

This section includes AMBICO Blast Resistant Steel Door and Frame assemblies that can be fire rated or non-rated. This section relies on both the Canadian Steel Door Manufacturers Association (CSDMA.org) industry standard, as well as on the Hollow Metal Manufacturers Association (NAAMM.org) industry standard. This section includes proprietary, descriptive and performance type specification requirements. Edit to avoid conflicting requirements.

Part 1 General

1.1 SECTION INCLUDES

This article includes a summary of the content of this section which will not be included in other sections. This article is NOT intended to be used as a trade or other form of jurisdictional content.

- .1 Blast-resistant [non-rated] [fire rated] pressed steel frames.
- .2 Blast resistant [non-rated] [fire rated] steel [swing] [sliding] doors [and panels].
- .3 Factory- supplied [and installed] hinges and latching devices.
- .4 Glazed lite blast resistant steel frames.
- .5 Factory supplied [and installed] glass and glazing.

1.2 RELATED SECTIONS

This article references other specification sections that inter-rely on this section. This listing should include those sections that describe subjects or products that affect this section directly.

- .1 Section [_____ - _____]: Masonry mortar fill of metal frames.
- .2 Section 07 92 00 - Joint Sealing: Caulking between doors and adjacent construction.
- .3 Section 08 71 10 - Door Hardware - General.
- .4 Section 09 91 15 - Painting: Field painting of [doors] [frames] [doors and frames].

1.3 REFERENCES

Edit this article after editing the rest of this section. List reference standards that are included within the text of this section, when edited for a project specification. Delete references that do not apply to this project.

- .1 ASTM A36/A36M-05 - Standard Specification for Carbon Structural Steel.
- .2 ASTM A653/A653M-06 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .3 ASTM A1011/A1011M-07 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.

- .4 UFC 3-340-02 - Structures to Resist the Effects of Accidental Explosions.
- .5 ASCE – Design of Blast Resistant Buildings in Petrochemical Facilities.
- .6 PIP STC01018 – Blast Resistant Building Design Criteria.
- .7 ASTM E330-02 - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
- .8 ASTM F2247 – Standard Test Method for Metal Doors Used in Blast Resistant Applications (Equivalent Static Load Method).
- .9 ASTM E1300 – Determining Load Resistance of Glass in Buildings
- .10 ASTM F2248 – Specifying an Equivalent 3-Second Duration Design Loading for Blast Resistant Glazing Fabricated with Laminated Glass.
- .11 ASTM F1642 – Standard Test Method for Glazing and Glazing Systems Subject to Airblast Loadings.
- .12 Canadian Steel Door Manufacturers Association (CSDMA), Selection and Usage Guide for Steel Doors and Frames, 1990.
- .13 HMMA 802-92 - Manufacturing of Hollow Metal Doors and Frames.
- .14 HMMA 840-99 - Installation and Storage of Hollow Metal Doors and Frames.
- .15 NFPA 80-07 - Standard for Fire Doors and Other Opening Protectives.
- .16 UL10C-98 Standards for Positive Pressure Fire Tests of Door Assemblies.

1.4 PERFORMANCE REQUIREMENTS

Include this article if all doors should meet the same performance requirement; otherwise, specify individual performance for door types in Part 2 or in a door schedule.

- .1 Structural Performance (Static Loading):
 - .1 Provide doors capable of withstanding a pressure of _____ kPa (_____ psi) tested to ASTM E330.
 - .2 Rebound: 0-100% [_____]
 - .3 Response: [_____] Elastic (no damage)
[_____] Inelastic (minor damage)
- .2 Structural Performance (Dynamic Loading):
 - .1 Provide doors capable of withstanding a peak reflected pressure of _____ kPa (_____ psi) tested to ASTM F2247.

- .2 [Duration: _____ msec] or [Impulse: _____ psi-msec]
- .3 Rebound: 0-100% [_____]
- .4 Ductility ratio 1-20 [_____]
- .5 End Rotation 1-12 [_____] degrees

1.5 REGULATORY REQUIREMENTS

- .1 Installed Door and Frame Assembly: Conform to [NFPA 80] [_____] for fire rated class [as scheduled.] [as indicated.].

1.6 SUBMITTALS

- .1 Section [01 33 00]: Submission procedures.
- .2 Product Data: Provide product data on door construction and [_____].
- .3 Shop Drawings: Indicate door and frame elevations, internal reinforcement, anchor types, closure methods, [finishes] location of cut-outs for hardware, and cut-outs [for glazing] [for louvers].
- .4 Samples: Submit manufacturer's door finish samples, as well as manufacturer's frame corner sample.
- .5 Test Data:
 - .1 Submit independent test data from a recognized licensed laboratory indicating compliance with the blast-resistance requirements.
 - .2 When blast resistance is not supported by prototype tests, design calculations by a licensed professional engineer shall be accepted.

1.7 QUALITY ASSURANCE

- .1 Perform Work to requirements of [CSDMA (Canadian Steel Door Manufacturers Association)] [HMMA (Hollow Metal Manufacturers Association)] standards.
- .2 Manufacturer: Minimum 5 years documented experience manufacturing blast resistant door and frame assemblies.
- .3 Pre-installation Meeting: Convene a pre-installation meeting [2] [_____] weeks before start of installation of door and frame assemblies. Require attendance of parties directly affecting work of this section, including contractor, architect, installer, and manufacturer's representative. Review installation and coordination with other work.

1.8 DELIVERY, STORAGE AND PROTECTION

- .1 Section [01 61 00]: Transport, handle, store, and protect products.
- .2 Comply with HMMA 840.
- .3 Weld minimum two temporary jamb spreaders per frame prior to shipment.

- .4 Remove doors and frames from wrappings or coverings upon receipt on site and inspect for damage.
- .5 Store in vertical position, spaced with blocking to permit air circulation between components.
- .6 Store materials out of water and covered to protect from damage.
- .7 Clean and touch up scratches or disfigurement caused by shipping or handling with zinc-rich primer.

1.9 WARRANTY

- .1 Manufacturer's Limited Warranty: Five (5) years from date of supply, covering material and workmanship.

Part 2 Products

2.1 MANUFACTURERS

List the manufacturers acceptable for this project. Edit the subsequent descriptive specifications of Part 2, to identify project requirements and to eliminate any conflict with specified manufacturer's products.

- .1 AMBICO Limited
 1120 Cummings Avenue
 Ottawa, Ontario, Canada K1J 7R8
 Toll Free Phone 888-423-2224
 Phone 613-746-4663
 Toll Free Fax 800-465-8561
 Fax 613-746-4721
- .2 Other Acceptable Manufacturers:
 - .1 [_____].
 - .2 [_____].
- .3 Substitutions: [Refer to Section 016000.] [Not permitted.]

2.2 MATERIALS

- .1 Sheet Steel: Galvanized steel to ASTM A653/A653M.
 - .1 Coating designation [Z275] ([G90]) for exterior door assemblies.
 - .2 Coating designation [ZF001] ([A01]) for interior door assemblies.
- .2 Reinforcement [Channel]: To CSA G40.20/G40.21, coating designation to ASTM A653/A653M, [ZF75] ([A25]).
- .3 Structural Plate: Hot rolled steel to ASTM A1011.

2.3 ACCESSORIES

AMBICO blast resistant steel door and frame assemblies are supplied with hinges and latching devices as an integral part of the tested assembly. All other hardware items may be supplied by Section # 08 71 10. All other accessories specified in this section shall be supplied by the door and frame manufacturer.

- .1 Hinges: Heavy weight butt type to be factory supplied [and pre-installed].
- .2 Glazing Stops: Formed galvanized steel channel, [butted] [mitred] corners; prepared for countersink style [tamperproof] screws.
- .3 Glass: Type as tested to achieve fire and blast performance ratings. Glazing to be factory supplied [and preinstalled].
- .4 Primer: Rust inhibitive zinc chromate.
- .5 Threshold and perimeter seals to be factory supplied.
- .6 Door Hardware: [Mortise lock] [Exit device] to be factory supplied [and pre-installed].

2.4 FABRICATION

- .1 Manufacture doors and in accordance with performance requirements in Section 1.4 and HMMA 802-92 - Manufacturing of Hollow Metal Doors and Frames.

Specify door thickness and other values with caution as they may vary in order to meet the blast performance ratings available. Higher ratings may require doors thicker than 1 3/4" (44 mm).

- .2 Steel Doors, [Swing] [Sliding] Type:
 - .1 Sheet steel faces, thickness, design, and core suitable to achieve specified blast performance.
 - .2 Blast resistant construction, longitudinal edges [mechanically inter-locked] [welded, filled and sanded] with [no] visible edge seams.
 - .3 Top and Bottom Channels: Inverted, recessed, welded steel channels.
 - .4 Astragals: Metal astragals for double doors designed to conform with blast pressure rating.
 - .5 Weld structural steel channels flush to top and bottom of door.
 - .6 Weld hardware reinforcement plates in place.
- .3 Steel Frames: Swing Type

Frames at swing doors openings are provided as an integral part of the blast door and frame assembly. Frames at sliding doors shall be provided by Section # 05 10 00 Structural Metal Framing.

- .1 Sheet steel and metal thickness appropriate to maintain door blast and fire ratings, mitred corners.
- .2 Factory assemble and weld frames.
- .3 Mullions for Double Doors: [Fixed] [Removable] type.
- .4 Provide three single silencers for single doors [and mullions of double doors] on strike side, and two single silencers on frame head at double doors without mullions.

- .4 Install [glazing and] door silencers.
- .5 Hinges and latching devices to be factory supplied [and pre-installed].
- .6 Sliding doors to be provided with door hangers, guides, and track which will be supplied loose by the door manufacturer.
- .7 Affix permanent metal nameplates to door and frame, indicating manufacturer's name, door tag, model number, and performance rating.

2.5 PRE-INSTALLATION OF SWINGING DOOR HARWARE

- .1 Hinges and latching device to be supplied complete with door and frame in conformance with blast resistant requirements of project.
- .2 Hinges and latching device shall be factory pre-installed on the door and frame assembly.

2.6 PRE-INSTALLATION OF GLAZING

- .1 Glazing shall be designed in conformance with 1.4.
- .2 Glazing shall be factory supplied [and pre-installed] [and shipped loose ready for site installation by others].

2.7 FINISHES

- .1 Factory Finish: Factory applied zinc chromate primer [to be applied to all exposed surfaces] [touch-up only, where product has been welded and ground smooth].

Part 3 Execution

3.1 INSTALLATION

- .1 Install components including doors, frames, and hardware in accordance with manufacturer's written instructions.
- .2 Install doors and frames to [CSDMA] [HMMA 840] standards [and in accordance with NFPA 80, and local authority having jurisdiction].
- .3 Coordinate with [masonry] [gypsum board] [concrete] [_____] wall construction for anchor placement.
- .4 Set frames plumb, square, level and at correct elevation.
- .5 Allow for deflection to ensure that structural loads are not transmitted to frame.
- .6 Adjust operable parts for correct clearances and function.
- .7 Finish paint in accordance with Section 09 91 15.

3.2 ERECTION TOLERANCES

- .1 Section 01 73 00: Tolerances.
- .2 Installation tolerances of installed frame for squareness, alignment, twist and plumbness are to be no more than ± 1/16in (1.5mm) in compliance with HMMA 841.

3.3 FIELD QUALITY CONTROL

- .1 Provide qualified manufacturer's representative to instruct installers on the proper installation and adjustment of door assemblies.
- .2 Provide manufacturer's representative to inspect door installation, and test minimum ten (10) cycles of operation. Correct any deficient doors.

3.4 SCHEDULE

Include this article to identify variations of products or installation requirements specified. If door and/or frame schedules are listed on drawings or on separate schedule sheets, do not repeat statements in this article.

- .1 Blast Resistant Door and Frame Assembly Schedule:

Tag	Room	Nominal Size	Thickness	Material	Glazing	Fire Rating	Blast Rating	Comments
D-1	100	2/750mm x 3600mm	75	GS	D	NFR	1 psi (7kPa)	
D-2	101	3'0" x 8'0"	1 ¾"	GS	C	NFR	50 psi (350 kPa)	
D-3	105	2/4'0"x8'0"	1 ¾"	SS	A	FR	5psi (35 kPa)	
<ul style="list-style-type: none"> Material types: GS = Galvanized Steel, SS = Stainless Steel Glazing types: A = Halflite, B = Fulllite, C = Narrowlite D=Flush Blast Ratings: psi = pounds per square inch kPa = kilopascals per square meter Note: 1 psi = 7 kPa 								

END OF SECTION