

*This section includes AMBICO blast resistant steel sliding steel door assembly which includes electric operators as an integral part of the assembly. This section relies on industry standard for steel doors, electrical components and hardware and 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 steel doors [and panels].
- .2        Factory- supplied blast resistant sliding door hardware counterbalance system and valance.
- .3        Factory-supplied electric door operators.
- .4        Leading and following, head and sill seals and threshold.
- .5        Factory finishing.

### **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 05 50 00 – Metal Fabrications: Steel channel frame to suit metal door and operator.
- .3        Section 08 36 23.13- Blast Resistant Steel Door and Frame Assemblies
- .4        Section 08 71 10 - Door Hardware - General.
- .5        Section 09 91 00 - Painting: Field painting of doors panels
- .6        Section 26 05 20 – Electrical wiring, conduit, and disconnects for electrical hardware.

### **1.3                REFERENCES**

*Edit this article after editing the rest of this section. Only list reference standards below 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        AISC 325-17 - AISC Steel Construction Manual.
- .2        ASTM A36/A36M-14 - Standard Specification for Carbon Structural Steel.
- .3        AWS D1.1/D1.1M:2015, Structural Welding Code - Steel.

- .4 ASTM A653/A653M-15e1 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .5 ASCE – Design of Blast Resistant Buildings in Petrochemical Facilities.
- .6 UFC 3-340-02 - Structures to Resist the Effects of Accidental Explosions.
- .7 UFC 4-010-01 - DoD Minimum Antiterrorism Standards for Buildings.
- .8 ASTM F2247-11(2017) Standard Test Method for Metal Doors Used in Blast Resistant Applications (Equivalent Static Load Method).
- .9 ASTM F2927-12 Standard Test Method for Door Systems Subject to Airblast Loadings.
- .10 CSDMA, Selection and Usage Guide for Steel Doors and Frames, 2009.
- .11 HMMA 802-07 - Manufacturing of Hollow Metal Doors and Frames.
- .12 USGBC – LEEDv4.

#### 1.4 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, anchor types and spacing, closure methods, [finishes] location of cut-outs for hardware [, and cut outs for glazing].
- .4 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.

*Include the following ONLY if specifying for a LEED project. Specify only the technical requirements necessary to achieve the credits desired for this project. AMBICO Blast Resistant products offer significant advantages to firms interested in supporting LEED certification*

- .5 Sustainable Design:
  - .1 Section 01 35 18: LEED documentation procedures.
  - .2 Provide required LEED documentation for Product.
  - .3 Manufacturer's Certificate: Certify that Products meet or exceed [specified requirements]. Section 01 35 18: LEED documentation procedures.
  - .4 Submit Type 3 Environmental Product Declaration (EPD) for Products of this Section.
- .6 Closeout Submittals
  - .1 Section 01 78 10: Submission procedures.

- .2 Warranty Documentation: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with and registered with manufacturer.
- .3 Sustainable Design Closeout Documentation: [\_\_\_\_\_].

## 1.5 QUALITY ASSURANCE

- .1 Provide Products of this section from a single manufacturer, unless components are referenced specifically in other sections.
- .2 Pre-installation Meeting: Convene a pre-installation meeting [2] [\_\_] weeks before installation of blast resistant door and frame assembly. Require attendance of relevant subcontractors, consultants, and manufacturer's representative. Review installation and coordination with other work.
- .3 Perform Work to requirements of [CSDMA (Canadian Steel Door Manufacturers Association)] [HMMA (Hollow Metal Manufacturers Association)] standards.
- .4 Manufacturer: Minimum 5 years documented experience manufacturing blast resistant sliding steel door assemblies.

## 1.6 DELIVERY, STORAGE AND PROTECTION

- .1 Section [01 61 00]: Transport, handle, store, and protect products.
- .2 Remove door panels, seal components, door hardware and operators from wrappings or coverings upon receipt on site and inspect for damage.
- .3 Store in vertical position, spaced with blocking to permit air circulation between components.
- .4 Clean and touch up scratches or disfigurement caused by shipping or handling with zinc-rich primer.
- .5 Store materials out of water and covered to protect from damage.

## 1.7 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 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 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 schedule. Specify static performance or dynamic performance in consultation with the factory.*

- .1 Structural Performance (Static loading): Provide doors capable of withstanding explosive pressure of [\_\_\_\_\_] kPa ([\_\_\_\_\_] psi), as tested to ASTM F2247 or as proven by calculations.
  - .1 Rebound: 0-100% [\_\_\_\_\_]
  - .2 Response: [Elastic (no damage)] [Inelastic (minor damage)].

**[OR]**

- .2 Structural Performance (Dynamic loading): Provide doors capable of withstanding a peak reflected pressure of [\_\_\_\_\_] kPa ([\_\_\_\_\_] psi), as tested to ASTM F2927 or as proven by calculations.
  - .1 [Duration: [\_\_\_\_\_] msec] [Impulse: [\_\_\_\_\_] psi-msec].
  - .2 Rebound: [0-100%] [True rebound]
  - .3 Ductility ratio : 1-20 [\_\_\_\_\_]
  - .4 End rotation : 1-12 [\_\_\_\_\_] degrees.

**2.4 MATERIALS**

- .1 Sheet Steel: Galvanized steel to ASTM A653/A653M.

- .1 Exterior doors: [ZF75 (A25)] coating designation.
- .2 Interior doors: [ZF001 (A01)] coating designation.
- .2 Structural Steel: ASTM A36.
- .3 Reinforcement [Channel]: To CSA G40.20/G40.21, coating designation to ASTM A653/A653M, [ZF75] ([A25]).
- .4 Core Insulation: Minimum U-value of 0.18.
- .5 Primer: Rust inhibitive zinc phosphate.
- .6 Recycled Content: Minimum [ ]%

## 2.5 FABRICATION

- .1 Manufacture doors to achieve specified performance in accordance with ASTM A36 and ASTM A 2247.

*If more than one type of blast pressure door rating is required, include the assembly in a door schedule and delete the paragraph below. Consider maximum sizes when selecting blast pressure requirements. Specify door thickness and other values with caution; as they may vary in order to meet the Blast Resistant available. Higher performance ratings may require thicker doors, and may limit blast pressure ratings.*

- .2 Sliding Steel Doors:
  - 1. Sheet steel faces, thickness, design, and core suitable to achieve specified blast performance.

*Where door panels are larger than 4' wide or 10' high, specify the construction details in consultation with AMBICO.*

- 2. Blast Resistant core construction, longitudinal edges [mechanically inter-locked with visible edge seams] [tacked and filled seamless] [fully welded].
- 3. Reinforce doors where surface-mounted hardware is required.
- 4. Drill and tap for mortised, templated hardware.
- 5. Top and Bottom Channels: Inverted, recessed, welded steel channels.

## 2.6 ELECTRICAL SPECIFICATIONS

- .1 Electrical operators shall be supplied by the blast resistant, sliding door manufacturer and shall be an integral part of the Blast Resistant, Steel Sliding Door Assembly.
  - .1 Electric Operator: The electric operator shall have the following characteristics:
    - .2 The unit shall be UL approved. The unit shall have a heavy duty worm-gear reducer with a NEMA "C" flange and shall have a minimum 220 [ ] volt, 3 phase motor.
    - .3 The unit shall be supplied with an electromechanical brake, rotary screw type limit switches and manual operation chain hoist.

- .4 The unit shall be supplied with an electrical interlock for manual operation. Where the door is electrified the door speed shall be 8"-10" per second and shall include soft start and stop.
- .2 Door Controls and Electrical Equipment
- .1 The door control shall have integral piggyback control panel.
- .2 The door shall have a separate control panel located at the ground level. This panel shall be provided by Section 26 05 20 –Wire and box connectors: Electrical wiring, conduit and disconnects.
- .3 The controls will include a heavy duty reversing starter, thermal overload relays as well as control relays.
- .4 Time delay shall be provided on reversing. Timer shall be supplied to close the door. A reversing safety system shall be provided on the door.
- .5 [Control interface and interlock with any third-party system.]

## 2.6 ACCESSORIES

*AMBICO Blast Resistant, Sliding Steel Door Assemblies are supplied with heavy weight sliding door hardware and electrical operators as an integral part of a tested assembly. All other accessories specified in this section shall be supplied by the door manufacturer.*

- .1 Weight Box: shall be constructed from structural steel members. Counterweight shall have internal angle guides to enclose and guide the counterweights for the full travel. The weight box shall be braced at the building structure by the door erector.
- .2 Guide Assembly: Shall be constructed from structural steel members with base and guide covered with 1/4" thick steel plate. The guide assembly shall be braced at the building structure by the door erector.
- .3 Section Guides: Each door section shall have continuous member that shall mate with the guide angles. The section guides shall be bolted to the door section for easy field installation or replacement removal of the sections.
- .4 Insulation of Weight boxes and Guides: Exposed surfaces of the weight boxes and guides shall be insulated with 1" thick polystyrene insulation and shall be back sheeted with 18 gage galvanized steel sheet.
- .5 Track and hangers: shall be integrated into Assemblies consistent with weight of the door leafs and the specified blast performance ratings.
- .6 Model # 45 Drive and Counterbalancing Mechanism: positive frictionless drive will consist of machined cable sheaves and steel sprockets mounted on a solid cold rolled steel shaft. All rotating elements will rotate on a heavy duty, grease-packed-for life, self-aligning flange bearing. The drive unit will be modular and will be mounted in a removable heavy gage drive housing. For maximum safety two cables shall be provided for each section as well as two roller chains for the bottom section. Counterweight sets will be suspended by heavy duty roller chains and preformed galvanized cables assuring

the smooth travel of each door section. Steel pick up members with rubber shock absorbing cushions will ensure smooth and quiet operation.

- .7 Fail-Safety Device: The door will be equipped with a fail safety device that shall instantly cut power to the motor preventing further damage.
- .8 Nameplates: Affix permanent nameplates to door and frame, indicating manufacturer's name, model number, and performance rating.

## **2.7 FINISHES**

- .1 Factory Finish: Factory applied zinc phosphate primer [to be applied to all exposed surfaces] [touch-up only, where product has been welded and ground smooth [; VOC compliant with local indoor air quality regulations] [As scheduled].
- .2 Finish Painting: finish painting shall be by Section 09 91 00.

## **Part 3 Execution**

### **3.1 INSTALLATION**

- .1 Install components including door panels, seal components, door hardware and operator in accordance with manufacturer's written instructions.
- .2 Coordinate with [masonry] [gypsum board] [concrete] [\_\_\_\_\_] wall construction for anchor placement.
- .3 Utilize welders certified by [Canadian Welding Bureau (CWB)] [American Welding Society (AWS)] for field welding.
- .4 Install hardware and door panel system with counterbalance and adjust to operate smoothly.
- .5 Adjust operable parts for correct clearances and function.
- .6 Install, connect, test and adjust the operator, safety devices and set limits.
- .7 Finish paint in accordance with Section 09 91 00. Touch up painted finishes where damaged.

### **3.2 FIELD QUALITY CONTROL**

- .1 Field supervision to be conducted on-site by factory personnel during the initial installation period. Final commissioning of blast resistant, sliding steel door assemblies shall occur in the presence of a factory representative.
- .2 Provide manufacturer's representative to inspect door installation, and test minimum five (5) cycles of operation. Correct any deficient doors, hardware or electrical accessories.

**END OF SECTION**