

*This section includes proprietary, descriptive and performance specification requirements. This section includes AMBICO Tornado Resistant, Wood Doors and Steel Frames. This section relies on both the Hollow Metal Manufacturers Association (NAAMM.org) industry standard for steel frames, and Window & Door Manufacturer's Association (WDMA.com) standard for wood doors. This section includes proprietary, descriptive and performance type specifications. Edit to avoid conflicting requirements.*

### **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 Tornado resistant pressed steel frames.
- .2 Tornado resistant wood swing doors.
- .3 Factory- supplied [and installed] and latching devices.
- .4 Catalyzed lacquer, premium grade finish to WDMA I.S. 1A, [clearcoat only] [stain and clear coat] [paint] [as selected].

### **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 00 - Painting: Field painting of [doors] [frames] [doors and frames].

### **1.3 REFERENCES**

*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 ASTM A36/A36M-14 - Standard Specification for Carbon Structural Steel.
- .2 ASTM A653/A653M-15e1- Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .3 ASTM A1011/A1011M-17a 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 ICC 500-2014- Standard for the Design and Construction of Storm Shelters
- .5 HMMA 802-07 - Manufacturing of Hollow Metal Doors and Frames.
- .6 HMMA 840-16 - Installation and Storage of Hollow Metal Doors and Frames.
- .7 ANSI/WDMA I.S. 1A-2013 - Industry Standard for Architectural Wood Flush Doors.
- .8 FSC – Forest Stewardship Council Standard for Chain of Custody Certification.

- .9 USGBC LEED v4.

#### 1.4 PERFORMANCE REQUIREMENTS

- .1 Structural Performance:
  - .1 Provide doors capable of withstanding a peak reflected pressure of 1.76psi in accordance with tested ICC 500 standards.
  - .2 Missile Impact Testing: 15-lb wood 2x4 traveling without pitch or yaw at 100 mph and striking perpendicular to the surface.
  - .3 All items in assembly to conform to ICC 500 performance criteria.

#### 1.5 REGULATORY REQUIREMENTS

- .1 Installed Door and Frame Assembly: in conformance with ICC 500 (2014) standards

#### 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.
- .4 Test Data:
  - .1 Submit independent test data from a recognized licensed laboratory indicating compliance with the tornado resistance requirements.

*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 Tornado 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 [recycled content] [regional materials] [low emitting materials].
  - .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.
  - .5 Submit Chain-of-Custody Certificates certifying that doors [and frames] comply with FSC certification requirements.
  - .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 the manufacturer.

## **1.7 QUALITY ASSURANCE**

- .1 Perform work to [HMMA (Hollow Metal Manufacturers Association)] [Window & Door Manufacturers Association (WDMA)] standards. Manufacturer: Minimum 5 years documented experience manufacturing tornado resistant door and frame assemblies.
- .2 Provide products of this section from a single manufacturer unless components are referenced specifically in other sections.
- .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 Comply with WDMA I.S. 1A for doors
- .4 Weld minimum two temporary jamb spreaders per frame prior to shipment.
- .5 Remove doors and frames from wrappings or coverings upon receipt on site and inspect for damage.
- .6 Store in vertical position, spaced with blocking to permit air circulation between components.
- .7 Store materials out of water and covered to protect from damage.
- .8 Store doors between 50 to 90 degrees F (10 to 32 degrees C) and 25 to 55 percent relative humidity.
- .9 Clean and touch up scratches or disfigurement of frames caused by shipping or handling with zinc-rich primer.
- .10 Clean and touch up scratches or disfigurement to wood surfaces.

## **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 01 60 00.] [Not permitted.]

**2.2 PERFORMANCE REQUIREMENTS**

- .1 Assemblies shall comply with test criteria established in ICC 500 (2014) and shall be certified and listed with approved independent testing laboratory.

**2.3 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 Door Facing:

- .1 Wood Face Veneer: [\_\_\_\_\_] species, [\_\_\_\_\_] cut; minimum thickness before sanding 2 mm (3/32 inch).

- .2 Door Edging:

- .1 Where door face is wood face veneer, door edges shall be supplied with matching stiles and hardwood rails

## 2.4 ACCESSORIES

*AMBICO tornado resistant wood door and steel frame assemblies are supplied with hinges and multi-point latching devices as an integral part of the tested assembly. Additional hardware items shall be supplied by Section # 08 71 10.*

- .1 Hinges: Heavy weight butt type to be factory supplied loose.
- .2 Door Hardware: Multi-point [Mortise lock] [Exit device] to be approved windstorm device by Securitech and to be factory supplied [and pre-installed].
- .3 Primer: Rust inhibitive zinc phosphate.

## 2.5 FABRICATION

- .1 Manufacture doors and frames in accordance with ICC 500 tested assemblies.
  - .1 Sheet steel faces, thickness, design, and core suitable to achieve specified tornado resistance.  
Wood Doors:
    - .2 Wood veneer faces, door thickness, design, and core suitable to achieve specified tornado resistant performance.
    - .3 Reinforce doors where surface-mounted hardware is required.
    - .4 Drill and tap for mortised, templated hardware.
- .2 Steel Frames: Swing Type
  - .1 Sheet steel and metal thickness appropriate to maintain specified tornado resistance.
  - .2 Factory assemble and weld frames.
  - .3 Provide and factory-install three single silencers for single doors [and mullions of double doors] on strike side.
- .3 Multi-point latching devices to be factory supplied [and pre-installed].
- .4 Affix permanent metal nameplates to door and frame, indicating manufacturer's name, door tag, model number, and performance rating.

## 2.6 PRE-INSTALLATION OF SWINGING DOOR HARWARE

- .1 Hinges and multi-point latching device to be supplied complete with tornado resistant steel door and frame in conformance with tornado resistant requirements of project.
- .2 [Latching device shall be factory pre-installed on the tornado resistant steel door and frame assembly.]

## 2.7 FINISHES

- .1 Factory Frame 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 Factory Door Finish: Catalyzed lacquer, premium grade finish to WDMA I.S. 1A, [clearcoat only] [stain and clear coat] [paint] [as selected].

- .3 Top and Bottom Rails: Factory sealed with wood sealer.

### **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 HMMA 840 standards.
- .3 Coordinate with [masonry] [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 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 door assemblies.
- .2 Provide manufacturer's representative to inspect door installation, and test minimum ten (10) cycles of operation. Correct any deficient doors.

**END OF SECTION**