International Door, Inc.

HIGH SPEED VERTICAL LIFT DOORS

Section 08361- High Speed Vertical Lift Doors

Part 1-General

1.1 Related Document:

A. Drawing and general provisions of contract, including general and supplementary conditions and division 1 specification section, 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 High Speed Vertical Lift Doors described herein. All work shall be in accordance with the specifications and drawings.

B. **Related Sections include the following:**

1. Division 8 Section "Door Hardware" for lock cylinders and keying.
2. Division 9 Section "Painting" for field-applied paint finish.
3. Division 16 Section "Conductors and Cables" for electrical service and connections for powered operators and accessories.
4. Division 16 Section "Disconnect Switches and Circuit Breakers" for disconnect switches and circuit breakers for powered operators.

1.3 Definitions

A. Operation Cycle: One complete cycle of a door begins with the door in the closed position. The door is then moved to the open position and back to the closed position.

1.4 Performance Requirements

A. Structural Performance: Provide high speed vertical lift doors capable of withstanding the effects
Of gravity loads and the following loads and stresses without evidencing permanent deformation of door components:

1. Wind Load: Uniform pressure (velocity pressure) of 25lbf/sq. ft. (1.2Kpa) acting. inward and outward

B. Operation-Cycle Requirements: Design high speed vertical lift door components and operator to operate for not less than 100,000 cycles.

C. To minimize doors being hit by moving vehicles, and vice versa, doors to move at high speed.

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1.5 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 a 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.

1.6 Quality Assurance

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

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

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

1.7 Requirements of Regulatory Agencies

A. Equipment and installation shall comply with local, state and federal laws and 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.

1.8 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.

1.9 Submittals

A. Submit detailed shop drawings of all work, and list the location in the building for each door. Clearly show and describe in detail, detailed door assemblies, and adjacent construction, including elevations, sections, and details of door, track, hardware, and operating components, dimensions, finishes and relationship of door, frames, track, hardware and operating components to adjacent construction.

B. Submit printed operation instructions and maintenance data for the doors as follows:

1. Wiring diagrams: "as built" straight line wiring and schematic diagrams showing electrical connections and control circuitry.

2. Instructions showing operation.

3. Lubrication chart indicating lubrication points and type of lubricant recommended for equipment.

Part 2-Products

2.1 Manufacturers and Products

A. Manufacturer: Subject to compliance with requirements. Provide products as manufactured by International Door, Inc. (734) 459-3000, or approved equal by the Architect and Owner.

B. Model # XXX-VL-DSI-H

C. High Speed Vertical Lift Doors shall be one, two, three or four leaf types as indicated on contract drawings.

2.2 Door Design

A. Design doors to withstand horizontal wind loads in closed position of 25 pounds per square foot positive and negative wind load. Maximum deflection under full design load shall be 1/120 of the span.

2.3 Materials

A. Provide electrically operated, insulated with safety controls and provision for manual operation in case of power failure.

2.4 Door Material and Construction

A. Stiles and rails shall be of structural steel sections, not smaller than three-inch channels, with all joints welded and ground smooth. Bracing shall consist of horizontal and vertical structural sections, to adequately stiffen the door panels.

B. Door leaves shall be faced on the exterior side with 14-gauge sheet steel welded to stiles, rails and bracing members from the inside. There shall be no exposed welds on exterior panels. All exterior doors shall be fully insulated with fiberglass thermal insulation, full thickness of panel: door shall be covered on the inside with 16-gauge sheet steel welded to stiles, rails and bracing members. All interior welds are to be ground smooth

C. Equipment:

1. High Speed Vertical Lift Door guides and counterweight box shall be fabricated from structural steel shapes or plates bolted or welded together to give ample strength at their connections in performing their proper functions. Counterweights shall be guided by rollers fitted with anti-friction sealed bearings for full travel of height. Access to the counter weight box shall be furnished by removable # 14 GA HRS flatsheet covers up to 8'-0" high.

2. Provisions shall be made on the leaves for application of any attached hardware. All hardware shall be heavy duty industrial type and designed for reversing duty. No reduction for intermittent operation shall be all owed.

3. Door leaves shall be suspended on plow steel wire rope from machined steel sheaves and lifting drums to counterweights located at one side of the opening.

4. Sheaves, rollers and drums shall have anti-friction sealed bearings.

5. Wire rope shall have the capacity to sustain the dead weight of the door with an allowance of 25 percent of impact all with a minimum safety factor of 10.

D. Provide safety latches on all door leaves that will prevent the door from falling in case of failure of one or more of the supporting cables. When these devices are actuated they must not cause and damage to the door panel or door guides and be reusable.

E. Flexible, fabric re-inforced neoprene weather seals are provided at top, meeting rails, bottom and sides. Seals are secured with bolts and continuous steel retainers for easy replacement. Door bottom weather seal shall be a safety type as specified under "Reversing Fail Safe Safety Edge"

F. There shall be no steel to steel contact between door and the guides. Rollers with sealed ball bearings shall guide all panels and support the door leaves against wind and/or side thrust loads.

G. Vision lites shall be provided in the door leaves as indicated, for glazing with ¼" thick Plexiglas. A continuous glazing bead and stop shall be provided. Unless otherwise specified, the Plexiglas shall be provided and installed by door contractor.

2.5 Break-Away Panel- Optional

A. Panel shall be an 18 to 36 inch flexible ½" THK rubber panel and shall be mounted in the lower portion of the bottom panel, able to withstand the impact of Hi-Lo's/ trucks entering the truck dock with the door not in the full open position. Panels shall be able to be reset with no tools.

2.6 Finishes General

A. Finish: Gray primer for exposed steel surfaces.

B. Color: As selected by Architect and/or Owner from manufacturer's full range of colors.

2.7 Electric Door Operators

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

B. Comply with NFPA 70 and NEC 96

C. Furnish all labor and material required 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 phases, 60 cycles, 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 mechanism 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. Clutch must be adjusted to slip slightly each time the motor starts so as to cushion starting and reversing loads.

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 n a NEMA 12 enclosure mounted on door operator. All materials necessary for the pre-wired assembly shall conform to J.I.C. 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 switched, 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 pushbutton controls labeled "Open", "Close" and "Stop".

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.
3.

2.8 Reversing Fail Safe Safety Edge

Door manufacturer shall provide and install the **"FAIL-SAFE electric** safety edge. The safety edge shall be reliable 3-wire system continuously energized at low voltage, and shall operate through necessary relay, resistor and low voltage transformer etc. to stop the door on contact with an obstruction and instantly reverse the direction of travel of the door to full open position being operative after the door has been opened. Controls shall be designed so that the failure or malfunction of any component in the safety edge electrical circuit shall prevent the door closing cycle. 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-EC100-3W** as manufactured by International Door, Inc.

2.9 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 by means of the chain operator

D. Limit Switches: Provide adjustable switches, interlocked with motor controls and set to automatically stop door at fully opened and fully closed positions. Limit switches shall be plug in type to reduce down time in case of accidental damage.

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 consists 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 are standard: 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 eyes 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 for accurately counter balancing with 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 high speed vertical lift doors.

C. Koil Kords or S.O. Cords: The Fail Safe Safety Edge shall be wired with koil kords or S.O. cords. Koil Kords or S.O. Cords 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 an account of faulty materials, workmanship, design or door construction shall be made at no additional charge to the owner.

3.3 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 Division1 Section "Contract Closeout"

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

END OF SECTION 08361