

Specification Section 08390
Mid to High Range Blast Resistant Door PDI Model DB-X

PART 1 - GENERAL

1.2 Scope:

Furnish blast resistant door assembly where indicated on door schedule and specified. Installation is optional. The door system shall be manually operated, side hinged, swinging type. Include steel door leaf, frame, anchorage, latching hardware and hinge(s) to resist the design requirements specified.

1.5 Submittals:

Before fabrication is started, manufacturer shall furnish _____ complete sets of submittal drawings, and if required, analysis calculations showing conformance or blast loading certification for Architect's approval. Drawings shall detail latching hardware, hinges, and frames to wall anchors, hardware functions, and if required, transom panels, door closers, thresholds and perimeter sealing devices. (*Optional:* Calculations shall bear the stamp and signature of a Registered Professional Engineer.)

1.6 Warranty:

Manufacturer shall warrant its products to be free of defects in labor and material for one year after shipment.

PART 2 - PRODUCT

2.1 Design Basis:

Blast resistant door systems as shown on drawings shall be Sonicbar® series Model DB-X manufactured by Protective Door Industries, Harvey, IL 60426 at 708/331-2515 or prior approved equal. Door manufacturer shall submit evidence of having been engaged in the successful design and manufacture of blast resistant door assemblies for a minimum of 10 years.

2.2 Design Criteria:

Blast resistant door shall be engineered for one of the following design loads:

- A. Static Load: Door systems shall be designed to resist a positive blast force of _____ PSI static equivalent loading at _____ % rebound with the positive pressure acting to seat the door into the frame (hinge side) or unseat the door against the hardware (stop side).
- B. Dynamic Load: Door systems shall be designed to resist a peak reflected overpressure (P_r) of _____ PSI at a duration of _____ milliseconds in the positive phase; rebound as calculated. Deflection shall be limited to _____. (If not specified, the door shall be designed to the yield strength of the materials.)
- C. Missile / Tornado Resistance: Door systems shall be designed to resist a missile projectile constructed of _____, diameter of _____, length of _____, and weight of _____ at an impact velocity of _____ miles/hour with an angle of incidence at _____ degrees. Unless specified, the missile will be analyzed impacting the center of the door.

Door system shall be operable after application of blast load.

Fire rating: Where indicated on the door schedule, those openings shall be certified by the blast door manufacturer that the materials used in the construction of the door assembly are of noncombustible construction for the degree of U.L. protection specified.

2.3 Fabrication:

2.3.1 Shop Assembly:

Blast doors shall be of noncombustible construction, full flush, insulated, fabricated of structural shapes and plates with sharp lines and angles. Faceplates shall be one piece, fabricated from straight material with thickness determined by the design calculations. A non-removable astragal assembly shall be attached to and swing with the inactive leaf of pair at the meeting style. Removable mullions are optional.

Frame shall be a formed frame or structural steel channel with welded bar stops; three- or four-sided, set-up and welded, factory reinforced and template tapped for hardware. Frame to be equipped with anchors designed to transfer all blast loadings to adjacent walls or to structural embeds. Transom panel and transom bars, if required, shall be designed to permit their complete removal for occasional access of equipment.

Steel material shall conform to the standards of the American Institute of Steel Construction. All work shall be assembled using all welded construction per the standards of AWS D1.1 and D1.3. Welds to be of a size and type as required per the blast load analysis criteria.

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2.3.2 Hardware:

- A. Latching hardware shall be supplied by blast door manufacturer and certified as a complete system. The hardware shall not release under blast loads or rebound.
1. Single door and active leaf of pair shall use factory installed Protective Door Industries Sonicbar® SH-153 series mortised single or two-point horizontal spring latch system. Heavy duty hardware assemblies shall be corrosion resistant, positive acting, vibration-free and operated by lever handle on outside and lever handle or exit bar on the inside. Doors shall be prepared for key locking cylinder with the master key cylinder provided by others as specified. The trim handle(s) activate steel bolts engaging strikes at door jamb, and shall not release under blast loads or rebound. All exposed trim shall be stainless steel with US32D finish. The inactive leaf of pair shall use factory installed Protective Door Industries Sonicbar® Model SH-154-FB two-point vertical manual flush bolts in US26D finish. A sill bolt keeper plate shall be embedded in concrete floor.
 2. *Optional:* Single and each leaf of pair shall use factory installed Protective Door Industries Sonicbar® SH-154 series manually operated vertical two-point latch unit, either surface mounted or fully concealed, operated by lever handle on stop side, and lever handle or no exterior operation or trim on hinge side. All exposed trim shall be stainless steel with US32D finish. A sill bolt keeper plate shall be embedded in concrete floor at each leaf. If required, the door panel shall be prepared for a security hasp and staple, with the padlock supplied by others.
- B. A heavy-duty surface mounted door closer shall be non-hold-open type and included for the single or active leaf of pair where a U.L. Fire Label is required. Door and frame shall be factory reinforced for door closer. Closer shall be sprayed aluminum finish, BHMA symbol 689.
- C. Blast door manufacturer shall furnish hinges. Door and frame shall be factory reinforced, drilled and tapped, and fitted for hinges. Hinge type shall consist of one of the following depending upon design criteria and door panel size.
1. Continuous steel hinge with stainless steel pin available in factory USP prime finish or optional brushed stainless steel finish.
 2. Protective Door Industries Sonicbar® SH-460 half-mortise or SH-461 surface bolted high strength cast six-way adjustable hinges. Hinges shall be capable of smooth operation and designed so one hinge will carry entire door weight. Hinges shall be manufactured of structural quality steel and contain a stressproof pin, steel pintle, steel straps and a sperco bearing. An allen wrench shall be used to adjust the six-way hinges. The exposed surfaces shall be factory USP prime finish.
- D. Where scheduled, active door leaf shall be prepared to interface with card key access control or power assisted operation where specified. A 24 VDC power supply to door panel is required via an electric hinge for U.L. Fire rated door systems or surface power loop for non-U.L. Fire rated door systems.

2.4 Finish:

All tool marks and imperfections shall be removed and exposed welded joints dressed smooth. Surfaces shall be cleaned and/or ground smooth for maximum paint adhesion. Exposed surfaces shall be factory prime painted with the manufacturer's standard rust inhibitive prime paint.

PART 3 - EXECUTION

3.1 Storage:

Prior to installation, cover and store all materials in a dry, protected location to prevent damage.

3.2 Installation:

Installation of materials shall be performed by Contractor's skilled mechanics or by manufacturer's trained personnel. Installation shall be in strict accordance with installation instructions and approved installation drawings provided by the door manufacturer. Frames and embeds shall be installed plumb, level, square and rigid. Doors shall be securely hung in place and adjusted for proper operation and ease of swing. All latch bolts shall fully extend into strike cut-outs. Doors shall be finished painted as applicable under another referenced section.