International Door, Inc.

LARGE VERTICAL LIFT DOORS

SECTION 08362 – Large Vertical Lift Doors

Part 1 – General

1.1 Related Documents

A. Drawings and general provisions of contract, including general and supplementary conditions and division 1 specification sections, apply to this section.

1.2 Work Included

A. Provide all labor, equipment, materials and services required to execute and complete all items of work in connection with furnishing and installing the vertical lift doors described herein. All wok shall be in accordance with the specifications and drawings.

1.3 Work not included

A. Opening framework and preparation, wall support steel, and exterior fascia.

B. Electrical field wiring including electrical disconnects, conduit, wire, junction boxes, field wiring and mounting of electrical components.

C. Finish painting

D. Coordinate hardware for man door with section 08710 "finish hardware".

E. Coordinate window opening requirements with section 08800 "glass and glazing" and installer of glass.

F. Furnish for other trades drawings and details for any structural steel, bracing, required holes, that will be part of building construction performed by other trades, but are required for proper installation of the doors. Drilling of holes, cutting, or any other work affecting structural framing of the building shall be subject to approval of the architect.

1.4 Work to be coordinated with other trades

A. Coordinate opening requirements of man doors with section 08111 "standard steel doors and frames" and supplier.

B. Coordinate exit sign installation requirements with division 16 and supplier of exit signs.

1.5 Submittals

A. Shop drawings

1. Submit complete, detailed shop drawings to the architect for review in accordance with the requirements of the contract documents prior to fabrication and installation.

2. Shop drawings shall include a large scale, profiles, gauges, types, sizes, reinforcing and anchorage devices for securing to adjacent materials.

3. Shop drawings shall include schedules listing the quantities of each kind or type of buck, frame, trim, and door, size of doors and frames, clearance, hardware, motor operators and controls.

4. Submit with the shop drawings complete with calculations of the door design and performance criteria as specified in the design criteria.

B. Product data: Submit manufacturer's printed literature for doors and accessories proposed.

C. Spare parts: Submit a list of spare parts recommended to be maintained in inventory at the site.

D. Operation and maintenance manuals: Furnish to the architect three (3) bound and indexed copies of the final approved installation, operation, maintenance and service manual containing the following:

1. Operation and maintenance instructions.
2. A list of parts to be serviced and adjusted and the frequency of adjustment.
3. Complete wiring diagrams.

1.6 Product Delivery, Storage and Handling

A. Deliver materials in sequence to meet the installation schedule and arrange ahead for off-the-ground, covered storage locations. Only materials scheduled to be erected within 24 hours may be stored on site. Other materials will have to be stored off site.

B. Handle components with care. Protect against damage, dirt, disfigurement and weather.

C. Protect other work resulting from work of this Section. Replace work, which cannot be satisfactorily repaired or restored at no additional cost to the owner.

1.7 Guarantee

A. Provide to the Owner a written guarantee, warranting the doors against any

defects or materials and/or workmanship for the new door for a period of 1 year, with proper maintenance, commencing from the date of final acceptance of the project. Motors shall be guaranteed for the period of 1 year. State that all door and control work that becomes defective during the guarantee period shall be repaired promptly, to the requirements of these Specifications and at no cost to the Owner.

1.8 Quality Assurance

A. Installation work shall only be carried out by the unit manufacturer or by an approved installation specialist properly licensed or franchised for installation work.

B. Source Limitations: Obtain vertical lift doors through one source from a single manufacturer.

1. Obtain operators and controls from the vertical lift door manufacturer.

1.9 Requirements of Regulatory Agencies

A. Equipment and installation shall comply with local, state and federal laws and with other mandatory requirements. Be responsible to insure an installation which is in compliance with such laws and regulations and all changes or alterations required by the authorized inspector or the authority having jurisdiction to be made without increase of subcontract price. Systems shall bear labeling for electrical equipment form the following standards;

1. Underwriters Laboratory 508 Electrical standards.

1.10 General

A. All vertical lift doors, guides, operators, hardware and accessories shall be fabricated utilizing new material throughout and shall be installed by the manufacturer or by a duly authorized agent of the manufacturer.

B. Details of the vertical lift door opening frames, which are furnished by others, shall be studied and any change in the structure from that shown on the bid drawings, which may be required for the installation of the vertical lift doors, shall be submitted prior to bidding, otherwise, all such changes shall be made as part of the work covered herein, and at no extra expense to the owner.

C. All additional materials necessary for the proper installation of the vertical lift doors, guides, operators, and hardware, and all drilling and tapping of steel, drilling of masonry, and other materials shall be a part of the work provided by the vertical lift door manufacturer and installer.

D. Vertical lift doors shall be accurately fitted with proper clearances, installed, and trimmed complete with hardware as specified herein. Vertical lift doors shall be

Designed to withstand a 25 psf wind load with the deflection limited to 1/120 of the span. The vertical lift doors and components shall be designed and constructed per the AISC steel construction manual, latest edition. The door manufacturer shall provide detailed calculations proving that the vertical lift doors and components will withstand the specified wind load.

E. The vertical lift door shall be provided with electric operators and synchronized cable reeving system complete with all accessories. The operator shall have a provision for manual operation in the event of a power failure.

Part 2 – Products

2.1 Manufacturer: Subject to compliance with requirements, provide products manufactured by International Door, Inc.- (734) 459-3000 or approved equal by the architect and owner. Model # XXX VL-DSI-S.

2.2 Vertical lift door construction

A. Materials used in the construction of the vertical lift doors shall be as follows:

1. Structural shapes and plates: ASTM A36
2. Face sheets, flat, steel, cold-rolled: ASTM A569
3. Castings. Cast iron: ASTM A48
4. Shafting, round steel 1045: ASTM A108
5. Wire rope, improved plow steel: ASTM A108
6. Weather-stripping: 1 ply cloth inserted rubber/neoprene

B. The vertical lift door shall be the one, two, three or four section type as shown on the contract drawings.

C. The vertical lift door panels shall be constructed from structural steel channels and angles. The door panel frames shall be of bolted or welded construction and all joints shall develop the full strength of the framing members. Intermediate members shall run vertically in the panel frame at no more than 4'-0" on center in order to provide proper support for the door panel sheeting and keep oil canning of the sheeting to a minimum. The door panel frame members shall be true to dimension and square in all directions. The door panel frames shall not be bowed, warped, or out of line by more than 1/8" in 20'.

D. The vertical lift door panels shall be sheeted on the exterior and interior sides with minimum 14 gauge flat hot-rolled steel. The sheeting shall be bolted to the door frame using 5/16" diameter self tapping screws at not more that 12" on center. Exposed welds and welds which interfere with various parts shall be ground smooth.

E. The vertical lift door panels shall be fully insulated with fiberglass thermal insulation. The insulation shall be cut neatly and fitted to cover the entire interior

surface of the exterior sheeting between the structural members of the door panel frame.

F. The vertical lift doors shall be provided with formed steel plate guides. The vertical lift door guide assemblies shall consist of a series of structural shapes and plates arranged as shown on the drawings. Heavy structural steel angle guides shall be welded to the formed steel plate tower assemblies. Minimum thickness of the formed steel plate tower assemblies shall be ¼" structural steel guide angles shall be 3/8".

G. Steel plate sectional counterweights shall be provided to properly balance the vertical lift 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 door panels, operating over cast iron sheaves. The counterweight box shall be guided throughout by UHMW throughout the full of height of travel. Access to the counterweight box shall be furnished by removable #14 GA HRS flat sheet covers up to 8'-0" high.

2.3 Hardware and accessories:

A. All hardware shall be heavy duty, industrial type. All mechanical components (gearboxes, couplings, guide rollers, cable sheave bearings, etc.) must be designed for reversing duty with a minimum service factor of 3.0—no reduction for intermittent operation will be allowed.

B. There shall be no sliding contact between the door and the guides. Rollers with hardened treads and pairs of factory lubricated sealed-for-life ball bearings shall guide and support the door leaves against all wind and/or side thrust loads.

C. Cable system: The vertical lift door panels shall be placed one behind the other with vertical travel so arranged that all door panels shall start to move at the same time, travel at different 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. Cable wind up drums shall not be used.

1. The wire ropes shall be galvanized 3/8" diameter minimum 6x37 improved plow steel with independent fiber core (iwfc). The wire ropes shall be designed with a 6.25 to 1 factor. The wire ropes shall sustain the dead weight of the door panels plus 25% impact allowance plus a minimum safety factor of five (5). The ends of the wire ropes shall be equipped with turnbuckles or other means for independent adjustments.

2. Panel sheaves shall be cast iron 8" diameter minimum and mounted in the interior of the door panels for protection. Removable access panels on the interior side of the door panels shall be provided to obtain access to the panel sheave. All sheaves shall be equipped with factory lubricated sealed for life ball bearings.

3. Tower sheaves shall be cast iron with idler tower sheaves being 8" diameter minimum and the traction sheaves atop the counterweight tower being 14" diameter minimum. Miscellaneous idler sheaves shall be 8" factory lubricated, sealed for life ball bearings and the traction sheaves and main drive shaft will be supported on sealed pillow block bearings.

4 Flexible, fabric reinforced neoprene weather seals shall be provided at top, meeting rails, bottom and sides. Provide a metal retainer strip screwed onto the door panels and door head. Provide complete weather-stripping at horizontal and vertical joints. Air leakage shall not exceed .42 cfm per linear foot of seal with a 25 mph wind.

2.4 Electric Door Operators

A. General: Provide electric door operator assembly of size and capacity recommended and provided by door manufacturer for door and with electric motor and factory-prewired motor controls, starter, gear-reduction unit, solenoid-operated brake, clutch, remote-control stations, control devices, sheaves, racks, levers, cables and accessories required for proper operation.

B. Comply with NFPA 70 and NEC 96

C. Furnish all labor and material for the complete installation of electric door operator for each door, including motor, speed reducers with all gears running in oil, sheaves, cables and brakes.

D. Motor shall be 220/440 volt, 3 phase, 60 cycle, totally enclosed, ball bearing, continuous duty and of capacity sufficient to operate the door at specified speed without exceeding a temperature rise of 55 degrees Celsius. Braking device to be operated automatically by a solenoid and be adjustable to suit the requirements of the door.

E. Operating mechanisms shall include a safety friction clutch, that must be set to allow only slightly more than enough power to reach the door raising mechanism than is required to lift door. If door should become stalled, the clutch must slip free, eliminating the chance for a motor burnout.

F. Door operator is to be equipped with a disconnecting device, chain or lever operated, which will disconnect the driving unit and engage a chain hoisting arrangement to facilitate the easy operation of the door when the power is off. Motor, brake, hand operation disconnect switch, and open and close limit switches are to be factory mounted and pre-wired to a terminal block in a NEMA 12 enclosure mounted on door operator. All material necessary for the pre-wired assembly shall conform to J.I.C./NEMA electrical standards for equipment and connections. The door contractor shall furnish and install the electric door operator including the motor, with "open-close" limit switches, hand chain

disconnect switch, solenoid, brake, all pre-wired to a terminal box mounted adjacent to the motor.

G. Electric Motors: Provide motors complying with automotive Standards Specification.

1. Motors ¼ HP and over-inductive type NEMA design B nameplate rated for 460 volts, three phase, 60 hertz.

2. Motors under ¼ HP-split phase or capacitor type rated for 115 volts, single phase, 60 hertz.

3. Frames: Where manufacturers option supplies 143T-Frames or 56 Frames provide 143T-Frame.

4. Motor Speed: 1800 rpm unless otherwise indicated

5. Explosion Proof Motors: For Class 1. Division 1, and Group D installation in hazardous locations.

6. Manufacturers: Subject to compliance with requirements, provide products by one of the following.

   a. Lincoln
   b. Marathon
   c. Reliance
   d. US Motor

H. Remote-Control Station: Provide momentary-contact, three-button station with NEMA ICS 6. Type 12 enclosure.

1. Provide interior units, full-guarded, surface-mounted, heavy-duty type, with NEMA ICS 6. Type 12 enclosure.

2. Provide exterior units, full-guarded, standard, surface-mounted, weatherproof type. NEMA ICS 6. Type 4 enclosure.

2.5 Reversing Soft Fail Safe Safety Edge

A. Door manufacturer shall provide and install a foam rubber-encased, reverse action soft safety mechanism on the electrically-operated vertical lift doors. The system is continuously energized and operates through the electrical system to stop the downward travel of the door on contact with an obstruction, providing an instantaneous reversal of the door travel to the full open position. Failure of any component prevents closing of door. A multi-conductor cord from an electrical junction box on the bottom door leaf is provided for the safety edge. The safety edge system shall be catalog # IDI-FSSE-S2K as manufactured by International Door, Inc.

2.6 Emergency Manual Operation

A. Provide and install devices and make provisions for emergency manual operation in accordance with the following: emergency chain operation, including plated chain, reduction unit, sheaves, etc., required to provide complete operation from side of door to suit conditions. This device shall be so arranged that when set for manual operation the brake is automatically released and control circuit is broken, making it impossible to operate the doors electrically until the device is set for motor operation.

B. Chain gear operators shall be approved type, designed for easy uniform effort. Plated chain shall be installed within easy reach of floor.

C. Operators shall be so designed that the electric motor may be removed without affecting manual operation of the door.

D. Limit Switches: Provide adjustable switches, interlocked with motor controls and set to automatically stop door at fully opened and fully closed positions.

E. Provide electric operators **as an option** with ADA-compliant audible alarm and visual indicator lights.

F. Radio Control: Provide radio control system **as an option** consisting of the following.

1. 3-Channel universal coaxial receiver to open, close and stop door, 1 per operator.
2. Multifunction remote control.
3. Remote antenna mounting kit.

G. Pull-Cord Operation **as an option**: The doors may be operated by a pull-cord device which consist of a switch mounted overhead and away from the door so that a driver may open and close the door without leaving the vehicle. The switch shall be heavy-duty, oiltight and weather proof. All relays and contacts to operate and sequence this device shall be included in the control panel.

H. Fully Automatic controls **as an option:** Fully automatic electric control panel includes a flange-mounted, fusible disconnect switch, size 1 reversing starter, fail-safe safety edge controls, loop detector amplifier, timers, relays, pilot lights, selector switches, terminal blocks, etc., all built in a NEMA 12 enclosure to conform to JIC automotive standards. Loop detector wires are embedded in floor on either side of door to open door automatically. Modulated L.E.D. through beam electric eye beams are unbroken. Non-automatic, push button type control systems are available for openings with low volume traffic.

I. Electrical power required for standard operators is 220/480 volts, 3 phase, 3 wire, 60 hertz and is to be provided by the electrical contractor.

J. Ground Fault Detection: This system shall incorporate ground fault detection with indicating lights on the face of the control panels, complying with automotive standards.

Part 3 – Execution

3.1 Installation

A. Installation of the doors shall be by the manufacturer or a duly authorized agent who is qualified to do this installation. The door installer shall be responsible for mounting the door guides and hanging the door panels plumb and true accurately counter balancing and weather-stripping. The door installer will make the final adjustments of the limit switches to ensure proper operation of the doors.

B. The door manufacturer shall have total responsibility for the installation of the vertical lift doors.

C. Koil Kords or S.O. Cords: The Fail Safe Safety Edge shall be wired with a 3 conductor koil kords or 3 conductor S.O. cords. Koil Kords or S.O. shall be furnished by door manufacturer.

D. Fully synchronize doors, with the hardware and cables designed so that the door sections move simultaneously, the upper section traveling at a fraction of the speed of the lower sections so that they reach the open or closed position at the same time.

3.2 Adjusting

A. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

B. Any repairs that required on account of faulty materials, workmanship, design or door construction shall be made at no additional charge to the owner.

3.3 Painting

A. All exposed and unexposed surfaces of doors and door hardware, except mechanical parts (not usually painted), shall be shop-painted with one (1) coat of standard shop primer.

B. The door installer shall field touch-up paint with standard primer all damaged or marred areas or unpainted surfaces left from welding or grinding during the installation process.

3.4 Guarantee

A. The door manufacturer shall guarantee the doors, components and installation for one (1) year against defects in material and workmanship for parts and labor.

B. This is conjunction with the standard 1 year warranty provided by the general contractor.

3.5 Demonstration

A. Startup Services: Engage a factory-authorized service representative to perform startup services and to train Owner's maintenance personnel as specified below.

1. Train Owner's maintenance personnel on procedures and schedules related to startup and shutdown, troubleshooting, servicing, preventive maintenance and procedures for testing and resetting release devices.

2. Review data in the maintenance manuals. Refer to Division 1 Section "Contract Closeout".

3. Schedule training with Owner with at least 7 days advance notice.

END OF SECTION 08632