

This section includes AMBICO Blast Resistant Steel Overhead Door assemblies which includes electric operators as an integral part of the assembly. 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 steel overhead doors [and panels].
- .2 Factory- supplied blast resistant overhead door hardware.
- .3 Factory-supplied blast resistant electric door operators.
- .4 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 05 50 00 - Metal Fabrications: Steel channel frame.
- .3 Section 07 92 00 - Joint Sealing: Caulking between frame and adjacent construction.
- .4 Section 08 10 00- Steel Frame: to suit metal door and operator.
- .5 Section 09 91 15 - Painting: Field painting of doors.
- .6 Section 26 05 20-Wire and Box Connectors: Electrical wiring, conduit and disconnects.

1.3 REFERENCES

List reference standards that are included within the text of this section. 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.

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 SUBMITTALS

- .1 Section [01 33 00]: Submission procedures.
- .2 Product Data: Provide product data on door construction and [_____].
- .3 Shop Drawings: Indicate door elevations, internal reinforcement, anchor types, closure methods, [finishes] location 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.

1.6 QUALITY ASSURANCE

- .1 Manufacturer: Minimum 5 years documented experience manufacturing blast resistant door and frame assemblies.
- .2 Pre-installation Meeting: Convene a pre-installation meeting [2] [____] weeks before start of installation of door, door hardware and operator 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.

1.7 DELIVERY, STORAGE AND PROTECTION

- .1 Section [01 61 00]: Transport, handle, store, and protect products.
- .2 Remove door panels, 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 Store materials out of water and covered to protect from damage.
- .5 Clean and touch up scratches or disfigurement caused by shipping or handling with zinc-rich primer.

1.8 WARRANTY

- .1 Manufacturer's Limited Warranty: One (1) 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 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 overhead door assemblies are supplied with overhead door hardware and electric operators as an integral part of the tested assembly. All other accessories specified in this section shall be supplied by the door manufacturer.

- .1 Glazing Stops: Formed galvanized steel channel, [butted] [mitred] corners; prepared for countersink style [tamperproof] screws.
- .2 Glass: Type as tested to achieve blast performance ratings. Glazing to be factory supplied [and preinstalled].
- .3 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.
- .4 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.
- .5 Guide Angles: Door blades will ride on a continuous vertical structural steel angle and guides and shall not be less than 1/4" in thickness. The guide angles will be welded to the weight box and guide assembly. The weight box and guide assembly shall be braced at the building structure by the door erector on 48" (1200 mm) centers.
- .6 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.
- .7 Insulation of Weight boxes and Guides: Exposed surfaces of the weight boxes and guides shall be insulated with 1" thick polyurethane insulation and shall be back sheeted with 18 gage galvanized steel sheet.
- .8 Weatherstripping: The vertical weatherstripping shall be combination aluminum retainer and nylon brush set over insulation of the weight box and guides cover.
- .9 Multi-blade 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. The drive and idler

housings will be seated and bolted to the weight box and door guide assemblies for easy servicing. Counterweight sets will be suspended by heavy duty roller chains and preformed galvanized cables assuring the smooth travel of each door blade in both the upward and downward direction. Steel pick up members with rubber chock absorbing cushions on the top of each section will ensure smooth and silent operation. Roller chain and cables will be selected to provide 7:1 safety factor and shall be equipped with blade levelling screws.

- .10 Safety Catches: in the case of a cable failure the upper blades will be equipped with heavy duty factory welded catches. The safety catches will prevent the upper sections from falling further than the section immediately below.
- .11 Fail-Safety Device: The door will be equipped with a fail safety device that will provide the following features:
 - .1 Instantly locking bottom section into both weight box and guide when one or both counterweight chains are broken or slacked
 - .2 Instantly cuts power to the motor preventing further damage.
 - .3 Maximum permissible engagement is 6 inches.
 - .4 Eliminates the need for side locks.
- .12 Primer: Rust inhibitive zinc chromate.
- .13 Threshold and perimeter seals to be factory supplied.

2.4 FABRICATION

- .1 Manufacture doors and in accordance with section 1.4.
- .2 Steel Doors, Overhead Door Type:
 - .1 Sheet steel faces, thickness, design, and core suitable to achieve specified blast performance.
 - .2 Blast resistant construction, mechanically inter-locked shall be welded, filled and sanded with visible edge seams.
 - .3 Top and Bottom Channels: shall be full width and shall form a ship-lap joint between sections.
 - .4 Weld structural steel channels flush to top and bottom of door.
 - .5 Weld hardware reinforcement plates in place.
- .3 Install [glazing and] door silencers.
- .4 Affix permanent metal nameplates to door and frame, indicating manufacturer's name, door tag, model number, and performance rating.

2.5 ELECTRICAL SPECIFICATIONS

Electrical operators shall be supplied by the blast resistant steel door manufacturer and shall be an integral part of the Blast resistant Steel Overhead Door Assembly.

- .1 Electric Operator: The electric operator shall have the following characteristics:

- .1 The unit shall be UL approved.
 - .2 The unit shall be environmentally rated at Class I, Division II, Group C. Installation shall be in conformance with NEC.
 - .3 The unit shall have a heavy duty worm-gear reducer with a standard NEMA "C" flange. The unit shall have a minimum 220 volt, 3 phase motor and shall be TEFC.
 - .4 Electromechanical brake
 - .5 Rotary screw type limit switches
 - .6 Manual operation chain hoist.
 - .7 Electrical interlock for manual operation.
 - .8 Door speed 8"-10" per second.
- .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 door controls shall be housed in a Class I, Division II, metal box.
 - .4 The controls will include a heavy duty reversing starter.
 - .5 Thermal overload relays.
 - .6 Control relays.
 - .7 Time delay on reversing.
 - .8 Timer to close the door.
 - .9 Miller reversing safety bar on the bottom of the door.
 - .10 Additional protective urethane rubber hood over the Miller safety bar.
 - .11 16 gage SOW coiled cord for revering safety bar.
 - .12 Control interface and interlock with any third-party system.

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].
- .2 Finish Painting: finish painting shall be by Section 09 91 15.

Part 3 Execution

3.1 INSTALLATION

- .1 Install components including door panels, door hardware and operator in accordance with manufacturer’s written instructions.
- .2 Coordinate with [masonry] [gypsum board] [concrete] [_____] wall construction for anchor placement.
- .3 Set frames plumb, square, level and at correct elevation.
- .4 Allow for deflection to ensure that structural loads are not transmitted to frame.
- .5 Adjust operable parts for correct clearances and function.
- .6 Finish paint in accordance with Section 09 91 15.

3.2 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 five (5) cycles of operation. Correct any deficient doors.

3.3 SCHEDULE

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

- .1 Blast Resistant Steel Overhead Door Assembly Schedule:

Tag	Room	Nominal Size	Thickness	Material	Glazing		Blast Rating	Comments
D-1	100	3600mm x 3600mm	75	GS	D		1 psi (7kPa)	
D-2	101	10'0" x 10'0"	2"	GS	C		216 psf (10.5 kPa)	4 lites
D-3	105	8'0"x8'0"	2 "	GS	D		5psi (35 kPa)	
<ul style="list-style-type: none"> Material types: GS = Galvanized Steel Glazing types: C = Narrowlite D=Flush Blast Ratings: psi = pounds per square inch , psf= pounds per square foot 								

Tag	Room	Nominal Size	Thickness	Material	Glazing		Blast Rating	Comments
kPa = kilopascals per square meter Note: 1 psi = 7 kPa								

END OF SECTION