



MANUFACTURING INDUSTRIAL DOORS

SECTION 08 35 00

FOUR-FOLD DOORS, SIDE ACTUATING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. Basis of Design for doors is the **BATOR 158, OR BATOR 238AFFD OR BATOR 400AFFD** by BATOR North America LLC.: PO Box 36526, 1451 South Elm-Eugene Street, Greensboro, NC 27406 (336.907.2286) www.bator.com.

1.2 SUMMARY

- A. This Section includes four-fold metal doors with surface mounted tube frames.
- B. This Section includes four-fold metal doors, tested and approved for use in design codes of 20psf or greater.
- C. This Section includes four-fold metal doors, tested and approved for use in High Velocity Wind Zones, up to design pressure of 120psf.
- D. This Section includes operation of four-fold metal doors includes overhead mounted electro-mechanical or hydra-pneumatic operators.
- E. Doors to be manufactured in accordance with ISO 9001.

1.3 SUBMITTALS

- A. General: Submit each item in this Article per the Conditions of the Contract and Division 1 Specification Sections.

- B. Product Data for each type of product specified consisting of manufacturer's technical Product Data and installation instructions for each type of door required, including data substantiating that products comply with requirements.
- C. Submittal Drawings showing fabrication and installation of four-fold metal doors including plans, elevations, sections, details of components, hardware, operating mechanism(s), and attachments to the other units of Work. Include wiring diagrams for coordination with electrical trade.
- D. Reference list including (5) successful installations of this type of door within the past two (2) years.

1.4 QUALITY ASSURANCE

- A. Doors shall be designed to withstand external or internal horizontal wind loads of 20 lbs. minimum psf. The maximum allowable deflection shall not exceed 1/120 of the span. Fiber stresses in main members shall be limited to 27,000 lbs. psi. Steel frames shall be designed in accordance with the AISC "Steel Construction Manual".

OR

- A. Doors shall be designed to withstand external or internal horizontal wind loads of 120 lbs. minimum psf. The maximum allowable deflection shall not exceed 1/120 of the span. Fiber stresses in main members shall be limited to 27,000 lbs. psi. Steel frames shall be designed in accordance with the AISC "Steel Construction Manual".
- B. Door manufacturer shall have at least 10 years of experience manufacturing door type specified for applications of similar type.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Store delivered materials and equipment in dry locations with adequate ventilation, free from dust and water; in such way as to permit access for inspection and handling.
- B. Handle materials carefully to prevent damage.

1.6 WARRANTY

- A. The door manufacturer shall provide a written standard limited warranty for material and workmanship.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: BATOR North America LLC.: PO Box 36526, 1451 South Elm-Eugene Street, Greensboro, NC 27406 (336.907.2286) www.bator.com

Model (Choose one):

- 158MFFD (Manual Operation)
- 158AFFDH (Automatic Hydro-Pneumatic Operation)
- 158AFFD (Automatic Electric Operation)
- 238MFFD (Manual Operation)
- 238AFFDH (Automatic Hydro-pneumatic Operation)
- 238AFFD (Automatic Electric Operation)
- 400MFFD (Manual Operation)
- 400AFFDH (Automatic Hydro-Pneumatic Operation)
- 400AFFD (Automatic Electric Operation)

- B. Substitutions permitted as long as they meet basis of design in clearance dimensions and motor operation. Substitutions request not permitted less than 10 days prior to bid date.

2.2 MATERIALS

- A. Steel Tube: ASTM A513 and ASTM A500/A500M
- B. Steel Sheets: Steel sheets of commercial quality, complying with ASTM A1011/A1011M hot-rolled steel sheet.
- C. Hardware: Manufacturer's standard components.
- D. Fasteners: Zinc-coated steel.

2.3 FOUR-FOLD DOORS

- A. Construction: Door framing shall be minimum 11-gauge structural steel tube with 14-gauge steel sheet on the exterior and interior faces. Sheeting shall be formed on the vertical edges with no visible welds on the interior or exterior panel faces. Door panels and optional glazing shall be sealed with wet silicone on exterior and interior side. All frames and framing members shall be true to dimension and square in all directions, and no door shall be bowed, warped, or out of line, in the vertical or horizontal plane of the door opening by more than 1/8 inch in 20 feet. Exposed welds and welds which interfere with the installation of various parts shall be ground smooth and flush. If installation is within 50 miles of coast, tube frame members shall be hot-dipped galvanized. Door to be pinch proof design between section leaves.
- B. Surface Mounted Tube Frame: Supply pre-hung tube frame system, designed to anchor to masonry wall construction or weld to steel structure. All hinges, track supports, and operator supports shall be factory attached.

- C. Factory finish: Door Panels and Tube Frames shall be finished with manufacturer's standard factory applied powder coating system. Customer to select from manufacturer's standard color chart or furnish sample to match. Custom paint available upon request.
 - a. Operator and operating hardware shall be powder-coated manufacturer's standard blue.
- D. Hardware: Hardware shall include guide tracks and brackets, trolleys, center guides, not less than three pairs of jamb and fold hinges per opening, and all bolts, nuts, fasteners, etc. necessary for complete installation and operation.
- E. Hinges: All hinges shall be welded on frame. Hinges are equipped with thrust bearings and grease nipples. All hinge pins shall be a minimum of 1" in diameter and made of stainless steel or hardened steel.
- F. Insulation: Insulating material shall be mineral wool with a calculated R-value of 4.8.
- G. Weather-stripping: Material shall be adjustable and readily replaceable and provide a substantially weather-tight installation. Weather-stripping at center shall be 1/8" inserted neoprene and include no exposed fasteners on the exterior face of the panel. Weather-stripping at sill shall include two 1/8" inserted neoprene sweeps without aluminum retainer.
- H. Perimeter Weather-stripping: Provide jamb and head weather-stripping of 1/8" neoprene with double layer seal. Bulb seals are not acceptable.
- I. Glazing:
 - a. Provide glazing per elevation drawings.
 - a. 1" DSB Insulated
 - b. 1" DSB Insulated Tempered
 - c. 1" Glass per selection by architect,
 - b. Provide 1 1/2" impact resistant glass (1/4" CLTP 9/16" Air (SIL) 1/4" CLHS 180SG 1/4" CLHS) vision panels of the size, shape and location as noted on the plans.

2.4 OPERATOR

- A. Each Automatic Four-Fold door shall be operated by either an overhead mounted electro-mechanical or hydro-pneumatic drive unit designed for high cycle operation. Operator shall consist of an electric or hydro-pneumatic motor, gear, reducer, and rotating drive arm. Choose one of the following two motor systems:
 1. Option I: (Electro-mechanical drive unit) The gear boxes on both the right and left side of the door shall be enclosed by aluminum chassis, connected by rotating gear shaft maintaining control at all times.
 2. Option II: (Hydro-Pneumatic drive system) Requiring 86 psi pressured air (by others). Fully enclosed motorization unit. Minimum overhead space of 1' required. System requires 1-1/2 gallon oil for each door leaf. Maintains control at all times.
- B. Operator shall be instantly reversible, open and close rapidly and start and stop gradually. Operator shall be adjustable to allow door to fully clear the opening. Operator shall automatically lock the door in the closed position. Operator shall be equipped with disengaging mechanism for conversion to manual override in the event of power failure.

- C. Motorization system shall be an enclosed system with motor housing for protection which is easily removable for service and maintenance. Motor housing shall enclose motor, gearbox, and limit switches.
- D. Electric motor shall be of sufficient size to operate doors under normal operating conditions at no more than 75 percent of capacity. The motor shall be controlled by a built-in frequency converter at 230 VAC, 60 hertz operation.
- E. Electric Controls: Controls shall be furnished by the door manufacturer and shall be complete for each door, built in accordance with the latest NEMA standards. **Incoming electrical shall be (Choose One): 120VAC single phase, 208VAC single phase, 208/230VAC 3-phase**
 - 1. Controls shall include a programmable logic controller with digital message display or LED indicators. **Option: Controller shall include programmable close timers and programmable inputs/outputs.**
 - 2. Motor shall be controlled by frequency converter with overload and under voltage protection. Motor shall have integrated brake system. All control components shall be enclosed in motor housing unit with wiring diagram placed on inside panel.
 - 3. If incoming voltage is single phase, control panel shall include a variable frequency drive to convert voltage to 3-phase for the motor
 - 4. Enclosures shall be NEMA 4 with disconnect switch.
 - 5. Pushbuttons (interior) for each door shall have one (1) momentary pressure three-button push-button station marked "OPEN", "CLOSE" and "STOP". Push button enclosure shall be NEMA 4.
 - 6. Limit switches shall be provided to stop the travel of the door in its fully open or fully closed position.
 - 7. Safety edges: Provide electric safety edges on leading edge of all doors to reverse door upon contact with obstruction. **Optional: Wireless safety edge transmitters with low battery alarm.**
 - 8. Photo eyes: Provide (1) exterior, jamb mounted, thru-beam type photo eyes, NEMA 4 rated.
 - 9. **(Option) Presence Sensor: Provide (1) interior, overhead mounted, presence sensor.**
 - 10. **(Option) Radio controls: Provide one (1) radio receiver and (1) single button remotes per door. Remotes to open and close doors with single button.**
 - 11. **(Option) Safety Loop Detectors: Provide "safety" loop detector to reverse or hold the door open when activated. G.C. to coordinate installation of preformed loop with installer prior concrete being poured.**
 - 12. **(Option) Timer Activation Loop Detectors (fire station applications): Provide "pulse on exit type" loop detector to activate auto close timer once loop has been activated and cleared, include hand/auto switch to deactivate timer. G.C. to coordinate installation of preformed loop with installer prior to exterior apron being poured.**
 - 13. Wiring: Door manufacturer shall supply controls and components only. Electrical contractor shall install controls and furnish and install conduits and wiring for jobsite power and control wiring.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install Four-Fold metal doors in strict accordance with the approved drawings by qualified door erection crews. All door openings shall be completely prepared by the general contractor prior to the installation of the doors. Permanent or temporary electric wiring shall be brought to the door opening before installation is started and shall be completed so as not to delay the inspection test.
- B. Doors shall be set plumb, level, and square, and with all parts properly fastened and mounted. All moving parts shall be tested and adjusted and left in good operating condition.

3.2 ADJUSTING AND CLEANING

- A. Inspection of the doors and a complete operating test will be made by the installer in the presence of the general contractor or architect as soon as the erection is complete. Any defects noted shall be corrected. After door approval in the above test, the general contractor must assume the responsibility for any damage or rough handling of the doors during construction until the building is turned over to the owner and final inspection is made.
- B. Clean surfaces and repaint abraded or damaged finished surfaces to match factory-applied finish.

END OF SECTION