MODEL 41

HYDRAULIC FOUR FOLD DOORS

Guide Specification Template

INSTRUCTIONS FOR USE

EPD has provided this PDF guide template to assist in your development of an accurate document for use in specifying this product. Print this out and make changes as needed on your new document. The template contains areas identified with yellow highlighted notations that allow you to easily identify optional features and customize your document to meet the specific unique requirements for your project.

For example:

The motor shall be high-starting torque, ball bearing, rated at 460 V, 3 phase

If your project requires 208-volt single-phase motors, replace the information with ***"208 volt, single phase.*** Other areas serve as reminders of recommended inclusions in other related specifications for painting, electrical, miscellaneous metal, etc.

Feel free to contact EPD at 1-800-346-5760 ext. 100 if you have any questions or require assistance in using this guide specification. Please contact the factory at the number listed above to discuss your specific needs and we will e-mail or fax the materials to you as soon as possible.

SECTION
08350

MODEL 41
HYDRAULIC FOUR FOLD DOORS

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to the Work of this Section.

1.02 SUMMARY

A. This Section describes the requirements for providing hydraulic four-fold doors as shown on the Drawings and as specified.

B. Provide complete operating door assemblies including door sections, guides, hardware, operators, and installation accessories.

C. Opening framing is specified in Division 5, and is by others.

D. Concrete or grout work in Division 3, and is by others.

E. Finish painting is specified in Division 9, and is by others.

F. Electrical connections, including disconnects, conduit, wire, junction boxes, and field wiring of high or low voltage systems for powered operators and accessories are specified in Division 16, and is by others.
NOTE: Be sure to specify work in Sections 3,5,9,16.

1.03 SUBMITTAL

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Product Data: Submit manufacturer's product data, roughing-in diagrams, and installation instructions for each type and size of hydraulic four-fold door. Provide operating instructions, maintenance information, and electrical rough-in instructions.

C. Shop Drawing: Show construction details; clearance requirements, metal gauges, finish, electrical requirements, design data, and interface requirements for Work of other Sections of this Specification.

D. Door Manufacturer shall submit a reference list including names and telephone numbers of five (5) successful installations of type specified within the past two (2) years.

1.04 QUALITY ASSURANCE

A. Furnish each hydraulic four fold door as a complete unit produced by one manufacturer, including hardware, accessories, mounting and installation components.

B. Door manufacturer shall have at least 10 years experience in manufacturing door of type specified.

C. Single Source: Furnish hydraulic four-fold door units by one manufacturer for entire Project.

D. Insert and Anchorage's: Provide setting drawings, templates, instructions and directions for installation of anchorage devices. Coordinate delivery with other Work to avoid delay.

E. See concrete and masonry Sections of these Specifications for installation of inserts and anchorage devices.

F. Design Criteria: The door panels will be designed such that they will not deflect more than L/120 of their span under a minimum windload of 20 pounds per square foot with calculations based on the premise that the door panels are supported on the two non-spanning edges. Loads shall be applied to the vertical perimeter members. Door components shall be designed in accordance with the following specifications of latest adoption:
****Check Local Codes for actual windloads****

1. Shapes, Plates, and Bars – AISC Specification for the design, fabrication, and erection of structural steel for buildings.

2. Sheet or Strip Metal – AISI Specification for the design of cold-formed steel structural members.

G. Submit written certification verifying door assembly ability to support specified loads

PART 2 – PRODUCTS

2.01 MANUFACTURER

A. Project design is based on materials and systems of:

Electric Power Door, 522 West 27th Street, Hibbing, MN 55746, 1-800-346-5760.

B. Similar materials and systems of other manufacturers will be considered for substitution, providing that all items of the specification are complied to and subject to the requirements of Section 01630, "Substitutions".

2.02 MATERIALS AND FABRICATION

A. General: Comply with the following standards for forms and type of materials for required items of work.

1. Steel Tubing, Electric Welded: ASTM A513
2. Steel Tubing, Structural Welded: ASTM A500 Grade B
3. Structural Shapes and plates: ASTM A36
4. Castings, Cast Iron: ASTM A48
5. Face Sheets: Steel sheet metal, flat, hot rolled, 14 gauge minimum ASTM A569
6. Glazing: 1/4" clear tempered glass. **Specify other glass type if required**

B. Design Criteria: Design doors to limit deflection to more than L/120 of their span under a minimum windload of 20 pounds per square foot. Door components shall be designed in accordance with the following:

1. Shapes, Plates, and Bars: "AISC Specification for the Design, Fabrication and Erection of Structural Steel for Buildings".

2. Sheet or Strip Metal: "AISI Specification for the Design of Cold-Formed Steel Structural Members".

3. Operation Frequency: High Frequency, 24 hour per day operation.

C. Door Panel Construction: Custom metal fabrications as indicated.

1. Door panel frames (leaves) have both horizontal and vertical structural framing, and shall be constructed of standard structural steel, square steel tubing, or rectangular steel tubing sections of ample size and strength for loads and stresses imposed under the specified conditions. Minimum steel tube thickness of the vertical perimeter members shall be 1/8" or 11 gauge. Interior door panel frame members shall be tubing spaced at Manufacturer's recommended spacing and shall run horizontally. Pan style construction will not be allowed.

2. Door panel frames shall be of welded construction and all joints shall develop the full strength of the framing members.

3. Door panel frame members shall be true to dimension and square in all directions.

4. Unglazed portions of the door panel frames shall be sheeted on both sides with 14 gauge flat hot rolled steel which is welded to the door panel frame. Welds to be 9" O.C. All exposed seams of the door panel sheeting shall be caulked with Eclectic Brand E6100 adhesive caulk after fabrication and prior to prime painting.

5. Unglazed portions of the door sections shall be insulated with 2" of fibrous glass batt-type insulation providing a U-value of .12 or less. The insulating material shall be fitted to cover the entire surface of the door panel between the structural members.

6. Door panels shall not be bowed, warped, or out of line by more than 1/8" in 20 feet.

7. Exposed welds and welds which interfere with the installation of various parts shall be ground smooth.

8. Provide ¼" clear tempered glass windows and frames as shown on the drawings. **Specify other glass type if required**.

2.03 HARDWARE

A. Provide hardware necessary for a complete installation. Hardware shall be heavy duty type, including all bolts and fittings for the hardware as follows:

1. Door Guides:

   a. For doors up to 16'-0" wide: The door guides shall be an upside down channel shape fabricated from ¼" thick steel plate. Include wall support brackets. Guides shall be capable of being mounted within 4" of headroom.

   b. For doors 16'-0" or wider: The door guides shall be "S" beams – S4 X 7.7 minimum. Include wall support brackets. Guides shall be capable of being mounted within 15" of headroom.

2. Guide Roller Assemblies:

   a. For doors up to 16'-0" wide: The door shall have a minimum of two anti-friction bearing guide rollers. The guide rollers shall be of sufficient size to transmit the windload from the door panel to the steel door guides.

   b. For doors 16'-0" or wider: The door shall have a minimum of two anti-friction guide roller assemblies. The guide roller shall

be of sufficient size to transmit the windload from the door panels to the steel door guides. Provide two (2) 3" diameter minimum rollers in each assembly with bearings to take vertical load and four (4) 1" diameter minimum steel rollers which take horizontal load.

3. Jamb Hinges: Door shall be complete with shop-applied strap type jamb hinges. Jamb hinge seams must be welded. Jamb hinges shall be gusseted along both edges. Each hinge shall be supported on Timken roller bearings. Hinges shall be through bolted on panel. Grease zerk fittings shall be provided on all hinges for greasing hinge pintles.

4. Hinge Pintles: Jamb hinges shall have continuous 7/8" diameter steel pintles the full height of the opening.

5. Fold Hinges: Door shall be complete with strap type fold hinges. Fold hinge seams must be welded. Fold hinges shall be of dual capture design and have no less than two (2) shear planes. Fold hinges shall be equipped with a 5/8" (for doors up to 15') or 7/8"(for doors 15' or wider) diameter hinge pin with grease chase and grease zerk for lubrication. All fold hinges shall be equipped with two (2) Timken roller bearings.

6. Weatherstrip: Doors shall be completely weatherstripped with impregnated dual durometer snap-on type weatherseal at the jambs and head, cloth inserted rubber sweep at sill, combination reversing edge and rubber seal at meeting edges, and sponge rubber and metal astragal between door sections.

7. Operating Unit: Doors shall be hydraulically operated using one (1) jamb mounted cylinder actuator per side. Overhead type or rotary type actuators will not be allowed. The cylinder rods shall be retracted when door is in closed position.
NOTE: Two (2) actuators may be required on larger doors. Consult factory.

   a. The operator shall be furnished complete and shall consist of an integral pump and tank assembly attached to the motor, mounting brackets, control panel, adjustable limits, hydraulic cylinders, push buttons, and all necessary brackets and fittings to provide a smooth and satisfactory operation.

   b. Operator shall open or close the door, starting the door in motion smoothly, the accelerating to mid-swing and bring it to an adjustable slow smooth stop.

   c. The operator mechanism shall be instantly reversible and capable of functioning without chatter and/or vibration.

d. The actuators shall be mounted adjacent to the jamb panel hinges and require about 2'-6" from edge of jamb on each side.

e. Actuators shall not extend out from the door more than 18" when the door is closed.

f. The actuators shall require less than 20" side room, measured from the jamb panel hinge center line when the door is opened 105 degrees.

g. There shall be no more than five pivot points in the mechanism with no sliding or rolling contract points.

h. Provide an emergency override system so door can be operated in case of power failure.

i. Door panels shall be free to operate manually after emergency override system is activated.

j. The system shall automatically reset itself after returning to power operation without readjusting any limit switches.

k. Electric Motors: Each electric motor shall be 2 H.P. minimum suitable for operation on 460 volt, 3 phase, 60 Hz power. Motor shall be 1725 RPM, totally enclosed fan cooled, with "C" face for mounting to pump unit. **Specify different voltage if required**.

l. Pump Unit: Each pump unit shall be rated to provide maximum 1,100 PSI oil pressure at 3 gallons per minute pumping rate. Oil pressure gauge shall be provided.

m. Reservoir Tank: Each reservoir tank shall have a 4.5 gallon capacity and be equipped with oil level gauge and filler cap with vent plug.

n. Valves: Electric Solenoid Valves, flow control valves, and safety pressure relief valves shall be incorporated into a single machined manifold block which is fixed to the integral motor-pump-reservoir unit. These valves shall control starting, stopping, acceleration, deceleration, speed, and direction. The valves should be able to start the doors slowly, increase to maximum speed at mid cycle, and slow to a smooth stop. All movements shall be accomplished without vibration and/or chatter.

o. Hydraulic Hose:: The hydraulic hose shall be minimum 3/8" diameter I.D. hose to consist of an inner synthetic rubber tube with one braid of high tensile strength steel wire reinforcement and an outer synthetic rubber cover which is resistant to oil, weather, and abrasion. Temperature range to be –40 degrees to +250 degrees F. Minimum burst pressure to be 9,000 PSI. Hose to be SAE 100 R1 type at.

p. Hydraulic Tubing: The hydraulic tubing shall be minimum ½" diameter O.D. x 0.049 wall steel tubing – annealed, low carbon, 47,500 PSI tensile strength, SAE J525, flushed and tested. All fittings shall be included.

q. Needle type disconnect flow control valves shall also be provided to allow for manual operation of the doors without having to disconnect the cylinder actuators from the door panels.

r. (Option) Pump Enclosure: Provide a lockable cover for motor and pump assembly enclosure shall be a minimum of 10 gauge materials.

s. (Option) Wall Mounting Brackets: Provide wall mounting brackets for motor and pump assembly.

t. (Option) Interlock Switches: Provide interlock switches to insure only one (1) door can be opened at a time.

u. (Option) Door Position Switch: Provide limits to be used exclusively for indicating if the door is in the opened or closed position.

u. Each power pack unit shall also have an electrical junction box with terminals for wiring to the electric solenoid valves.

v. Hydraulic fluid shall be Lubriplate 231052 –70.

w. A NEMA 12 control panel housing the motor starter, relays, timers, transformer, etc. shall also be provided with each power pack unit. Control panel assembly shall be U.L. labeled. **Specify other NEMA Classes if required**.

x. Controls: Doors shall be opened and closed from remote switches located near the door opening. Pushbuttons shall be located on the interior of the building where shown and shall be the three-button type, with the buttons marked "OPEN", "CLOSE", and "STOP". The "OPEN" button shall be of the type requiring only momentary pressure by the operator to

cause the door to go from the closed to fully open position. The "CLOSE" button shall require constant pressure from the operator to maintain the closing motion of the door. When the door is in full motion and the "STOP" button is pressed, the door shall stop instantly and remain in the stop position; from the stop positions, the door may then be operated in either direction by pushing the "OPEN" or "CLOSE" button. Pushbuttons shall be NEMA rated for the environment specified. **Specify other controls and sequences of operation if required.**

x. Limit Switches: Shall be NEMA rated switches mounted to cylinder actuators.

y. Sensing Device: Pneumatic-type reversing edges shall be located full length of the door on the leading edges of the two center sections. Reversing edges will automatically reverse the doors should they come in contact with an obstruction during closing. This reversing edge shall not substitute for a limit switch.

z. Photo Electric Eyes: A photo electric eye shall be located on both sides of the opening. These photo eyes will automatically reverse the door if an obstruction is in the door opening during closing. Photo eyes shall be through beam type. Photo enclosures to be NEMA 4X or IP6.

2.04 SHOP FINISHING

A. General: Thoroughly clean, pre-treat and prime surfaces of door assembly including fixed panels trim, support and closure pieces.

1. Pre-treatment: As required by primer manufacturer.

2. Primer must be compatible with field finish coating as specified in Section 98000, Special Coatings.

PART 3 – EXECUTION

3.01 INSPECTION

A. Verify that conditions are satisfactory for installation of hydraulic four fold doors.

B. Do not proceed with the Work of this Section until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. The installation of doors shall be a factory trained and certified door company of the door manufacturer or supervised by an authorized representative of the door manufacturer.

B. Install door and operating equipment complete with necessary hardware, jamb and head weather strips, anchors, inserts, hangers, and equipment supports in accordance with final Shop Drawings, manufacturer's instructions, and as specified herein.

C. Upon completion of installation including work by other trades, lubricate, test and adjust doors to operate easily, free from warp, twist, or distortion and fitting weathertight for entire perimeter.

D. Provide a professionally produced, narrated video tape providing detailed information for maintenance and control adjustments.