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Engineering in motion

VERTICAL LIFT DOOR - TYPE I
THREE (3) LEAF - INTERIOR MOUNTED
Guide Specification Template

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EPD has provided this PDF guide template to assist in your development of an accurate document for use in specifying this product. Since this guide specification needs to be somewhat generic in nature for general usage, it may or may not fully represent the full need of every project. The user of this specification guide should be knowledgeable and experienced in adapting general specifications to specific projects. By using this guide specification, the user assumes full responsibility for the appropriateness and completeness of the specification for the project.

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.

After selecting the appropriate changes, the completed guide specification can be printed out and used for your records.
If you fax or e-mail a copy of the finished specification to Electric Power Door, EPD can provide a fully editable version of your completed guide specification in MS Word or other formats along with **additional comments and materials that are appropriate for your project.**
Please feel free to contact the factory at anytime to discuss your specific needs.

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SECTION

Enter your specification number

VERTICAL LIFT DOOR - TYPE I
THREE (3) LEAF - INTERIOR MOUNTED

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 Three (3) Leaf, Electrically Operated, Interior Mounted, Type I, Vertical Lift Door shown on the Drawings and as specified.

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

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

D. Opening frame is specified in Division 5, 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 and 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 or other Section Numbers.

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 Three (3) Leaf Electrically Operated, Interior Mounted, Type I, Vertical Lift Door. Provide operating instructions, maintenance information, and electrical rough-in instructions.

C. Shop Drawings: Show construction details; clearance requirements, metal gauges,

finish, electrical requirements, and design data, and interface requirements for Work of other Sections of this Specification.

D. Submit written certifications and calculations that verify the door assembly's ability to support its own weight and the specified loads.

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

1.04 QUALITY ASSURANCE

A. Furnish each electric vertical lift 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 doors of the type specified.

C. Single Source: Furnish all electric vertical lift doors and operating units, inclusive of control panels, from one manufacturer for the entire Project.

D. Inserts and anchorages: Furnish setting drawings, templates, instructions, and directions for installation of anchoring devices. Coordinate delivery with work in other divisions to avoid delays.

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

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 the required items of work.

1. Structural Shapes and Plates --- ASTM A36
2. Castings, Cast Iron ---------- ASTM A48
3. Face Sheets -- Steel Sheet Metal, Flat, Hot Rolled, 14 Gauge Minimum--- ASTM A569
4. The use of cold formed shapes for structural members or stiffeners fabricated from sheets or strips of any material will not be allowed.

B. Design criteria: The door panels shall be designed with sufficient structural stiffness and strength to resist the required wind load conditions without incurring permanent damage. Calculations shall be submitted to prove the adequacy of the door structure based on the formulas and methods contained in the AISC Manual of Steel Construction *Allowable Stress Design (Ninth Edition)*. The calculations shall confirm the structural qualities of the door panels using the following design parameters:

1. The "Net design wind pressure" p_{net} shall be [ ] pounds per square foot. (Mile per hour wind velocities should be converted to the "Net design wind pressure" p_{net} using the appropriate building codes and accounting for the project location, exposure factor, importance factor and other load contributing factors specified in the applicable code.)

2. The deflection (Δ) at the mid-span distance of the main structural members of the door panel (both vertical and horizontal shall be less than the full spanning dimension divided by [120 (L/120) | Pick One] Allowable deflections must be verified for both vertical and horizontal structural members.

3. Flexural stress at the extreme fiber (*f*) of the main structural members (both vertical and horizontal) shall be less than [ ] psi.

4. The moment of inertia (I) and the section modulus (S) of the main structural members (both vertical and horizontal) of the door panel shall be obtained from tables in the AISC Manual or geometrically computed.

   Geometrically computed values for the moment of inertia and section modulus shall not include contributory widths of sheeting or any other form of stiffener unless it continuously welded to both edges of a main structural member and its size does not exceed the limits determined by the AISC Manual.

5. Uniformly distributed load per unit length (*w*) shall be calculated from the values p_{net} and the appropriate contributory area on the door panel.

6. Procedures contained in the "BEAM DIAGRAMS AND FORMULAS" (Section 2 of the AISC) shall be used to compute the maximum

deflection and flexural stress at the extreme fiber. Calculations shall be based on the loading geometry shown in figure 1, (the weight of the door panel shall be ignored when the panel deflection and stress calculations are performed.)

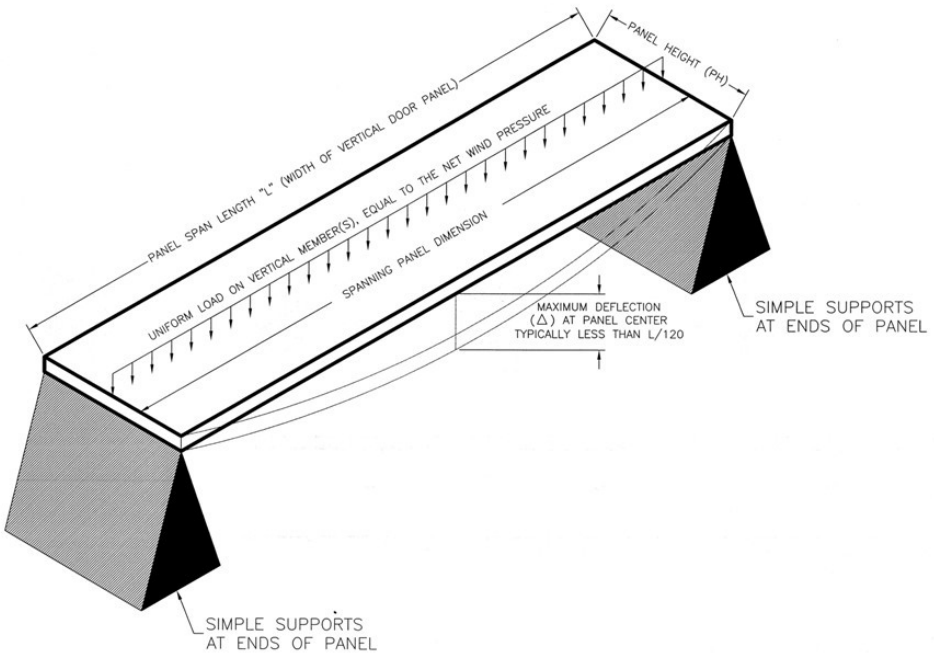

Figure 1
Example of a door panel simply supported on its non-spanning edges.

C. Door Panel Construction:

1. Door panel frames will have both horizontal and vertical structural framing, and shall be 4" minimum thickness constructed of standard structural steel channels and angles of ample size and strength for loads and stresses imposed under the specified conditions. Minimum steel channels and angles thickness of the vertical perimeter members shall not be less than 0.083" or 14 gauge. Interior door panel frame members shall be steel channels and angles not less than 0.083" or 14 gauge thick and spaced at not more than 24 inches center to center. The interior members shall run vertically. Pan style construction or the use of cold/hot formed sheet metal channels, hats, angles, or other sheet formed members in the panel construction will not be allowed.

2. The structural frames for the door panels shall be of welded construction and all joints shall be ground smooth wherever exposed and/or where sheeting overlaps the framing members.

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

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

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

6. 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.

7. Door guide assemblies shall consist of a series of structural shapes and plates arranged as shown on the plans. Guide assemblies shall be fabricated for field bolting or welding to the structural framing as required for a rigid installation. Minimum thickness of the door guide plate materials shall be ¼". Door guide angles shall be ¼" thick minimum.

8. Steel plate sectional counterweight shall be provided to properly balance door leaves for easy operation. Cast iron counterweight will not be allowed. The counterweight shall be contained in a steel plate box, which is suspended on cables attached to the doors operating over cast iron sheaves. Counterweight box shall be guided throughout the full height of travel by a counterweight enclosure (tower) with internal guides. Counterweight guide tower material shall be ¼" minimum. The counterweight tower shall be covered with 14 gauge steel to a height of 8'-0" minimum above the finished floor.

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 and as follows:

1. Guide Rollers: The doors shall have a minimum of eight 1 ¼" minimum diameter anti-friction bearing cam followers per panel. Two cam followers at each corner shall engage single angle steel door guides and guide the panels up and down. The cam followers and support bracketry shall be of sufficient size to transmit the windload from the door panel to the steel door guides. Metal to metal sliding guides will not be allowed. Cam followers shall not extend above or below the door panels. The cam rollers will be easily accessible through the door access panels and will be easily removable for maintenance or replacement purposes. Cam follower brackets will be bolted on.

2. Cable System: Leaves shall be placed one behind the other with vertical travel so arranged that all leaves shall start to move at the same time, travel at differential speeds and arrive at their fully opened or closed

position simultaneously. Provide all necessary wire rope, sheave assemblies, and fittings to make this system operable. Panel sheaves shall be mounted on the interior of the panel with easy access by removable covers. Wire ropes shall be designed to sustain the dead weight of door leaves plus 25% impact allowance with minimum safety factor of five. The ends of the wire ropes at door leaves shall be equipped with turnbuckles or other means for independent adjustment. Traction sheaves shall be 12" Ø minimum and idler sheaves shall be 8" Ø minimum. All idler sheaves shall be provided with sealed roller bearings. All cables supporting the doors and counterweight shall be 6x37 IWRC type.

3. Mechanical Emergency Stop Devices: Each door panel will be provided with two (2) mechanical emergency stop devices, one at each side. The mechanical emergency stop device will be a cam action device, which will engage the single angle guide and impede the downward slide of the door panels should a cable break or there is an attachment failure. The device in the bottom or single panel will have a three point contact action, and in the upper panels, the device will have a two point contact action. The device will be required to be reset by hand once the broken cable is replaced or the attachment devices have been repaired or replaced. The emergency stop device shall have been factory tested with verification by an independent testing laboratory. The manufacturer shall have a video of the test available for review by the architect/engineer and/or owner. Patent Number 6,553,716.

4. Weathering: Special wind lock seals to be dual durometer with flexibility to -40F. They shall be push-on type with built-in wear strip. No external fasteners allowed. Air leakage not to exceed .42 CFM per linear foot of seal with a 25 MPH wind.

5. Operating Unit: Doors shall be suspended on wire ropes reeved from leaves over traction sheaves to counterweights. Traction sheaves shall be driven by motor operator (specify if mounted on top of tower or at floor level) with auxiliary hand crank operation. Pull required on hand crank to open the door shall not exceed 20 pounds. Electric power operator shall be complete with electric gear motor, magnetic brake, brackets, pushbutton control, limit switches, magnetic reversing starter and other accessories specified and required. The power operator shall be designed such that the gear motor may be removed without disturbing the limit switch setting and without affecting the emergency auxiliary operators. Provisions shall be made for immediate emergency manual operation of door in the event of electrical failure. The emergency operating mechanism shall be arranged such that it can be placed in and out of operation from the floor and its use shall not affect the timing of the limit switches.

   Manual operation shall be by means of a hand crank connected to the drive system by a roller chain drive. A manual interlock switch shall be

provided to disconnect the motor when the manual operating hand crank is engaged. Emergency operation of door by operating through the motor gearing will not be permitted.

a. Gearmotor: Motor shall be high-starting torque type, with sufficient torque output to move door in either direction from any position and produce a door travel speed of not less than two-thirds, nor more than one foot per second, without exceeding the rated capacity. Motor shall be equipped with a magnetic brake. Motor shall conform to NEMA standards and shall be suitable for operation on 460V, 3 Phase, 60 htz Pick One

2.04 ELECTRICAL CONTROLS

A. Control Panel: Each door shall be furnished with a NEMA 12 (Industrial Us Pick One control panel enclosure. The control panel assembly shall be U.L. labeled and house a reversing across-the-line type magnetic motor starter having thermal-overload protection along with control relays, timers, fuses, terminal strips, and other electronic components as required to provide the specified operating sequences. All components shall be neatly labeled and pre-wired to numbered terminal strips that correspond to all the door's additional electrical components that are located outside of the electrical control panel enclosure. Power circuits in excess of 200 volts shall be provided with control transformers to reduce the voltage in the control circuit to 120 volts.

a. Pushbuttons: 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 the 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 motion and the "STOP" button is pressed, the door shall stop instantly and remain in the stop position; from the stop position, the door may then be operated in either direction by pushing the "OPEN" or "CLOSE" button. Pushbuttons shall be NEMA 12 (Industrial Us Pick One rated.

If a different sequence of operation for the pushbuttons is required, please specify in the box below. If you have questions, please contact us toll free at 800-346-5760.

b. Limit Switches: Shall be rotary can-type switches with NEMA rated microswitches.

c. Photo 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.

d. Reversing 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. The reversing edges shall not substitute for limit switches.

e. Optional Controls: If required, please select from below.

- ☐ Loop Detectors and Loop Wires:
  - Quantity
  - Location
  - Function
- ☐ Radio Controls:
  - Transmitter Quantity
- ☐ Automatic Timer to Close
- ☐ Selector Switch - 3 Position - Auto, Manual, Off
- ☐ Card Readers:
  - Card Quantity
- ☐ RFID Reader
  - Tag Quantity
- ☐ Keyswitch on Pushbutton Station

Consult factory for additional controls and sequences of operation.

2.05 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 coating as specified in Section 98000, Special Coatings.

If you have specific paint requirements, please enter below.

PART 3 - EXECUTION

3.01 INSPECTION

A. Verify that conditions are satisfactory for installation of electric vertical lift 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.