

## **SECTION 08360(08344) – HYDRAULIC SINGLE PANEL DOOR**

### **PART 1 – GENERAL**

#### **1.01 RELATED DOCUMENTS**

- A. Drawings and General Provisions of Contract, including General and Supplementary Conditions, apply to this contract.

#### **2. SIZE OF DOOR – Clear Open Width & Height**

- 2.1 Hangar Door in open position shall have a minimum clear width of \_\_\_\_\_ and a minimum clear height of \_\_\_\_\_ above the finished floor elevation as shown in the plans.

#### **3. GENERAL / CONTRACTORS REQUIREMENTS – DESIGN CRITERIA**

- 3.1 The hydraulic door shall be designed to the same loading requirements for live, dead and wind loads as the hangar/building.
- 3.2 The doors shall be engineered to resist all anticipated loads without sagging, bowing, or restricting its operation.
- 3.3 Design for wind load shall be as required by current local building code.
- 3.4 The building header shall be designed to accommodate horizontal and vertical building deflections to support the bi-fold door in all positions with proper lateral bracing
- 3.5 The building door columns shall be of proper design and size to carry all loads and vibrations imposed thereon by the bi-fold door.

#### **4. GENERAL / ELECTRICAL REQUIREMENTS**

- 4.1 The building contractor shall furnish and install a factory assembled electrical door operator to operate the hydraulic door
- 4.2 The contractor is responsible and required to completely install the electrical door operator, push button controls, accessories, and electrical conduit and wiring to the door operator controls.
- 4.3 Standard controls to include control panel and up/down/stop switch

#### **5. GENERAL / ELECTRIC POWER OPERATOR FOR BI-FOLD DOOR**

- 5.1 All electrical controls and devices shall conform to the requirements of the current National Electrical Code 513, NEMA, and be UL approved.
- 5.2 Provide electric operator size and type as recommended by the manufacturer
- 5.3 The operator is furnished complete with a motor and factory assembled control panel consisting of a magnetic reversing starter, push button controls, control circuit transformers.

## 6. SUBMITTALS

6.1 Product data: Submit manufacturer's literature and spec sheet on the hydraulic door. Include details to allow building manufacturer to sufficiently design the building to accommodate the loads of the door. Including:

- A. Summary of the forces imposed on the building header and jambs.
- B. Details of proper sheeting and trim requirements to complete installation of the door.

6.2 Shop Drawings: Submit shop drawings for approval prior to fabrication. Including plan showing elevations, required clearance, and details of framing members and accessories.

6.3 Submit \_\_\_\_ copies of each of the following manufactures manuals

- A. Bi-Fold Door Literature
- B. Operators Manual
- C. Building Design Spec Sheets
- D. Installation Manual

## 7. QUALITY ASSURANCE

7.1 Source Limitations: Obtain Hydraulic Doors through one source from a single manufacturer

7.2 Manufacturer Qualifications: Engage in a firm experienced in manufacturing hydraulic doors similar to those indicated for this project and with a record of successful in-service performance.

7.3 Installer Qualifications: Utilize an installer who is an authorized representative of the door manufacturer for both installation and maintenance.

7.4 Pre-Construction Conference: Schedule a pre-installation conference prior to the installation of the hydraulic door to establish optimum working conditions and coordinate the door install with adjacent work.

7.5 The contractor shall touch up all scratches and abrasions with same type of paint as originally applied.

## 8. DELIVERY STORAGE AND HANDLING

8.1 Delivery of materials and products and storing at jobsite shall adhere to manufacturer's instructions and recommendations. Protect from weather, excessive temperatures, and construction operations to avoid damage.

8.2 Inspect hydraulic doors upon delivery for damage. Notify manufacturer immediately if damages have occurred during shipment.

8.3 When storing hydraulic frames, place on blocking to elevate sections off the ground. Ensure that electrical components are protected from the elements.

8.4 The contractor shall store sheet, panels, components and other manufactured items to avoid damage. Store sheet metal or panels to ensure water will drain freely off product. Do not store sheets or panels in direct contact with other materials as this may cause staining.

## 9. APPROVED MANUFACTURERS

9.1 The Hydraulic doors shall be supplied by a manufacturer who is regularly engaged in the manufacture of aircraft hangar doors for a minimum of ten years, and upon request from the owner shall provide a list of completed projects.

A. Standard of hydraulic door shall be Midland Door Solutions, 1021 7<sup>th</sup> St. NE, West Fargo, ND 58078, phone 701-277-8836 or equal.

## 10. HYDRAULIC DOOR FRAMEWORK

10.1 Hangar doors shall be of the electrically operated hydraulic single panel type and shall be integral with the hangar building design.

10.2 When in the open position, the doors shall have a slight slope to ensure proper drainage of moisture away from the building.

10.3 Door shall be hinged horizontally at the top and be designed to open by swinging out perpendicular to the wall.

10.4 Door frame shall have pre-located top hinges to align with the building truss members.

10.5 Door frame shall be jig welded steel tube sections engineered by the door manufacturer to withstand all anticipated loads without bowing, sagging or restricting its operation.

10.6 Structural steel door framing members shall be ASTM A500 Grade B square or rectangular structurally welded steel tubing.

10.7 All labor, materials, accessories, equipment and services necessary to furnish a complete installation of a hydraulic door as indicated by the manufacturer. Including frame, brackets, cylinders, hardware, seals, control panel and power unit.

## 11. LIFT CYLINDERS

11.1 The solid steel cylinder shaft (ASTM 1045 Cold Finished Round) with tubing sized to handle pressure and flow of

11.2 The cylinders shall be attached to the door frame with welded 1 inch pins and 1 inch steel plate.

11.3 Cylinders shall be sized to ensure a 5:1 safety factor.

## 12. HEAVY DUTY HINGES

12.1 High strength A715 grade 50 steel formed hinges shop welded to frame. Hinge pins are 3/4" cold rolled hinge pins – lubricated on install

## 13. DOOR TRUSS

13.1 Exterior Truss – Standard

A. High strength structural tube truss mounted in the center of the door on the exterior of the door.

13.2 Interior Truss – Option

A. High strength structural tube truss mounted in the interior base of the door.

## 14. CYLINDER PINS

14.1 Door side rollers shall be minimum 3" diameter bottom rollers with sealed bearings mounted on the bottom of the door at each jamb.

## 15. HEADER HINGE ANGLE

15.1 Solid continuous hinge angle across entire width of door. Bolted or welded to header to distribute forces across header.

## 16. DOOR JAMB

16.1 Minimum 8" deep structural tube bolted or welded to building jamb. Anchor bolt in to concrete.

16.2 Building design shall accommodate forces transmitted by door.

## 17. PRIMER

17.1 Door frame and parts shall be factory painted with a gray primer.

## 18. PAINT

18.1 Exterior truss and sides of door and jamb not covered by metal sheeting shall be painted to match the trim color.

## 19. TOP AND BOTTOM RUBBER SEAL

19.1 Provide manufacturer's standard continuous rubber seal at the top and bottom of door.

## 20. METAL SHEETING FOR DOOR

20.1 Install door skin and trim to cover hydraulic door frame according to manufacturer recommendations.

20.2 Utilize same material used to side the exterior of the hangar/building.

## 21. ELECTRIC OPERATOR

21.1 HYDRAULIC POWER UNIT: Mounted on jamb near opening.

A. Service: 240 VAC, single phase

B. Motor: 2 HP or 5 HP totally enclosed motor

C. Valve: 24 VDC solenoid valve mounted on PO check valve

D. Control Wiring: All control wiring is low voltage (24 VDC) to ensure safety. This includes the wires to the solenoids.

E. Hoses and Fittings: All hoses and fittings supplied to connect to steel lines rated a minimum of 3000 psi.

F. Reservoir: Clear plastic reservoir to allow sight of proper fluid level.

21.2. HYDRAULIC CONTROL PANEL: Panel mounted on jamb near door.

A. Service: 240 VAC, single phase disconnect

B. Enclosure: Nema 4/12

C. Control Wiring: All control wiring is low voltage (24 VDC) to ensure safety.

D. Control Station: Constant pressure push buttons mounted to the face of the panel.

21.3 All electrical controls and devices shall be designed to meet National Electrical Code Section 513 and UL Listed.

## 22. EXECUTION

22.1 Examine all wall and overhead areas, including opening framing and bracing, to ensure compliance with the requirements for installation tolerances, clearances, and other conditions affecting the performance of work in this section.

## 23. INSTALLATION

### 23.1 General

- A. Door manufacturer is required to coordinate with the building manufacturer in the design of the exact installation details by providing weights and loads to the building manufacturer.
- B. Install door, jambs, and operating equipment complete with necessary hardware, seals, anchors and equipment supports according to shop drawings, manufacturer's written instructions, and as specified.
- C. Building manufacturer to provide sway bracing, diagonal bracing and structural reinforcement to ensure proper installation of hydraulic door.

### 23.2 Exterior Door Sheeting

- A. Contractor to install the same exterior wall panels as are applied to the exterior wall of the building. Install proper trims per manufacturer's recommendations.

### 23.3 Apply Proper Safety Markings and Warning Labels

- A. Installer shall fasten all safety and warning labels as required by the door manufacturer.

### 23.4 Installation of bi-fold door shall be completed by a qualified installer or by a manufacturer representative.

## 24. ELECTRICAL WORK

24.1 The contractor is responsible and required to completely install the pre-wired electrical door operator, push button controls, devices and electrical conduit to the door operator controls.

24.2 Differentiate between manufacturer installed and field installed wiring and between components provided by door manufacturer and those provided by others.

## 25. ADJUSTMENT & CLEANING

25.1 Lubricate, test and adjust doors to operate free from warp, twist or distortion and creating a weather tight fitting for the entire perimeter.

### 25.2 Primer touch up

- A. Immediately after installation, sand smooth and rusted or damaged areas of prime coat.
- B. Touch up damaged coating with rust inhibiting primer.

### 25.3 Final Adjustments:

- A. Lubricate required moving parts and open and close limits to ensure easy operation free from warp, twist, and distortion.
- B. Check and readjust operating finish hardware items.

## 26. DEMONSTRATION

26.1 Start-up services: Manufacturers representative to perform start-up services and to train Owner's personnel as specified:

- A. Test and adjust flow.
- B. Train Owner's maintenance personnel on procedures and schedules related to operation, trouble shooting, servicing, and preventative maintenance.
- C. Review data in the operator's manual.

## 27. WARRANTY

27.1 The contractor shall warrant the door to be free of defects and in accordance with the General Conditions, except the warranty shall be extended by a manufacturer's 3-year written warranty against defects in materials and workmanship.

## 28. ENTRY DOOR - Optional

28.1 Manufacturer shall provide walk in entry door incorporated within the hydraulic door frame.

28.2 Location of Walk-in Door – standing on the inside of building facing door

A. Inside right

B. Inside left

28.3 Walk-in door shall be insulated with steel skin and jambs. Nominal dimensions shall be 32" width x 72" height.

28.4 Lockset

A. Walk-in door shall be equipped with a cylindrical lock, manufactured by Schlage or equal.

B. Each door shall be keyed differently and shall be master keyed to the remainder of doors on the building.