered.

Door panels shall be prepared and reinforced for standard hardware.

THE FRAME - All frames are formed of 16 gage steel with reinforced corners welded and ground smooth to present a neat appearance. Jambs are furnished with wall anchors adaptable to wall construction as specified.

THE LABEL - Access doors and frames are available with UL "3" or "1 1/2" hour labels as shown above. Labels will be furnished only when the door and frame are furnished as a unit. Hinges, listed locks and closers must be prepared for. Openings available for vertical (wall mounting) only.

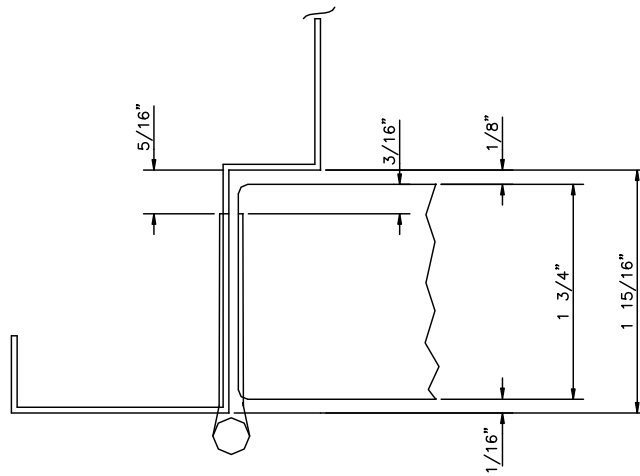
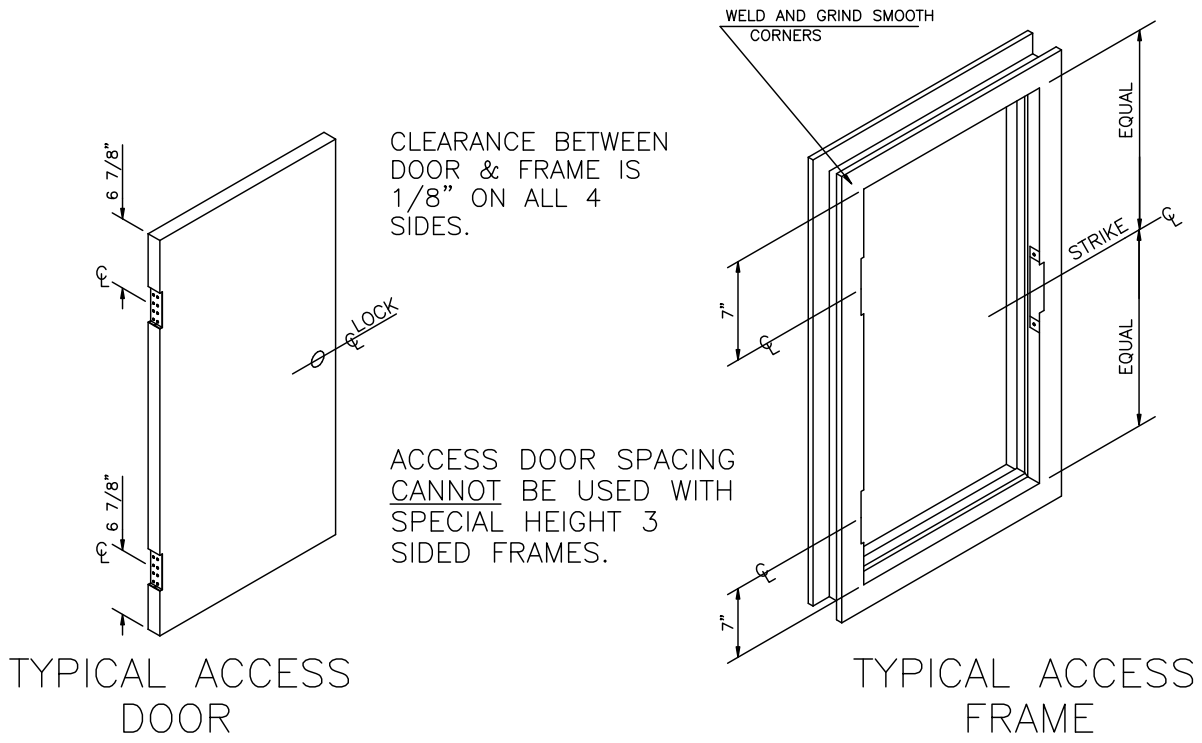
Frame Series/Gage	Door Series	Door Thickness	Door Gage	Label	Locks	Hinges
400-16	15LE-17LE 35LE-37LE	1-3/4"	20-18-16	3 Hour - 1-1/2 Hr	Cylindrical Mortised	1 Pair 4-1/2" x 4-1/2"

FINISH - For maximum resistance to rust and corrosion, all surfaces shall be cleaned, phosphatized and painted with gray primer.

STANDARD SIZES -

Width 2'0", 2'4", 2'6", 2'8", 2'10", 3'0", 3'4", 3'6", 3'8", 3'10" and 4'0"
 Height Minimum 2'0", Maximum 5'0"





1 3/4" DOORS

AMWELD'S DOOR, FRAME & HINGE RELATIONSHIP.

SCOPE:

This bulletin covers the details and features of Black Mountain Door's transom panels when used without a transom bar.

PURPOSE:

To give the reader full knowledge of this product.

DESCRIPTION:

While we believe the following details and specifications are self-explanatory, the following items should be noted.

1. Transom panels are to be furnished in flush type only.
2. Standard face sheets are 18 gage steel. 16 gage available when specified.
3. All preparations and additions to the panels, including the horizontal astragal, must be specified. If they are not, a non-astragal panel without hardware preparation will be assumed. The closer reinforcement location in panel will be identified with a "Hinge Jamb" sticker.
4. Transom panels are available in core construction only. (Kraft paper honeycomb for fire-rated assemblies.)
5. For sealing the clearance gap between the 55LE Series transom panel and the door, various types of weather-stripping are available. This application would be in addition to or in place of an astragal. The weather-stripping is to be installed by others.
6. All panels have a flush bottom condition. This eliminates the use of special closure caps in the 55LE Series.
7. Cartoning - Transom panels will be packaged with our standard door corner pads. The screws and instruction sheet will be found in an envelope inside the recessed top channel of the unit. The top angle will be nestled between a foam pad strip and the transom panel. This foam pad strip primarily protects the transom clips in shipment.

SERIES 55LE SPECIFICATIONS

Series 55LE transom panels shall be installed without transom bar.

CONSTRUCTION - Series 55LE transom panels shall have face panels of 18 gage steel (16 gage optional). With 18 gage steel channels forming the top and bottom closures, the face panels shall be securely projection welded 2" O.C. or laser welded around their entire perimeter.

The panels shall be securely bonded by a thermosetting adhesive to Black Mountain Door's Super-Core®, a 1# density, odorless, rigid foam that is resistant to fungus, bacteria, moisture, mildew and rot.

The continuous top angle, furnished for adjustable top securement of the transom panel in the opening, shall be 18 gage steel. Top angle to be held in place with #10 x 1 1/2" pan head sheet metal screws.

The transom mounting clips shall be 14 gage steel, welded to the vertical closures of the panel proper. The transom panel is to be field-fastened in opening by securing clips to frame rabbets with #10-24 x 1/2" flat (undercut-head) self-tapping machine screws.

When specified, a 12 gage flat-strip astragal shall be factory installed on the transom panel. Astragal to be welded approximately 6" on center.



Hardware Preparations (When Specified)

- 1) Steel channel closer reinforcement.
- 2) Mortised and reinforced with 14 gage steel for flush bolt application.
- 3) Reinforced with 14 gage steel for surface bolt application.

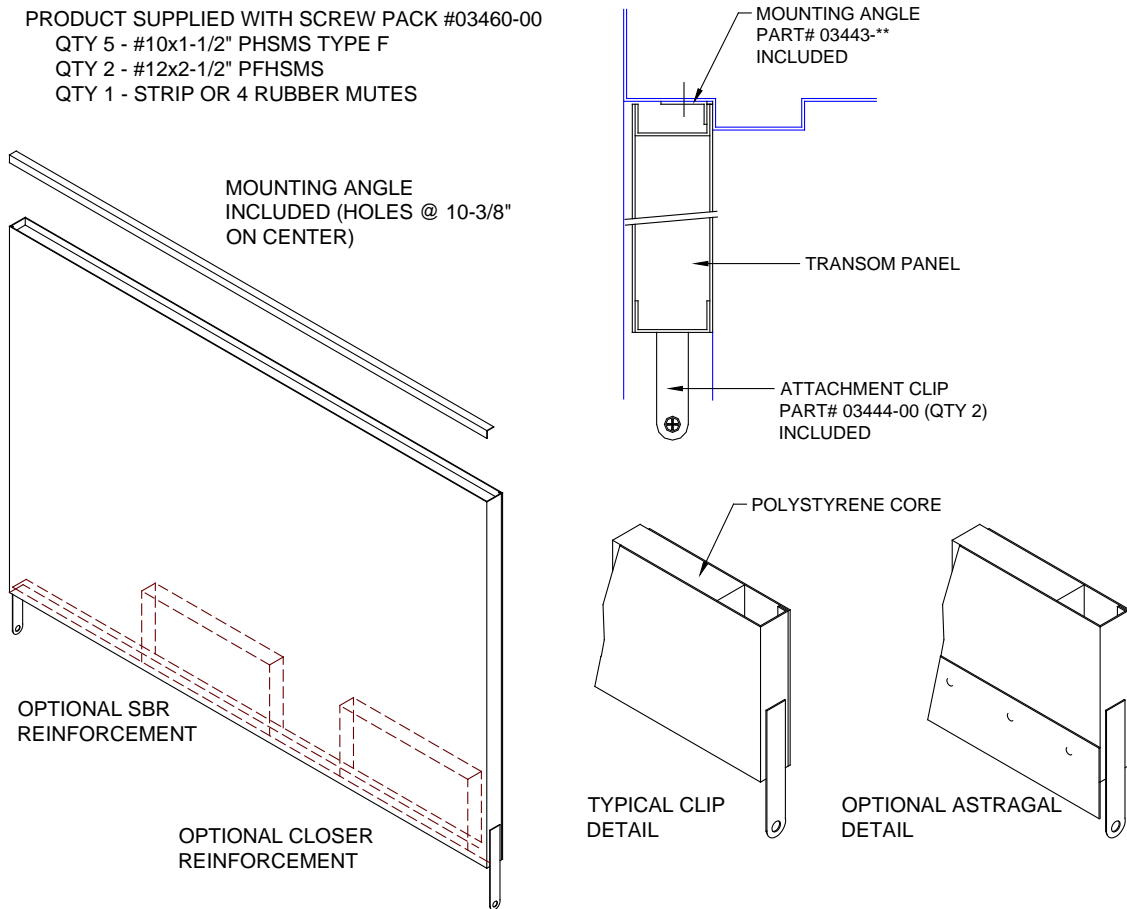
FINISH - Exposed surfaces on doors shall be cleaned, treated with a three (3) stage iron phosphate and given one shop coat of synthetic resin, rust-inhibitive alkyd enamel primer.

STANDARD SIZES

Width* 2'0", 2'4", 2'6", 2'8", 2'10", 3'0", 3'4", 3'6", 3'8", 3'10", 4'0"
 4'8", 5'0", 5'4", 6'0", 6'8", 7'0", 7'4", 7'8", 8'0"
 Height * 8" to 48"

**Dimensions shown are nominal and subject to normal clearances.*

PRODUCT SUPPLIED WITH SCREW PACK #03460-00
 QTY 5 - #10x1-1/2" PHSMS TYPE F
 QTY 2 - #12x2-1/2" PFHSMS
 QTY 1 - STRIP OR 4 RUBBER MUTES



SCOPE:

This bulletin covers the details and features of Black Mountain Door's transom panels when used with a transom bar.

PURPOSE:

To give the reader full knowledge of this product.

DESCRIPTION:

Although the following details and specifications are self-explanatory, the following items should be noted.

- 1) Transom panels to be furnished in flush type only.
- 2) Standard face sheets are 18 gage steel. 16 gage available when specified.
- 3) Standard transom panel is removable, non-security type, with mounting screws through the face of panel. Full security type, fastened through back of frames, must be specified.
- 4) Cartoning - Transom panels will be packaged with our standard door corner pads. The screws and instruction sheet will be found in an envelope inside the recessed top channel of the unit.
- 5) It should be noted that the 56LE Series panel is designed to be used with a header. If floor-to-ceiling units are required, the 55LE Series must be specified.

56LE SERIES SPECIFICATIONS

56LE Series transom panels shall be installed with transom bar. Standard panel shall be removable when desired. Full security type, non-removable, is optional.

CONSTRUCTION - 56LE Series transom panels shall have face panels of 18 gage steel (16 gage optional). With 16 gage steel channels forming the top and bottom closures, the face panels shall be securely projection welded 2" O.C. or laser welded around their entire perimeter.

The panels shall be securely bonded by a thermosetting adhesive to Black Mountain Door's Super-Core®, a 1# density, odorless, rigid foam that is resistant to fungus, bacteria, moisture, mildew and rot.

Transom panel to be field-fastened in opening with #12 x 2 1/2" flat head (Phillips) sheet metal screws.

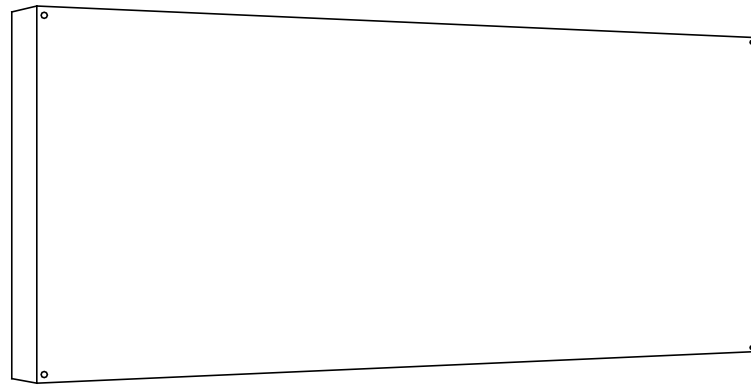
FINISH - Exposed surfaces on doors shall be cleaned, treated with a three (3) stage iron phosphate and given one shop coat of synthetic resin, rust-inhibitive alkyd enamel primer.

STANDARD SIZES

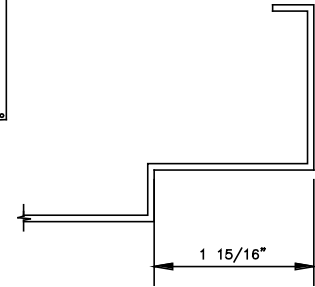
*Width 2'0", 2'4", 2'6", 2'8", 2'10", 3'0", 3'4", 3'6", 3'8", 3'10", 4'0"
 4'8", 5'0", 5'4", 6'0", 6'8", 7'0", 7'4", 7'8", 8'0"
*Height 8" to 48"

**Dimensions are nominal and subject to normal clearances.*

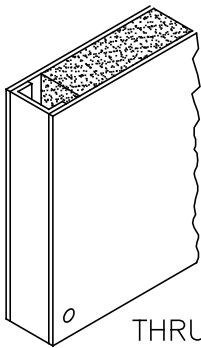




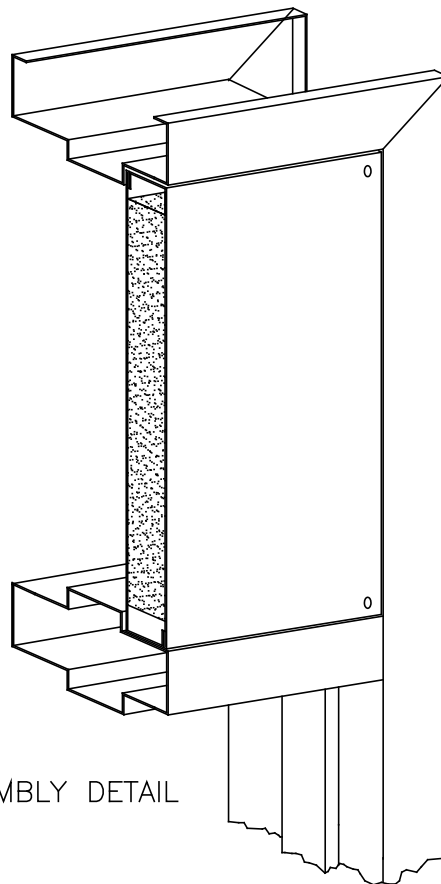
WELDS APPROX. 2" O.C.



HORIZ. SECTION



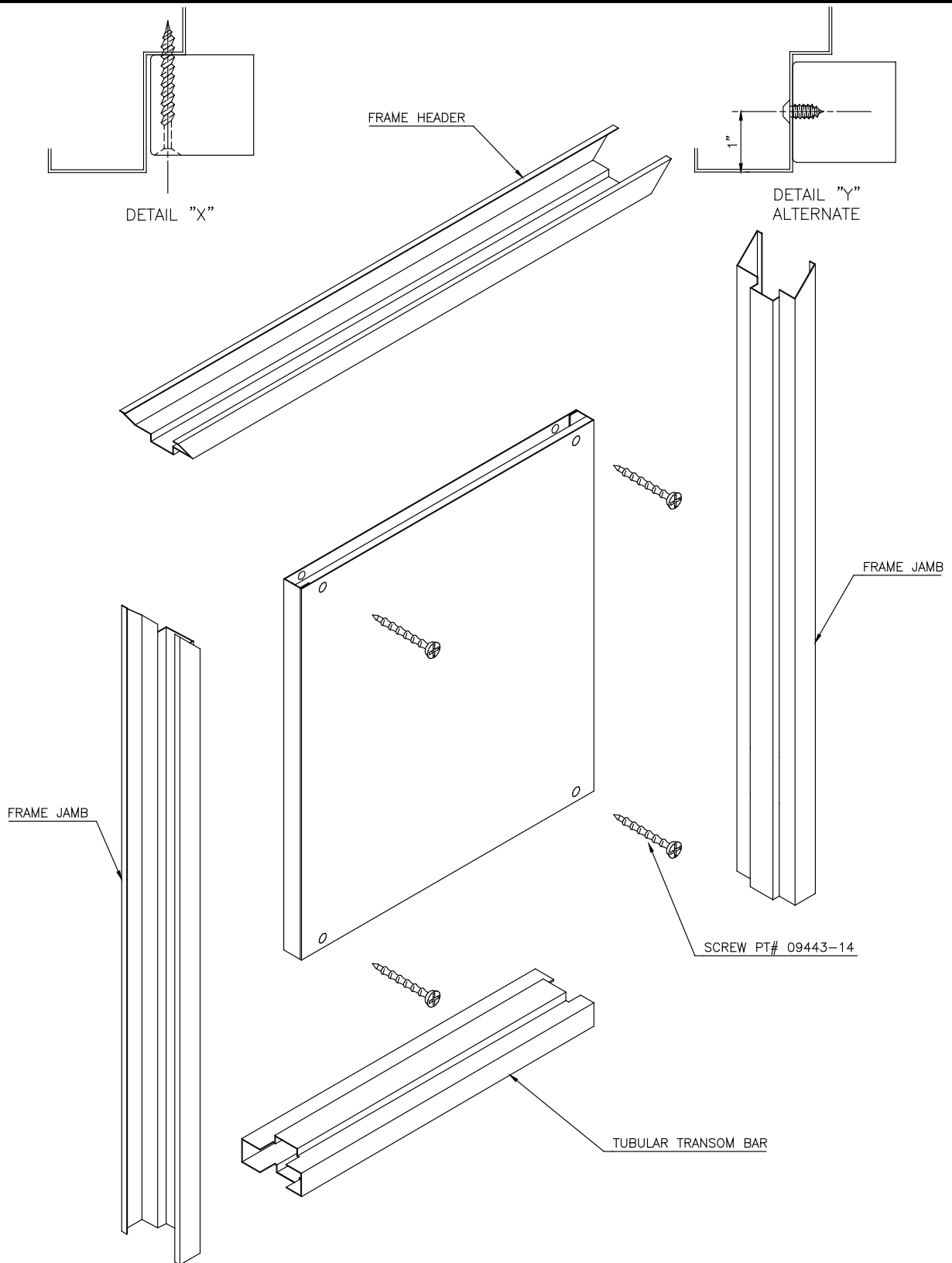
THRU BOLT DETAIL



ASSEMBLY DETAIL



56LE
VERTICAL
SECTION



SCOPE:

This bulletin covers the details and features of the subject door.

PURPOSE:

To inform the reader of the construction features, specifications and available types and sizes of this door series.

DESCRIPTION:

While the details and specifications enclosed are self-explanatory, the following features should be noted:

1. Edges are beveled, fully welded, and seamless. Door is handed.
2. Doors are available with 18, 16 or 14 gage face sheets, both cold-rolled steel and galvanized.
3. Sizes and hardware locations are variable to suit virtually any condition.
4. Vertical stiffeners and insulation conform to NAAMM (HMMA-861).
5. Surface CL/PAC reinforcing conforming to BHMA requirements is standard, both sides of doors. Reinforcing for surface closers not conforming to this standard is available.
6. Hinge reinforcing is #7 gage, 10" long conforming to NAAMM. Integral #14 gage lock reinforcing boxes will be used wherever hardware variations permit.
7. Reinforcing for strikes, flush bolts, etc. on door edges will conform to NAAMM (HMMA-861).
8. Standard insulation will be 0.6# density fiberglass. Other densities including up to 8.0# are optionally available for exterior conditions or compliance with certain specifications.
9. Top end closures will be flush, Bottom end closure will be inverted.
10. Glass moulding will be flush with screwed on glazing. Glazing arrangements shall accommodate 1/4" thick glass, supplied by others. Optional screw fastened kits are also available when specified.
11. Available lite configurations conform to Black Mountain Door's current standards. Other configurations are available. Consult Black Mountain Door.
12. Louvered doors will be prepared with "Z" (Std) Integral, "Y" Blade Integral, or UL fusible link (Labeled) louvers. After market louvers are also available. Louver type must be specified.
13. 07WE Series doors are available with UL labels up to and including 3 hours. Temperature rise ratings of 450° and 650° are available in sizes up to 4'0" x 8'0" single, 8'0" x 8'0" pair. (See L-22.0, page 2)
14. Fully templated hardware variations such as mortise holders, sectional trim locks, mortise dead locks, exit device machining, etc. are available.



07WE SERIES 1 3/4" DOOR SPECIFICATIONS

CONSTRUCTION – 07WE Series seamless 1 3/4" doors shall have each face formed of 18, 16 or 14 gage steel (specify) to present a completely smooth and unbroken surface on face and edge of door. The door faces shall be joined at the vertical edges by continuous weld extending the full height of the door. All such welds shall be ground, filled and dressed to provide a smooth, flat surface.

Face sheets shall be stiffened by continuous vertical steel "HAT" shaped sections. The stiffeners shall not be less than 22 gage, spaced not more than 6 inches apart and securely attached to both face sheets with spot-welds no more than 4 inches on center. Spaces between the stiffeners shall be sound deadened and insulated the full height of the door with an inorganic noncombustible batt type material. (20, 18, 16 Gage stiffeners optional)

Top and bottom edges of all doors shall be closed and reinforced with a continuous steel channel not less than 16 gage extending the full width of the door and projection welded to both faces. (Optional inverted or flush top and bottom channels)

HARDWARE- Lockset preparation shall provide for field installation of locksets manufactured in accordance with ANSI/BHMA A156.115 (mortise or bored). The lock reinforcing shall be 14 gage integral boxes pierced and tapped for mounting specified locksets. Mounting holes for surface-applied escutcheons shall be drilled in the field by others. Where required by special locksets or exit devices, reinforcing conforming to NAAMM HMMA 861 shall be used.

Hinge mortises shall be reinforced with #7 gage steel plates, welded in place and tapped for (minimum) 4 1/2" x 4 1/2" templated hinges. Preparation for 5" hinges, pivots or other variations are available.

All 07WE Series 1 3/4" doors shall be prepared with 12 gage closer reinforcing. When required or otherwise specified, doors shall be prepared with 14 gage (min.) face reinforcing for push-pull plates, panic devices or other surface hardware. Drilling and tapping for all surface hardware is not included.

Inactive leaves, where called for on drawings or in the door schedule, shall be mortised and reinforced with 12 gage steel for top and bottom flush bolts (ANSI/BHMA A156.115) and 4 7/8" universal strike (ANSI/BHMA A156.115).

Flat astragals shall be factory installed when specified.

GLAZING - Doors shall be furnished with flush moulding with screwed on glazing, permitting selection of secure side in the field. Glazing arrangements shall accommodate 1/4" thick glass, supplied by others.
NOTE: After market kits available upon request.

FINISH - Doors are thoroughly cleaned, phosphatized, and primed with a coat of force cured rust inhibiting primer that meets and/or exceeds the requirements of ANSI A250.10 (120 hour continuous salt spray test per ASTM B117 and 240 hour continuous humidity test per ASTM D4585)



SUBJECT:
AMWELD 07WE SERIES 1-3/4" SEAMLESS / STEEL STIFFENED
DOORS
(WELDED BEVELED EDGE)

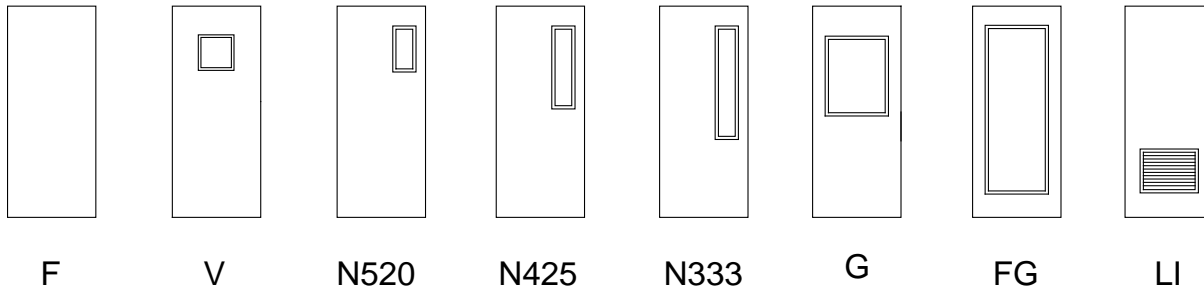
NO: D-17.0
DATE: 03/12
PAGE: 3

STANDARD DOOR SIZES:

Width 2'0", 2'4", 2'6", 2'8", 2'10", 3'0", 3'4", 3'6", 3'8", 3'10", 4'0"

Height 6'8", 7'0", 7'2", 7'10", 8'0"

STANDARD DOOR STYLES:



*Available standard lock preparations will include:

- D - ANSI/BHMA A156.115
- L - Variation of ANSI/BHMA A156.115
- T - Universal Lever Lock Preparation
- Y - ANSI/BHMA A156.115
- YBP - Sectional trim available
- U/FB - Universal strike, ANSI flushbolts
- PB - Rim Panic - blank faces
- MP - Mortise Panic - edge only, blank faces
- VR - Surface Vertical Rod Panic - blank faces
- PP - Push & Pull

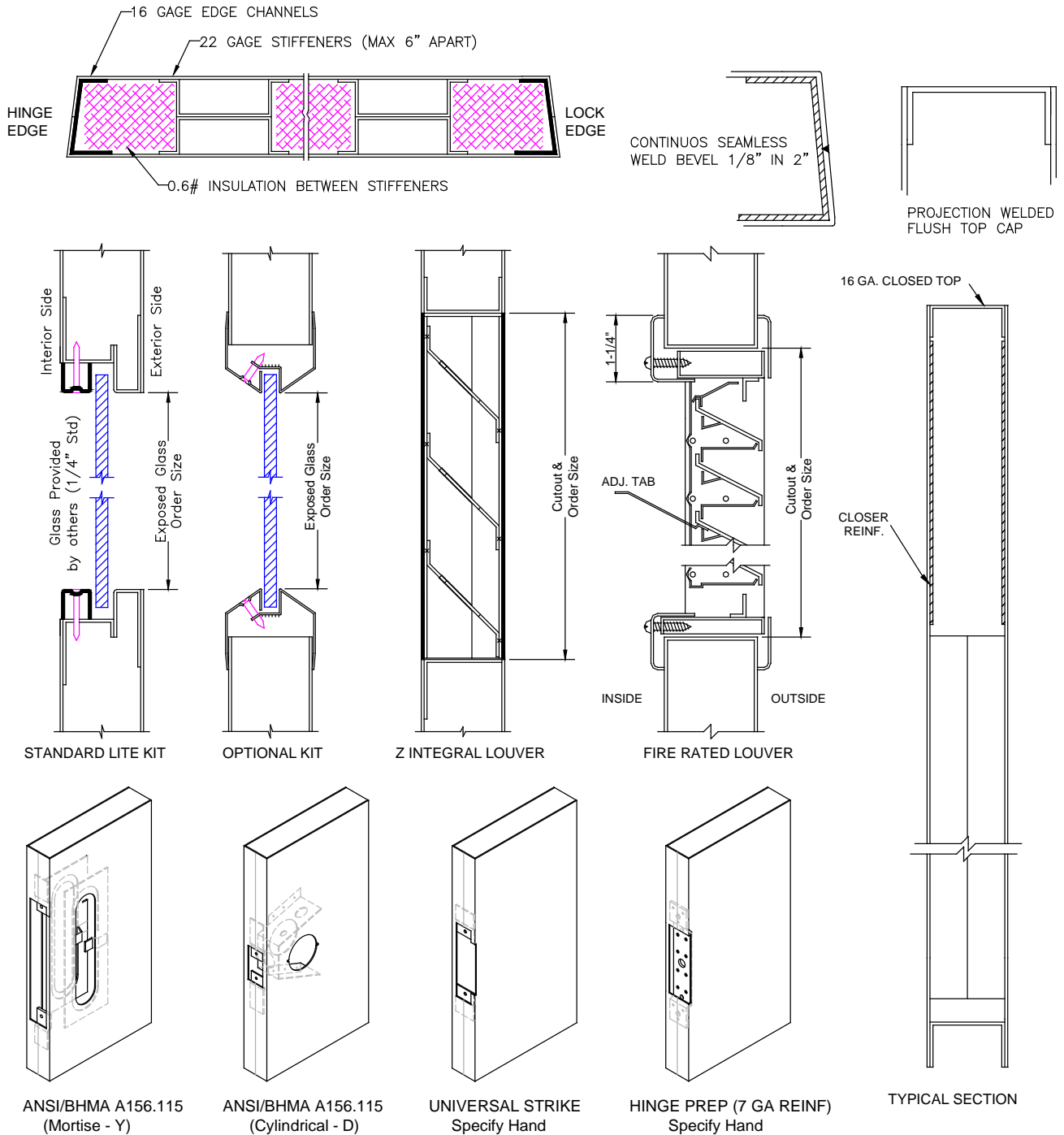
SEE NEXT PAGE FOR CONSTRUCTION DETAILS.



SUBJECT:
AMWELD 07WE SERIES 1-3/4" SEAMLESS / STEEL STIFFENED
DOORS
(WELDED BEVELED EDGE)

NO: D-17.0
DATE: 03/12
PAGE: 4

07WE - CONSTRUCTION DETAILS



SCOPE:

This bulletin covers the details and features of the subject door.

PURPOSE:

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

DESCRIPTION:

While the details and specifications enclosed are self-explanatory, the following features should be noted:

1. The 07LE Series door will be furnished with a visible seam on the vertical edges as standard or can optionally be furnished as a completely seamless unit.
2. Internal door construction consist of vertical stiffeners and insulation that conforms to NAAMM (HMMA-861).
3. Standard insulation will be 0.6# density fiberglass. Other densities including up to 8.0# are optionally available for exterior conditions or compliance with certain specifications.
4. The top of the door is flush to meet most architectural specifications. This allows the unit to be installed in exterior openings without the use of special top cap closures. For watertight conditions, caulking by painter is required.
5. Reference Page 3 of this document for typical door elevations/styles available.
6. Astragals may be required for inactive doors in certain fire rated applications.
7. "G" lites in doors up to and including 9'0" in height will be the same size as those in 8'0" units. Those in doors from 9'1" up to and including 10'0" in height will be approximately 60" high. Standard glazing hole spacing from the top and both vertical edges will apply. The dimension from the bottom of the hole to the bottom of the door will vary.
8. 07LE Series doors are available with UL labels up to and including 3 hours. Temperature rise ratings of 450° and 650° are available in sizes up to 4'0" x 8'0" single, 8'0" x 8'0" pair. (See L-22.0, page 2)

SUMMARY:

The 1 3/4" doors, in Amweld Series 07LE full flush and seamless, provide an expanded door product line coupled with a wide range of hardware preparations, enabling architects and contractors to exercise complete freedom in selecting door types and thicknesses for all construction projects.



07LE SERIES 1 3/4" SPECIFICATIONS

CONSTRUCTION - 07LE Series full flush 1 3/4" doors shall have each face formed of 20, 18, 16 or 14 gage* steel to present a completely smooth and unbroken surface on faces of door. Visible seams at door edges (Seamless optional). With 16 gage flush top and inverted bottom steel channels projection welded on 2 1/2" centers (Optional inverted top and flush bottom channels), the face panels shall be securely continuously laser welded around their entire perimeters. Doors are non-handed square edge design (1/8" in 2" beveled lock edge optional)

Face sheets shall be stiffened by continuous vertical steel "HAT" shaped sections. The stiffeners shall not be less than 22 gage, spaced not more than 6 inches apart and securely attached to both face sheets with spotwelds no more than 4 inches on center. Spaces between the stiffeners shall be sound deadened and insulated the full height of the door with an inorganic noncombustible batt type material. (20, 18, 16 Gage stiffeners optional)

HARDWARE - Lockset preparation shall provide for field installation of locksets manufactured in accordance with ANSI/BHMA A156.115 (Mortise) or (Bored). The lock reinforcing shall have 14 gage thread engagement. They shall be pierced and tapped for mounting specified locksets. Mounting holes for surface applied escutcheons shall be drilled in the field by others. Hinge mortises shall be reinforced with 10 gage steel standard, (7 gage optional), welded in place and tapped for 1 1/2 pairs 4 1/2" x 4 1/2" templated hinges (2 pair at doors over 7'6") (5" regular or heavyweight optional).

Mortises shall extend the full width of hinge stile and filler plates shall be provided to permit installation of hinges for right or left hand swing, as specified. 4 1/2" hinge preparation shall accept both regular and heavyweight.

All 07LE Series 1 3/4" doors shall be prepared with 14 gage closer reinforcing (12 gage optional) which will accept most regular or parallel arm applications. When called for on drawings, or otherwise specified, doors shall be prepared with 14 gage reinforcing for push-pull plates. Reinforcing must be drilled and tapped in the field by installer.

Inactive leaves, where called for on drawings or in the door schedule, shall be mortised and reinforced with 14 gage steel for top and bottom flush bolts (ANSI/BHMA A156.115). Strike edge of all doors shall be prepared for ANSI/BHMA A156.115 strike (4 7/8" Universal). Inactive doors shall be provided with an astragal, except inactive leaves prepared for push-pull plates or rim-type panic devices which shall have blank panels and be furnished without astragals. As an option, reinforcing for strikes, flush bolts, etc. on door edges may conform to NAAMM (HMMA-861).

GLAZING - Glass lite doors are furnished with formed (18 Ga. Galv./CR) steel vision frame of the screw-fastened type to permit selection of secure side in the field. Glazing arrangements accommodate 1/4" (6.4mm) thick glass, supplied by others. Optionally, Glass moulding can be supplied as flush with screwed on glazing to accommodate 1/4" thick glass, supplied by others.

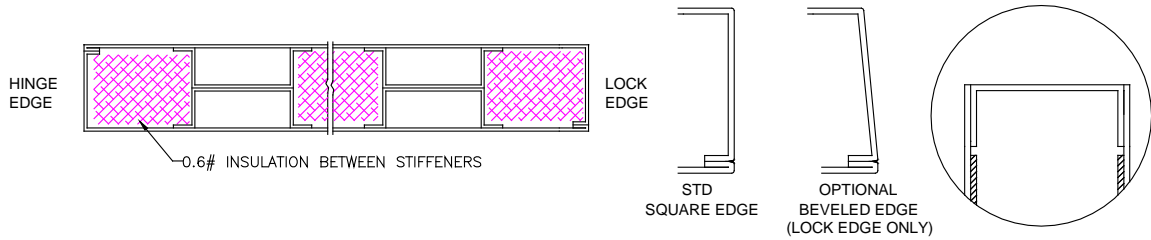
FINISH - Doors are thoroughly cleaned, phosphatized, and primed with a coat of force cured rust inhibiting primer that meets and/or exceeds the requirements of ANSI A250.10 (120 hour continuous salt spray test per ASTM B117 and 240 hour continuous humidity test per ASTM D4585)

STANDARD DOOR SIZES -

Width 2'0", 2'4", 2'6", 2'8", 2'10", 3'0", 3'4", 3'6", 3'8", 3'10" and 4'0"

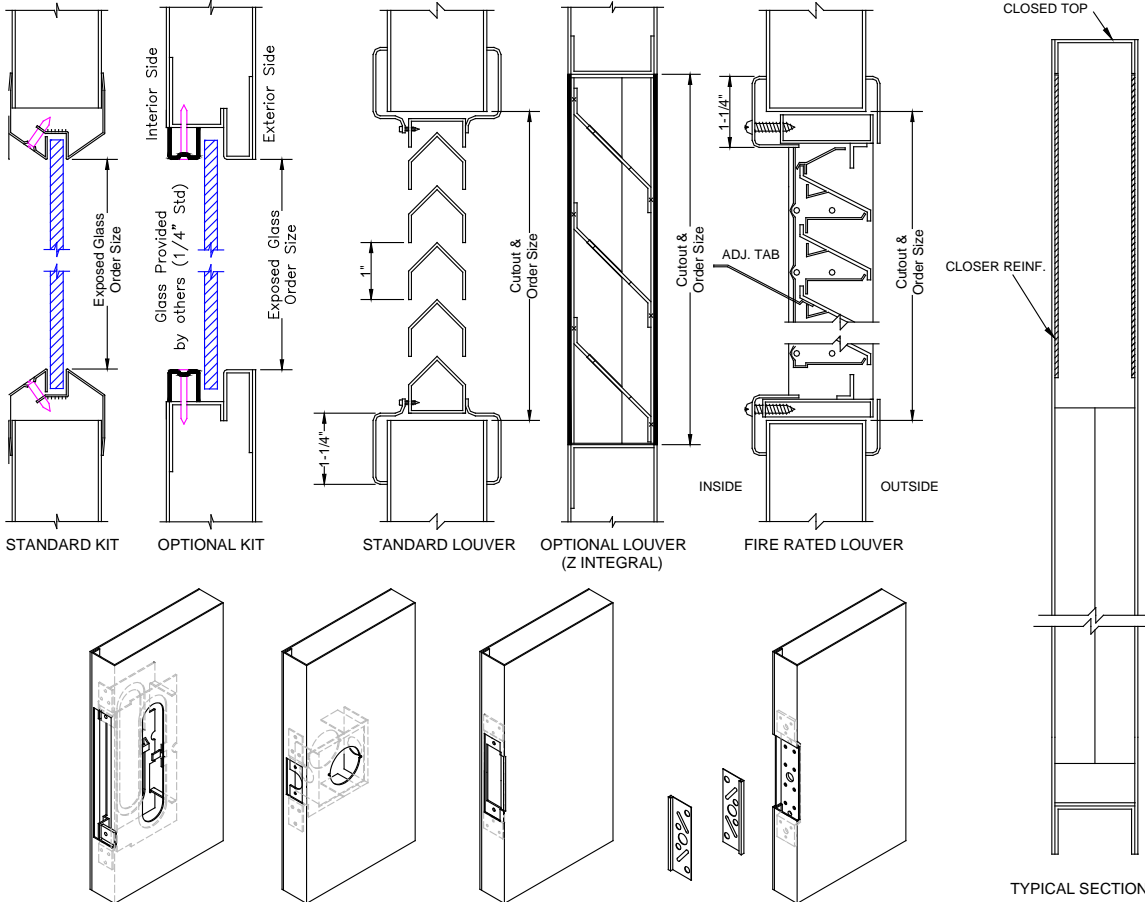
Height 6'8", 7'0", 7'2", 7'10", 8'0", 8'1" to 10'0"

*20 gage available up to 3'6" x 7'2" | 18 and 16 gage available up to 4'0" x 10'0" | 14 gage available up to 4'0" x 8'0"



LITE KIT STYLES AVAILABLE

LOUVER STYLES AVAILABLE



ANSI A115.1
(Mortise - Y)

ANSI A115.2
(Cylindrical - D)

UNIVERSAL STRIKE

NON-HANDED HINGE

3 HR. LABEL STYLES

1 1/2 HR. LABEL STYLES

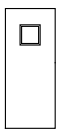
3/4 HR. LABEL STYLES



F



F



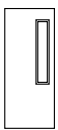
V



N520



N425



N333



LI



G



LI

EXPOSED GLASS VARIES
(SEE D-20.ppt)

SCOPE:

This bulletin covers Black Mountain Door's standard louver program.

PURPOSE:

To insure the reader is aware of the details of this important program.

DESCRIPTION:

The enclosed drawing shows the details and specification of the inserted type louvers with relation to the various door series.

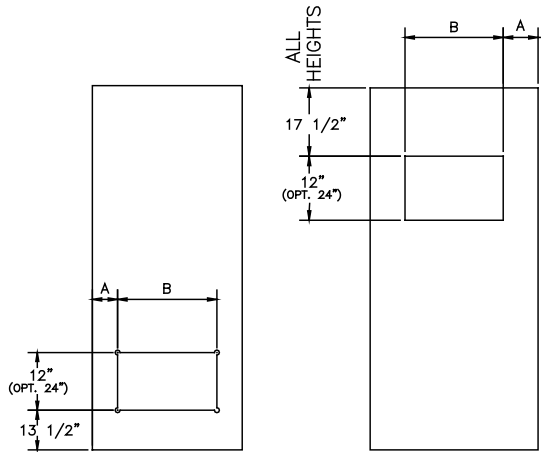
Refer to this data whenever information regarding this particular type of louver is required.

Free air space ratings are rounded off to the nearest whole number.

DETAILS ON NEXT 2 PAGES



SEAMLESS & FULL FLUSH



LOUVER SIZE	FREE AIR SPACE
12" X 12"	72
18" X 12"	108
24" X 12"	144
24" X 24"	288

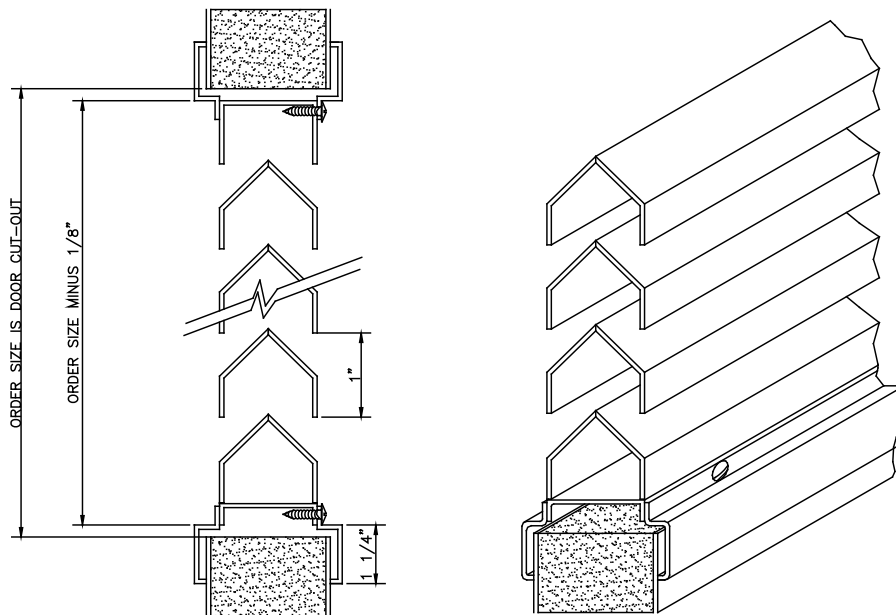
NOTE: FREE AIR SPACE INDICATED IN SQ. IN.
(ORDER SIZE IS DOOR CUTOUT SIZE)

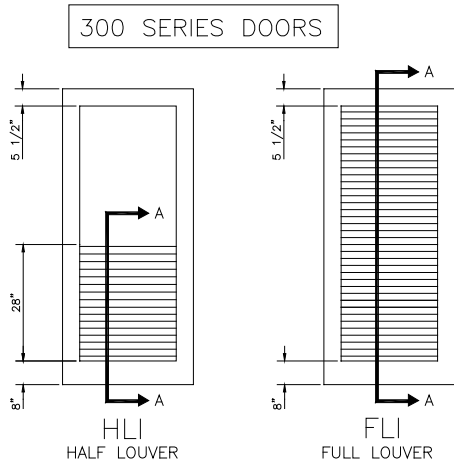
2'-0" THRU 4'-0"

CUTOUT SIZES (Non-Labeled)

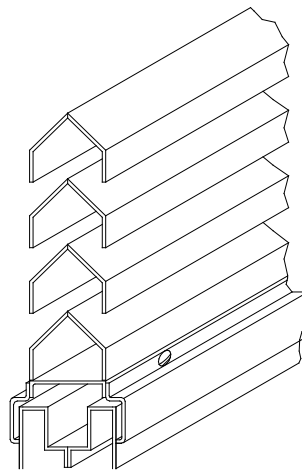
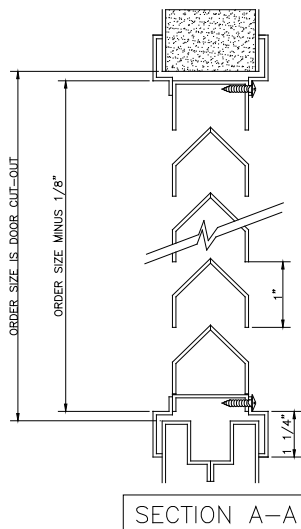
DOOR WIDTH	2'-0"	2'-4"	2'-6"	2'-8"	2'-10"	3'-0"	3'-4"	3'-6"	3'-8"	3'-10"	4'-0"
A	5 7/8"	7 7/8"	5 7/8"	6 7/8"	7 7/8"	5 7/8"	7 7/8"	8 7/8"	9 7/8"	10 7/8"	11 7/8"
B	12	12	18	18	18	24	24	24	24	24	24

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





NOTE: FREE AIR SPACE INDICATED IN SQ. IN. AND ROUNDED OFF TO NEAREST WHOLE NUMBER.



DOOR SIZE	HALF LOUVER SIZE	FREE AIR SPACE	FULL LOUVER SIZE	FREE AIR SPACE
2068	12 1/4" x 27 9/16"	145	12 1/4" x 65 1/8"	343
2468	16 1/4" x 27 9/16"	193	16 1/4" x 65 1/8"	455
2668	18 1/4" x 27 9/16"	216	18 1/4" x 65 1/8"	511
2868	20 1/4" x 27 9/16"	240	20 1/4" x 65 1/8"	567
21068	NOT AVAILABLE	---	NOT AVAILABLE	---
3068	24 1/4" x 27 9/16"	287	24 1/4" x 65 1/8"	679
3468	28 1/4" x 27 9/16"	335	28 1/4" x 65 1/8"	791
3668	30 1/4" x 27 9/16"	359	30 1/4" x 65 1/8"	847
3868	32 1/4" x 27 9/16"	382	32 1/4" x 65 1/8"	903
31068	NOT AVAILABLE	---	NOT AVAILABLE	---
4068	36 1/4" x 27 9/16"	430	36 1/4" x 65 1/8"	1015
<hr/>				
2070	12 1/4" x 27 9/16"	145	12 1/4" x 69 1/8"	364
2470	16 1/4" x 27 9/16"	193	16 1/4" x 69 1/8"	483
2670	18 1/4" x 27 9/16"	216	18 1/4" x 69 1/8"	542
2870	20 1/4" x 27 9/16"	240	20 1/4" x 69 1/8"	602
21070	NOT AVAILABLE	---	NOT AVAILABLE	---
3070	24 1/4" x 27 9/16"	287	24 1/4" x 69 1/8"	721
3470	28 1/4" x 27 9/16"	335	28 1/4" x 69 1/8"	840
3670	30 1/4" x 27 9/16"	359	30 1/4" x 69 1/8"	899
3870	32 1/4" x 27 9/16"	382	32 1/4" x 69 1/8"	959
31070	NOT AVAILABLE	---	NOT AVAILABLE	---
4070	36 1/4" x 27 9/16"	430	36 1/4" x 69 1/8"	1077
<hr/>				
2080	12 1/4" x 27 9/16"	145	12 1/4" x 81 1/8"	427
2480	16 1/4" x 27 9/16"	193	16 1/4" x 81 1/8"	567
2680	18 1/4" x 27 9/16"	216	18 1/4" x 81 1/8"	637
2880	20 1/4" x 27 9/16"	240	20 1/4" x 81 1/8"	706
21080	NOT AVAILABLE	---	NOT AVAILABLE	---
3080	24 1/4" x 27 9/16"	287	24 1/4" x 81 1/8"	846
3480	28 1/4" x 27 9/16"	335	28 1/4" x 81 1/8"	985
3680	30 1/4" x 27 9/16"	359	30 1/4" x 81 1/8"	1055
3880	32 1/4" x 27 9/16"	382	32 1/4" x 81 1/8"	1125
31080	NOT AVAILABLE	---	NOT AVAILABLE	---
4080	36 1/4" x 27 9/16"	430	36 1/4" x 81 1/8"	1265

SCOPE:

This TD covers the standard exposed lite sizes and locations of the standard glazing system used on Black Mountain Door's doors except for 700 Series. Refer to TD # D-21.0 for flush glazing at 700 Series.

PURPOSE:

To convey to the reader the important dimensional details of Black Mountain Door's standard glazing system.

DESCRIPTION:

Black Mountain Door's standard glazing system is an overlapping, fully field reversible lite kit designed to take maximum advantage of reversible feature of standard LE Series and 500 Series doors as well as flush doors cut for glazing at Distributor or Distribution Center locations. The kit is designed for a neatly appearing return toward the door face. This return is small enough to avoid interfering with most touchbar exit devices having integral or supplemental offsets from door faces. The kit is fastened to itself by screws and is spaced for 1/4" nominal glazing thickness. Other glazing thickness can be accommodated by modification of the two components (contact Black Mountain Door for information).

ACCESSIBILITY (HANDICAPPED PERSONS) CODES:

Most Building Codes and ANSI A117.1 have established minimum distances from the floor to the bottom of glazing and a minimum flush surface at the bottom of doors to accommodate persons in wheelchairs. Since actual dimensions may vary for individual jurisdictions, the details on the following pages incorporate relevant standard dimensions for standard door sizes. Dimensional limits can easily be achieved through the use of FG, FGH, FG2 doors or the use of additional "N" lites.

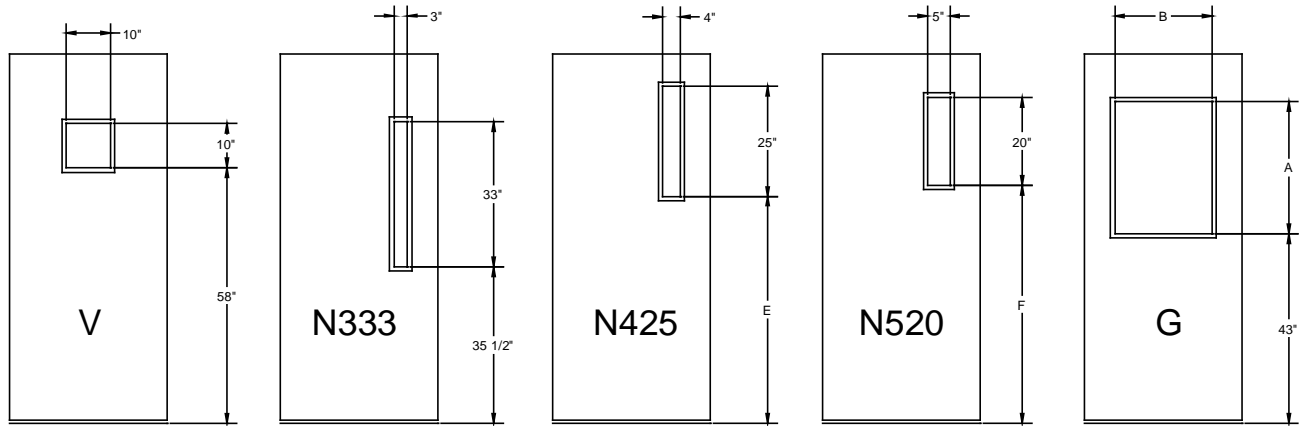
IMPACT CONSIDERATIONS:

For occupant safety, many Building Codes require the use of impact rated glazing in the lower portions of doors. The FG2 design or the use of additional "N" lites can easily satisfy these requirements.

GLASS CUTTING SIZES:

Due to the great variety of available combinations of glazing materials, wet or dry glazing compounds, setting block systems, etc. Black Mountain Door recommends that cutting sizes for glazing be determined by the glazier based on dimensions taken from physical doors.



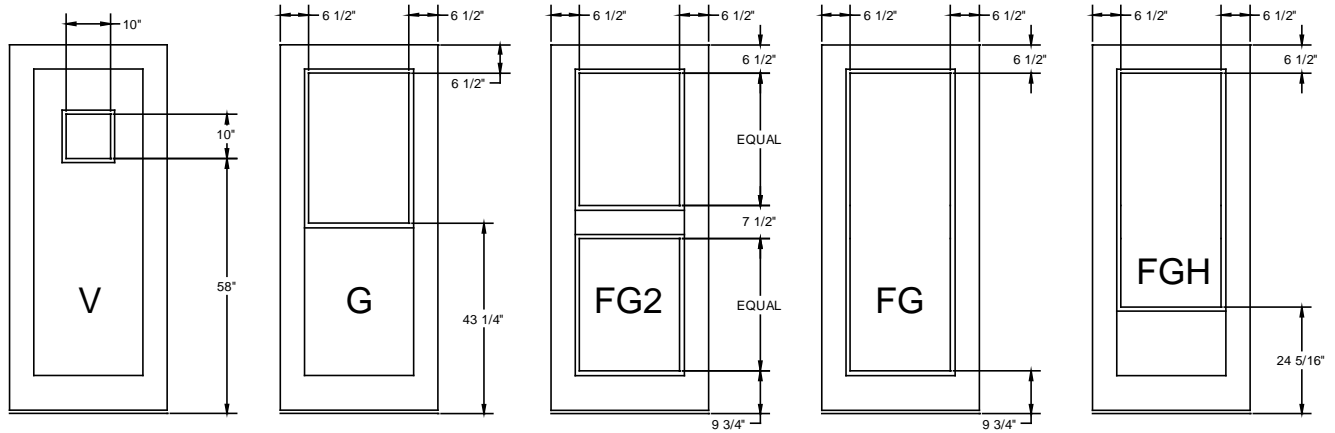
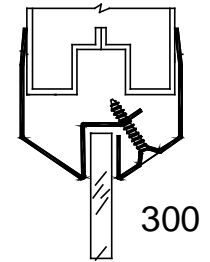
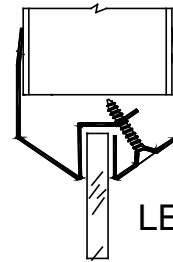


EXPOSED GLASS SIZES - LE

DIMENSIONS SHOWN FROM BOTTOM OF FRAME TO EXPOSED LITE (3/4"UC)

NOM HT	A	E	F
6'8"	28"	47 1/2"	50"
7'0"	30"	51 1/2"	54"
7'2"	30"	53 1/2"	56"
7'10"	34"	53 1/2"	56"
8'0"	34"	53 1/2"	56"

NOM W	B
2'0"	10"
2'4"	14"
2'6"	14"
2'8"	16"
2'10"	16"
3'0"	22"
3'4"	22"
3'6"	22"
3'8"	30"
3'10"	30"
4'0"	30"



EXPOSED GLASS SIZES - 300

DIMENSIONS SHOWN FROM BOTTOM OF FRAME TO EXPOSED LITE (3/4"UC)

Typical Stile Dimension = 5-1/2"
 Typical Top/Mid Rail Dimension = 5-1/2"
 Typical Bottom Rail Dimension = 8"

SCOPE:

This Tech Data covers the general details of the “flush moulding” system used on Black Mountain Door’s 07WE Series steel stiffened doors. It revises, clarifies, and standardizes the glazing details, sizes, and locations of this door Series.

PURPOSE:

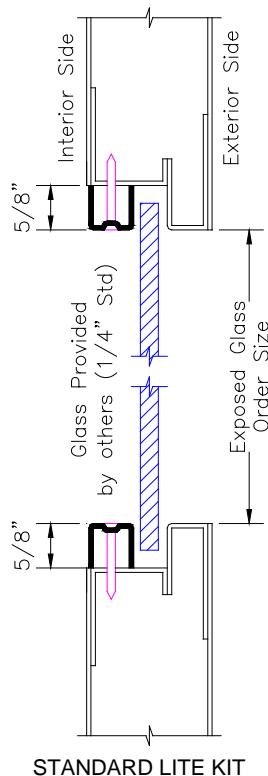
- 1) To convey to the reader the important construction details of the “flush moulding” system.
- 2) To eliminate inconsistencies in the previous versions of this TD page.
- 3) To establish standardized sizes and locations consistent with other Black Mountain Door door Series as defined on Tech Data D-20.0.

DESCRIPTION:

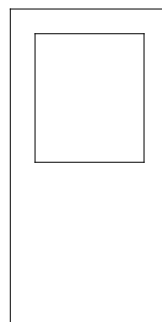
The STANDARD glazing detail for 07WE Series doors is a “flush moulding” system whereby the glazing moulding is welded to door faces forming an integral part of the door’s structure, and without any projections beyond the face of the door. The glazing is retained by a screw-applied glazing bead spaced for 1/4” nominal glazing thickness. Other glazing thickness can be accommodated by modification of the two components (contact Black Mountain Door for information).

Unless specifically noted otherwise, the fixed (non-removable) moulding is positioned on the outside (keyed side or exterior side) and the removable glazing bead is positioned on the inside (opposite keyed side or interior side). Thus, for a reverse bevel handed door the fixed side is the “pull side”. Since it is NOT reversible it is therefore not applicable to 500 Series doors.

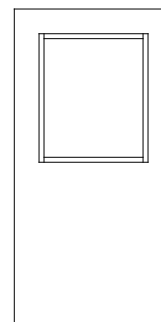
A detail of this kit follows:



Previous versions of this TD inaccurately depicted the appearance of this glazing detail. Using the reverse bevel example from above, the door faces appear as follows:



VIEW FROM
OUTSIDE
(KEYED SIDE)



VIEW FROM
INSIDE

STANDARDIZATION:

In order to aesthetically match other standard Black Mountain Door doors, exposed lite sizes and locations (unless specified otherwise) will be as defined by Tech Data D-20.0. This will establish some visual consistency for projects that may have a mixture of different door Series. Tech Data D-20.0 is being revised to remove the 07WE Series exception.

Where lite sizes and/or locations are other than those defined by TD D-20.0, such requirements shall be noted on the order accompanied by a legible drawing showing dimensions relative to exposed lite. Unless noted otherwise, “off center” lites (such as N style) are offset toward the lock edge. For large, centered lites (such as G or FG styles) **either** stile dimensions or exposed lite dimensions (not both) should be shown.

“CUTOUT ONLY” OPTIONS:

Where glazing kits or louvers are supplied “by others” non-rated 07WE Series doors are available with reinforced cutouts. Internal reinforcing channels are welded to door faces flush (or slightly inset) with cutouts. Such requirements shall be noted on the order accompanied by a legible drawing showing dimensions relative to cutout. Unless noted otherwise, “off center” cutouts are offset toward the lock edge. For large, centered cutouts **either** stile to cutout dimensions or cutout dimensions (not both) should be shown.

GLAZING CUTTING SIZES:

Due to the great variety of available combinations of glazing materials, wet or dry glazing compounds, setting block systems, etc, Black Mountain Door recommends that cutting sizes for glazing be determined by the glazier based on dimensions taken from physical doors.

SCOPE:

This bulletin covers distributor modifications to LE Series doors to create glazing gaps to accept non-standard glass thickness.

PURPOSE:

To alert the reader to the availability of design options to accomplish these modifications.

DESCRIPTION:

Black Mountain Door's standard glazing system incorporates a glazing gap of 3/8" to accept glass up to 1/4" thickness. This system can also be ordered for glazing up to 1" thick if specified. The advantage is conformity in appearance for a variety of glazing thicknesses (Consult Black Mountain Door for availability).

For situations where conformity of appearance is not necessary or when time will not permit ordering of special kits, this TD shows a few options for accommodating a glazing gap up to 1 1/8".

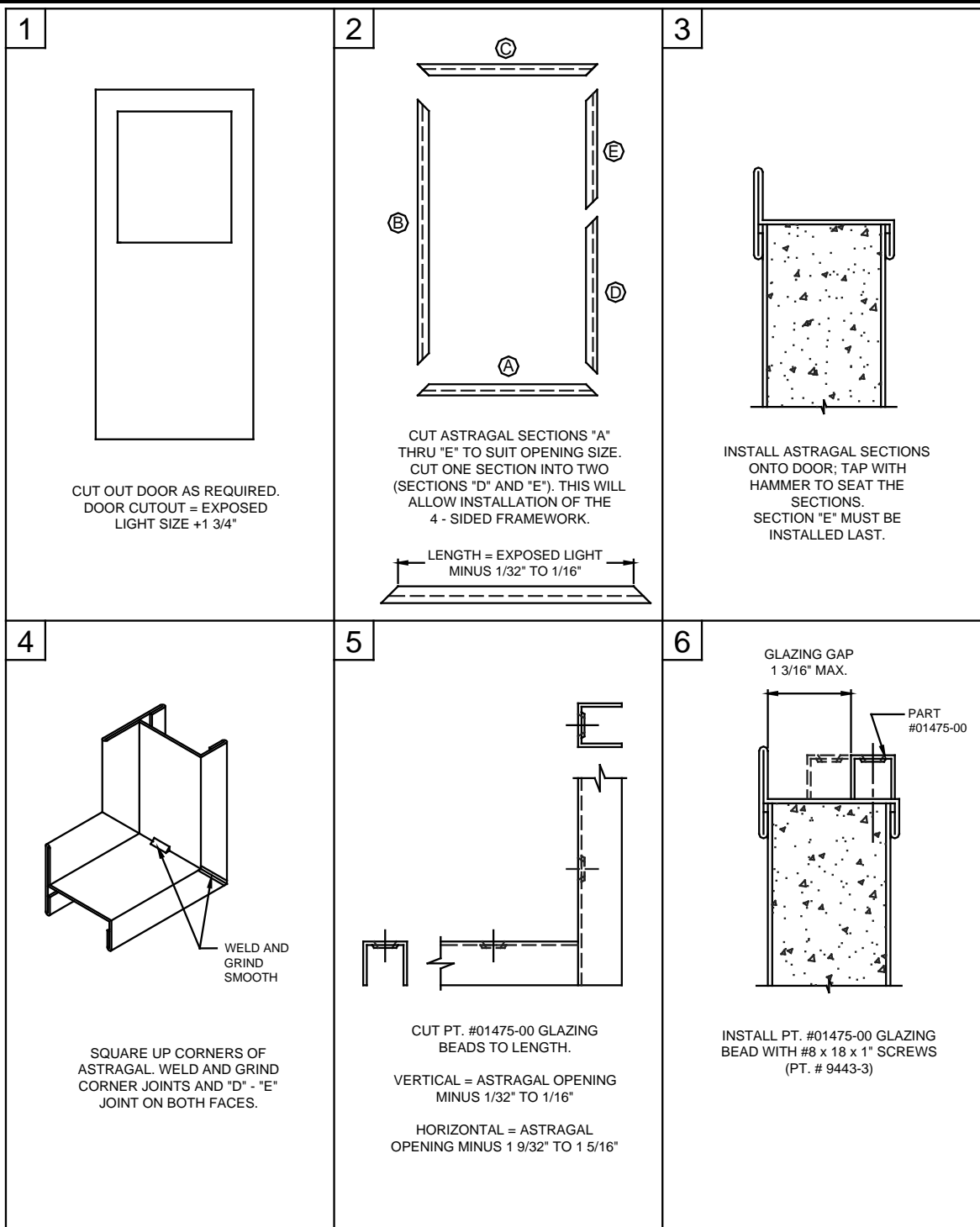
A system utilizing blank wrap around astragals (part #64232-06) and screw-applied glazing beads to create a four-sided glazing system is detailed on Page 2 of this TD. This system will create a glazing gap of approximately 1 3/16" when cut into an LE type flush door.

. Since the astragal projects about 1/8" from the surface of the door, caution should be taken to avoid interference with certain touch-bar type exit devices.

NOTE: Due to the weight of insulated glazing, it is recommended that due caution be exercised where full glass doors are to be used.

A system designed and tested for impact situations is detailed on TD # L-23.3 provided that ALL essential components are used. Although this system does not in itself create a windstorm rated door, it has demonstrated the ability to resist the 350 foot-pound impact of windstorm rated doors.





SCOPE:

This bulletin provides information and details of Black Mountain Door's lead lined door capabilities.

PURPOSE:

To provide necessary information for specifying, detailing and ordering lead lined doors

DESCRIPTION:

Unlike lead lined frames into which the lead is commonly inserted as part of the wall installation process, doors must be lead lined as they are being manufactured.

As indicated in details following, the lead is inserted between the stiffeners and is extended through lock cutouts, closer reinforcing, etc. The lead is field cut to clear lock function holes. Bottoms of doors are capped and lead lined to minimize possible ray penetration.

Glass mouldings must be the flush type design in order to allow the lead to overlap the field installed protective glazing. Standard glazing gap is 3/8" for 1/4" thick glazing. Other gap widths can be achieved with zee moulding surface applied onto door face.

Standard stiffeners will accommodate up to 1/8" thick lead.

The chart below is an approximation of the weights for lead sheets per square foot.

Lead Thickness	1/64"	1-32"	3/64"	1/16"	5/64"	3/32"	1/8"
Lbs / Sq. Ft.	1	2	3	4	5	6	8

HARDWARE RECOMMENDATIONS:

The additional weight of lead lined doors and their necessity to prevent penetration of rays makes it important to consult with an accredited A.H.C. or the hardware manufacturers for recommendations.

Locks should be chosen to minimize the penetrating of the lead lining. Special consideration should be given to using lead lined knobs, roses, escutcheons, etc.

Thru-bolted hardware should be avoided unless provisions can be made in mounting lugs or sex nuts for lead lining.

Continuous Hinges or pivots should be specified to adequately support the additional door weight.

Concealed hardware such as concealed closers or concealed vertical rod exit devices should be discouraged since they may require interruption of the lead lining.

FIRE RATINGS:

07WE Series lead lined doors are available with U.L. labels up to 3 hours with the following restrictions:

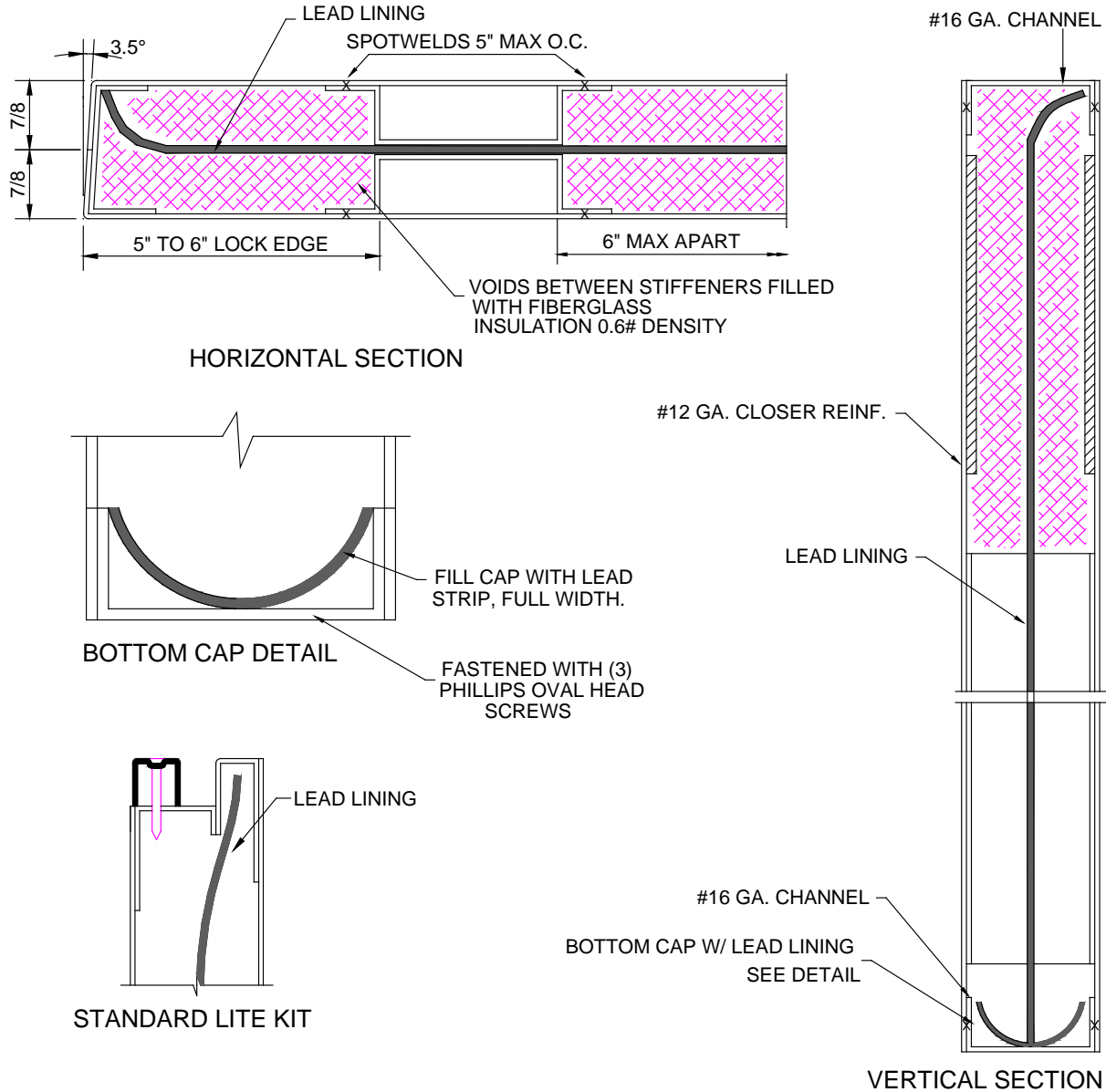
- Single doors only up to 4'0" x 8'0".
- 18, 16, or 14 gage steel or A60 galvanealed.
- Maximum lead thickness 1/8".
- Hardware and glazing must be U.L. listed.



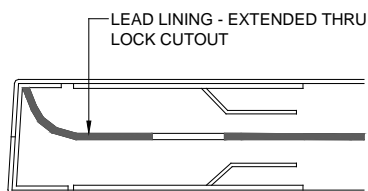
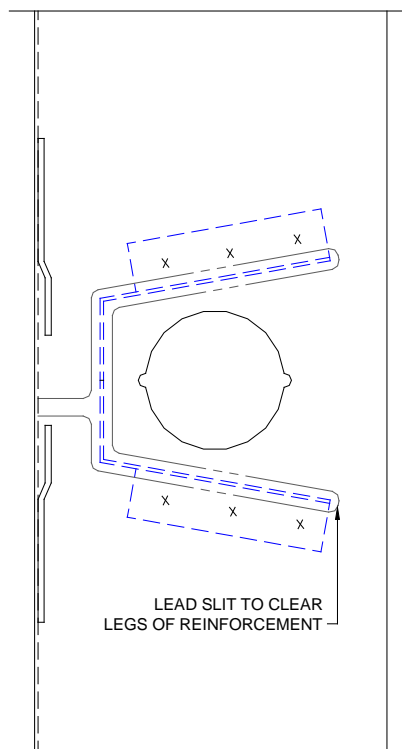
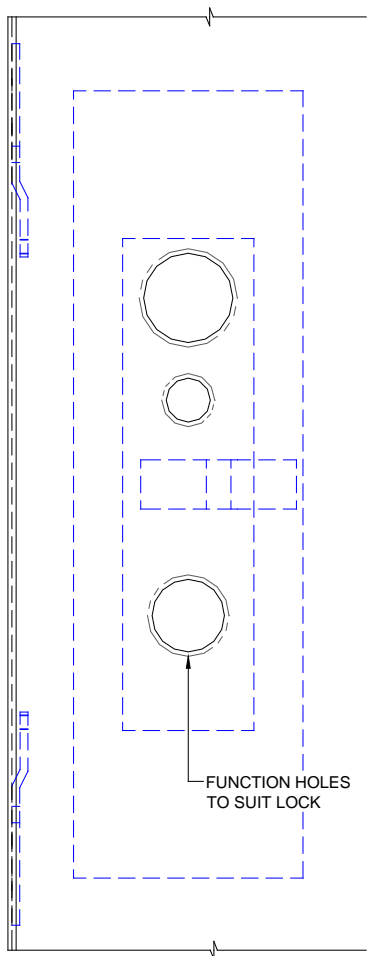
SPECIFICATIONS:

See Tech Data No. D-17 for specification except as modified above.

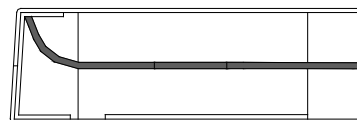
LEAD LINING DETAILS:



LOCK PREPARATION – LEAD LINING DETAILS:



Y - MORTISE LOCK PREP



D/L - CYLINDICAL OR LEVER LOCK

SCOPE:

This bulletin covers the details and features of the subject door.

PURPOSE:

To inform the reader of the construction features, specifications and available types and sizes of this door series.

DESCRIPTION:

While the details and specifications enclosed are self-explanatory, the following features should be noted:

1. Edges are square, fully welded, and seamless. Door is non-handed.
2. Doors are available with 18 or 16 gage face sheets, both cold-rolled steel and galvanized.
3. Sizes and hardware locations will match Black Mountain Door's standards.
4. Vertical stiffeners and insulation conform to NAAMM (HMMA-861).
5. Surface CL/PAC reinforcing conforming to D.H.I. requirements is standard, both sides of doors.
6. Hinge reinforcing is #7 gage, 10" long conforming to NAAMM. Integral #14 gage lock reinforcing boxes will be used wherever hardware variations permit.
7. Standard insulation will be 0.6# density fiberglass. Other densities including up to 8.0# are optionally available for exterior conditions or compliance with certain specifications.
8. Top end closures will be flush, Bottom end closure will be inverted.
9. Standard Glass moulding will be flush with screwed on glazing. Glazing arrangements shall accommodate 1/4" thick glass (glass supplied by others). After market lite kits and louvers available upon request only.

05WE SERIES 1 3/4 DOOR SPECIFICATIONS

Contractor shall furnish and install steel doors as fabricated by Black Mountain Door in all openings except as provided for in the specifications.

CONSTRUCTION - 05WE Series seamless 1 3/4" doors shall have each face formed of 18 or 16 gage steel (specify) to present a completely smooth and unbroken surface on face and edge of door. The door faces shall be joined at the vertical edges by continuous weld extending the full height of the door. All such welds shall be ground, filled and dressed to provide a smooth, flat surface.

Face sheets shall be stiffened by continuous vertical steel "HAT" shaped sections. The stiffeners shall not be less than 22 gage, spaced not more than 6 inches apart and securely attached to both face sheets with spot-welds no more than 4 inches on center. Spaces between the stiffeners shall be sound deadened and



SUBJECT:
**FIREDOOR 05WE SERIES 1-3/4" SEAMLESS / STEEL STIFFENED
DOORS**
(WELDED SQUARE EDGE)

NO: D-24.0
DATE: 03/12
PAGE: 2

insulated the full height of the door with an inorganic noncombustible batt type material. Optional 20, 18, and 16 Gage stiffeners are available.

Top and bottom edges of all doors shall be closed and reinforced with a continuous steel channel not less than 16 gage extending the full width of the door and projection welded to both faces. Top cap will be flush, bottom cap inverted (Optional inverted top and flush bottom)

HARDWARE- Lockset preparation shall provide for field installation of locksets manufactured in accordance with ANSI/BHMA A156.115 (mortise or bored). The lock reinforcing shall be 14 gage integral boxes pierced and tapped for mounting specified locksets. Mounting holes for surface-applied escutcheons shall be drilled in the field by others.

Hinge mortises shall be reinforced with #7 gage steel plates, welded in place and tapped for 4 1/2" or 5" templated hinges.

All 05WE Series 1 3/4" doors shall be prepared with 12 gage closer reinforcing. When required or otherwise specified, doors shall be prepared with 14 gage (min.) face reinforcing for push-pull plates, panic devices or other surface hardware. Drilling and tapping for all surface hardware is not included.

Inactive leaves, where called for on drawings or in the door schedule, shall be mortised and reinforced with 12 gage steel for top and bottom flush bolts (ANSI/BHMA A156.115) and 4 7/8" universal strike (ANSI/BHMA A156.115) without strike lip.

Flat astragals shall be supplied for application by installer where indicated.

GLAZING - Doors shall be furnished with flush moulding with screwed on glazing. Glazing arrangements shall accommodate 1/4" thick glass, supplied by others.

FINISH - Doors are thoroughly cleaned, phosphatized, and primed with a coat of force cured rust inhibiting primer that meets and/or exceeds the requirements of ANSI A250.10 (120 hour continuous salt spray test per ASTM B117 and 240 hour continuous humidity test per ASTM D4585)

STANDARD DOOR SIZES:

Width 2'0", 2'4", 2'6", 2'8", 2'10", 3'0", 3'4", 3'6", 3'8", 3'10", 4'0"
Height 6'8", 7'0", 7'2", 7'10", 8'0"

STANDARD LOCK DEVICE OPTIONS:

D – Cylindrical ANSI/BHMA A156.115
L – Lever type Cylindrical Variation of ANSI/BHMA A156.115
Y – Mortise ANSI/BHMA A156.115
YBP - Blank faces
U/FB - Universal strike, ANSI flushbolts (strike lip to be cut by distributor)
PB - Rim Panic - blank faces
MP - Mortise Panic - edge only, blank faces
VR - Surface Vertical Rod Panic - blank faces
PP - Push & Pull



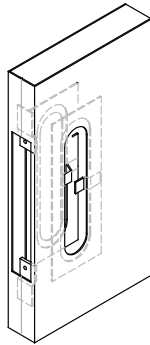
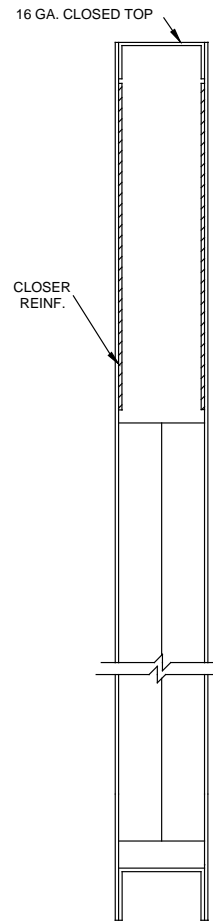
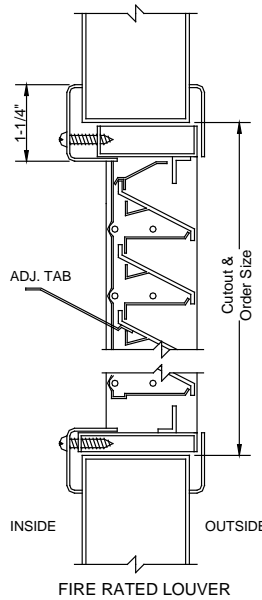
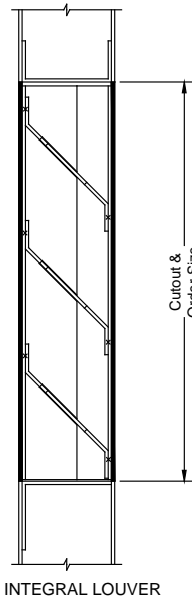
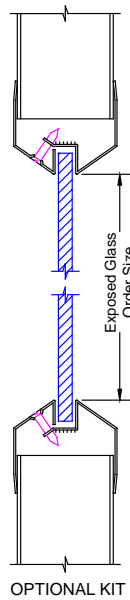
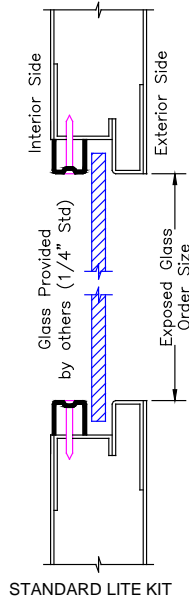
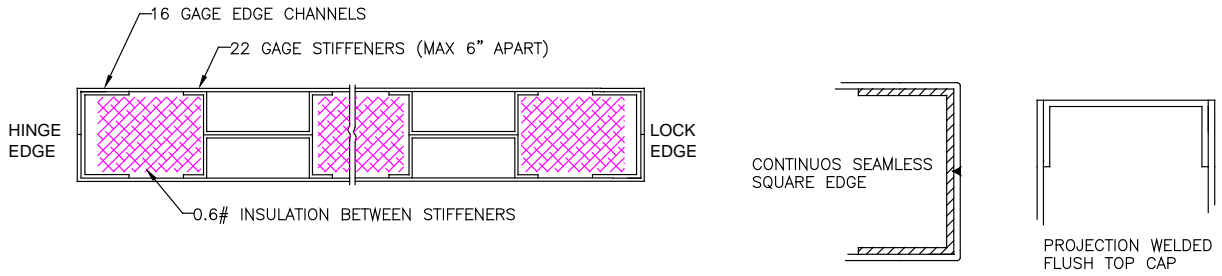
SUBJECT:
FIREDOOR 05WE SERIES 1-3/4" SEAMLESS / STEEL STIFFENED
DOORS

NO: D-24.0

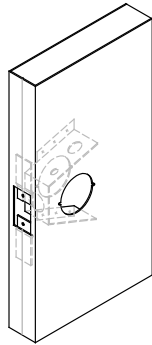
DATE: 03/12

PAGE: 3

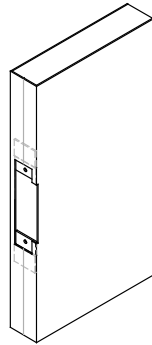
(WELDED SQUARE EDGE)



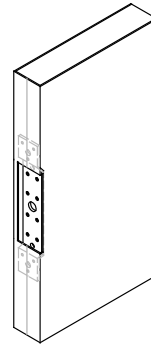
ANSI/BHMA A156.115
 (Mortise - Y)



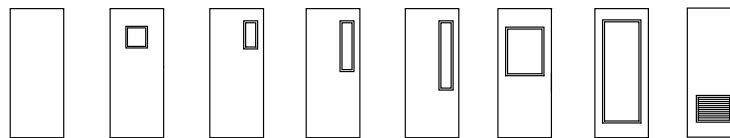
ANSI/BHMA A156.115
 (Cylindrical - D)



UNIVERSAL STRIKE
 Specify Hand



HINGE PREP (7 GA REINF)
 Specify Hand



F V N520 N425 N333 G FG LI



SCOPE:

This bulletin clarifies the procedure for accurately measuring door width.

PURPOSE:

To inform the reader how to measure the width of doors without regard to edge profile.

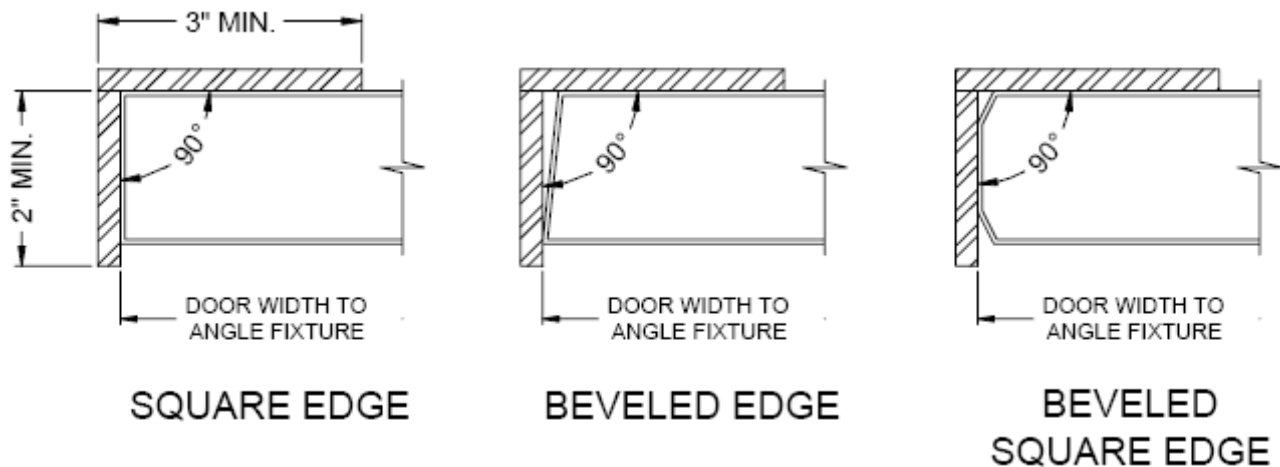
DESCRIPTION:

Steel doors, whether new or existing, often need to be measured for size determination, verification, replacement, or upgrade of the door or frame.

ANSI/SDI A250.8-2003 (or 1998) defines a variety of door edge profiles such as square, beveled or beveled square. Other less common edge profiles such as bullnose, rabbeted or parallel bevel are defined in HMMA 810-87.

In steel door construction, the forming radius of the face to edge bends will affect the visual ability to determine accurate measurement especially when utilizing the potentially abused "hook end" of a typical tape measure.

To obtain accurate dimensions of 1 3/4" or 1 3/8" thick doors, Black Mountain Door recommends the use of TWO machined or accurately die cut 90 degree angle fixtures with legs at least 2" long. (A formed fixture may not render accurate measurements since the bend may not allow the fixture to properly "seat" against the door edge). These fixtures are to be positioned with one leg parallel to the door face and the other perpendicular and butted to the outermost point of the door edge on opposite stiles of the door. An accurate measurement may then be taken BETWEEN the fixtures, thus eliminating any tape measure "end play" problem. It is important to keep the fixtures level with each other and to avoid any conflict with hardware mortises. Measurements shall be taken approximately 4" from the top and bottom of doors and at the approximate vertical centerline of door height. The largest dimension shall be recorded. Using this method, the true overall width can be determined without regard to the edge profile.



SCOPE:

This bulletin covers the undersizing of narrow active leaf doors.

PURPOSE:

To inform the reader of undersizing or narrow active leaf doors.

DESCRIPTION:

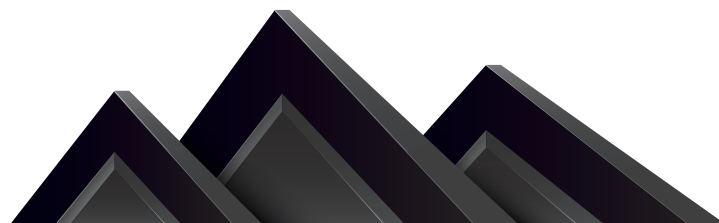
The following nominal active door sizes will be manufactured to the actual sizes listed below. The additional under sizing is required to ensure that the door swings freely without impacting the inactive door or strike jamb.

NOTE: Inactive door leaves of these sizes do not require additional undersizing

Nominal Width – Active Door Leaf	Actual Size – Active Door Leaf
1'-6"	17.6875"
1'-4"	15.6562"
1'-2"	13.6562"
1'-0"	11.625"



/ TECHNICAL DATA **FRAMES**



BLACK MOUNTAIN
DOOR™

www.blackmountaindoor.com

310 Flint Drive
Mt. Sterling, KY 40353

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

<u>Description</u>	<u>Number</u>
Amweld 400 Series - 1-3/4" Masonry Frames	F-1.0
Firedoor Brand HR Series (FR-High Riser) Frames	F-1.3
Amweld 2600 & 4600 Series Slip-On Drywall Frames.....	F-2.0
Amweld 800 Series Adjustable Retrofit Frame Application	F-3.0
Amweld 3000 Series 1-3/4" Thermal Break Frame (Patent #4,594,831).....	F-5.0
4" Headers in Amweld 400 Series Masonry Frames	F-9.0
Hospital Stop Preparations	F-10.0
Removable Mullion Preparation	F-11.0
Amweld 400 Series Frames Prepared for Lead Lining	F-12.0
Firedoor Brand Stainless Steel Frames (Series FR) by Black Mountain Door	F-16.0

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.



SCOPE:

This bulletin covers specifications and features of Black Mountain Door's Amweld series frames for 1 3/4" doors.

PURPOSE:

To provide a concise specification with details showing the frame construction and frame anchors.

DESCRIPTION:

The 1 3/4", 400 Series frames are available in the following depths in 1/8" increments and are applicable to Virtually every type of wall construction. This is made possible by Black Mountain Door's frame anchoring system.

STANDARD FRAME SIZES:

SINGLE FRAME WIDTHS 2'0" through 4'0"

DOUBLE FRAME WIDTHS 4'0", 4'8", 5'0", 5'4", 5'8", 6'0", 6'8", 7'0", 7'4", 7'8", & 8'0"

FRAME HEIGHTS 6'8", 7'0", 7'2", 7'10", 8'0", 8'1" to 10'0"

STANDARD PROFILES:

Double Rabbet (1 15/16" - 1 9/16") from 4 1/2" through 13 3/4"

Single Rabbet from 3" through 12 3/4"

Trimmed Opening from 3" through 12 3/4"

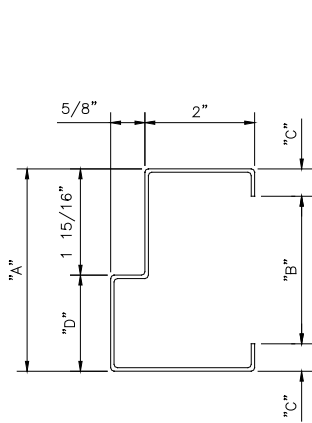
SPECIFICATIONS:

Specifications in ARCAT type, CSI MASTER FORMAT type and Spec Data are elsewhere on this website. Therefore, they are not duplicated in this Tech Data.

Profile and Frame Details on following pages..

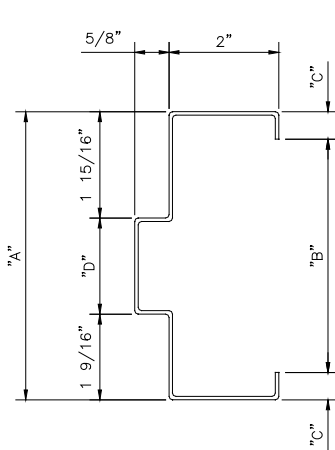


PROFILE DETAILS -



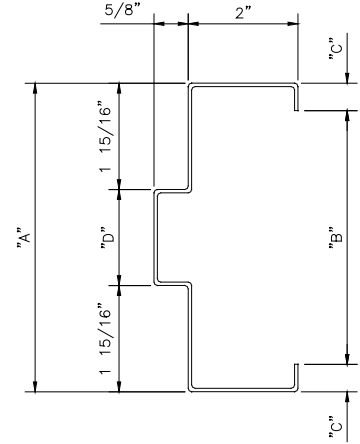
SINGLE RABBETED

A	B	C	D
3	2 1/8	7/16	1 1/16
3	1 3/4	5/8	1 1/16
3 3/4	2 3/4	1/2	1 13/16



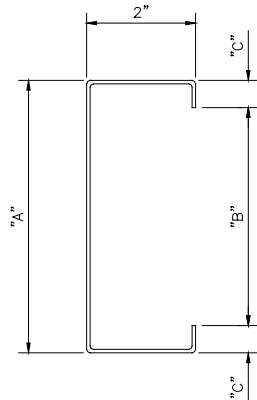
STANDARD DOUBLE RABBETED

A	B	C	D
5 3/4	4 7/8	7/16	2 1/4
ALL OTHERS	DEPTH - 1"	1/2	DEPTH - 3 7/8"



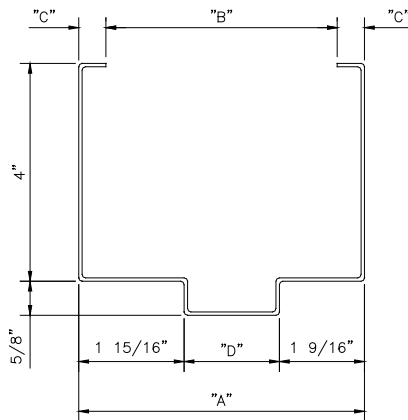
COMMUNICATING (2200 SERIES)

A	B	C	D
5 3/4	4 7/8	7/16	2 1/4
ALL OTHERS	DEPTH - 1"	1/2	DEPTH - 3 7/8"



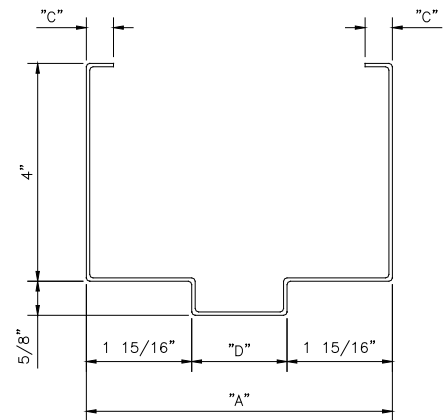
CASED OPENING

A	B	C
3	2 1/8	7/16
3	1 3/4	5/8
3 3/4	2 3/4	1/2
5 3/4	4 7/8	7/16
ALL OTHERS	DEPTH - 1"	1/2



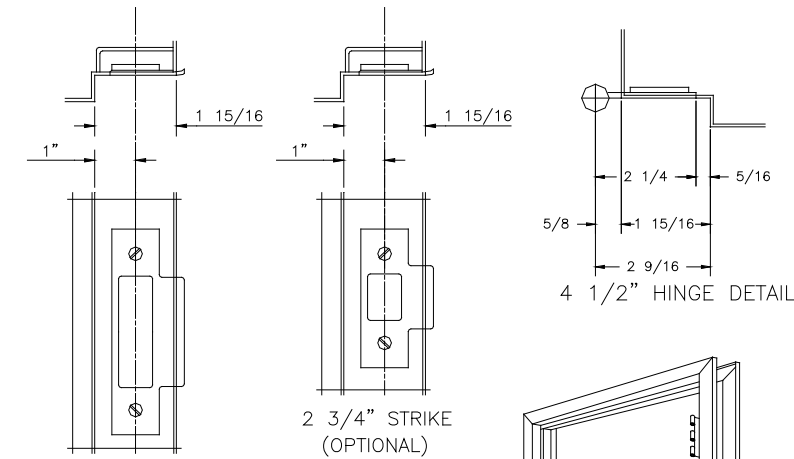
4" FACE HEADER
 STANDARD DOUBLE RABBETED

A	B	C	D
5 3/4	4 7/8	7/16	2 1/4
ALL OTHERS	DEPTH - 1"	1/2	DEPTH - 3 7/8"

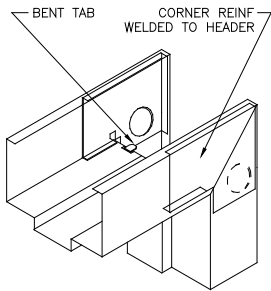
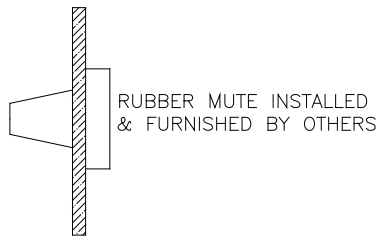


4" FACE HEADER
 COMMUNICATING (2200 SERIES)

A	B	C	D
5 3/4	4 7/8	7/16	2 1/4
ALL OTHERS	DEPTH - 1"	1/2	DEPTH - 3 7/8"

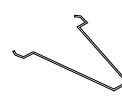


ANSI/DHI A115.1
 4 7/8" UNIVERSAL STRIKE

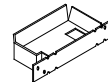


TYPICAL "INTER-LOK"
 K-D MITERED CORNER

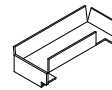
STANDARD SNAP-IN ANCHOR TYPES



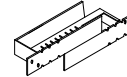
WIRE MASONRY ANCHOR
 3" THRU 8 3/4"
 (STANDARD)
 SPECIFY "M"



WOOD STUD ANCHOR
 3 3/4", 4 3/4", 5 3/4",
 6 3/4", 7 3/4", 8 3/4"
 (STANDARD)
 SPECIFY "S"



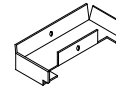
CHANNEL STEEL STUD ANCHOR
 3 3/4", 4 3/4", 5 3/4"
 (STANDARD)
 SPECIFY "C"



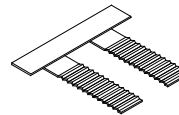
ADJUSTABLE WOOD STUD ANCHOR
 5 3/4", 6 1/4", 6 3/4", 7 1/4",
 7 3/4", 8 1/4", 8 3/4"
 (OPTIONAL)



FLOOR ANCHOR-WELDED
 (STANDARD)



COMPLETED OPENING
 ANCHOR / LAG BOLT
 5 3/4", 6 3/4"
 SPECIFY "CO" FOR COMPLETED OPENING
 SPECIFY "LAG" FOR LAG BOLT (OPTIONAL)



MASONRY ANCHOR
 9 1/2" AND OVER
 (OPTIONAL)
 SPECIFY "M"

NOTE: ALL OTHER SIZES WILL REQUIRE A
 WELD-IN TYPE ANCHOR

SCOPE:

This bulletin covers dimensions and standard details for Black Mountain Door HR Series (FR- HIGH RISER) frames manufactured under the Firedoor Brand.

PURPOSE:

To provide a verbal and visual description of standard sizes, features, and construction details of this specialized frame Series.

DESCRIPTION:

The HR Series (FR- HIGH RISER) Series frame is an alternative to the essentially "residential grade" light gage frames used for interior partitions. It is ideally suited for apartments, interior offices, condominiums, or "open plan" areas where frequent tenant changes are common. These frames are available in both rabbetted and cased opening profiles with depths made to suit common interior partitions.

Being made entirely of steel and capable of being removed and re-used, it is fully compliant to both recycled content and material re-use provisions of LEED 2009.

Full Specifications in ARCAT type, CSI MASTER FORMAT type and Spec Data are elsewhere on this website. Therefore, they are not duplicated in this Tech Data.

MATERIALS:

HR Series (FR- HIGH RISER) Series frames are fabricated from 18 gage galvaneal (hot-dip galvanized) steel, coating class A 40, complying with ASTM A-653 and A-924 (see TD G-8.0 and G-9.0)

OPENING SIZES:

These frames are available in any width from 2'-0" through and including 6'-0" and any height from 6'-8" through and including 8'-0". Note: Actual opening width at double frames is 1/16" less for reduced gap at meeting edges. This under sizing does not affect operation of doors, nor is it to be considered out of tolerance.

Metric Sizes: See TD G-10.0 for examples of "soft metric" conversions and dimensions.

PROFILE DIMENSIONS:

HR Series (FR- HIGH RISER) Series frames are fabricated to suit specified partition thickness in the following standard profiles. Generally single rabbet and cased opening jamb depths are 3" minimum; double rabbet jamb depths are 4 1/8" minimum (with 1 3/8" doors), and 4 5/8" (with 1 3/4" doors). Frames are designed without backbends or returns for a minimal projection above wall surface, thus allowing for aesthetic design freedom by application of a casing that matches wall decor or base.

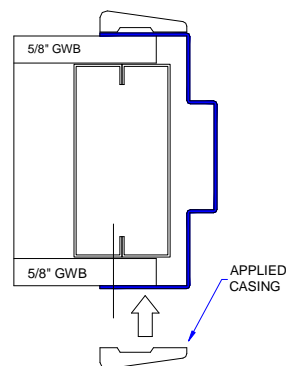
Double Equal Rabbet (1 15/16" - 1 15/16" or 1 9/16"- 1 9/16").

Double Unequal Rabbet (1 15/16" - 1 9/16").

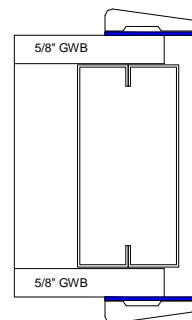
Single Rabbet (1 15/16" or 1 9/16").

Trimmed (Cased) Opening without doors or for sliding or bifold doors.

Faces (standard): 2" at jambs and header.



DOUBLE RABBET



CASED OPENING

HARDWARE PREPARATIONS:

Preparations for hinges, strikes, sliding or bi-fold sets, or other hardware common to interior openings are available in accordance with the approved finish hardware schedule and templates. Selection of closers must be coordinated with the frame design or interior trim casings used. Reinforcing complies with ANSI/SDI A250.6, A250.8, and HMMA 860/861. Strike Jamb's prepared for standard push-in mutes.

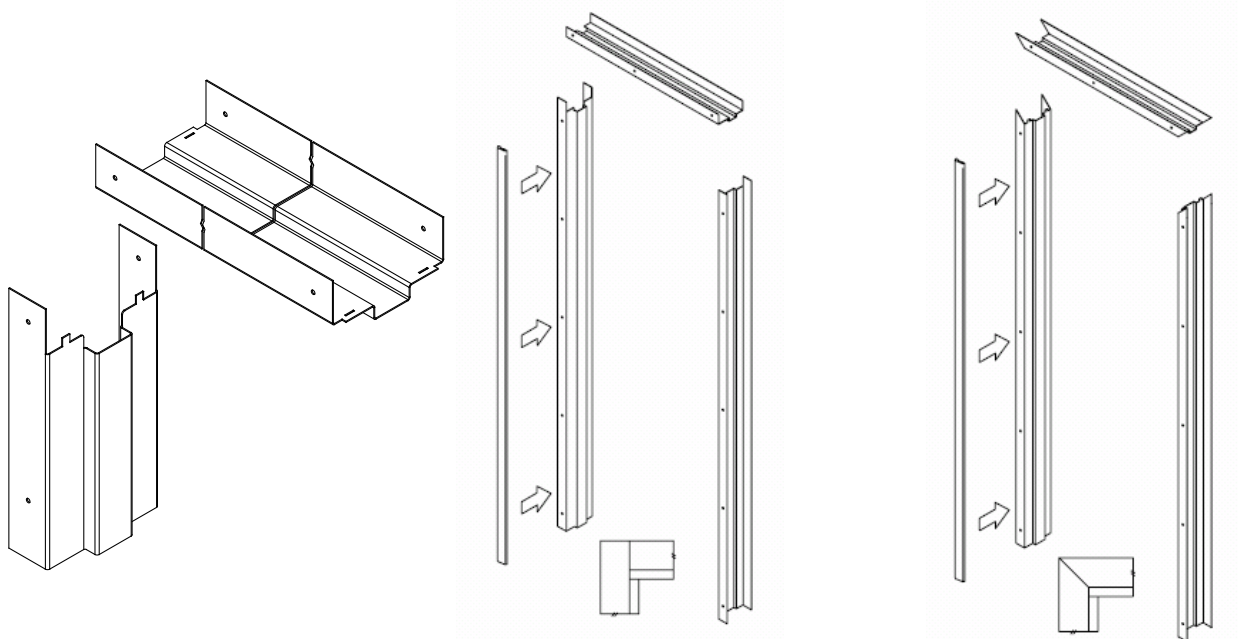
ANCHORS:

Frames are pierced on both faces of jamb's and headers for # 6 drywall screws (provided by installer) about 21" maximum OC at jamb's and 17 1/2" maximum OC heads for fastening to studs through the drywall layer.

CORNERS and ASSEMBLY:

Frames are furnished as knocked-down (KD) and palletized. Optionally, frames may be bundled together per opening, although this is unnecessary for "runs" of repetitious frames where the only difference is handing.

Frame corners are available mitered or butted (fire rated frames require butted corners) with tab and slot engagement. In the finished installation the corners are concealed by interior casings to match decor. Welded corners are NOT AVAILABLE.



BUTTED CORNER STANDARD AND FIRE-RATED

MITERED CORNER OPTIONAL

PAINT:

Frames are available in unpainted galvalume steel, factory primed to meet ANSI/SDI A250.10 or factory color painted to meet ANSI/SDI A250.3. Primed or unpainted frames allow a field color match with wall casings or decor using Direct to Metal (DTM) finish paints.

FIRE RATINGS:

Single frames up to 3'-0" X 8'-0" and double frames up to 6'-0" X 8'-0" may be ordered with ITS/Warnock Hersey 3/4 hour positive pressure Listing Marks (labels). The positive pressure Listing certifies compliance with UL 10B, UL 10C, or NFPA 252 fire tests. **Fire rated frames require butted corners** for compliance with fire test and certification. Profile (jamb depth) size for fire-rated frames is from 4 5/8" to 12" inclusive for wood stud, steel stud, or masonry walls. Jobsite-applied casings are permitted subject to approval by Local Authorities.

SUMMARY:

The HR Series (FR- HIGH RISER) frame is a useful and economical alternative to conventional hollow metal frames or "residential grade" light gage frames for certain interior installations. The ability to use applied interior trim casings allows them to seamlessly match with almost any decor.

CERTIFICATION:

This Tech Data may serve as a certification of compliance with fabrication or testing Standards noted herein.

SCOPE:

This bulletin covers specifications and features of Black Mountain Door's standard Amweld 2600 and 4600 Series slip-on drywall 3-sided frames. The 600 Series option for 3-sided frames has been eliminated as redundant.

PURPOSE:

To provide the reader with the necessary information to specify and detail standard 2600 and 4600 Series slip-on drywall frames.

DESCRIPTION:

The 2600 and 4600 Series slip-on drywall frames are designed to be installed into completed drywall partitions. This feature allows them to be installed into properly framed openings (see installation instructions) after walls are painted and the majority of "heavy" jobsite work is finished. This reduces the possibility of damage and repair due to movement of other materials on the jobsite. For standard 2" face frames, wall framing (rough opening is 1 3/4" to 2" wider than frame opening width and 1" higher than frame opening height, on all three sides. For example a 3'-0" X 7'-0" frame opening requires 38" X 85" rough opening.

The standard 2600 Series frames are designed for 1 3/4" doors, with options for 1 3/8" doors. The standard profile is double rabbeted to match the 400 Series. The 4600 Series frames are designed as trimmed opening frames without rabbets.

Designs are available in the following depths in 1/8" increments:

- 2600 double unequal rabbet (1 15/16" - 1 9/16") from 4 1/2" through 14".
- 2600 double equal rabbet (1 15/16" - 1 15/16") from 5 1/8" through 14".
- 2600 Kerfed double unequal rabbet (2 3/16" - 1 9/16") from 5 3/8" through 14".
- 2600 single rabbet (2" and 2 5/8" faces) from 3" through 14".
- 4600 trimmed opening from 3" through 14".

Both 2600 and 4600 Series are designed with double return backbend profile to grip the wall with minimal impact on the wall finish. Frame depth for both designs is 1" wider than the wall thickness.

Standard faces are 2" at jambs and header. It is recommended that smaller faces or hardware items deeper than 1" not be used without consulting Black Mountain Door and the finish hardware intended to be used. Since this is a "wrap-around" design, at least 1/2" projection of the wall into the throat is recommended for stability and is required at fire rated frames. We do not recommend notching of wall studs to fit hardware.

FIRE LABELS:

2600 Series hinge jambs for 1 3/4" doors are embossed with an ITS Warnock Hersey "Mark" where ordered.

This certifies compliance to up to 1 1/2 hour rating in accordance with UL-10B (neutral pressure), UL-10C (positive pressure), or NFPA-252 fire tests. Smoke control "S" labels are not required on frames. UL or ITS/WHI Mylar or metal labels are available when ordered. 4600 Series frames ARE NOT available with labels.

Available sizes are up to: 4'-0" X 9'-0" single, 8'-0" X 8'-0" double, or 7'-0" X 9'-0" double. Labeled frames over 7'-0" in height have intermediate channel-shaped stiffeners at jambs.

Consult corresponding Tech Data in "LABELED" section for other requirements.



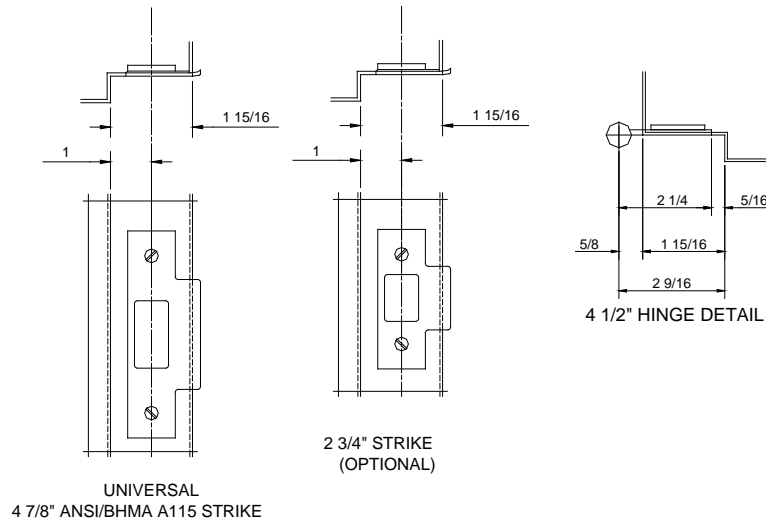
STANDARD FRAME SIZES:

SINGLE FRAME WIDTHS 2'0" through 4'0" DOUBLE FRAME WIDTHS 4'0" through 8'0"
FRAME HEIGHTS 6'8", 7'0", 7'2", 7'10", 8'0"

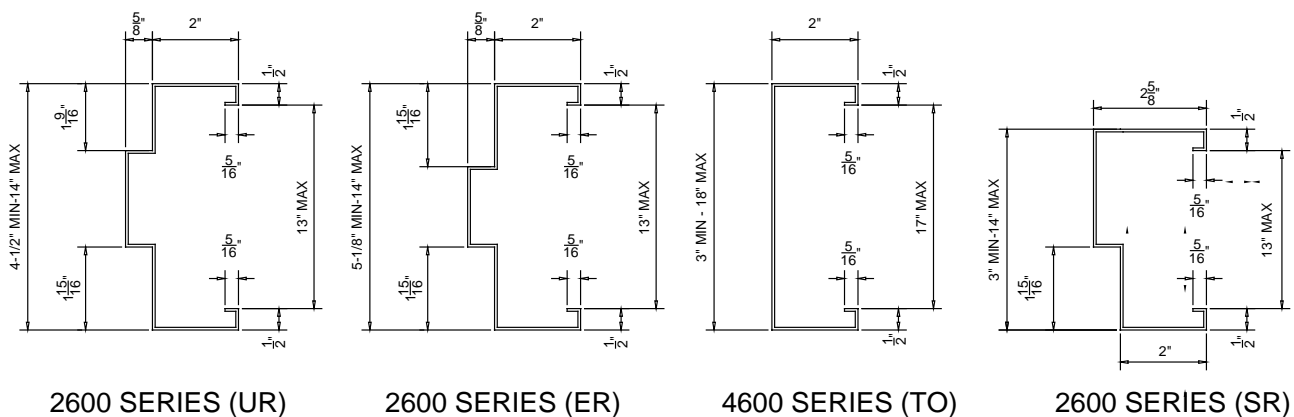
SPECIFICATIONS:

Specifications in ARCAT type, CSI MASTER FORMAT type and Spec Data are elsewhere on this website. Therefore, they are not duplicated in this Tech Data.

TYPICAL HARDWARE LOCATION:

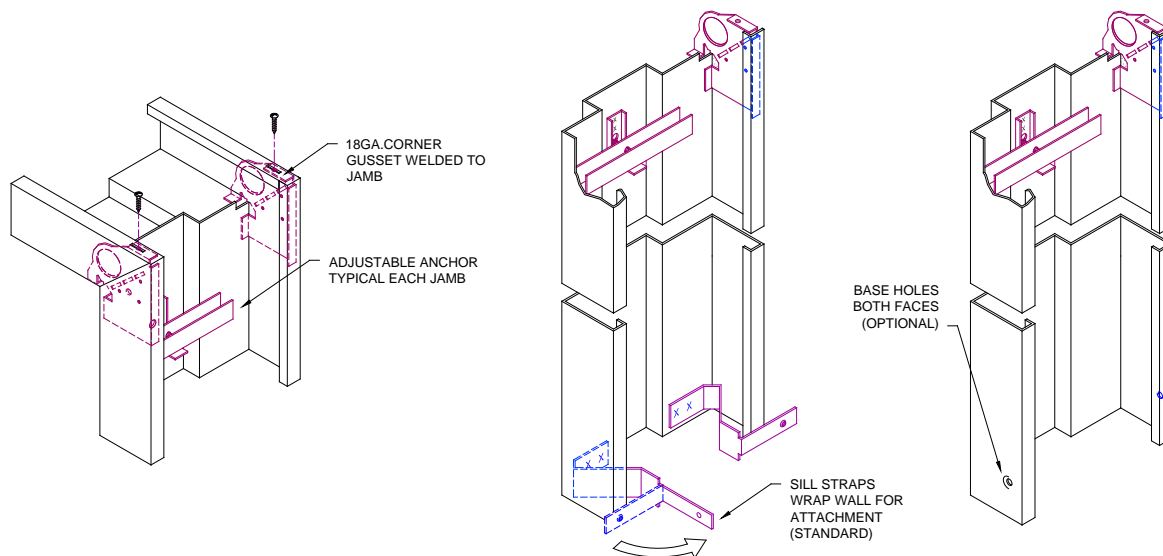


PROFILE TYPES:



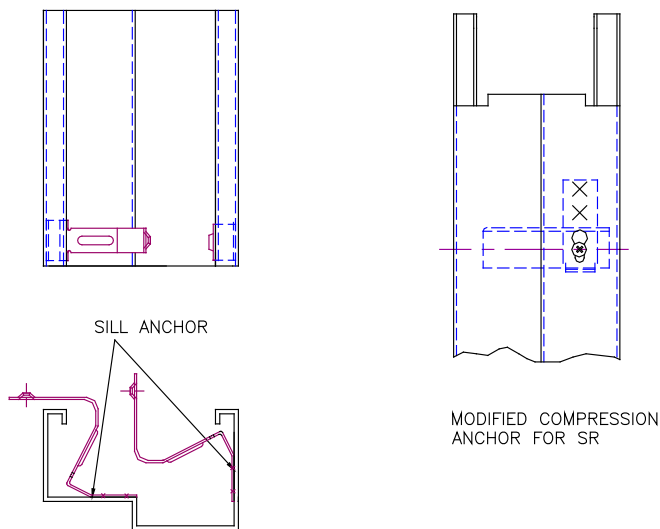
ANCHOR TYPES:

UNEQUAL & EQUAL RABBET ANCHORING – 3 SIDED FRAME CONSTRUCTION



Note: One additional Stiffener will be added (per jamb) for labeled openings where applicable (Reference L-6.0)

SINGLE RABBET ANCHORING – 3 SIDED FRAME CONSTRUCTION

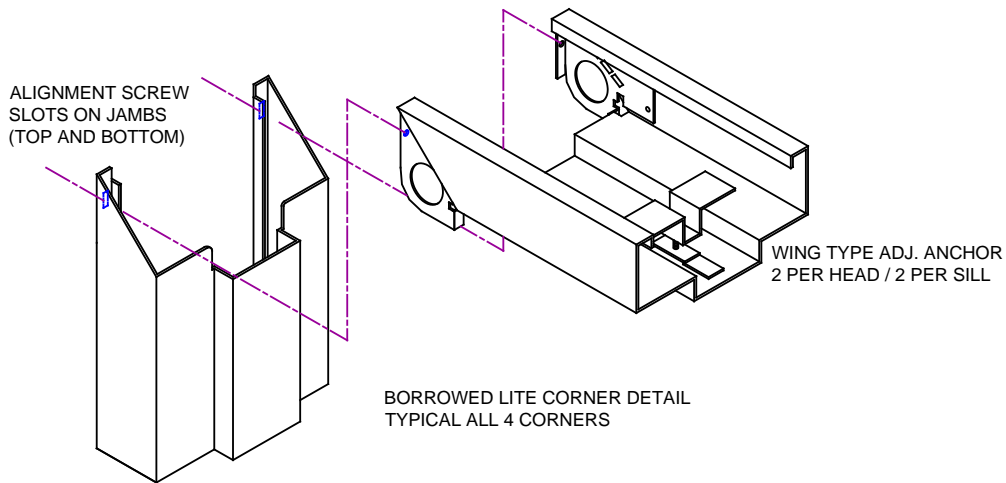


Header components will not be prepared with compression anchors in 3 sided frames.

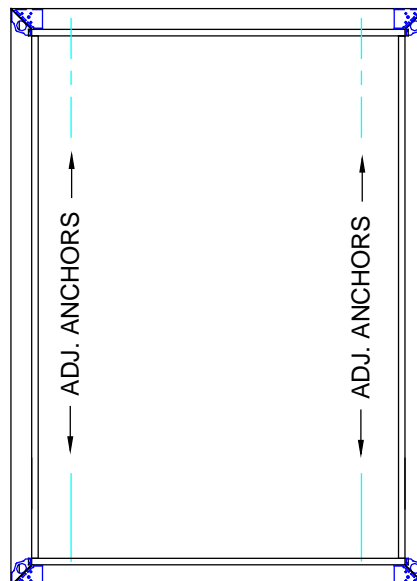
BORROWED LITE CONSTRUCTION AND ANCHORING:

2600 Series Borrowed Lite Jambs (Drywall Construction) *formerly known as 600 Series*. Will now be ordered and constructed in our Fab-a-Frame product line. The details below show typical construction of this product.

Note: The ITS Label is not available on borrowed lite units.



KNOCKED DOWN (KD) BORROWED LITE.



See Borrowed Lite Installation Instructions for further details.

PURPOSE:

The purpose of this bulletin is to introduce to architects the availability of Black Mountain Door 800 Series Adjustable Frames which are offered in standard and special sizes which will beautifully trim nearly all door frame openings ordinarily encountered in retrofit applications.

SCOPE:

This technical bulletin covers architect specifications, dimensions, and features of Black Mountain Door's Adjustable Frame. Black Mountain Door can furnish custom doors sized to fit all series 800 Adjustable Retrofit Frames.

DESCRIPTION:

The Series 800 Adjustable Frame is made up of two basic components, a 3 piece hardware section and a 3 piece trim section. The hardware section has a header and two jambs and is the portion into which the door fits.

The hardware section can be provided with any desired hardware preparation or as blank for a trimmed opening application. The trim section also has a header and two jambs and mates with the hardware section to form the completed frame. (Each trim size has a wall thickness adjustment of approximately 1 1/4").

The 800 Series Frame assembly fits over existing walls or existing frames. A popular retrofit application is to completely encapsulate and cover all of the existing frame which may have been previously painted with a lead-based paint. 2" faces are standard; other sizes optionally available.

These frames shall be supplied in cold rolled steel or .4 oz. (A40) or .6 oz. (A60) hot dipped galvanized finish for exterior applications. They come standard with gray primer, but are available with any of Black Mountain Door's 12 prefinished colors.

The 800 Series Retrofit Frames can also be supplied with a 1 1/2 hour Underwriters Laboratories label up to a maximum size of 4'0" x 8'0". Refer to T.D. #L-25.0 for more information on fire ratings. The details on the following pages show our standard 800 Series Frame for use on openings without existing stops. On the bottom half of the page, we also show the details for existing frames with stops.

STANDARD FRAME SIZES

SINGLE FRAME WIDTHS 2'0", 2'4", 2'6", 2'8", 3'0", 3'4", 3'6", 3'8" & 4'0" for 1 3/4"

*DOUBLE FRAME WIDTHS 4'0", 4'8", 5'0", 5'4", 6'0", 6'8", 7'0", 7'4" & 8'0"

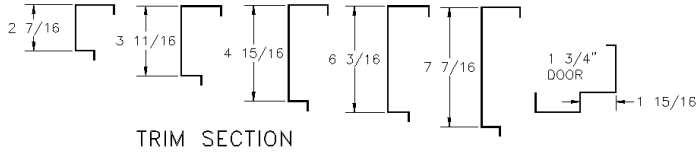
*FRAME HEIGHTS 6'8", 7'0", 7'2" & 8'0"

*Double door widths and door heights 7'2" & 8'0" not available in labeled.

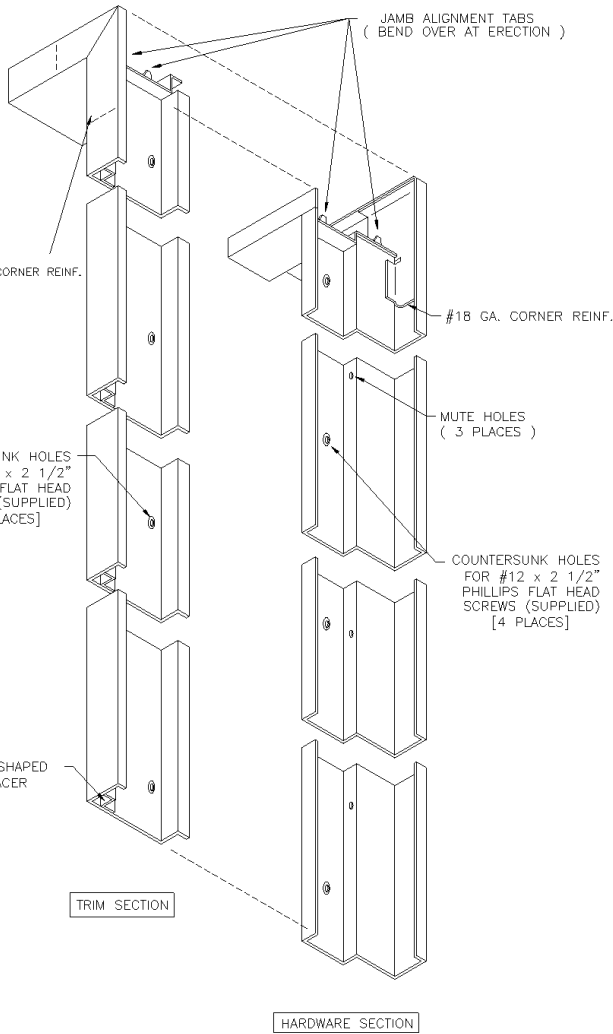
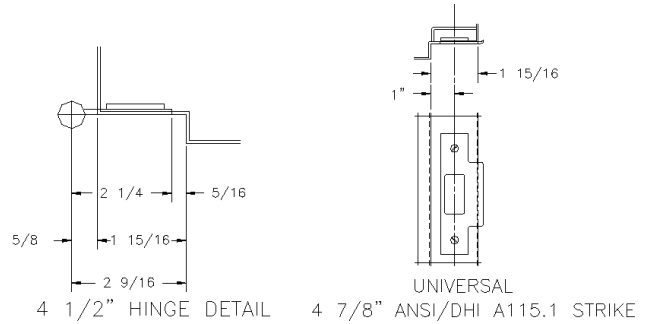
SPECIFICATIONS:

Specifications in ARCAT type, CSI MASTER FORMAT type and Spec Data are elsewhere on this website. Therefore, they are not duplicated in this Tech Data.

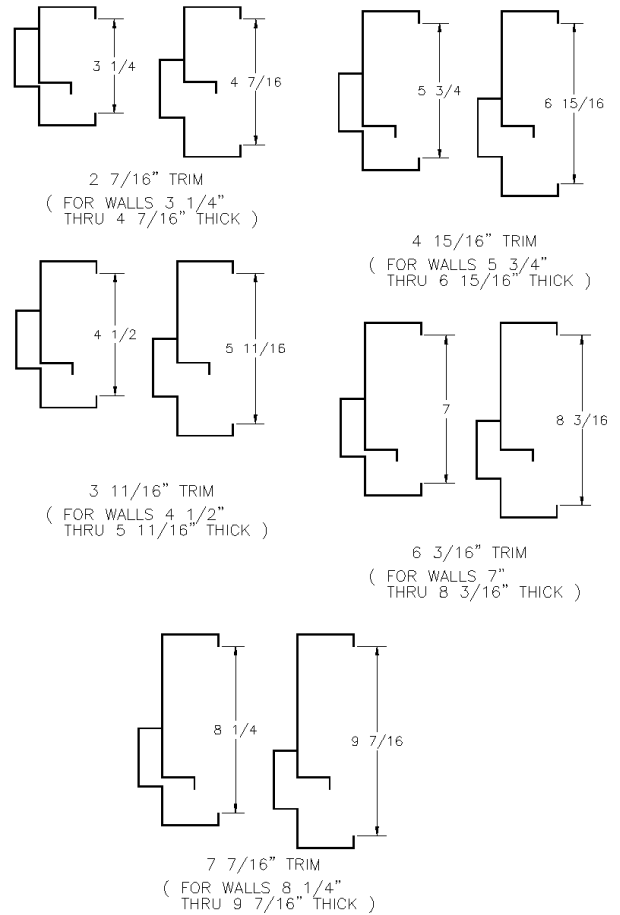




HDWRE SECTION



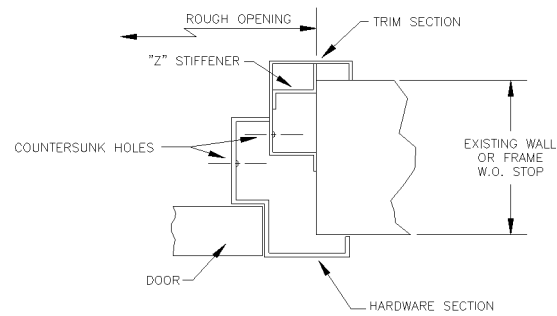
ASSEMBLED FRAME



STANDARD 800 SERIES

(FOR WALLS OR FRAMES WITHOUT STOPS)

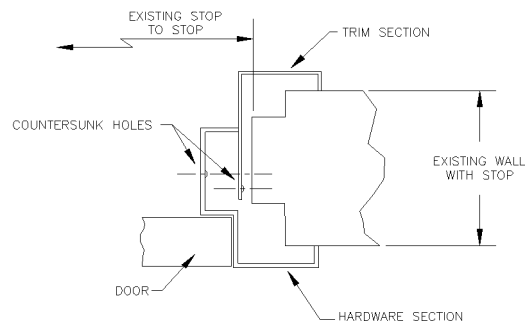
NEW FRAME SIZE
EXISTING ROUGH OPENING WIDTH MINUS 2 1/8"
EXISTING ROUGH OPENING WIDTH MINUS 1 1/8"



MODIFIED 800 SERIES

(FOR FRAMES WITH STOPS)

NEW FRAME SIZE
EXISTING STOP TO STOP MINUS 1"
EXISTING STOP TO FLOOR HEIGHT MINUS 1/4"



SUBJECT:

Amweld 3000 Series 1 3/4" Thermal Break Frame (Patent #4,594,831)

NO: F-5.0

DATE: 03/12

PAGE: 1

SCOPE:

This bulletin covers specifications and features of Black Mountain Door's Thermal Break Frame for 1 3/4" doors intended for use in exterior installations.

PURPOSE:

To provide concise details showing the frame construction.

DESCRIPTION:

The Series 3000 Thermal Break Frame is made up from two (2) separate frame sections which are joined together by a special PVC Thermal Break Section.

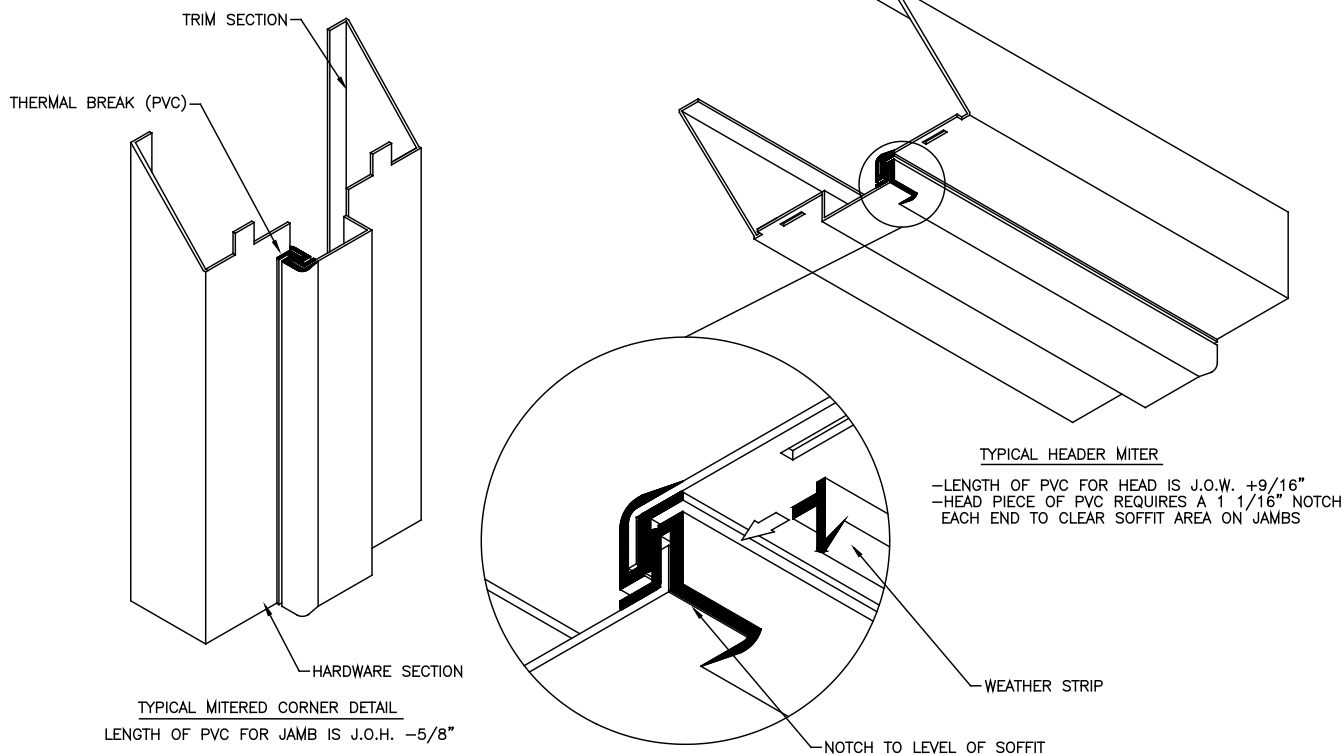
Thermal tests were run at an independent testing lab in accordance with ASTM C-236. With the outside temperature at 20°F below zero, the 3000 series thermal frame had 47% less reduction in temperature conductivity than a one piece steel frame. In the same series of tests, there was a heavy build-up of frost on the interior portions of the one piece frame. Transfer of frost on the thermal frame was stopped "cold" at the thermal break.

The advantages of Black Mountain Door's Thermal Break Frame are:

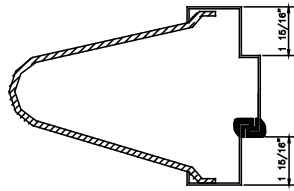
- 1) There is a complete 3/16" thick thermal break around the perimeter of the frame.
- 2) There are no fasteners, exposed or hidden.
- 3) A replaceable, flexible, vinyl weather-stripping may be optionally incorporated into the thermal break system.

STANDARD FRAME SIZES:

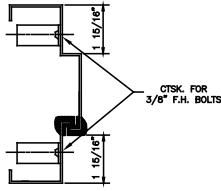
SINGLE DOOR WIDTHS 2'0" through 4'0"
 SINGLE DOOR HEIGHTS 6'8", 7'0", 7'2", 7'10", & 8'0"
 DOUBLE DOOR WIDTHS 4'0" through 8'0"
 DOUBLE DOOR HEIGHTS 6'8", 7'0", 7'2", 7'10", & 8'0"



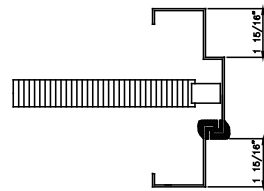
TYPICAL ANCHOR DETAILS:



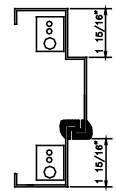
MASONRY ANCHOR (JAMBS)



COMPLETED OPENING ANCHOR (JAMBS)

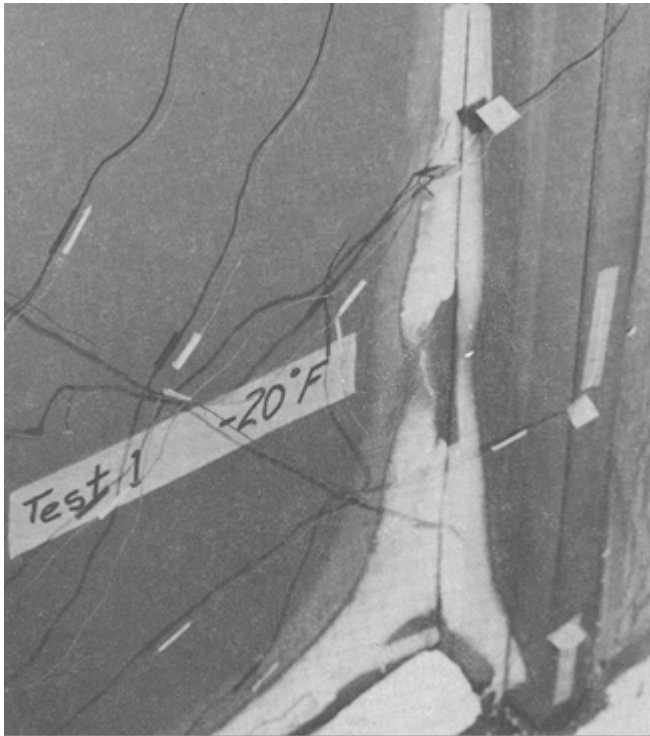


YOKE/STRAP ANCHOR (JAMBS)

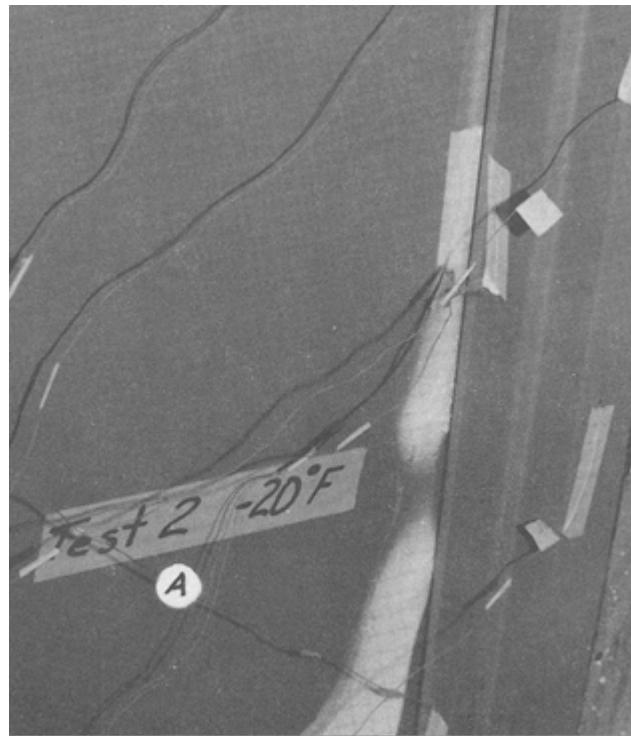


BASE ANCHOR (JAMB)

TESTING DETAILS:



TEST #1 – ONE PIECE 400 SERIES FRAME



TEST #2 – 2 PIECE THERMAL BREAK FRAME

Thermal tests were run at an independent testing lab in accordance with ASTM C-236. With an outside temperature at 20°F below zero, the 3000 series thermal frame had 47% less reduction in temperature conductivity than a typical one piece frame.

In a series of tests, there was a heavy build-up of frost on the interior portions of the one piece frame (Test #1). Transfer of frost on the thermal frame was stopped "cold" at the thermal break. (Test #2).

SCOPE:

This bulletin covers the standard and custom 4" header program for 400 Series frames.

PURPOSE:

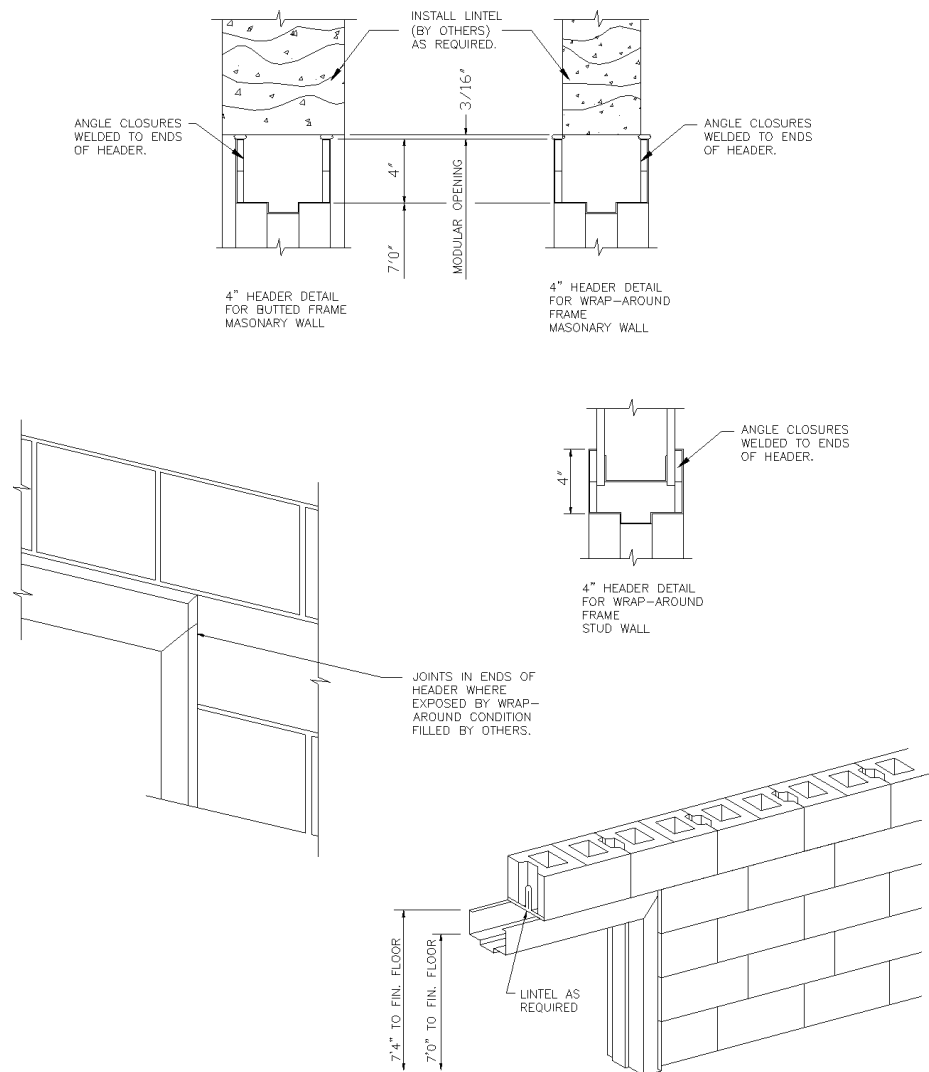
To inform the reader of the modular possibilities of Black Mountain Door frames.

DESCRIPTION:

Modular construction requires that full block coursing be provided for masonry openings to receive door frames. The 4" header is designed to be used with standard 7'0" jamb to provide a total frame height of 7'4" which is equal to eleven 8" block courses. Cutting of block at the top of the frame is thereby eliminated. Normally, modular construction results in a butted-to-masonry situation in which the ends of headers are not exposed. With the increasing probability of stud walls adjacent to masonry walls, in order for the 4" header to suit the wrap-around condition, the ends must be capped.

SUMMARY:

All 4" headers will have end closer angles installed as standard.
Refer to details on page 2 of this Tech Data.



SCOPE:

This bulletin covers standard and labeling requirements for hospital stops.

PURPOSE:

To advise the reader of the details of the frame construction.

DESCRIPTION:

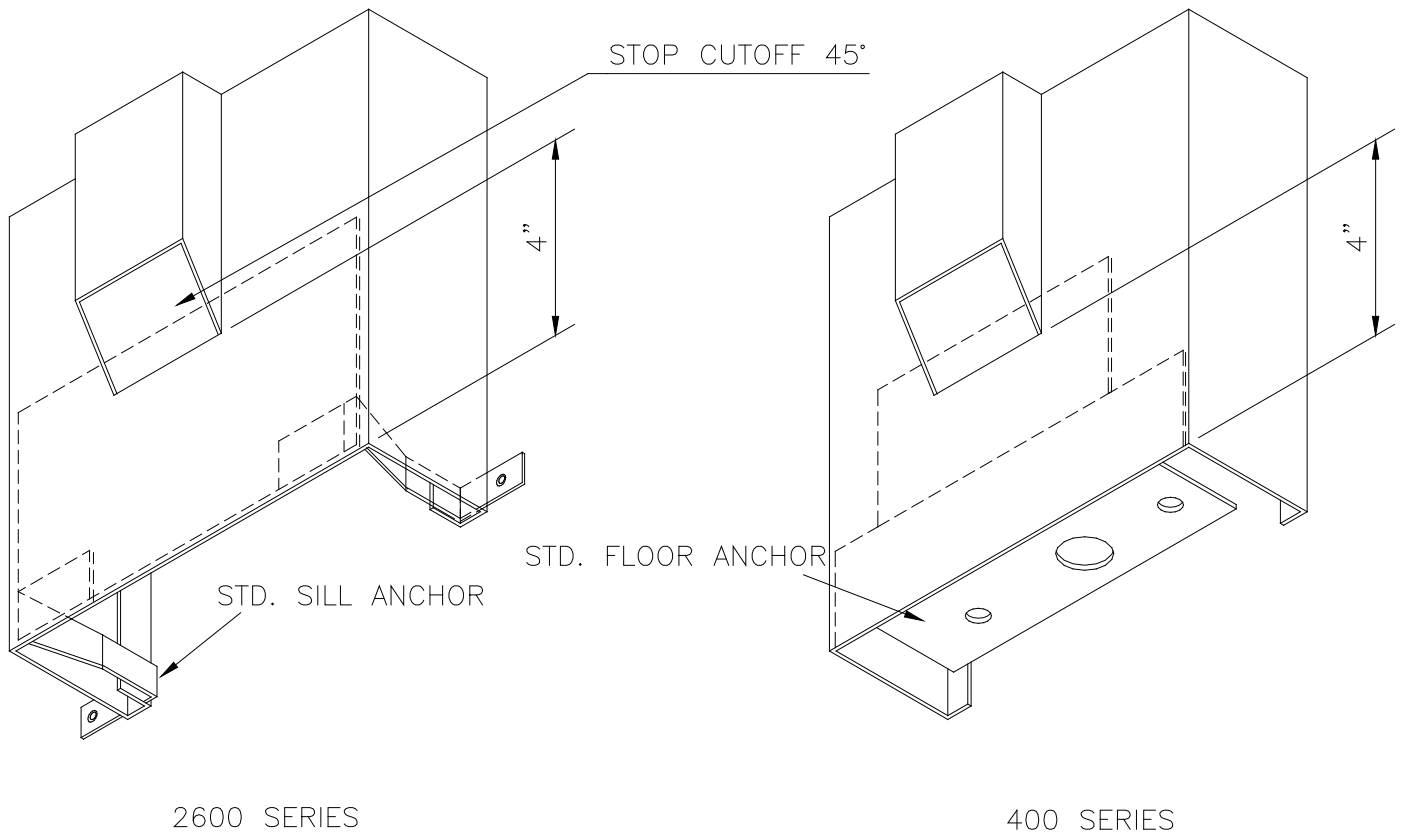
Hospital frames will be furnished standard with 45° stop cutoff 4" from the base of the jamb. The hospital stop preparation is available on all gage frames. Hospital stops are not suitable for gasketed, smoke barrier or double egress frames.

Amweld 400 SERIES:

All frame depths - UL and WHI labels are available.

Amweld 2600 SERIES:

All frame depths - UL and WHI labels are available.



SCOPE:

This bulletin covers the specifications and installation of Black Mountain Door's removable mullion.

PURPOSE:

To provide Black Mountain Door distributors with a removable hollow metal mullion for labeled and standard 400 Series frames.

DESCRIPTION:

Removable mullions are available for 1 3/4" doors, 6'8", 7'0", 7'2" and 8'0". they are manufactured from 16 gage steel and reinforced for rim panic devices or prepared for ANSI/DHI A115.1 strike (4 7/8" universal). Headers for removable mullions must be ordered 2 1/16" larger than normal double door sizes (i.e., the normal opening for two nominal 2'6" doors is 4'11 15/16"; with removable mullion it is 5'2"). These headers will not be prepared for mutes. The top anchor will be welded to the header at the factory. You will note that the top and floor anchors have been provided with a notch for plumb bob reference for locating the floor anchor position.

This mullion is not intended to supersede hardware-type mullions which are performance tested as part of exit device function requirements (ANSI/BHMA A156.3).

FIRE RATINGS:

Door and frame sizes will follow the standards as set forth by the Underwriters for single doors when a labeled assembly is required. The opening can only be considered as "protected" when the mullion is in place. Should the mullion be removed for moving equipment through the doorway and left out overnight, the opening will be considered "without sufficient protection". This would come under the same ruling as hooking or chaining a door open which is protecting an opening. The door could not close in the event of a fire. Without the removable mullion in place, the door would not have a strike jamb to close on. The assembly will bear a regular fire door frame label on both hinge jambs. Labeled removable mullions must be ordered with the complete frame assembly. However, they may be shipped six (6) like members per bundle. All removable mullions for labeled frame assemblies will have the pressure sensitive KD frame part label and the Dennison label firmly affixed to the inside of the face.

REMOVABLE MULLION KITS:

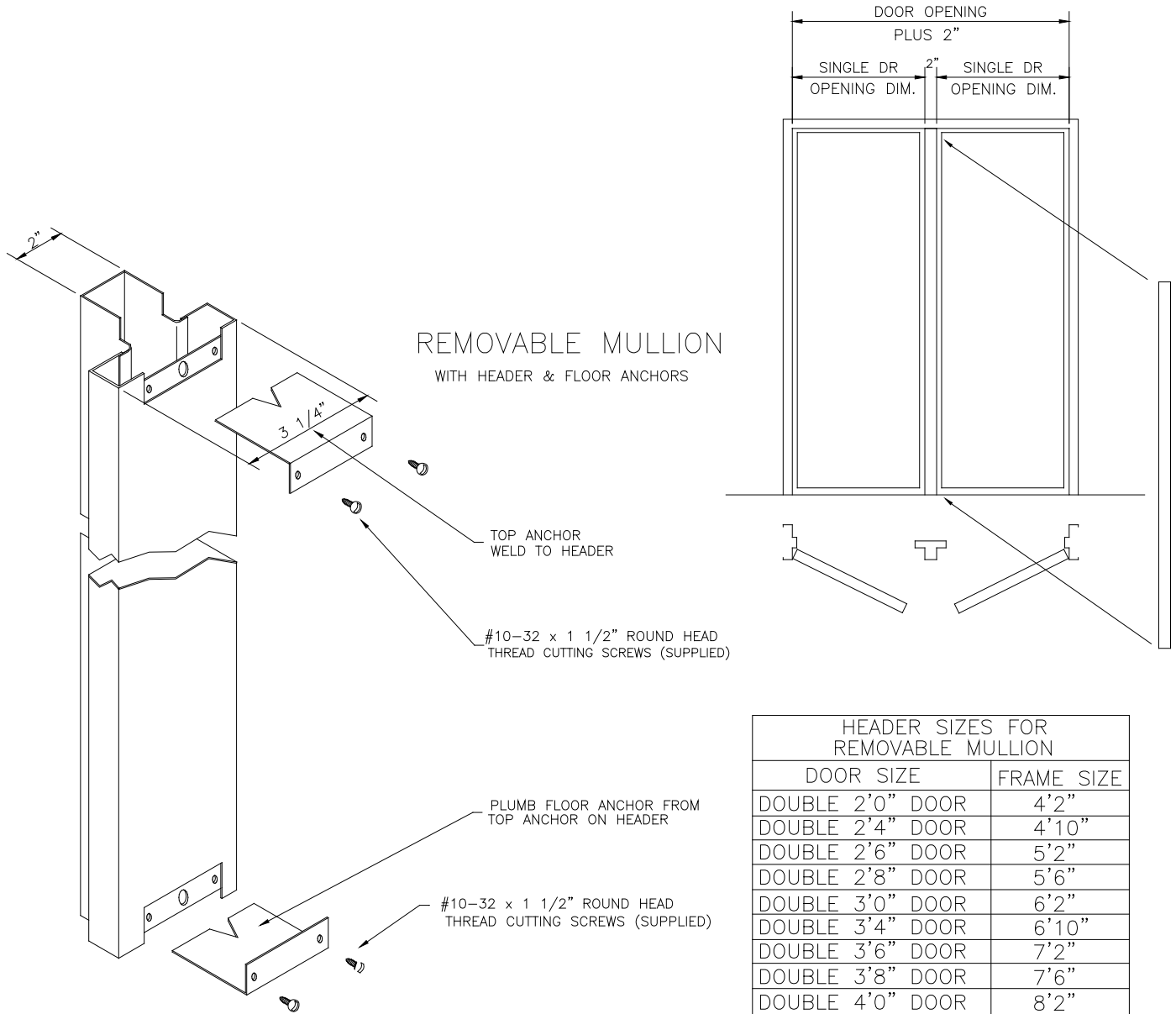
Removable mullions are available as kits for non-labeled frames to the fabricating distributor. Kit will include the following:

- 1 Mullion Assembly (6'8", 7'0", 7'2" or 8'0").
- 2 Anchors, Part 14179.
- 4 #10-32 x 1/2" R.H. Thread Cutting Screws
- 1 Installation Sheet

Order removable mullion kit - 4 7/8" Universal Strike x Height or Blank x Height.

The distributor will provide headers 2 1/16" longer than nominal double headers for non-labeled frames.





SCOPE:

This bulletin covers the construction features of 400 Series frames in lead lined applications.

PURPOSE:

To provide details of frame construction and frame anchors to allow for field installation of lead lining.

DESCRIPTION:

As shown on the details following, Black Mountain Door will fabricate frames with retaining clips and anchors suitable for wall construction.

The chart below shows an approximation of weights for lead sheets per square foot.

Lead Thickness	Lbs/Sq.Ft.
1-64"	1.0
1/32"	2.0
3/64"	3.0
1/16"	4.0
5/64"	5.0
3/32"	6.0
1/8"	8.0

Due to the additional weight of lead lined doors, Black Mountain Door recommends the use of 3/16" thick hinge reinforcing and/or the addition of a backup zee as shown.

Frames should be assembled and/or welded prior to the installation of lead so that a proper overlap of lead in frame corners is achieved.

Hospital stops, since they negate the protective overlap of lead at the bottom of the door, are not applicable.

Preferably, wall construction should be new masonry, steel stud, or wood stud walls. Existing masonry type anchoring may not allow for a controllable overlap of lead between frames and walls, thus potentially compromising the installation. Stud wall construction should be sufficiently rigid to support the weight of the door assembly.

FIRE RATINGS:

4'-0" x 8'0" Maximum Nominal Frame Size with 1/8" Thick Lead Max.

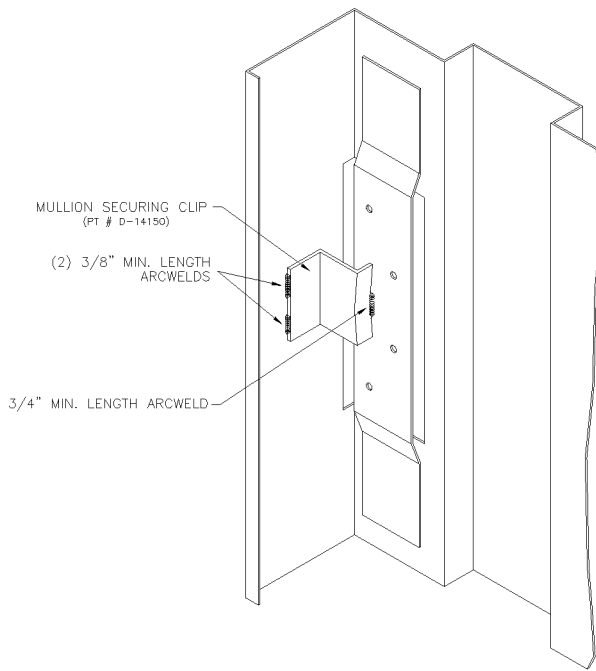
As long as all other requirements for fire rating are met, the addition of lead lining does not affect the fire rating of 3 sided fire door frames.

Note: Details assume lead in walls is on the door side. If opposite condition exists, consult Black Mountain Door.

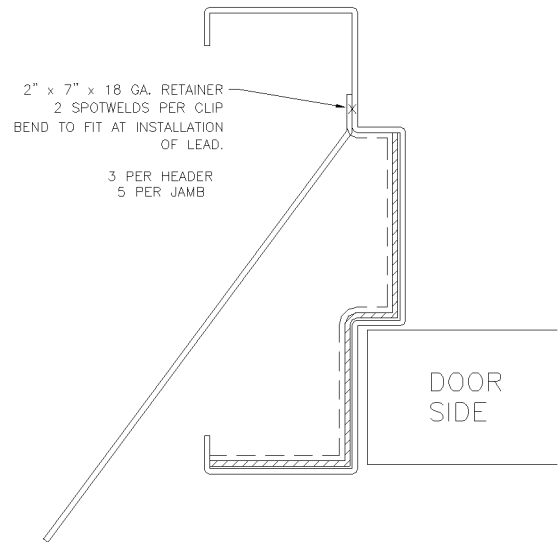
Recommended Anchors:

- For New Construction Masonry "T" or Wire Anchors
- For Steel Stud "Z" Style Anchors as shown Below

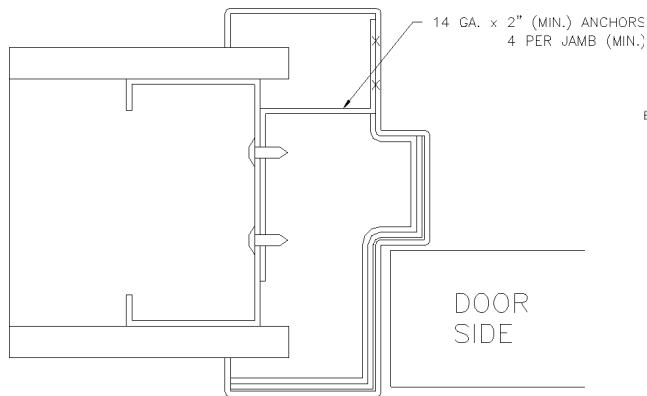




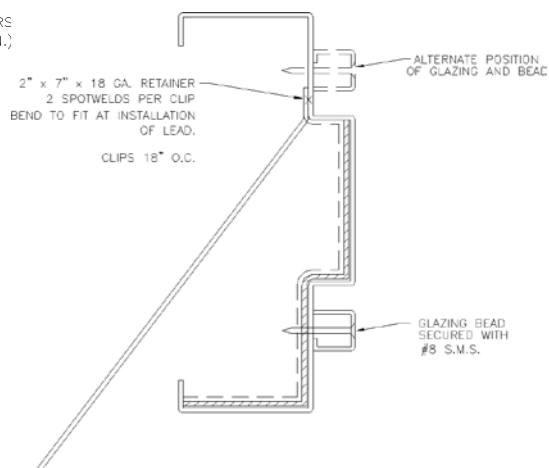
HINGE BACKUP ZEE



LEAD RETAINER CLIP DETAIL



STEEL STUD WALL ANCHOR
 USE GYPSUM GROUT AS ADDITIONAL STABILIZER



JAMB AT SIDELITE
 OR WINDOW FRAME

SCOPE:

This bulletin covers the description, dimensions, availability, and details for Black Mountain Door Series FR Stainless Steel 3-sided frames manufactured under the Firedoor Brand. Stainless Steel Frames for borrowed lights, sidelight and/or transom frames are available, but due to their complexity and variety of joints or splices they are described on "shop drawings" basis.

PURPOSE:

To provide a verbal and visual description of details, features, and options for these specialized frames generally included in CSI Specification Sections 08 11 19 and 08 12 19.

DISCLAIMER:

Since all stainless steel frames are "made-to-order" it is extremely important to specify exact requirements for stainless steel type and finish, materials for reinforcements or other components, and anchors. Black Mountain Door has no control over the intended usage and expectations of these doors.

DESCRIPTION:

Stainless steel frames along with corresponding doors (see Tech Data D-26.0) are used for a variety of purposes including corrosion protection and aesthetics. Even when not used with stainless steel doors, the features and options available in the Black Mountain Door Firedoor Brand stainless steel frames make them easily adaptable to uses such as:

- Swimming pool areas where moisture and chlorine content are high.
- Agricultural, animal care or dairy farm areas where repeated washing and cleanliness are major health concerns.
- Pharmaceutical laboratories where contamination cannot occur.
- Main entrances of buildings in "snow belt" areas or airports where the use of de-icing agents are used for occupant or mechanical safety.
- Sewage treatment plants where contaminated fumes, liquids, or solids commonly exist.
- Hospital operating rooms or special patient care areas where diseases or contamination simply cannot be tolerated.
- Purely decorative entrances to buildings or executive offices.

Since these frames are primarily intended for moisture or corrosion protection they are normally used in masonry or existing masonry/concrete walls that are not subject to porosity issues of common dry wall installations.

Frame construction complies with fabrication requirements of HMMA-866.

MATERIALS:

Firedoor Brand stainless steel frames may be ordered in 16 gage (0.053" min.), 14 gage (0.067" min.), or 12 gage (0.093" min.).

Frame heads and jambs are available in either type 304 or type 316 stainless steel complying with ASTM A666 in a # 4 grained finish. Of the two types, 316 has better corrosion resistance properties than 304.

The # 4 finish is a very fine grained surface well suited for concealing minor defacing such as fingerprints and may be restored using the proper mild abrasives.

Black Mountain Door does not recommend nor use the # 8 mirror finish since it is almost impossible to restore any minor scratches inherent during transit, storage, installation, or use.

Other components such as anchors and hardware reinforcing are available in either stainless steel or galvanized (hot-dip galvanized) steel. If specified to be stainless steel, these unexposed items are normally the same type as heads and jambs with a # 4 finish.



OPENING SIZES:

Firedoor Brand stainless steel frames are available with door opening sizes up to 4'-0" X 8'-0" for single doors and 8'-0" X 8'-0" for double doors. Note: Actual opening width at double frames is 1/16" less for reduced gap at meeting edges. This under sizing does not affect operation of doors, nor is it to be considered out of tolerance. Consult Black Mountain Door for other sizes. IN ALL CASES, stainless steel sheets may be subject to availability from steel vendors.

PROFILE DIMENSIONS:

Firedoor Brand stainless steel frames are available in the following standard profiles (jamb depths) based on a 16 gage frame with standard 3/8" returns (backbends). ADD 1/4" to minimum profile for 14 gage and 1/2" to minimum profile for 12 gage :

Double Rabbet (1 15/16" - 1 15/16"): From 4 7/8" through 13 3/4" in 1/8" increments.

Single Rabbet: From 3" through 12 3/4" in 1/8" increments.

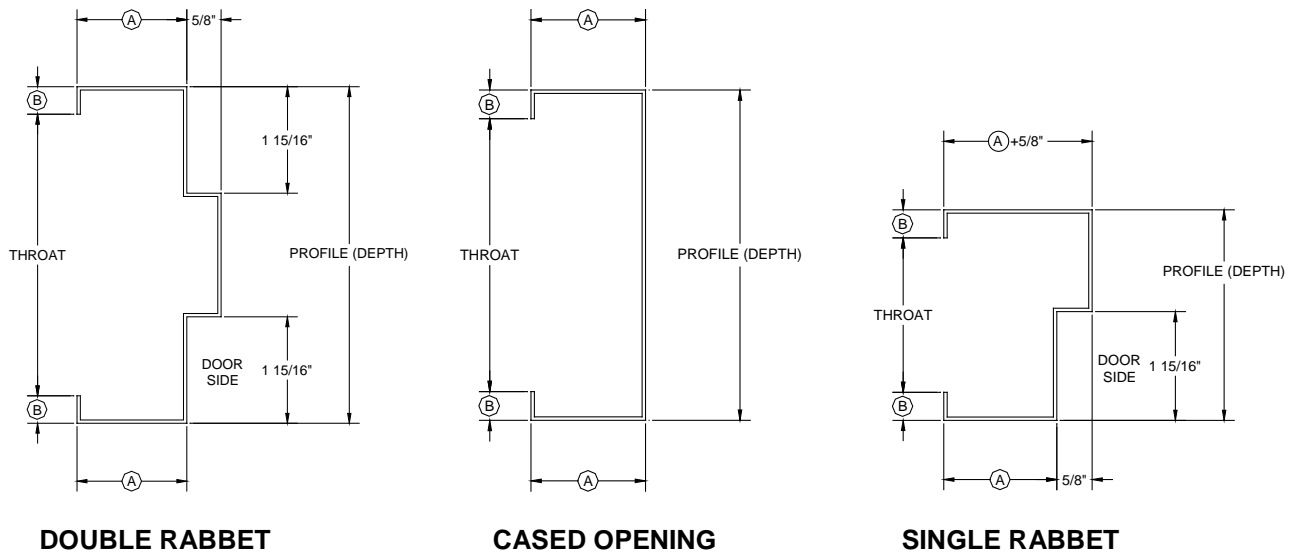
Trimmed (Cased) Opening: From 3" through 12 3/4" in 1/8" increments.

Double Egress: From 5" to 13 3/4" in 1/8" increments. Standard Faces are 1 3/8" and 2 5/8" on opposite sides of the profile to match with 2" faces of other frame designs. Faces of 3 3/8"- 4 5/8" are available on headers but this frame design seldom occurs at new masonry walls.

Faces (standard): 2" at jambs and header; 4" optional at header.

Faces (standard double egress): 1 3/8" and 2 5/8" on opposite sides of jambs, 2" at head with applied stops.

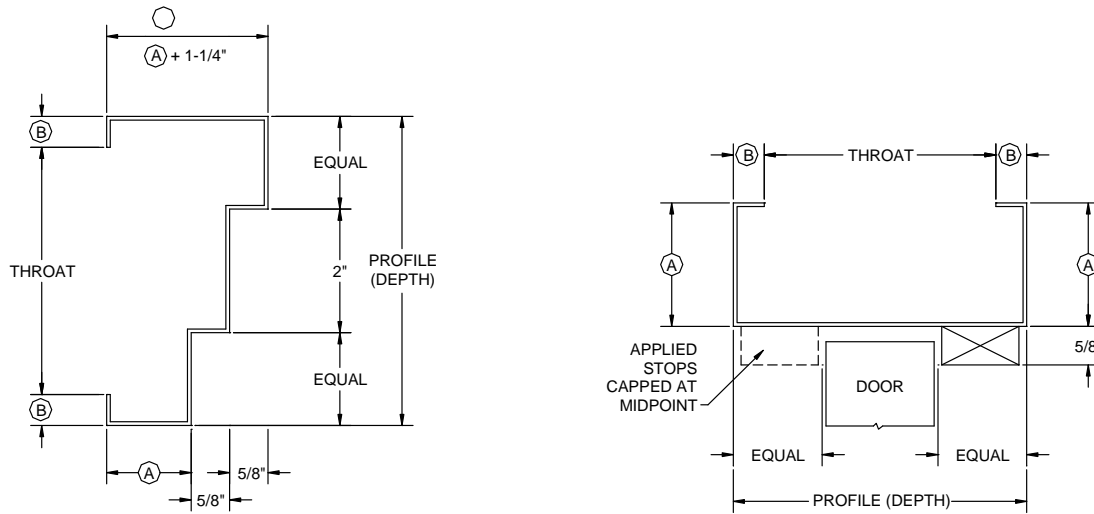
Returns (backbends): 3/8" at 16 gage, 1/2" at 14 gage, and 5/8" at 12 gage. **Note that these differ from corresponding Black Mountain Door Brand frames. Throat size for wrap-around frames should be 1/8" larger than the wall thickness. Take this in consideration when ordering.**



DOUBLE RABBET-CASED OPENING-SINGLE RABBET					
GAGE	A standard	A common range	B standard	min. soffit sgl. rabbet	min. soffit dbl. rabbet
16	2"	1" to 4"	3/8"	1 1/4"	1 1/4"
14	2"	1" to 4"	1/2"	1 1/2"	1 1/4"
12	2"	1 1/4" to 4"	5/8"	1 3/4"	1 1/2"

Dimensions in the chart above and on page 3 represent those commonly used and are based on standard tooling. Contact Black Mountain Door for recommendations if project requirements vary from those shown above.





DOUBLE EGRESS					
GAGE	A standard @ jamb	A standard @ head	A common range @ jamb	B standard	min. profile (depth)
16	1 3/8"	2"	1" to 4"	3/8"	4 1/2"
14	1 3/8"	2"	1" to 4"	1/2"	5"
12	1 3/8"	2"	1 1/4" to 4"	5/8"	5 1/2"

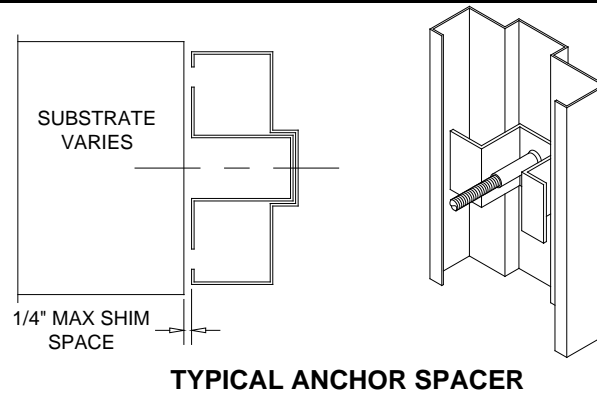
HARDWARE REINFORCING:

Reinforcing for hardware is available either in stainless steel or hot-rolled/cold-rolled/galvanneal steel. Reinforcing meets dimensional criteria of ANSI/SDI A250.8, ANSI A250.6, and ANSI/NAAMM HMMA 866. Extra care is taken to minimize adverse effects of welding while maintaining structural integrity. Grinding and re-graining is needed only at welded areas.

ANCHORS:

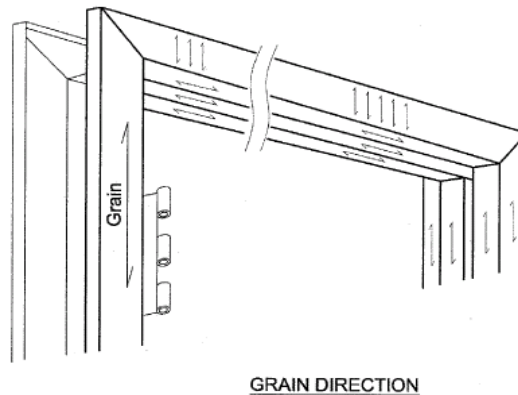
Firedoor Brand stainless steel frames are provided with a welded-on floor anchor except where existing walls prohibit their use. To minimize defacing and re-graining of # 4 finish, Black Mountain Door recommends the use of loose (snap-in) wall anchors wherever possible. Loose anchors are detailed in other Tech Data or Installation Instructions. For new masonry, wire or TEE anchors are recommended since their main function is to bind the frame to masonry until grout sets. For existing masonry or concrete walls, loose CO anchors are available or stainless steel spacers (shown below) may be specified. For the rare occasions when steel stud walls occur, Black Mountain Door recommends loose snap-in anchors of the appropriate type. Unless wall studs are stainless steel and drywall is non-permeable, stainless steel anchors are unnecessary. Stainless steel welded ZEE clips are available (welds are ground and re-grained).





ASSEMBLY:

In order to assure an aesthetic matching of grain at corners (when ordered # 4 finish) Firedoor Brand stainless steel frames are provided as face welded and ground smooth (WGS) 3-sided assemblies. This preserves continuity of the graining (see below). Note that the grain on both head and jamb **faces** runs **vertically** to match doors. Temporary shipping spreaders are provided at the bottom of jambs. Unlike prime painted steel frames, # 4 finish frames **are not available** with full profile (continuously) welded corners since this process leaves unsightly deformation and discoloration in areas that cannot be re-grained.



FIRE RATINGS:

Stainless steel reacts differently to heat than cold-rolled or galvanized steel. For this reason fire resistance ratings for stainless steel frames and doors are not as extensive as their steel equivalents. Stainless steel frame and door assemblies have been fire tested to UL 10B (neutral pressure), UL 10C (positive pressure) and NFPA 252 test standards. As the "companion" document to Tech Data D-26.0 this Tech Data addresses Approval Listings by Underwriters Laboratories (UL) for frames up to 4'-0" X 8'-0" for single doors and 8'-0" X 8'-0" for double doors. Frames may be used with doors rated up to 3-hours

These approvals along with Publication UL-63 allow labels on frames in masonry, steel stud, wood stud, or existing masonry/concrete walls. Throat size is 2" minimum (@single rabbet, see chart on page 2) to 13" maximum. Faces for double rabbet frames may be 1 1/4" minimum to 4" maximum; single rabbet frame faces may be 2" minimum to 4" maximum. Frames may be knocked-down or face welded.

Pressure-Fit (slip-on drywall) or double egress frames are not included.

SUMMARY:

Stainless steel frames combined with stainless steel doors (see Tech Data D-26.0) from the Firedoor Brand can add that decorative or functional touch to supplement or match other Black Mountain Door doors.

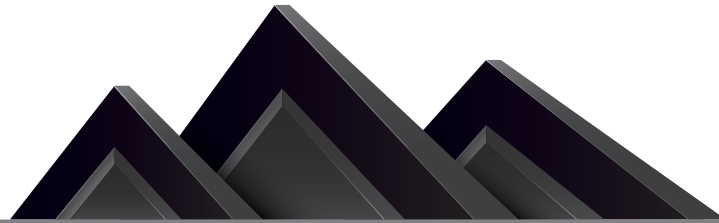
SUBJECT:
FIREDOOR BRAND STAINLESS STEEL FRAMES (SERIES FR)
BY BLACK MOUNTAIN DOOR

NO: F-16.0
DATE: 03/12
PAGE: 5

CERTIFICATION:

This Tech Data may serve as a certification of compliance with fabrication or testing Standards specifically referenced herein.





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INDEX – GENERAL

rev. 05-04-12

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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.



SCOPE:

This bulletin is intended to inform the reader of recommendations for using Black Mountain Doors and frames fabricated under both the Amweld and Firedoor Brand names.

PURPOSE:

To act as an easily understandable set of recommendations for selecting the correct **standard** product based on specifications defined in ANSI/SDI and HMMA Standards. Due to the vast differences in Occupancy Classifications or established preferences of individual Architects, it is not intended to be all inclusive. Generally, Amweld Brand material is fabricated to hardware locations and fabrication requirements of ANSI/SDI A250.8; Firedoor Brand material is fabricated to hardware locations and fabrication requirements of HMMA Standards.

DESCRIPTION:

For identification purposes, the basic features of Black Mountain Door doors and frames are summarized as follows:

Door Edges:

- LE: Edges joined with a continuous laser welded seam (LaserEdge) for full flush edge. Filler is added and ground smooth for seamless edge,
- LS: Edges joined with a continuous interlocking seam for full flush edge. Filler is added and ground smooth for seamless edge,
- WE: Edges joined with a continuous weld, filled and ground smooth and seamless.
- CS: Same as WE but used for limited specialty items.

Amweld Brand Door Series:

- 15LE full flush polystyrene Supercore ®.
- 17LE seamless polystyrene Supercore ®.
- 25LE full flush hot-dip galvanized (galvanneal) polystyrene Supercore®.
- 27LE seamless hot-dip galvanized (galvanneal) polystyrene Supercore®.
- 35LE full flush 250 degree F temperature rise core.
- 37LE seamless 250 degree F temperature rise core.
- 35LE **(option)** full flush hot-dip galvanized (galvanneal) 250 degree F temperature rise core.
- 37LE **(option)** seamless hot-dip galvanized (galvanneal) 250 degree F temperature rise core.
- 45LE full flush honeycomb core.
- 47LE seamless honeycomb core.
- 45LE **(option)** full flush hot-dip galvanized (galvanneal) honeycomb core.
- 47LE **(option)** seamless hot-dip galvanized (galvanneal) honeycomb core.
- 61LE full flush embossed panel polystyrene core.
- 63LE seamless embossed panel polystyrene core.
- 85LE full flush urethane core.
- 87LE seamless urethane core.
- 83LE full flush hot-dip galvanized (galvanneal) urethane core.
- 89LE seamless hot-dip galvanized (galvanneal) urethane core.
- 300 tubular sections of hot-dip galvanized (galvanneal) steel.

NOTE: Standard 35LE, 37LE, 45LE and 47LE are cold rolled steel. Galv must be ordered as option.



Firedoor Brand Door Series:

- 25LS full flush hot-dip galvanized (galvanneal) polystyrene core.
- 27LS seamless hot-dip galvanized (galvanneal) polystyrene core.
- 27WE seamless hot-dip galvanized (galvanneal) polystyrene core.
- 35LS full flush hot-dip galvanized (galvanneal) 250 degree F temperature rise core.
- 37LS seamless hot-dip galvanized (galvanneal) 250 degree F temperature rise core.
- 37WE seamless hot-dip galvanized (galvanneal) 250 degree F temperature rise core.
- 61LS full flush 6-panel hot-dip galvanized (galvanneal) polystyrene core doors.
- 63LS seamless 6-panel hot-dip galvanized (galvanneal) polystyrene core doors.
- 61CS (**see note**) full flush lockseam 6-panel hot-dip galvanized (galvanneal) steel stiffened doors.
- 63CS (**see note**) seamless 6-panel hot-dip galvanized (galvanneal) steel stiffened doors.
- 83LS full flush hot-dip galvanized (galvanneal) polyurethane core.
- 89LS seamless hot-dip galvanized (galvanneal) polyurethane core.
- 89WE seamless hot-dip galvanized (galvanneal) polyurethane core.
- 05LS full flush hot-dip galvanized (galvanneal) steel stiffened non-handed.
- 05LS (**option**) seamless hot-dip galvanized (galvanneal) steel stiffened non-handed.
- 05WE seamless hot-dip galvanized (galvanneal) steel stiffened non-handed.
- 07LS full flush hot-dip galvanized (galvanneal) steel stiffened handed.
- 07LS (**option**) seamless hot-dip galvanized (galvanneal) steel stiffened handed.
- 07WE seamless hot-dip galvanized (galvanneal) steel stiffened handed.

NOTES:

For seamless edge (**Model 2 option**) on 05LS and 07LS doors, "seamless filled edges" must be ordered. "**CS**" indicates special construction; lockseam embossed face door with steel stiffeners.

Amweld Brand Frame Series, cold rolled steel or hot-dip galvanized (galvanneal) steel as ordered:

- 0400 standard Interlok(R) frames K-D or welded.
- 4400 double-egress frames frames K-D or welded.
- 0400 standard Interlok(R) cased opening frames frames K-D or welded.
- 2600 standard slip-on drywall frames K-D only.
- 4600 slip-on drywall cased opening frames K-D only.
- 0600 4-sided slip-on drywall frames K-D only
- 3000 frames with integral thermal break K-D or welded.

Firedoor Brand Frame Series hot-dip galvanized (galvanneal) steel only:

- FR equal, or single rabbet frames K-D or welded.
- FR double-egress frames K-D or welded.
- FR cased opening frames K-D or welded.
- PF pressure fit frames for doors or cased openings K-D only.
- HR "High Riser" frames for swing doors, K-D only.
- HR "High Riser" cased opening frames for sliding or bifold doors, K-D only.

Recommendations shown in the chart on page 3 are based on the "SCOPE" of ANSI/SDI A250.8-2003 (reaffirmed 2008) "SDI-100 Recommended Specifications for Standard Steel Doors and Frames". Door and Frame Series defined in this chart are suggested products based on Level Classification. "Grade" Classifications used in some prior versions based on SDI-100 are now referred to as "Level" Classifications. Gage designations are minimums and are based on material thickness shown in Tech Data #G-8.0. Other door or frame Series may be available when constructed in gauges defined.

ANSI / SDI A250.8 – Black Mountain Door Product Reference

Level	Model	Description	Minimum Door Gauge	Recommended Door Series						Minimum Frame Gauge	Recommended Frame Series				
Level 1 - Standard Duty															
1	1	Full Flush 1-3/4"	20	15LE	25LE	61LE	45LE			18(16)	400	2600	FR	PF	High Riser
	2	Seamless 1-3/4"	20	17LE	27LE	63LE	47LE			18(16)	400	2600	FR	PF	High Riser
Level 2 - Heavy Duty															
2	1	Full Flush 1-3/4"	18	15LE 25LE 25LS	05LS 07LS	35LE 35LS	45LE	61LE 61LS	85LE 83LE 83LS	16	400 3000	2600	4400	FR	PF
	2	Seamless 1-3/4"	18	17LE 27LE 27WE 27LS	05WE 07WE 05LS 07LS	37LE 37WE 37LS	47LE	63LE 63LS 63WE	87LE 89LE 89LS 89WE	16					
Level 3 - Extra Heavy Duty															
3	1	Full Flush 1-3/4"	16	15LE 25LE 25LS	05LS 07LS	35LE 35LS	45LE	61LE 61LS	85LE 83LE 83LS	16	400 3000	2600	4400	FR	PF
	2	Seamless 1-3/4"	16	17LE 27LE 27WE 27LS	05WE 07WE 05LS 07LS	37LE 37WE 37LS	47LE	63LE 63LS	87LE 89LE 89LS 89WE	16					
	3	Stile & Rail 1-3/4"	16/18	300						16					
Level 4 - Maximum Duty															
4	1	Full Flush 1-3/4"	14	15LE 25LE 25LS	05LS 07LS		45LE		85LE 83LE	14	400	4400	FR		
	2	Seamless 1-3/4"	14	17LE 27LE 27WE 27LS	05WE 07WE 05LS 07LS	37WE	47LE		87LE 89LE 89WE	14					

Recommendations shown in the chart on page 4 are based the "SCOPE" of the following HMMA Documents:

- HMMA 860-92 "Guide Specifications for Hollow Metal Doors and Frames".
- ANSI/NAAMM HMMA 861-06 "Guide Specifications for Commercial Hollow Metal Doors and Frames".
- ANSI/NAAMM HMMA 867-06 "Guide Specifications for Commercial Laminated Core Hollow Metal Doors and Frames".

As above, Gage designations are minimums and are based on material thickness shown in Tech Data # G-8.0.



HMI/HMMA - Amweld International Product Reference

HMMA#	Location	Minimum Door Gauge	Recommended Door Series	Minimum Frame Gauge	Recommended Frame Series
HMMA # 860					
860	EXTERIOR	18 Galv. A60	07LS 07WE	16 Galv A60	FR 400*
	INTERIOR	20 (18)	07LS 07WE	18 HC Wood 16 Others	FR 400* PF 2600* HighRiser 4400*
HMMA # 861					
861	EXTERIOR	16 Galv. A60	07WE	16 Galv A60	FR 400*
	INTERIOR	18	07WE	16	FR 400* 4400*
HMMA # 867					
867	EXTERIOR	18 Galv. A60	05LS 05WE 07LS 07WE 25LS 25WE 27LS 27WE 61LS 61WE 63LS 63WE 83LS 89LS 89WE <i>Amweld Series Doors (See Note):</i> 25LE 27LE 45LE 47LE 61LE 63LE 87LE 89LE	16 Galv A60	FR 400* 3000*
	INTERIOR	20 (18)	05LS 05WE 07LS 07WE 25LS 25WE 27LS 27WE 61LS 61WE 63LS 63WE 83LS 89LS 89WE 35LS 37LS 35WE 37WE <i>Amweld Series Doors (See Note):</i> 25LE 27LE 45LE 47LE 61LE 63LE 87LE 89LE 15LE 17LE 35LE 37LE	18 HC Wood 16 Others	FR 400* PF 2600* HighRiser 4400*

Notes: HighRiser is 18 Gauge for Hollow Core (HC) Wood Doors Only.
 * Amweld Brand Frames must be ordered with 7 Gage Hinges and Special Hardware Locations.
 Amweld Series Doors must be ordered with handed beveled lock edge option, 7 Gage Hinge Reinforcements and Special Hardware Locations.

SUMMARY:

Charts included in this Tech Data are the recommendations of Black Mountain Door for standard products meeting the fabrication requirements of the Specifications noted. It must be noted that in some cases Black Mountain Door does not use certain materials (such as the frame gage indicated as minimums for Level 1). In those cases Black Mountain Door uses products heavier than actually required. Such deviations are noted in parenthesis.

CERTIFICATION:

This TD may be used as written certification of compliance to the fabrication requirements of the individual Specifications shown in charts.



SCOPE:

This bulletin is intended to inform the reader of process and performance test acceptance criteria for Black Mountain Door's door and frame prime and factory finish paint.

PURPOSE:

To provide sufficient information to allow the reader to evaluate Architectural specifications for prime and factory finished paint coatings used by Black Mountain Door.

DESCRIPTION:

It must first be acknowledged that paint processes and ingredients are of a proprietary nature, formulated and applied to meet performance conditions of acceptance defined in nationally recognized specifications. As such, Black Mountain Door will not divulge the actual processes or ingredients used. This is not to be interpreted as a refusal to comply with regulations that require Material Safety Data Sheets (MSDS) or with air quality points of LEED. Black Mountain Door doors and frames are considered "finished products". As such, there is no jobsite curing time, nor emissions generated.

Primer and factory finish paint coatings are formulated as water-borne synthetic coatings designed to be applied and fully oven cured with volatile organic compound (VOC) emissions at legal limits. This is both for the protection of the workers and local environment.

Prior to the painting process, materials are cleaned and degreased to remove oil, dust, dirt, or other such contaminants detrimental to adhesion to the surface to be painted and cohesion of the actual paint to itself. During the application and curing processes, ingredients are monitored and adjusted for conditions such as temperature and humidity.

Certain heat-sensitive products are air-dried following the same periodic monitoring and adjusting.

TESTING STANDARDS:

Many specifications will require either very specific or "hazardous" materials such as chromates, lacquer thinners, sandblasting, ketones or others. For these specifications it is necessary to establish "UP FRONT" if the specified processes are essential to the finish coat or if compliance to nationally recognized standards is more important. Specifications that reference ANSI A224.1 (1990) should be suspect since that document was replaced over 10 years ago by ANSI/SDI A250 standards.

American National Standards ANSI/SDI A250.10 "Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames" and ANSI/SDI A250.3 "Test Procedure and Acceptance Criteria for Factory Applied Finish Painted Steel Surfaces for Steel Doors and Frames" define conditions of acceptance within prescribed limits for:

240 continuous hours condensation (humidity) testing

120 continuous hours salt spray (fog) testing

Flaking after impact

Film adhesion

Resistance to abrasion

Both documents may be downloaded at www.steeldoor.org.

VENDOR LAB TESTING:

ANSI/SDI A250.10 and A250.3 Specification testing is routinely conducted at paint vendor's laboratories for validation purposes and quality control. Such paints used in testing include:

Vendor #22-F149A (Amweld Part # 94208-00 –Door Primer)

Vendor #WLA2050 (Amweld Part # 94209-00 – Frame Primer)

Vendor #WLW0166 (Amweld Part # 94336-04 – Polar White)



An example of test results follows:

"SDI specification ANSI A250.10 was used to test WLA2050 and 22-F149A. ANSI A250.3 for the testing of WLW0166. Amweld supplied pre-coated panels of CRS and Galvanized for all products except for WLA2050 which was painted at vendor location on material supplied by Black Mountain Door. All panels were given 7 Days post cure time prior to testing. Films on all panels are including metal thickness."

ANSI A250.1	Metal	Film	Adhesion	Impact - 20 Lb	Condensation - 240 Hr	Salt Spray - 120 Hr
22-F149A	Crs	0.8-1.15	5B	Pass	Few #6-8	1/32-1/8", #9-10 Rust
WLA2050	Crs	0.8-0.95	5B	Pass	Med-Med Dense #8	0-1/32", #6-7 Rust
22-F149A	Galv	1.3-1.65	5B	Pass	Few-Med #8	0-1/8", #8-9 Rust
WLA2050	Galv	1.2-1.7	5B	Pass	No Blisters	0", #6-7 Rust
ANSI A250.3	Metal	Film	Adhesion	Impact - 20 Lb	Condensation - 480 Hr	Salt Spray - 120 Hr
WLW0166	Crs	1.2-1.8	5B	Pass	Few #8	0-1/8", #6-8 Rust
WLW0166	Galv	1.75-2.6	5B	Pass	Few #6-8	0"-#8-9 Rust

BLACK MOUNTAIN DOOR SPECIFICATION ANALYSIS:

In addition to ANSI A250 testing, each batch of primer or factory finish undergoes analysis testing to Black Mountain Door specifications before being released by the manufacturer. Such certified tests include Visual Color, Gloss, VOC Content, Wet Hiding Properties, and even PH. Due to the proprietary nature, test results are not duplicated in this TD.

CERTIFICATION:

This Tech Data may be used as a certification that paints used on Black Mountain Door doors and frames has been tested at a recognized independent testing laboratory in accordance with ANSI/SDI A250.10 and ANSI A250.3 and meet the acceptance criteria outlined in those documents (120 continuous salt spray hours, 240 continuous humidity hours, flaking after impact, film adhesion, etc.).

ENVIRONMENTAL STATEMENT:

Black Mountain Door complies with EPA and OSHA requirements regarding the use and disposal of non-hazardous primers.



SCOPE:

This bulletin covers the recommendations and cautions for various types of paint coatings specified for application onto prime or factory finishes used on Black Mountain Door doors and frames.

PURPOSE:

To provide important information necessary to assure preservation of prime painted surfaces through storage and protection practices, provide recommendations for surface preparation prior to finish painting and to recommend steps to assure finish paint compatibility.

PRIME PAINT EXPOSURE:

Black Mountain Door's Doors, Frames and manufactured Accessories (where painted) are painted to comply with acceptance criteria specified in ANSI A250.10 (See TD# G-2.0) to insure maximum paint adhesion. Primer processes are intended to protect the steel surfaces for a limited amount of time. Factory applied primer needs to be somewhat porous in order to accept finish coatings. It is therefore susceptible to the action of moisture or ambient condensation during shipping or storage. Transportation of materials in unprotected open trucks during inclement weather (rain or snow) or on roadways where salt or other snow melting agents are used will deteriorate the primer. Such moisture problems will show up as rusted or water stained areas. ANSI A250.8 and HMMA 840 contain an Industry consensus of jobsite storage requirements.

Should the primer become scratched, abraded, rusted or stained, the affected areas will rust unless sanded and reprimed with a suitable DTM primer containing rust inhibitors. Exercise caution when repriming with spray cans. Propellants or thinners used to make the primer sprayable may soften the factory primer in as little as a few minutes. When using spray can primers, test in an inconspicuous area or request cutoff door or frame samples. Should it become necessary to add a field coat of finished paint to a factory finished door or frame, first sand the entire surface of the door or frame for better adhesion and to assure uniform color and gloss, then repaint. Due to the many types of paint available today, it is recommended that the customer test a small area of the door with their coating before proceeding.

PREPARATION FOR FIELD PAINTING:

Black Mountain Door endorses existing National or Industry Standards for storage, protection, surface preparation, and finish painting of doors and frames. These Standards include:
ANSI/SDI A250.8 "Recommended Specifications for Standard Steel Doors and Frames" paragraph 2.1.5.
SDI 127-E Prime Painted Materials Alert

HMMA 840 "Installation and Storage of Hollow Metal Doors and Frames" Section B.

HMMA-840 TN01-07 Tech Note, "Painting Hollow Metal Products"

Before the application of finished coat of paint, surfaces must be dry and free of all dirt, oil and dust. In every case, the finish coat must be applied over a film which is intact. All scratches or bare edges should be field primed with rust inhibiting Direct-To-Metal (DTM) primer before top coating. Follow the instructions on finish coat application provided by the paint manufacturer.

Prior to application of finish coats, the substrate shall be inspected by the Painting Contractor. All Architectural Specification requirements along with all requirements of the Paint manufacturer shall be followed. These will generally include scuff sanding of the substrate with 300 grit (or smaller) sandpaper and cleaning with a mild mineral spirits type solvent and a clean white "tack-free" rag to remove foreign materials, scratches or abrasions from construction processes, along with any special or mandatory requirements for primer touch-up or additional primers required by the paint "system".

MOST IMPORTANTLY, the field-applied primer and finish paint "systems" must be designed for direct to metal applications and contain rust inhibiting properties.

IF COATING COMPATIBILITY IS AN ISSUE, either Black Mountain Door or our local Distributor can provide "sample" material for the Painting Contractor's use. Fab-A-Frame cutoffs or light/louver cutouts are ideal for this purpose.



FINISHED COAT TESTING:

Without prejudice, Black Mountain Door conducted comparative testing on a variety of finish paints commonly seen in specifications.

Bonderite 1000 Iron Phosphated panels were sprayed with standard primer and allowed to cure at room temperature for 8 days. Dry film thickness averaged 0.85 mils. Each finish paint was then brushed on the primed panels and allowed to cure at room temperature for 7 days prior to testing.

Adhesion was tested in three ways. The first method was to apply a strip of clear scotch tape over the paint, press firmly and remove it immediately and quickly at a 90° angle. The second method was to do a crosshatch adhesion test in conformance with ANSI A250.10. The third method involved scraping the surface with a coin until the substrate was visible.

The paints involved in the testing are as follows:

- A. Water Base acrylic flat black house paint - satin-sheen latex 12604.
- B. Two-Package epoxy - 63-C104A 5:1 with 63-X111A.
- C. Polyvinyl acetate emulsion - White base interior flat wall paint X3042-99993.
- D. Nitrocellulose Lacquer - 11-W229B.
- E. Water base acrylic latex paint - interior latex KM 1208 semi-gloss kitchen & bath.
- F. Polyurethane - 53-C113A 2:1 53-X139A.
- G. Water base acrylic latex paint - exterior performer house & trim latex gloss white, 3872.
- H. 11-F245A solvent based alkyd.

The results are defined in the general terms or *poor, fair, good, very good and excellent* as follows:

Intercoat Crosshatch Adhesion Tape Tests

TOPCOAT CURE		16 Hours	24 Hours	48 Hours	72/96 Hours	7 Days
A.	Frame	Excellent	-	-	Excellent	Excellent
	Door	Poor	Poor	Poor	Poor	Poor
B.	Frame	Excellent	-	-	Very Good	Very Good
	Door	Poor	-	-	Very Good	Very Good
C.	Frame	Excellent	-	-	Excellent	Excellent
	Door	Excellent	-	-	Excellent	Excellent
D.	Frame	Excellent	-	-	Excellent	Excellent
	Door	Excellent	-	-	Very Good	Very Good
E.	Frame	Fair	-	-	Excellent	Excellent
	Door	Poor	Poor	Poor	Poor	Poor
F.	Frame	Excellent	-	-	Excellent	Excellent
	Door	Excellent	-	-	Excellent	Excellent
G.	Frame	Excellent	-	-	Excellent	Excellent
	Door	Poor	Poor	Poor	Poor	Poor
H.	Frame	Excellent	Excellent	Very Good	Very Good	Excellent
	Door	Excellent	Excellent	Excellent	Excellent	Excellent



Poor: No adhesion, paint comes off easily.

Fair: Paint is somewhat difficult to remove, but can be readily peeled off once film is broken through.

Good: Paint is difficult to remove, but can be pulled off once film is broken through.

Very Good: Paint is very difficult to remove, but still can be separated from the primer with difficulty.

Excellent: Paint is very difficult to remove and will not separate from the primer.

RECOMMENDATIONS:

The reader may utilize the results chart on page 2 as a reference tool in selecting types of finish paints. Based on similar testing, Black Mountain Door has determined that other acceptable choices include:

- Sherwin Williams SWP Alkyd House & Trim or equivalent
- Sherwin Williams II Tile Clad Epoxy or equivalent
- Sherwin Williams Polane or equivalent.

We again caution the reader to make sure that finish paint chosen be suitable for Direct-To-Metal (DTM) use.

"RED FLAGS":

The following finish paints are be considered "Not Recommended" until the finish painter conducts compatibility testing prior to using them.

- Paints containing ketones or lacquer thinners.
- Water based house paints designed for use on wood, drywall, or other such porous substrates.
- Paints that cannot be applied Direct-To-Metal (DTM).
- Paints that require sandblasting of the steel substrate or primer before application.

FINISH PAINT GLOSS:

Both the Steel Door Institute (SDI) and the Hollow Metal Manufacturers Association (HMMA) acknowledge that high gloss finish paints will permit weld marks to show through. These marks are the result of structurally necessary manufacturing processes such as welding. Black Mountain Door has taken steps to minimize these visible marks through projection welding or laser welding (see TD # G-7.0) they cannot be completely eliminated.

Appendix B "Aesthetics" of ANSI/SDI A250.8 states: "These characteristics are inherent in production and are not to be considered as manufacturing defects. The show-through characteristics increase as the paint gloss increases. This standard recommends a maximum paint gloss rating of 20% reflectance, measured using a 60° gloss meter". HMMA Tech Note HMMA-840 TN01 has similar, but not identical, verbiage including the 20% reflectance.

SUMMARY:

This TD is a summary of Black Mountain Door's recommendations. It is not intended to be complete nor is it intended to ignore any finish paint systems not tested. For the best paint coating performance, the materials must be stored, cleaned, prepared, and painted with all due attention to details. It is the adhesive and cohesive properties of multi-layer paint systems that assure the best surface protection.

For the proper performance of finish paints care should be taken to acquaint your contractor/customer with these recommendations.

CERTIFICATION:

Since the finish paints specified or used, product storage, or jobsite conditions are beyond the scope of Black Mountain Door's control, we are unable to certify the performance of finish paints.



SCOPE:

This Tech Data is intended to inform the reader of designations, titles, and basic content for Standards and Documents commonly found in Architectural Specifications.

PURPOSE:

To act as an aid in determining how a large variety of reference documents apply (or are not applicable) to products provided by Black Mountain Door under the Amweld and Firedoor Brands.

DESCRIPTION:

Since it is so extensive, Black Mountain Door DOES NOT infer compliance with Standards and Documents listed herein. In many cases, we are asked to confirm compliance to documents that are not manufacturing documents (such as installation standards or those that define material and methods for conducting tests). In addition, when not edited, some reference documents may inadvertently be left in a specification when the product is not in the project scope.

The content is arranged for ease of use in a source and subject format. For example, ASTM Standards relating to windstorms are grouped together. We have made references specific to Black Mountain Door in addition to indicating re-designations or withdrawals.

There are other Documents or Standards that are Building Codes, product-specific, regional, military, governmental, or those of Groups not primarily involved with steel (hollow metal) doors and frames that are too numerous to summarize in this Tech Data. Many of them are covered in individual Tech Data pages such as the G-11 and G-12 Series. Based on need, they will be added in subsequent revisions to this TD.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

Steel (M indicates metric version):

ASTM A568/A568M - Standard Specification for Steel, Sheet, Carbon, Structural, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements for.

Standard defines formulations, dimensions, and tolerances for steel. Used primarily by steel mills but is part of steel purchasing requirements.

ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

Standard defines formulations, methods, tolerances, thicknesses, weights, and classifications for application of zinc coatings onto steel, substrates. Used primarily by steel mills in conjunction with ASTM A568 (for example) but is part of steel purchasing requirements.

ASTM A879/A879M - Standard Specification for Steel Sheet, Zinc Coated by the Electrolytic Process for Applications Requiring Designation of the Coating Mass on Each Surface.

Standard is similar to ASTM A653 but coating thicknesses are generally lower and are applied by a different process. This is not hot-dipped. Used primarily by steel mills but is part of steel purchasing requirements for components such as anchors to minimize rusting during storage.

ASTM A924/A924M - Standard Specification for General Requirements for Sheet Steel, Metallic-Coated by the Hot-Dip Process.

Standard is similar to ASTM A653 but allows alternatives to zinc as a coating.

ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable.

Standard defines formulations, dimensions, and tolerances for steel used in specialized applications



requiring (for example) high strength or ductility. Used primarily by steel mills but is part of steel purchasing requirements.

ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength. Standard is similar to ASTM A1008 but is used in very specialized applications not generally applicable to standard materials.

Fire Testing:

ASTM E152 Methods of Fire Tests of Door Assemblies
No longer applicable since this Standard was **withdrawn** in 1995.

Acoustic Testing:

ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.

Standard defines the method and equipment for laboratory testing of walls and door assemblies using sound transmission loss (STL) between two acoustically specialized rooms at a series of standardized frequencies.

ASTM E413 - Classification for Rating Sound Insulation.

Standard establishes the method for calculating a single number sound transmission class (STC) based on laboratory STL measurements.

ASTM E1408- Standard Test Method for Laboratory Measurement of the Sound Transmission Loss of Door Panels and Door Systems

No longer applicable since this Standard was **withdrawn** in 2009.

ASTM E1425 - Standard Practice for Determining the Acoustical Performance of Windows, Doors, Skylight, and Glazed Wall Systems

Standard defines method and equipment for laboratory testing STL of primarily glazed assemblies of any material. It also reports operating force, latching force, and air leakage.

NOTE: Due to the very specific combination of gaskets, latches, installation and other factors that will differ between laboratory tests and actual installations, Black Mountain Door has not tested to this Standard.

Windstorm/Pressure/Impact Testing:

ASTM E330 - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.

This Standard is an integral part of almost any windstorm tests and is also used to establish static loading performance for pressure-resistant (blast) assemblies. It defines methods and equipment for laboratory testing of door assemblies, windows, storefronts, etc for pressure loading capabilities.

ASTM E1886 - Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.

This Standard is also an integral part of almost any windstorm tests. It defines methods and equipment for laboratory testing of door assemblies, windows, storefronts, etc for windborne debris and cyclic wind pressures common during storms.

ASTM E1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.



This is a "companion" Standard to ASTM E1886 that details information necessary (such as locations of impacts) to conduct testing to that Standard.

Security/Detention:

ASTM F476 - Standard Test Methods for Security of Swinging Door Assemblies

This Standard provides a description of test methods to measure the ability of doors and related components to resist common "break in" attacks. It does not address attacks by skilled burglars using specialized equipment. It does not establish acceptance criteria, deferring to local authorities having jurisdiction (AHJ).

ASTM F1450 - Standard Test Methods for Hollow Metal Swinging Door Assemblies for Detention Facilities

This Standard provides methods and requirements for structural testing of doors in detention facilities to prevent or delay escape of inmates. It is a specialized Standard not used in standard products.

Painting:

ASTM Standards covering methods of testing surface preparation, painting processes, paint or other coating performance are not listed in this Tech Data. Pertinent Standards are incorporated into Standards such as ANSI/SDI A250.10 and .3.

FLORIDA DEPT. OF COMMUNITY AFFAIRS-FLORIDA BUILDING COMMISSION (FBC)

TAS 201 - Impact Test Procedures:

TAS 202 - Criteria for Testing Impact & Nonimpact Resistant Building Envelope Components Using Uniform Static Air Pressure:

TAS 203 - Criteria for Testing Products Subject to Cyclic Wind Pressure Loading:

Although the purpose of this Tech Data is not to address every "local" Building Code, these three merit attention. The basis for windstorm testing in the United States began with the South Florida Building Code (SFBC) from which these Standards were derived. In their original form, designations were **PA 201, PA 202, and PA 203**. With the statewide Code, designations were revised, but content remains the same. They are similar (not identical) to ASTM windstorm test standards noted above but contain some additional tests for water penetration and forced entry based on local needs.

AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE)

ANSI/ASCE 7 - American Society of Civil Engineers Minimum Design Loads for Buildings and Other Structures.

This Document forms the basis for Structural Engineers to calculate design loads on buildings. It is referenced in almost all Building Codes. In addition to floor or roof loads, it is used to determine design pressures for doors and frames based on the door's location in the wall, the height above ground, the building's location relative to the coastline, wind speeds, and numerous other factors. **Refer to the L-23 Series of Tech Data for the importance of specifying design pressure ratings.**

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI A250)

Note: The Steel Door Institute (SDI) is the Secretariat of the A250 TC-1 Technical Committee. As such, most, but not all, Document titles are indicated as ANSI/SDI. The TC-1 Committee also includes representatives from the Hollow Metal Manufacturers Association (HMMA) and the Canadian Steel Door Manufacturers Association (CSDMA).

Specifications and Instructions:

ANSI/SDI A250.4-2011 – Test Procedure and Acceptance Criteria for – Physical Endurance for Steel Doors, Frames and Frame Anchors.

ANSI/SDI A250.8 - Recommended Specifications for Standard Steel Doors & Frames.

This Standard covers all necessary requirements for fabrication and use of steel doors and frames in nonresidential installations. It is the basis on which materials fabricated under the Amweld Brand are based.



ANSI A250.11 - Recommended Erection Instructions for Steel Frames.

This Standard covers the methods and necessary precautions required to properly install the majority of steel frames in a variety of wall conditions.

ANSI/SDI A250.6 - Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames.

This Standard establishes minimum sizes and thicknesses for builder's hardware reinforcing members in steel doors and frames. It also defines how doors and frames are prepared for a variety of mortised or surface applied hardware items.

ANSI/SDI A250.7 - Nomenclature for: Standard Steel Doors and Steel Frames

This Standard provides verbal and visual definitions for the majority of specialized terminology used in the steel door and frame Industry. This Standard **REPLACED ANSI/SDI A123.1** in 1997.

Windstorm/Pressure/Impact Testing:

ANSI A250.13 - Testing and Rating of Severe Windstorm Resistant Components for Swinging Door Assemblies.

This Standard covers the required tests and methods for rating individual components of a door assembly (door, frame, locks, hinges, etc) in addition to complete assemblies. It uses valid methods and engineering practices in addition to ASTM Standards. It also clarifies how the individual component ratings contribute to an assembly rating using the least rating of components.

Painting:

ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.

This Standard establishes minimum acceptable performance standards (such as adhesion, rusting, peeling, exposure, etc) for factory applied prime paints using applicable ASTM Standards.

This Standard **REPLACED ANSI A224.1** in 1990.

ANSI/SDI A250.3 - Test Procedure and Acceptance Criteria for Factory-Applied Finish Painted Steel Surfaces for Steel Doors and Frames.

This Standard establishes minimum acceptable performance standards (such as adhesion, rusting, peeling, exposure, etc) for factory applied finish paint coatings using applicable ASTM Standards.

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

Building Design:

NFPA 80 - Standard for Fire Doors and Other Opening Protectives.

This Standard covers in great detail the ratings, usage, installation, repair, etc of fire doors and frames of all types, glazing, and protective fire curtains. It is probably the most commonly referenced Document in specifications and Building Codes. It is generally a building design and installation Standard, not a manufacturing Standard.

NFPA 101 - Life Safety Code.

This Standard covers numerous "life safety" issues such as smoke barriers, sprinklers, and means of egress. Similar to NFPA 80, it is generally a building design and installation Standard, not a manufacturing Standard.

Fire/Smoke Testing:

NFPA 252 - Standard Methods of Fire Tests of Door Assemblies.

This Standard is the NFPA equivalent of other fire door and frame test Standards. It incorporates many of the test methods, furnace construction, and acceptance criteria of Underwriters Laboratories (UL) Documents, but allows for neutral pressure or positive pressure testing as options. It is generally a Standard for building test apparatus and conducting the testing, not a manufacturing Standard.



NFPA 257 - Standard on Fire Test for Window and Glass Block Assemblies.

This is a "companion" Standard to NFPA 252 covering fire and hose stream tests on fire windows and glazing. Similar to NFPA 252 it is not a manufacturing Standard.

NFPA 105 - Standard for the Installation of Smoke Door Assemblies and other Opening Protectives.

This Standard covers installation, testing, maintenance requirements and performance standards for smoke door assemblies used to limit spread of smoke penetration.

Note: Since Industry testing has established that gaskets are the primary requirement to retard passage of smoke; this Document is not entirely applicable to doors and frames.

BUILDERS HARDWARE MANUFACTURERS ASSOCIATION (BHMA)

ANSI/BHMA A156.115 Hardware Preparation in Steel Doors and Steel Frames.

This Standard visually and verbally establishes dimensions, preparations, tap locations, etc for builders hardware items that have been standardized through the efforts of Industry Groups involved with manufacturing or preparing for such items. Defined preparations include locks, strikes, flushbolts, and others. This Standard set **REPLACES ANSI/DHI A115** series of documents.

UNDERWRITERS LABORATORIES, INC. (UL)

Fire/Smoke Testing:

UL-10C - Standard for Positive Pressure Fire Tests of Door Assemblies.

This is the generally accepted Standard for methods, furnace construction, fire and hose stream testing, and acceptance criteria for "positive pressure" fire tests of door and frame assemblies. Under positive pressure, a neutral furnace pressure plane is established at 40" above the sill after 5 minutes. It is generally a Standard for building test apparatus and conducting the testing, not a manufacturing Standard, but carries very specific conditions of acceptance that serve as the basis for approvals (Listings) and manufacturing Procedures. This Standard generally **REPLACES UBC 7-2 (1997)** in major Building Codes.

UL-10B - Standard for Fire Tests of Door Assemblies.

This is the "neutral pressure" equivalent to UL-10C. Under neutral pressure, the neutral furnace pressure plane is maintained at the top of the assembly. Although positive pressure testing is now the most common, tests conducted under UL-10B are still valid for engineering analysis or evaluations.

UL-9 - Standard for Fire Tests of Window Assemblies.

This is the "companion" Standard to UL-10C and UL-10B covering fire windows and glazing. It allows for neutral pressure or positive pressure testing as options. This Standard generally **REPLACES UBC 7-4 (1997)** in major Building Codes.

UL-1784 - Standard for Air Leakage Tests of Door Assemblies.

This is the generally accepted Standard for methods, equipment, and acceptance criteria for testing gasket systems or door assemblies. Although it is a testing Standard, not a manufacturing Standard, it is used to confirm gasket systems for use in accordance with NFPA 105.

UL Subject 63 - Outline of Investigation for Fire Door Frames.

Although not generally available to the public, this Document forms the basis for fabrication of steel (sheet or structural) frames for fire doors. It is incorporated into Follow-up Services Procedures of UL Listed fire door frame manufacturers. It visually and verbally describes "generic" details and sizes for 3-sided frames, anchors, reinforcing, etc. Variations beyond these details must be fire tested or otherwise evaluated before UL will allow their use as fire door frames.

Security:

UL-752 - Standard for Bullet-Resisting Equipment.

Although a very small portion of this Standard relates to door assemblies, it is the generally accepted Standard for methods, bullet configurations, performance levels, and acceptance criteria for bullet penetration resistance. Although it is a testing Standard, not a manufacturing Standard, it is used by UL as the basis for approvals (Listings) and manufacturing Procedures for bullet resisting assemblies.



STEEL DOOR INSTITUTE (SDI)

Manufacturing Standards:

SDI-117 - Manufacturing Tolerances Standard Steel Doors and Frames.

This Standard covers allowable manufacturing tolerances in size, profile, warp, twist, bow, hardware locations and preparations, etc for steel doors and frames that will not adversely affect fit and function of the manufactured items. Installation inaccuracies may adversely affect the operation of the assembly.

Informative Documents:

SDI-112 - Zinc-Coated (Galvanized/Galvannealed) Standard Steel Doors and Frames.

This Document describes the zinc coatings endorsed or discouraged by SDI. Coating weights, processes, and ASTM coating Classes are covered.

SDI-118 -Basic Fire Door Requirements.

This Document describes the testing methods, ratings, and usage of fire-rated steel doors and frames. It also covers the use of louvers, glazing, and hardware for both single and double doors. An important Section covers the **approved materials and methods (metal, mylar, embossing, etc) of the fire door and frame labels.**

SDI-124 - Maintenance of Hollow Metal Doors and Frames.

This Document is intended to be a reference for the Owner for use after building is occupied. This information is important when **inspections of fire doors are required by local Building Codes.** It gives recommendations for assuring continued function of the door and frame. Maintenance of hardware is addressed by the individual lock, hinge, closer; etc manufacturers separate from doors and frames.

SDI-128 - Guidelines for Acoustical Performance of Standard Steel Doors and Frames.

This Document covers terminology, rating methods and important considerations for specifying and installing mid-range standard sound control assemblies.

HOLLOW METAL MANUFACTURERS ASSOCIATION (HMMA)

Note: The Hollow Metal Manufacturers Association is a Division of the National Association of Architectural Metals Manufacturers (NAAMM), the Secretariat for the HMMA Technical Documents. As such, the document titles are prefaced as ANSI/NAAMM.

Manufacturing Standards:

ANSI/NAAMM HMMA 861 - Guide Specifications for Commercial Hollow Metal Doors and Frames.

This Standard covers steel stiffened doors in welded frames for commercial installations. It contains requirements for hardware reinforcing, hardware locations, anchors, construction, manufacturing and installation tolerances, etc. more specific to steel stiffened door assemblies than ANSI A250.8. This Standard could be used for 07WE doors and FR frames manufactured under the Firedoor Brand.

ANSI/NAAMM HMMA 867 - Guide Specifications for Commercial Laminated Core Hollow Metal Doors and Frames.

This Standard is similar in content and very specific fabrication requirements to HMMA 861 except that it covers doors with laminated (polystyrene, polyurethane, etc) cores in welded, knocked down, or slip-on drywall frames for commercial installations. This Standard could be used (as examples) for 25LS and 27WE doors and FR or PF frames manufactured under the Firedoor Brand or could be used for doors or frames (with manufacturing options) under the Amweld Brand.

ANSI/NAAMM HMMA 865 - Guide Specifications for Sound Control Hollow Metal Doors and Frames.

This Standard is similar in content and specific requirements to HMMA 861 except that it covers door assemblies used in sound control commercial installations. Unlike some of the very specific fabrication requirements of HMMA 861, it acknowledges that sound control doors and frames have proprietary variations for acoustic purposes.



Informative Documents:

HMMA 803 - Steel Tables.

This Document equates decimal as well as metric thicknesses of uncoated steel sheet to the "gage" designations historically used.

HMMA 810-TN01 - Defining Undercuts.

This Document visually and verbally clarifies the HMMA interpretation of undercuts, finished floor, bottom clearance, etc.

HMMA 820-TN01 - Grouting Hollow Metal Frames.

This Document covers descriptions, guidelines, and precautions for grout in frames and mullions used in commercial installations.

HMMA 820-TN02 - Continuously Welded Frames.

This Document visually and verbally clarifies the much misunderstood and misused term "continuously welded" in addition to other types of weld joints commonly used. It defines areas of frame corners to be welded **in addition to faces**. This IS NOT the option "WGS". Black Mountain Door prefers using the terms **full weld, fully welded, or full profile welded** since they are more descriptive.

HMMA 820-TN03 - Guidelines for Glazing of Hollow Metal Transoms, Sidelights, and Windows.

This Document visually and verbally clarifies the HMMA recommendations for positioning and sealing glazing in interior and exterior hollow metal windows or sidelight/transom frames. It is the opinion of Black Mountain Door that these recommendations are to be used by the Architect when preparing Architectural Drawings or during the shop drawing review/approval process.

HMMA 840 - Installation and Storage of Hollow Metal Doors and Frames.

This Document is somewhat of a "companion" to ANSI A250.11. From receipt at jobsite until doors are hung it covers storage, handling, and installation of frames into a variety of walls, and other recommendations or precautions.

HMMA 840-TN01 - Painting Hollow Metal Products.

This Document covers important considerations and precautions to take for cleaning, surface repair, finish painting, etc of doors and frames to assure adhesion and aesthetic properties.

ANSI/NAAMM HMMA 841 - Tolerances and Clearance for Commercial Hollow Metal Doors and Frames.

This Document is a "companion" to SDI-117, ANSI A250.11, and HMMA 840 (among others) for commercial installations. It is a subject very critical to assuring the fit and function of doors and frames, therefore it cannot be repeated enough.

DOOR AND HARDWARE INSTITUTE (DHI)

DHI Installation Guide for Doors and Hardware:

Originally **ANSI/DHI A115IG**, this Document covers the installation of doors and frames manufactured from a variety of materials including steel. It is also a general guide for installing builders hardware (hinges, locks, closers, surface mounted items, etc). Being from the 1980s, it is somewhat out of date, but most practices are still valid.

SUMMARY:

We believe this Tech Data will be beneficial to the reader and satisfy the "SCOPE" and "PURPOSE" As noted above, the documents that are listed herein is by no means intended to be a complete list. We feel that they are more complete than almost any reference list in common Specifications.

This list should reduce the time spent researching such references both for the reader and Amweld International.

CERTIFICATION:

This Tech Data is intended to be used to determine if certifications of manufactured products are applicable to the project scope (example: 15LE doors cannot comply with ASTM A 653).

Keep in mind that in cases like fire doors and frames or windstorm rated doors and frames the certification is the physical label applied to the product or a Listing by UL, FBC, Dade County or ITS/Warnock Hersey.



SCOPE:

This bulletin covers, in illustration detail, the rules for determining handing of doors and astragals, and the swing of the frame.

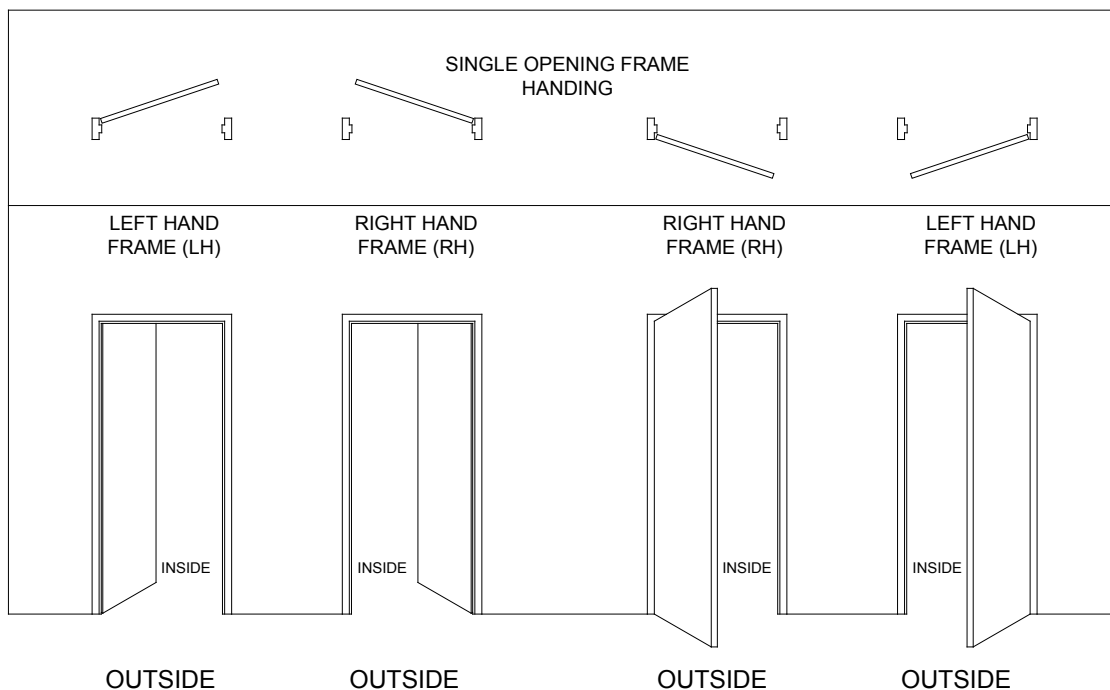
PURPOSE:

To inform the reader of Black Mountain Door standard procedures to assure that this critical concept is clearly understood and the correct entries can be made on the "Activity" column of order forms.

DESCRIPTION:

Frames (see illustration below):

Unlike doors, frames are handed as either left hand or right hand **swing** as shown. Swing in or swing out requirement is a matter of positioning the frame during installation.



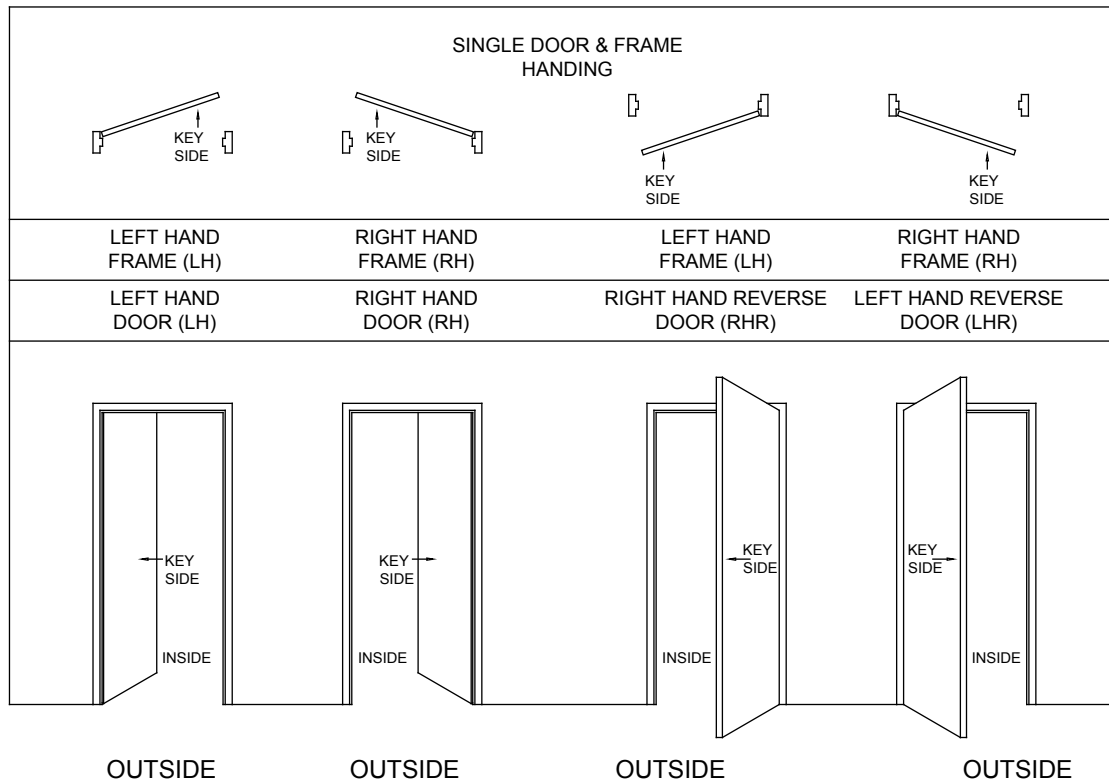
Rev 11/09

Doors (see illustration on page 2):

Handing of a door designates critical operational functions such as key side, exit device mounting side, or "loose" (removable) light kit side.

Most Black Mountain Door brand standard doors have square edges, universal hinge preparation, and closer reinforcement on both sides to allow the door to be reversible (non-handed) by positioning in the frame, **not inverting**. Lock preparations such as D, Y, YBP, T, L, PB, and many others are symmetrical; therefore it is not necessary to specify a hand when ordering this type of door. When ordering doors with a non-symmetrical preparation, consider whether the preparation required on the inside face is different from that on the outside. If this is the case, handing must be specified (i.e. preparations for sectional trim (YST) or exit devices with non-symmetrical preparations). In addition, Black Mountain Door also offers a variety of Amweld brand beveled lock edge doors that will require a hand to be defined.

Almost all Firedoor brand doors (except for 05LS and 05WE) are handed and beveled on both edges, therefore handing must be noted on order.



Double Doors and Frames (see illustrations on page 3):

Frames for double doors are handed when hardware preparation (such as automatic flushbolts, concealed vertical rod exit device strikes, etc.) requiring the frame header to be non-symmetrical. Handing must be specified relative to the **active** door leaf (such as Right Hand Active or Left Hand Reverse Active).

Double Doors should always be ordered as handed when any non-symmetrical hardware preparations occur or when astragals will be used. Handing for double doors is the same as for single doors.

Wrap-around or Zee astragals for labeled doors must be applied to the inactive door leaf at the factory, thus making the inactive door handed.

Astragal Parts/Accessories:

When ordering astragal kits separately, Wrap-around or Zee astragals are given the same hand as the door leaf to which it is applied. Astragal handing is shown in the illustrations on double doors.

Flat plate astragals are not handed.

Fire-Rated Double Doors:

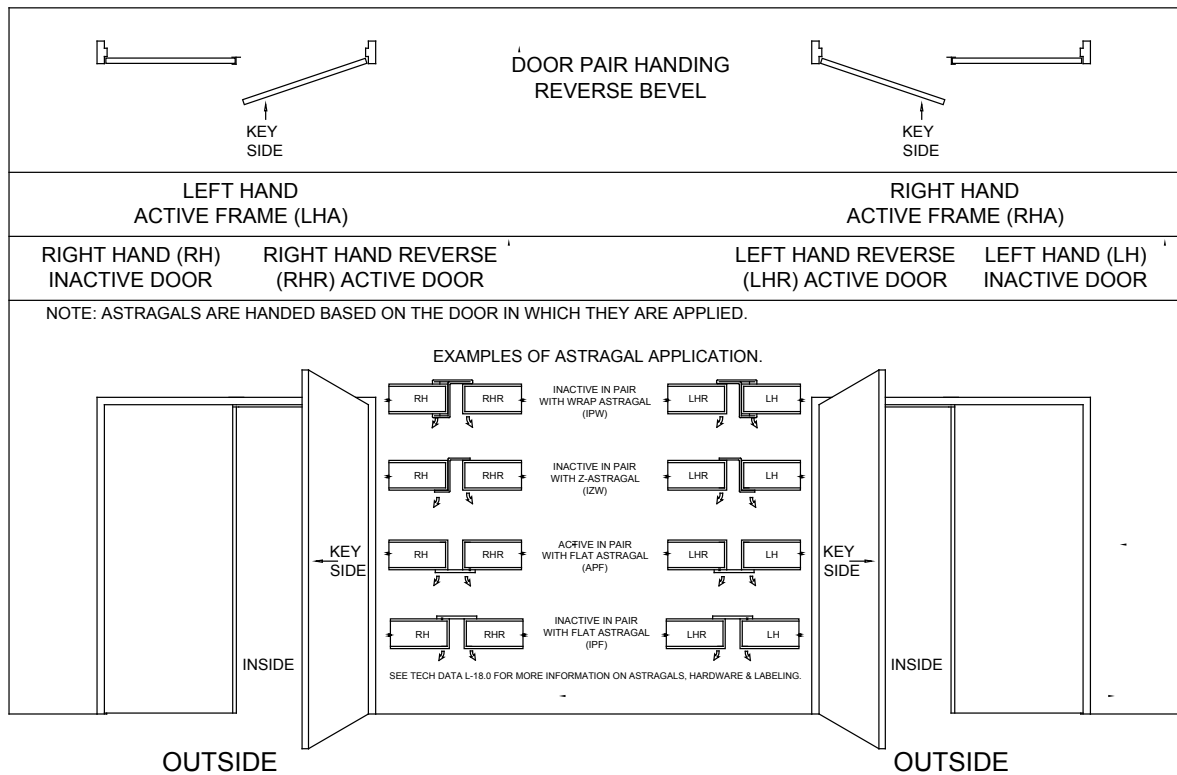
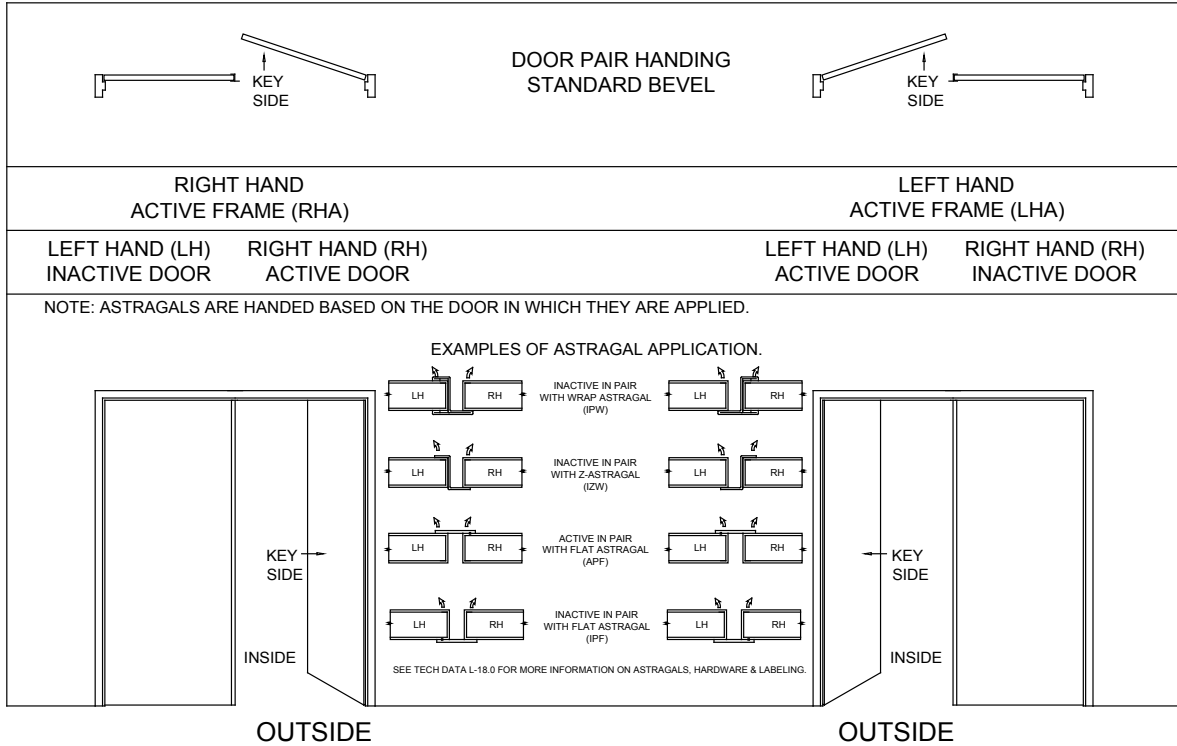
Refer to Tech Data # L-18.0 for astragal variations permitted on double doors.

CERTIFICATION:

NOT APPLICABLE TO THIS SUBJECT.

SUMMARY:

Knowing the proper handing is essential when processing your orders. If you are unsure if handing is required, indicate it on the order. Too much information will not hurt.



SCOPE:

This bulletin covers the basic physical properties for Black Mountain Door's Expanded Polystyrene (EPS) door cores and thermal properties when physically tested to ASTM C-236 (Pg 1-2) C1199-09, C1363-05, E1423-06 (Pg 3).

PURPOSE:

To provide information to the reader, for comparative purposes, test results on 1 3/4" thick **operable assemblies** utilizing 1.0 pounds per cubic foot (nominal) EPS insulation. This insulation is referred to as **Super Core®** in the Black Mountain Door Brand Series 15LE, 17LE, 25LE, and 27LE doors. EPS insulation used in the Firedoor Brand has similar physical properties.

DISCLAIMER:

As stated above, this information is provided for comparative purposes only. There are many methods (ASTM and others) of physical testing, computer simulating, or simply publishing values of the core itself. The ASTM C-236 "guarded hot box" test method of operable assemblies utilized incorporates controlled measurements of heat, cold, humidity, and a wind factor similar to what occurs in reality.

Steel, along with many other materials tends to expand when heated. When the insulating core is "doing its job", the side opposite the exposed side is cooler and will experience less expansion. This phenomenon is referred to as "**thermal bow**". This is discussed in detail in the appendix of ANSI/SDI A250.8 (download at www.steeldoor.org). It is a natural occurrence, not a product defect.

DEFINITIONS:

U-Factor is the overall coefficient of thermal transmission (air to air); the time rate of heat flow normally expressed in BTU's/hour, sq. ft., °F. The U-Factor applies to non-homogenous (composed of a variety of materials) assemblies, it is the term best suited for doors. Lower U-Factors are more thermally efficient.

R-factor or thermal resistance is the inverse of the U-factor. To calculate R-Factor, divide 1 by U-Factor ($1/U=R$). R-Factor is normally only used on homogeneous materials like insulations.

Apparent U Factor is applied to the results for assemblies incorporating a door and frame combination along with the wood surrounds and insulated wall used in the test.

K-factor is a measurement of thermal conductivity that applies to homogenous (a single substance) materials therefore it is not applicable to doors.

C factor or thermal conductance refers to average temperature differences between two surfaces, normally used only by air conditioning engineers.

TEST SPECIMENS and PROCEDURE:

Doors were 1 3/4" thick full size welded seam construction (not thermally broken) thus assuring metal-to-metal contact, filled with standard Super Core®. The doors were equipped with 4 1/2" standard weight butts and a cylindrical lock. Frames were 16 gage 400 Series (not thermally broken) equipped with commercial grade weatherstripping and threshold. The doors and frames were installed in a heavily insulated wall and the frames were grouted full.

Testing was conducted in accordance with ASTM C-236 by nationally recognized laboratories that are qualified and equipped to perform the tests indicated. Test data was established using calibrated controls and devices. Air temperature controls were capable of reaching and recording temperatures of -50°F. Doors were opened and closed repeatedly during the test per the test standard.

OBSERVATIONS:

Note: Observations are provided only as a reference for performance under extreme conditions.

Between -20°F and -30°F, a small amount of delamination was observed. The test report notes "The door continued in good operating condition and served as a good thermal barrier up to the -50°F point when the test was terminated.

To determine the effectiveness of the core with respect to frost, the warm side was controlled to maintain specific dew points and relative humidity. The report indicates frost did not occur until -40°F. Frost was noted on



the bottom edge of the unit, extending up approximately 1", on the edges up to the mid point, heavy frost on the threshold, and some evidence of frost in the knob and hinge areas.

TEST RESULTS:

The Apparent U Values (in BTU/Hour, sq. ft., °F) for the **operable assemblies** were as follows, with R-Factor (for reference only) shown in parentheses:

Apparent U Factor corrected to a winter design with 15 mph winds outside.

15LE Super Core® Series 1 3/4" 20 gage 0.28 (3.57).

15LE Super Core® Series 1 3/4" 18 gage 0.28 (3.57).

Apparent U Factor corrected to still air both sides.

15LE Super Core® Series 1 3/4" 20 gage 0.24 (4.16).

15LE Super Core® Series 1 3/4" 18 gage 0.25 (4.00).

SUMMARY:

As can be seen in the results, a very slight difference can be attributed to steel face thickness, The doors provided superior insulation values, even in sub zero temperature ranges.

Greater differences may occur when doors are cut out for glazing, hardware preparations require larger cutouts in door cores, or other such design factors. Engineers and Specifiers are reminded to recognize that doors in commercial buildings are opened (affording no thermal protection) many times more than in residences and the relatively low percentage of exterior walls "penetrated" by swinging doors. Most Energy Codes establish "default values" to cover these instances.

BASIC PHYSICAL PROPERTIES:

The chart below is included as a reference source only. It indicates relevant ASTM Specifications and includes R-values of the core at 1 1/2" thickness.

PHYSICAL PROPERTIES OF EXPANDED POLYSTYRENE			
PROPERTY	ASTM TEST	UNITS	RESULTS
COMMON DESIGNATION	N/A	PCF	1.0
DENSITY RANGE	C-303 OR D-1622	PCF	0.90 TO 1.14
R-FACTOR AT 1 1/2" THICKNESS	C-518	25 F 40 F 75 F	6.3 TO 6.5 6.0 TO 6.3 5.4 TO 5.8
WATER ABSORPTION	C-272	%	LESS THAN 4% BY VOLUME
CAPILLARITY	-	-	NONE
SERVICE TEMPERATURE	-	F	167 LONG TERM 180 INTERMITTENT
FLAME SPREAD	E-84	-	LESS THAN 25
SMOKE DEVELOPED	E-84	-	LESS THAN 450

CERTIFICATION:

This Tech Data may be used as a certification by Black Mountain Door of thermal test results based on ASTM C-236 and data from ASTM Standards as noted in the chart above. This certification is dependant on factors noted in SUMMARY and DISCLAIMER paragraphs.



ADDITIONAL TESTING NOTES/FINDINGS:

Test Date: June 20, 2011 (Revised July, 19, 2011)
 Excerpted from Test Report G100020717TOR-002K

From Full Unit Testing

Evaluation Property: Thermal Performance

Reporting\Testing Structure and Compliance findings for:

- ASTM C1199-09 Test Method for Measuring the Steady-State Thermal Transmittance of Fenestration Systems Using Hot Box Methods
- ASTM C1363-05 Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus
- ASTM E1423-06 Practice for Determining Steady State Thermal Transmittance of Fenestration Systems

Table 1: Products Tested

Door Number	Door Model	Interior Fill	Steel Skin Gauge	Visible Light Size (if present)
1	61LE 16C Polystyrene	Polystyrene	16	NA
2	85LE 18C Polyurethane	Polyurethane	18	NA
3	15LE 18C NCLO Polystyrene	Polystyrene	18	NA
4	15LE 18C SC-- Polystyrene	Polystyrene	18	NA
5	15LE 20C Polystyrene	Polystyrene	20	NA

Table 2: Hardware

Door Assembly	Model
Steel Frame	Generic - non-thermally broken
Hinges	Generic - 4.5" steel
Door Latch	Generic - steel knob
Sill Sweep	Generic - vinyl with co-extruded bulb and fins

Findings:

Table 3: Test Results of Steel Doors

Door Number	Door Model	U-Factor		Overall R-Value	
		Btu/hr-ft ² -°F	W/m ² K	hr-ft ² -°F/Btu	hr-ft ² -°F/Btu
1	61LE 16C Polystyrene	0.41	2.35	2.41	0.43
2	85LE 18C Polyurethane	0.38	2.14	2.65	0.47
3	15LE 18C NCLO Polystyrene	0.37	2.12	2.68	0.47
4	15LE 18C SC-- Polystyrene	0.40	2.26	2.51	0.44
5	15LE 20C Polystyrene	0.38	2.17	2.61	0.46



SCOPE:

This bulletin covers the welding methods utilized by Black Mountain Door to structurally join parts, components, stiffeners, reinforcements and door edges.

PURPOSE:

To provide the reader with a brief, descriptive summary of welding types, processes and advantages.

DESCRIPTION:

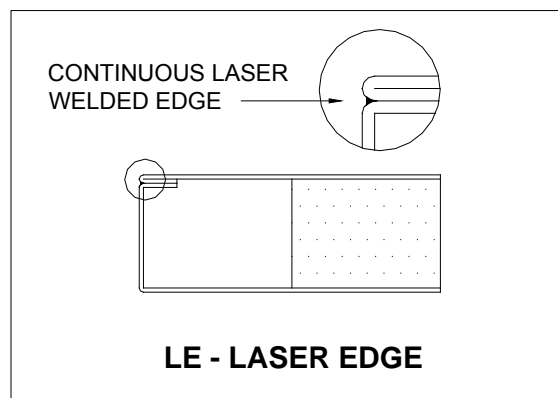
Laser Welding:

First and foremost is the patented (**Patent No. 6,351,882**) method of seam welding the vast majority of doors manufactured under the Amweld brand.

Black Mountain Door is the only steel door manufacturer with *laser-welded* precision doors. Our laser-welded doors represent state of the art strength, quality, and aesthetics. Our Laser- Edge welding process incorporates only the parent metals, not any wire or weld rods that degrade over time. The process utilizes the heat and concentrated beam of a laser to quickly fuse steel together. To accomplish this gaps between panels, edge radius, and alignment must be held to tolerances measured in thousandths of an inch. Amazingly, the weld is cool to the touch seconds later, thus reducing heat warp possible with other methods. The result is an aesthetically pleasing continuous weld stronger than the parent metal and recessed slightly from the bend line stress areas. This recessed weld does not require grinding.

For an invisible seamless door, the slight recess allows for the use of a minimal amount of filler.

Doors noted as Laser-Edge and/or listed with a product code of LE are considered Laser-Edge doors, eligible for our **Lifetime warranty**.



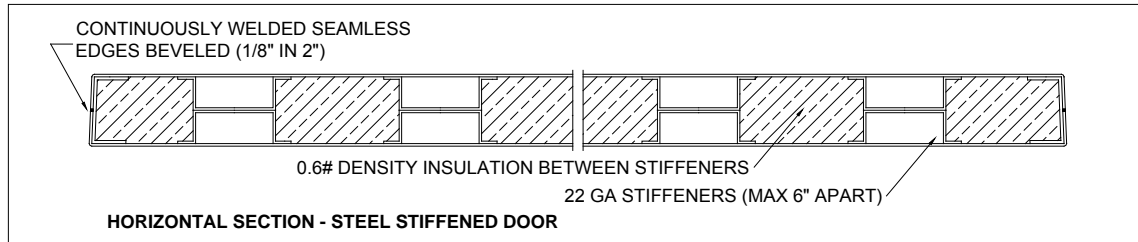
Projection Welding and Spot Welding:

These two welding methods rely on the fusion of metals by controlled heat (via electricity) and, in most cases, pressure or force to hold components together. These two systems both being resistance welding, are widely used throughout industry at the present time. In these two processes, a high density current passes through a certain localized resistance path for a given length of time to produce the heat required to create a molten area and fusion between two parent metals. The current varies with material thicknesses and other factors. High forces are applied to the molten area and insure proper union.

In Projection Welding, the current flow is through a series of small outward projections on one of the components. These projections are embossments or protrusions in the parent metal and are created through forming by stamping, coining, or machining. Projections must be correctly sized for the thickness of material to be joined and are usually staggered for structural integrity after welding. With projection welding the electrode serves only to carry the required current and to apply the necessary force. The electrode, additionally, provides a means for holding the pieces during the complete welding cycle. This method is used primarily on standardized parts like hinge, lock, and strike reinforcements so that several welds are made at the same time. Projection welding minimizes distortion through controlled conditions, lower temperatures and lower pressures than spot welding.

In Spot Welding, two electrodes on opposite sides of the material to create the current path or flow and furnish the pressure or force to centralizes the current flow at the single welding point. The weld's characteristics depend entirely on the size, shape and other applicable properties of the electrodes. Spot Welding is used to join overlapping materials of different thicknesses where parts are not standardized or weld configurations will vary. In many operations, such as welding stiffeners or edge channels in WE or CS Series doors, multiple electrodes are used for greater production efficiency.

The contour of the spot welding electrode changes as the usage increases and if not continually dressed to the original or wanted size, the weld itself changes physically. Black Mountain Door's Quality Manuals address the constant monitoring of equipment and electrodes.



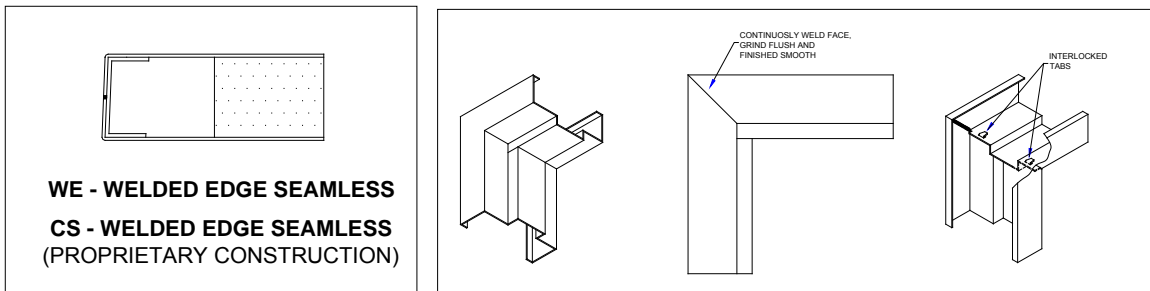
Arc Welding:

The Arc Welding method utilizes a consumable welding rod or wire to join two non-overlapping materials together. Electric current flows through the rod or wire to the substrate(s) to be welded. The rod or wire acts as "filler" material to bridge and join the materials. In most cases the rod, wire, or even the metals to be joined are coated with a "flux" to allow a better joint at lower temperatures and to shield the weld area during the process.

Instead of using a flux, the shielded metal arc (MIG) method is used. In this method various inert gases (like argon) are fed into the weld area to shield it. No flux is necessary, and the bare wire "filler" is mechanically fed into the weld area. This process greatly increases production since it totally eliminates the need to change weld rods.

This method is the most common "manual welding" method, ideal for assembling frames or "tack welding" anchors in place. Using continuous wire feed equipment; it is commonly used for joining butted door edge seams.

Where the weld cannot be concealed it is ground, filled, and sanded to minimize possibly objectionable welding marks.



AESTHETICS:

Since any method of welding relies on heat to melt and structurally join two metals, weld marks are a "necessary evil". These marks are inherent in almost any item fabricated from steel (automobiles, bicycles, swing sets, and numerous others) and are not to be considered defects. Black Mountain Door takes the necessary steps to minimize these marks without compromising structural integrity wherever possible. See Tech Data G-3.0 for further information relating to finish painting.

SUMMARY:

We believe that the **Laser-Welded** edge is the most structurally durable door edge available today.

Projection welding when compared to spot welding is a more durable and efficient process, within its suitable range of use. Weld marks can be minimized by designs and equipment controls.

Spot Welding is an absolute necessity for parts that do not lend themselves to large production runs. With the proper maintenance, spot welding offers greater variety in parts to be joined.

Arc Welding is the most versatile and consistent method (other than Laser Welding) for joining butted parts or producing continuous welds.

CERTIFICATION:

Black Mountain Door is confident that the Amweld Brand **Laser-Welded** edge offers the most durable weld in the industry. This edge construction meets ANSI/SDI A250.8 and, although not the entire door, HMMA 860, 861, and 867. To confirm this, an excerpt from our LE product warranty (full text available at www.blackmountaindoor.com) follows:

15LE "LASER EDGE" SERIES LIFETIME WARRANTY

Black Mountain Door warrants that the 15LE "Laser Edge" door under normal use and service, will maintain the structural integrity of door edge with no separation at any seam for the useful life of the original building where the door is originally installed, subject to the following:

- 1. This Warranty shall be null and void if manufacturer's products are subject to improper storage, shipping and handling, vandalism, willful damage, improper maintenance, unreasonable abuse, accident, misapplication, or installation not in accordance with the Steel Door Institute (SDI) specifications and instructions.*
- 2. This Warranty applies only to the 15LE Series door furnished as manufacturer's product and does not extend to or cover finish painting, hardware, glass or other components furnished by other manufacturers.*
- 3. Owner's Responsibility: Black Mountain Door will have no liability under this Warranty unless:*
 - A. The Manufacturer's products are handled, stored, and installed in complete accordance with Steel Door Institute (SDI) specifications, instructions, the Manufacturer's recommendations, and any instructions appearing on the door label.*
 - B. Proper maintenance, lubrication and if needed, replacement of malfunctioning hardware is performed.*
 - C. Notice in writing to Black Mountain Door of any alleged failure or deterioration in the material shall have been given either immediately upon discovery thereof or within a reasonable period after which it should have been apparent.*

Other welding methods utilized by Black Mountain Door in both Amweld and Firedoor Brands are covered by our standard warranty, an excerpt (not full text) from which follows:

Black Mountain Door hereby guarantees our steel doors and frames from material or workmanship defect, for a period of one (1) year from the date of shipment. The company's guarantee is based upon the usage of the units with the hardware for which they were prepared and the assumption that normal industry and company storage, installation, and usage recommendations were employed, that the products be properly painted and maintained and are subject to normal usage. This guarantee is limited to replacement or repair of said doors and/or frames at the option of the manufacturer, and the manufacturer makes no other implied or express guarantee.



SCOPE:

This bulletin covers the numerical equivalents of the various gages used by Black Mountain Door in the fabrication of steel doors and frames.

PURPOSE:

To clarify the decimal equivalents to steel gage thicknesses and explain the reasoning for Black Mountain Door's continued use of the term "gages".

DESCRIPTION:

Black Mountain Door (along with most of the steel door and frame industry) uses the minimum decimal thicknesses specified by the Underwriters' Laboratories as the basic guide for purchasing steel. The UL inspector becomes a part of the QA program. These minimum thicknesses are also as published in ANSI/SDI A250.8 ANSI/SDI A250.8 - Recommended Specifications for Standard Steel Doors & Frames and HMMA-803 - Steel Tables.

Base steel material used in the manufacturing of doors and frames complies with ASTM A568, ASTM A1008 and/or ASTM A1011.

Where specified, hot-dip galvanized (galvanneal) steel coating complies with ASTM A653 and ASTM A924. Coating Class A40 (ZF120) is standard; Class A60 (ZF180) is available. For zinc coated (galvanized) steel sheets, the coating thickness only slightly affects steel thickness. A40 or A60 material adds an average coating thickness of about 1 mil (0.025 mm) or 0.001" **total**. See Tech Data G-9.0 for more information on galvanized steel used by Black Mountain Door.

Decimal equivalents for steel gages as published in HMMA 803-Steel Tables is reproduced below. The full document may be downloaded at www.hollowmetal.org.

MINIMUM THICKNESS		
Uncoated Steel Sheet		
Gage	Decimal	mm
4	0.214	5.43
5	0.199	5.05
6	0.184	4.67
7	0.167	4.24
8	0.152	3.86
10	0.123	3.12
12	0.093	2.36
14	0.067	1.70
16	0.053	1.34
18	0.042	1.06
20	0.032	0.81
22	0.026	0.66
24	0.020	0.50
26	0.016	0.40
28	0.013	0.33



CONTINUED USE OF GAGE REFERENCES:

Although no longer used in the purchase of steel or in most Industry Standards, the historical term gage (or gages) is used by Black Mountain Door. It is an integral part of the ordering, pricing, and product identification procedures that cannot be easily changed.

SUMMARY:

We believe this document will be useful in conversion of gage to decimal thickness(or vice versa) when either appears in Architectural specifications.

Steel purchased to minimum decimal thicknesses which are exceeded by the mill or supplier as normal practice. Verification is not only by Black Mountain Door internal Quality inspections but also is routinely done by UL or ITS inspectors.

CERTIFICATION:

This Tech Data serves as certification that steel thicknesses used by both the Amweld Brand and the Firedoor Brand will comply with minimum steel thicknesses of Underwriters Laboratories, ANSI/SDI A250.8, and HMMA 803.



SCOPE:

This bulletin covers the Hot-Dip Galvanized (Galvanneal) steel coating used by Black Mountain Door in the production of steel doors and frames. It is intended to be a short summary of the subject.

PURPOSE:

To provide the reader with a brief explanation of the processes, coating classes and advantages afforded by the use of Galvanneal coatings.

DESCRIPTION:

For the purpose of this document, Black Mountain Door will refer to Hot-Dip Galvanized (zinc coated) steel sheet as "**galvanneal**".

Galvanneal is a steel treatment that combines galvanizing and annealing to create a zinc-iron alloy integral with the steel surface. Galvanneal, defined in ASTM standards as coating class A, is made by a hot-dipping process that results in its distinctive dull gray matte finish. Galvanneal is not subject to flaking when pierced or formed (coating class G is prone to flaking). The fine matte finish reacts like a primer that is easily paintable and is very rust resistant. When stored incorrectly or moisture is allowed to collect on the surface grayish white stains may appear. Since Galvanneal has excellent paintability, weldability, corrosion resistance, and formability characteristics it is extensively used in the automotive industry.

In short, **galvanneal is a hot-dip process**, it is a zinc coating (class A), it is paintable, and it does provide better corrosion protection than unpainted or primed steel without all the flaking or adhesion problems of "G" coatings.

The Process:

An excellent source of information on steel coating processes is from the International Zinc Association at www.galvinfo.com. A description of the process for galvanneal appears in GalvInfoNote 1.3. Keep in mind that this is a description of only the coating process. We have excerpted the following:

"The reactions that convert a liquid zinc coating to a solid zinc-iron coating begin at the steel interface. The moving sheet is immersed in the zinc bath where a thin inhibition alloy layer forms at the zinc-steel interface. As the strip emerges from the bath it drags excess zinc with it, which the air knives remove to obtain the desired coating weight. The still molten zinc coating is converted to zinc-iron alloy layers in the heating and holding furnaces."

This website source has many other reference materials under GalvInfoNotes in the GalvInfo Library.

Similar verbiage on the hot-dip coating process is in a document entitled "Zinc Coatings" is published by the American Galvanizers Association and is available for download at www.galvanizeit.org. Our edited summary follows:

"The continuous hot-dip coating process is a widely used method for galvanizing products such as steel sheet. The molten coating is applied onto the surface of the steel in a continuous process through a bath of molten zinc. This continuous hot-dip coating process begins by cleaning the steel. Then the steel passes into the annealing furnace to soften it and impart the desired strength and formability. The exit end of the furnace is a vacuum chamber to the molten coating bath to prevent any air from re-oxidizing the heated steel product. In the bath, the steel product reacts with the molten metal to create the bonded coating. Once removed from the bath, high-pressure air is used to remove any excess molten zinc to create a closely controlled coating thickness. The steel is cooled to allow the metal to solidify onto the steel surface."

Coatings:

Keep in mind that galvanneal is a zinc-iron alloy coating on sheet steel. Galvanneal coatings contain about 10% iron alloyed (bonded) with the zinc. Specifications for this coating are defined in ASTM A653 "Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated

(Galvannealed) by the Hot-Dip Process" and ASTM A924 / A924M - 09 Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process".

Although a variety of coating metals are referenced in these two Standards, Black Mountain Door uses coating class A-40 or A-60 when ordered in both the Amweld and Firedoor Brands. The A 40 and A 60 designations refer to the **total** coating thickness of both sides of the sheet in ounces per square foot. A40 is 0.40 ounces per square foot; A60 is 0.60 ounces per square foot. Coating classes A0 and A25 are not used. The A40 or A60 coatings result in approximately 0.5 mils (0.0005") thickness each side, therefore not increasing steel thickness to any great degree.

The use of electro-zinc coated steel for 300 series stile/rail doors has been discontinued in favor of A40.

Advantages of Galvanneal Coatings:

- Galvanneal steel is protected in two ways. First, the zinc coating serves as a barrier between the steel and the corrosive elements in the atmosphere. Second, if the coating should be damaged, galvanic action will take over and the zinc continues to protect the steel by sacrificing itself. As a matter of fact, minor scratches may gradually close in with zinc because of this sacrificial action.
- Zinc coating is not affected by porosity. If a spot of rust occurs due to surface damage, the rust will not travel back under the adjacent coating, nor will it pit deeply into the abrasion.
- Because of its resistance to corrosion, galvanneal steel (in conjunction with primer as mandated by ANSI/SDI A250.8) are recommended for use at exterior installations, in salt or corrosive atmospheres, or where the use of acid or salt bearing additives are used in conjunction with concrete. This is not to say that the added protection of suitable finish paint systems applied in a timely manner is unnecessary.
- The annealed zinc-iron alloy coating improves paint adhesion. "G" class coatings tend to destroy the paint bond over a relatively short time, resulting in flaking or a near complete adhesion failure. Black Mountain Door considers the potential for failure of coating class G as unacceptable, especially when adhesion of door cores and primer are critical structural integrity and quality factors. This results in less warranty, delamination, or paint issues.
- A galvanneal "A" coating is harder than "G" coating, making it less prone to scratches.

Informal Testing for Galvanneal:

Through the years, we have been asked how you can tell galvanneal steel from CRS after it is painted. The key element in this is muriatic acid, a chemical available from most building supply stores (it is normally used to clean up masonry). If you scratch a regular steel painted surface and apply muriatic acid with a cotton swab, nothing happens. If you do the same thing on a galvanized steel painted surface, there is a definite bubbling action at the scratch that is easily observed.

SUMMARY:

This Tech Data to be a basic description of galvanneal steel and will answer many what-why-how questions about galvanneal. For the reasons stated herein, Black Mountain Door strongly endorses the use of Galvanneal over the G coatings. It is simply not worth the risk to use G90 (for example) instead of Galvanneal to gain only a **few ten-thousandths** of zinc that may flake off anyway.

CERTIFICATION:

This Tech Data may be used as a certification of compliance to ASTM A653 and ASTM A 924 when materials have been correctly ordered as either class A40 or A60.

It also may be used as a certification that A class coatings as used by Black Mountain Door **are hot-dipped galvanized** coatings.



SCOPE:

This bulletin is intended to clarify the dimensional relationship that will be used by Black Mountain Door for metric and standard dimensions.

PURPOSE:

To insure the reader has proper information to convert standard dimensions into metric approximations and to establish the conversions that Black Mountain Door intends to use when metric dimensions are given.

DESCRIPTION:

The metric system is in use by most foreign countries and most construction projects of the US Government. Not all dimensions for building products, including steel doors, door frames, hardware, fasteners, components of walls, etc. are metric-based. For example, a simple # 12-24 hinge screw is based on threads per inch and cannot be directly interchanged with a metric equivalent.

In an Industry like ours where the "feet & inches" system has been the ingrained dimensional standard for hundreds of years, the task is to manufacture products that will adapt to the metric system without compromising fit and function and yet comply with tolerances defined in SDI-117 Manufacturing Tolerances Standard Steel Doors and Frames (referenced in ANSI/SDI A250.8) and ANSI/NAAMM HMMA 841 Tolerances and Clearance for Commercial Hollow Metal Doors and Frames. In this age of CNC (computer numeric control) machines capable of operating to thousandths of an inch for piercing and forming, we can come very close to (but not exact) metrication. It is for this reason that Black Mountain Door has adopted "soft" metrication where necessary.

In the metric system for our industry, the dimensional base is the millimeter. One millimeter is a relatively small unit of measure. One millimeter equals 0.03937 inches or 0.00328 feet. For converting the opposite way, one inch equals approximately 25.4 millimeters (actually 25 25/64mm), one foot equals 304.8 millimeters.

IMPORTANT NOTE: For fit and function purposes, most dimensions will be rounded "upwards" For example a 49 mm rabbet will be 49.2 mm (1 15/16"); a 50 mm face will be 50.8 mm (2").

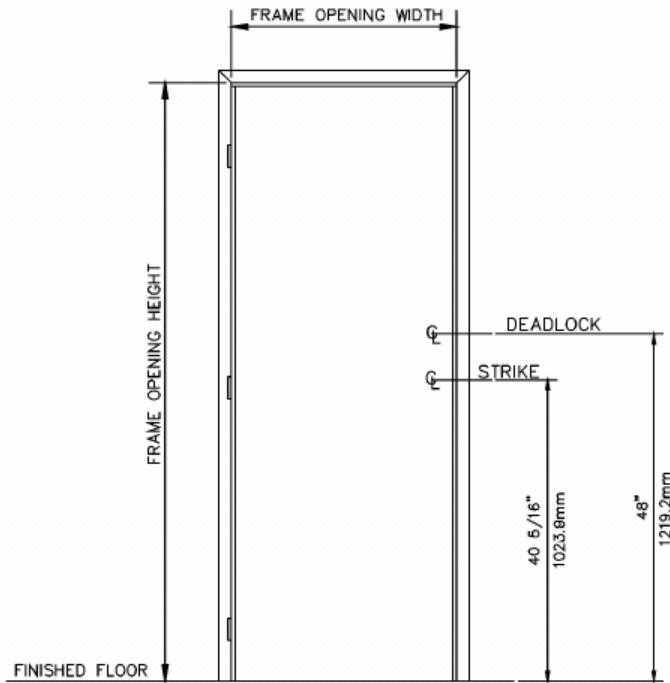
SUMMARY:

Charts on the following pages indicate the "soft" metric equivalents for common dimensions used by Black Mountain Door for the Amweld Brand and the Firedoor Brand. Charts also indicate the dimensions Black Mountain Door intends to use when dimensions are specified in metrics. Keep in mind that metric dimensions indicated are not "exact".

CERTIFICATION:

This Tech Data may be used as a certification that Black Mountain Door will fabricate to "soft" metric dimensional equivalents as described herein to allow for fit and function. Dimensions indicated are subject to relevant tolerances defined in SDI-117 and HMMA 841.





STANDARD SINGLE FRAME WIDTH	
2'-0"	609.6mm
2'-4"	711.2mm
2'-6"	762.0mm
2'-8"	812.8mm
2'-10"	863.6mm
3'-0"	914.4mm
3'-4"	1016.0mm
3'-6"	1066.8mm
3'-8"	1117.6mm
3'-10"	1168.4mm
4'-0"	1219.2mm

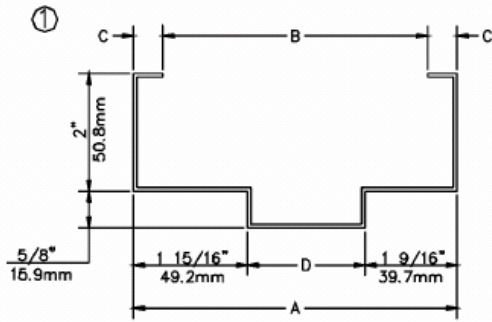
STANDARD DOUBLE FRAME WIDTH	
4'-0"	1219.2mm
4'-8"	1422.4mm
5'-0"	1524.0mm
5'-4"	1625.6mm
5'-6"	1676.4mm
5'-8"	1727.2mm
6'-0"	1828.8mm
6'-8"	2032.0mm
7'-0"	2133.6mm
7'-4"	2235.2mm
7'-8"	2336.8mm
7'-10"	2387.6mm
8'-0"	2438.4mm

STANDARD FRAME HEIGHT	
6'-8"	2032.0mm
7'-0"	2133.6mm
7'-2"	2184.4mm
7'-10"	2387.6mm
8'-0"	2438.4mm
10'-0"	3048.0mm

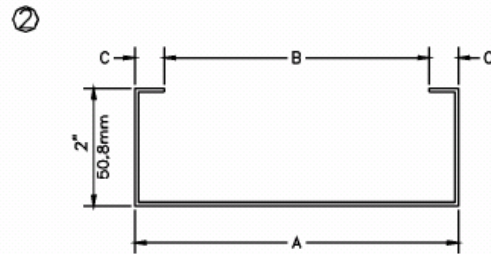
GAGE	
18=.042"	1.1mm
16=.053"	1.3mm
14=.067"	1.7mm

METRIC	STANDARD
700	27 9/16"
800	31 1/2"
900	35 7/16
1000	39 3/8"
1200	47 1/4"
2100	82 11/16"
2200	86 5/8"
2400	94 1/2"

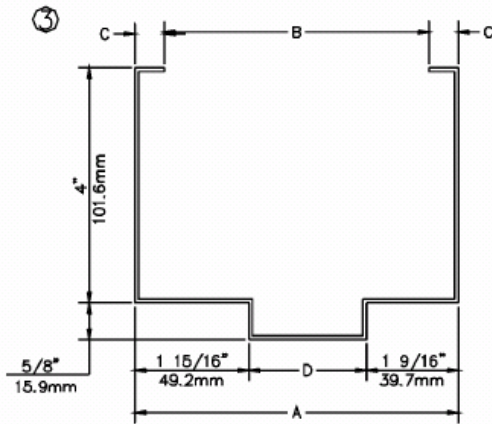




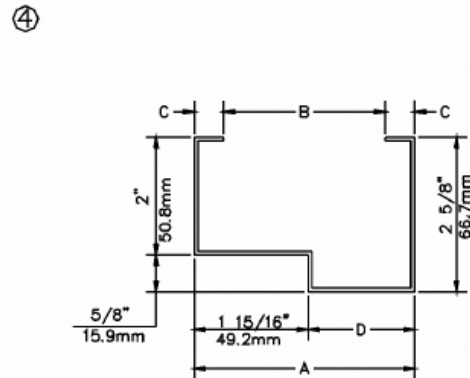
UNEQUAL RABBET



TRIMMED OPENING



4" FACE HEADER UNEQUAL RABBET



SINGLE RABBET

STANDARD PROFILES
(400 SERIES SHOWN)

Standard 400 Series Amweld Brand frames are shown for reference. For Firedoor Brand standard frames or where equal rabbet frames are ordered, both rabbets are 1 15/16" (49.2 mm). See charts on page 4 for A-B-C-D dimensions.

(1) UNEQUAL RABBET			
A	B	C	D
5 3/4"	4 7/8"	7/16"	2 1/4"
ALL OTHERS	B=A-2C	1/2"	D=A-3 1/2"
CONVERTED TO METRIC			
A	B	C	D
146.1mm	123.8mm	11.1mm	57.2mm
ALL OTHERS	B=A-2C	12.7mm	D=A-88.9mm

(2) EQUAL RABBET			
A	B	C	D
5 3/4"	4 7/8"	7/16"	1 7/8"
ALL OTHERS	B=A-2C	1/2"	D=A-3 7/8"
CONVERTED TO METRIC			
A	B	C	D
146.1mm	123.8mm	11.1mm	47.7mm
ALL OTHERS	B=A-2C	12.7mm	D=A-98.4mm

(3) 4" FACE UNEQUAL RABBET HDR			
A	B	C	D
5 3/4"	4 7/8"	7/16"	2 1/4"
ALL OTHERS	B=A-2C	1/2"	D=A-3 1/2"
CONVERTED TO METRIC			
A	B	C	D
146.1mm	123.8mm	11.1mm	57.2mm
ALL OTHERS	B=A-2C	12.7mm	D=A-88.9mm

(4) 4" FACE EQUAL RABBET HDR			
A	B	C	D
5 3/4"	4 7/8"	7/16"	1 7/8"
ALL OTHERS	B=A-2C	1/2"	D=A-3 7/8"
CONVERTED TO METRIC			
A	B	C	D
146.1mm	123.8mm	11.1mm	47.7mm
ALL OTHERS	B=A-2C	12.7mm	D=A-98.4mm

(5) TRIMMED OPENING			
A	B	C	D
3"	2 1/8"	7/16"	-
3"	1 3/4"	5/8"	-
3 3/4"	2 3/4"	1/2"	-
5 3/4"	4 7/8"	7/16"	-
ALL OTHERS	B=A-2C	1/2"	-
CONVERTED TO METRIC			
A	B	C	D
76.2mm	54.0mm	11.1mm	-
76.2mm	44.5mm	15.9mm	-
95.3mm	69.9mm	12.7mm	-
146.1mm	123.8mm	11.1mm	-
ALL OTHERS	B=A-2C	12.7mm	-

(6) SINGLE RABBET			
A	B	C	D
3"	2 1/8"	7/16"	1 1/16
3"	1 3/4"	5/8"	1 1/16
3 3/4"	2 3/4"	1/2"	1 13/16
CONVERTED TO METRIC			
A	B	C	D
76.2mm	54.0mm	11.1mm	27.0mm
76.2mm	44.5mm	15.9mm	27.0mm
95.3mm	69.9mm	12.7mm	46.0mm

VARIABLE DIMENSION			
A =JAMB DEPTH		C =RETURN SIZE	
B =THROAT OPENING		D =SOFFIT WIDTH	



JAMB DEPTH (A)

STANDARD	METRIC
3	76.2
3 1/8	79.4
3 1/4	82.6
3 3/8	85.7
3 1/2	88.9
3 5/8	92.1
3 3/4	95.3
3 7/8	98.4
4	101.6
4 1/8	104.8
4 1/4	108.0
4 3/8	111.1
4 1/2	114.3
4 5/8	117.5
4 3/4	120.7
4 7/8	123.8
5	127.0
5 1/8	130.2
5 1/4	133.4
5 3/8	136.5
5 1/2	139.7
5 5/8	142.9
5 3/4	146.1
5 7/8	149.2
6	152.4
6 1/8	155.6
6 1/4	158.8
6 3/8	161.9
6 1/2	165.1
6 5/8	168.3
6 3/4	171.5
6 7/8	174.6
7	177.8
7 1/8	181.0
7 1/4	184.2
7 3/8	187.3
7 1/2	190.5
7 5/8	193.7
7 3/4	196.9
7 7/8	200.0

STANDARD	METRIC
8	203.2
8 1/8	206.4
8 1/4	209.6
8 3/8	212.7
8 1/2	215.9
8 5/8	219.1
8 3/4	222.3
8 7/8	225.4
9	228.6
9 1/8	231.8
9 1/4	235.0
9 3/8	238.1
9 1/2	241.3
9 5/8	244.5
9 3/4	247.7
9 7/8	250.8
10	254.0
10 1/8	257.2
10 1/4	260.4
10 3/8	263.5
10 1/2	266.7
10 5/8	269.9
10 3/4	273.1
10 7/8	276.2
11	279.4
11 1/8	282.6
11 1/4	285.8
11 3/8	288.9
11 1/2	292.1
11 5/8	295.3
11 3/4	298.5
11 7/8	301.6
12	304.8
12 1/8	308.0
12 1/4	311.2
12 3/8	314.3
12 1/2	317.5
12 5/8	320.7
12 3/4	323.9

(ALL STANDARD WIDTHS ARE IN INCHES, AND METRIC CONVERSIONS ARE IN MILLIMETERS)



SCOPE:

To inform the Reader of the how the contents of "LEED 2009 for New Construction and Major Renovations" effective April 27, 2009 relates to Black Mountain Door, our Distributors, and Customers. It will also address minor differences in other 2009 LEED documents.

PURPOSE:

To allow the Reader to have a concise yet thorough knowledge of what constitutes a "Green Building", how Black Mountain Door's materials & components can affect the attainment of ratings, and what services Local Distributors can perform to assist Architects, Contractors and Owners to comply from design through construction and into occupancy.

DESCRIPTION/OVERVIEW:

A few terms, namely "Green Buildings", LEED, USGBC, or Sustainability are used for this subject. They all pertain to the "LEED 2009 for New Construction and Major Renovations" document, for public use and display, written by the U.S. Green Building Council (USGBC). This "base" document identifies performance standards for public or private commercial, institutional, or residential high rise buildings

LEED stands for "Leadership in Energy & Environmental Design" a registered trademark of USGBC. The document defines what USGBC considers as a national design guideline for a "Green Building". The public document may be downloaded from <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=298>. The above noted document forms the basis for additional "specialized" versions based on use or occupancy. These additional documents are:

- "LEED 2009 for SCHOOLS New Construction and Major Renovations" (see TD G-11.1).
- "LEED 2009 for Commercial Interiors".
- "LEED 2009 for Core and Shell Development".
- "LEED for Existing Buildings: Operations & Maintenance" (September 2008).

Two other LEED 2009 documents covering healthcare and retail occupancies are still in development as of this date.

The Green Building Rating System is a voluntary third-party system of rating environmental design impact of the ENTIRE BUILDING leading to a LEED certification. Buildings earn "points" toward certification by meeting or exceeding specified requirements ranging from site conditions, energy & water efficiency, water quality, environmental quality, materials, heating/ventilation, furniture, appliances, alternative energy sources, and innovative design processes. Point totals vary by different classifications and uses.

Even though steel doors & frames are a relatively small percentage of the entire building's value, Black Mountain Door's products directly impact primarily the "Materials & Resources" (MR) series of credits. Distributor services can aid in other areas.

GENERAL PRODUCT INFORMATION:**STEEL:**

According to the Steel Recycling Institute (www.recycle-steel.org), steel is this Country's most widely recycled material. In 2007, the latest data available, steel produced by the Basic Oxygen Furnace (BOF) method (used primarily for steel sheet) incorporated over 14 million TONS of steel scrap to produce 44 million TONS of liquid steel, a recycled content of 32%. Of this, about 25% was post-consumer and almost 7% was post-industrial.

These figures will fluctuate with scrap availability, sources, quantity exported, and the "recipe" used by the individual Steel Mill.

A Statement addressed to Architects, Engineers, Designers, and Specifiers regarding the recycled content percentages of steel is available at the above-mentioned website.

NON-RECYCLED CONTENT:

Black Mountain Door does use materials with a small recycled content in certain critical structural or performance components. These include adhesives, paint coatings, and certain core materials. Keeping in mind that the typical 15 Series door is over 90% steel by weight, the remaining materials by weight are negligible.



FRAMES:

The typical 400, FR, or 2600 frame (or component) is over 95% steel by weight. Refer to the "STEEL" paragraph above for recycled content.

DOORS:

Typical weights for materials (other than steel) in a typical 3-0 X 7-0 door follow. The balance of material can be considered as steel.

15-17-25-27-61- 63 Series:

- Expanded Polystyrene Core = about 3 pounds per door. Note: Due to the critical structural and performance criteria, our Supplier cannot use recycled material.
- Adhesive = 1 1/2 to 2 pounds per door.
- Paint (see prime paint below) = about 1 pound.

45-47 Series:

- Honeycomb Core = about 3.75 pounds per door of which 18% is recycled material.
- Adhesive = 1 1/2 to 2 pounds per door.
- Paint (see prime paint below) = about 1 pound.

35-37 Series:

- Temperature Rise Coreboard = about 65 pounds per door of which 42% is recycled material.
- Adhesive = 1 1/2 to 2 pounds per door.
- Paint (see prime paint below) = about 1 pound.

83-85-87-89 Series:

- Polyurethane Slab Core = about 6 pounds per door. Note: Due to the performance criteria, our Supplier cannot use recycled material.
- Adhesive = 1 1/2 to 2 pounds per door.
- Paint (see prime paint below) = about 1 pound.

03 Series Full Glass:

- Paint (see prime paint below) = about 1 pound.
- Perimeter Insulation (optional) = about 4 pounds.

05-07 Series:

- Insulation = between 3 pounds for standard fiberglass up to 14 pounds for 8 pcf mineral wool.
- Paint (see prime paint below) = about 1 pound.

PRIME PAINT & FILLER:

Primer used is a "low volatile organic compound" (VOC) water reducible emulsion. In order to meet strict performance requirements, recycled materials are generally not used.

Filler is generally minimal and is sanded smooth after application. The minimal weight is therefore disregarded.

PACKAGING:

Doors as shipped by Black Mountain Door are generally packaged in cardboard corner pads and banding. Our Supplier indicates that the corner pads are made from about 50%-recycled material. A set of four weighs about one pound. The plastic banding, although a petrochemical, weighs less than 4 ounces.

Frame components are generally banded with plastic weighing about one ounce per 6-pack, a minimal amount.

HOW THIS RELATES TO "GREEN BUILDING RATING SYSTEM":

The Rating System assigns points toward the Building's compliance based on "Credit Sections" defined in the LEED document. These points are all relative to the value of the ENTIRE BUILDING. Black Mountain Door and our Distributors do not necessarily determine the final value of the steel doors & frames furnished, but the percentage by weight can be used to estimate the dollar values.



HOW BLACK MOUNTAIN DOOR PRODUCTS CONTRIBUTE:

Using "LEED 2009 for New Construction and Major Renovations" as the base document, the most evident of the areas where Black Mountain Door products have a direct contribution toward earning these points occur in the following Credit Sections:

- MR (Materials and Resources) CREDIT 4 Recycled Content:

Points are awarded for buildings that incorporate recycled materials based on the sum of post-consumer + one-half pre-consumer (example: production process scrap) recycled content determined by weight and multiplied by cost. Recycled content of 10% earns one point; recycled content of 20% earns two points. As evidenced by the above paragraphs, the recycled content of Black Mountain Door's products is so high that they would easily meet these requirements.

- MR CREDIT 5 Regional Materials

One point is awarded for buildings that incorporate a minimum of 10% (based on cost) of total value of materials if manufactured within a radius of 500 miles. Two points are awarded for buildings that incorporate a minimum of 20% (based on cost) of total value of materials if manufactured within a radius of 500 miles.

Note: Even though the Black Mountain Door factory that produced the doors or frames may be outside of this radius, your Facility is the "manufacturer" if you modify, label, or assemble (for example) any of Black Mountain Door's products. LEED has established the definition of a manufacturing in Versions 2.0 and 2.1 as referring to the place of final assembly of components into the product.

SPECIAL NOTE REGARDING INDOOR ENVIRONMENTAL QUALITY (IEQ) CREDITS:

IEQ CREDITS specifically pertain to indoor air quality issues **during or after the construction process, not during the manufacturing process.** Points are awarded for controlling emissions of **jobsite-applied** paints, adhesives, sealants, etc. within specified limits. Other IEQ Credits relate to heating/ventilating systems, lighting, thermal comfort by allowing operable windows, increasing "daylight" or views by using glazing. Nothing in this Section directly relates to doors or frames.

OTHER CREDITS:

Sustainable Sites (SS), Water Efficiency (WE), and Energy and Atmosphere (EA) Credits directly relate to the design, location, operating systems, and performance of the building. These Sections do not directly relate to doors or frames. Innovation in Design (ID) Credits are awarded for design features or performance above requirements and/or innovative performance in categories not specifically addressed.

Regional Priority (RP) Credits are bonus points for exceeding other Credit Levels or by addressing local issues. Since these Credits are based on ZIP Code, these Credits are not addressed in this TD.

OPTIONAL DISTRIBUTOR CONTRIBUTIONS:

By providing some creative additional "services", the local Distributor can also have an indirect contribution toward earning points for the Building. At the Distributor's preference, these can be quoted as paid options or provided as free services by the Distributor. These opportunities occur in the following Credit Sections:

- EA CREDIT 1 (Optimize Energy Performance)

To verify that buildings operate as intended and that levels of energy efficiency are achieved, the Distributor can assist in defining or interpreting local Energy Codes and verifying proper installation of products. The verification of installation can be as simple as an offer to conduct a walk-through inspection of exterior doors prior to turn-over for proper function of weather-stripping to control thermal losses.

- EA CREDIT 3 (Enhanced Commissioning) and EA CREDIT 5 (Measurement & Verification)

Credits are awarded for implementing (or having a contract in place for) a review of Building operation with the Operation & Maintenance Staff. The Distributor can offer to conduct a training session for Maintenance Staff using published operation & maintenance instructions for products furnished by the Distributor.

- MR CREDIT 1.2 (Building Reuse-Maintain Interior Nonstructural Elements)



Credits are awarded for re-using existing interior elements including doors (frames and hardware are assumed to be included) in at least 50% by area of the completed building or additions. An on-site survey may be all that is

required. The Distributor then has an opportunity to provide new materials if existing door assemblies no longer meet Codes.

- **MR CREDIT 2 (Construction Waste Management)**

Credits are awarded for diverting construction waste from landfills. One point is awarded for diverting at least 50% of debris; two points are awarded for diverting at least 75%. As a "material supplier" the Distributor is not normally involved in the management of construction debris, but they can provide a list of known local recyclers for various materials.

- **MR CREDIT 3 (Materials Reuse)**

Credits awarded are very similar to Credits in MR 1.2. The Distributor can promote the use of 2600 slip-on drywall, 800 or 1800 retrofit, FR pressure fit, FR "High Riser" or similar removable frames. In the event of a major renovation, these designs are re-usable. Re-used materials earn one point if they are at least 5% of total value of materials; two points if at least 10%. It is also an opportunity for the Distributor to sell excess or obsolete material, possibly to a small new Project or renovation.

RELATED USGBC DOCUMENTS:

- "LEED 2009 for Commercial Interiors" covers tenant spaces in office, restaurant, healthcare, hotel, resort, and educational buildings both public and private. It is used for tenants that lease space but do not occupy the entire building. It is therefore possible to have a "Green" area within a non-certified building. Important differences between this and "LEED 2009 for New Construction and Major Renovations" are:

MR Credit 1.1 awards a point for tenants who commit to remain at least 10 years. MR Credit 1.2 awards one point for maintaining 40% of nonstructural components; two points for 60%.

Other MR Credits such as Recycled Content and Regional Materials are identical. IEQ Credits still relate to **jobsite-applied** materials.

- "LEED 2009 for Core and Shell Development" is essentially the remainder of the building not involving tenant spaces. Main examples are office, warehouse, or retail buildings. Important differences between this and "LEED 2009 for New Construction and Major Renovations" are:

SS (Sustainable Sites) Credit 9 awards one point for providing tenants with information on the design and construction features, requirements for coordinating their fit-out with the building system, and requirements for products and services. MR Credit 1 awards up to five points for maintaining up to 75% of the exterior building structure (excluding windows).

Other MR Credits such as Recycled Content and Regional Materials are identical. IEQ Credits still relate to **jobsite-applied** materials.

- "LEED for Existing Buildings: Operations & Maintenance" covers operating performance instead of design. MR Credits are primarily concerned with management practices for purchasing of consumable or durable goods, maintenance, cleaners, and solid waste. Doors and frames are noted in MR Credit 3 with Recycled Content and Regional Materials requirements the same as "LEED 2009 for New Construction and Major Renovations". MR Credit 9 requires diverting at least 70% by volume of facility alterations or additions waste from landfills. EQ Credit 2.1 implements an occupant survey on issues including acoustics, an area where Black Mountain Door's doors could be utilized.

CONCLUSIONS:

We trust that this Tech Data will serve to clarify the "Green Building" concept, to identify the extent to which Black Mountain Door's products contribute to attaining "points" for the Building, and to suggest opportunities that enhance the service level of the local Distributor.



SCOPE:

To inform the Reader of the how the contents of “LEED 2009 for **SCHOOLS** New Construction and Major Renovations” effective April 27, 2009 relates to Black Mountain Door, our Distributors, and Customers. It will also address how it differs from “LEED 2009 for New Construction and Major Renovations”.

PURPOSE:

With the emphasis on **SCHOOLS**, to allow the Reader to have a concise yet thorough knowledge of what constitutes a “Green Building”, how Black Mountain Door’s materials & components can affect the attainment of ratings, and what services Local Distributors can perform to assist Architects, Contractors and Owners to comply from design through construction and into occupancy.

DESCRIPTION/OVERVIEW:

A few terms, namely “Green Buildings”, LEED, USGBC, or Sustainability are used for this subject. Within the scope of this Tech Data, they all pertain to the “LEED 2009 for **SCHOOLS** New Construction and Major Renovations” document, for public use and display, written by the U.S. Green Building Council (USGBC). This Document identifies performance standards for academic buildings on K through 12 school grounds. Non-academic buildings (offices, dormitories, maintenance buildings) on K-12 school grounds, pre-K, and post-secondary buildings have the option to use this Document or “LEED 2009 for New Construction and Major Renovations” (see TD# G-11.0 R07/09).

LEED stands for “Leadership in Energy & Environmental Design” a registered trademark of USGBC. The document defines what USGBC considers as a national design guideline for a “Green Building”. The public document may be downloaded from: <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=298>.

The Green Building Rating System is a voluntary third-party system of rating environmental design impact of the ENTIRE BUILDING leading to a LEED certification. Buildings earn “points” toward certification by meeting or exceeding specified requirements ranging from site conditions, energy & water efficiency, water quality, environmental quality, materials, heating/ventilation, furniture, appliances, alternative energy sources, and innovative design processes. Even though steel doors & frames are a relatively small percentage of the entire building’s value, Black Mountain Door’s products directly impact primarily the “Materials & Resources” (MR) series of credits. Distributor services can aid in other areas.

GENERAL PRODUCT INFORMATION:

STEEL:

According to the Steel Recycling Institute (www.recycle-steel.org), steel is this Country’s most widely recycled material. In 2007, the latest data available, steel produced by the Basic Oxygen Furnace (BOF) method (used primarily for steel sheet) incorporated over 14 million TONS of steel scrap to produce 44 million TONS of liquid steel, a recycled content of 32%. Of this, about 25% was post-consumer and almost 7% was post-industrial.

These figures will fluctuate with scrap availability, sources, quantity exported, and the “recipe” used by the individual Steel Mill.

A Statement addressed to Architects, Engineers, Designers, and Specifiers regarding the recycled content percentages of steel is available at the above-mentioned website.

NON-RECYCLED CONTENT:

Black Mountain Door does use materials with a small recycled content in certain critical structural or performance components. These include adhesives, paint coatings, and certain core materials. Keeping in mind that the typical 15 Series door is over 90% steel by weight, the remaining materials by weight are negligible.

FRAMES:

The typical 400, FR, or 2600 frame (or component) is over 95% steel by weight. Refer to the “STEEL” paragraph above for recycled content.



DOORS:

Typical weights for materials (other than steel) in a typical 3-0 X 7-0 door follow. The balance of material can be considered as steel.

15-17-25-27-61- 63 Series:

- Expanded Polystyrene Core = about 3 pounds per door. Note: Due to the critical structural and performance criteria, our Supplier cannot use recycled material.
- Adhesive = 1 1/2 to 2 pounds per door.
- Paint (see prime paint below) = about 1 pound.

45-47 Series:

- Honeycomb Core = about 3.75 pounds per door of which 18% is recycled material.
- Adhesive = 1 1/2 to 2 pounds per door.
- Paint (see prime paint below) = about 1 pound.

35-37 Series:

- Temperature Rise Coreboard = about 65 pounds per door of which 42% is recycled material.
- Adhesive = 1 1/2 to 2 pounds per door.
- Paint (see prime paint below) = about 1 pound.

83-85-87-89 Series:

- Polyurethane Slab Core = about 6 pounds per door. Note: Due to the performance criteria, our Supplier cannot use recycled material.
- Adhesive = 1 1/2 to 2 pounds per door.
- Paint (see prime paint below) = about 1 pound.

03 Series Full Glass:

- Paint (see prime paint below) = about 1 pound.
- Perimeter Insulation (optional) = about 4 pounds.

05-07 Series:

- Insulation = between 3 pounds for standard fiberglass up to 14 pounds for 8 pcf mineral wool.
- Paint (see prime paint below) = about 1 pound.

PRIME PAINT & FILLER:

Primer used is a "low volatile organic compound" (VOC) water reducible emulsion. In order to meet strict performance requirements, recycled materials are generally not used.

Filler is generally minimal and is sanded smooth after application. The minimal weight is therefore disregarded.

PACKAGING:

Doors as shipped by Black Mountain Door are generally packaged in cardboard corner pads and banding. Our Supplier indicates that the corner pads are made from about 50%-recycled material. A set of four weighs about one pound. The plastic banding, although a petrochemical, weighs less than 4 ounces.

Frame components are generally banded with plastic weighing about one ounce per 6-pack, a minimal amount.

HOW THIS RELATES TO "GREEN BUILDING RATING SYSTEM":

The Rating System assigns points toward the Building's compliance based on "Credit Sections" defined in the LEED for **SCHOOLS** document. These points are all relative to the value of the ENTIRE BUILDING. Black Mountain Door and our Distributors do not necessarily determine the final value of the steel doors & frames furnished, but the percentage by weight can be used to estimate the dollar values.



HOW BLACK MOUNTAIN DOOR PRODUCTS CONTRIBUTE:

Using "LEED 2009 for **SCHOOLS** New Construction and Major Renovations" the most evident of the areas where Black Mountain Door products have a direct contribution toward earning these points occur in the following Credit Sections:

- **MR (Materials and Resources) CREDIT 4 Recycled Content:**

Points are awarded for buildings that incorporate recycled materials based on the sum of post-consumer + one-half pre-consumer (example: production process scrap) recycled content determined by weight and multiplied by cost. Recycled content of 10% earns one point; recycled content of 20% earns two points. As evidenced by the above paragraphs, the recycled content of Black Mountain Door's products is so high that they would easily meet these requirements.

- **MR CREDIT 5 Regional Materials**

One point is awarded for buildings that incorporate a minimum of 10% (based on cost) of total value of materials if manufactured within a radius of 500 miles. Two points are awarded for buildings that incorporate a minimum of 20% (based on cost) of total value of materials if manufactured within a radius of 500 miles.

Note: Even though the Black Mountain Door factory that produced the doors or frames may be outside of this radius, your Facility is the "manufacturer" if you modify, label, or assemble (for example) any of Black Mountain Door's products. LEED has established the definition of a manufacturing in Versions 2.0 and 2.1 as referring to the place of final assembly of components into the product.

- **IEQ (Indoor Environmental Quality) Credit 9 (Enhanced Acoustical Performance)**

One point is awarded where classrooms, walls, core learning spaces, etc meet the STC requirements of ANSI S12.60 paragraph 4.5.5. A copy is available through the Acoustical Society of America. This Document, although somewhat confusing, indicates door STC ratings of 30 between classrooms and rooms other than music rooms, mechanical equipment rooms, pool areas and gymnasium areas. These other areas require an STC of 40. Black Mountain Door's Tech Data# D-12.0 indicates test results that affirm compliance with both ratings. The STC 30 can even be achieved with standard 15 or 61 type doors with suitable sound seals. The "Specifications" Section of the Black Mountain Door website show other options that meet or exceed these STC levels.

- **IEQ CREDIT 10 Mold Prevention**

One point is awarded in this Section primarily for ventilation, but it should be noted that physical properties of our Expanded Polystyrene under water resistance show that this core allows only miniscule water retention, thus reducing a major source of mold.

SPECIAL NOTE REGARDING INDOOR ENVIRONMENTAL QUALITY (IEQ) CREDITS:

IEQ CREDITS not specifically noted in this TD pertain to indoor air quality issues **during or after the construction process, not during the manufacturing process**. Points are awarded for controlling emissions of **jobsite-applied** paints, adhesives, sealants, etc. within specified limits. Other IEQ Credits relate to heating/ventilating systems, lighting, thermal comfort by allowing operable windows, increasing "daylight" or views by using glazing. Nothing in this Section directly relates to doors or frames.

OTHER CREDITS:

Sustainable Sites (SS), Water Efficiency (WE), and Energy and Atmosphere (EA) Credits directly relate to the design, location, operating systems, and performance of the building. These Sections do not directly relate to doors or frames.

Innovation in Design (ID) Credits are awarded for design features or performance above requirements and/or innovative performance in categories not specifically addressed.

Regional Priority (RP) Credits are bonus points for exceeding other Credit Levels or by addressing local issues. Since these Credits are based on ZIP Code, these Credits are not addressed in this TD.



OPTIONAL DISTRIBUTOR CONTRIBUTIONS:

By providing some creative additional “services”, the local Distributor can also have an indirect contribution toward earning points for the Building. At the Distributor’s preference, these can be quoted as paid options or provided as free services by the Distributor. These opportunities occur in the following Credit Sections:

- **MR CREDIT 1.2 (Building Reuse-Maintain Interior Nonstructural Elements)**
Credits are awarded for re-using existing interior elements including doors (frames and hardware are assumed to be included) in at least 50% by area of the completed building or additions. An on-site survey may be all that is required. The Distributor then has an opportunity to provide new materials if existing door assemblies no longer meet Codes.
- **MR CREDIT 2 (Construction Waste Management)**
Credits are awarded for diverting construction waste from landfills. One point is awarded for diverting at least 50% of debris; two points are awarded for diverting at least 75%. As a “material supplier” the Distributor is not normally involved in the management of construction debris, but they can provide a list of known local recyclers for various materials.
- **MR CREDIT 3 (Materials Reuse)**
Credits awarded are very similar to Credits in MR 1.2. The Distributor can promote the use of 2600 slip-on drywall, 800 or 1800 retrofit, FR pressure fit, FR "High Riser" or similar removable frames. In the event of a major renovation, these designs are re-usable. Re-used materials earn one point if they are at least 5% of total value of materials; two points if at least 10%. It is also an opportunity for the Distributor to sell excess or obsolete material, possibly to a small new Project or renovation.

CONCLUSIONS:

We trust that this Tech Data will serve to clarify the “Green Building” concept, to identify the extent to which Black Mountain Door’s products contribute to attaining “points” for the Building, and to suggest opportunities that enhance the service level of the local Distributor.



SCOPE:

This Tech Data is intended to summarize Black Mountain Door's interpretation of the important provisions of the October, 2003 version of the Department of Defense (DoD) Minimum Antiterrorism Standards for Buildings. It does not include the provisions of the January, 2007 version (see TD# G-12.2).

PURPOSE:

To inform the Reader of what this Standard involves and how it relates to exterior doors and windows on Department of Defense (DoD) Facilities. It is for use where Specifications may reference this version of the DoD Document.

DISCLAIMER:

This Tech Data represents Black Mountain Door's interpretation of this Standard. It **does not** infer that this interpretation is endorsed by the U.S Government, the Department of Defense, or any other such entity beyond Black Mountain Door. The Reader is cautioned to utilize this TD in conjunction with the Document noted in the SUBJECT. The Reader may seek relevant documents from the Whole Building Design Guide website at "dod.wbdg.org" or "www.wbdg.org".

OVERVIEW:

This document is intended to apply to ALL buildings for the ALL "Components" of the Department of Defense (DoD). It was created under the Unified Facilities Criteria (UFC) document control system for construction by the May 29, 2002 Under Secretary of Defense memorandum. It is intended to minimize casualties from terrorist attacks against DoD Facilities.

It assigns responsibility for application of this standard to every DoD employee, **contractor**, or **vendor**.

The list of reference documents includes other UFC documents in "draft" stages or "FOUO" (for official use only-not available to the public). Mandatory minimum requirements are specified in appendices to the actual document.

Generally, all DoD new, existing, leased, or temporary facilities regardless of funding source are included. Definitions relating to building types, use, or occupancy are covered in Chapter 1 Section 6.

Much of the document is devoted to "standoff distances", types of threats, and methods of attack.

Tables 2-1 and 2-2 in Chapter 2 define levels of protection based on structural damage, door and window hazards, and injuries, however Tables DO NOT define any performance criteria.

DESCRIPTION:**GLAZING:**

Non-impact rated glazing is noted as one of the major threats to inhabitants. Minimizing the quantity and sizes of windows is suggested. Window and door designs must treat all components and attachments as an integrated system. Replacement of glazing is **MANDATORY** for all existing inhabited buildings within any planned door or window replacement project.

Appendix A defines "glazing" as the part of a window or door assembly that is transparent and transmits light, not air. It defines "structural glazed window systems" as window systems that use an adhesive to bond both sides of the glazing to the window frame. The Dow-Corning sealant used in Black Mountain Door's windstorm-rated doors qualifies.



This standard limits “visual glazing openings” (assume exposed lite sizes) to no more than 32 square feet. For larger openings, the “DoD Security Engineering Design Manual is to be consulted. As of January, 2007 this is still in “DRAFT” stage and is almost impossible for the general public to access.

All exterior glazing is to be a minimum of 1/4” nominal laminated glass consisting of two 1/8” glass panes laminated to both sides of a 0.030” PVB interlayer. (The glazing used in Black Mountain Door’s windstorm-rated doors exceeds this.) This glazing must also be used as the inner pane of insulating glass units.

GLAZED DOOR AND WINDOW ASSEMBLIES:

All exterior doors for inhabited areas must open outward. Doors in Mailrooms must have weather-stripping at all four edges. External hallway configurations containing large numbers of doors should be avoided for inhabited buildings. The size and number of windows should be minimized.

Designs must treat all components and attachments as an integrated system. Un-reinforced masonry walls are prohibited for exterior walls of new buildings. This would suggest that masonry anchors have holes to allow rebar to pass.

Glazed window frames and glazed door stiles & rails may use “ultimate yield stresses” (not defined). Equivalent static design loads are 1 pound per square inch (144 psf) applied to the surface of glazing, with allowable deformation not exceeding 1/160 of unsupported lengths. It does not say if this load is based on exposed glazing area or total assembly area.

Minimum “bite” (overlap of glazing and framing member) is 3/8” for structural glazing and 1” for all others. This would be 5/8” stop height for structural glazing and 1 1/4” stop height for others.

Static design loads applied to the surface of glazing and the frame for the window or door frame to the walls, hardware, or other connections shall be 10.8 pounds per square inch (1,555 psf) with exposed lite area of 10.8 square feet or smaller and 4.4 pounds per square inch (634 psf) for exposed lites over 10.8 square feet up to 32 square feet. As a comparison, our 70psf 16 gage 15LE windstorm assembly passed a static load of 105 psf, the Black Mountain Door/Firedoor FEMA 320 “tornado” unit passed a static load of 1.41 pounds per square inch (203 psf).

Where minimum “stand off” distances are not possible, frames and glazing must resist explosives based on Table B-1 which denotes weight of TNT for specific exposure categories. The TNT weight is based on a document designated “FOUO”, making the chart inaccessible to the public reader.

CONCLUSIONS:

The treatment of door or window openings as “integrated systems” infers that they are “assemblies” rather than components. Under typical Architectural specification systems, the door and/or frame manufacturer does not have the ability to control the hardware, glazing components, or the actual installation since they are in other specification sections.

The static load design criteria specified herein are well beyond the capabilities of our current door designs tested for hurricane or tornado situations. Designs needed to comply with this version of UFC 4-010-01 are specially designed “blast” door assemblies.

Black Mountain Door can generally comply with the specific manufacturing details for doors and windows (sizes, glazing bite, structural glazing adhesive), but the static loading requirements necessitate extensive design and testing of radically “non-standard” assemblies.



SCOPE:

This Tech Data is intended to summarize Black Mountain Door's interpretation of the important provisions of the January, 2007 version of the Department of Defense (DoD) Minimum Antiterrorism Standards for Buildings. This version contains significant revisions of the October, 2003 version (see TD# G-12.1).

PURPOSE:

To inform the Reader of what this Standard involves and how it relates to exterior doors and windows on Department of Defense (DoD) Facilities. It is for use where Specifications may reference this version of the DoD Document.

DISCLAIMER:

This Tech Data represents Black Mountain Door's interpretation of this Standard. It **does not** infer that this interpretation is endorsed by the U.S Government, the Department of Defense, or any other such entity beyond Black Mountain Door. The Reader is cautioned to utilize this TD in conjunction with the Document noted in the SUBJECT. The Reader may seek relevant documents from the Whole Building Design Guide website at "dod.wbdg.org" or "www.wbdg.org".

OVERVIEW:

This document is the revised version of UFC 4-010-01 (October 2003). It incorporates ASTM test standards for glazing that were not available for the 2003 version. Thus, it adds performance standards to prescriptive requirements.

It is still intended to apply to ALL buildings for the ALL "Components" of the Department of Defense (DoD) to minimize casualties from terrorist attacks against DoD Facilities. It retains responsibility for application of this standard to every DoD employee, **contractor**, or **vendor**.

The list of reference documents still includes other UFC documents in "draft" stages, documents noted as "FOUO" (for official use only-not available to the public) or Working Group websites that are incorrect or not accessible. Mandatory minimum requirements are specified in appendices to the actual document. The additional ASTM documents pertain to determining load resistance, testing, and specifying **glazing**.

Generally, all DoD new, existing, leased, or temporary facilities regardless of funding source are included. Definitions of building types, use, or occupancy are covered in Chapter 1 Section 6.

Much of this version remains devoted to "standoff distances", types of threats, and methods of attack.

Tables 2-1 and 2-2 in Chapter 2 define levels of protection based on structural damage, door & window hazards, and injuries. They still DO NOT define any performance criteria. Performance descriptions are in a document not available to the public.

DESCRIPTION:

GLAZING AND WINDOW ASSEMBLIES:

Glazing is noted as one of the major threats to inhabitants. Minimizing the quantity and sizes of windows is suggested. Window and door designs must treat all components and attachments as an integrated system. Appendix A defines "glazing" as the part of a window or door assembly that is transparent and transmits light, not air. It defines "structural glazed window systems" as window systems that use an adhesive to bond both sides of the glazing to the window frame. The Dow-Corning sealant used in Black Mountain Door's windstorm-rated doors qualifies.

Replacement of glazing is **MANDATORY** for all existing inhabited buildings during any door or window replacement project.



Table B-1 denotes weight of TNT for specific categories of exposure. The TNT weight is based on a document designated "FOUO" therefore the chart is USELESS to the public reader.

Tables B-2 and B-3 have been added to aid in the selection of laminated and insulated glazing and interlayer thicknesses based on standoff distances (distance between the building or portion thereof and the location of potential explosive device). Many of the entries rely on ASTM F-2248 for determination of design loads, explosive weight, and standoff distances. Restrictions on size of windows in the 2003 version have been removed.

All exterior glazing is to be a minimum of 1/4" nominal laminated glass consisting of two 1/8" glass panes laminated to both sides of a 0.030" PVB interlayer. (The glazing used in Black Mountain Door's windstorm-rated doors exceeds this.) This glazing must also be used as the inner pane of insulating glass units.

Un-reinforced masonry walls are still prohibited for exterior walls of new buildings. This would suggest that masonry anchors have holes to allow rebar to pass.

Framing members of window frames must resist deflection at the edges of glazing to 1/160 of length at design loads based on ASTM F 2248. Minimum "bite" (overlap of glazing and framing member) is now dependent on ASTM F 2248 instead of being prescriptive like the 2003 version.

Connections to surrounding walls are based on loads determined in accordance with ASTM F 2248, with alternate methods of analysis or testing now allowed.

EXTERIOR DOOR ASSEMBLIES:

This version separates exterior doors from windows. All exterior doors for inhabited areas must open outward. Doors in Mailrooms must have weather-stripping at all four edges. **Glazing in doors must meet requirements for glazing and windows.** Designs must treat all components and attachments as an integrated system. External hallway configurations containing large numbers of doors should be avoided for inhabited buildings.

Un-reinforced masonry walls are prohibited for exterior walls of new buildings again suggesting that masonry anchors have holes to allow rebar to pass.

Prescriptive design loads specified in the 2003 version have been removed. In their place, this version relies on ASTM F-2248 for determination of design loads, explosive weight, and standoff distances. Table B-1 denotes weight of TNT for specific categories of exposure. The TNT weight is based on a document designated "FOUO" making the chart is inaccessible to the public reader.

CONCLUSIONS:

The treatment of door or window openings as "integrated systems" infers that they are "assemblies" rather than components. Under typical Architectural specification systems, the door and/or frame manufacturer does not have the ability to control the hardware, glazing components, or the actual installation since they are in other specification sections.

Although the prescriptive static load requirements (see TD# G-12.1) have been deleted, the need to use ASTM standards in conjunction with this standard infers that extensive design and testing of radically "non-standard" assemblies will still apply.

We are initiating an Engineering Evaluation from Intertek Testing Services to determine to what extent our windstorm-rated doors may comply based on explosive weight and standoff distance. Results will be addressed in a future G-12 series Tech Data.

/ TECHNICAL DATA **HARDWARE**



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DOOR™

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INDEX – HARDWARE

rev. 05-04-12

<u>Description</u>	<u>Number</u>
Standard Hardware Locations in Black Mountain Door Frames.....	H-1.0
Firedoor Brand 5-10-Equal Type Hardware Locations.....	H-1.1
Black Mountain Door’s Vertical Hinge Location	H-2.0
Hardware Reinforcing in Doors & Frames Dutch.....	H-3.0
Hardware Reinforcing Gages	H-4.0
4-1/2" Standard and Heavy Weight Hinge Preparation	H-5.0
5" Standard and Heavy Weight Hinge Preparation	H-5.0
Anchor Hinge Preparation	H-6.0
Bored Lock Prep in 1-3/4" Doors (D Lock)	H-7.0
Mortise Lock Prep in 1-3/4" Doors (Y Lock).....	H-8.0
ANSI/DHI Manual Flush Bolt Preparation.....	H-10.0
Double Acting Hinges or Pivot Sets	H-11.0
Thru-Bolted Cylindrical Locks	H-13.0
Black Mountain Door’s Hinge Basket	H-14.0

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.



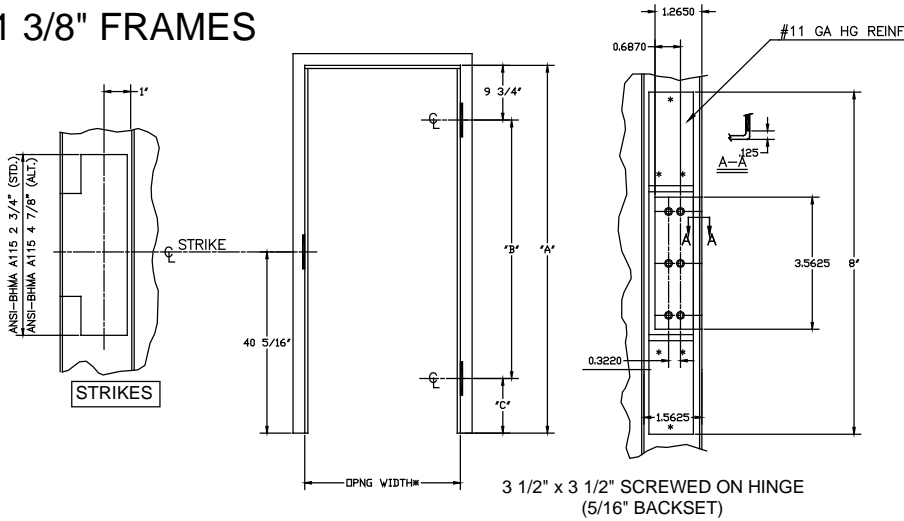
SCOPE:

This bulletin covers the normal hinge and strike preparations and their locations in standard frames.

PURPOSE:

To provide the distributor with a single document he can convey to manufacturers of wood and other related items to insure their product matches our frames.

1 3/8" FRAMES



SEE H2.0 FOR EXCEPTIONS

1 3/8" THICK DOORS

FRAME HEIGHT	"A"	"B"	"C"
6'-8"	80"	59 7/8"	10 3/8"
7'-0"	84"	59 7/8"	14 3/8"
7'-2"	86"	59 7/8"	16 3/8"

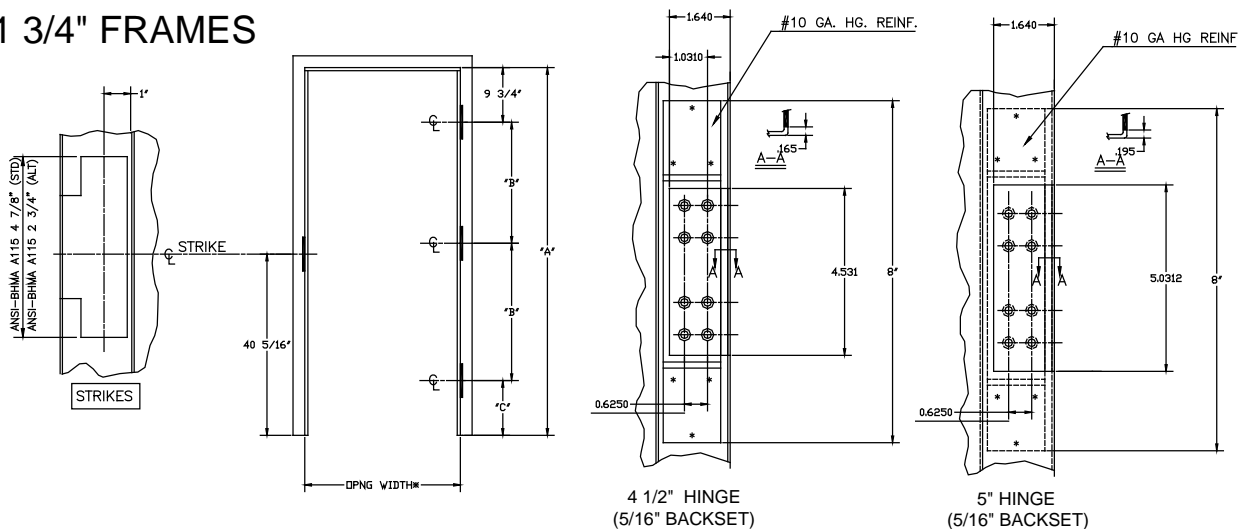
NOTE FOR 1 3/8" DOORS:
 3 HINGE PREPS(ALT.)
 DIVIDE "B" DIM. IN HALF.
 (i.e. 2 @ 29 15/16"
 FOR A 6'8" DOOR)

1 3/4" THICK DOORS

FRAME HEIGHT	"A"	"B"	"B"	"C"
6'-8"	80"	29 15/16"	29 15/16"	10 3/8"
7'-0"	84"	31 15/16"	31 15/16"	10 3/8"
7'-2"	86"	31 15/16"	31 15/16"	12 3/8"
7'-10"	94"	25 5/16"	25 5/16"	8 5/16"
8'-0"	96"	25 5/16"	25 5/16"	10 5/16"
10'-0"	120"	32 15/16"	32 15/16"	11 7/16"

* WIDTH AND HEIGHT OF SINGLE OPENINGS SHALL BE NOMINAL (i.e. 3070 FRAME=36" x 84"). WIDTH OF DOUBLE OPENING OVER 4'0" SHALL BE 1/16" LESS THAN NOMINAL (i.e. 6'-0" WIDTH =71 15/16").

1 3/4" FRAMES



SCOPE:

This bulletin is intended to show the "5-10-equal" type hardware locations historically used by the Firedoor Brand of Black Mountain Door on frames for 1 3/4" thick doors. **These locations are used only when specifically ordered as special locations** such as may occur on retrofits of older Firedoor material, additions to projects, or where specifically necessary for Miami-Dade windstorm products.

PURPOSE:

To provide specific dimensional information for instances where 5-10-equal type hinge spacing and 38" strike centerline is required by project specifications or for matching to previously supplied Firedoor Brand products.

IMPORTANT NOTE:

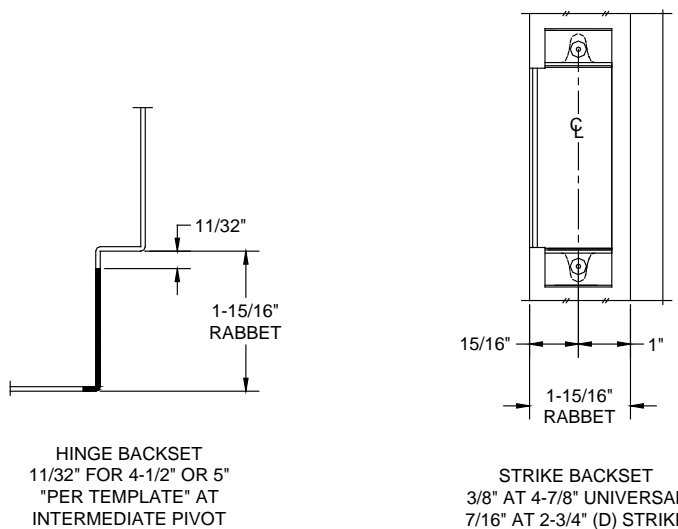
Hardware locations for Miami-Dade windstorm product NOAs are currently undergoing a revision to incorporate Amweld Brand vertical hardware locations. We expect this change to be finalized shortly. Since NOAs require both doors and frames by Firedoor as an assembly, match-up of vertical locations is not an issue. If this creates any questions or for consistency within a certain project, please contact Amweld International for instructions on ordering special locations.

DESCRIPTION:

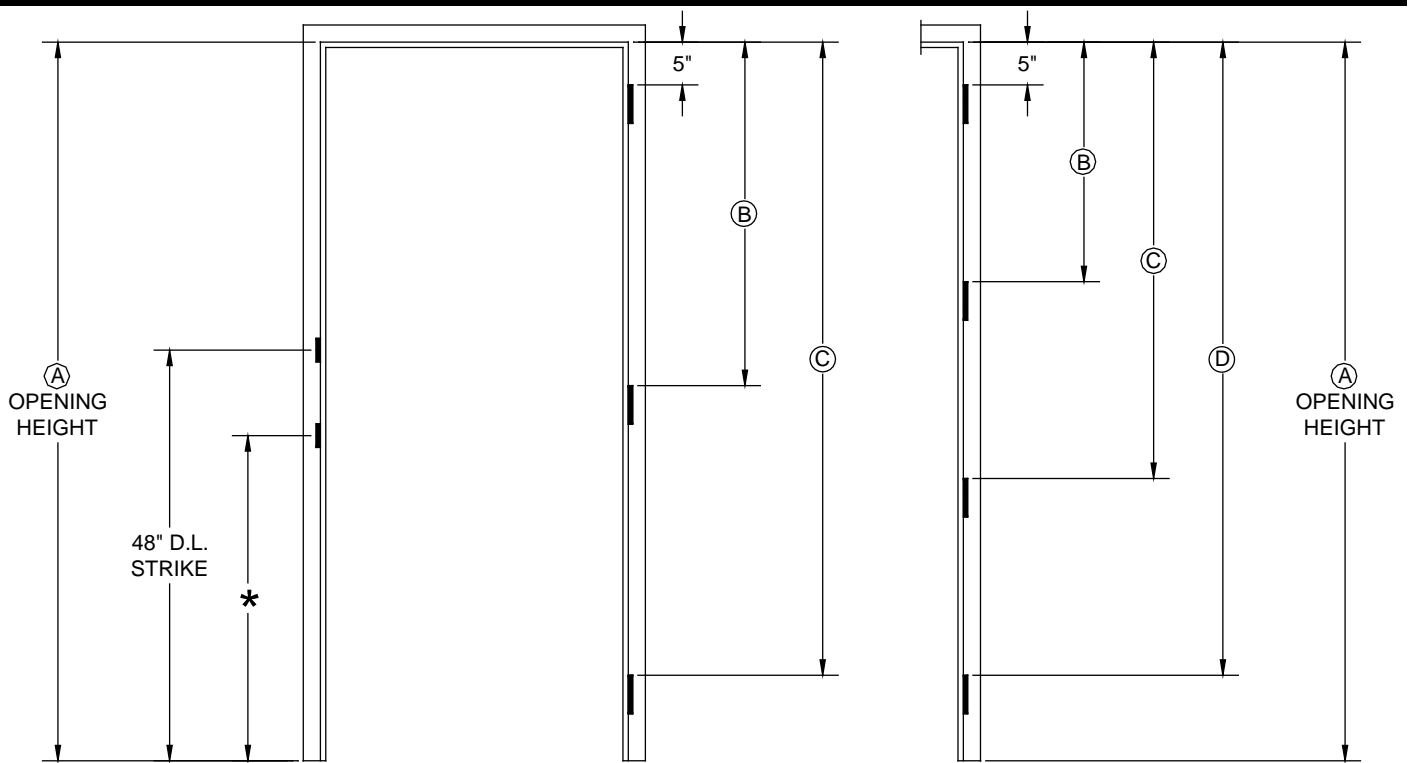
As part of the "harmonization" of both the Amweld and Firedoor Brands of Black Mountain Door, the Firedoor brand began using the Amweld Brand VERTICAL locations (see Tech Data H-1.0) which are more prevalent in the Industry and on hardware templates.

The hinge backset on frames prepared for 4 1/2" and 5" hinges manufactured by the Firedoor Brand will remain at 11/32". The 1/32" smaller hinge backset (5/16") on Amweld Brand frames should present no difficulties with Firedoor Brand doors, especially when beveled doors are used or doors are adjusted to maintain the 1/8" design clearance at hinge edges.

The strike backset and stop to centerline of strike match between the two Brands.



The vertical hinge location charts on this Tech Data are for reference only and apply to standard template 4 1/2" and 5" butt hinges in 2" increments. The locations for both 4 1/2" and 5" hinges are identical when measured to the top of hinges. These hinge locations ARE NOT exactly to the "5-10-equal" formula, but represent vertical locations historically used. Consult Black Mountain Door if dimensions for locations of substantially less common 3 1/2", 4", or 6" hinges, locations for other than 1 3/4" thick doors, or if exact dimensions are needed for use by other trades or other products.



* = 38" TO CENTER OF
 LOCK OR LATCH STRIKE

3 HINGES

4 HINGES

FRAME PREPARATIONS FOR 3 HINGES			
4 1/2" or 5" TEMPLATE BUTT HINGES			
OPENING HEIGHT "A"	"B"	"C"	FIRE-RATED
6'-0" (72")	31 1/4"	57 1/2"	YES
6'-2" (74")	32 1/4"	59 1/2"	YES
6'-4" (76")	33 1/4"	61 1/2"	YES
6'-6" (78")	34 1/4"	63 1/2"	YES
6'-8" (80")	35 1/4"	65 1/2"	YES
6'-10" (82")	36 1/4"	67 1/2"	YES
7'-0" (84")	37 1/4"	69 1/2"	YES
7'-2" (86")	38 1/4"	71 1/2"	YES
7'-4" (88")	39 1/4"	73 1/2"	YES
7'-6" (90")	40 1/4"	75 1/2"	YES
7'-8" (92")	41 1/4"	77 1/2"	NO
7'-10" (94")	42 1/4"	79 1/2"	NO
8'-0" (96")	43 1/4"	81 1/2"	NO
GREATER HEIGHTS NOT RECOMMENDED			

FRAME PREPARATIONS FOR 4 HINGES			
4 1/2" or 5" TEMPLATE BUTT HINGES			
OPENING HEIGHT "A"	"B"	"C"	"D"
6'-8" (80")	25 1/4"	45 1/2"	65 1/2"
7'-0" (84")	26 1/2"	48"	69 1/2"
7'-2" (86")	27 3/16"	49 5/16"	71 1/2"
7'-4" (88")	27 13/16"	50 11/16"	73 1/2"
7'-6" (90")	28 1/2"	52"	75 1/2"
7'-8" (92")	29 3/16"	53 5/16"	77 1/2"
7'-10" (94")	29 13/16"	54 11/16"	79 1/2"
8'-0" (96")	30 1/2"	56"	81 1/2"
8'-2" (98")	31 3/16"	57 5/16"	83 1/2"
8'-4" (100")	31 13/16"	58 11/16"	85 1/2"
8'-6" (102")	32 1/2"	60"	87 1/2"
8'-8" (104")	33 3/16"	61 5/16"	89 1/2"
8'-10" (106")	33 13/16"	62 11/16"	91 1/2"
9'-0" (108")	34 1/2"	64"	93 1/2"
9'-2" (110")	35 3/16"	65 5/16"	95 1/2"
9'-4" (112")	35 13/16"	66 11/16"	97 1/2"
9'-6" (114")	36 1/2"	68"	99 1/2"
9'-8" (116")	37 3/16"	69 5/16"	101 1/2"
9'-10" (118")	37 13/16"	70 11/16"	103 1/2"
10'-0" (120")	38 1/2"	72"	105 1/2"
ALL ABOVE PREPARATIONS MAY BE FIRE-RATED			

DUTCH FRAME PREPARATIONS (4 HINGES)			
4 1/2" or 5" TEMPLATE BUTT HINGES			
OPENING HEIGHT "A"	"B"	"C"	"D"
6'-8" (80")	28 1/2"	43"	65 1/2"
7'-0" (84")	32 1/2"	47"	69 1/2"

SUMMARY AND CERTIFICATION:

Not applicable. This Tech Data is informational only within the bounds of the SCOPE-PURPOSE DESCRIPTION stated.



SCOPE:

This bulletin covers the formula used by Black Mountain Door to determine vertical hinge locations.

PURPOSE:

To provide the reader with a template that can be used in the fabrication of frames.

DESCRIPTION:

The chart on the inside of this bulletin shows the vertical location of hinges and strikes that will be used on Black Mountain Door frames. Several points should be emphasized in the use of this information:

- 1) The issuance of this bulletin does not relieve the reader of the responsibility of noting on his purchase order the specific hinge and strike spacing required for non-standard height units for which he has fabricated frames. We hope the bulletin will save time in the passing of templates but we still want the spacing on record to avoid costly errors in assembling the door.
- 2) Heights above those indicated are so special that a formula cannot be established. Again, please consult with Black Mountain Door for special directions on this point if it is encountered.
- 3) Four-sided access door/frames employ a different hinge spacing than shown enclosed. Please see D-14 for the details of this type of assembly.
- 4) Non-Formula Hardware Spacing. If, for some reason, there is a need for hardware spacing that does not conform to the locations indicated, the distributor must forward an initial copy of the enclosed form with his order. This cannot be handled by telephone. (Note that the form is based on hinge and strike centerlines.) Orders not complying with this requirement will be held in the Black Mountain Door Engineering Department until the form is received.

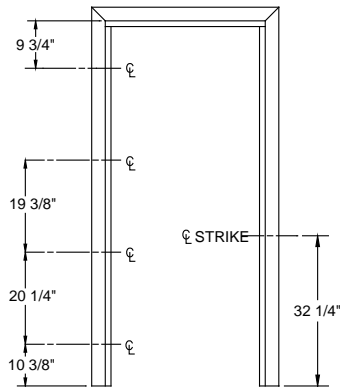
If additional copies of the form are required, they may be obtained through normal Customer Service sources by specifying Part D-9445A.

- 5) While not necessarily to the point of special hardware spacing, it should always be noted that orders for special height and width products be received with the dimension noted as being "nominal" (assuming normal clearances) or "actual". Orders for special height and width products received will not be processed until one of these words is indicated.

SUMMARY:

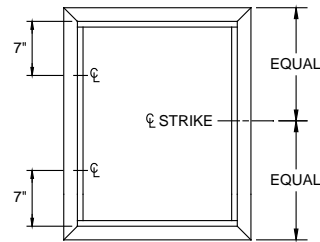
The use of the information in this bulletin should save you time in the fabrication of frames for special height doors.





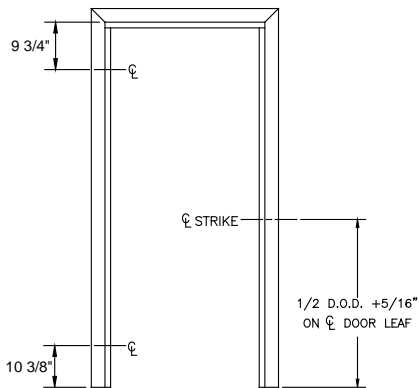
ALL HEIGHTS (1-3/4")

Dutch Door Frames

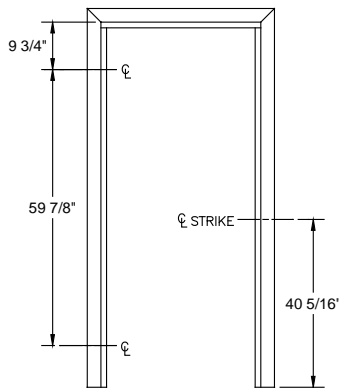


2'-0" TO 5'0"

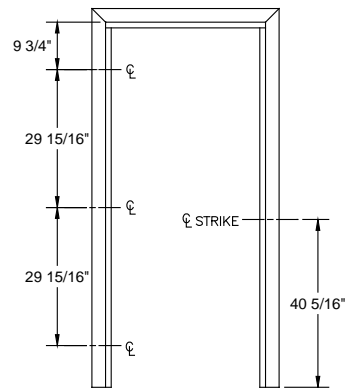
4 Sided Access Frames



3'-0" UP TO 6'-6"
 (NOT INCLUDING 6'-6")

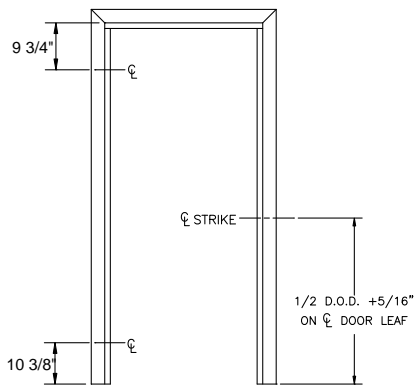


6'-6" UP TO & INCLUDING 7'-2"
 (WITH 2 HINGES)

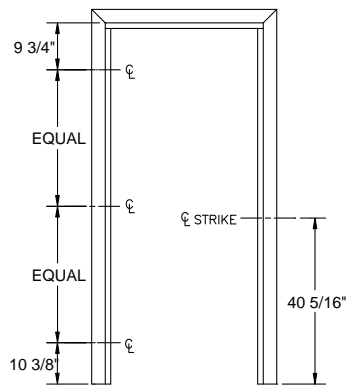


6'-6" UP TO & INCLUDING 7'-2"
 (WITH 3 HINGES)

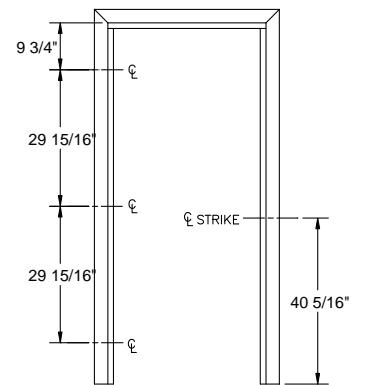
1-3/8" Door Frames



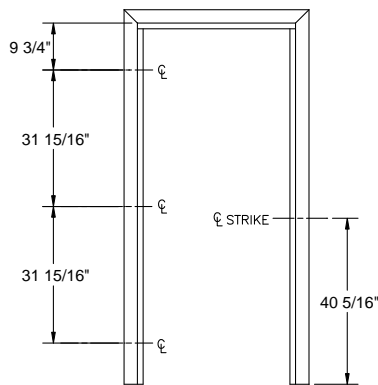
3'-0" UP TO 5'-0"
(BUT NOT INCLUDING 5'-0")



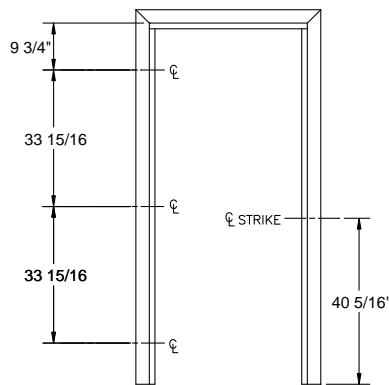
5'-0" UP TO 6'-6"
(BUT NOT INCLUDING 6'-6")



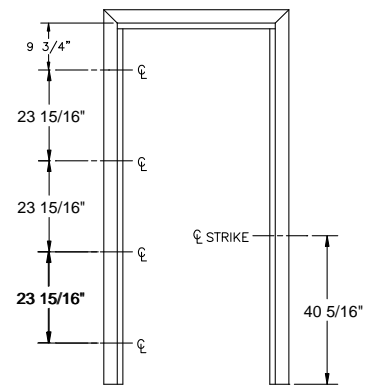
6'-6" UP TO 6'-10"
(BUT NOT INCLUDING 6'-10")



6'-10" TO AND INCLUDING 7'-2"

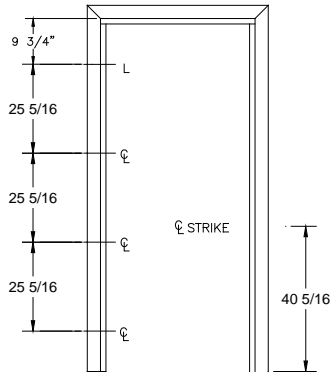


OVER 7'-2" TO AND INCLUDING 7'-6"

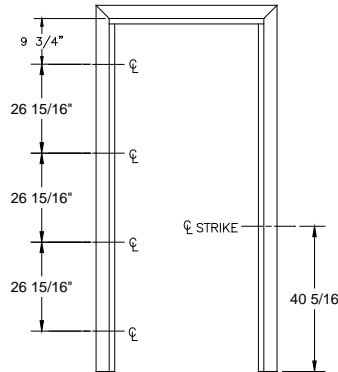


OVER 7'-6" TO 7'-10"
(BUT NOT INCLUDING 7'-10")

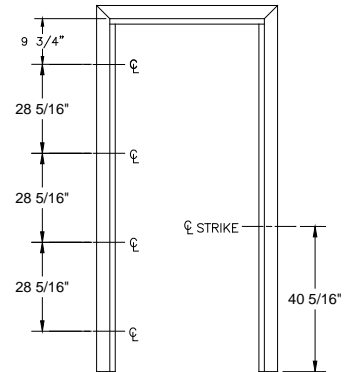
1-3/4" Door Frames



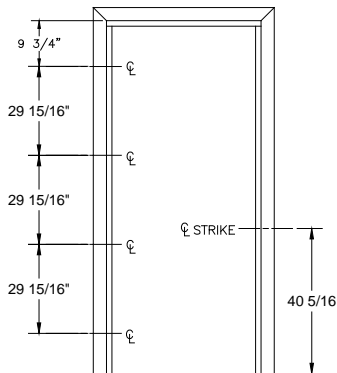
7'-10" TO AND INCLUDING 8'-2"



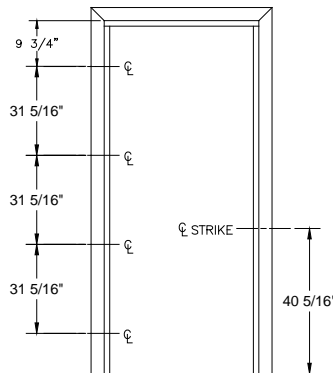
OVER 8'-2" TO & INCLUDING 8'-7"



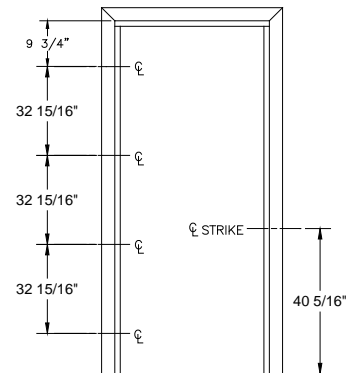
OVER 8'-7" TO & INCLUDING 8'-11"



OVER 8'-11" TO & INCLUDING 9'-4"



OVER 9'-4" TO AND INCLUDING 9'-8"



OVER 9'-8" TO & INCLUDING 10'-0"

1-3/4" Door Frames

SCOPE:

This bulletin covers the reinforcing normal in Black Mountain Door's standard, engineered or custom 300, 07WE, 07LS, 15LE, 17LE, 25LE, 27LE, 35LE, 51LE-53LE, 61LE-63LE, OR 37LE Amweld Series Doors, and 400, 800, 1800 and 2600 Amweld Series Frames.

PURPOSE:

To keep the reader abreast of the latest change in Black Mountain Door's program in this critical area.

DESCRIPTION:

While the enclosed details are clear, a clarification of Black Mountain Door's program as to what is standard, what is engineered or what is custom may be in order.

1) All 1 3/4" doors, with the exception of Series 300 are equipped with the regular closer reinforcing shown in section "F-F". Closer reinforcing must be called for in 300 Series doors. 07WE/07LS Series doors are as shown in section details following.

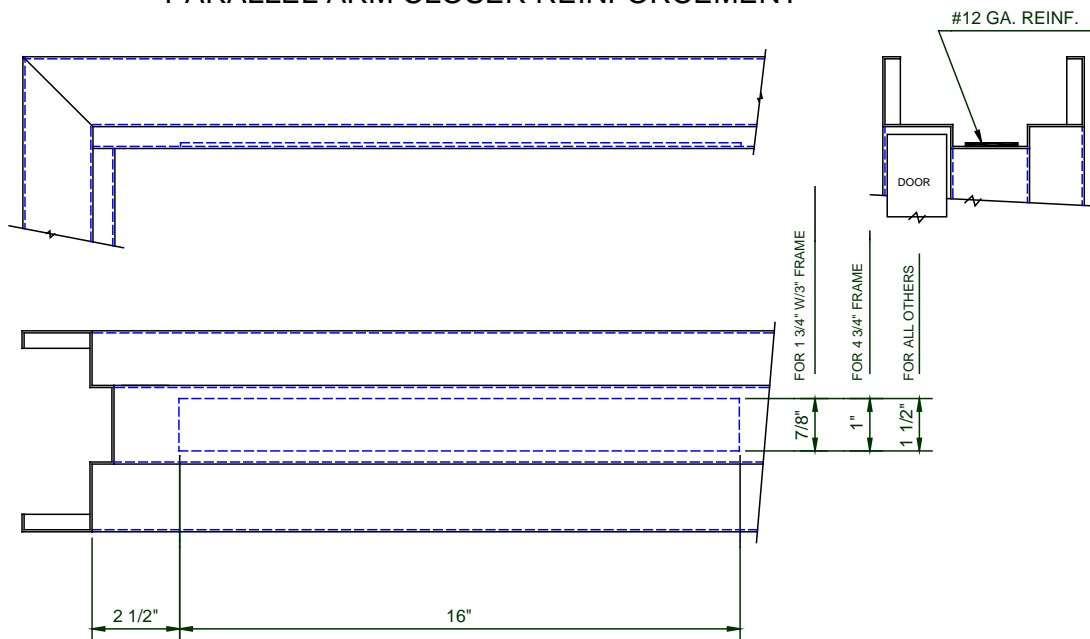
2) The 300, 15LE, 17LE, 25LE, 27LE, 51LE, 53LE, 61LE, 63LE, 35LE, and 37LE series 1 3/4" doors automatically receive flush bolt preparations, but 15LE and 17LE Series 1 3/4" type units can be equipped with the surface bolt reinforcing if specified. Flush bolt reinforcing are available if required in all other 1 3/4" doors and 15LE and 17LE units. 700 Series specify flush or surfaces bolt reinforcing.

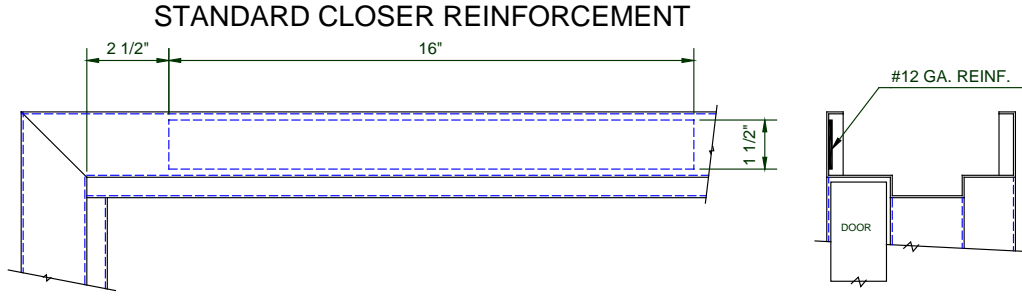
3) All other reinforcing shown are furnished only on an engineered basis in the doors and frames. The frame reinforcing are also available for attachment in the distributors' warehouses.

DETAILS:

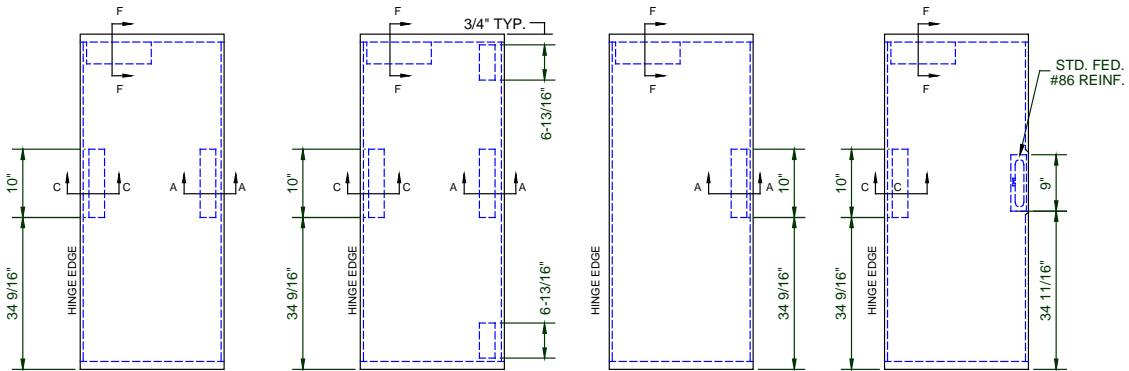
Standard Frame Closer Detail (PAC/SC)

PARALLEL ARM CLOSER REINFORCEMENT





Standard Door Device Reinforcements (LE Style Doors)

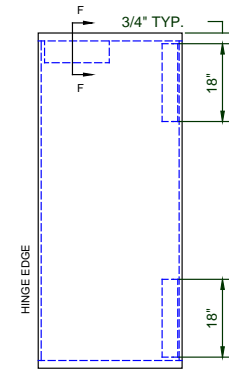


**RIM APPLIED
 PANIC BAR
 REINFORCEMENT
 FOR UL & STD.**

**VERTICAL ROD
 PANIC BAR
 REINFORCEMENT
 FOR UL & STD.**

**PUSH/PULL
 REINFORCEMENT**

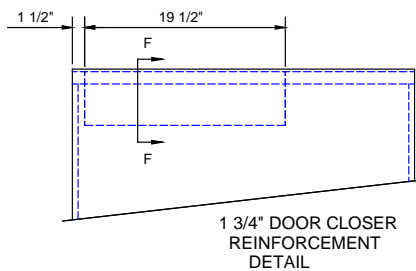
**MORTISED
 PANIC BAR
 REINFORCEMENT
 FOR UL & STD.**



**SURFACE BOLTS
 REINFORCEMENT**

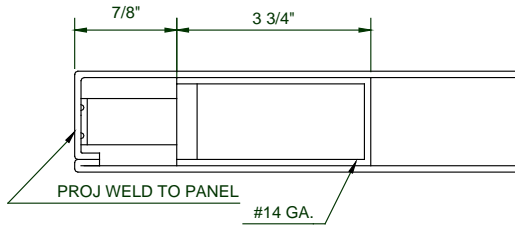


1 3/4" DOOR F-F

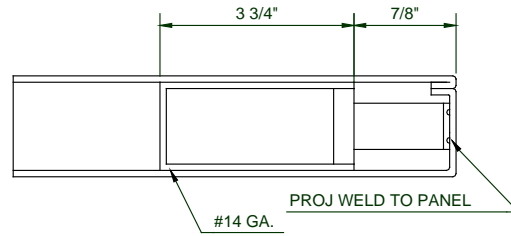


**1 3/4" DOOR CLOSER
 REINFORCEMENT
 DETAIL**

Standard Exit Device Reinforcements (LE Style Doors)



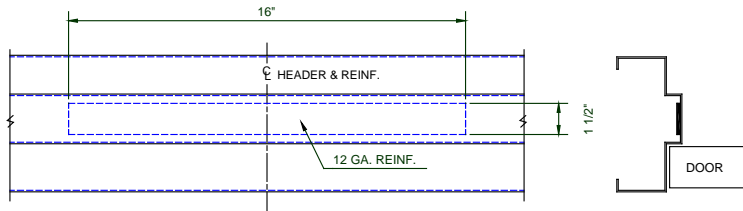
SECTION C--C
 (15LE SERIES)



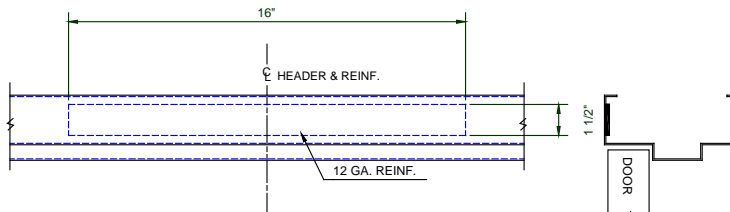
SECTION A--A
 (15LE SERIES)

VR Strike and Surface Bolt Reinforcements

Standard Dutch Door

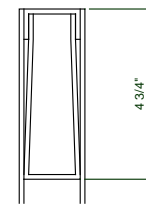
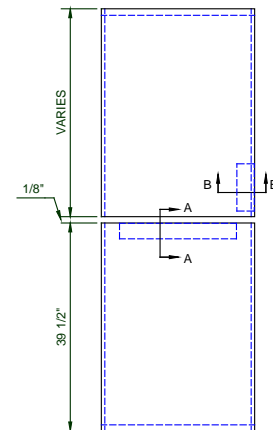


VERTICAL ROD W/ SURFACE STRIKE REINFORCEMENT
 SURFACE BOLT REINFORCEMENT- STOP SIDE OF DOOR

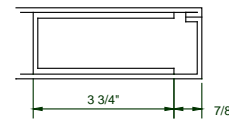


SURFACE BOLT REINFORCEMENT- HINGE SIDE OF DOOR

DUTCH DOOR BOLT AND SHELF REINFORCEMENT
 (MUST BE SPECIFIED ON ORDER)



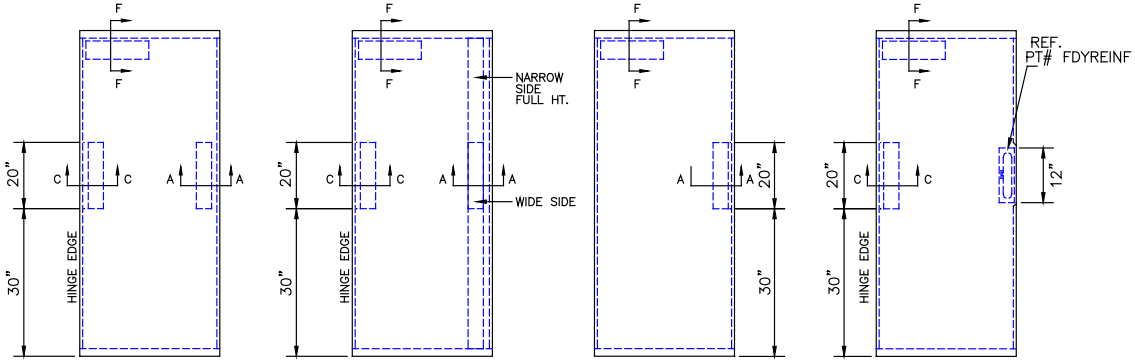
SECTION A-A



SECTION B-B

Continued.

Standard Door Device Reinforcements (WE & LS Style Doors)

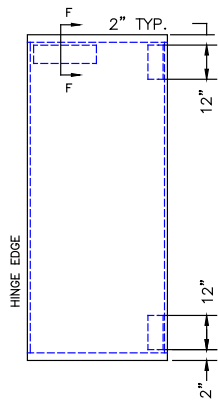


RIM APPLIED
 PANIC BAR
 REINFORCEMENT
 FOR UL & STD.

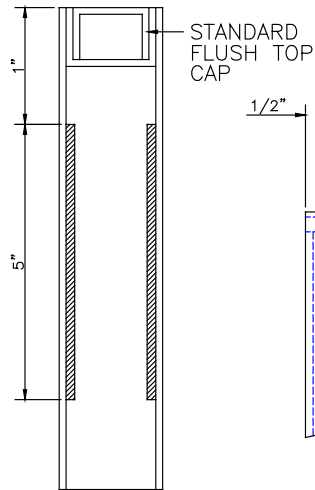
VERTICAL ROD
 PANIC BAR
 REINFORCEMENT
 FOR UL & STD.

PUSH/PULL
 REINFORCEMENT

MORTISED
 PANIC BAR
 REINFORCEMENT
 FOR UL & STD.

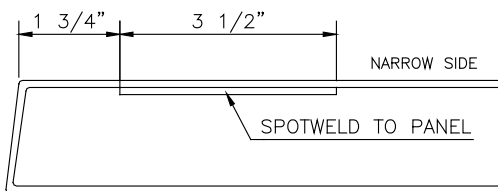


SURFACE BOLTS
 REINFORCEMENT

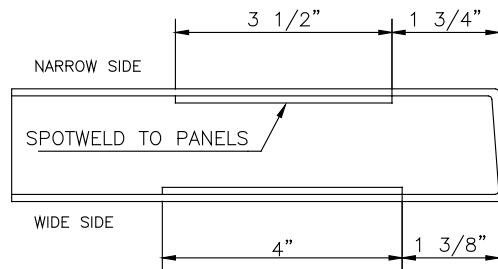


STANDARD CLOSER
 REINFORCEMENT
 DETAIL

SECTION F--F



SECTION C--C



SECTION A--A

SCOPE:

This bulletin covers the standard metal gages in Black Mountain Door hardware reinforcing. For further information refer to ANSI/SDI A250.6 (SDI 107), ANSI A250.8

PURPOSE:

To provide the reader with reinforcement gage information in a convenient format for architectural specification checking.

SERIES	LOCK/ STRIKE	HINGE	CLOSER	PANIC BARS	PULL PLATES & BARS	SURFACE BOLTS	FLUSH BOLTS	DEAD LOCKS
1538-1544 1 3/4"	14 Gage (1)	7 Gage - 5"	12 Gage	14 Gage	14 Gage	14 Gage	14 Gage	14 Gage (1)
300 1 3/4"	14/16 Gage (1)	10 Gage 7 Gage - 5"	12 Gage Opt.	14 Gage	14 Gage	14 Gage	16 Gage	14 Gage (1)
25LE-27LE 15LE-17LE 35LE-37LE 61LE-63LE 1 3/4" X 20 Gage	14 Gage (1)	10 Gage	12 Gage	14 Gage	14 Gage	14 Gage	14 Gage	14 Gage (1)
15LE-17LE 45LE-47LE 25LE-27LE 35LE-37LE 1 3/4" X 16 & 18 Gage	14 Gage (1)	10 Gage 7 Gage	12 Gage	14 Gage	14 Gage	14 Gage	14 Gage	14 Gage (1)
400-600-2600 Series 1 3/4" Door Frame	16 Gage (4 7/8" Strike)	10 Gage Std., 7 Gage available in 400 Series	12 Gage Opt.	--	--	14 Gage	14 Gage	14 Gage
07WE Series 1 3/4"	14/12 Gage	7 Gage	12 Gage	14 Gage	14 Gage	12 Gage	12 Gage	14/12 Gage

- (1) Thinner steel may be employed as long as tapped holes used for mounting the hardware are extruded to produce an equivalent number of threads. (Ref. ANSI/SDI A250.8)

ANSI/SDI A250.8, the standard door and frame industry's standard specification, indicates the following hardware reinforcing gages as the industry norm. These same gages appear in the DHI's brochure "Hardware reinforcements for Steel Doors & Frames".

HARDWARE	DOOR THICKNESS	FRAME
Hinge 1 3/4" (44mm) Door**	.123" (3mm)***	.123" (3mm)***
Mortise Lock or Deadbolt**	.067" (1.6mm)	.067" (1.6mm)
Bored Lock or Deadbolt**	.067" (1.6mm)	.067" (1.6mm)
Flush Bolt Front**	.067" (1.6mm)	.067" (1.6mm)
Surface Bolt****	.067" (1.6mm)	.067" (1.6mm)
Surface Applied Closer****	.067" (1.6mm)	.067" (1.6mm)
Hold Open Arms****	.067" (1.6mm)	.067" (1.6mm)
Pull Plates and Bars****	.053" (1.3mm)	.053" (1.3mm)
Surface Exit Device****	.067" (1.6mm)	.067" (1.6mm)
Floor Checking Hinges	.167" (4.2mm)	.167" (4.2mm)
Pivot Hinges	.167" (4.2mm)	.167" (4.2mm)
Kick Plates / Pull Plates	Not Required	Not Required

* Minimum steel thicknesses are derived from minimum thickness for specific gages as defined by Underwriters Laboratories Inc.

** A thinner steel may be employed as long as tapped holes used for mounting the hardware are extruded to produce an equivalent number of threads.

*** If reinforcing is angular or channel shaped, .093" (2.4mm) is permitted.

**** When reinforcing is omitted and thru-bolting is required, the use of spacers or sex-bolts is required.

SCOPE:

This bulletin covers Black Mountain Door's version of a common preparation for standard and heavy duty hinges in our standard doors and frames.

PURPOSE:

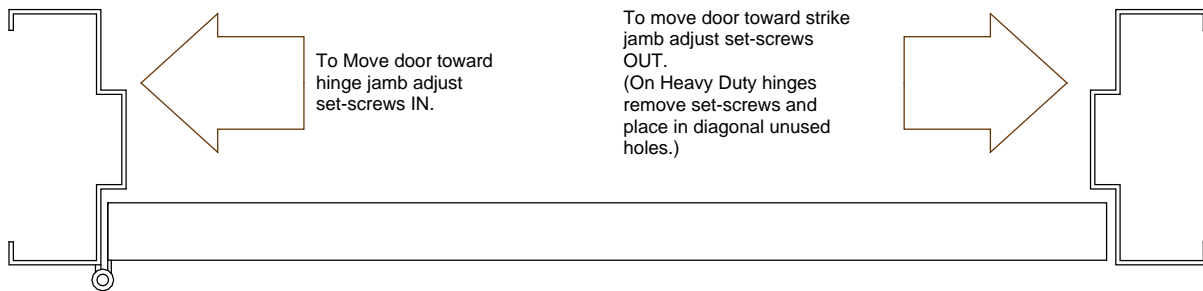
To provide the unique details of this program.

DESCRIPTION:

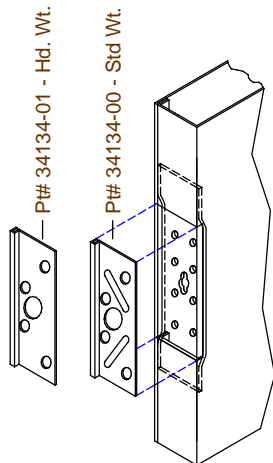
With Black Mountain Door's 4 1/2" hinge preparation, it is now possible to easily convert from standard weight to heavy duty hinges. This is only available on 4 1/2" 10 gage hinge reinforcing.

Doors Covered: 1 3/4", 15LE, 17LE, 25LE, 27LE, 35LE, 37LE, 45LE, 47LE, 61LE, 63LE, 05WE, 05LS Amweld & Firedoor series. (Square Edge Doors)

Frames Covered: All series of our 1 3/4" frames with 10 gage reinforcing. With our frame detail, in addition to the hinge conversion, it is now possible to adjust the door clearances along the hinge and strike jambs.



ADJUSTING DOOR CLEARANCE



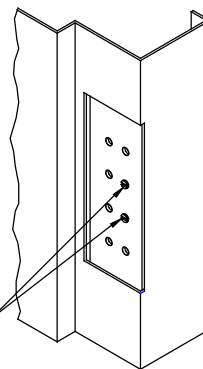
COMMON DOOR PREPARATION IN 15LE SERIES

The 4-1/2" hinge filler has raised embossments to handle standard duty hinges.

Pt# 34134-00 Supplied with Standard Door or Custom Door with Option: 4.50 Denoted.

When heavy duty hinges are required flatten out embossments or order hinge fillers without embossments.

Pt# 34134-01 Supplied on Custom Door. When Option: 45HD Denoted.



Each 4-1/2" frame hinge reinforcing will have two(2) set-screws in place as shown for standard duty hinges.

When heavy-duty hinges are required adjust set-screws in until they are flush with top of reinforcing.(alt: Remove set-screws)

COMMON PREPARATION IN 1-3/4" FRAME

SCOPE:

This bulletin covers Black Mountain Door's version of a common preparation for standard and heavy duty hinges.

PURPOSE:

To provide the unique details of this program.

DESCRIPTION:

With Black Mountain Door's 5" hinge preparation, differences between standard and heavy duty weight hinges are addressed using subsequent hinge reinforcement backsets based on the option being ordered.

Doors Covered: 1 3/4", 15LE, 17LE, 25LE, 27LE, 35LE, 37LE, 45LE, 47LE, 61LE, 63LE, 05WE, 05LS Amweld Series. (Square Edge Doors) All 5" Hinge reinforcements for the doors covered will be constructed of 7 Gage materials.

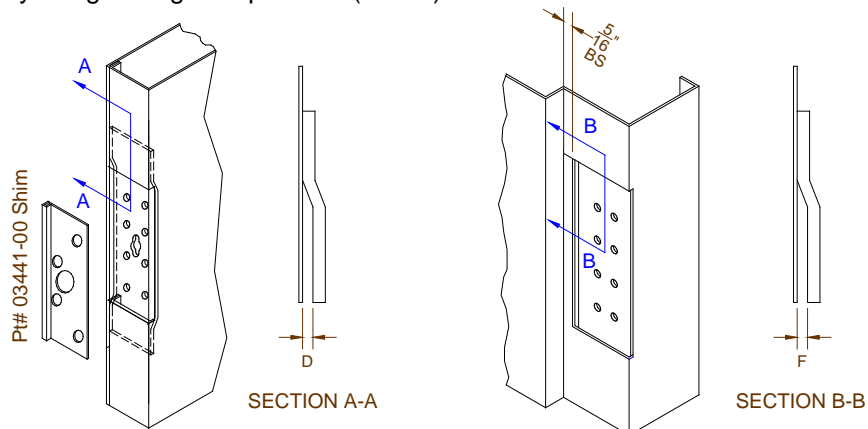
Available Door Options:

- 507 - 5" Standard Weight Hinge Preparation (7 Ga) - Pt# 03441-00 Hinge Shim
- 5HD - 5" Heavy Duty Weight Hinge Preparation (7 Ga) - Pt# 03441-00 Hinge Shim

Frames Covered: All series of our 1 3/4" frames with 10 or 7 gage reinforcing based on the option selected. Set screws are not supplied with 5" hinge preparations.

Available Frame Options:

- 500 - 5" Standard Weight Hinge Preparation (10 Ga)
- 507 - 5" Standard Weight Hinge Preparation (7 Ga)
- 5HD - 5" Heavy Weight Hinge Preparation (7 Ga)
- 5H1 - 5" Heavy Weight Hinge Preparation (10 Ga)



**COMMON DOOR
 PREPARATION**

**COMMON FRAME
 PREPARATION (1-3/4")**

DOOR OPTION	HINGE TYPE	-D- REINF OS.	REINF. PART#
507	STD WT. (.134)	0.125	HINGEREINF507
5HD	HD WT. (.180)	0.1719	HINGEREINF50HD

FRAME OPTION	HINGE TYPE	-F- REINF OS.	REINF. PART#
500	STD WT. (.134)	0.086	14171-00
507	STD WT. (.134)	0.086	24901-00
5HD	HD WT. (.180)	0.141	24901-01
5H1	HD WT. (.180)	0.141	64155-02

SCOPE:

This bulletin covers the use of anchor hinges on Black Mountain Door's doors and frames.

PURPOSE:

To inform the reader of Black Mountain Door's program when this type of hinge is specified.

DESCRIPTION:

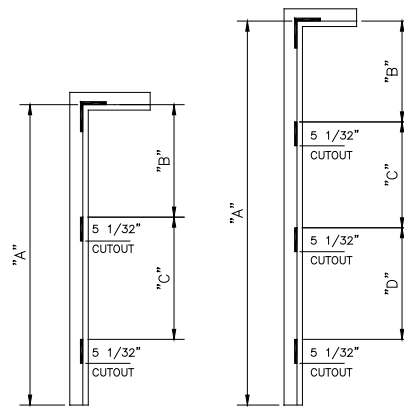
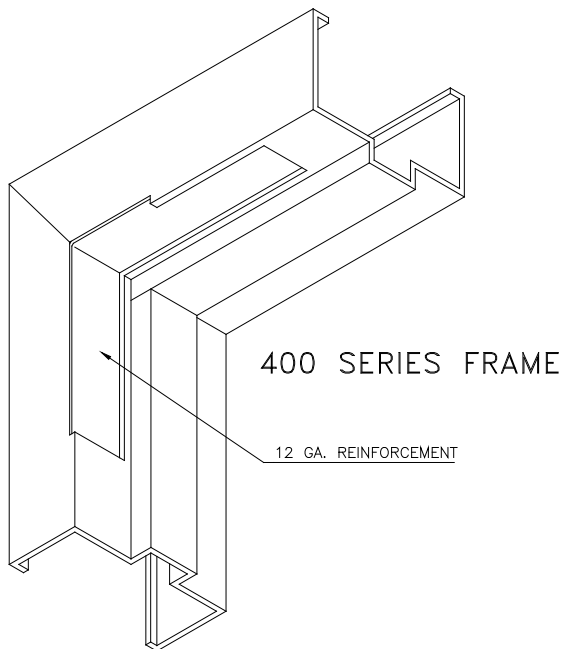
This type of hinge was primarily designed for use on wood doors being hung in wood or metal frames where they are a requirement for heavy duty openings.

Although we are not in complete favor of the anchor hinge for use on steel doors, we will prepare for this hinge.

However, the following points must be kept in mind.

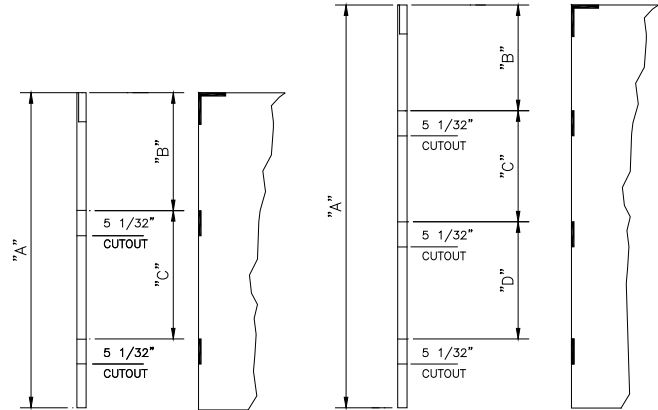
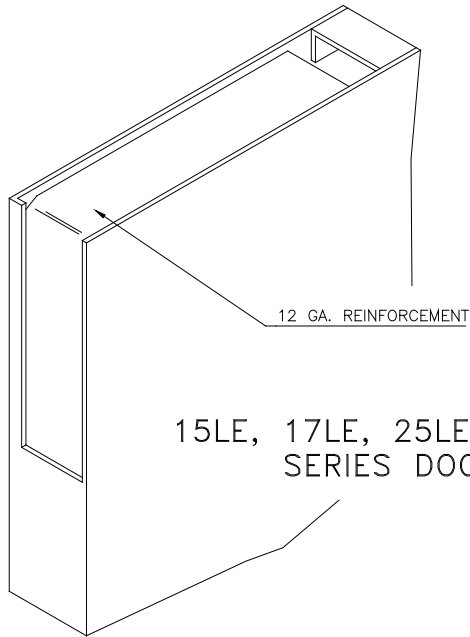
- 1) The drilling and tapping required to receive the anchor hinge itself and the notching of the face of the door to establish the hand will be done in the field. We have found these hinges have not always been made to template. In addition, adjustments must be made in the field, to compensate for imperfect installation.
- 2) In addition to the anchor hinge, the door and frame are prepared to receive one pair (1 1/2 pairs for 8'0" units) of extra heavy duty 5" x 4 1/2" hinges. (Refer to chart for Black Mountain Door spacing.)
- 3) Frames are only furnished spot-welded or welded and ground smooth or knock down without the anchor hinge reinforcement welded in.

FRAME PREPARATION:



DIM "A" (FRAME OPNG. HEIGHT)	DIM "B"	DIM "C"	DIM "D"
6'-8"	33 41/64"	33 15/32"	————
7'-0"	35 41/64"	35 15/32"	————
7'-2"	35 41/64"	35 15/32"	————
7'-10"	27 17/64"	26 59/64"	26 59/64"
8'-0"			

DOOR PREPARATION:



NOMINAL DOOR HEIGHT	DIM "A"	DIM "B"	DIM "C"	DIM "D"
6'-8"	79 1/8"	33 33/64"	33 15/32"	_____
7'-0"	83 1/8"	35 33/64"	35 15/32"	_____
7'-2"	85 1/8"	35 33/64"	35 15/32"	_____
7'-10"	93 1/8"	27 9/64"	26 59/64"	26 59/64"
8'-0"	95 1/8"			

SCOPE:

This bulletin covers Black Mountain Door's 1 3/4" doors with ANSI/BHMA A115 bored lock preparation and Amweld Series 400 frames prepared for the ANSI/BHMA A115 (4 7/8" universal) strike. It also covers the use of extended backsets in glazed doors.

PURPOSE:

To show the widespread availability of bored locks with 2 3/4" backset and the 4 7/8" "universal" strike, and the use of 3 3/4" and 5" backsets with Black Mountain Door doors.

BORED LOCK x EXTENDED BACKSETS:

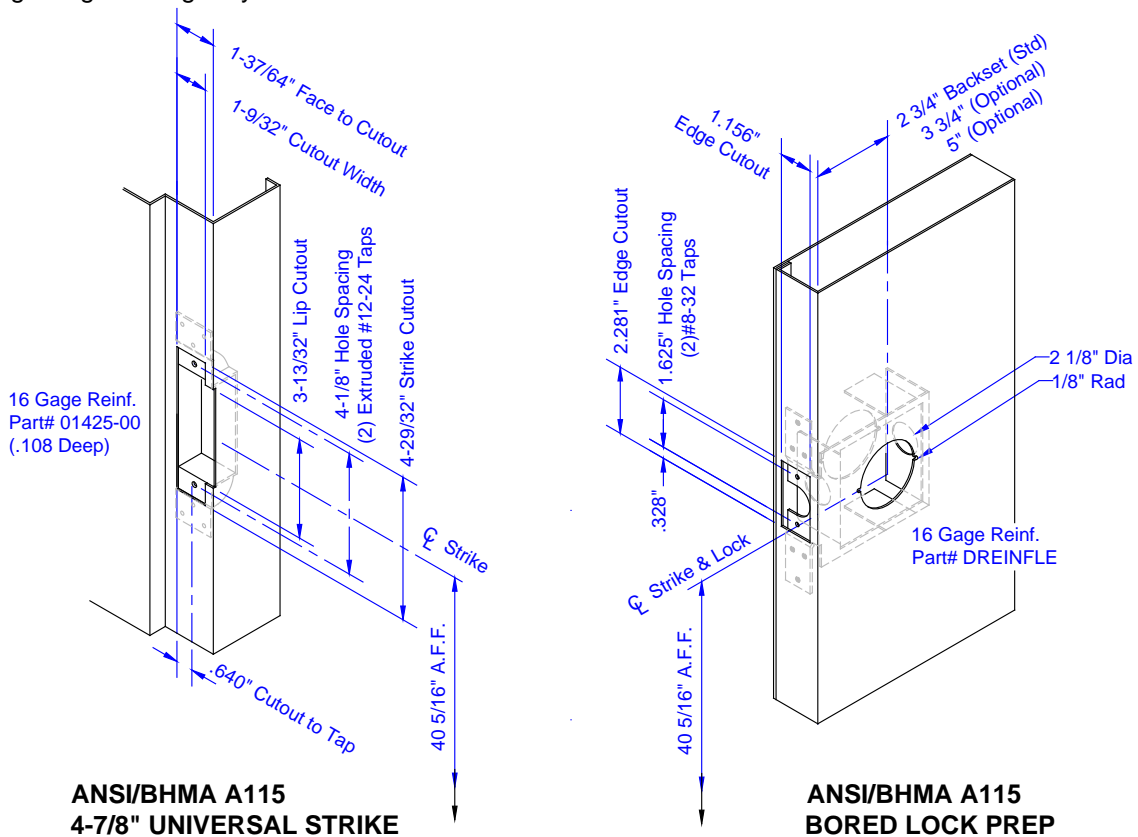
Doors with 3 3/4" and 5" backsets are available on an engineered basis. Special consideration must be given when glazed doors are specified. The following are combinations to be considered.

V-N520-N425-N333 DOORS (Vision Lite & Narrow Lite Doors)

- 1) 3 3/4" and 5" backset bored locks can be used with V lites in all series of doors except our 300 Series.
- 2) 3 3/4" and 5" backset bored locks cannot be used with N520, N425 and N333 lites in any series of doors because of obvious interference with lite.

G DOORS (Half Glass Doors)

- 1) 3 3/4" backset lock preparations are available in our 07WE, 15LE - 17LE, 25LE - 27LE and 35LE - 37LE Amweld Series doors. Our 300 Series door cannot be used because the tubular stile door construction.
- 2) Only standard door heights (6'8", 7'0", 7'2", 8'0"), standard "G" series glass cutouts and our normal lock height should be used since interference may be encountered if any of these are altered.
- 3) Please note that any escutcheon with a diameter larger than 3" should not be specified since interference with the glazing molding may result.



SCOPE:

This bulletin covers Black Mountain Door's 1 3/4" doors with mortise lock preparation.

PURPOSE:

To emphasize the universal compliance of our units in this respect.

DESCRIPTION:

The enclosed details cover all function holes required for ANSI/BHMA A115 mortise locks.

It is significant to note the 4 7/8" ANSI/BHMA A115 strike is standard with these devices in every case.

The preps shown are designed to accept the full escutcheon type trim.

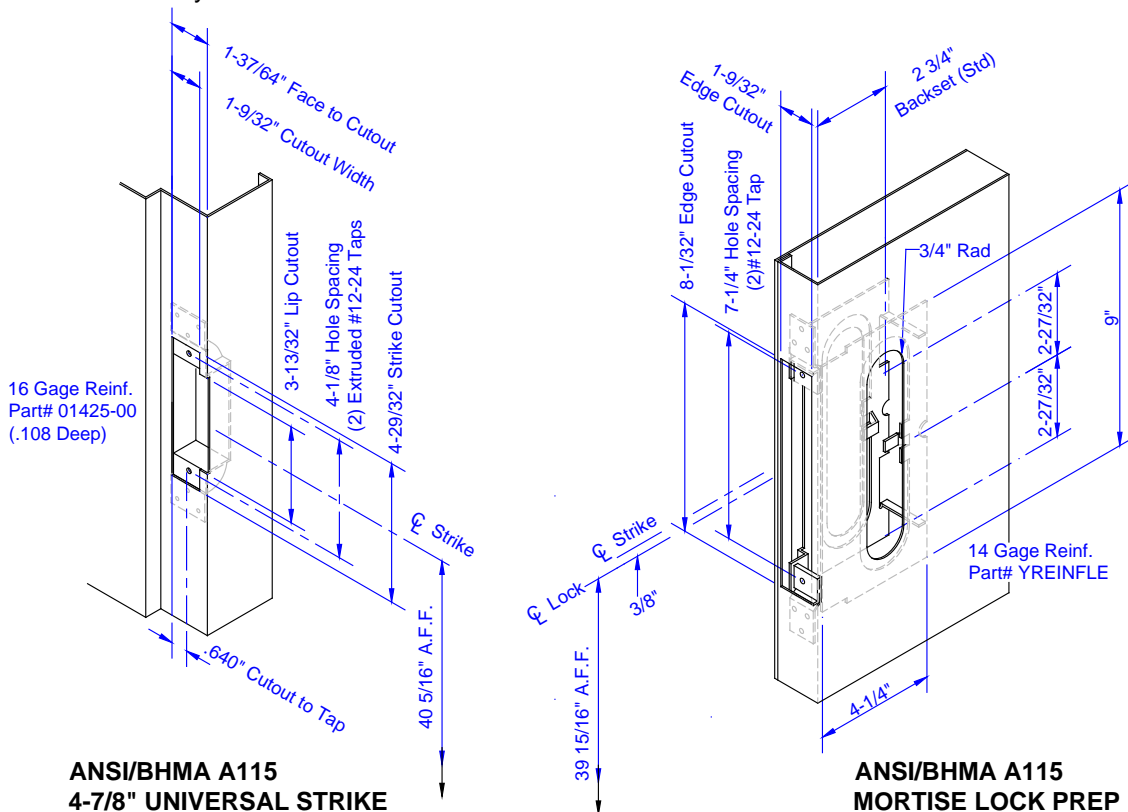
A change in the door face preparation was made to accommodate as much as possible the thru-bolted full escutcheon trim per ANSI/BHMA A115. Unfortunately no one has been able to devise a preparation that will cover all the manufacturers.

If trim is questionable, Black Mountain Door suggests checking manufactures template against preparation of door face.

Black Mountain Door also offers sectional trim preparation where escutcheon trim is not required.

SUMMARY:

Black Mountain Door doors with mortise locks preparations are engineered for maximum compatibility with the builders hardware industry.



SCOPE:

This bulletin covers the preparation in Black Mountain Door's standard 1 3/4" doors and standard frames when manual flush bolts are specified.

PURPOSE:

To advise the reader of the reversibility of this frame preparation and the standard top bolt location on doors.

DESCRIPTION:

The details enclosed conform to those established by ANSI/BHMA in their publication A115.

They are available in Amweld Series 300, 15LE/17LE, 35LE/37LE, 1 3/4" doors as well as Amweld 400 and 2600 Series frames.

The header preparation is designed in such a way to make it non-handed. It is Black Mountain Door's policy to prepare all doors and frames as shown when the flush bolt preparation is specified.

The centerline of the bolt will vary from the top of the door, depending on the height of the opening specified.

The following chart will serve as a reference guide to determine the correct bolt location. The bottom bolt preparation is constant at 12".

Centerline - Top Bolt	Door Opening Height
12"	6'8" to 7'6"
24"	Over 7'6" to 8'6"
36"	Over 8'6" to 9'6"
48"	Over 9'6" to 10'0"

Other preparations and down-sets are available as may be necessary for automatic or semi-automatic flush bolts.

If preparation requires a deviation from that specified herein, make specific notation on your order and forward a template.

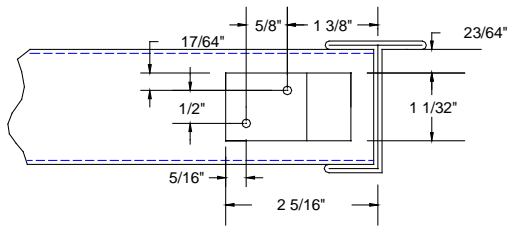
SUMMARY:

This program is another example of Black Mountain Door's policy of manufacturing doors with maximum hardware flexibility and a minimum of special handling.

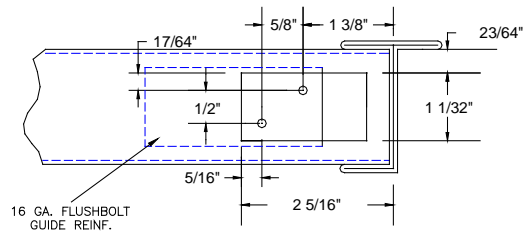
Details on following Pages...



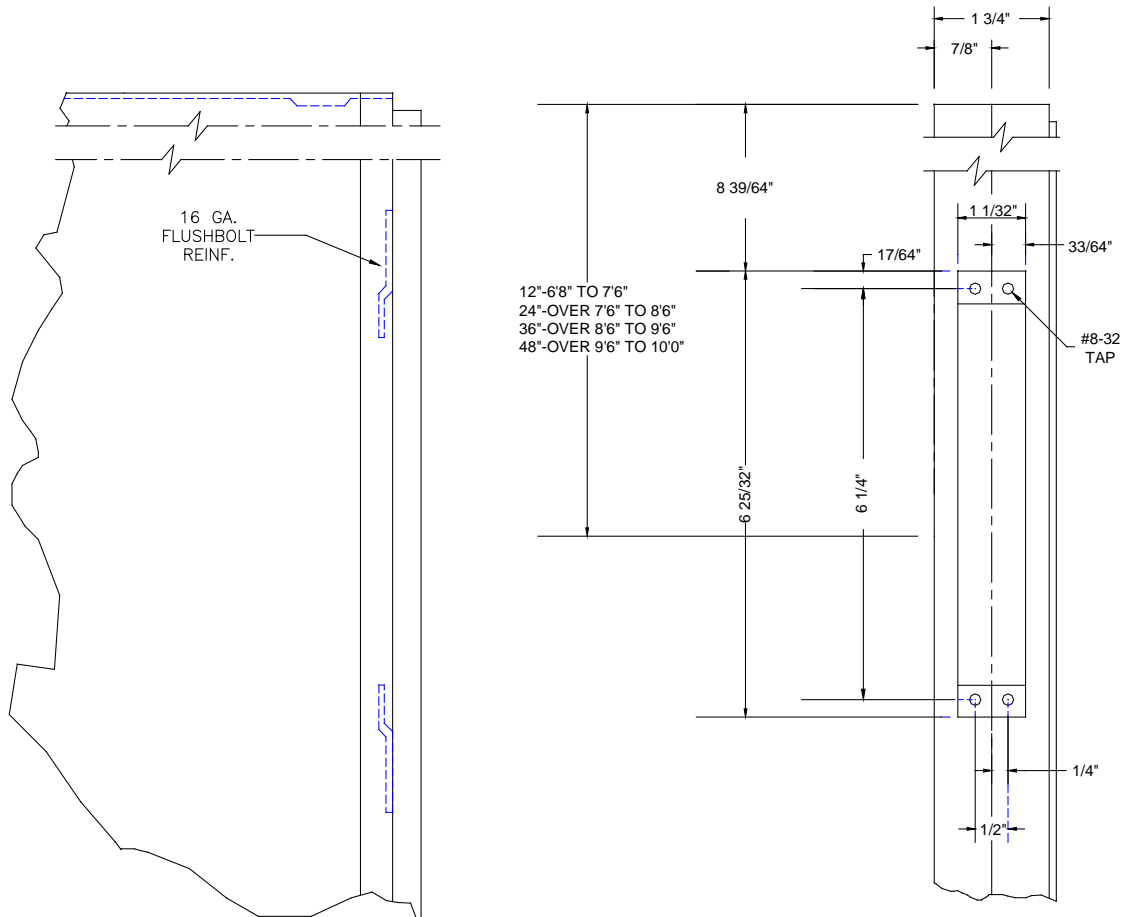
STANDARD DOOR FLUSH BOLT DETAILS:



15LE-17LE SERIES DOOR

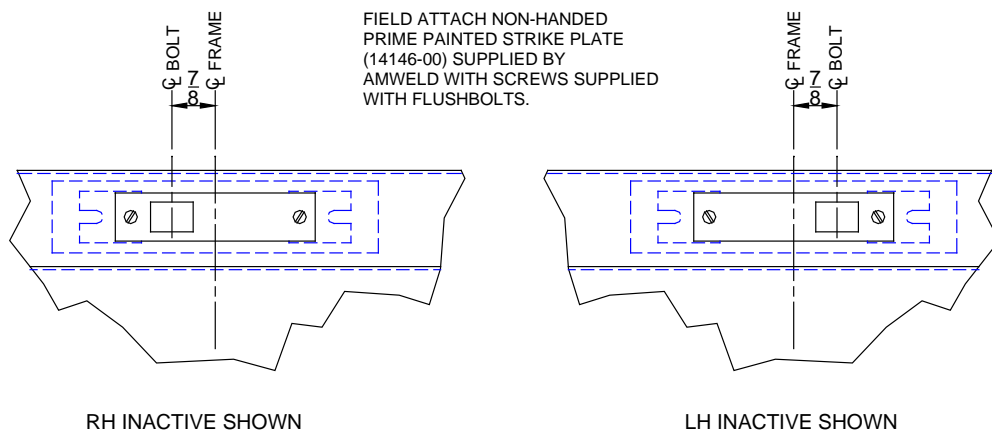
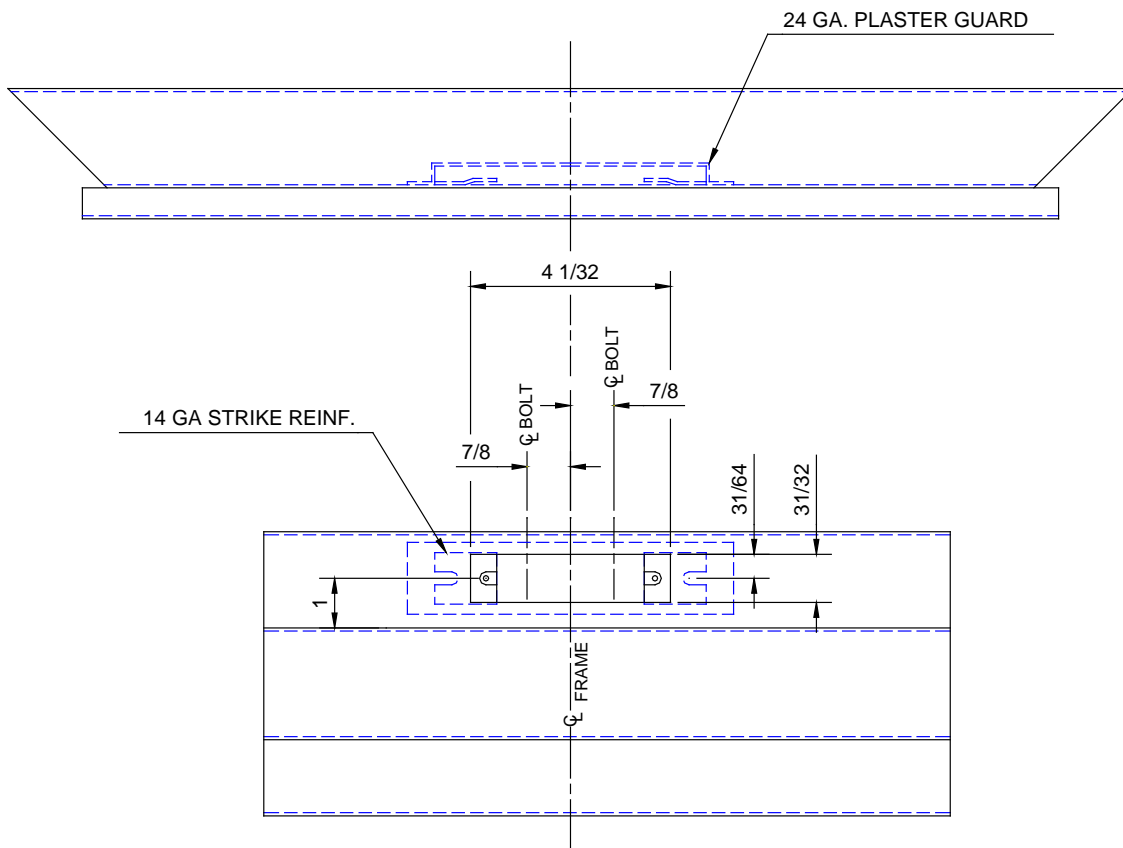


300 SERIES DOOR



300, 15LE & 17LE, 35LE & 37LE SERIES 1 3/4" DOORS
ANSI/BHMA A115 FLUSHBOLT

STANDARD FRAME FLUSH BOLT DETAILS:



ANSI/BHMA A115 FLUSHBOLT
400 & 2600 SERIES FRAME
NON-HANDED FLUSHBOLT

SCOPE:

This bulletin defines Black Mountain Door's policy relating to double acting type hardware.

PURPOSE:

To provide a definitive statement concerning the relationship of frame opening widths, door widths, edge configuration and preparations.

DESCRIPTION:

Hardware for double acting openings generally falls into two categories:

1. Hinges
2. Pivot Sets

Previously, Black Mountain Door increased header lengths (where required) in order to utilize standard width doors. This practice has now been discontinued.

To preserve the utilization of standard frame header sizes, doors will be undersized as needed for operating clearance. Note also that Black Mountain Door does not manufacture a bullnose edge door in any series. Doors will be manufactured as square edge, including steel stiffened doors.

DOUBLE ACTING HINGES

The three most common types are the mortise type, half surface type and clamp flange type, as illustrated on page 2.

Mortise types are surface mounted to cased opening frames and mortised into the door edge. Frames may or may not require a hanging strip or soffit for mounting of hinges. Black Mountain Door's preferred hinge types incorporate an undersized door leaf that will fit into a 4 1/2" (or 3 1/2") template hinge mortise. When using these hinges, consult the hinge manufacturer's literature for door size or weight limitations, especially when using Black Mountain Door standard hinge location.

Half surface hinges are surface mounted to a cased opening frame and to the face of the door. These are more commonly used on wood doors, but may be used on hollow metal doors with proper reinforcing.

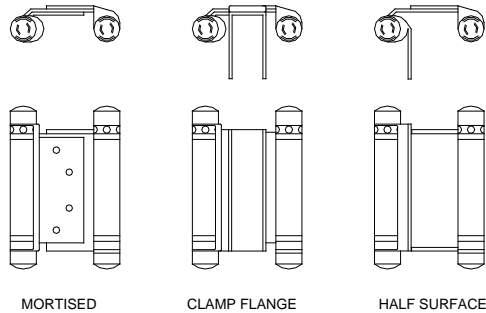
Clamp flange hinges are surface mounted to a cased opening frame. The box type flange wraps around the door edge and both faces, or doors may be notched to clear the hinge to reduce hinge edge clearance. Installation onto the door is usually by thru-bolts.

When using or specifying any of the above hinges, consult the hinge manufacturer's literature for door size or weight limitations, especially when using Black Mountain Door standard hinge locations. In many cases, non-standard vertical locations are suggested by the manufacturer. These may be requested by using Form D9445A.

Most of the hinges are also "non-template". It is mandatory to request a template from the hinge manufacturer to be included with your order to Black Mountain Door. In addition, the hinge manufacturer may require special operational clearances. A layout should also accompany your order to Black Mountain Door.



Types of Double Acting Hinges:



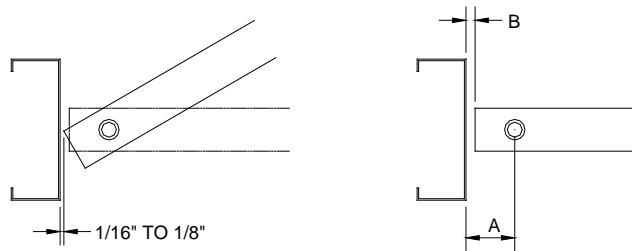
DOUBLE ACTING PIVOT SETS

Recent changes to ANSI/DHI documents affect preparations previously used by Black Mountain Door.

Since there is no longer an applicable American National Standard, template coordination becomes paramount. Black Mountain Door's doors (unless requested otherwise) will be undercut 3/4" in accordance with ANSI A250.10-98. In some cases this may leave bottom pivot arms exposed. It is therefore important to enclose a sketch of threshold conditions (if any) or special pivot shaft extensions, especially in the case of a jamb mounted bottom pivot.

Since Black Mountain Door's doors are square edge design, center hung or double acting pivots may require additional operating clearance at the hinge side. This clearance will allow a minimum of 1/16" clearance for the corners of doors to clear frames.

Reference illustration below.



PIVOT LOCATION A	HINGE EDGE CLEARANCE B
1 5/16"	1/2"
1 3/4"	3/8"
2"	3/8"
2 3/8"	3/8"
2 3/4"	1/4"
3 1/4"	1/4"

This chart shows hinge side clearances for common pivot point locations.

SCOPE:

This procedure details lever handle cylindrical lock preparations incorporating thru-bolt slots complying with ANSI A115 for 15LE-17LE-25LE-27LE-35LE-37LE-45LE-47LE-61LE-63LE Amweld series 1 3/4" thick doors.

Black Mountain Door's "T" preparation will also accept the Yale 5400LN and Sargent 6500 line where template dimensions do not fit the ANSI standard.

DESCRIPTION:

The flat area of door stiles must be at least 5 1/4" in order to fit most lever/rose combinations. (It cannot be used on 61LE-63LE doors under 3'0" except at 2'8" doors ordered as "NR6126" or "NR6326".) In addition, overlap type vision lite moldings may require special stile widths.

NOTE:

The detail on H-13.0 page 2 of this TECH DATA indicates an overall dimension of 3 1/4". It is therefore obvious that rose diameters must be somewhat larger than 3 1/4" in order to cover the preparation. It is the Distributor's responsibility to verify that the rose diameter of the lock specified is compatible with the cutout dimensions indicated.

KEEP IN MIND THAT THIS IS AN ANSI STANDARD PREPARATION developed through DHI and endorsed by (for example) SDI and BHMA.

Verification of compatibility may be done by consulting the Lock Manufacturer's TEMPLATE BOOKS or CATALOGS for an indication of compliance to ANSI A115. Most hardware Manufacturers will be able to confirm this.

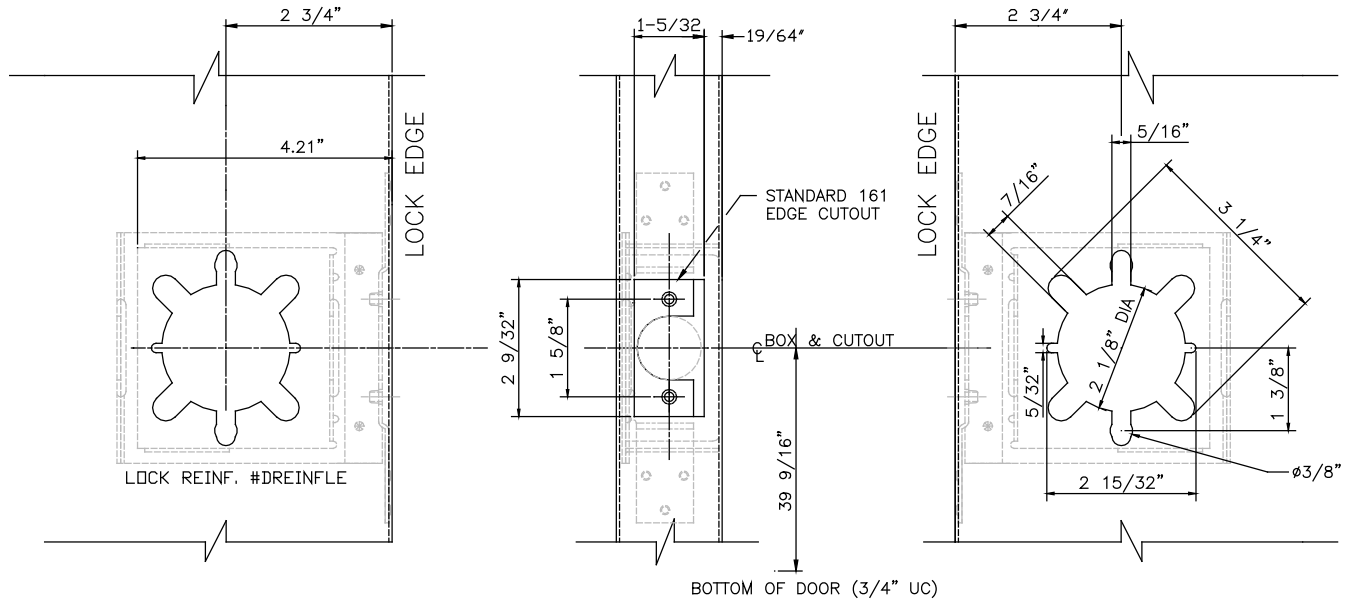
We suggest you take some time to review this TECH DATA with your lock supplier to assure you do not experience compatibility problems.

Details on page 2 of this document.



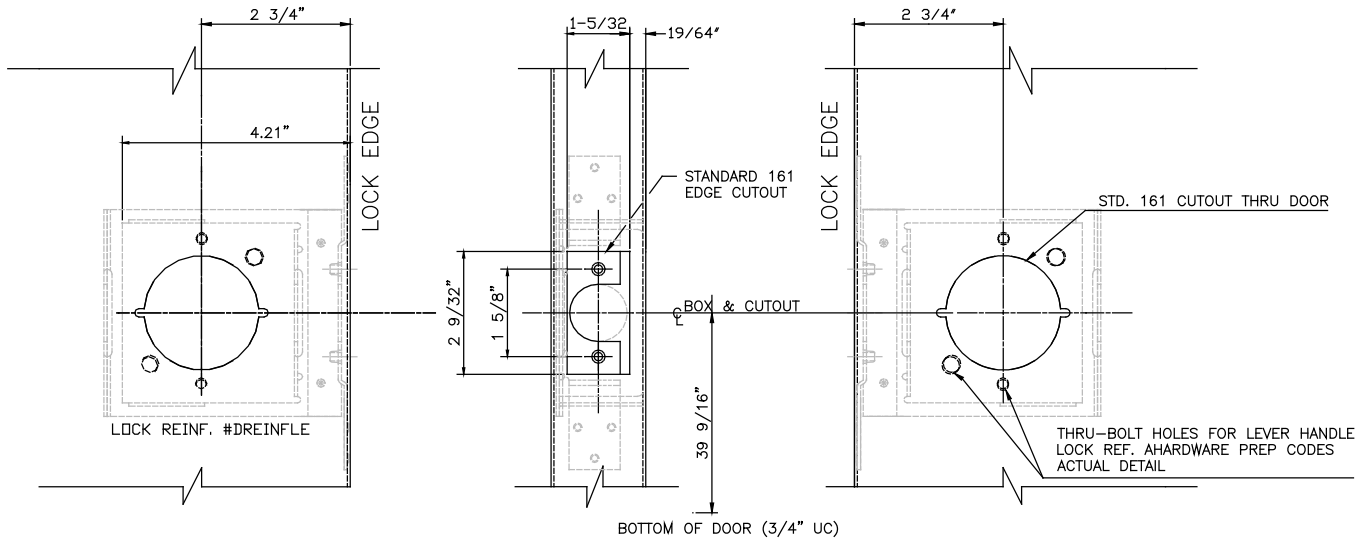
LOCK OPTION – “T”:

LEVER LOCK REINFORCEMENT & ASSEMBLY DETAIL FOR 15LE SERIES THRU-BOLTED 161 CYLINDRICAL LOCK – ANSI A115.



LOCK OPTION – “L”:

LEVER LOCK REINFORCEMENT & ASSEMBLY DETAIL FOR 15LE SERIES THRU-BOLTED 161 CYLINDRICAL LOCK – ANSI A115.



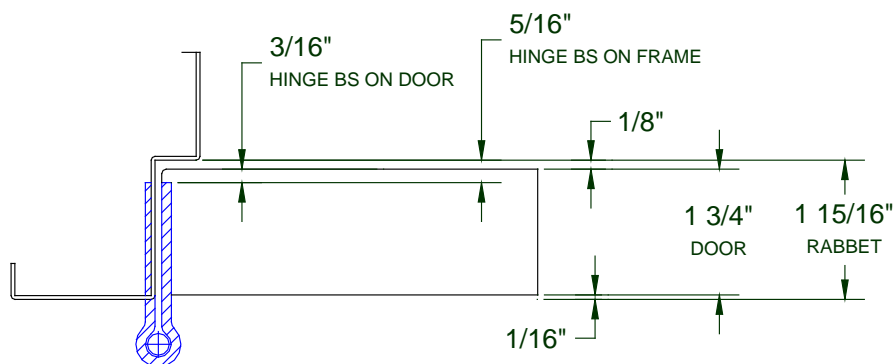
SCOPE:

This bulletin shows details of Black Mountain Door's standard hinge backset.

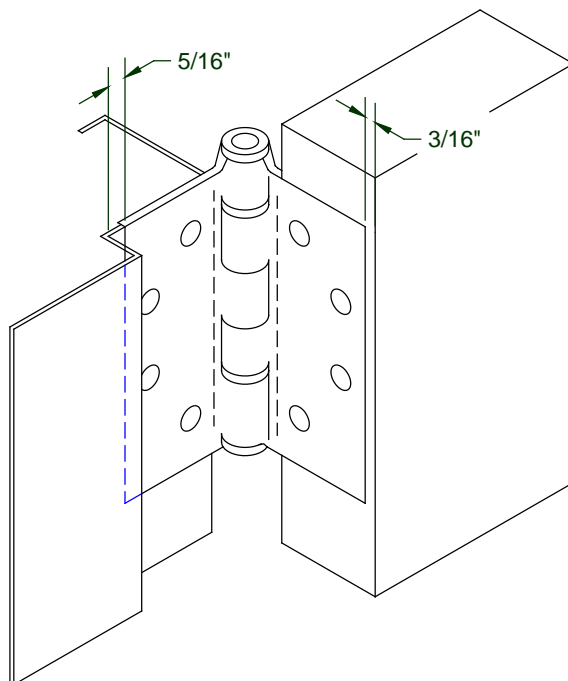
PURPOSE:

The purpose of this document is to provide the reader with a reference of the hinge backset currently used on Black Mountain Door's door and frame products.

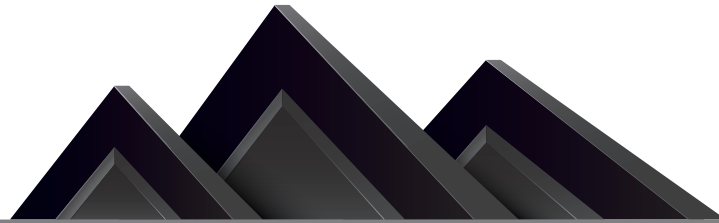
Hinge Backset on Door – 3/16" from Door Face.
Hinge Backset on Frame – 5/16" from Stop.



AMWELD INTERNATIONAL (1-3/4" DOORS)
DOOR, FRAME, AND HINGE RELATIONSHIP.



/ TECHNICAL DATA **INSTALLATION**



BLACK MOUNTAIN
DOOR™

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INDEX – INSTALLATION

rev. 05-04-12

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EXISTING OPENING TYPE FRAME INSTALLATION INSTRUCTIONS

1

NOMINAL DOOR WIDTH + 4 1/4" to 4 7/16"

NOMINAL DOOR HEIGHT + 2 1/8" TO 2 1/4"

FOLLOW FRAME ASSEMBLY INSTRUCTIONS PRIOR TO INSTALLATION IN EXISTING OPENING

CONFIRM ROUGH OPENING SIZE. IDEAL ROUGH OPENING IS NOMINAL DOOR WIDTH + 4 1/4" & NOMINAL DOOR HEIGHT + 2 1/8". THIS APPLIES TO 2" FACE ONLY. ADJUST FOR DIFFERENT SIZED FRAME FACES.

ORDER SIZE FORMULA: R.O.W.-4.25" = N.D.W. R.O.H.-2.125" = N.D.H.

NOTE: THESE DIMENSIONS & INSTALLATION INSTRUCTIONS ALSO APPLY TO 4400 SERIES DOUBLE EGRESS FRAMES.

2

JAMB HEIGHT	ANCHOR QTY.
UP TO & INCLUDING 5'4"	3
OVER 5'4" TO 7'6"	4
OVER 7'6" TO 9'8"	5
9'8" TO 11'10"	6

SNAP IN ANCHOR EXAMPLE

WELDED IN ANCHOR EXAMPLES

ANCHORING THE JAMBS.
 UNLESS PREPIERCED & WELDED IN PLACE, DRILL 3/4" DIA. HOLES, CENTER IN THE SOFFIT. AS PER CHART ABOVE, AT A MAXIMUM OF 6" FROM BOTH ENDS & NO MORE THAN 26" EQUALLY SPACED ON BOTH JAMBS. SNAP IN ANCHORS, ROTATE INTO PLACE. USE A HAMMER TO TAP IN IF NECESSARY. ALIGN HOLE IN THE ANCHOR WITH PIERCED/ DRILLED HOLES IN SOFFIT.

3

POSITION FRAME IN OPENING.
 SQUARE FRAME AS NEEDED, MARK ANCHOR LOCATIONS ON THE WALL THROUGH ANCHOR HOLES IN THE JAMB SOFFIT.

4

REMOVE FRAME FROM ROUGH OPENING AND DRILL
 MARKED HOLES IN WALL. IF DRILL BIT IS LONG ENOUGH, THE FRAME CAN REMAIN IN PLACE FOR THIS PROCESS. BUT CARE MUST BE TAKEN NOT TO MARK THE SOFFIT.

5

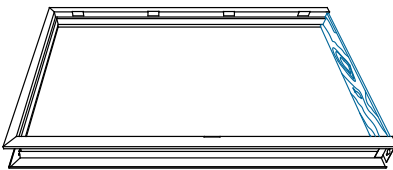
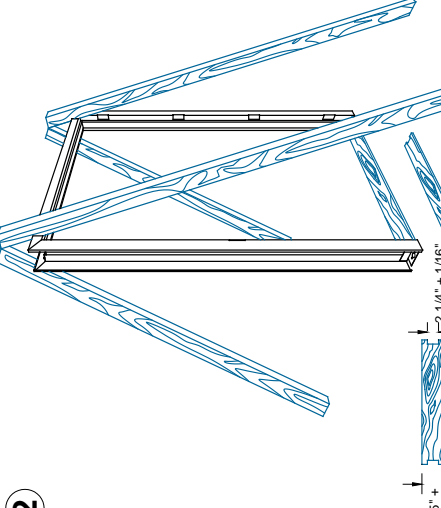
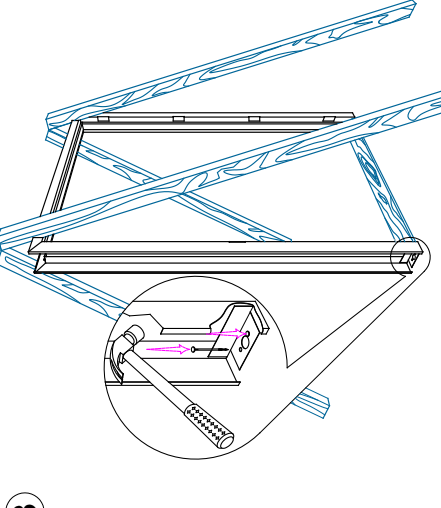
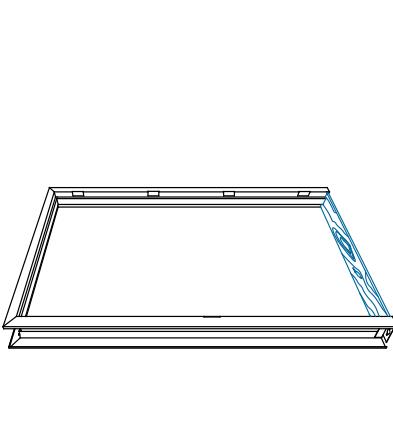
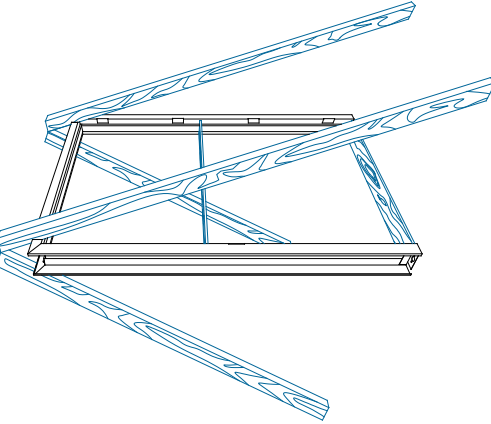
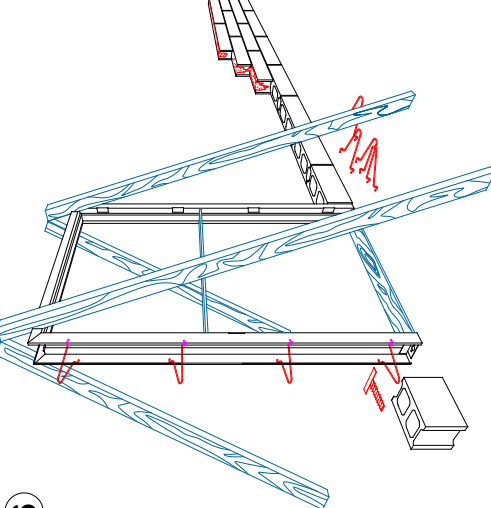
CHECK PLUMB AND SQUARENESS OF ROUGH OPENING.
 IF OPENING IS OUT OF SQUARE, SHIMMING MAY BE REQUIRED. INSERT EXPANSION ANCHORS IN THE WALL IF NOT USING ANMWELED 3/8" EXPANSION BOLTS. REPLACE FRAME IN OPENING.

6

INSTALL 3/8" EXPANSION BOLTS.
 IN ALTERNATING SEQUENCE IF USING C.O. TYPE ANCHORS, OR BOLT PORTION OF EXPANSION ANCHOR. CHECKING SQUARENESS ALONG THE HEIGHT OF BOTH JAMBS. SNAP IN HOLE PLUGS WITH ANMWELED C.O. LEAVE 3/8" BOLT HEAD EXPOSED FOR P&D TYPE OR PUDDY AND FINISH FOR A SEAMLESS LOOK.



400 SERIES NEW MASONRY TYPE FRAME INSTALLATION INSTRUCTIONS

<p>1</p> 	<p>FOLLOW FRAME ASSEMBLY INSTRUCTIONS PRIOR TO INSTALLATION IN NEW MASONRY CONSTRUCTION. PLACE FRAME WHERE INSTALLATION WILL OCCUR. INSERT A WOOD SPREADER AT THE BASE OF THE FRAME. IF A THRESHOLD IS USED, THIS IS NOT REQUIRED. NOTE: THIS INSTALLATION APPLIES TO 400 SERIES DOUBLE EGRESS FRAMES ALSO.</p>	<p>2</p>  <p>BRACE FRAME AS SHOWN WITH 2x4'S OR TO THE CEILING OR TO THE CEILING. DO NOT BRACE IN THE SAME DIRECTION THE WALL WILL BE CONSTRUCTED. IT IS RECOMMENDED THAT THE CONTRACTOR MAKE 2 WOOD SPREADERS TO BE USED FOR MAINTAINING THE DOOR OPENING DIMENSION AND PLACED AT THE BOTTOM AND MID POINT OF THE FRAME. USING LUMBER AT LEAST 1" THICK, WITHIN 3/4" OF FRAME DEPTH, NOTCHED AT BOTH ENDS TO ACCEPT THE SOFFIT AND CUT TO EXACT OPENING WIDTH. EXAMPLE: A 3'-0" WIDE OPENING WOULD NEED A SPREADER AS SHOWN ABOVE.</p>	<p>3</p>  <p>PLUMB, LEVEL AND SHIM THE JAMB BOTTOMS AS REQUIRED. POSITIVELY PLACE FRAME AND ATTACH JAMBS TO FLOOR AS SHOWN WITH EITHER HAMMER AND CONCRETE NAIL OR DRILL AND CONCRETE BOLT. DEPENDING ON FLOOR CONDITION, OTHER ANCHORING METHODS MAY BE REQUIRED.</p>
<p>4</p>  <p>LEVEL HEADER, PLUMB JAMBS AND SQUARE CORNERS. INSTALL RUBBER MITES.</p>	<p>5</p>  <p>PLACE SPREADER AT MIDPOINT OF JAMBS. DETERMINE WALL ANCHORING REQUIREMENTS. THE CORRECT ANCHORING REQUIREMENT IS 3 ANCHORS PER JAMB UP TO 7'-6", 4 PER JAMB UP TO 10'-0" AND 5 OR MORE ABOVE THAT. TRY TO ANCHOR IMMEDIATELY ABOVE OR BELOW EACH HINGE REINFORCEMENT, ACCORDING TO THE NEXT INSTALLATION STEP.</p>	<p>6</p>  <p>ADJUST WIRE ANCHORS TO FIT FRAME THROAT AND INSTALL AT EQUAL INTERVALS AS THE WALL IS ERRECTED. CONTINUALLY CHECK PLUMB AND SQUARENESS AS THE WALL PROGRESSES. WHEN USING MASONRY 'T' SHAPED ANCHORS, USE THIS INSTALLATION ALSO.</p>	

400 SERIES WOOD STUD TYPE FRAME INSTALLATION INSTRUCTIONS

JAMB HEIGHT	ANCHOR QTY.
UP TO & INCLUDING 5'0"	2
OVER 5'0" TO 7'6"	3
OVER 7'6" TO 10'0"	4
OVER 10'0" TO 11'10"	5

1

PREPARE ROUGH OPENING.
 TO DETERMINE THE ROUGH OPENING SIZE, ADD 4 3/8" TO THE NOMINAL DOOR WIDTH & 2 1/8" TO THE NOMINAL DOOR HEIGHT. THIS APPLIES TO 2" FACE ONLY.
 FORMULA: N.D.W. + 4.375" = R.O.W. N.D.H. + 2.125" = R.O.H.
 NOTE: THIS INSTALLATION APPLIES TO 400 SERIES DOUBLE EGRESS FRAMES ALSO.

2

ASSEMBLE THE FRAME.
 REFER TO THE 400 SERIES FRAME ASSEMBLY INSTRUCTIONS. INSTALL ANCHORS PER CHART ABOVE AT HINGE LEVELS AND DIRECTLY OPPOSITE ON STRIKE JAMB. ROTATE ANCHORS INTO PLACE, USING A HAMMER TO TAP IN IF NECESSARY. WELDED ANCHORS ARE AVAILABLE ALSO.

3

PLACE FRAME IN ROUGH STUD OPENING.
 BEND ANCHOR TABS AROUND STUD LEAVING DESIRED CLEARANCE BETWEEN FRAME RETURN AND STUD FOR INSERTING FINISHED WALL MATERIAL. SET SPREADER AND LEVEL FRAME. SHIM JAMBS IF REQUIRED.

4

SQUARE FRAME.
 SELECT TOP ANCHOR TO NAIL TO STUD ON ONE JAMB ONLY.

5

NAIL ANCHOR TO STUD.
 NAILS OR SCREWS CAN BE USED. CHECK PLUMB AND SQUARE AND CONTINUE TO NAIL THE BALANCE OF ANCHORS TO THE STUD ON THE FIRST JAMB.

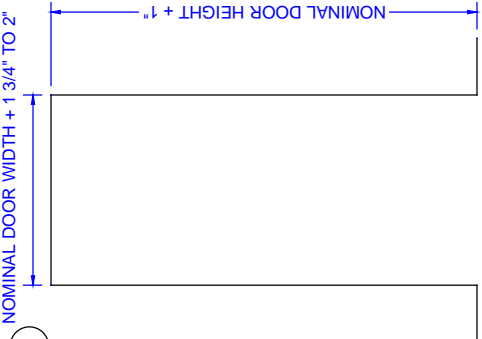
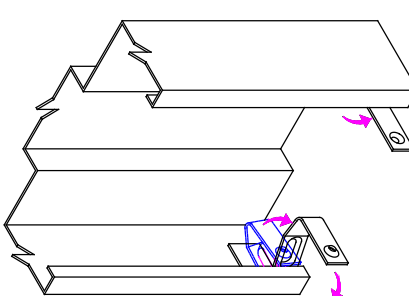
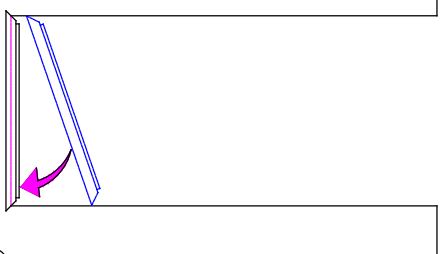
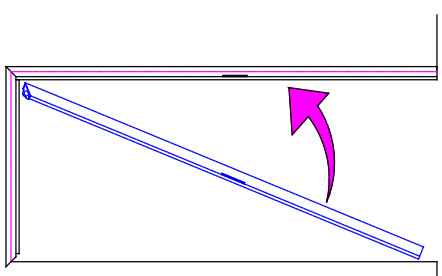
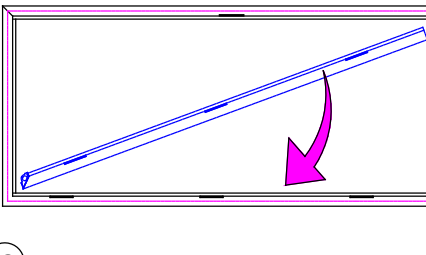
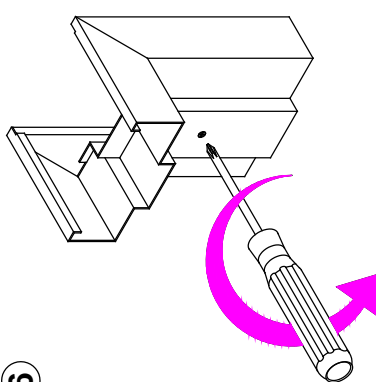
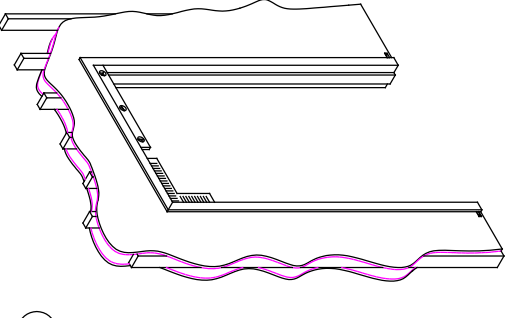
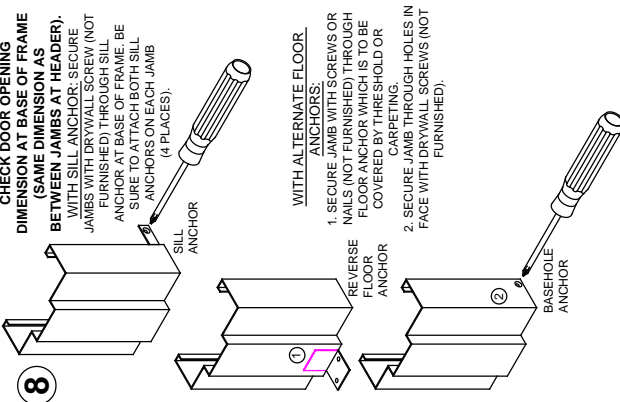
6

CHECK PLUMB AND SQUARENESS.
 REPEAT STEP 5 FOR FINAL FRAME ANCHORING. FINISH MATERIAL CAN NOW BE APPLIED TO THE WALLS.

ALTERNATE ANCHOR DETAIL WELDED IN ONLY.



2600 SERIES DRYWALL TYPE FRAME INSTALLATION INSTRUCTIONS

<p>1</p>  <p>PREPARE ROUGH OPENING. TO DETERMINE THE ROUGH OPENING SIZE, ADD 1 3/4" TO 2" TO THE NOMINAL DOOR WIDTH & 1" TO THE NOMINAL DOOR HEIGHT. FORMULA: (D.O.W. + 1 3/4" OR 2") x (D.O.H. + 1"). NOTE: LABELLED OPENINGS REQUIRE A MINIMUM OF 1/2" OF DRYWALL ENGAGEMENT INTO FRAME THROAT.</p>	<p>2</p>  <p>BEND SILL ANCHORS OUT OF FRAME AS SHOWN. THE SILL ANCHORS NEED TO BE BENT OUTWARD TO REST OUTSIDE THE STUD.</p>	<p>3</p>  <p>INSTALL HEADER INTO POSITION APPROX. 1" FROM TOP AND IN THE CENTER OF THE ROUGH OPENING. ROTATE HEADER OVER DRYWALL AS SHOWN.</p>	<p>4</p>  <p>INSTALL STRIKE JAMB BY SLIDING OVER WALL AT TOP AND ENGAGING CORNER REINFORCING INTO THE HEADER. PIVOT INTO PLACE. REPEAT WITH HINGE JAMB.</p>
<p>5</p>  <p>REPEAT STEP # 4 WITH THE HINGE JAMB.</p>	<p>6</p>  <p>TURN ADJUSTING SCREWS IN BOTH JAMBS COUNTERCLOCKWISE UNTIL ANCHOR IS RESTING AGAINST THE STUD. TIGHTEN MANUALLY. NOTE: DO NOT ATTEMPT TO TIGHTEN JUST ONE JAMB ANCHOR. BOTH ADJUSTING ANCHORS SHOULD BE TURNED EQUAL AMOUNTS ALTERNATELY.</p>	<p>7</p>  <p>IF FEASIBLE, HANG DOOR NOW AND ADJUST FRAME ON WALL TO ALLOW PROPER DOOR/FRAME CLEARANCES OR PLUMB FRAME WITH CARPENTERS SQUARE AND/OR LEVEL. NOTE: DO NOT ATTEMPT TO TIGHTEN JUST ONE JAMB ANCHOR. BOTH ADJUSTING ANCHORS SHOULD BE TURNED EQUAL AMOUNTS ALTERNATELY.</p>	<p>8</p>  <p>CHECK DOOR OPENING DIMENSION AT BASE OF FRAME (SAME DIMENSION AS BETWEEN JAMBS AT HEADER). WITH SILL ANCHOR: SECURE JAMBS WITH DRYWALL SCREW (NOT FURNISHED) THROUGH SILL ANCHOR AT BASE OF FRAME. BE SURE TO ATTACH BOTH SILL ANCHORS ON EACH JAMB (4 PLACES).</p> <p>WITH ALTERNATE FLOOR ANCHORS: 1. SECURE JAMB WITH SCREWS OR NAILS (NOT FURNISHED) THROUGH FLOOR ANCHOR WHICH IS TO BE COVERED BY THRESHOLD OR CARPETING. 2. SECURE JAMB THROUGH HOLES IN FACE WITH DRYWALL SCREWS (NOT FURNISHED).</p>



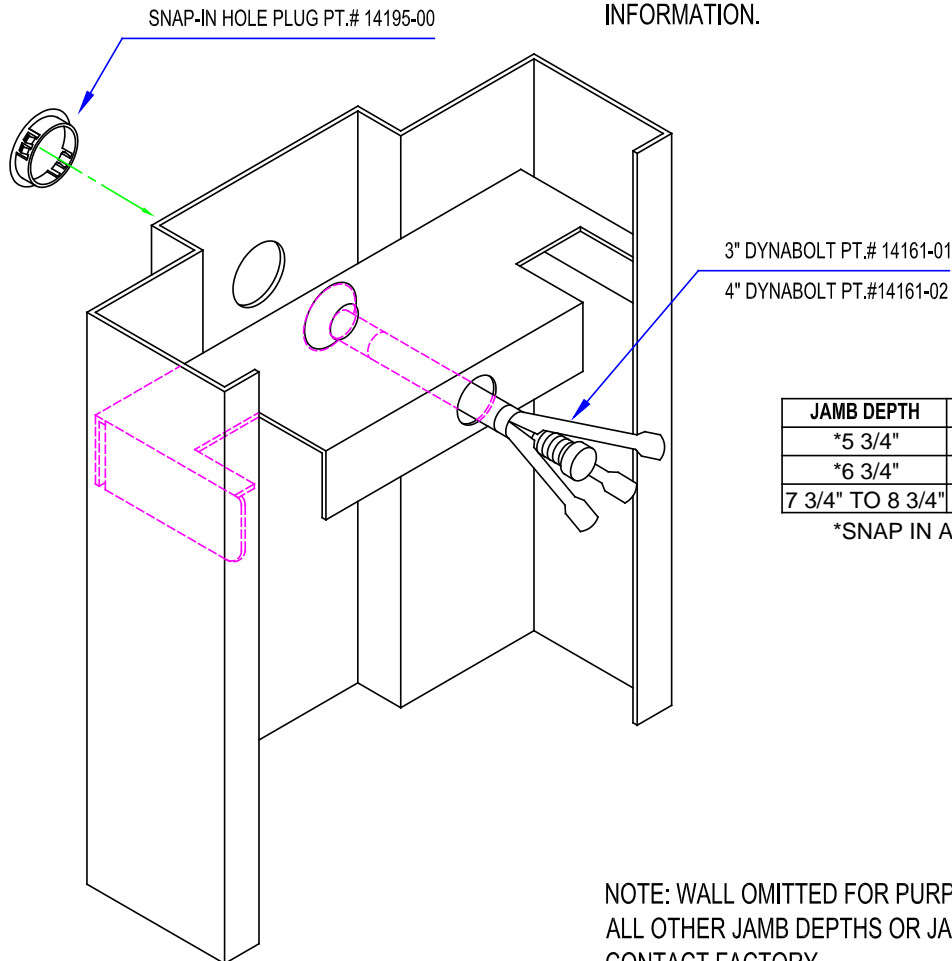
**TECH
 DATA**

COMPLETED OPENING ANCHOR INSTALLATION

JAMB HEIGHT	ANCHOR QTY.	SPACING*
UP TO & INCLUDING 5'4"	3	26" MAX.
OVER 5'4" TO 7'6"	4	26" MAX.
OVER 7'6" TO 9'8"	5	26" MAX.
OVER 9'8" TO 11'10"	6	26" MAX.

* 6" MAX CENTERLINE FROM TOP & BOTTOM OF JAMB

INSTALL SNAP-IN ANCHORS TO ALIGN WITH PIERCED HOLES IN JAMBS. FRAMES MAY ALSO BE SUPPLIED WITH ANCHORS WELDED IN PLACE. SLIDE FRAME INTO OPENING, INSTALL WOOD SPREADERS. SHIM TO MAINTAIN SQUARENESS AND FRAME ALIGNMENT AS REQUIRED. BUTT ONE JAMB TIGHT TO WALL IF POSSIBLE. INSERT BOLT ANCHORS AND TIGHTEN SECURELY. REPEAT FOR OPPOSITE JAMB. INSTALL PLUGS TO COVER HEADS. REFER TO 400 SERIES EXISTING OPENING INSTALLATION INSTRUCTIONS OR ANSI A250.11-2001 FOR ADDITIONAL INFORMATION.



JAMB DEPTH	ANCHOR PART #
*5 3/4"	14194-01
*6 3/4"	14194-02
7 3/4" TO 8 3/4"	14194-02

*SNAP IN ANCHORS

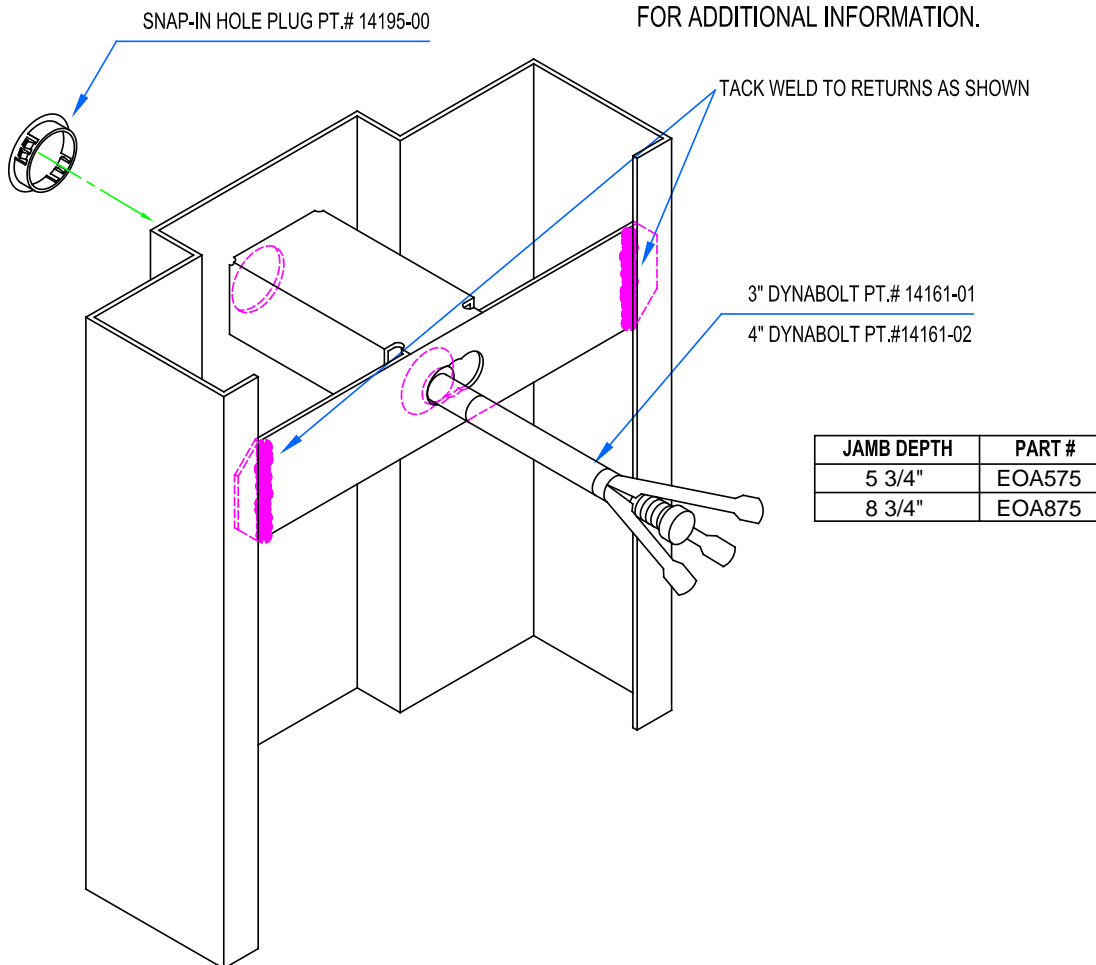
NOTE: WALL OMITTED FOR PURPOSES OF CLARITY
 ALL OTHER JAMB DEPTHS OR JAMB FACES OVER 4",
 CONTACT FACTORY.

EXISTING OPENING ANCHOR INSTALLATION

JAMB HEIGHT	ANCHOR QTY.	SPACING*
UP TO & INCLUDING 5'4"	3	26" MAX.
OVER 5'4" TO 7'6"	4	26" MAX.
OVER 7'6" TO 9'8"	5	26" MAX.
OVER 9'8" TO 11'10"	6	26" MAX.

* 6" MAX CENTERLINE FROM TOP & BOTTOM OF JAMB

WELD ANCHORS TO ALIGN WITH PIERCED HOLES IN JAMBS. FRAMES MAY ALSO BE SUPPLIED WITH ANCHORS WELDED IN PLACE. SLIDE FRAME INTO OPENING, INSTALL WOOD SPREADERS. SHIM TO MAINTAIN SQUARENESS AND FRAME ALIGNMENT. BUTT ONE JAMB TIGHT TO WALL IF POSSIBLE. INSERT BOLT ANCHORS AND TIGHTEN SECURELY. INSTALL PLUGS TO COVER BOLT HOLES. REFER TO AMWELDS 400 SERIES EXISTING OPENING INSTALLATION INSTRUCTIONS OR ANSI A250.11-2001 FOR ADDITIONAL INFORMATION.



JAMB DEPTH	PART #
5 3/4"	EOA575
8 3/4"	EOA875

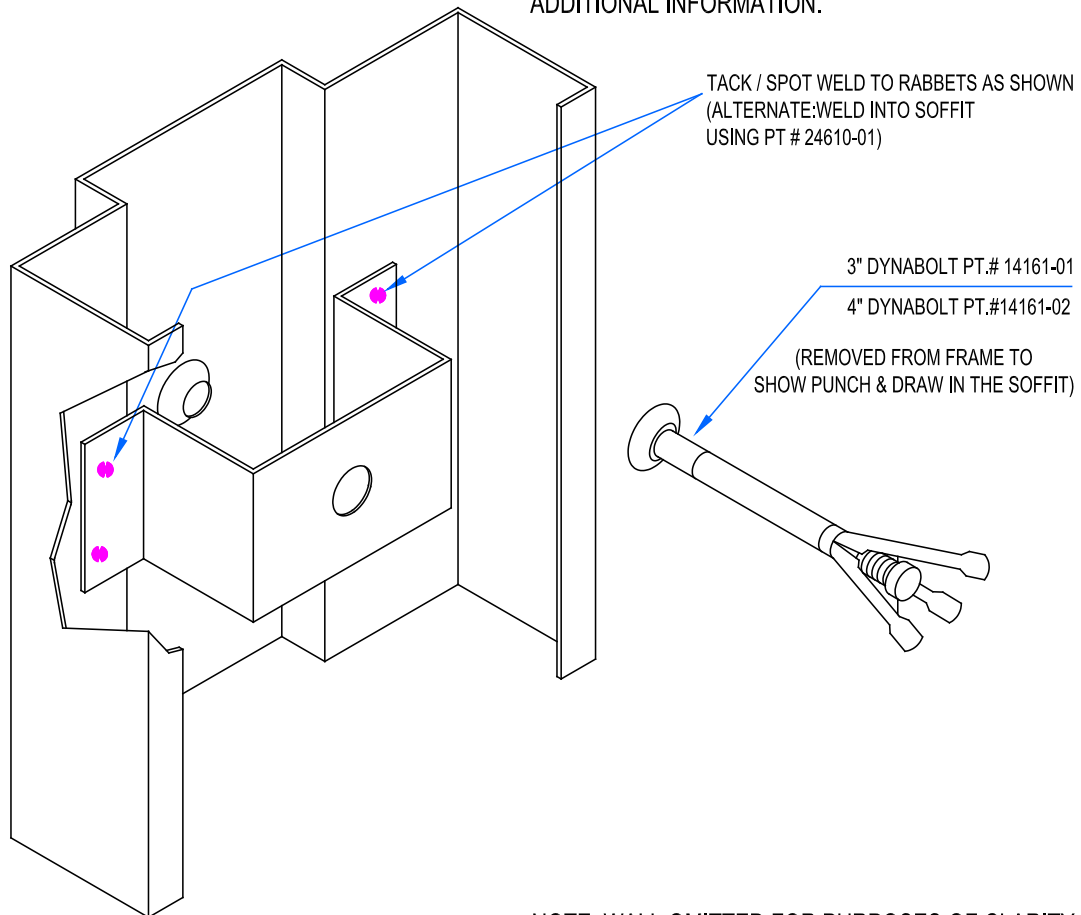
NOTE: WALL OMITTED FOR PURPOSES OF CLARITY

PUNCH & DRAW FOR 3/8" BOLT ANCHOR INSTALLATION

JAMB HEIGHT	ANCHOR QTY.	SPACING*	PART #
UP TO & INCLUDING 5'4"	3	26" MAX.	24610-12
OVER 5'4" TO 7'6"	4	26" MAX.	24610-12
OVER 7'6" TO 9'8"	5	26" MAX.	24610-12
OVER 9'8" TO 11'10"	6	26" MAX.	24610-12

* 6" MAX CENTERLINE FROM TOP & BOTTOM OF JAMB

WELD IN ANCHORS TO ALIGN WITH PIERCED HOLES IN JAMBS. FRAMES MAY ALSO BE SUPPLIED WITH ANCHORS WELDED IN PLACE. SLIDE FRAME INTO OPENING, MARK ANCHOR LOCATIONS, REMOVE AND PRE-DRILL. REPLACE FRAME IN ROUGH OPENING. INSTALL WOOD SPREADERS. SHIM TO MAINTAIN SQUARENESS AND FRAME ALIGNMENT. BUTT ONE JAMB TIGHT TO WALL IF POSSIBLE. INSERT BOLT ANCHORS AND TIGHTEN SECURELY. PUDDY & FINISH BOLT HEADS IF DESIRED. REFER TO AMWELDS 400 SERIES EXISTING OPENING INSTALLATION INSTRUCTIONS OR ANSI A250.11-2001 FOR ADDITIONAL INFORMATION.



NOTE: WALL OMITTED FOR PURPOSES OF CLARITY

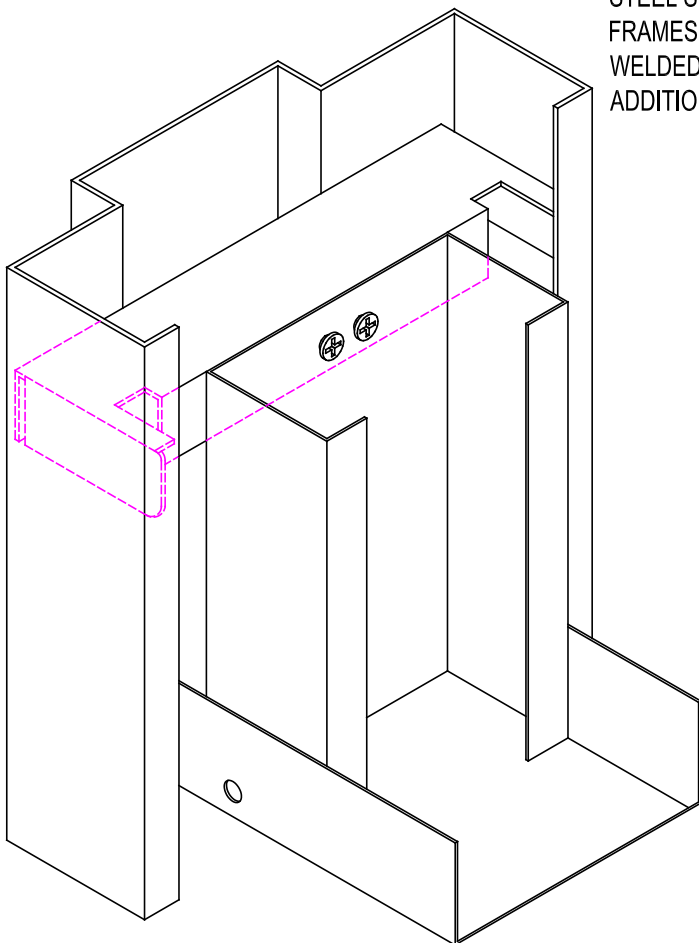


STEEL STUD ANCHOR INSTALLATION

UP TO & INCLUDING 5'0"	2	30" MAX.
OVER 5'0" TO 7'6"	3	30" MAX.
OVER 7'6" TO 10'0"	4	30" MAX.
OVER 10'0" TO 11'10"	5	30" MAX.

* 30" MAX. FROM JAMB BOTTOM UP @ BOTTOM ANCHOR

INSTALL ANCHORS AS SHOWN. ATTACH JAMBS TO FLOOR THROUGH FLOOR ANCHOR OR FLOOR EXTENTION. POSITION STUDS IN FRAME THROAT AND ATTACH TO ANCHORS WITH SCREWS OR WELD. IF USING SCREWS, DRILL FROM THE BACK SIDE OF THE STUD, THROUGH BOTH THE STUD AND ANCHOR, THEN ATTACH WITH (2) SCREWS PER ANCHOR LOCATION. SCREWS SHALL BE # 6 x $\frac{3}{8}$ " MINIMUM STEEL SHEET METAL OR SELF TAPPING TYPE. FRAMES MAY ALSO BE SUPPLIED WITH ANCHORS WELDED IN PLACE. REFER TO ANSI A250.11-2001 FOR ADDITIONAL INFORMATION.

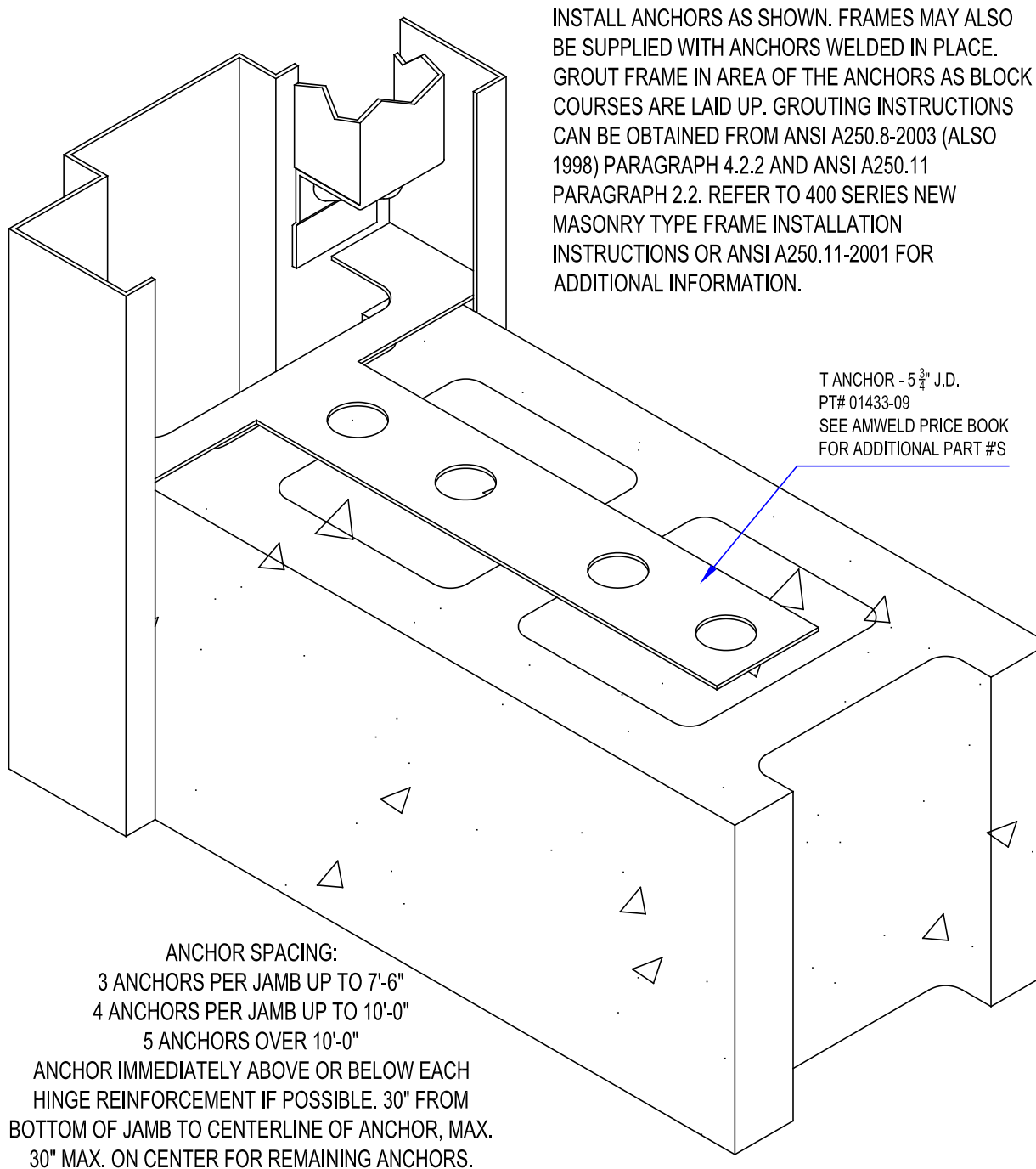


3 3/4"	14114-01
4 3/4"	14115-01
5 3/4"	14117-01

T MASONRY ANCHOR INSTALLATION

INSTALL ANCHORS AS SHOWN. FRAMES MAY ALSO BE SUPPLIED WITH ANCHORS WELDED IN PLACE. GROUT FRAME IN AREA OF THE ANCHORS AS BLOCK COURSES ARE LAID UP. GROUTING INSTRUCTIONS CAN BE OBTAINED FROM ANSI A250.8-2003 (ALSO 1998) PARAGRAPH 4.2.2 AND ANSI A250.11 PARAGRAPH 2.2. REFER TO 400 SERIES NEW MASONRY TYPE FRAME INSTALLATION INSTRUCTIONS OR ANSI A250.11-2001 FOR ADDITIONAL INFORMATION.

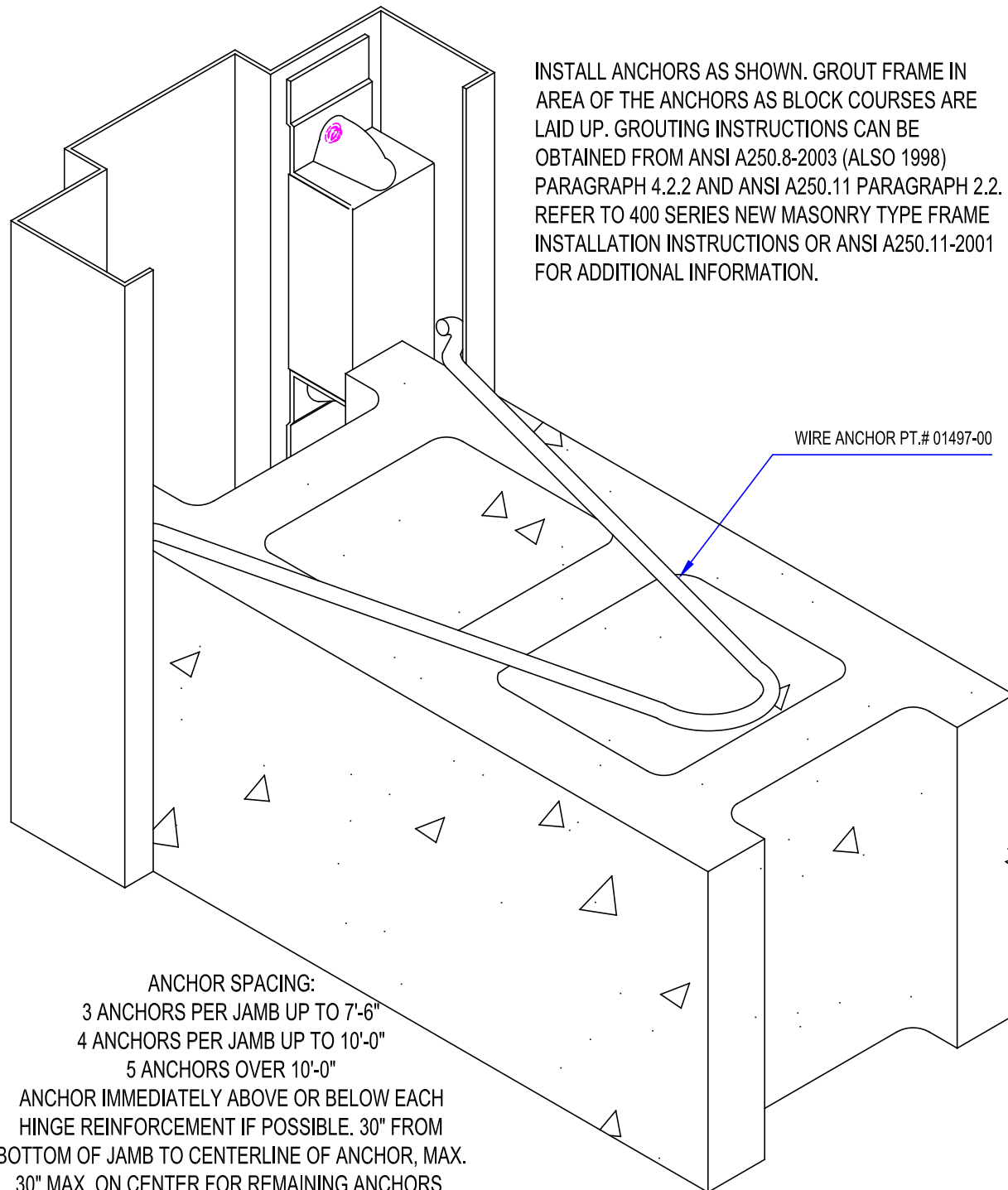
T ANCHOR - 5 ³/₄" J.D.
PT# 01433-09
SEE AMWELD PRICE BOOK
FOR ADDITIONAL PART #S



ANCHOR SPACING:
3 ANCHORS PER JAMB UP TO 7'-6"
4 ANCHORS PER JAMB UP TO 10'-0"
5 ANCHORS OVER 10'-0"
ANCHOR IMMEDIATELY ABOVE OR BELOW EACH
HINGE REINFORCEMENT IF POSSIBLE. 30" FROM
BOTTOM OF JAMB TO CENTERLINE OF ANCHOR, MAX.
30" MAX. ON CENTER FOR REMAINING ANCHORS.

WIRE MASONRY ANCHOR INSTALLATION

INSTALL ANCHORS AS SHOWN. GROUT FRAME IN AREA OF THE ANCHORS AS BLOCK COURSES ARE LAID UP. GROUTING INSTRUCTIONS CAN BE OBTAINED FROM ANSI A250.8-2003 (ALSO 1998) PARAGRAPH 4.2.2 AND ANSI A250.11 PARAGRAPH 2.2. REFER TO 400 SERIES NEW MASONRY TYPE FRAME INSTALLATION INSTRUCTIONS OR ANSI A250.11-2001 FOR ADDITIONAL INFORMATION.



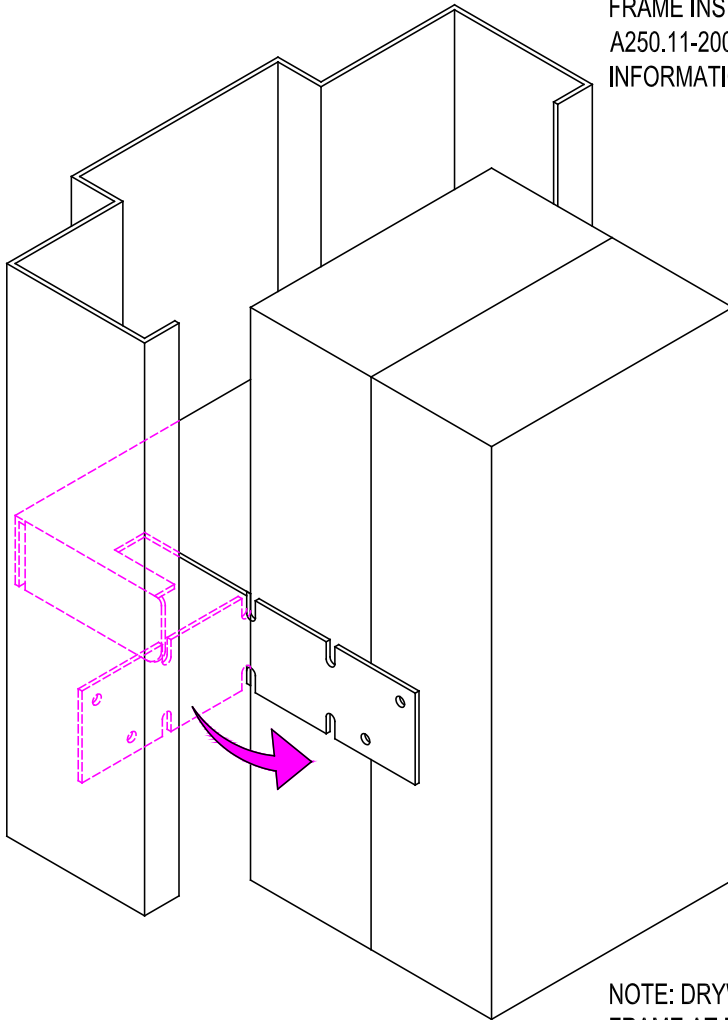
ANCHOR SPACING:
3 ANCHORS PER JAMB UP TO 7'-6"
4 ANCHORS PER JAMB UP TO 10'-0"
5 ANCHORS OVER 10'-0"
ANCHOR IMMEDIATELY ABOVE OR BELOW EACH
HINGE REINFORCEMENT IF POSSIBLE. 30" FROM
BOTTOM OF JAMB TO CENTERLINE OF ANCHOR, MAX.
30" MAX. ON CENTER FOR REMAINING ANCHORS.

WOOD STUD ANCHOR INSTALLATION

INSTALL ANCHORS AS SHOWN. ATTACH JAMBS TO FLOOR THROUGH FLOOR ANCHOR OR FLOOR EXTENTION IF POSSIBLE. BEND ANCHOR TABS AROUND STUD LEAVING DESIRED CLEARANCE BETWEEN FRAME RETURN AND STUD FOR INSERTING FINISHED WALL MATERIAL. SQUARE AND NAIL OR SCREW TOP ANCHOR TO STUD ON ONE JAMB ONLY. CHECK PLUMB AND SQUARE AND CONTINUE TO ATTACH BALANCE OF ANCHORS TO STUD. REPEAT FOR OPPOSITE JAMB. FRAMES MAY ALSO BE SUPPLIED WITH ANCHORS WELDED IN PLACE. REFER TO 400 SERIES WOOD STUD TYPE FRAME INSTALLATION INSTRUCTIONS OR ANSI A250.11-2001 FOR ADDITIONAL INSTALLATION INFORMATION.

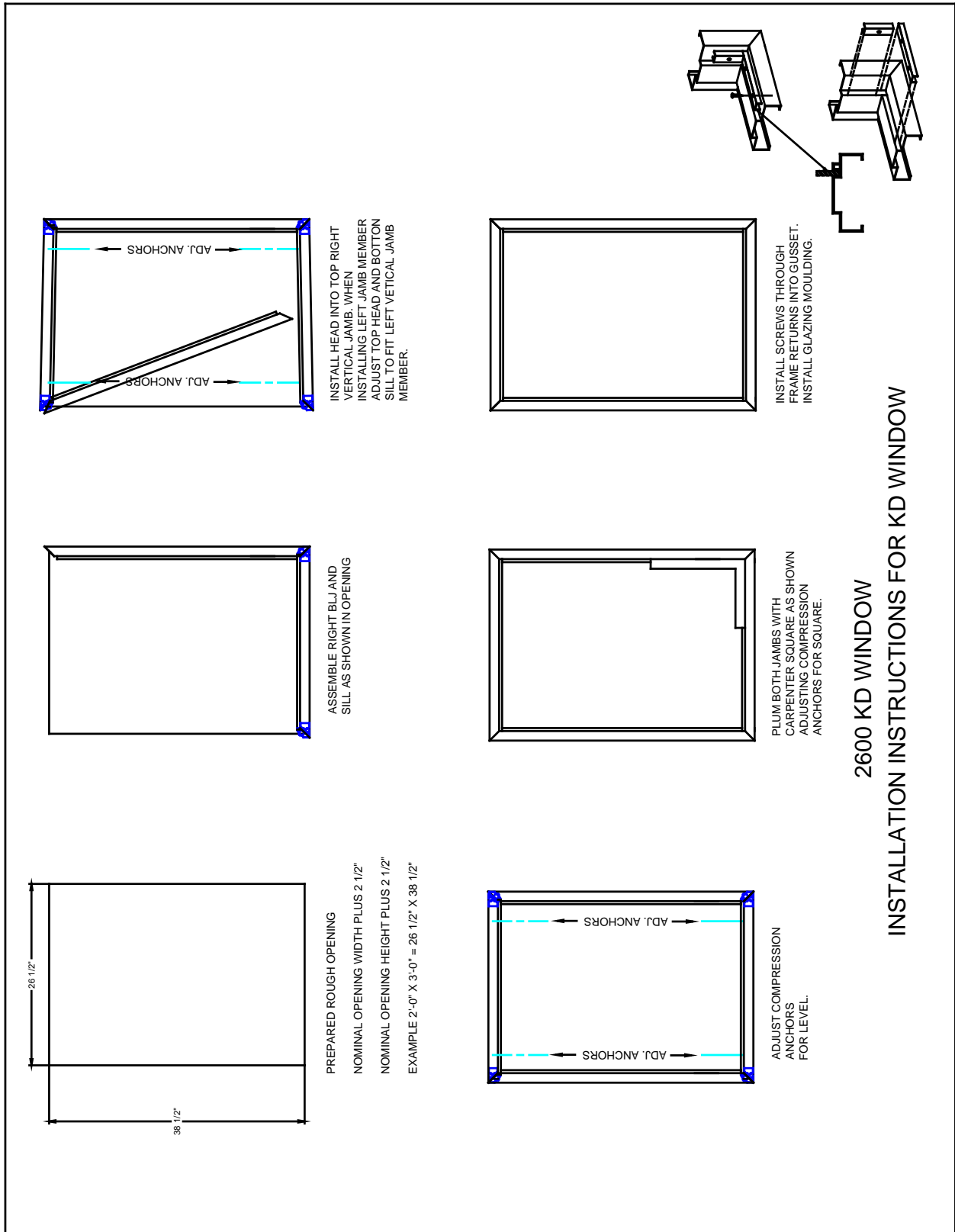
JAMB HEIGHT	ANCHOR QTY.	SPACING*
UP TO & INCLUDING 5'0"	2	30" MAX.
OVER 5'0" TO 7'6"	3	30" MAX.
OVER 7'6" TO 10'0"	4	30" MAX.
OVER 10'0" TO 11'10"	5	30" MAX.

* 30" MAX. FROM JAMB BOTTOM UP @ BOTTOM ANCHOR

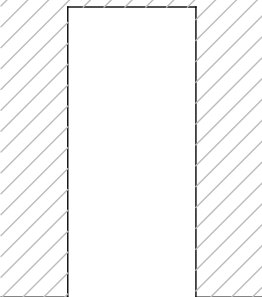


JAMB DEPTH	PART #
3 3/4"	14103-00
4 3/4"	14104-00
6 3/4"	14176-00
7 3/4"	14177-00
8 3/4"	14196-00

NOTE: DRYWALL MUST EXTEND AT LEAST $\frac{1}{2}$ " INTO FRAME AT FIRE RATED INSTALLATIONS.

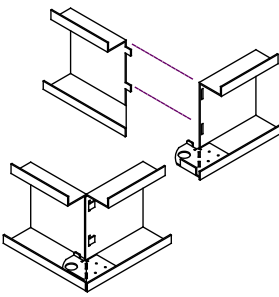


1



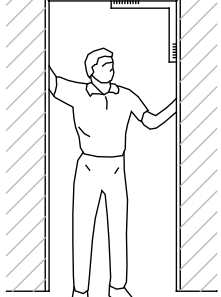
Prepare Rough Opening
 Width - Nominal Door Width + 2-1/8"
 Height - Nominal Door Height + 1-1/8"
 (i.e. 3070 = 38-1/8"W x 85-1/8"H)

2



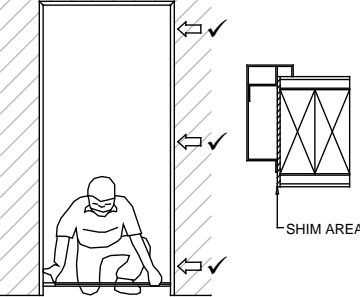
Slide Trim Jambs Over Corner Gussets with tabs inserted in slots. Push header and jamb miters together. Bend tabs out with a hammer.

3



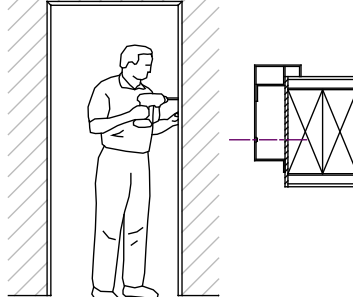
Insert trim section into opening. Make certain frame returns are resting against the wall surface. Then Square Jambs with a carpenter square.

4



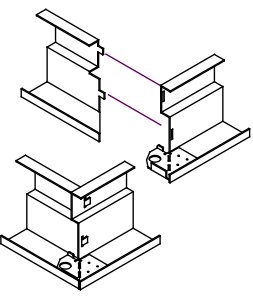
Check Door Opening Dimension where shown. Shim where required. (Shims by others)

5



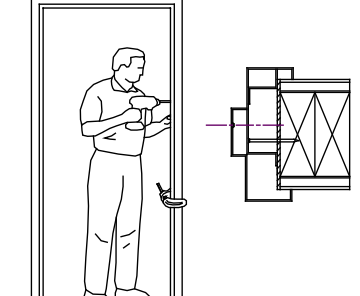
Drill 5-3/2" Pilot Holes in Wall (If Req'd) through factory punched countersunk holes. Secure trim jambs to wall with #12 Screws (Supplied).

6



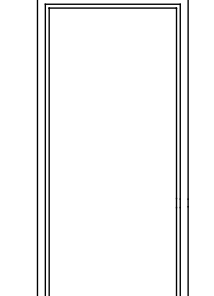
Slide Hardware Jambs Over Corner Gussets with tabs inserted in slots. Push header and jamb miters together. Bend tabs out with a hammer.

7

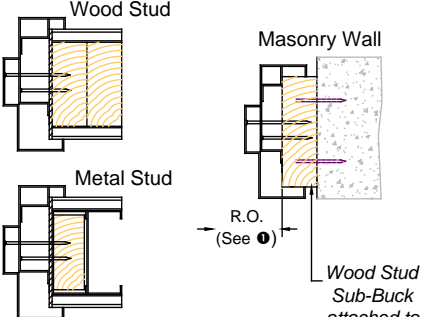


Insert & Clamp Hardware Section to Trim. Drill 5/32" holes thru countersunk holes in hardware section thru trim section and secure with #12 screws (supplied).

8



Install rubber silencers into strike jamb after finish paint.



Wood Stud
 Metal Stud
 Masonry Wall
 R.O. (See 1)
 Wood Stud Sub-Buck attached to Wall
 Wood blocking needed for light gage steel stud. (Not Req'd for 20Ga.)

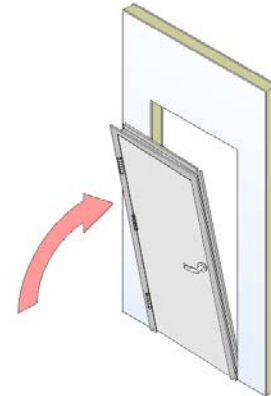


INSTRUCTIONS

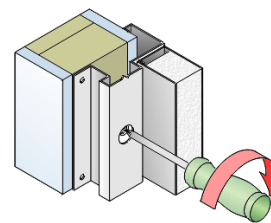
1. Preferred installation method uses two people. One installer and one helper.
2. The installer should be standing on the push side (the side of the door that you would have to push the door away from you in order to open it) with the helper on the pull side (the side of the door that you would have to pull towards you in order to open it).
3. Before installing, check opening for correct size. Rough opening should be door width + 2-1/4" and door height + 1-1/4" (3'0" x 7'0" door will have opening of 38-1/4" {+/-1/8} x 85-1/4" {+/-1/8})
4. Open package and place trim piece and installation tools on push side of opening.
5. Place door side of unit on pull side of opening. **(DET.1)**
6. Have helper stand door side up in the opening.
7. Push unit tight against hinge jamb side of opening.
8. Engage 4 compression anchors by turning the anchor with screw driver clockwise. **(DET.2)**
9. Place 4' level vertically on hinge edge of frame.
10. If out of level / plumb, compress and/or expand compression anchors to adjust the frame in the opening on both jambs.
11. Once frame is correct in the opening use the #8 x 2" screws to attach the unit to the wall framing at screw holes located in flange on frame. (4 screws into each jamb) – do not over tighten. **(DET.3)**
12. On pull side of the door have helper screw in the 2 each #8 x 2 1/2" screws at the base of each jamb.
13. Remove the two screws from the spreader bar and take the spreader bar off of the unit. This can be thrown away.
14. Take the trim piece and slide the tabs on the trim piece into the slots on the door side. **(DET.4)**
15. Slide trim piece onto door side until it is tight against the wall.
16. Clamp the frame together to hold firm while attaching.
17. Pre-drill through the tab once trim side is clamped tight to the wall.

Continued on Next Page.

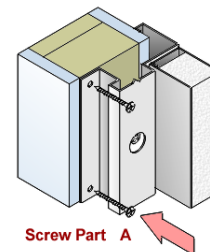
DETAILS



(DET.1)
Tilt Hardware Section into Wall, follow attachment procedures.



(DET.2)
Press frame tightly against the wall and adjust compression anchor to square the frame in the wall, maintaining an equal gap around the perimeter of the opening.



(DET.3)
After the frame is squared. Attach the unit to the wall using (Part A) Screws around the perimeter of the frame. Ensure that the door does not bind at this time.

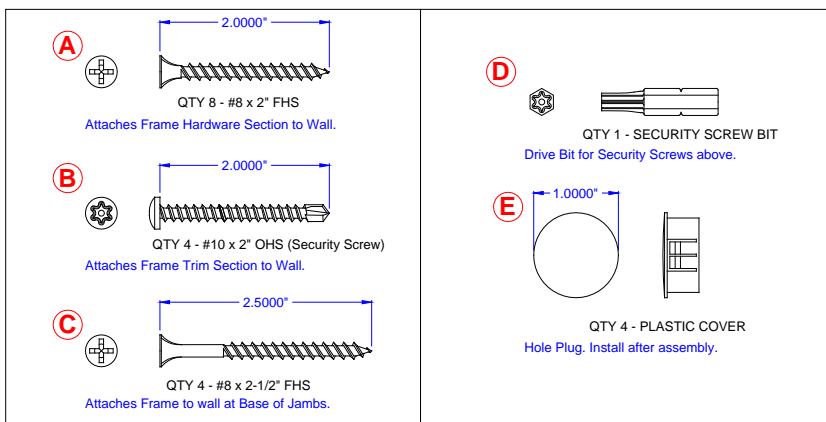
INSTRUCTIONS CONTINUED.

18. At the 4 compression anchor locations insert self tapping screw into screw hole.
19. Drive the screw through the tab from the trim piece and into the wall. Do not over tighten. **(DET.5)**
20. Push plugs into the 4 holes at compression anchor locations. **(DET.6)**
21. On push side of the door have helper screw in the 2 each #8 x 2 1/2" screws at the base of each jamb. **(DET.7)**
22. Install other loose hardware items.

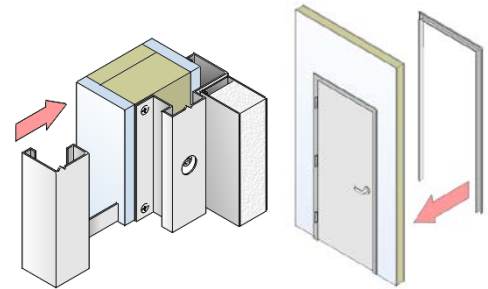
TOOLS NEEDED:

- Level
For squaring frame during installation.
- Screw Driver
For attachment screws and compression anchors.
- Supplied Security Bit and Drill
For final trim attachment (Security Screw B)
- Clamps
To hold frame sections firmly against wall during attachment.

INCLUDED IN TNP SCREW PACK

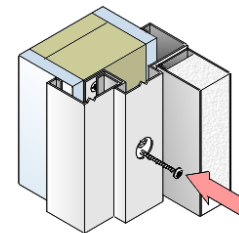


DETAILS



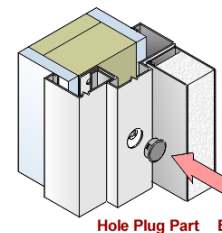
(DET.4)

Align the trim tabs with the slots located at the compression points and slide the trim section in place.



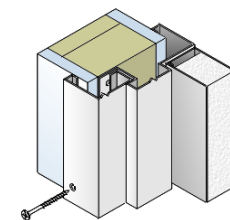
**Screw Part B
(DET.5)**

Holding the trim section firmly against the wall, drive in screw (Part B) through the compression bracket, trim tab, and into the wall.



**Hole Plug Part E
(DET.6)**

Install hole plugs to cover compression/attachment holes on jambs.



**Screw Part C
(DET.7)**

Finish by securing the unit to the wall using screw (Part C) through the base holes at the bottom of the frame.

/ TECHNICAL DATA **LABELED**



BLACK MOUNTAIN
DOOR™

www.blackmountaindoor.com

310 Flint Drive
Mt. Sterling, KY 40353

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

<u>Description</u>	<u>Number</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
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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).

**TECH
DATA**

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.

ENGINEERING DATA ON CORE	
"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.

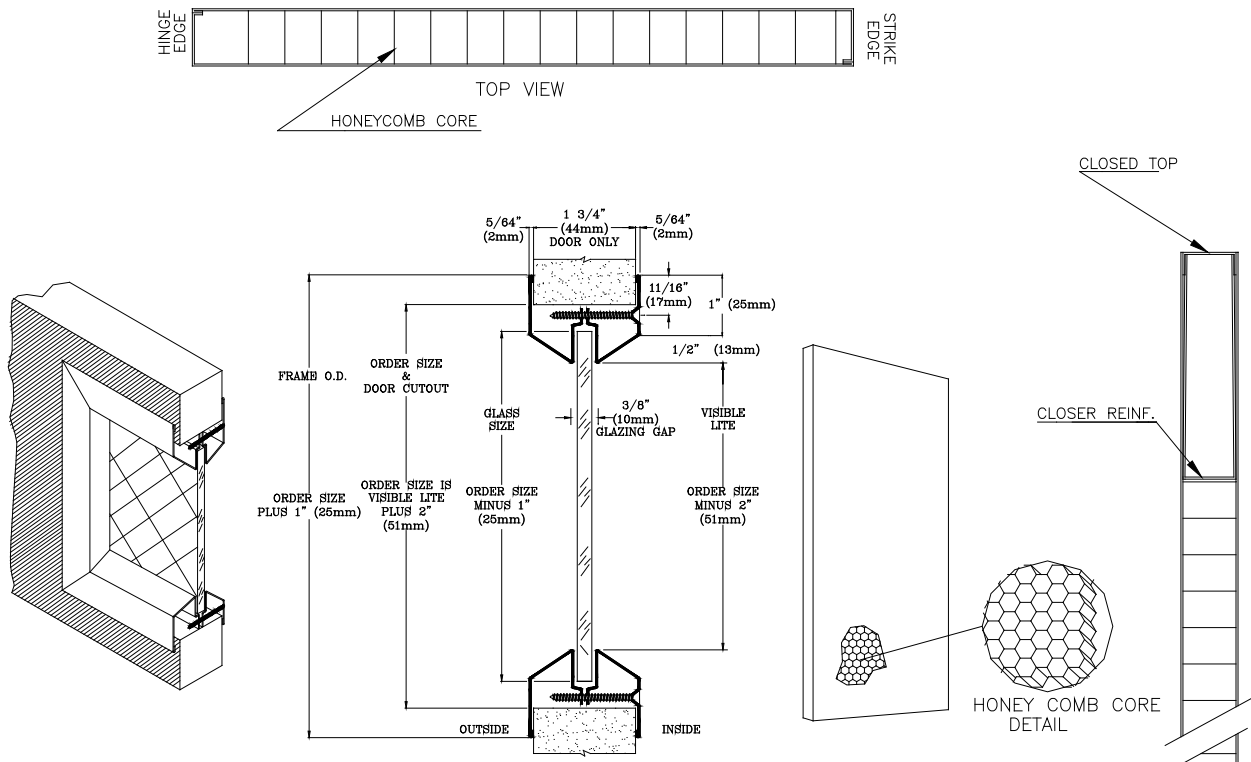
TEST CRITERIA:

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

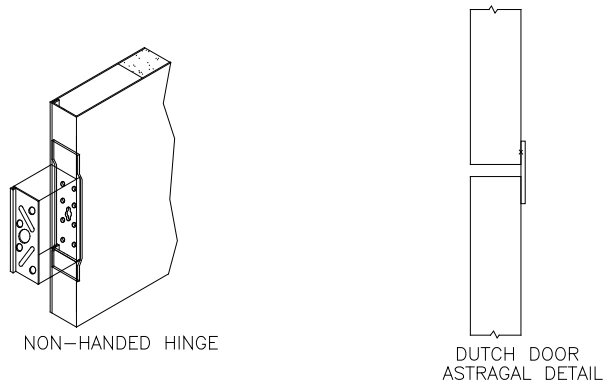
Product Assembly Details on Next Page.



45LE / 47LE DOOR CONSTRUCTION



TYPICAL GLAZING SYSTEM



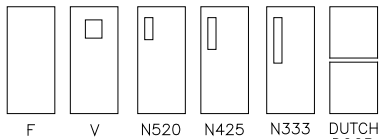
TYPICAL SECTION

3 HR. LABEL STYLES



F

1 1/2 HR. LABEL STYLES



F

V

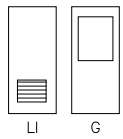
N520

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:

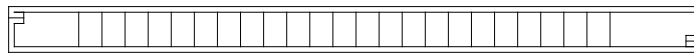
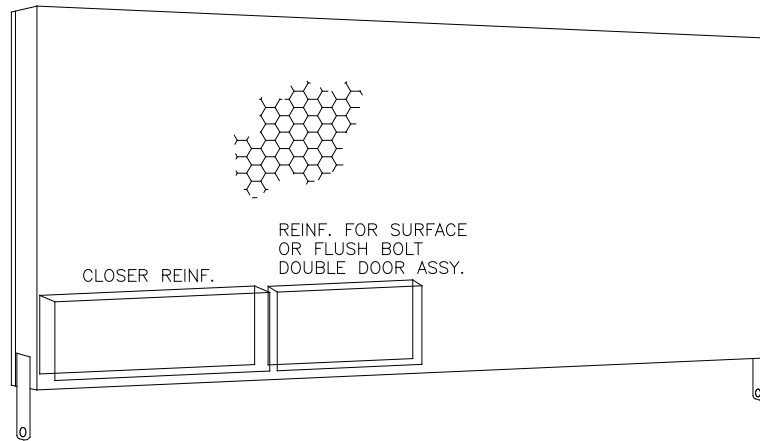
Any labeled fire door may be used.

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

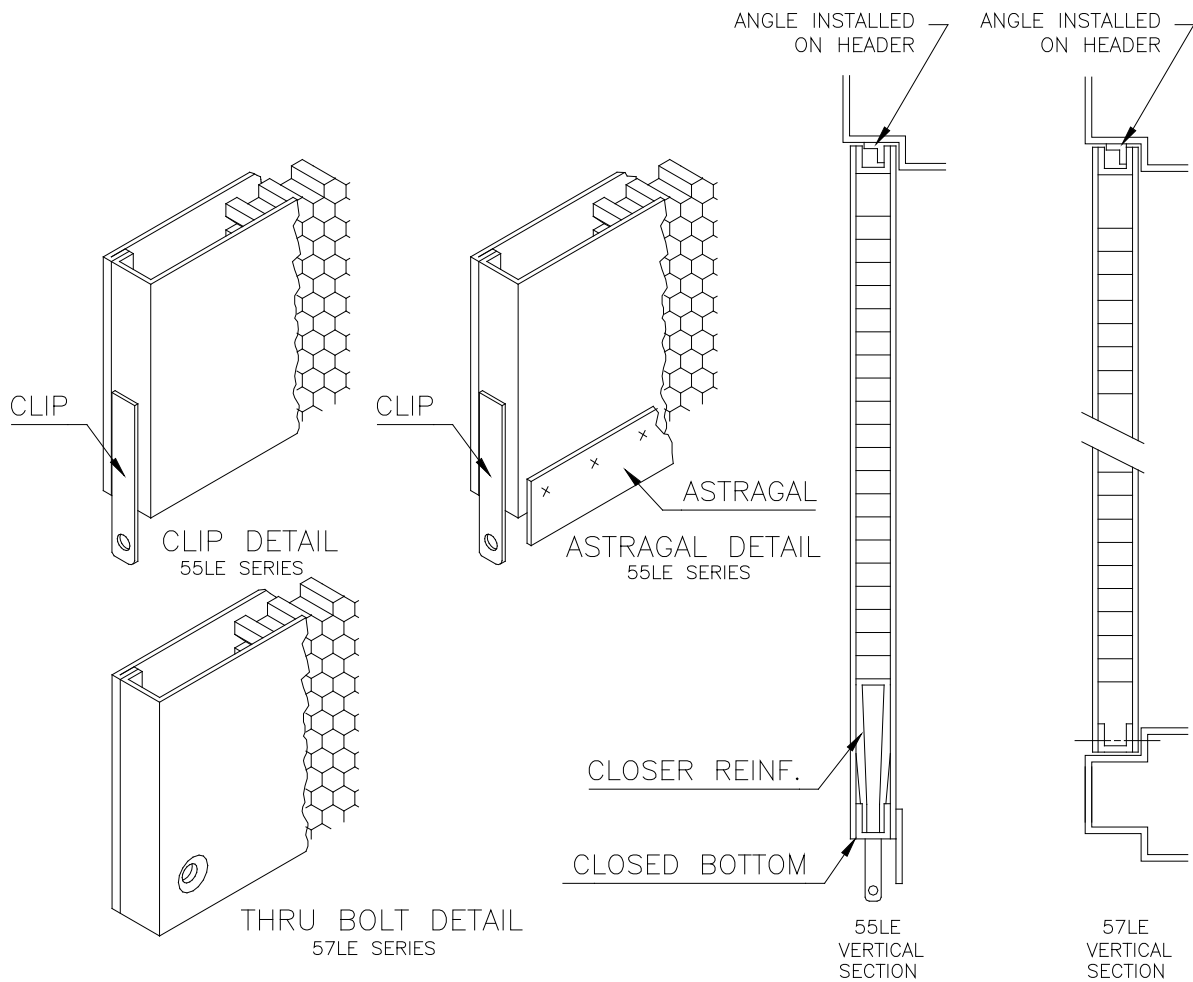
TEST CRITERIA:

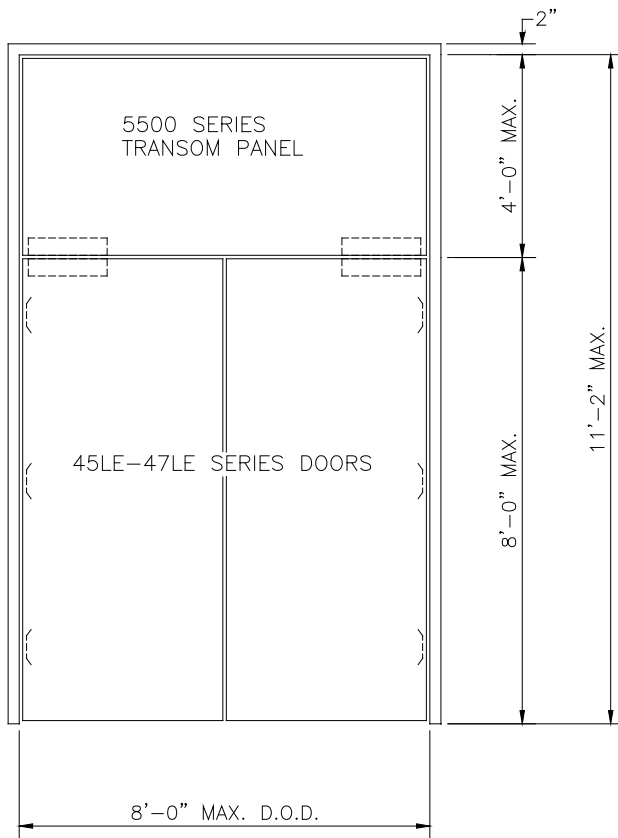
Units are constructed to meet fire test criteria as defined in UL10b, NFPA252 or UBC 7-2(1994).



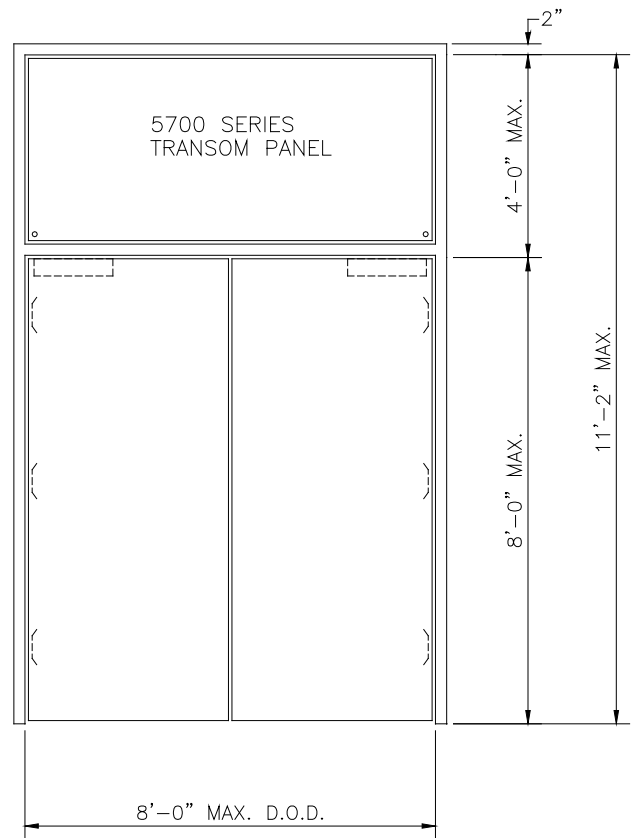


HORIZONTAL SECTION

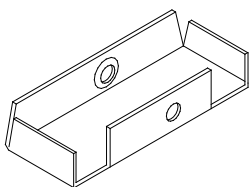




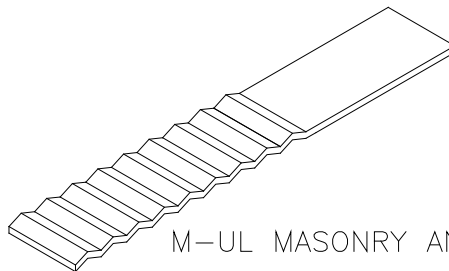
ASSEMBLY UNIT



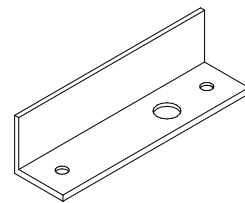
ASSEMBLY UNIT



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

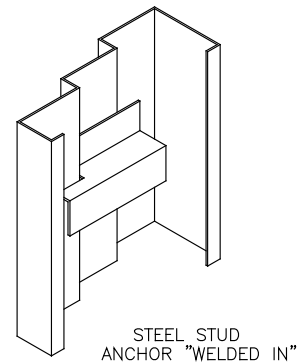
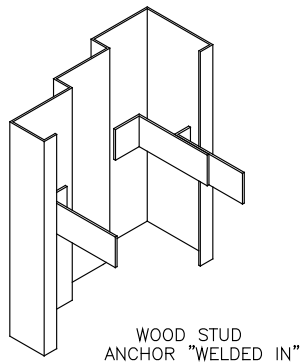
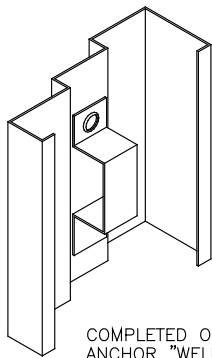
DATE: 03/12

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.

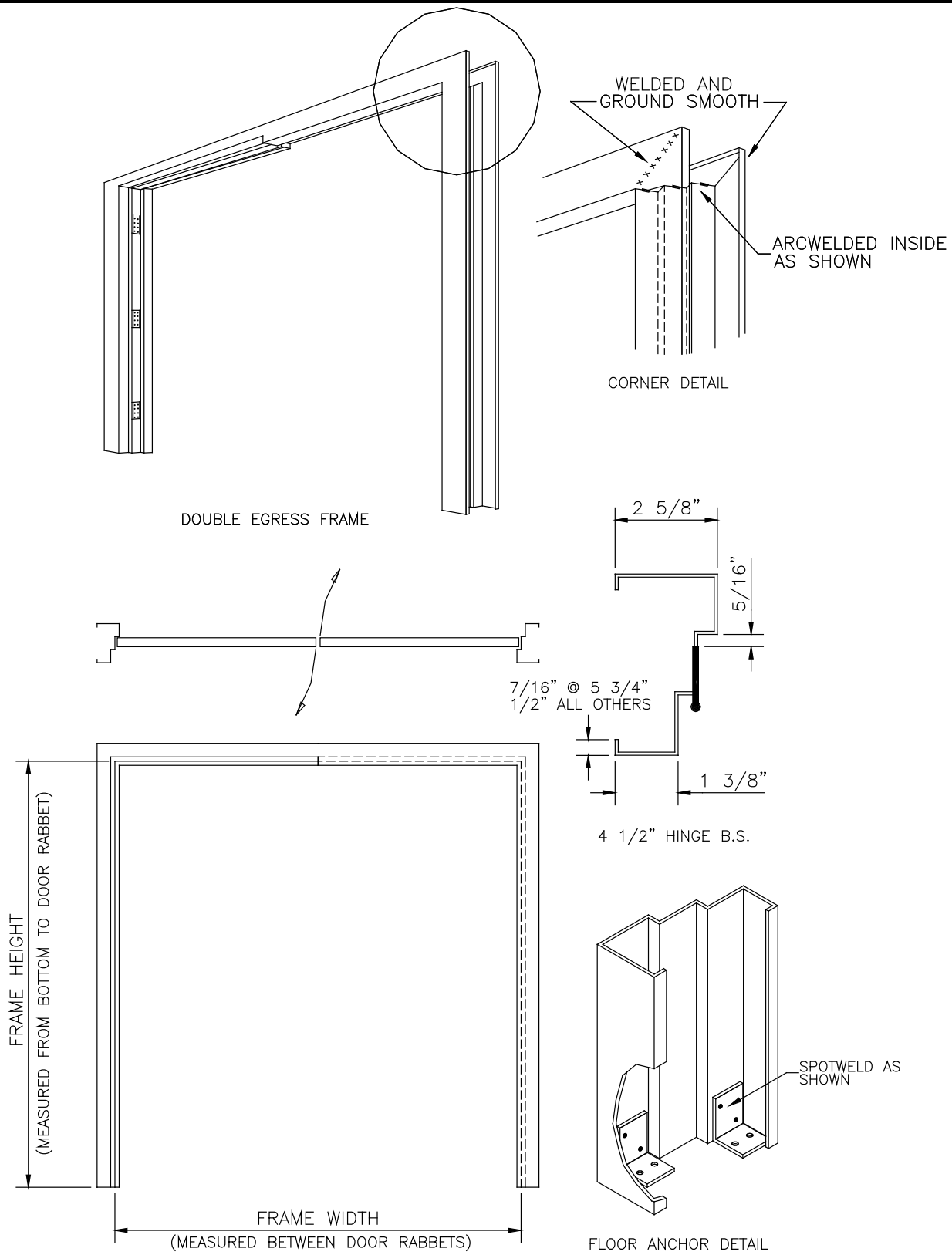
ANCHORS:

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:

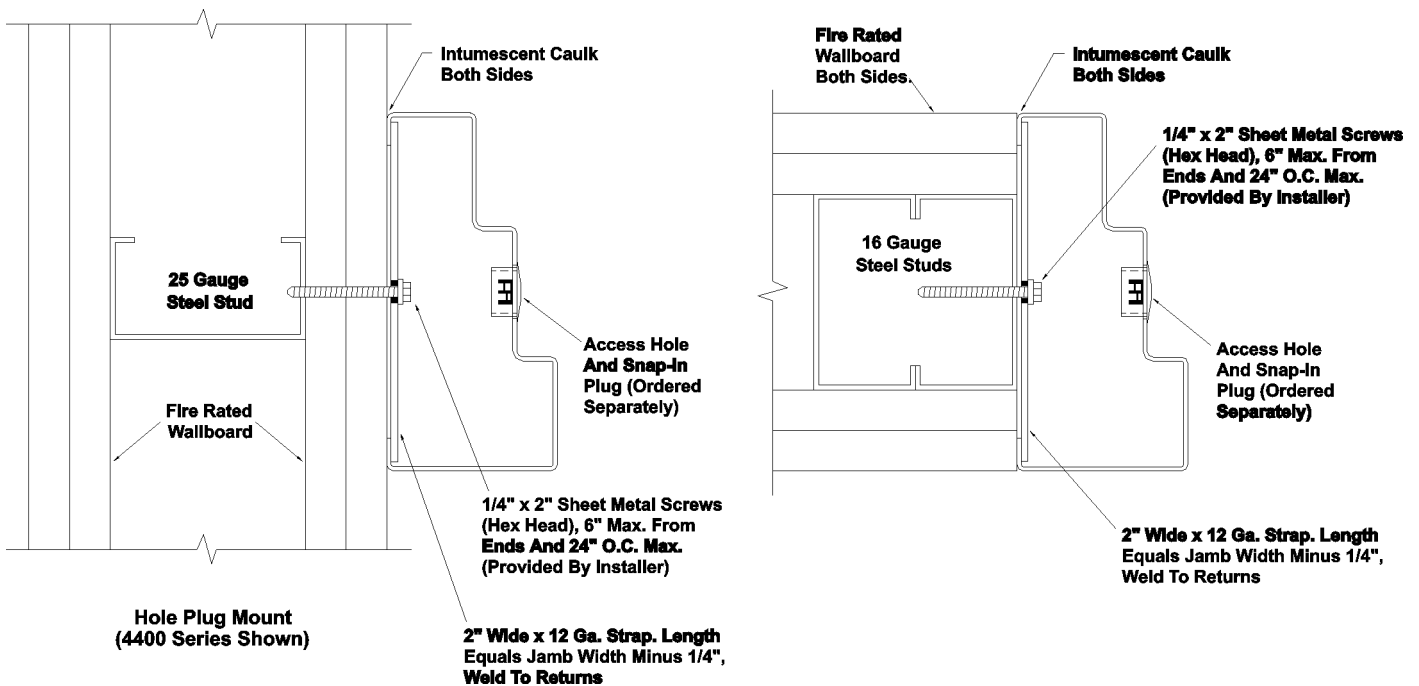
Faces 4400 = 1-3/8" / 2-5/8"

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.

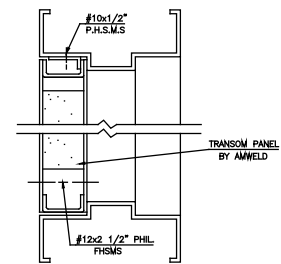
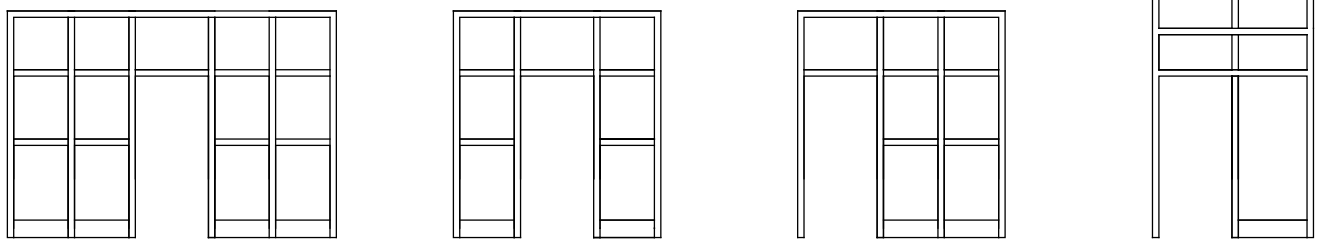
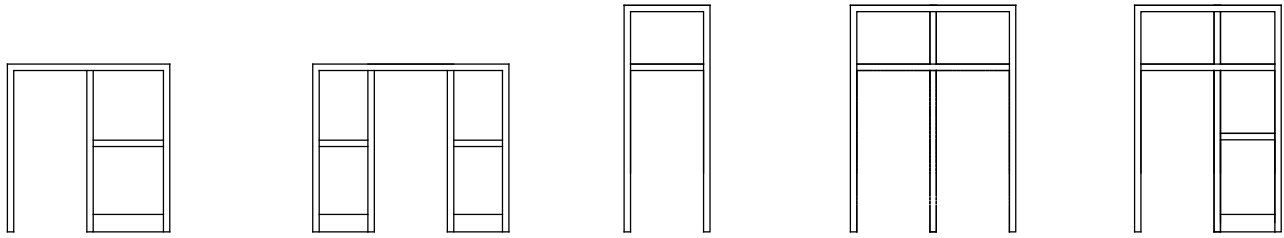
UL FAB-A-FRAME ASSEMBLIES																	
HOURLY RATING OF DOOR	MAXIMUM SIZE DOOR OPENING		MAXIMUM SIZE OVERALL		MAXIMUM LITE SIZE		MAXIMUM LITE AREA SQ. IN.	MAXIMUM PANEL SIZE		MAXIMUM PANEL AREA SQ. IN.	WALL THICKNESS	MASONRY	EXISTING MAS.	STEEL STUD	WOOD STUD	WELDED	REMARKS
	WIDTH	HEIGHT	WIDTH	HEIGHT	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:

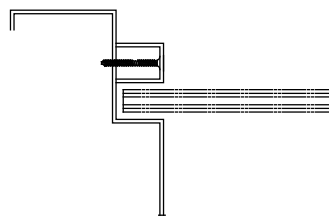
1. With frame faces under 2"
2. If used in stud wall, frame must be mounted on masonry sill.
3. Fire Lite glass and corresponding glazing material required.
4. Field splice permitted for shipping purposes.
5. Face dimension 1" minimum.
6. Face dimension 1-1/4" minimum.



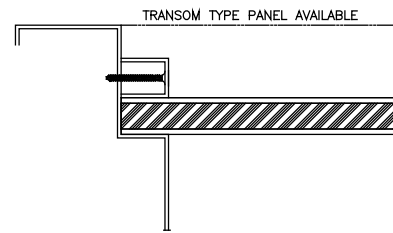
400 SERIES FAB-A-FRAME DETAILS



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 REQ'D (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"	•	•	•	•	•			
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.

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:

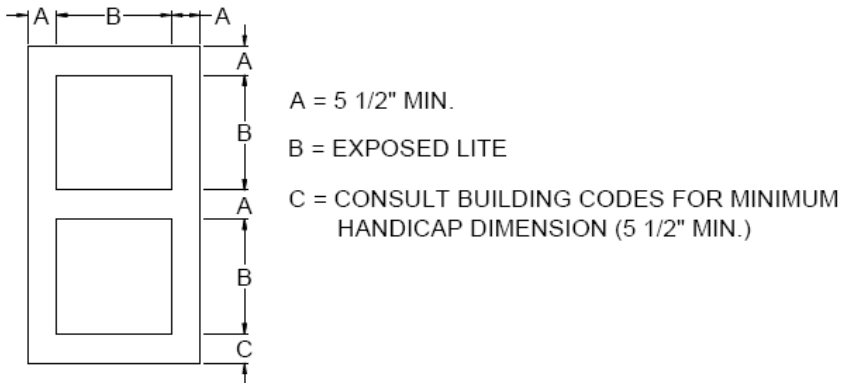
5 mm. = 0.197”	8.6 mm. = 0.338”	17 mm. = 0.670”
21 mm. = 0.827”	25 mm. = 0.984”	



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.

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.



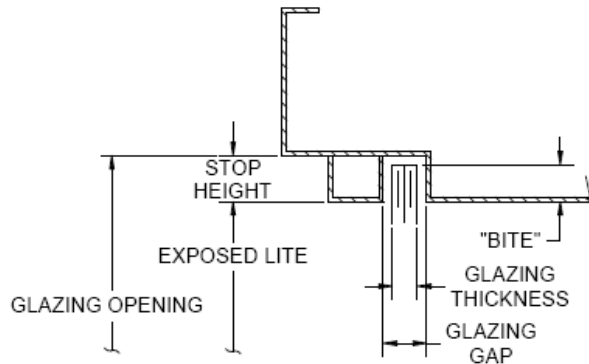
GLAZING TESTED AS “WALLS”:

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:

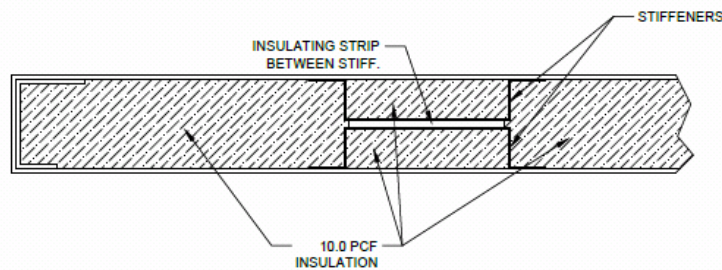
FRAMES:

- 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.

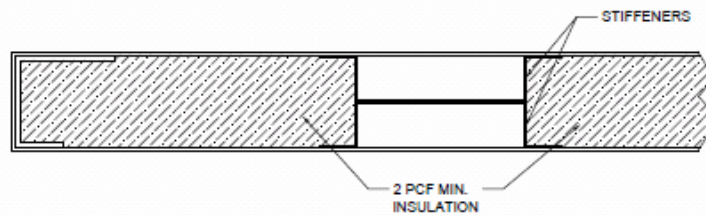


DOORS:

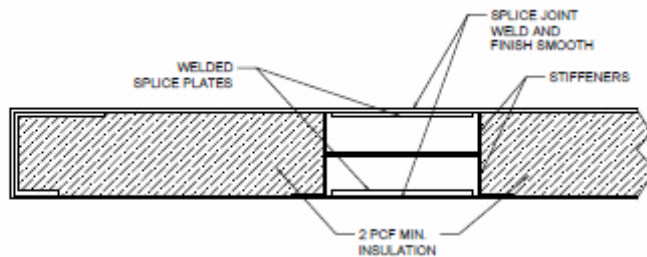
- Doors are made to general manufacturing requirements of HMMA-861.
- Series designation is 07CS representing a 1 3/4" thick continuously seam welded, bevel edge, steel stiffened "special" door (replaces 7700 Series).
- Door faces are either 16 (0.053" min) or 14 (0.067" min).
- Internal reinforcing 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. 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.

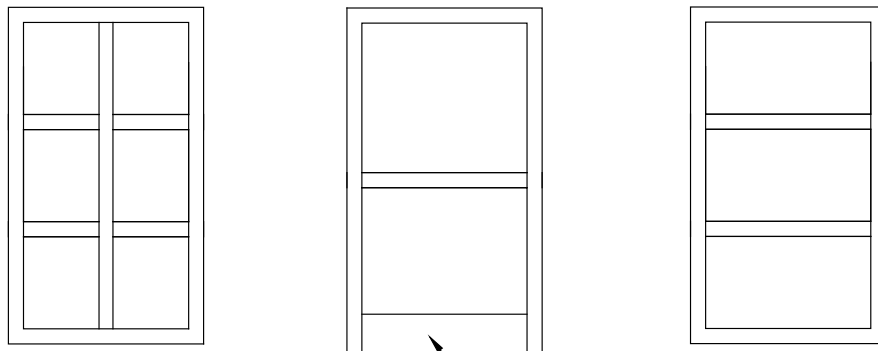
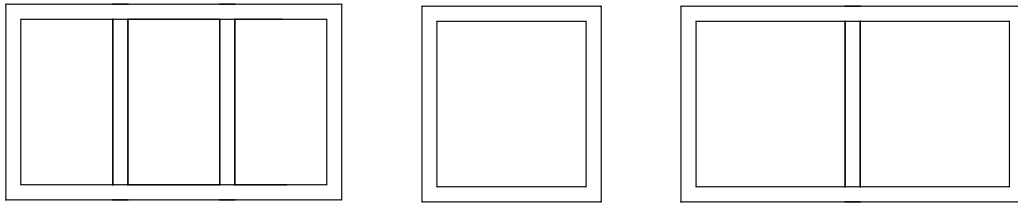
Each vertical jamb shall be equipped with one welded-in floor anchor and masonry anchors 24" O.C.* Welded in completed opening frame anchors, wood stud and steel stud anchors are also available.
 * (Lock-in wire masonry anchors are approved in assemblies up to 4'0" x 10'0" in size. larger units up to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

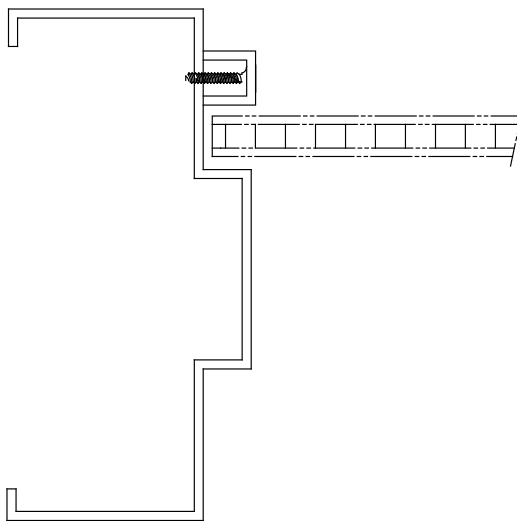
RATING	MAXIMUM LITE AREA OVERALL W X H	MAXIMUM LITE SQ IN	MAXIMUM LITE WIDTH	MAXIMUM LITE HEIGHT	WALL	MIN WALL THICKNESS
1 HOUR	10'2 1/2" X 10'1"	2721"	54"	77 3/4"	MASONRY ONLY	4 7/8"
1 HOUR	10'2" X 10'1"	2721"	54"	77 3/4"	DRYWALL/MASONRY SILL	4 7/8"
1 HOUR	9'2 1/2" X 4'11 1/2"	2721"	54"	77 3/4"	DRYWALL	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.

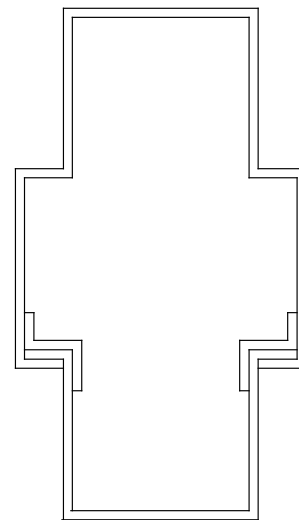




8 3/4" SILL AVAILABLE



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.

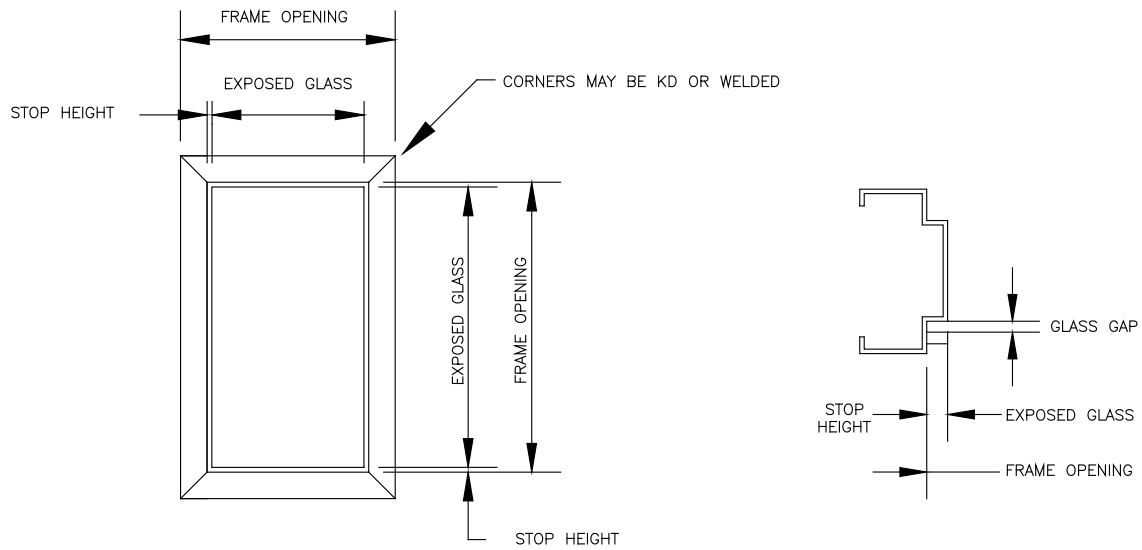
Each vertical jamb shall be equipped with one welded-in floor anchor and masonry anchors 24" O.C.*
Welded in completed opening frame anchors, wood stud and steel stud anchors are also available.

** (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.



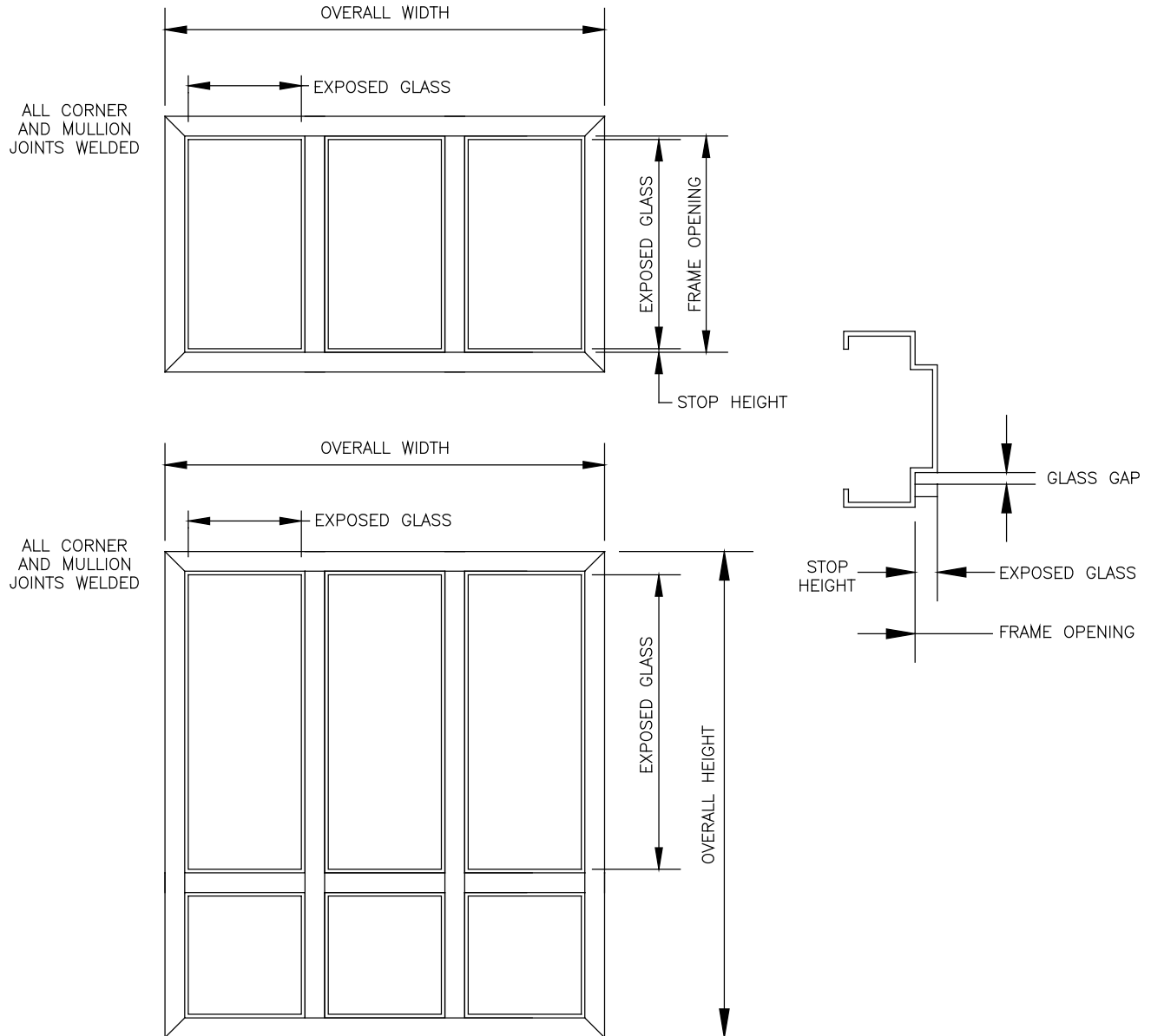


	GLAZING	EXPOSED GLASS WIDTH X HEIGHT	TOTAL EXPOSED GLASS	MINIMUM STOP HEIGHT	MINIMUM WALL THICKNESS	GLASS GAP
1 HOUR	FIRELITE	54" x 77 3/4" *	2721 SQ. IN.	5/8"	4 7/8"	3/8"
	FIRELITE PLUS	54" x 77 3/4" *	2721 SQ. IN.	5/8"	4 7/8"	1/2"
3/4 HOUR	1/4" LISTED WIRE GLASS	NEITHER TO EXCEED 54"	500 SQ. IN.	5/8"	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



**TECH
DATA**



** 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	
1 HOUR RATING														
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"		•	•	•	•	
20 MINUTE RATING - NO HOSE STREAM														
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	
3/4 HOUR RATING														
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

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

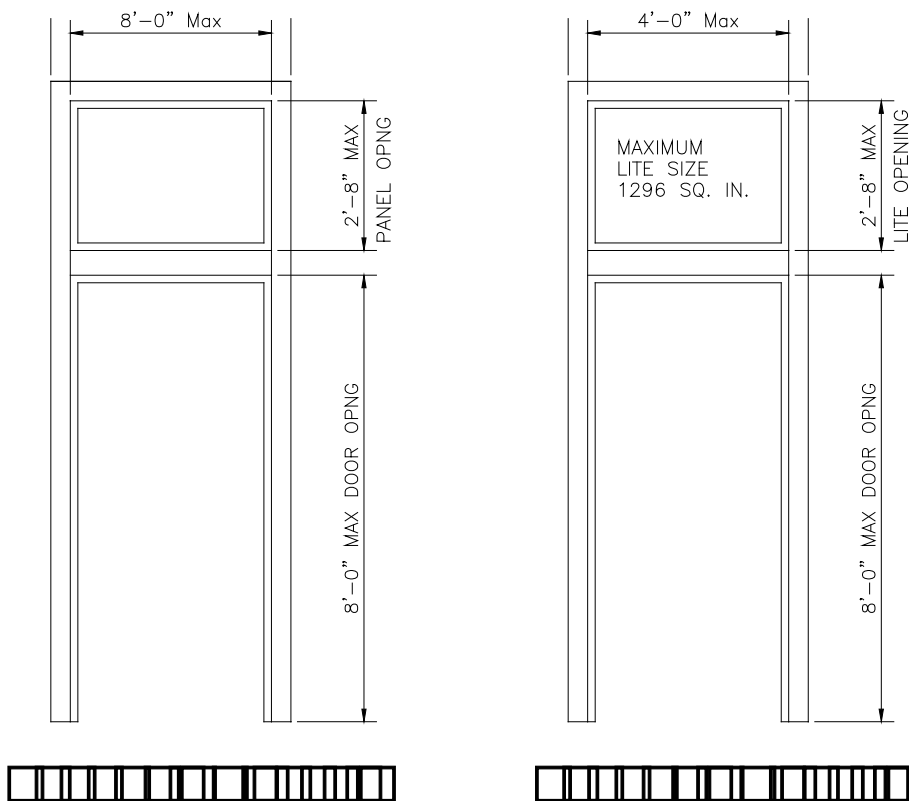
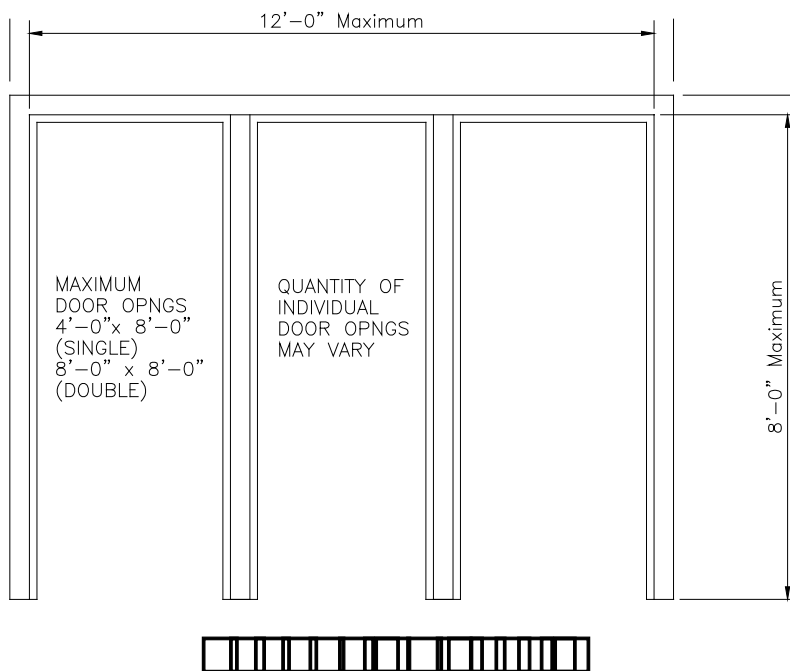


FAF "SMOKE SCREEN" FRAMES																	
HOURLY RATING	MAXIMUM DOOR OPENING		MAXIMUM SIZE OVERALL		MAXIMUM LITE SIZE		MAX. LITE AREA SQ. IN.	MAXIMUM PANEL SIZE		MAXIMUM PANEL AREA SQ. IN.	THROAT SIZE	MASONRY	EXISTING MAS.	STEEL STUD	WOOD STUD	WELDED	REMARKS
	WIDTH	HEIGHT	WIDTH	HEIGHT	WIDTH	HEIGHT		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											REMARKS
SERIES	MAX. OPENING SIZE WIDTH X HEIGHT	THROAT SIZE	MAX. DOOR RATING	WALL				ASSEMBLY			
				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 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	•	•			•	•						•	•	①④
4400	•	•	•	•	8-0	10-0			•	•	•	•						•	•	①④
2600, 600	•	•	•	•	4-0	8-0			•	•	•	•					•	•	•	③
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

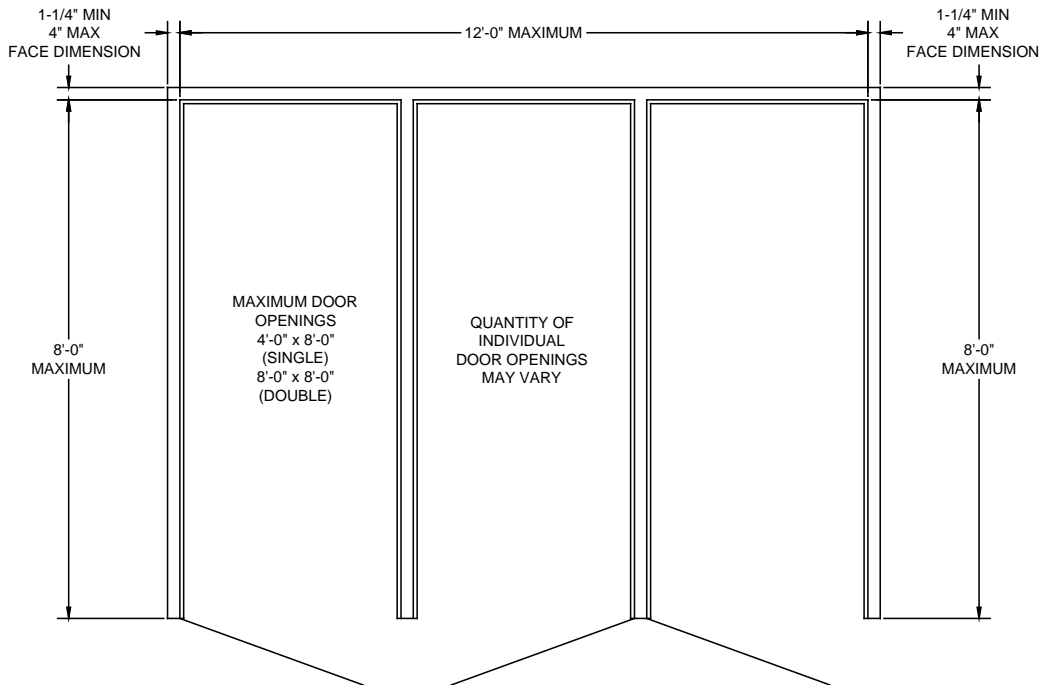


SCOPE:

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:

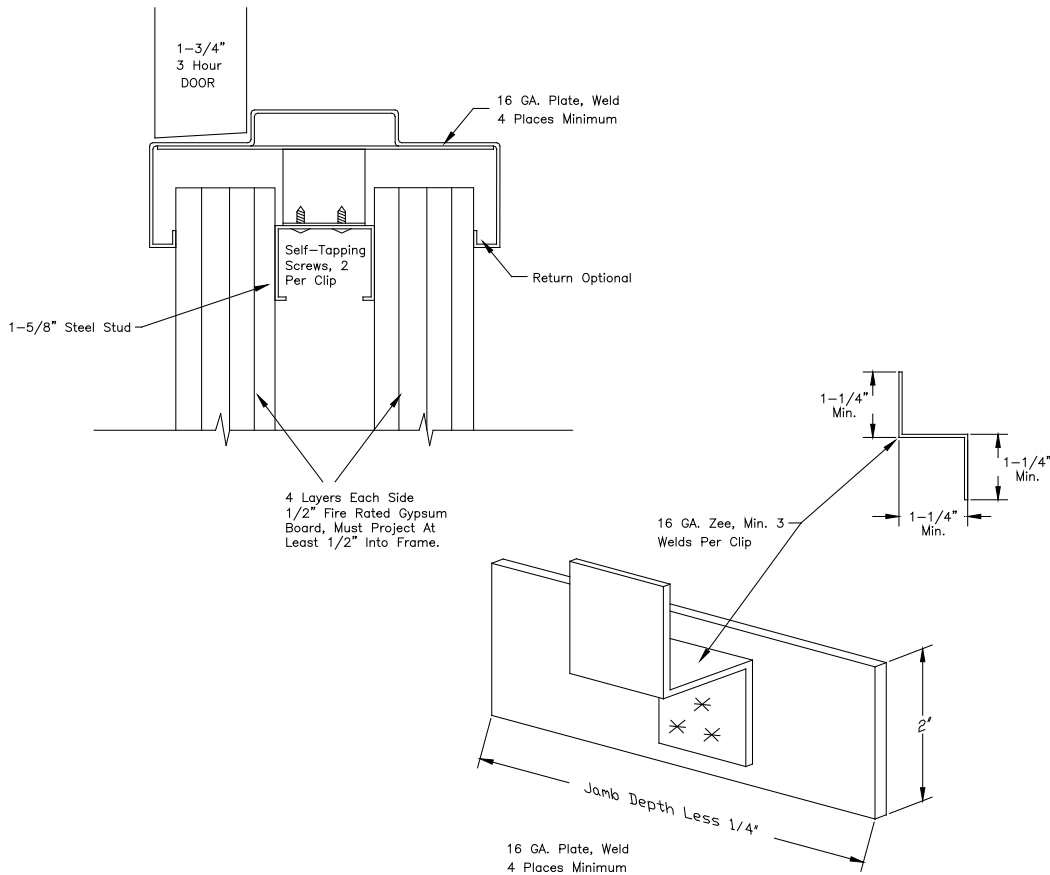
Black Mountain Door has acquired, through ITS/Warnock Hersey, Manufacturing Specifications for a 3 hour 400 Series frame in steel stud partitions. The wall is a 1 5/8" steel stud with four layers of 1/2" fire rated gypsum board each side (Gypsum Association #WP2970).

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:

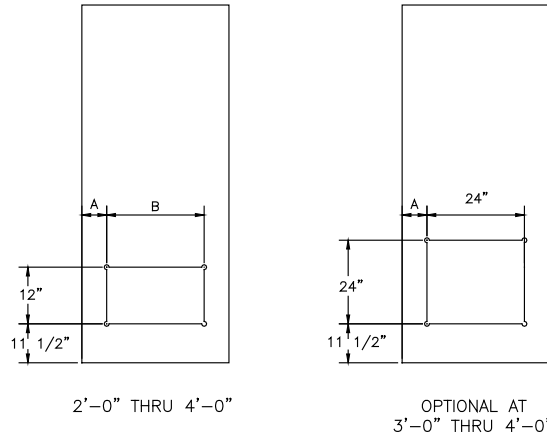
UL labeled louvered fire doors are available up to 4080 and 8080 in size when this maximum size is within our 1 1/2 hour UL or WHI program. The louver is approved in 1 3/4" 35LE, 37LE, 700, 15LE, 17LE, 25LE and 27LE Amweld Series labeled doors in appropriate maximum sizes. Non temperature rise labels 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.

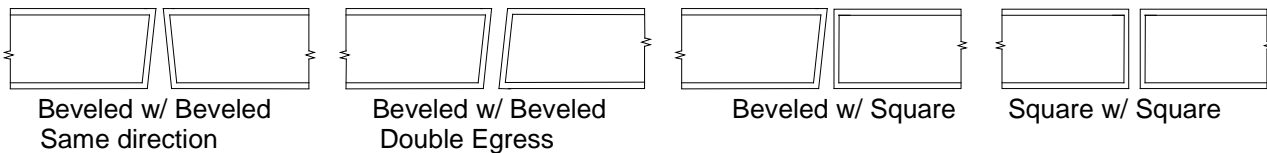
PURPOSE:

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:

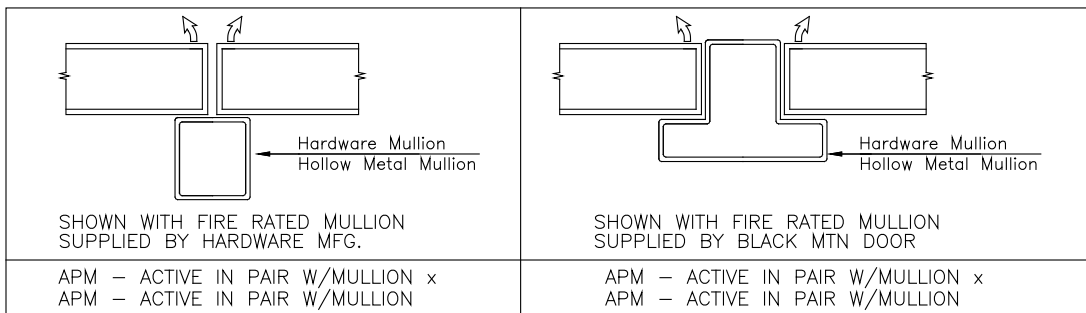
"U", "Z", Wrap, Flat and Dogleg astragals can be welded or applied with screws. Screw-on applications use #8x1/2" Truss Head SMS or similar. Weld or screw locations should be 1-1/2" maximum from each end and are not to exceed 12" O.C. across the height of the astragal. Overlapping astragals are REQUIRED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

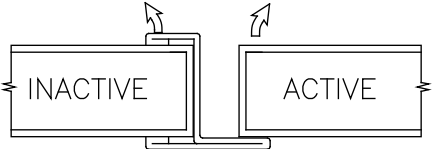
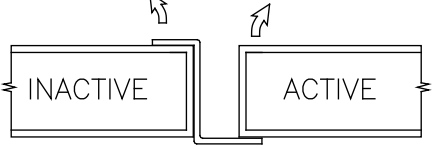
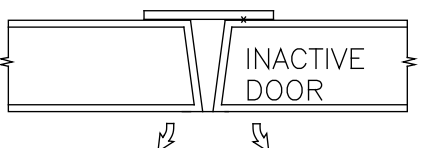
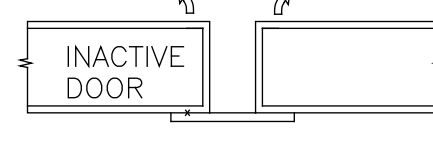
Door Series: 15LE, 17LE, 25LE, 27LE, 61LE, 63LE, 35LE, 37LE, 700, 45LE, and 47LE
 Hardware: Rim Panic on Both Leaves with a Mullion (Astragal not Required)
 Sizes: See Chart Z.1 on Page 6
 Label: 3-Hour Maximum



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

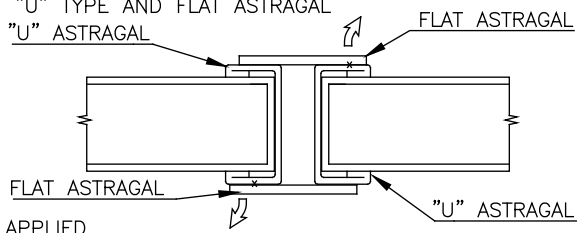
****700 Series available with Flat Astragal Only.***

<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 & FLAT AST. x APUF – ACTIVE IN PAIR W/ U & 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).

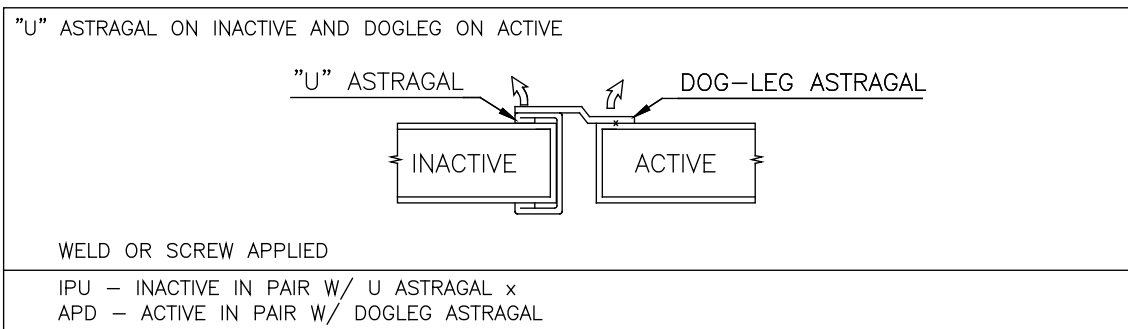
2) Mortised Panic on Active Leaf / Concealed or Surface Vertical Rod on Inactive Leaf.

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).

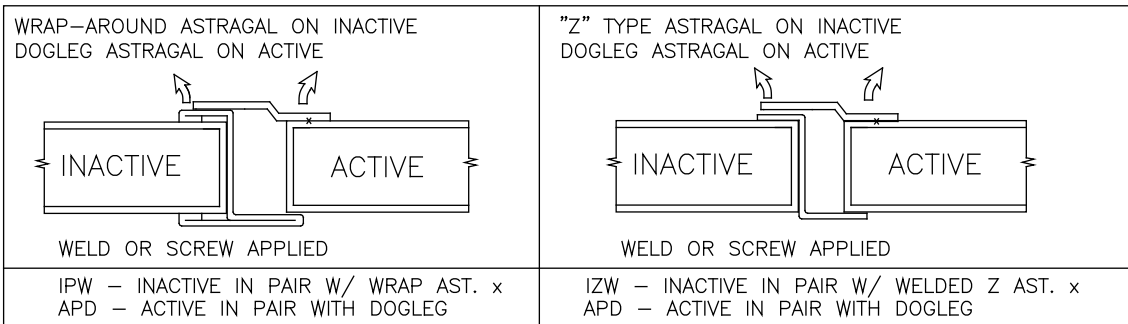
2) Mortised Panic on Active Leaf / Concealed or Surface Vertical Rod on Inactive Leaf.

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

jurisdiction.

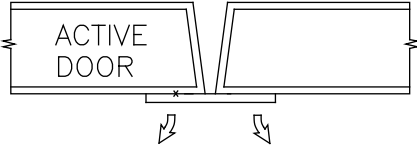
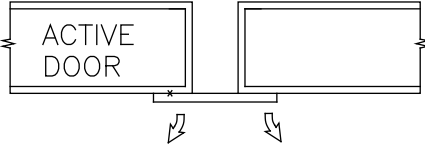
Sizes: See Chart Z.2 on Page 6

Label: 3-Hour Maximum



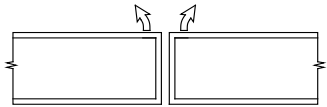
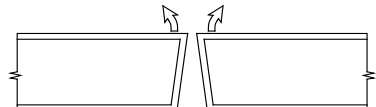
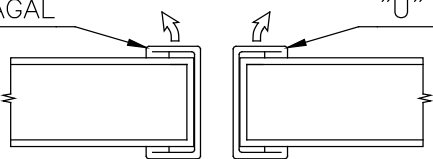
3-HOUR APPLICATIONS WITH ACTIVE GAP COVERAGE

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

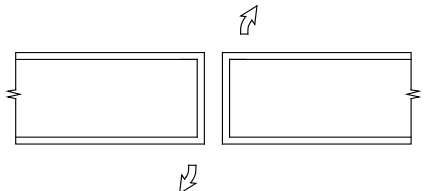
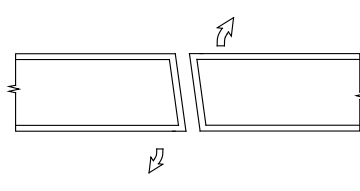
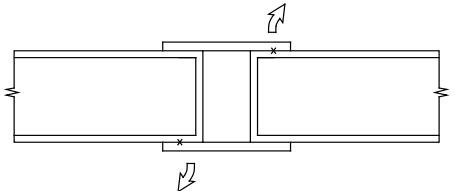
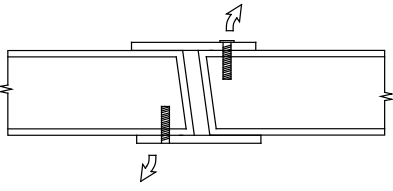
Door Series: 15LE, 17LE, 25LE, 35LE, 37LE, 45LE, 47LE, 700, 61LE and 63LE
 Hardware: Concealed or Surface Vertical Rod on both leaves, a concealed or surface vertical rod can be employed on one leaf and an automatic or manual flush or surface bolt on other leaf when acceptable to Authorities having jurisdiction).
 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

ACTIVE DOOR HARDWARE		INACTIVE DOOR HARDWARE
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.



AVAILABLE DOOR LITE SIZES			
Rating	Maximum Sq. In.	Maximum Width	Maximum Height
<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).

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.

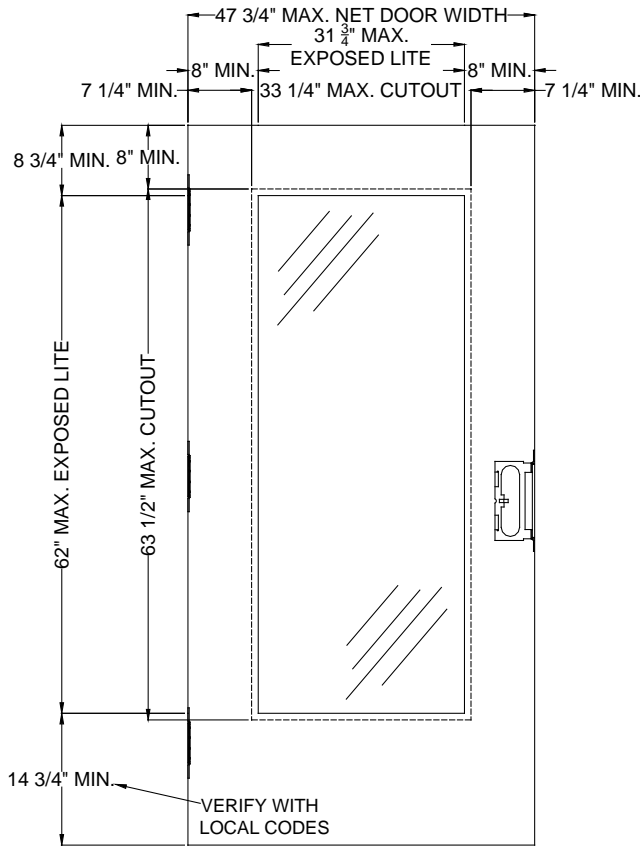
G7 Internal Reinforcing Channel 5/8" Legs X 1 5/8" Width X 0.042" min. X Length to Suit Cutout Size. All Corners Welded. Channel Welded to Both Door Faces 16" On Center max.

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.

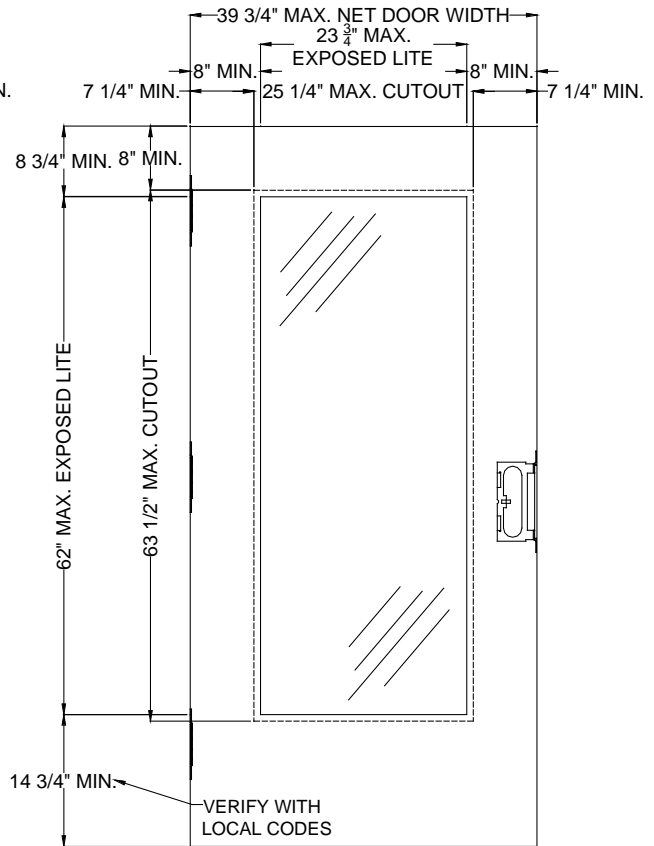


"FULL GLASS" DIMENSIONS 0.053" (MIN.) DOOR

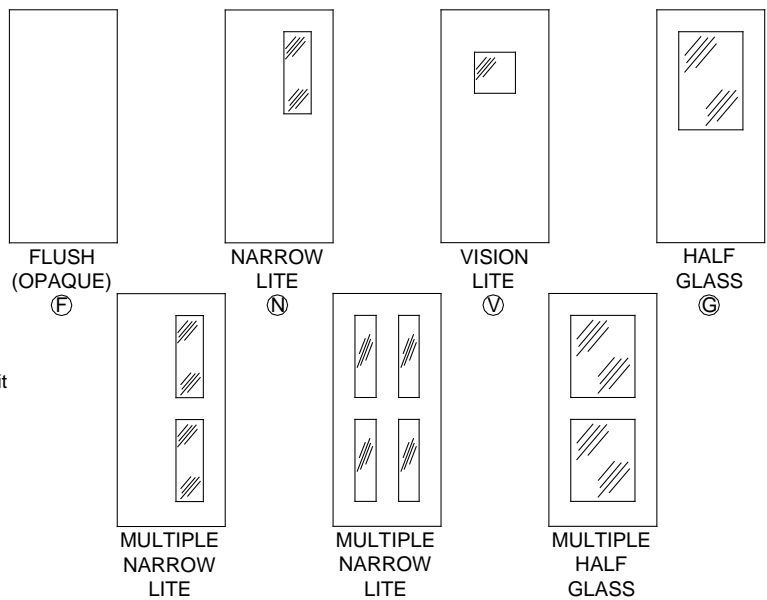
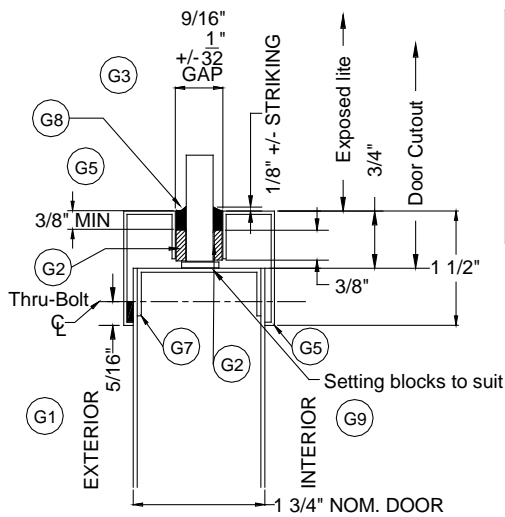


GLAZING ASSEMBLY DETAIL

"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. Details are also included on the Florida Building Commission website at 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/six 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. Details are also included on the Florida Building Commission website at 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.

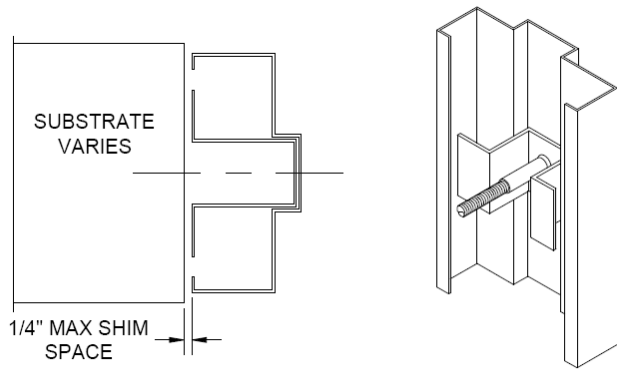
B. 3/8" diameter carbon steel sleeve anchor by "HILTI" with 1 5/8" minimum embed into concrete or masonry.

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.

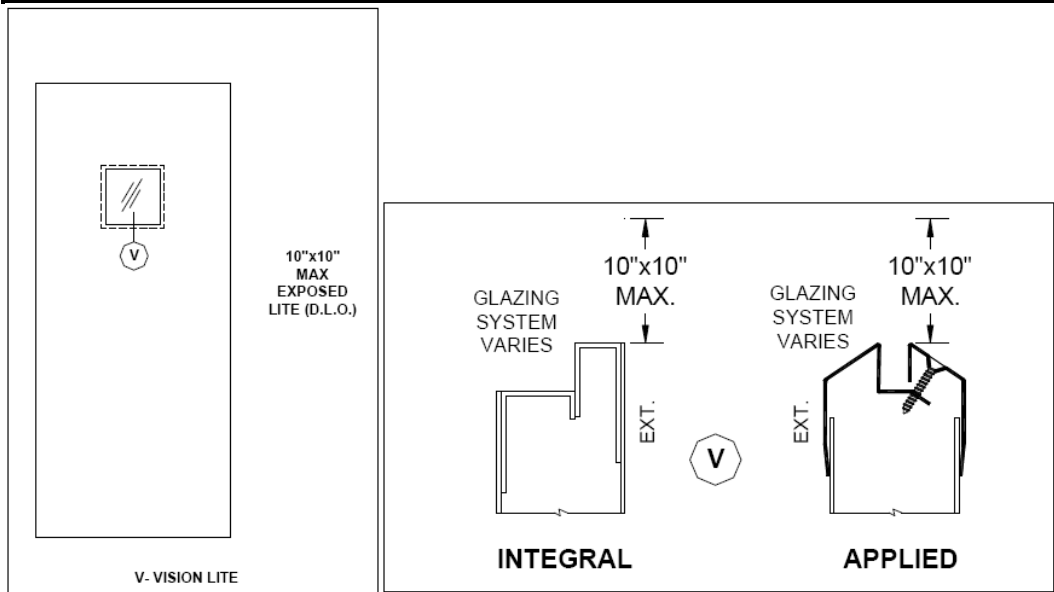
Doors: Series 25WE, 27WE, 25LS, 27LS, 07WE, 07LS, 61LS, and 63LS, 18 gage (0.045" min.) faces. Doors may be opaque (Flush), FV (vision light), or 6-panel embossed. Insulation at 07WE and 07LS is batttype insulation.

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).

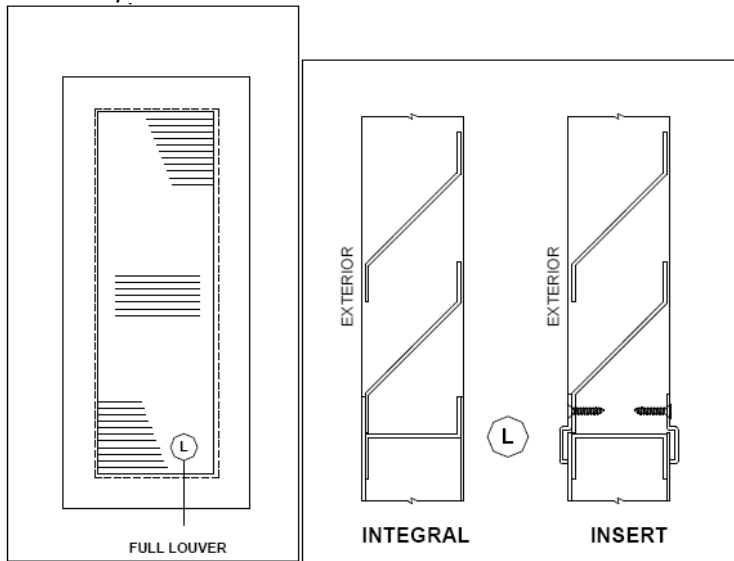
Doors: Series 25WE, 27WE, 25LS, 27LS, 07WE, or 07LS, 18 gage (0.045" min.) faces, opaque (Flush) only. Insulation at 07WE and 07LS may be expanded polystyrene (EPS) or batt-type insulation. Flat astragals required both sides of double doors.

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.

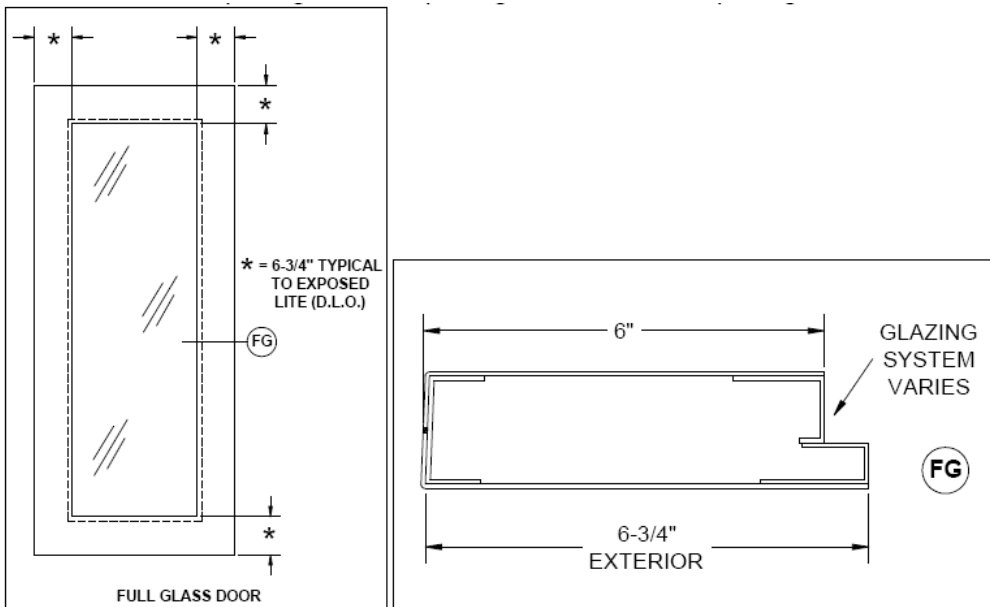
Transom Bar: Non-removable (welded to jambs), 16 gage (0.058" min.), 5 1/8" minimum depth, reinforced with continuous C5 channel, 2" face ONLY.

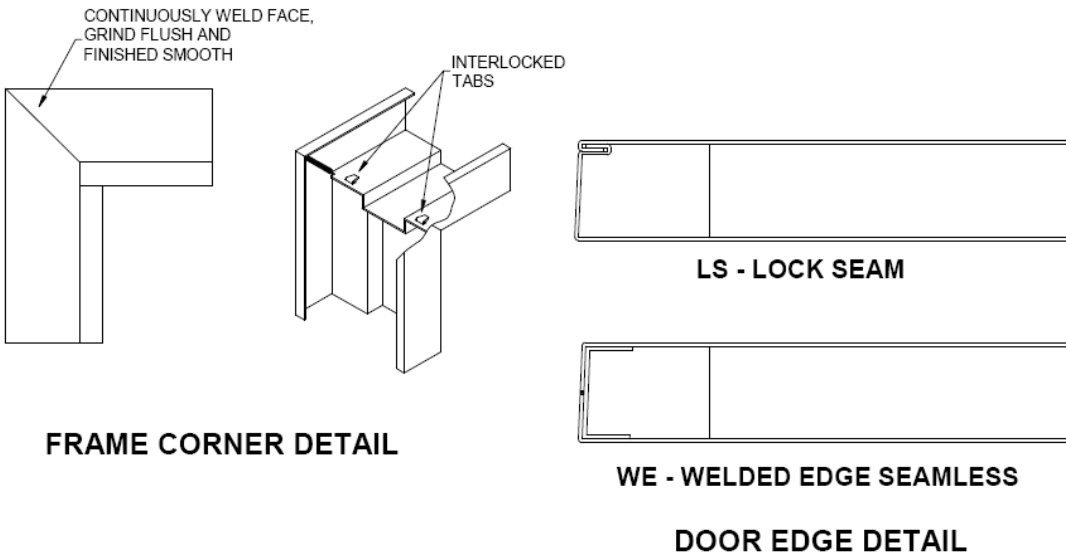
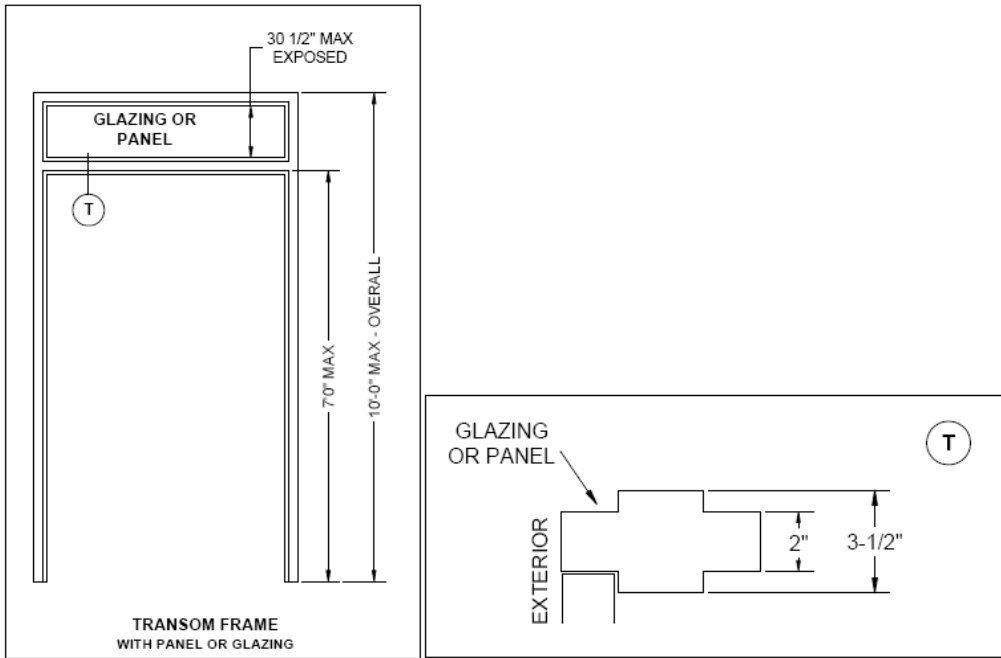
Door Glazing: Doors have an Integral (Flush) Molding with channel or angle shaped glazing beads on the interior side. A wide variety of glazing materials (too numerous to list here) will maintain the +/- 75 psf design pressure. Glazing is to be installed with a Structural Sealant.

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"

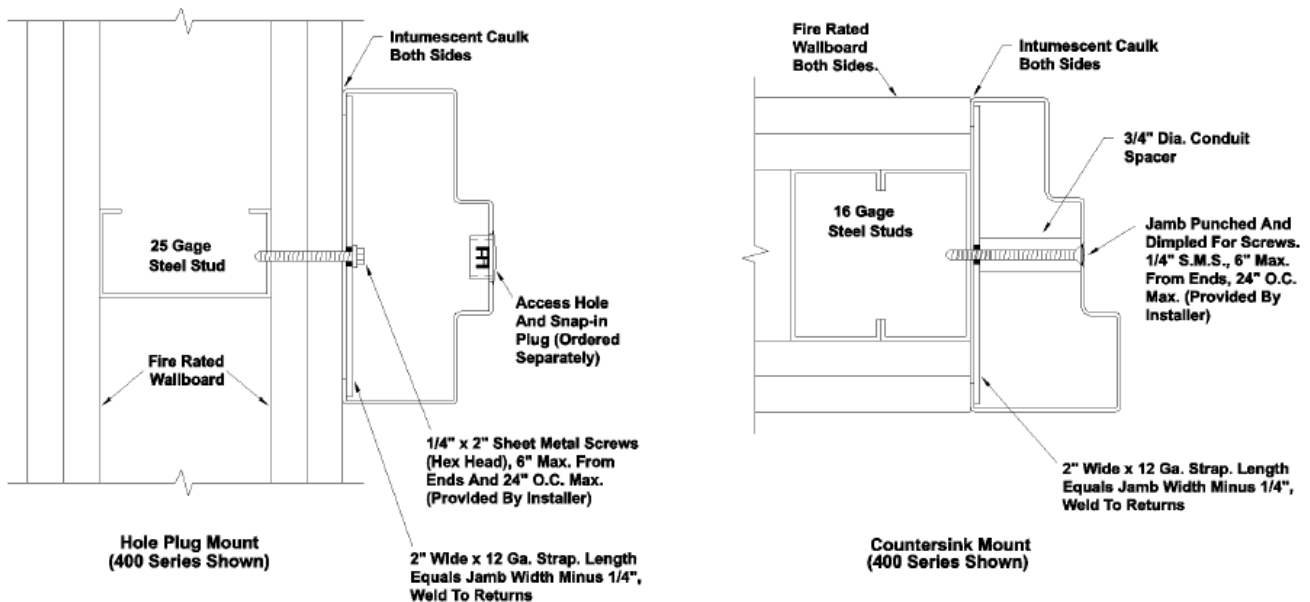
Dimensional criteria are as follows:

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".



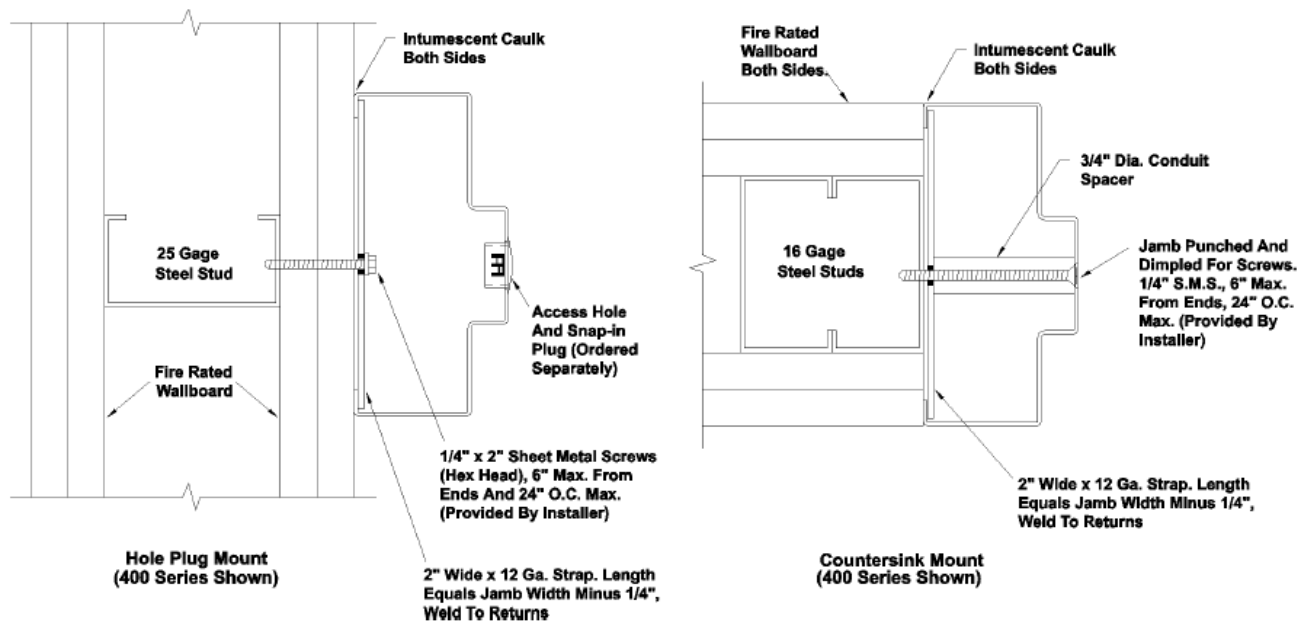
INSTALLATION INSTRUCTIONS:
Amweld 400/4400 Series Fire Door Frame Butted to Drywall

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 or SDI (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:

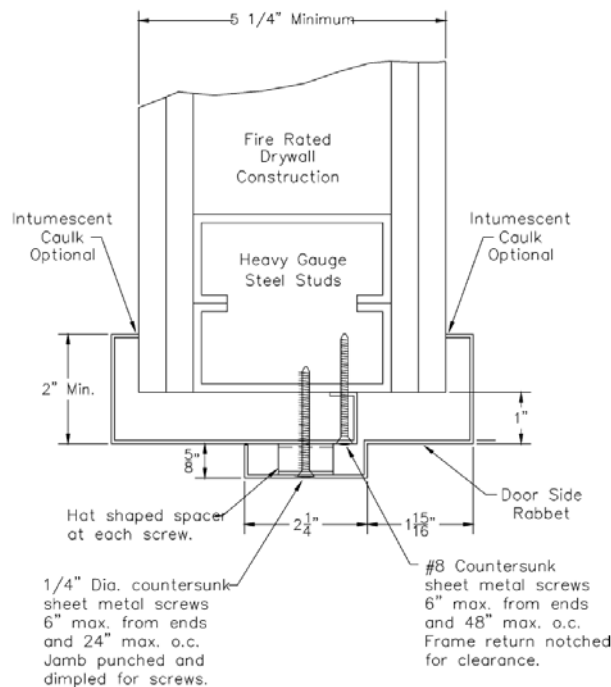
Black Mountain Door 800 Series frames are detailed in Tech Data sheet F-3.0. These frames are available with UL labels in retrofit applications such as to install over an existing non-rated frame. Another important installation possibility is their use as an adjustable frame where stud wall thicknesses 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  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
Black Mountain Door's Tech Data at 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.

