

*This section includes AMBICO Blast Resistant Steel Window Frame assemblies and relies on applicable industry standards. This section includes proprietary and descriptive 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 window frame assemblies. Items shall be fixed-in-place and shall be designed to be inoperable.
- .2        Glazed lite blast resistant steel frames.
- .3        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 36 23.13-Blast Resistant Steel Door and Frames Assemblies
- .4        Section 09 91 00 - Painting: Field painting of window 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 - Standard Specification for Carbon Structural Steel.
- .2        ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .3        ASTM A1011 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 - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
- .8 ASTM E1300 – Determining Load Resistance of Glass in Building.
- .9 ASTM F2247 – Standard Test Method for Metal Doors Used in Blast Resistant Applications (Equivalent Static Load Method).
- .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 ASTM C1172 - 14 Standard Specification for Laminated Architectural Flat Glass
- .13 CSDMA - Selection and Usage Guide for Steel Doors and Frames, 2009.
- .14 HMMA 802 - Manufacturing of Hollow Metal Doors and Frames.
- .15 HMMA 840 - Installation and Storage of Hollow Metal Doors and Frames.
- .16 HMMA 841-17 Guide Specifications For Receipt, Storage and Installation of Hollow Metal Doors and Frames
- .17 GSA TS-01 - Standard Test Method for Glazing and Window Systems Subject to Dynamic Overpressure Loadings.

**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 window schedule.*

- .1 Structural Performance (Static Loading):
  - .1 Provide windows capable of withstanding a pressure of \_\_\_\_ kPa (\_\_\_\_ psi) tested to ASTM E330.
  - .2 Rebound: 0-100% [\_\_\_\_]
- .2 Structural Performance (Dynamic Loading):
  - .1 Provide windows 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 Hazard Rating (as per ASTM F 1642):
    - No Break [\_\_\_\_]
    - No Hazard [\_\_\_\_]
    - Minimal Hazard [\_\_\_\_]
    - Very Low Hazard [\_\_\_\_]
    - Low Hazard [\_\_\_\_]
    - High Hazard [\_\_\_\_]

**1.5 SUBMITTALS**

- .1 Section [01 33 00]: Submission procedures.
- .2 Product Data: Provide product data on door construction and [\_\_\_\_\_].
- .3 Shop Drawings: Indicate blast resistant window frame elevations, internal reinforcement, anchor types, closure methods, and cut-outs [for glazing] [for louvers].
- .4 Samples: Submit 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.

Include the following ONLY if specifying for a LEED project. Specify only the technical requirements necessary to achieve the credits desired for this project. The Type 3 EPD are normally required for LEED v4 certification. AMBICO Bullet Resistant products offer significant advantages to firms interested in supporting LEED certification.

**1.6 SUSTAINABLE DESIGN**

- .1 Section 01 35 18: LEED documentation procedures.
- .2 Provide required LEED documentation for product.
- .3 Submit Type 3 Environmental Product Declaration (EPD) for products of this section.
- .4 Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

**1.7 QUALITY ASSURANCE**

- .1 Manufacture blast resistant window frame assemblies in compliance with [CSDMA] [HMMA 841] standards.
- .2 Manufacturer: Minimum 5 years documented experience manufacturing blast resistant window frame assemblies.
- .3 Pre-installation Meeting: Convene a pre-installation meeting [2] [\_\_\_\_\_] weeks before start of installation of blast resistant window 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 [CSDMA] [HMMA 840] standards for storage and installation
- .3 Remove window frames from wrappings upon receipt on site and inspect for damage.

- .4 Store in vertical position, spaced with blocking to permit air circulation between components. Store materials out of water and covered to protect from damage.
- .5 Clean and touch up scratches 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.
  - .1 Coating designation [Z275] ([G90]) for exterior assemblies.
  - .2 Coating designation [ZF001] ([A01]) for interior 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 A36 or ASTM A1011.
- .4 Glass in conformance with ASTM C1172 and as tested to achieve blast resistance in conformance ASTM F2248,

**2.3 ACCESSORIES**

*AMBICO blast resistant, window frame assemblies are supplied with glazing as an integral part of the tested assembly. All accessories in this section shall be supplied by the window frame manufacturer.*

- .1 Glazing Stops: Formed galvanized steel channel, butt corners, prepared for countersink style [tamperproof] screws.

- .2 Glass: as [tested] [calculated] to achieve blast performance ratings. Glazing to be factory supplied loose ready for site installation by others.
- .3 Primer: Rust inhibitive zinc phosphate primer.

## **2.4 FABRICATION**

- .1 Steel Window Frames: Fixed Type
  - .1 Sheet steel and metal thickness appropriate to provide blast resistance.
  - .2 Factory assembled with fully welded mitered corners.
- .2 Affix permanent metal nameplates to window frame assemblies, indicating manufacturer's name, tag, model number, and performance rating.

## **2.5 INSTALLATION OF GLAZING**

- .1 Glazing shall be supplied by the window frame manufacturer and shipped loose for site installation by others.

## **2.6 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].
- .2 Finish Painting: finish painting shall be by Section 09 91 00

## **Part 3 Execution**

### **3.1 INSTALLATION**

- .1 Install components including blast resistant window frame assemblies and glazing in accordance with manufacturer's written instructions.
- .2 Install window frames as per [CSDMA] [HMMA 840] instructions.
- .3 Coordinate with [masonry] [gypsum board] [concrete] [\_\_\_\_\_] wall construction for anchor placement.
- .4 Set window frame assemblies plumb, square, level and at correct elevation.
- .5 Finish paint in accordance with Section 09 91 00.

### **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  $\pm 1/16$ in (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 window frame assemblies.
- .2 Provide manufacturer's representative to inspect window frame assembly installation.

**END OF SECTION**